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欢迎索取免费详细资料、设计指南和光盘；产品凡多，未能尽录，欢迎来电查询。

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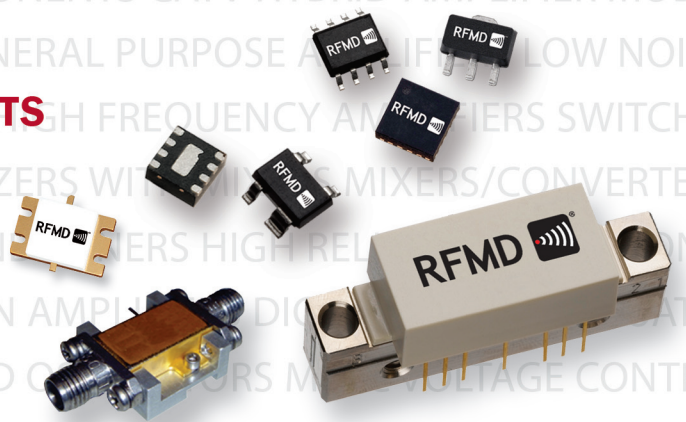
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# RFMD®

## 2010-2011 PRODUCT SELECTION GUIDE

**MORE THAN 150 NEW PRODUCTS**



# Multiple Markets. Multiple Choices. One RFMD®.

RFMD® is a global leader addressing the RF industry's complex challenges by delivering a broad portfolio of high-performance RF components for a diverse range of applications and end markets. Our product leadership, extensive portfolio breadth, and exceptional technical support enable us to accelerate our customers' time to market.

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ISO 9001: 2000 Certified  
ISO 14001: 2004 Certified

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## InGaP Active Bias Gain Blocks (SBB Series)

- Active bias provides stable performance over temperature
- Runs directly off a 5 V supply with no dropping resistor required
- Flat gain over frequency bandwidth



Table 01

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|---------|----------------|
|  | 50                        | 850                       | 15.5         | 3.5        | 19.0           | 43.0          | 5.0                    | 90                      | SOT-89  | SBB-1089Z      |
|  | 50                        | 6000                      | 15.5         | 4.5        | 19.5           | 35.0          | 5.0                    | 80                      | SOT-89  | SBB-4089Z      |
|  | 50                        | 6000                      | 16.5         | 3.9        | 15.0           | 30.0          | 4.2                    | 42                      | SOT-89  | SBB-3089Z      |
|  | 50                        | 850                       | 20.0         | 2.7        | 20.0           | 43.0          | 5.0                    | 90                      | SOT-89  | SBB-2089Z      |
|  | 50                        | 6000                      | 20.0         | 4.2        | 20.5           | 35.0          | 5.0                    | 75                      | SOT-89  | SBB-5089Z      |

## SBB Series - InGaP Amplifiers (Active Bias)

- High-linearity InGaP HBT
- Active bias network providing stable current over temperature
- Optimized for applications requiring excellent gain flatness



Table 02

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|---------|----------------|
|  | 50                        | 6000                      | 15.5         | 4.3        | 19.0           | 39.0          | 5.0                    | 80                      | Die     | SBB-4000       |
|  | 50                        | 6000                      | 21.0         | 3.8        | 20.5           | 38.5          | 5.0                    | 80                      | Die     | SBB-5000       |
|  | 50                        | 1000                      | 15.0         | 3.4        | 18.0           | 42.0          | 5.0                    | 90                      | Die     | SBB-1000       |
|  | 50                        | 1000                      | 20.0         | 2.9        | 19.0           | 42.5          | 5.0                    | 90                      | Die     | SBB-2000       |

## SiGe Active Bias Gain Blocks (SGC Series)

- Active bias provides stable performance over temperature
- 3 V and 5 V supply voltage with no dropping resistor



Table 03

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|---------|----------------|
|  | 50                        | 4000                      | 16.7         | 3.7        | 13.4           | 29.5          | 3.0                    | 54                      | SOT-86  | SGC-4386Z      |
|  | 50                        | 4000                      | 17.0         | 3.7        | 10.4           | 23.0          | 3.0                    | 26                      | SOT-363 | SGC-2363Z      |
|  | 50                        | 4000                      | 17.0         | 3.8        | 10.5           | 23.0          | 3.0                    | 26                      | SOT-86  | SGC-2386Z      |
|  | 50                        | 4000                      | 17.1         | 4.0        | 13.3           | 28.5          | 3.0                    | 54                      | SOT-363 | SGC-4363Z      |
|  | 50                        | 4000                      | 19.8         | 3.5        | 10.5           | 22.5          | 3.0                    | 26                      | SOT-363 | SGC-2463Z      |
|  | 50                        | 4000                      | 19.9         | 3.3        | 10.5           | 23.0          | 3.0                    | 25                      | SOT-86  | SGC-2486Z      |
|  | 50                        | 4000                      | 20.5         | 3.7        | 13.8           | 28.0          | 3.0                    | 52                      | SOT-363 | SGC-4463Z      |
|  | 50                        | 4000                      | 20.5         | 3.4        | 13.8           | 29.0          | 3.0                    | 52                      | SOT-86  | SGC-4486Z      |
|  | 50                        | 4000                      | 26.5         | 1.7        | 16.8           | 29.5          | 3.0                    | 48                      | SOT-363 | SGC-4563Z      |
|  | 50                        | 4000                      | 15.0         | 3.3        | 15.2           | 32.0          | 3.0                    | 55                      | SOT-363 | SGC-4263Z      |

## SiGe Gain Blocks (SGA Series)

- Industry-leading 50 ohm gain blocks
- Wide range of P1 db, gain, and package styles



Table 04

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|---------|----------------|
|  | DC                        | 2500                      | 25.6         | 1.9        | 15.0           | 27.1          | 6.0                    | 45                      | SOT-363 | SGA-4563Z      |
|  | DC                        | 3000                      | 21.5         | 2.8        | 22.4           | 35.5          | 7.0                    | 115                     | SOT-89  | SGA-7489Z      |
|  | DC                        | 3500                      | 14.0         | 3.4        | 14.2           | 29.3          | 6.0                    | 45                      | SOT-363 | SGA-4263Z      |
|  | DC                        | 3500                      | 17.5         | 2.9        | 11.6           | 25.4          | 5.0                    | 35                      | SOT-363 | SGA-3363Z      |
|  | DC                        | 3500                      | 18.8         | 3.1        | 17.0           | 32.0          | 6.0                    | 60                      | SOT-86  | SGA-5486Z      |
|  | DC                        | 3500                      | 19.0         | 2.5        | 14.0           | 27.0          | 6.0                    | 45                      | SOT-363 | SGA-4463Z      |
|  | DC                        | 3500                      | 20.1         | 2.7        | 20.7           | 34.0          | 6.0                    | 75                      | SOT-89  | SGA-6489Z      |
|  | DC                        | 3500                      | 25.2         | 2.5        | 21.5           | 32.5          | 6.0                    | 80                      | SOT-89  | SGA-6589Z      |
|  | DC                        | 4000                      | 15.7         | 2.7        | -7.8           | 2.6           | 5.0                    | 8                       | SOT-363 | SGA-1263Z      |
|  | DC                        | 4000                      | 17.5         | 2.7        | 14.3           | 28.7          | 6.0                    | 45                      | SOT-363 | SGA-4363Z      |
|  | DC                        | 4000                      | 19.7         | 2.8        | 16.0           | 30.8          | 6.0                    | 60                      | SOT-89  | SGA-5489Z      |
|  | DC                        | 4000                      | 23.1         | 2.5        | 18.1           | 31.6          | 6.0                    | 60                      | SOT-86  | SGA-5586Z      |
|  | DC                        | 4000                      | 23.8         | 2.7        | 21.5           | 33.8          | 6.0                    | 80                      | SOT-86  | SGA-6586Z      |
|  | DC                        | 4000                      | 23.8         | 3.0        | 18.2           | 32.9          | 6.0                    | 60                      | SOT-89  | SGA-5589Z      |
|  | DC                        | 4000                      | 24.0         | 1.7        | 16.5           | 28.6          | 6.0                    | 45                      | SOT-86  | SGA-4586Z      |
|  | DC                        | 4500                      | 12.7         | 4.6        | -1.8           | 9.4           | 5.0                    | 8                       | SOT-363 | SGA-0163Z      |
|  | DC                        | 4500                      | 13.3         | 4.0        | 16.3           | 32.5          | 5.0                    | 60                      | SOT-363 | SGA-5263Z      |
|  | DC                        | 4500                      | 13.9         | 3.7        | 18.1           | 34.4          | 6.0                    | 75                      | SOT-89  | SGA-6289Z      |
|  | DC                        | 4500                      | 15.5         | 3.8        | 20.2           | 35.2          | 6.0                    | 80                      | SOT-89  | SGA-6389Z      |
|  | DC                        | 4500                      | 16.4         | 3.3        | 16.3           | 31.5          | 6.0                    | 60                      | SOT-89  | SGA-5389Z      |
|  | DC                        | 4500                      | 17.0         | 2.9        | 15.3           | 28.9          | 6.0                    | 45                      | SOT-86  | SGA-4386Z      |
|  | DC                        | 4500                      | 18.5         | 2.7        | 15.4           | 28.2          | 6.0                    | 45                      | SOT-86  | SGA-4486Z      |
|  | DC                        | 4500                      | 19.6         | 3.0        | 2.3            | 14.2          | 5.0                    | 11                      | SOT-363 | SGA-0363Z      |
|  | DC                        | 4500                      | 19.7         | 3.0        | 20.2           | 35.0          | 6.0                    | 75                      | SOT-86  | SGA-6486Z      |
|  | DC                        | 5000                      | 10.0         | 4.7        | 14.6           | 28.3          | 6.0                    | 45                      | SOT-86  | SGA-4186Z      |
|  | DC                        | 5000                      | 10.2         | 4.3        | 7.5            | 20.0          | 5.0                    | 20                      | SOT-86  | SGA-2186Z      |
|  | DC                        | 5000                      | 10.5         | 4.1        | 7.1            | 21.0          | 5.0                    | 20                      | SOT-363 | SGA-2163Z      |
|  | DC                        | 5000                      | 10.5         | 4.8        | 13.0           | 29.7          | 6.0                    | 45                      | SOT-363 | SGA-4163Z      |
|  | DC                        | 5000                      | 13.4         | 4.2        | 15.8           | 31.8          | 6.0                    | 60                      | SOT-89  | SGA-5289Z      |
|  | DC                        | 5000                      | 13.5         | 3.7        | 15.0           | 29.1          | 6.0                    | 45                      | SOT-86  | SGA-4286Z      |
|  | DC                        | 5000                      | 13.5         | 4.1        | 17.0           | 31.0          | 6.0                    | 60                      | SOT-86  | SGA-5286Z      |
|  | DC                        | 5500                      | 13.6         | 3.9        | 18.7           | 35.0          | 6.0                    | 75                      | SOT-86  | SGA-6286Z      |
|  | DC                        | 5000                      | 14.5         | 3.7        | 12.2           | 25.5          | 5.0                    | 35                      | SOT-86  | SGA-3286Z      |
|  | DC                        | 5000                      | 14.7         | 3.2        | 7.5            | 20.2          | 5.0                    | 20                      | SOT-363 | SGA-2263Z      |
|  | DC                        | 5000                      | 15.0         | 3.2        | 8.3            | 20.0          | 5.0                    | 20                      | SOT-86  | SGA-2286Z      |
|  | DC                        | 5000                      | 15.0         | 3.6        | 11.6           | 26.2          | 5.0                    | 35                      | SOT-363 | SGA-3263Z      |
|  | DC                        | 5000                      | 15.4         | 3.6        | 21.0           | 36.0          | 6.0                    | 80                      | SOT-86  | SGA-6386Z      |
|  | DC                        | 5000                      | 16.6         | 3.5        | 17.0           | 32.0          | 6.0                    | 60                      | SOT-86  | SGA-5386Z      |
|  | DC                        | 5000                      | 17.0         | 3.2        | 12.3           | 24.3          | 5.0                    | 35                      | SOT-86  | SGA-3386Z      |
|  | DC                        | 5000                      | 17.2         | 2.9        | 8.5            | 20.5          | 5.0                    | 20                      | SOT-86  | SGA-2386Z      |
|  | DC                        | 5000                      | 17.5         | 2.9        | 8.2            | 19.4          | 5.0                    | 20                      | SOT-363 | SGA-2363Z      |
|  | DC                        | 5000                      | 19.8         | 2.7        | 8.4            | 20.0          | 5.0                    | 20                      | SOT-86  | SGA-2486Z      |
|  | DC                        | 5000                      | 20.0         | 2.6        | 8.0            | 20.1          | 5.0                    | 20                      | SOT-363 | SGA-2463Z      |
|  | DC                        | 5000                      | 21.0         | 2.8        | 12.7           | 24.6          | 5.0                    | 35                      | SOT-86  | SGA-3486Z      |
|  | DC                        | 5000                      | 21.5         | 2.5        | 11.3           | 24.0          | 5.0                    | 35                      | SOT-363 | SGA-3463Z      |
|  | DC                        | 5000                      | 25.0         | 2.5        | 13.0           | 24.5          | 5.0                    | 35                      | SOT-86  | SGA-3586Z      |
|  | DC                        | 5000                      | 25.5         | 2.3        | 13.0           | 24.0          | 5.0                    | 35                      | SOT-363 | SGA-3563Z      |

## GaAs Gain Blocks

- Internally matched input and output
- High-frequency performance



Table 05

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|---------|----------------|
|  | DC                        | 6000                      | 12.0         | 3.7        | 13.5           | 24.0          | 4.8                    | 40                      | SOT-89  | RF3378         |
|  | DC                        | 6000                      | 12.0         | 3.7        | 13.6           | 25.4          | 4.8                    | 40                      | QFN-12  | RF3398         |
|  | DC                        | 6000                      | 12.7         | 5.3        | 17.5           | 33.5          | 6.6                    | 65                      | QFN-12  | RF3395         |
|  | DC                        | 6000                      | 13.2         | 4.5        | 16.0           | 29.0          | 6.6                    | 65                      | SOT-89  | RF3375         |
|  | DC                        | 6000                      | 15.5         | 2.8        | 12.5           | 25.5          | 4.5                    | 40                      | SOT-89  | RF3377         |
|  | DC                        | 6000                      | 15.5         | 2.8        | 13.0           | 25.5          | 4.5                    | 40                      | QFN-12  | RF3397         |
|  | DC                        | 6000                      | 18.7         | 3.5        | 17.5           | 32.0          | 6.0                    | 65                      | SOT-89  | RF3374         |
|  | DC                        | 6000                      | 18.7         | 3.5        | 17.5           | 32.0          | 6.0                    | 65                      | QFN-12  | RF3394         |
|  | DC                        | 6000                      | 19.8         | 2.0        | 11.5           | 24.0          | 4.2                    | 35                      | SOT-89  | RF3376         |
|  | DC                        | 6000                      | 19.8         | 2.0        | 11.5           | 24.0          | 4.2                    | 35                      | QFN-12  | RF3396         |

## InGaP Gain Blocks

- Broadband performance with excellent thermal performance
- Increased breakdown voltage and minimal leakage current between junctions



Table 06

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package                | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|------------------------|----------------|
|  | DC                        | 500                       | 14.8         | 3.3        | 20.1           | 42.0          | 4.9                    | 90                      | SOT-89                 | SBF-4089Z      |
|  | DC                        | 500                       | 20.0         | 2.8        | 21.0           | 41.0          | 4.9                    | 90                      | SOT-89                 | SBF-5089Z      |
|  | DC                        | 4000                      | 19.0         | 3.2        | 12.3           | 26.5          | 3.6 to 4.2             | 35                      | Ceramic Micro-X        | NBB-500        |
|  | DC                        | 4000                      | 19.0         | 4.0        | 13.0           | 23.0          | 3.6 to 4.2             | 35                      | Ceramic MPGA 3.0 x 3.0 | NBB-502        |
|  | DC                        | 5000                      | 14.2         | 4.8        | 19.0           | 33.5          | 5.0                    | 80                      | SOT-86                 | SBA-4086Z      |
|  | DC                        | 5000                      | 14.6         | 4.8        | 19.0           | 33.5          | 5.0                    | 80                      | SOT-89                 | SBA-4089Z      |
|  | DC                        | 5000                      | 17.2         | 4.5        | 19.5           | 34.0          | 4.9                    | 80                      | SOT-86                 | SBA-5086Z      |
|  | DC                        | 5000                      | 18.0         | 4.5        | 19.5           | 34.0          | 4.9                    | 80                      | SOT-89                 | SBA-5089Z      |
|  | DC                        | 6000                      | 15.5         | 4.1        | 12.0           | 29.6          | 3.6 to 4.2             | 47                      | Plastic Micro-X        | NLB-400        |
|  | DC                        | 8000                      | 14.3         | 4.3        | 15.8           | 26.0          | 3.6 to 4.2             | 47                      | Ceramic MPGA 3.0 x 3.0 | NBB-402        |
|  | DC                        | 8000                      | 16.0         | 4.3        | 15.0           | 28.1          | 3.6 to 4.2             | 47                      | Ceramic Micro-X        | NBB-400        |
|  | DC                        | 10000                     | 12.0         | 4.9        | 11.1           | 28.6          | 3.6 to 4.2             | 50                      | Plastic Micro-X        | NLB-300        |
|  | DC                        | 10000                     | 12.0         | 5.0        | 12.6           | 28.9          | 4.4 to 4.8             | 50                      | Plastic Micro-X        | NLB-310        |
|  | DC                        | 12000                     | 11.5         | 4.9        | 13.8           | 24.0          | 4.6 to 5.3             | 50                      | Ceramic Micro-X        | NBB-310        |
|  | DC                        | 12000                     | 12.0         | 5.2        | 13.0           | 27.1          | 3.6 to 4.2             | 50                      | Ceramic Micro-X        | NBB-300        |
|  | DC                        | 12000                     | 12.5         | 5.5        | 13.7           | 23.5          | 3.6 to 4.2             | 50                      | Ceramic MPGA 3.0 x 3.0 | NBB-302        |
|  | DC                        | 12000                     | 12.5         | 4.9        | 15.8           | 24.0          | 4.7 to 5.3             | 50                      | Ceramic MPGA 3.0 x 3.0 | NBB-312        |

## Low Noise Amplifiers

- Low noise figure <2.0 dB, minimal matching components
- Excellent output power
- Versatile with extended frequency ranges



Table 07

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|-----------------|----------------|
|  | 50                        | 4000                      | 12.8         | 0.8        | 22.7           | 39.5          | 5.0                    | 90                      | SOT-89          | SPF-5189Z      |
|  | 50                        | 4000                      | 18.2         | 0.8        | 20.0           | 33.0          | 3.0                    | 46                      | SOT-343         | SPF-5043Z      |
|  | 50                        | 4000                      | 18.9         | 0.6        | 23.0           | 38.0          | 3.0                    | 90                      | QFN 2.0 x 2.0   | SPF-5122Z      |
|  | 400                       | 3800                      | 30.0         | 0.8        | 22.5           | 36.0          | 5.0                    | 180                     | QFN 5.0 x 5.0   | RF3866         |
|  | 700                       | 3800                      | 15.0         | 0.8        | 22.5           | 35.0          | 5.0                    | 90                      | QFN 3.0 x 3.0   | RF3863         |
|  | 700                       | 3800                      | 15.0         | 0.8        | 22.5           | 35.5          | 5.0                    | 180                     | QFN 5.0 x 5.0   | RF3867         |
|  | 800                       | 4000                      | 24.5         | 0.8        | 22.4           | 39.0          | 5.0                    | 120                     | QFN 4.0 x 4.0   | SPF-5344Z      |
|  | 1550                      | 1600                      | 13.5         | 0.9        | 13.5           | 17.5          | 4.0                    | 8                       | SMT             | RF2815 **      |
|  | DC                        | 2500                      | 25.6         | 1.9        | 15.0           | 27.1          | 6.0                    | 45                      | SOT-363         | SGA-4563Z      |
|  | DC                        | 4000                      | 19.3         | 1.1        | 9.0            | 27.8          | 3.0                    | 10                      | SOT-343         | SGA-8343       |
|  | DC                        | 4000                      | 24.0         | 1.7        | 16.5           | 28.6          | 6.0                    | 45                      | SOT-86          | SGA-4586Z      |
|  | DC                        | 6000                      | 18.7         | 1.5        | 4.0            | 22.0          | 3.0                    | 6                       | SOT23-5         | RF2472         |
|  | 5                         | 1500                      | 20.5         | 1.3        | 24.0           | 39.0          | 5.0                    | 110                     | QFN 3.0 x 3.0   | RF3827         |
|  | 5                         | 2000                      | 20.0         | 1.1        | 2.5            | 13.0          | 3.0                    | 6                       | SOT-363         | SGL-0363Z      |
|  | 5                         | 4000                      | 23.0         | 2.0        | 1.5            | 5.3           | 3.0                    | 11                      | QFN 2.0 x 2.0   | SGL-0622Z      |
|  | 45                        | 2500                      | 15.0         | 1.5        | 5.0            | 19.0          | 3.0                    | 6                       | QFN 3.0 x 3.0   | RF2884         |
|  | 48                        | 1000                      | 17.5         | 1.2        | 1.3            | —             | 3.0                    | 20                      | QFN 2.0 x 2.0   | CXE-2022Z      |
|  | 100                       | 1300                      | 15.5         | 1.2        | 5.2            | 24.5          | 3.6                    | 12                      | SOT-363         | SGL-0163Z      |
|  | 150                       | 2500                      | 14.0         | 1.5        | 18.0           | 9.0           | 3.0                    | 13                      | SOT23-5         | RF2314         |
|  | 150                       | 2500                      | 20.0         | 1.4        | 14.0           | 26.0          | 3.0                    | 22                      | SOT23-5         | RF2878         |
|  | 300                       | 2500                      | 11.7         | 1.6        | 16.0           | 15.0          | 3.0                    | 8                       | SOIC-8          | RF2304         |
|  | 400                       | 3800                      | 14.5         | 1.0        | 22.5           | 35.5          | 5.0                    | 90                      | QFN 3.0 x 3.0   | RF3861         |
|  | 400                       | 3800                      | 28.5         | 1.2        | 22.5           | 36.0          | 5.0                    | 180                     | QFN 5.0 x 5.0   | RF3865         |
|  | 500                       | 2500                      | 19.0         | 1.5        | 13.0           | 27.0          | 3.6                    | 12                      | MSOP-8          | RF2442         |
|  | 900                       | 4000                      | 14.0         | 1.3        | -5.0           | 7.0           | 3.0                    | 7                       | SOT-6           | RF2370 *       |
|  | 900                       | 4000                      | 14.0         | 1.3        | -5.0           | 7.0           | 3.0                    | 7                       | QFN 2.2 x 2.2   | RF2374 *       |
|  | 900                       | 4000                      | 14.0         | 1.3        | 11.0           | 21.0          | 3.0                    | 7                       | QFN 3.0 x 3.0   | RF3857 *       |
|  | 1400                      | 2500                      | 10.8         | 2.0        | 7.9            | 25.0          | 3.0                    | 13                      | SOT-363         | SGL-0263Z      |
|  | 4900                      | 5900                      | 11.0         | 1.7        | -2.0           | 22.0          | 3.3                    | 12                      | QFN 2.0 x 2.0   | RF5515         |
|  | 4900                      | 5900                      | 11.0         | 1.7        | -2.0           | 22.0          | 3.3                    | 12                      | QFN 2.0 x 2.0   | RF5601 *       |
|  | 7000                      | 11000                     | 21.0         | 1.1        | 12.0           | 24.0          | 3.0                    | 65                      | Die             | FMA219         |

\* Integrated bypass

\*\* GPS LNA

## pHEMT Low Noise Discrete Transistors

- Low noise and high linearity over a range of bias conditions



Table 08

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | NF<br>(dB) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|--|---------------------------|---------------------------|--------------|----------------|---------------|------------|------------------------|-------------------------|-----------------|----------------|
|  | 500                       | 18000                     | 19.0         | 22.0           | 32.0          | 0.5        | 5.0                    | 55.0                    | P70             | FPD6836P70     |
|  | 700                       | 3000                      | 13.0         | 30.0           | 45.0          | 1.3        | 5.0                    | 450.0                   | SOT-89          | FPD3000SOT89   |
|  | 700                       | 3000                      | 16.5         | 29.0           | 38.0          | 0.7        | 4.0                    | 100.0                   | QFN 4.0 x 4.0   | FPM21500QFN    |
|  | 700                       | 3500                      | 14.0         | 29.0           | 44.0          | 1.2        | 5.0                    | 300.0                   | SOT-89          | FPD2250SOT89   |
|  | 700                       | 4500                      | 17.0         | 27.5           | 42.0          | 1.0        | 5.0                    | 200.0                   | SOT-89          | FPD1500SOT89   |
|  | 700                       | 5000                      | 18.0         | 24.0           | 38.0          | 0.6        | 4.0                    | 100.0                   | QFN 4.0 x 4.0   | FPM2750QFN     |
|  | 700                       | 5000                      | 20.0         | 24.0           | 39.0          | 0.8        | 5.0                    | 100.0                   | SOT-89          | FPD750SOT89    |
|  | 1000                      | 5000                      | 18.0         | 20.0           | 31.0          | 0.6        | 3.3                    | 40.0                    | SOT-343         | FPD750SOT343   |
|  | 1000                      | 5000                      | 18.0         | 18.0           | 32.0          | 0.5        | 3.0                    | 50.0                    | SOT-343         | FPD6836SOT343  |
|  | 1000                      | 18000                     | 21.0         | 20.0           | 30.0          | 0.5        | 5.0                    | 30.0                    | P70             | FPD7612P70     |
|  | 1000                      | 26000                     | 21.0         | 20.0           | 30.0          | 0.3        | 5.0                    | 30.0                    | P70             | FPD200P70      |

## Analog Variable Gain Amplifiers

- Amplifiers with voltage variable attenuators
- High-linearity power control
- Cellular infrastructure applications



Table 09

|            | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain Range<br>(Min) (dB) | Gain<br>(dB) | Gain<br>Flatness<br>(dB) | $P_{OUT}$ at<br>Rated<br>ACPR<br>(dBm) | OIP3<br>(dBm) | ACPR<br>(dBc) | $V_{CC}$<br>(V) | $I_{CC}$<br>(mA) | Package<br>(mm) | Part<br>Number |
|------------|---------------------------|---------------------------|--------------------------|--------------|--------------------------|----------------------------------------|---------------|---------------|-----------------|------------------|-----------------|----------------|
| <b>NEW</b> | 690                       | 810                       | 20.0                     | 23.0         | ±0.2                     | 10.0                                   | 41.0          | -62.0         | 5.0             | 475              | MCM 7.0 x 7.0   | RFVA1007       |
| <b>NEW</b> | 740                       | 870                       | 20.0                     | 23.0         | ±0.2                     | 10.0                                   | 41.0          | -62.0         | 5.0             | 475              | MCM 7.0 x 7.0   | RFVA1027       |
| <b>NEW</b> | 1425                      | 1550                      | 20.0                     | 25.0         | ±0.2                     | 12.0                                   | 43.0          | -65.0         | 5.0             | 475              | MCM 7.0 x 7.0   | RFVA1017       |
| <b>NEW</b> | 1750                      | 2250                      | 20.0                     | 25.0         | ±0.2                     | 12.0                                   | 43.0          | -65.0         | 5.0             | 475              | MCM 7.0 x 7.0   | RFVA2007       |
| <b>NEW</b> | 2250                      | 2440                      | 20.0                     | 24.0         | ±0.2                     | 12.0                                   | 43.0          | -65.0         | 5.0             | 475              | MCM 7.0 x 7.0   | RFVA2017       |
| <b>NEW</b> | 2440                      | 2750                      | 20.0                     | 27.0         | ±0.2                     | 12.0                                   | 44.0          | -65.0         | 5.0             | 430              | MCM 7.0 x 7.0   | RFVA3007       |

## Digital Variable Gain Amplifiers

- Amplifiers with digital step attenuators
- High-linearity power control
- Cellular infrastructure applications



Table 10

|            | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Number<br>of Bits<br>(dB) | Gain<br>(dB) | Step<br>Size<br>(dB) | P1dB<br>(dBm) | OIP3<br>(dBm) | Interface | $V_{CC}$<br>(V) | $I_{CC}$<br>(mA) | Package<br>(mm) | Part<br>Number |
|------------|---------------------------|---------------------------|---------------------------|--------------|----------------------|---------------|---------------|-----------|-----------------|------------------|-----------------|----------------|
| <b>NEW</b> | 10                        | 850                       | 6.0                       | 18.5         | 0.5                  | 20.0          | 35.0          | serial    | 5.0             | 90               | MCM 4.0 x 4.0   | RFDA0025       |
| <b>NEW</b> | 10                        | 4000                      | 6.0                       | 18.5         | 0.5                  | 21.0          | 35.0          | serial    | 5.0             | 80               | QFN 5.0 x 5.0   | RFDA1005L      |
| <b>NEW</b> | 50                        | 850                       | 6.0                       | 38.5         | 0.5                  | 20.0          | 40.0          | serial    | 5.0             | 175              | QFN 5.0 x 5.0   | RFDA0016       |
| <b>NEW</b> | 400                       | 2500                      | 6.0                       | 11.5         | 0.5                  | 25.0          | 42.0          | serial    | 5.0             | 120              | QFN 5.0 x 5.0   | RFDA2025       |
| <b>NEW</b> | 680                       | 970                       | 6.0                       | 35.0         | 0.5                  | 24.0          | 41.0          | serial    | 5.0             | 190              | MCM 6.0 x 6.0   | RFDA0026       |
| <b>NEW</b> | 1800                      | 2400                      | 6.0                       | 32.0         | 0.5                  | 24.0          | 43.0          | serial    | 5.0             | 190              | MCM 6.0 x 6.0   | RFDA2026       |
| <b>NEW</b> | 10                        | 850                       | 6.0                       | 18.5         | 0.5                  | 20.0          | 35.0          | parallel  | 5.0             | 90               | QFN 5.0 x 5.0   | RFDA0015       |
| <b>NEW</b> | 50                        | 1000                      | 6.0                       | 38.0         | 0.5                  | 20.0          | 38.0          | parallel  | 5.0             | 158              | QFN 5.0 x 5.0   | RFDA2032Z      |
| <b>NEW</b> | 400                       | 2500                      | 6.0                       | 11.5         | 0.5                  | 25.0          | 42.0          | parallel  | 5.0             | 120              | QFN 5.0 x 5.0   | RFDA2015       |

## Digital Step Attenuator

- Broadband 50 MHz to 4000 MHz operation
- Single supply, 3 V to 5 V operation
- High-linearity, wireless infrastructure grade performance



Table 11

|            | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Number<br>of Bits<br>(dB) | Step Size<br>(dB) | Attenuation<br>Range<br>(dB) | Insertion<br>Loss<br>(dB) | P1dB<br>(dBm) | Interface | $V_{CC}$<br>(V) | Package<br>(mm) | Part<br>Number |
|------------|---------------------------|---------------------------|---------------------------|-------------------|------------------------------|---------------------------|---------------|-----------|-----------------|-----------------|----------------|
| <b>NEW</b> | DC                        | 4000                      | 6.0                       | 0.5               | 31.5                         | 2.5                       | 27.0          | parallel  | 5.0             | QFN 4.0 x 4.0   | RFSA2614       |
| <b>NEW</b> | DC                        | 4000                      | 6.0                       | 0.5               | 31.5                         | 2.5                       | 27.0          | serial    | 5.0             | MCM 4.0 x 4.0   | RFSA2624       |

## Power Amplifiers

- Final stage power amplifier
- High-efficiency amplifier
- High gain



Table 12

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|-----|---------------------------|---------------------------|--------------|----------------|---------------|------------------------|-------------------------|-----------------|----------------|
|     | 150                       | 960                       | 33.0         | 35.0           | —             | 3.6                    | 180                     | QFN 3.0 x 3.0   | RF5110G        |
| NEW | 400                       | 1000                      | 30.0         | 28.0           | 34.0          | 5.0                    | 70                      | QFN 4.0 x 4.0   | RFPA0133       |
| NEW | 400                       | 1000                      | 31.0         | 35.0           | 40.0          | 3.6                    | 400                     | QFN 4.0 x 4.0   | RF6886         |

## Linear Driver Amplifiers

- Pre-driver for base station power amplifiers
- Final LNA stages for wireless infrastructure



Table 13

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | OP1dB<br>(dBm) | OIP3<br>(dBm) | Gain<br>(dB) | NF<br>(dB) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|-----|---------------------------|---------------------------|----------------|---------------|--------------|------------|------------------------|-------------------------|-----------------|----------------|
|     | 5                         | 2500                      | 24.5           | 43.0          | 17.0         | 4.2        | 5.0                    | 135                     | SOT-89          | SXB-2089Z      |
|     | 50                        | 3000                      | 22.9           | 38.5          | 11.7         | 3.2        | 5.0                    | 128                     | SOT-89          | SXE-1089Z      |
| NEW | 150                       | 1000                      | 35.0           | 47.0          | 14.5         | —          | 5.0                    | 400                     | QFN 4.0 x 4.0   | RFPA3800       |
|     | 300                       | 3000                      | 25.0           | 40.0          | 12.0         | 3.0        | 5.0                    | 100                     | SOT-89          | RF3315         |
| NEW | 400                       | 2200                      | 25.0           | 45.0          | 17.0         | —          | 5.0                    | 110                     | SOIC-8          | RFPA3807       |
|     | 400                       | 2500                      | 25.0           | 42.0          | 18.4         | 5.0        | 5.0                    | 115                     | SOT-89          | SXA-389BZ      |
|     | 400                       | 2500                      | 27.5           | 43.5          | 20.0         | 5.6        | 5.0                    | 265                     | SOT-89          | SXB-4089Z      |
| NEW | 400                       | 2500                      | 30.0           | 48.0          | 15.0         | —          | 5.0                    | 250                     | SOIC-8          | RFPA3809       |
|     | 700                       | 2200                      | 28.5           | 47.0          | 14.0         | 5.3        | 5.0                    | 318                     | SOF-26          | SPA-1426Z      |
|     | 700                       | 2200                      | 32.0           | 49.0          | 13.5         | 5.5        | 5.0                    | 645                     | SOF-26          | SPA-1526Z      |

## High-Linearity Amplifiers

- Low noise figure
- Small package styles



Table 14

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|-----------------|----------------|
|  | DC                        | 2500                      | 16.0         | 4.2        | 18.5           | 30.0          | 9.0                    | 100                     | SOIC-8          | RF2312         |
|  | DC                        | 3000                      | 15.0         | 5.3        | 22.0           | 38.0          | 10.0                   | 180                     | CJ2BAT0         | RF2317         |
|  | 5                         | 120                       | 25.0         | 3.0        | —              | 37.5          | 8.0                    | 138                     | SOIC-8          | CGR-0118Z      |
|  | 5                         | 900                       | 12.5         | 4.5        | 20.0           | 38.0          | 8.0                    | 150                     | ESOP-8          | CGA-3318Z      |
|  | 5                         | 1500                      | 20.0         | 1.2        | 24.0           | 33.7          | 7.0                    | 120                     | SOP-16          | RF2360         |
|  | 5                         | 2500                      | 16.7         | 2.6        | 22.0           | 36.0          | 7.0                    | 85                      | CJ2BAT0         | RF2320         |
|  | 50                        | 3500                      | 14.0         | 2.4        | 20.6           | 34.6          | 3.3                    | 86                      | SOT-343         | SGA-8543Z      |
|  | 400                       | 2500                      | 17.5         | 5.1        | 28.0           | 47.0          | 5.0                    | 240                     | SOIC-8          | SXA-3318BZ     |
|  | 400                       | 3800                      | 10.0         | 1.0        | 22.5           | 36.0          | 5.0                    | 90                      | QFN 3.0 x 3.0   | RF3861         |
|  | 400                       | 3800                      | 20.0         | 1.1        | 22.5           | 36.0          | 5.0                    | 180                     | QFN 5.0 x 5.0   | RF3865         |
|  | 400                       | 3800                      | 20.0         | 0.8        | 22.5           | 36.0          | 5.0                    | 180                     | QFN 5.0 x 5.0   | RF3866         |
|  | 700                       | 2200                      | 13.7         | 5.2        | 33.8           | 46.0          | 5.0                    | 445                     | SOF-26          | SPB-2026Z      |
|  | 700                       | 3800                      | 10.0         | 0.7        | 22.5           | 35.0          | 5.0                    | 90                      | QFN 3.0 x 3.0   | RF3863         |
|  | 700                       | 3800                      | 10.0         | 0.8        | 22.5           | 36.0          | 5.0                    | 180                     | QFN 5.0 x 5.0   | RF3867         |
|  | 810                       | 960                       | 33.0         | 5.0        | 30.5           | 47.0          | 5.0                    | 400                     | SOIC-8          | SPA-2118Z      |
|  | 1700                      | 2200                      | 23.5         | 5.5        | 30.0           | 47.0          | 5.0                    | 400                     | SOIC-8          | SPA-2318Z      |
|  | 2110                      | 2170                      | 12.5         | 7.0        | 29.5           | 47.0          | 5.0                    | 310                     | SOIC-8          | SPA-1318Z      |

## High-Linearity Discrete Transistors

- Low noise figure
- Low current consumption
- PA stage for medium-power applications



Table 15

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | OIP3<br>(dBm) | OP1dB<br>(dBm) | NF<br>(dB) | V <sub>D</sub><br>(V) | I <sub>D</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|---------------|----------------|------------|-----------------------|------------------------|---------|----------------|
|  | 50                        | 3000                      | 17.7         | 42.0          | 28.0           | 2.4        | 5.0                   | 280                    | SOT-89  | SGA-9289Z      |
|  | 50                        | 3000                      | 19.0         | 40.0          | 25.8           | 2.1        | 5.0                   | 180                    | SOT-89  | SGA-9189Z      |
|  | 50                        | 4000                      | 18.0         | 37.4          | 23.7           | 3.2        | 3.0                   | 170                    | SOT-89  | SGA-9089Z      |
|  | 50                        | 6000                      | 18.6         | 40.0          | 27.2           | 4.7        | 8.0                   | 100                    | SOT-89  | SHF-0189Z      |
|  | 50                        | 6000                      | 19.2         | 43.0          | 30.0           | 3.2        | 7.0                   | 200                    | SOT-89  | SHF-0289Z      |

## LTE/WiMAX/WiFi High-Power Amplifiers

- High gain, high P<sub>OUT</sub> performance
- Optimized for CPE (Customer Premises Equipment) applications



Table 16

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | P <sub>OUT</sub><br>(dBm) | EVM<br>(%) | Gain<br>(dB) | V <sub>CC</sub><br>(V) | I <sub>CC</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|-----|---------------------------|---------------------------|---------------------------|------------|--------------|------------------------|-------------------------|-----------------|----------------|
|     | 700                       | 3800                      | 30.0                      | 2.5        | 10.0         | 5.0                    | 1200                    | QFN 3.0 x 8.0   | RF5643         |
|     | 2000                      | 2700                      | 22.0                      | 3.0        | 25.0         | 5.0                    | 300                     | QFN 4.0 x 4.0   | SZA-2044Z      |
|     | 2200                      | 2700                      | 26.0                      | 2.5        | 13.5         | 5.0                    | 570                     | SOF-26          | SZP-2026Z      |
|     | 2300                      | 2700                      | 27.0                      | 2.5        | 36.0         | 6.0                    | 900                     | QFN 6.0 x 6.0   | SZM-2166Z      |
|     | 2300                      | 2700                      | 28.0                      | 2.5        | 36.0         | 5.0                    | 950                     | QFN 4.0 x 4.0   | RF5632         |
|     | 2300                      | 2700                      | 23.5                      | 2.5        | 34.0         | 3.3                    | 350                     |                 |                |
|     | 2300                      | 2700                      | 26.0                      | 2.5        | 34.0         | 5.0                    | 450                     | QFN 3.0 x 3.0   | RF5602         |
|     | 2400                      | 2700                      | 26.5                      | 2.5        | 34.0         | 5.0                    | 710                     | QFN 6.0 x 6.0   | SZM-2066Z      |
|     | 2700                      | 3800                      | 24.0                      | 2.5        | 25.0         | 5.0                    | 340                     | QFN 4.0 x 4.0   | SZA-3044Z      |
|     | 3300                      | 3800                      | 26.0                      | 2.5        | 12.0         | 5.0                    | 580                     | SOF-26          | SZP-3026Z      |
|     | 3300                      | 3800                      | 26.0                      | 2.5        | 34.0         | 5.0                    | 760                     | QFN 6.0 x 6.0   | SZM-3066Z      |
| NEW | 3300                      | 3800                      | 26.0                      | 3.0        | 30.0         | 5.0                    | 500                     | QFN 3.0 x 3.0   | RF5603         |
| NEW | 3300                      | 3800                      | 26.0                      | 3.0        | 30.0         | 5.0                    | 480                     | QFN 3.0 x 3.0   | RF5623         |
|     | 3300                      | 3800                      | 27.0                      | 2.5        | 35.0         | 5.2                    | 900                     | QFN 6.0 x 6.0   | SZM-3166Z      |
|     | 3300                      | 3800                      | 28.0                      | 2.5        | 34.0         | 5.0                    | 1050                    | QFN 4.0 x 4.0   | RF5633         |
|     | 3300                      | 6200                      | 10.0                      | 4.0        | 14.0         | 3.3                    | 52                      | SOT-363         | STA-5063Z      |
|     | 4900                      | 5900                      | 21.0                      | 3.0        | 28.0         | 5.0                    | 250                     | QFN 3.0 x 3.0   | RF5616         |
|     | 4900                      | 5900                      | 22.0                      | 3.0        | 28.0         | 5.0                    | 390                     | QFN 4.0 x 4.0   | SZA-5044Z      |
|     | 4900                      | 5900                      | 25.0                      | 2.5        | 9.0          | 5.0                    | 650                     | SOF-26          | SZP-5026Z      |
|     | 4900                      | 5900                      | 25.0                      | 2.5        | 17.0         | 5.0                    | 800                     | QFN 6.0 x 6.0   | SZM-5066Z      |

**NOTE:** Multiple platform tunes available for all parts in table 16, contact RFMD applications for details.

## WiFi and WiMAX High Power Amplifier Reference Designs

- High efficiency
- High linear output power



Table 17

|            | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | P <sub>OUT</sub><br>(dBm) | EVM<br>(%) | Gain<br>(dB) | V <sub>CC</sub><br>(V) | I <sub>CC</sub><br>(mA) | Reference Design BOM  | Evaluation Board<br>Part Number |
|------------|---------------------------|---------------------------|---------------------------|------------|--------------|------------------------|-------------------------|-----------------------|---------------------------------|
| <b>NEW</b> | 2300                      | 2400                      | 29.0                      | 3.0        | 32.0         | 5.0                    | 1000                    | 2-RF5602              | RF5602-HWB                      |
|            | 2300                      | 2500                      | >30.0                     | 2.5        | 35.0         | 6.0                    | 1400                    | SZA-2044 and RF5643   | RF5643-WDA                      |
|            | 2300                      | 2700                      | 29.0                      | 2.5        | 35.0         | 5.0                    | 1500                    | SZA-2044 and SZP-2026 | SZP2026-HWD                     |
| <b>NEW</b> | 2400                      | 2500                      | 29.0                      | 3.0        | 32.0         | 5.0                    | 1000                    | 2-RF5602              | RF5602-HWL                      |
| <b>NEW</b> | 2500                      | 2700                      | 29.0                      | 3.0        | 31.0         | 5.0                    | 1200                    | 2-RF5602              | RF5602-HWM                      |
|            | 2500                      | 2700                      | >30.0                     | 2.5        | 35.0         | 6.0                    | 1400                    | SZA-2044 and RF5643   | RF5643-WDB                      |
|            | 2700                      | 2900                      | >30.0                     | 2.5        | 35.0         | 6.0                    | 1500                    | SZA-3044 and RF5643   | RF5643-WDC                      |
|            | 3300                      | 3800                      | 29.0                      | 2.5        | 32.0         | 5.0                    | 1500                    | SZA-3044 and SZP-3026 | SZP3026-HWD                     |
|            | 3300                      | 3800                      | >30.0                     | 2.5        | 35.0         | 6.0                    | 1500                    | SZA-3044 and RF5643   | RF5643-WDD                      |
| <b>NEW</b> | 3300                      | 3600                      | 29.0                      | 3.0        | 30.0         | 5.0                    | 1000                    | 2-RF5623              | RF5623HL                        |
| <b>NEW</b> | 3600                      | 3800                      | 29.0                      | 3.0        | 30.0         | 5.0                    | 1200                    | 2-RF5623              | RF5623HH                        |
|            | 5100                      | 5850                      | 25.0                      | 2.5        | 32.0         | 5.0                    | 1000                    | STA-5063 and SZM-5066 | SZM5066-WD                      |
|            | 5100                      | 5850                      |                           |            |              |                        |                         |                       |                                 |
|            | 5150                      | 5350                      | 28.0                      | 2.5        | 35.0         | 5.0                    | 1400                    | SZA-5044 and SZP-5026 | SZP5026-HWD                     |
|            | 5700                      | 5900                      |                           |            |              |                        |                         |                       |                                 |

## Low Noise Amplifier + Switch

- Integrated LNA with bypass and SP3T switch
- Integrated input and output match, reducing external components
- High-performance WiFi applications



Table 18

|  | Freq Range<br>(Min)<br>(MHz) | Freq Range<br>(Max)<br>(MHz) | Integrated<br>Switch | LNA<br>Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | Switch<br>Insertion<br>Loss<br>(dB) | Switch<br>P1dB<br>(dBm) | IIP3<br>(dBm) | V <sub>CC</sub><br>(V) | I <sub>CC</sub><br>(mA) | DC-Blocked<br>RF Ports | Package<br>(mm)     | Part<br>Number |
|--|------------------------------|------------------------------|----------------------|---------------------|------------|----------------|---------------|-------------------------------------|-------------------------|---------------|------------------------|-------------------------|------------------------|---------------------|----------------|
|  | 2400                         | 2500                         | SP3T                 | 11.5                | 1.8        | 5.0            | 19.0          | 0.6                                 | 29.0                    | 7.0           | 3.3                    | 9                       | No                     | Flip Chip 0.9 x 0.9 | RF5511         |
|  | 2400                         | 2500                         | SP3T                 | 11.5                | 1.8        | 5.0            | 19.0          | 0.6                                 | 29.0                    | 7.0           | 3.3                    | 9                       | No                     | QFN 2.0 x 2.0       | RF5501         |
|  | 2400                         | 2500                         | SP3T                 | 11.5                | 1.8        | 5.0            | 19.0          | 0.6                                 | 29.0                    | 7.0           | 3.3                    | 9                       | No                     | QFN 1.75 x 1.75     | RF5521         |
|  | 2400                         | 2500                         | SP3T                 | 11.0                | 2.2        | 5.0            | 19.0          | 0.8                                 | 29.0                    | 7.0           | 3.3                    | 9                       | Yes                    | QFN 2.0 x 2.0       | RF5611         |

## 2.4 GHz WiFi Front End Modules

- High efficiency
- High linear output power
- Antenna sharing Bluetooth® and WLAN operation



Table 19

|            | Functionality                                   | IEEE<br>802.11<br>Type | 11g/n<br>P <sub>OUT</sub><br>(dBm) | 11b<br>P <sub>OUT</sub><br>(dBm) | 11b/g/n<br>Gain<br>(dB) | 11g/n<br>EVM<br>(%) | LNA<br>Gain<br>(dB) | LNA Noise<br>Figure<br>(dB)<br>(including<br>switch) | V <sub>CC</sub><br>(V) | 11g/n<br>Operating<br>Current<br>(mA) | 11b<br>Operating<br>Current<br>(mA) | Package<br>(mm) | Part<br>Number |
|------------|-------------------------------------------------|------------------------|------------------------------------|----------------------------------|-------------------------|---------------------|---------------------|------------------------------------------------------|------------------------|---------------------------------------|-------------------------------------|-----------------|----------------|
|            | PA, SP3T, RX Balun                              | b/g                    | 16.0                               | 20.0                             | 31.5                    | 3.0                 | —                   | —                                                    | 3.3                    | 175                                   | 240                                 | QFN 3.5 x 3.5   | RF5924         |
|            | PA, SP3T, Rx Balun                              | b/g/n                  | 16.0                               | 19.0                             | 26.0                    | 3.0                 | —                   | —                                                    | 3.3                    | 160                                   | 190                                 | QFN 3.0 x 3.0   | RF5225         |
|            | PA, SP3T, LNA                                   | b/g/n                  | 17.0                               | 20.0                             | 26.0                    | 3.0                 | 15.0                | 1.9                                                  | 3.3                    | 130                                   | 190                                 | QFN 3.0 x 3.0   | RF5745         |
| <b>NEW</b> | PA, SP3T, Rx Balun,<br>2170 MHz and 2 Fo Filter | b/g/n                  | 16.0                               | 20.5                             | 33.0                    | 3.0                 | —                   | —                                                    | 3.3                    | 135                                   | 170                                 | QFN 3.0 x 3.0   | RF3482 *       |
|            | PA, SP3T, LNA,<br>2170 MHz and 2Fo Rejection    | b/g/n                  | 17.0                               | 20.0                             | 30.0                    | 3.3                 | 15.0                | 1.9                                                  | 3.3                    | 145                                   | 190                                 | QFN 3.0 x 3.0   | RF5345 *       |
|            | PA, SP3T, LNA<br>and 2 Fo Rejection             | b/g/n                  | 17.0                               | 20.0                             | 26.0                    | 3.0                 | 15.0                | 1.9                                                  | 3.3                    | 130                                   | 190                                 | QFN 3.0 x 3.0   | RF5725 *       |
|            | PA, SP3T, 2 Fo Rejection                        | b/g/n                  | 17.0                               | 20.0                             | 26.0                    | 3.0                 | —                   | —                                                    | 3.3                    | 130                                   | 190                                 | QFN 3.0 x 3.0   | RF5325 *       |
| <b>NEW</b> | PA, SP3T, LNA<br>and 2 Fo Rejection             | b/g/n                  | 19.5                               | 23.0                             | 30.0                    | 3.3                 | 16.0                | 1.9                                                  | 3.3                    | 180                                   | 210                                 | QFN 3.0 x 3.0   | RF5755 *       |
| <b>NEW</b> | PA, SP3T, 2170 MHz<br>and 2 Fo Filter           | b/g/n                  | 18.0                               | 21.0                             | 30.0                    | 2.5                 | —                   | —                                                    | 3.3                    | 170                                   | 210                                 | QFN 2.5 x 2.5   | RF5365 *       |

\* Power Detector Coupler

## 5 GHz WiFi Front End Modules

- High efficiency
- High linear output power
- Integrated harmonic filter



Table 20

| Functionality | IEEE 802.11 Type | 11a/n P <sub>OUT</sub> (dBm) | 11a/n Gain (dB) | 11a/n EVM (%) | LNA Gain (dB) | LNA Noise Figure (dB) (including switch) | V <sub>CC</sub> (V) | 11a/n Operating Current (mA) | Package (mm)  | Part Number |
|---------------|------------------|------------------------------|-----------------|---------------|---------------|------------------------------------------|---------------------|------------------------------|---------------|-------------|
| PA, SPDT, LNA | a/n              | 16.0                         | 27.0            | 3.0           | 11.0          | 2.4                                      | 3.3                 | 145                          | QFN 3.0 x 3.0 | RF5506      |
| PA, SPDT, LNA | a/n              | 16.0                         | 27.0            | 3.0           | 11.0          | 2.4                                      | 3.3                 | 145                          | QFN 3.0 x 3.0 | RF5516      |
| PA, SPDT      | a/n              | 16.0                         | 27.0            | 3.0           | —             | —                                        | 3.3                 | 145                          | QFN 3.0 x 3.0 | RF5686      |

## Dual-Band WiFi Front End Modules

- High efficiency
- High linear output power
- Fully integrated front end

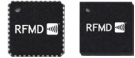


Table 21

| Functionality                                                     | IEEE 802.11 Type | 11g/n P <sub>OUT</sub> (dBm) | 11a/n P <sub>OUT</sub> (dBm) | 11b/g/n Gain (dB) | 11a/n Gain (dB) | 11g/n EVM (%) | 11a/n EVM (%) | 11a/n LNA Gain (dB) | 11a/n LNA Noise Figure (dB) (including switch) | V <sub>CC</sub> (V) | 11g/n Operating Current (mA) | 11a/n Operating Current (mA) | Package       | Part Number |
|-------------------------------------------------------------------|------------------|------------------------------|------------------------------|-------------------|-----------------|---------------|---------------|---------------------|------------------------------------------------|---------------------|------------------------------|------------------------------|---------------|-------------|
| <b>NEW</b> 2.4 GHz PA, SP3T, Rx Balun, 5.0 GHz PA, SPDT, Rx Balun | a/b/g/n          | 16.0                         | 15.5                         | 33.0              | 30.0            | 3.0           | 3.0           | —                   | —                                              | 3.3                 | 150                          | 170                          | QFN 4.0 x 4.0 | RF3688      |
| 2.4 GHz PA, SP3T, Diplexer 5.0 GHz PA, SPDT                       | a/b/g/n          | 18.0                         | 16.0                         | 26.0              | 25.0            | 4.0           | 5.0           | 8.0                 | 4.5                                            | 3.3                 | 160                          | 190                          | QFN 6.0 x 6.0 | RF5388      |
| 2.4 GHz PA, SP3T, Diplexer 5.0 GHz PA, SPDT                       | a/b/g/n          | 18.0                         | 16.0                         | 26.0              | 25.0            | 4.0           | 5.0           | 8.0                 | 4.5                                            | 3.3                 | 160                          | 190                          | QFN 6.0 x 6.0 | RF5389 *    |
| <b>NEW</b> 2.4 GHz PA, SP3T                                       | a/b/g/n          | 18.0                         | 16.0                         | 28.0              | 27.0            | 3.0           | 4.0           | —                   | —                                              | 3.3                 | 160                          | 200                          | QFN 5.0 x 5.0 | RF5618      |

\* Additional Rx Path (1 X 2 MIMO)

## Dual-Band WiFi Front End Modules with Low-Band LNA/High-Band LNA

- High efficiency
- High linear output power
- Fully integrated front end



Table 22

| Functionality                                                   | IEEE 802.11 Type | 11g/n P <sub>OUT</sub> (dBm) | 11a/n P <sub>OUT</sub> (dBm) | 11b/g/n Gain (dB) | 11a/n Gain (dB) | 11g/n EVM (%) | 11a/n EVM (%) | 11b/g/n LNA Gain (dB) | 11b/g/n LNA Noise Figure (dB) (including switch) | 11a/n LNA Gain (dB) | 11a/n LNA Noise Figure (dB) (including switch) | V <sub>CC</sub> (V) | 11g/n Op Current (mA) | 11a/n Op Current (mA) | Package       | Part Number |
|-----------------------------------------------------------------|------------------|------------------------------|------------------------------|-------------------|-----------------|---------------|---------------|-----------------------|--------------------------------------------------|---------------------|------------------------------------------------|---------------------|-----------------------|-----------------------|---------------|-------------|
| <b>NEW</b> 2.4 GHz PA, SP3T, LNA Diplexer 5.0 GHz PA, SPDT, LNA | a/b/g/n          | 16.0                         | 13.0                         | 28.0              | 27.0            | 2.0           | 2.0           | 12.0                  | 2.0                                              | 11.0                | 2.8                                            | 3.3                 | 160                   | 280                   | QFN 5.0 x 5.0 | RF5608      |
|                                                                 |                  | 18.0                         | 16.0                         |                   |                 | 4.0           | 4.0           |                       |                                                  |                     |                                                |                     | 200                   | 200                   |               |             |

## WiFi Power Amplifiers

- High-efficiency PA
- Optimized for battery applications



Table 23

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | P <sub>OUT</sub><br>(dBm) | EVM<br>(%) | V <sub>CC</sub><br>(V) | I <sub>CC</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|--|---------------------------|---------------------------|--------------|---------------------------|------------|------------------------|-------------------------|-----------------|----------------|
|  | 2400                      | 2500                      | 25.5         | 18.0                      | 2.5        | 3.0 to 3.6             | 120                     | QFN 2.2 x 2.2   | RF5122         |
|  | 2400                      | 2500                      | 25.5         | 18.0                      | 2.5        | 3.0 to 3.6             | 120                     | QFN 2.2 x 2.2   | RF5322         |
|  | 2400                      | 2500                      | 25.5         | 18.0                      | 2.5        | 3.0 to 3.6             | 120                     | QFN 2.2 x 2.2   | RF5722 *       |
|  | 2400                      | 2500                      | 28.0         | 12.0                      | 3.0        | 1.8 to 3.6             | 55                      | QFN 2.2 x 2.2   | RF5373         |
|  | 2400                      | 2500                      | 28.0         | 23.0                      | 3.0        | 3.0 to 4.2             | 210                     | QFN 3.0 x 3.0   | RF5125         |
|  | 2400                      | 2500                      | 28.0         | 21.0                      | 3.0        | 3.0 to 5.0             | 185                     | QFN 3.0 x 3.0   | RF5112         |
|  | 2400                      | 2500                      | 30.0         | 18.0                      | 3.0        | 3.0 to 3.6             | 95                      | QFN 2.2 x 2.2   | RF5622 *       |
|  | 2400                      | 2500                      | 31.0         | 17.0                      | 3.0        | 3.0 to 4.2             | 125                     | QFN 2.2 x 2.2   | RF5222 *       |
|  | 2400                      | 2500                      | 34.0         | 18.0                      | 3.0        | 3.0 to 3.6             | 130                     | QFN 3.0 x 3.0   | RF5152         |
|  | 4900                      | 5850                      | 26.0         | 18.0                      | 4.0        | 3.0 to 5.0             | 140                     | QFN 2.2 x 2.2   | RF5355         |
|  | 4900                      | 5850                      | 28.0         | 19.0                      | 3.0        | 3.0 to 5.0             | 200                     | QFN 3.0 x 3.0   | RF5616 *       |
|  | 4900                      | 5850                      | 30.0         | 18.0                      | 4.0        | 3.0 to 5.0             | 265                     | QFN 3.0 x 3.0   | RF5300         |

\* Integrated 2Fo Filter

## SmartEnergy AMI/ZigBee® Power Amplifiers

- High efficiency
- High output power



Table 24

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | PA Gain<br>(dB) | P <sub>OUT</sub><br>(dBm) | OP1dB<br>(dBm) | V <sub>CC</sub><br>(V) | PA I <sub>CC</sub><br>(mA) | Efficiency<br>(%) | Package<br>(mm) | Part<br>Number |
|--|---------------------------|---------------------------|-----------------|---------------------------|----------------|------------------------|----------------------------|-------------------|-----------------|----------------|
|  | 150                       | 960                       | 33.0            | 35.0                      | 35.0           | 3.6                    | 180                        | 57                | QFN 3.0 x 3.0   | RF5110G        |
|  | 400                       | 2500                      | 28.0            | 20.0                      | 22.0           | 3.6                    | 90                         | 45                | QFN 2.2 x 2.2   | RF5373         |
|  | 902                       | 2500                      | 0.0 to 28.0     | 23.5                      | 25.0           | 3.6                    | 145                        | 45                | QFN 4.0 x 4.0   | RF2172 *       |

\* VGA

## SmartEnergy AMI/ZigBee® Power Amplifiers/LNA/Switch Front End Modules

- Integrated harmonic filter
- Highly integrated, small form factor
- Antenna diversity switch



Table 24

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | PA Gain<br>(dB) | P <sub>OUT</sub><br>(dBm) | OP1dB<br>(dBm) | V <sub>CC</sub><br>(V) | PA I <sub>CC</sub><br>(mA) | Efficiency<br>(%) | LNA<br>Gain<br>(dB) | NF<br>(dB) | LNA I <sub>CC</sub><br>(mA) | Switch | Package<br>(mm)  | Part<br>Number |
|-----|---------------------------|---------------------------|-----------------|---------------------------|----------------|------------------------|----------------------------|-------------------|---------------------|------------|-----------------------------|--------|------------------|----------------|
|     | 902                       | 928                       | 27.0            | 31.5                      | 30.0           | 3.6                    | 970                        | 40.0              | 21.0                | 1.3        | 12                          | DPDT   | Module 8.0 x 8.0 | RF3858         |
|     | 2400                      | 2500                      | 27.0            | 23.0                      | 26.0           | 3.6                    | 220                        | 35.0              | 12.5                | 2.2        | 10                          | SP3T   | QFN 3.0 x 3.0    | RF5745         |
| NEW | 2400                      | 2500                      | 28.0            | 22.0                      | 22.0           | 3.3                    | 200                        | 30.0              | 13.5                | 2.5        | 7                           | DPDT   | QFN 3.5 x 3.5    | RF6525         |

## SmartEnergy AMI/ZigBee® Power Amplifiers/Switch Front End Modules

- Integrated harmonic filter
- Highly integrated, small form factor
- High gain, low noise



Table 26

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | PA Gain<br>(dB) | P <sub>OUT</sub><br>(dBm) | OP1dB<br>(dBm) | V <sub>CC</sub><br>(V) | PA I <sub>CC</sub><br>(mA) | Efficiency<br>(%) | Switch | Package<br>(mm) | Part<br>Number |
|-----|---------------------------|---------------------------|-----------------|---------------------------|----------------|------------------------|----------------------------|-------------------|--------|-----------------|----------------|
| NEW | 2400                      | 2500                      | 28.0            | 20.0                      | 22.0           | 3.3                    | 180                        | 30.0              | SP2T   | QFN 3.5 x 3.5   | RF6515         |

## High-Frequency pHEMT Amplifiers

- Monolithically matched high-IP3 broadband pHEMT MMIC
- Low-noise efficient amplifiers

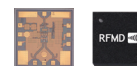


Table 27

|            | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>D</sub><br>(V) | I <sub>D</sub><br>(mA) | V-<br>(V) | Package<br>(mm) | Part<br>Number |
|------------|---------------------------|---------------------------|--------------|------------|----------------|---------------|-----------------------|------------------------|-----------|-----------------|----------------|
|            | DC                        | 18000                     | 9.5          | 4.8        | 13.7           | 24.3          | 5.0                   | 46                     | 5.0       | QFN 3.0 x 3.0   | SUF-1033       |
|            | DC                        | 12000                     | 14.6         | 4.2        | 16.8           | 25.7          | 5.0                   | 58                     | —         | QFN 3.0 x 3.0   | SUF-8033       |
| <b>NEW</b> | DC                        | 12000                     | 15.4         | 4.0        | 16.7           | 27.1          | 5.0                   | 58                     | —         | QFN 3.0 x 3.0   | SUF-8533       |
|            | DC                        | 20000                     | 10.5         | 4.5        | 14.0           | 26.0          | 5.0                   | 45                     | 5.0       | Die             | SUF-1000       |
|            | 0.1                       | 4000                      | 18.5         | 3.6        | 21.0           | 27.6          | 5.0                   | 90                     | 5.0       | QFN 3.0 x 3.0   | SUF-5033       |
|            | 100                       | 3700                      | 19.0         | 3.2        | 22.0           | 34.5          | 5.0                   | 90                     | 5.0       | Die             | SUF-5000       |
|            | 150                       | 10000                     | 17.0         | 2.8        | 21.0           | 32.0          | 5.0                   | 73                     | 5.0       | Die             | SUF-4000       |
|            | 200                       | 10000                     | 11.5         | 3.6        | 16.0           | 30.0          | 3.3                   | 71                     | 3.3       | Die             | SUF-2000       |
|            | 250                       | 16000                     | 10.0         | 4.8        | 15.5           | 26.5          | 5.0                   | 51                     | 5.0       | Die             | SUF-3000       |
|            | 2000                      | 16000                     | 20.5         | 4.7        | 14.0           | 27.5          | 5.0                   | 107                    | 5.0       | Die             | SUF-6000       |
|            | 2000                      | 20000                     | 11.0         | 4.5        | 23.5           | —             | 6.0                   | 120                    | -0.3      | Die             | FMA3008        |
|            | 2000                      | 20000                     | 11.5         | 4.5        | 25.0           | —             | 7.0                   | 135                    | -0.3      | Die             | FMA3007        |
|            | 2000                      | 20000                     | 15.0         | 6.5        | 15.0           | —             | 5.0                   | 90                     | 90.0      | Die             | FMA3058        |
|            | 8000                      | 14000                     | 30.0         | 2.5        | 20.0           | 44.0          | 6.0                   | 150                    | 6.0       | Die             | FMA246         |
|            | 12500                     | 15000                     | 35.0         | —          | 30.0           | 40.0          | 6.0                   | 1200                   | -0.4      | Die             | FMA3051        |
|            | 12700                     | 16000                     | 30.0         | 4.0        | 28.0           | 37.0          | 7.0                   | 450                    | -0.4      | Die             | FMA3011        |
|            | 12700                     | 16000                     | 32.0         | 6.0        | 15.0           | —             | 4.5                   | 100                    | 4.5       | Die             | FMA3014        |

## High-Frequency pHEMT Discrete Transistors

- Monolithically matched high-IP3 broadband pHEMT MMIC
- Low-noise efficient amplifiers



Table 28

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>at 12 GHz<br>(dB) | OP1dB<br>at 12 GHz<br>(dBm) | OIP3<br>(dBm) | V <sub>CC</sub><br>(V) | I <sub>D</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|---------------------------|-----------------------------|---------------|------------------------|------------------------|---------|----------------|
|  | 1000                      | 15000                     | 6.5                       | 32.5                        | 42.0          | 8.0                    | 400                    | Die     | FPD3000        |
|  | 1000                      | 16000                     | 11.0                      | 28.0                        | 39.0          | 8.0                    | 160                    | Die     | FPD1050        |
|  | 1000                      | 18000                     | 7.5                       | 32.5                        | 40.0          | 8.0                    | 350                    | Die     | FPD2250        |
|  | 1000                      | 18000                     | 8.5                       | 29.0                        | 41.0          | 8.0                    | 185                    | Die     | FPD1500        |
|  | 1000                      | 20000                     | 11.5                      | 27.0                        | 38.0          | 8.0                    | 115                    | Die     | FPD750         |
|  | 1000                      | 24000                     | 16.5                      | 25.5                        | —             | 8.0                    | 110                    | Die     | FPD6836        |
|  | 1000                      | 28000                     | 17.0                      | 19.0                        | —             | 5.0                    | 30                     | Die     | FPD200         |
|  | 2000                      | 28000                     | 17.0                      | 20.5                        | —             | 5.0                    | 27                     | Die     | FPD7612        |

## High Frequency SDA Series - GaAs pHEMT Distributed Amplifiers

- Directly-coupled GaAs microwave monolithic MMIC
- Operating in the DC to 50 GHz frequency range
- Support high-frequency commercial, military, and space applications



Table 29

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | OIP3<br>(dBm) | OP1dB<br>(dBm) | P <sub>SAT</sub><br>(dBm) | NF<br>(dB) | I <sub>CC</sub><br>(mA) | V <sub>CC</sub><br>(V) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|---------------|----------------|---------------------------|------------|-------------------------|------------------------|---------|----------------|
|  | DC                        | 20000                     | 17.0         | 36.0          | 25.0           | 26.0                      | 3.5        | 300                     | 8.0                    | Die     | SDA-1000       |
|  | DC                        | 22000                     | 12.0         | 38.0          | 26.0           | 28.0                      | 5.0        | 400                     | 8.0                    | Die     | SDA-2000       |
|  | DC                        | 24000                     | 17.1         | 34.0          | 24.0           | 26.0                      | 2.1        | 160                     | 8.0                    | Die     | SDA-3000       |
|  | DC                        | 26000                     | 15.0         | 30.0          | 20.0           | 22.0                      | 3.0        | 160                     | 5.0                    | Die     | SDA-4000       |
|  | DC                        | 35000                     | 12.0         | 27.0          | 17.0           | 19.0                      | 3.0        | 80                      | 6.5                    | Die     | SDA-5000       |
|  | DC                        | 40000                     | 12.0         | 36.0          | 22.0           | —                         | -5.0       | 200                     | 8.0                    | Die     | SDA-7000       |
|  | DC                        | 50000                     | 8.5          | 25.0          | 15.0           | —                         | -3.7       | 65                      | 8.0                    | Die     | SDA-6000       |

## Up-Converters

- Integrated I/Q mixer, LO amplifier, and output buffer amplifier
- Wide bandwidth with excellent image frequency rejection and high output power IP3
- Designed to meet requirements of next generation Point-to-Point systems



Table 30

|            | RF Freq Range (GHz) | IF Freq Range (GHz) | LO Freq Range (GHz) | Conversion Gain (dB) | OIP3 (dBm) | Image Rejection (dBc) | LO Input Power (dBm) | Bias (mA at V) | Package (mm)  | Part Number |
|------------|---------------------|---------------------|---------------------|----------------------|------------|-----------------------|----------------------|----------------|---------------|-------------|
| <b>NEW</b> | 10 to 16            | DC to 4             | 6 to 20             | 13.0                 | 22.0       | 25.0                  | 0.0 to 5.0           | 260 at 4.0     | QFN 5.0 x 5.0 | RFUV5945A   |

## Down-Converters

- Integrated I/Q mixer, LO amplifier, and output buffer amplifier
- Wide bandwidth combining excellent IMD3 performance with low noise figure
- Designed to meet requirements of next generation Point-to-Point systems



Table 31

|            | RF Freq Range (GHz) | IF Freq Range (GHz) | LO Freq Range (GHz) | Function                   | Integration                                        | Conversion Gain (dB) | OIP3 (dBm) | Image Rejection (dBc) | LO Input Power (dBm) | Bias (mA at V) | Package (mm)  | Part Number |
|------------|---------------------|---------------------|---------------------|----------------------------|----------------------------------------------------|----------------------|------------|-----------------------|----------------------|----------------|---------------|-------------|
| <b>NEW</b> | 10 to 16            | DC to 4             | 6 to 20             | IQ Downconverter /Receiver | VGC LNA, Image Reject Mixer, LOA                   | 12.0                 | 5.0        | 24.0                  | 0.0 to 5.0           | 200 at 4.0     | QFN 5.0 x 5.0 | RFRX5932A   |
| <b>NEW</b> | 10 to 16            | DC to 4             | 3 to 10             | IQ Downconverter /Receiver | VGC LNA, Image Reject Mixer, LOA, x2 LO Multiplier | 15.0                 | -1.0       | 25.0                  | 10.0                 | 200 at 5.0     | QFN 5.0 x 5.0 | RFRX5933A   |
| <b>NEW</b> | 10 to 16            | DC to 4             | 6 to 20             | IQ Mixer                   | Image Reject Mixer, LOA                            | -7.0                 | 25.0       | 25.0                  | 0.0 to 5.0           | 70 at 6.0      | QFN 5.0 x 5.0 | RFMX5986A   |

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### RF PLL/VCO + Mixers for Repeaters

#### RF2057 FEATURES

- 1900 MHz to 2400 MHz lo frequency range
- Low phase noise VCO
- Two high-linearity RF mixers
- Mixer input IP3 + 18 dBm
- 2.7 V to 3.6 V power supply
- QFN, 32-pin, 5.0 x 5.0 mm

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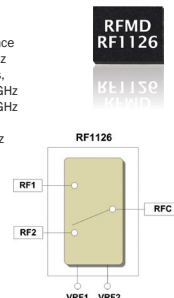


### Broadband Medium Power SPDT Switch

#### RF1126 FEATURES

- Broadband performance low frequency to 6 GHz
- Very low insertion loss,
  - 0.26 dB typ at 1 GHz
  - 0.32 dB typ at 2 GHz
- Excellent harmonics
  - < -75 dBc at 2 GHz
- High IIP3: 62 dBm
- 1.8 V capable for low power applications
- P0.1 dB > 23 dBm typ at 2 GHz
- Compact footprint (2.0 x 1.3 x 0.35 mm, 6-pin QFN)

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## Switches (Packaged)

- Broadband performance
- Excellent insertion loss and isolation
- Reflective and absorptive options



Table 32

|            | Type             | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Insertion<br>Loss<br>(dB) | Isolation<br>(dB) | OP1dB<br>(dBm) | V <sub>cc</sub><br>(V) | Package<br>(mm)  | Part<br>Number |
|------------|------------------|---------------------------|---------------------------|---------------------------|-------------------|----------------|------------------------|------------------|----------------|
| <b>NEW</b> | SPST             | DC                        | 20000                     | 1.1                       | 42.0              | 46.0           | -3.0 to -7.0           | QFN 3.0 x 3.0    | RFSW2040 **    |
| <b>NEW</b> | SPST             | DC                        | 20000                     | 1.4                       | 45.0              | 46.0           | -3.0 to -7.0           | QFN 3.0 x 3.0    | RFSW2044 **    |
| <b>NEW</b> | SPDT             | DC                        | 20000                     | 1.4                       | 42.0              | 46.0           | -3.0 to -7.0           | QFN 3.0 x 3.0    | RFSW2041 **    |
| <b>NEW</b> | SPDT             | DC                        | 20000                     | 2.6                       | 29.0              | 40.0           | -3.0 to -7.0           | QFN 3.0 x 3.0    | RFSW2043 **    |
|            | SPDT             | DC                        | 2500                      | 0.5                       | >28.0             | 37.0           | 2.7 to 5.0             | QFN 3.0 x 3.0    | FMS2014-001    |
|            | SPDT             | DC                        | 2500                      | 0.5                       | 26.0              | 37.0           | 2.6 to 5.0             | QFN-6, 2.0 x 2.0 | RF1200         |
|            | SPDT             | DC                        | 2500                      | 0.5                       | 26.0              | 41.0           | 2.6                    | QFN 2.0 x 2.0    | RF1201         |
|            | SPDT             | DC                        | 3500                      | 0.35                      | 31.0              | 32.0           | 2.85                   | QFN 2.0 x 1.3    | RF1128         |
|            | SPDT             | DC                        | 6000                      | 0.25                      | 27.0              | 23.0           | 3.0                    | QFN 2.0 x 1.3    | RF1126         |
|            | SPDT             | DC                        | 6000                      | 0.6                       | <36.0             | >42.0          | 2.6 to 5.0             | QFN 3.0 x 3.0    | FMS2031-001    |
|            | SPDT             | DC                        | 6000                      | 1.0                       | 25.0              | 42.0           | 2.7 to 5.0             | QFN 3.3 x 0.9    | FMS 2020-001   |
|            | SPDT             | 10                        | 4000                      | 0.3                       | 26.0              | 32.0           | 2.5 to 5.0             | SC70-6           | RF3023         |
|            | SPDT             | 10                        | 4000                      | 0.3                       | 26.0              | 32.0           | 2.5 to 5.0             | SC70-6           | RF3024         |
|            | SPDT             | 10                        | 6000                      | 0.5                       | 58.0              | 27.0           | 3.0 to 5.0             | QFN 3.0 x 3.0    | RF3021         |
|            | SPDT             | 10                        | 6000                      | 0.5                       | 58.0              | 27.0           | 3.0 to 5.0             | QFN 3.0 x 3.0    | RF3025         |
|            | SPDT             | 450                       | 3500                      | 0.3                       | 29.0              | 23.0           | 1.8                    | QFN 2.0 x 1.3    | RF1127         |
| <b>NEW</b> | SP3T             | DC                        | 15000                     | 2.2                       | 40.0              | 34.0           | -3.0 to -7.0           | QFN 3.0 x 3.0    | RFSW2042 **    |
|            | SP3T             | DC                        | 2500                      | 0.3                       | 31.0              | >34.0          | 2.6                    | QFN 2.0 x 2.0    | RF1131         |
|            | SP3T             | DC                        | 2500                      | 0.5                       | 23.0              | >34.0          | 2.6                    | QFN 2.0 x 2.0    | RF1132         |
|            | SP3T             | 450                       | 2500                      | 0.3                       | 29.5              | 37.0           | 1.8                    | QFN 3.0 x 3.0    | RF1130         |
|            | SP3T             | 500                       | 2500                      | 0.45                      | 40.0              | 37.0           | 1.8                    | QFN 2.5 x 2.5    | RF1603         |
|            | SP3T             | 600                       | 3500                      | 0.25                      | 28.0              | 27.0           | 1.8                    | QFN 2.5 x 2.5    | RF1136         |
| <b>NEW</b> | SP4T             | DC                        | 10000                     | 2.8                       | 32.0              | 33.0           | -3.0 to -7.0           | QFN 4.0 x 4.0    | RFSW2045 **    |
|            | SP4T             | DC                        | 2500                      | 0.4                       | 29.0              | 38.0           | 1.8                    | QFN 3.0 x 3.0    | RF1450         |
|            | SP4T             | DC                        | 2500                      | 0.65                      | >30.0             | 37.0           | 2.7 to 5.0             | QFN 3.0 x 3.0    | FMS2016-001    |
|            | SP4T             | DC                        | 2500                      | 0.65                      | >30.0             | 37.0           | 2.7 to 5.0             | QFN 3.0 x 3.0    | FMS2016-005    |
|            | SP4T             | 400                       | 2500                      | 0.35                      | 29.0              | 28.0           | 1.8                    | QFN 3.0 x 3.0    | RF1146         |
|            | SP4T             | 400                       | 2500                      | 0.35                      | 29.0              | 28.0           | 1.8                    | QFN 3.0 x 3.0    | RF1147         |
|            | SP4T             | 450                       | 2500                      | 0.3                       | 28.0              | 38.0           | 1.8                    | QFN 3.0 x 3.0    | RF1140         |
|            | SP5T             | DC                        | 2500                      | 0.35                      | 29.0              | 28.0           | 1.8                    | QFN 3.0 x 3.0    | RF1156         |
|            | SP8T             | DC                        | 2500                      | 0.7                       | 27.0              | —              | 2.7                    | QFN 3.5 x 3.5    | RF1480         |
|            | Transmit/Receive | DC                        | 2500                      | 1.0                       | 24.0              | —              | 3.0                    | SOT23 - 5        | RF2436         |

\*\* High Frequency Switches

## Switches (Die)

- High-frequency performance
- High isolation



Table 33

|            | Type | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Insertion<br>Loss<br>(dB) | Isolation<br>(dB) | OP1dB<br>(dBm) | V <sub>cc</sub><br>(V) | Package<br>(mm) | Part<br>Number  |
|------------|------|---------------------------|---------------------------|---------------------------|-------------------|----------------|------------------------|-----------------|-----------------|
| <b>NEW</b> | SPST | DC                        | 25000                     | 1.0                       | 50.0              | 46.0           | -3.0 to -7.0           | Die             | RFSW2040D **    |
| <b>NEW</b> | SPST | DC                        | 25000                     | 1.5                       | 43.0              | 46.0           | -3.0 to -7.0           | Die             | RFSW2044D **    |
|            | SPST | DC                        | 20000                     | 1.0                       | 50.0              | 24.0           | -5.0                   | Die             | FMS 2023 **     |
|            | SPST | DC                        | 20000                     | 1.6                       | 57.0              | 26.0           | -5.0                   | Die             | FMS 2029-000 ** |
| <b>NEW</b> | SPDT | DC                        | 20000                     | 2.25                      | 28.0              | 40.0           | -3.0 to -7.0           | Die             | RFSW2043D **    |
| <b>NEW</b> | SPDT | DC                        | 25000                     | 1.1                       | 45.0              | 46.0           | -3.0 to -7.0           | Die             | RFSW2041D **    |
|            | SPDT | DC                        | 20000                     | 1.4                       | 37.0              | 24.0           | -5.0                   | Die             | FMS 2024 **     |
|            | SPDT | DC                        | 20000                     | 2.1                       | 42.0              | 21.0           | -5.0                   | Die             | FMS 2027 **     |
| <b>NEW</b> | SP3T | DC                        | 20000                     | 1.6                       | 42.0              | 34.0           | -3.0 to -7.0           | Die             | RFSW2042D **    |
| <b>NEW</b> | SP4T | DC                        | 2000                      | 2.8                       | 38.0              | 33.0           | -3.0 to -7.0           | Die             | RFSW2045D       |
|            | SP6T | DC                        | 2500                      | 0.41                      | >42.0             | >37.0          | 2.7 to 6.0             | Die             | FMS 2028        |

\*\* High Frequency Switches

## MMIC VCOs

- No external resonator required
- Excellent phase noise performance
- Monolithic structure provides superior shock/vibration performance



Table 34

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | V <sub>TUNE</sub><br>(V) | Phase Noise<br>(dBc/Hz<br>at 10 kHz) | V <sub>CC</sub><br>(V) | P <sub>OUT</sub><br>(dBm) | Part<br>Number |
|-----|---------------------------|---------------------------|--------------------------|--------------------------------------|------------------------|---------------------------|----------------|
| NEW | 4000                      | 8000                      | 0.0 to 18.0              | 74.0                                 | 5.0                    | 3.5                       | RFVC1802       |
| NEW | 4500                      | 5000                      | 0.0 to 10.0              | 82.0                                 | 3.0                    | 3.0                       | RFVC1821       |
| NEW | 5000                      | 10000                     | 0.0 to 18.0              | 72.0                                 | 5.0                    | 3.0                       | RFVC1801       |
| NEW | 5500                      | 5500                      | 0.0 to 10.0              | 80.0                                 | 3.0                    | 3.0                       | RFVC1822       |
| NEW | 6000                      | 9000                      | 0.0 to 18.0              | 73.0                                 | 5.0                    | 3.5                       | RFVC1803       |
| NEW | 6100                      | 6750                      | 0.0 to 10.0              | 76.0                                 | 3.0                    | 3.0                       | RFVC1823       |
| NEW | 6800                      | 7400                      | 0.0 to 10.0              | 78.0                                 | 3.0                    | 10.0                      | RFVC1829       |
| NEW | 7200                      | 8000                      | 0.0 to 10.0              | 76.0                                 | 3.0                    | 10.0                      | RFVC1824       |
| NEW | 7800                      | 8700                      | 0.0 to 10.0              | 79.0                                 | 3.0                    | 10.0                      | RFVC1825       |
| NEW | 8000                      | 12000                     | 0.0 to 18.0              | 66.0                                 | 5.0                    | 4.0                       | RFVC1800       |

## Signal Source Modules

### Voltage-Controlled Oscillators

RFMD offers one of the industry's largest selections of discrete voltage-controlled oscillator (VCO) modules. The following tables offer a sample of the large family of component designs RFMD provides. If you do not see the device that fits your application, the full family of components is located on the RFMD website ([www.rfmd.com](http://www.rfmd.com)). For online custom VCO requests, go to [www.rfmd.com/products/vcopll/vcorequestorder](http://www.rfmd.com/products/vcopll/vcorequestorder) or contact RFMD at 1-480-756-6070. All VCOs are RoHS compliant.

### Additional Integration and Environmental Options

RFMD can provide additional integration in VCO modules as well as value-added environmental options.

#### Integration

- Buffer amplifiers
- Voltage regulators
- Dual band VCOs
- Switches
- Frequency doublers

#### Value-Added Environmental Options

- Conformal coating
  - For high-condensing relative humidity environments
- Foam filling
  - For high-vibration environments



## VCO Guide

| Freq Range       | Resonator             | Product Family Series | New Product Family Series | Table No. |
|------------------|-----------------------|-----------------------|---------------------------|-----------|
| 10 to 400 MHz    | Aircoil               | UMJ                   | RFVC66XX                  | 35        |
| 25 to 3500 MHz   | Microstrip            | UMS                   | RFVC64XX                  | 36        |
| 50 to 4000 MHz   | Aircoil or Microstrip | VCO190, 191, 790, 793 | RFVC7XXX                  | 37-40     |
| 100 to 6000 MHz  | Microstrip            | UMZ                   | RFVC2XXX                  | 41        |
| 500 to 5000 MHz  | Coaxial               | UMX                   | RFVC4XXX                  | 42        |
| 800 to 4000 MHz  | Microstrip            | UMV                   | RFVC62XX                  | 43        |
| 4001 to 8000 MHz | Microstrip            | UMZ-T2                | RFVC6XXX                  | 44        |

**NOTE: All new VCO designs will have part numbers beginning with RFVC.**

## RFMD VCO Product Family Capabilities Tables

### VCOs for IF Conversion - UMJ Series

- Ultra-low phase noise/low current
- Frequency: 10 to 400 MHz
- Resonator: Aircoil
- PCB: Rogers
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

#### Applications

- IF conversion applications
- Low phase noise agile clock applications
- Low phase noise applications

Table 35

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 50                        | 60                        | 1.0                            | 4.0                            | 4.5                  | 9.0                | -25                      | -124                                 | 5.0             | UMJ-123-D14-G  |
|  | 180                       | 190                       | 0.5                            | 4.5                            | 3.6                  | 9.0                | -25                      | -128                                 | 5.0             | UMJ-967-D16-G  |
|  | 200                       | 200                       | 0.0                            | 5.0                            | 1.0                  | 9.0                | -20                      | -133                                 | 5.0             | UMJ-1106-R14-G |
|  | 295                       | 296                       | 0.0                            | 10.0                           | 1.25                 | 9.0                | -25                      | -130                                 | 10.0            | UMJ-1109-D14-G |
|  | 400                       | 400                       | 1.0                            | 4.0                            | 4.0                  | 9.0                | -20                      | -125                                 | 5.0             | UMJ-858-D14-G  |

### Octave Band VCOs - UMS Series

- Octave band tuning
- Frequency: 25 to 3500 MHz
- Resonator: Microstrip
- PCB: Rogers
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

#### Applications

- Wide bandwidth applications
- Built-in-test applications
- 1st LO applications
- Frequency synthesizers

Table 36

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 25                        | 50                        | 1.0                            | 15.0                           | 2.4                  | 9.0                | -15                      | -125                                 | 12.0            | UMS-50-R16-G   |
|  | 50                        | 100                       | 1.0                            | 15.0                           | 4.5                  | 9.5                | -30                      | -105                                 | 12.0            | UMS-100-R16-G  |
|  | 500                       | 1000                      | 0.5                            | 11.0                           | 55.0                 | 10.0               | -20                      | -103                                 | 12.0            | UMS-1000-A16-G |
|  | 600                       | 1200                      | 0.5                            | 12.0                           | 60.0                 | 12.0               | -20                      | -104                                 | 12.0            | UMS-1200-A16-G |
|  | 2000                      | 3000                      | 1.0                            | 14.0                           | 90.0                 | 10.0               | -18                      | -98                                  | 12.0            | UMS-3000-R16-G |

### 5 V Narrowband VCOs - VCO190 Series

- Linear tuning/low phase noise
- Multiple supply voltage and package options available
- Low cost/high-volume series
- Frequency: 50 to 4000 MHz
- Resonator: Aircoil or microstrip
- PCB: FR-4
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

#### Applications

- Wireless infrastructure
- RFID
- General wireless

Table 37

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 100                       | 200                       | 1.0                            | 16.0                           | 7.0                  | 0.0                | -15                      | -114                                 | 5.0             | VCO190-150TY   |
|  | 600                       | 660                       | 0.5                            | 4.5                            | 22.0                 | 1.0                | -13                      | -112                                 | 5.0             | VCO190-630TY   |
|  | 845                       | 875                       | 1.0                            | 4.0                            | 15.0                 | 3.0                | -15                      | -113                                 | 5.0             | VCO190-860TY   |
|  | 902                       | 928                       | 1.0                            | 4.0                            | 12.0                 | 5.0                | -15                      | -113                                 | 5.0             | VCO190-915TY   |
|  | 3950                      | 4100                      | 1.0                            | 10.0                           | 30.0                 | 5.0                | -15                      | -94                                  | 5.0             | VCO190-4025TY  |

### 3 V Narrowband VCOs - VC0191 Series

Table 38

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|-----|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|     | 210                       | 230                       | 1.0                            | 2.9                            | 16.0                 | 0.0                | -13                      | -115                                 | 3.0             | VC0191-220UY   |
|     | 760                       | 786                       | 0.4                            | 2.6                            | 18.0                 | -3.0               | -12                      | -109                                 | 3.0             | VC0191-773UY   |
| NEW | 889                       | 915                       | 0.4                            | 2.6                            | 18.0                 | -3.0               | -14                      | -108                                 | 3.0             | VC0191-902UY   |
|     | 902                       | 928                       | 0.4                            | 2.6                            | 18.0                 | -3.0               | -16                      | -109                                 | 3.0             | VC0191-915UY   |
|     | 2400                      | 2500                      | 0.4                            | 2.7                            | 55.0                 | -3.0               | -15                      | -93                                  | 3.0             | VC0191-2450UY  |

### 5 V Wideband VCOs - VC0790 Series

Table 39

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 400                       | 800                       | 0.5                            | 20.0                           | 30.0                 | 5.5                | -5                       | -102                                 | 5.0             | VC0790-600TY   |
|  | 950                       | 2150                      | 0.5                            | 20.0                           | 75.0                 | 6.0                | -8                       | -102                                 | 5.0             | VC0790-1550TY  |
|  | 1000                      | 2000                      | 0.5                            | 20.0                           | 75.0                 | 6.0                | -9                       | -100                                 | 5.0             | VC0790-1500TY  |
|  | 2400                      | 2685                      | 0.9                            | 3.5                            | 217.0                | 6.0                | -21                      | -92                                  | 4.1             | VC0790-2560KY  |
|  | 2865                      | 3065                      | 0.8                            | 3.5                            | 170.0                | 6.0                | -20                      | -91                                  | 4.1             | VC0790-2965KY  |

### 12 V Wideband VCOs - VC0793 Series

Table 40

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 500                       | 1000                      | 0.0                            | 20.0                           | 40.0                 | 6.0                | -6                       | -104                                 | 12.0            | VC0793-750TY   |
|  | 950                       | 2150                      | 0.5                            | 22.0                           | 75.0                 | 7.0                | -8                       | -98                                  | 12.0            | VC0793-1550TY  |
|  | 1000                      | 2000                      | 0.5                            | 20.0                           | 75.0                 | 7.0                | -9                       | -100                                 | 12.0            | VC0793-1500TY  |
|  | 2100                      | 2500                      | 0.5                            | 4.5                            | 192.0                | 3.0                | -25                      | -92                                  | 12.0            | VC0793-2300TY  |

### Microstrip VCOs to 6000 MHz - UMZ Series

- Ultra-linear tuning/low phase noise
- Frequency: 100 to 6000 MHz
- Resonator: Microstrip
- PCB: Rogers
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

#### Applications

- Frequency synthesizers
- Up and down converters
- Instrumentation
- Wideband frequency applications

Table 41

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 100                       | 100                       | 0.5                            | 4.5                            | 1.0                  | 9.0                | -25                      | -135                                 | 5.0             | UMZ-1155-R16-G |
|  | 1460                      | 1825                      | 0.5                            | 18.0                           | 24.0                 | 0.0                | -20                      | -107                                 | 8.0             | UMZ-1089-D16-G |
|  | 1500                      | 1600                      | 0.5                            | 4.5                            | 36.0                 | 2.0                | -20                      | -108                                 | 5.0             | UMZ-140-A16-G  |
|  | 3700                      | 3700                      | 0.5                            | 5.0                            | 50.0                 | 3.0                | -15                      | -102                                 | 5.0             | UMZ-281-A16-G  |
|  | 5220                      | 5280                      | 0.0                            | 3.0                            | 70.0                 | 0.0                | -20                      | -85                                  | 3.3             | UMZ-191-A16-G  |

## Ultra-Low Noise CROs - UMX Series

- Ultra linear tuning/ultra low phase noise
- Frequency: 500 to 5000 MHz
- Resonator: Coaxial
- PCB: Rogers
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

## Applications

- Point-to-Point radio
- DRO/YIG multiplied replacements
- Low phase noise applications
- SAW VCO replacement

Table 42

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 818                       | 847                       | 3.0                            | 12.0                           | 5.5                  | 6.0                | -15                      | -120                                 | 7.0             | UMX-870-D16-G  |
|  | 1045                      | 1055                      | 1.0                            | 11.0                           | 3.0                  | 4.0                | -13                      | -125                                 | 5.0             | UMX-1035-D16-G |
|  | 1780                      | 1780                      | 0.5                            | 4.5                            | 6.0                  | 7.0                | -16                      | -123                                 | 8.0             | UMX-538-D16-G  |
|  | 2100                      | 2120                      | 0.5                            | 4.5                            | 9.5                  | 7.0                | -12                      | -120                                 | 8.0             | UMX-599-D16-G  |
|  | 4000                      | 4000                      | 0.5                            | 4.5                            | 6.5                  | 0.0                | -15                      | -116                                 | 5.0             | UMX-806-D16-G  |

## Ultra-Linear Tuning VCOs - UMV Series

- Linear tuning/100 MHz frequency bands
- Frequency: 800 to 4000 MHz
- Resonator: Microstrip
- PCB: Rogers
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

## Applications

- Frequency synthesizers
- Up and down converters
- Narrow V tune and VCC applications

Table 43

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|----------------|
|  | 900                       | 1000                      | 0.5                            | 4.5                            | 36.0                 | 0.0                | -15                      | -110                                 | 5.0             | UMV-950-R16-G  |
|  | 1800                      | 1900                      | 0.5                            | 4.5                            | 36.0                 | 0.0                | -20                      | -107                                 | 5.0             | UMV-1850-R16-G |
|  | 2200                      | 2300                      | 0.5                            | 4.5                            | 36.0                 | 0.0                | -20                      | -106                                 | 5.0             | UMV-2250-R16-G |
|  | 2400                      | 2500                      | 0.5                            | 4.5                            | 36.0                 | 0.0                | -20                      | -105                                 | 5.0             | UMV-2450-R16-G |
|  | 3900                      | 4000                      | 0.5                            | 4.5                            | 45.0                 | 0.0                | -15                      | -102                                 | 5.0             | UMV-3950-R16-G |

## VCOs with Internal Doubler - UMZ-T2 Series

- Internal frequency doubler and buffer AMP
- ½ Frequency output provided
- Frequency: 4000 to 8000 MHz
- Resonator: Microstrip
- PCB: Rogers
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

## Applications

- DRO replacements
- Higher frequency applications
- Wide bandwidth applications
- Test instrumentation

Table 44

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Tuning<br>Voltage<br>(Min) (V) | Tuning<br>Voltage<br>(Max) (V) | $K_{VCO}$<br>(MHz/V) | $P_{OUT}$<br>(dBm) | 2nd<br>Harmonic<br>(dBc) | Phase Noise<br>at 10 kHz<br>(dBc/Hz) | $V_{CC}$<br>(V) | Part<br>Number    |
|--|---------------------------|---------------------------|--------------------------------|--------------------------------|----------------------|--------------------|--------------------------|--------------------------------------|-----------------|-------------------|
|  | 4200                      | 4400                      | 2.0                            | 10.0                           | 75.0                 | 0.0                | -20                      | -97                                  | 5.0             | UMZ-T2-1078-016-G |
|  | 4460                      | 4615                      | 0.5                            | 4.5                            | 60.0                 | 0.0                | -18                      | -98                                  | 5.0             | UMZ-T2-1045-016-G |
|  | 5200                      | 5800                      | 1.0                            | 12.0                           | 80.0                 | 0.0                | -20                      | -95                                  | 8.0             | UMZ-T2-1080-016-G |
|  | 6525                      | 6525                      | 0.5                            | 4.5                            | 60.0                 | 0.0                | -20                      | -96                                  | 5.0             | UMZ-T2-397-016-G  |
|  | 6600                      | 8100                      | 1.0                            | 15.0                           | 130.0                | -2.0               | -15                      | -88                                  | 5.0             | UMZ-T2-447-016-G  |

## Phase Locked Loop Modules

RFMD offers complete phase locked loop (PLL) modules integrating a PLL IC, loop filter components, buffer amplifiers, and optional microcontroller. The following PLL module tables offer a sample of the large family of component designs RFMD provides. If you do not see the device that fits your application, the full family of components is located on the RFMD website ([www.rfmd.com](http://www.rfmd.com)). For online custom PLL module requests, go to [www.rfmd.com/products/vcopll/pllrequestorder](http://www.rfmd.com/products/vcopll/pllrequestorder) or contact us at 1-480-756-6070. All PLL modules are RoHS compliant.

### Additional Integration

RFMD can provide additional integration in PLL modules as well as value-added services.

#### Integration

- PLL IC
- Loop filter components
- Buffer amplifiers
- Voltage regulators
- Dual-band PLLs
- Switches



### PLL Guide

| Freq Range      | Resonator             | Product Family Series | New Product Family Series | Table No. |
|-----------------|-----------------------|-----------------------|---------------------------|-----------|
| 100 to 3500 MHz | Aircoil               | PLL350                | RFPK6XXX                  | 45        |
| 500 to 4000 MHz | Microstrip            | PNP                   | RFPK3XXX                  | 46        |
| 500 to 4000 MHz | Microstrip or Coaxial | PNP                   | RFPK4XXX                  | 47        |
| 700 to 2500 MHz | Aircoil               | PLL400                | RFPK7XXX                  | 48        |

**NOTE: All new PLL modules will have part numbers beginning with RFPK.**

## RFMD PLL Product Family Capabilities

### PLLs - PLL350 Series

- Low phase noise/fast settling time
- SPI BUS compatible
- Frequency: 100 to 3500 MHz
- Resonator: Aircoil
- PCB: FR-4
- Package: 0.8 x 0.582 in. (20.3 x 14.7 mm)

#### Applications

- Cellular infrastructure
- RFID
- General wireless

Table 45

| Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Step Size (Min) (kHz) | Settling Time to <1 kHz (mS) | P <sub>OUT</sub> (dBm) | Phase Noise at 100 kHz (dBc/Hz) | 2nd Harmonic (dBc) | V <sub>CC1</sub> (V) | V <sub>CC2</sub> (V) | Part Number  |
|------------------------|------------------------|-----------------------|------------------------------|------------------------|---------------------------------|--------------------|----------------------|----------------------|--------------|
| 264                    | 266                    | 2.5                   | 20.0                         | 5.0                    | -135                            | -20                | 5.0                  | 3.3                  | PLL350-265Y  |
| 869                    | 894                    | 200                   | 0.4                          | 3.0                    | -123                            | -25                | 5.0                  | 3.0                  | PLL350-881Y  |
| 1090                   | 1150                   | 100                   | 15.0                         | 2.0                    | -127                            | -15                | 5.0                  | —                    | PLL350-1120Y |
| 1230                   | 1290                   | 100                   | 15.0                         | 2.0                    | -125                            | -15                | 5.0                  | —                    | PLL350-1260Y |
| 2940                   | 3048                   | 125                   | 25.0                         | 2.0                    | -119                            | -35                | 5.0                  | —                    | PLL350-2944Y |

## Plug-N-Play Narrowband Synthesizers - PNP Series

- Internal microcontroller
- Programmable START/STOP/Step Size
- SPI BUS compatible
- Frequency: 500 to 4000 MHz
- Resonator: Microstrip
- PCB: Rogers
- Package size: 0.5 x 0.5 in. (12.75 x 12.75 mm)

### Applications

- Highly integrated radio designs
- High-performance radios
- Microwave radio IF conversion
- Instrumentation
- Frequency synthesizers

Table 46

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Step Size<br>(Min) (kHz) | Settling<br>Time to<br><1 kHz (mS) | P <sub>OUT</sub><br>(dBm) | Phase Noise<br>at 100 kHz<br>(dBc/Hz) | 2nd<br>Harmonic<br>(dBc) | V <sub>CC1</sub><br>(V) | V <sub>CC2</sub><br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------|------------------------------------|---------------------------|---------------------------------------|--------------------------|-------------------------|-------------------------|----------------|
|  | 800                       | 900                       | 25                       | 10000                              | 0.0                       | -130                                  | -15                      | 5.0                     | 3.0                     | PNP-850-L22-G  |
|  | 1100                      | 1200                      | 25                       | 10000                              | 0.0                       | -130                                  | -18                      | 5.0                     | 3.0                     | PNP-1150-L22-G |
|  | 2400                      | 2500                      | 25                       | 10000                              | 0.0                       | -125                                  | -18                      | 5.0                     | 3.0                     | PNP-2450-L22-G |
|  | 2500                      | 2600                      | 25                       | 10000                              | 0.0                       | -125                                  | -18                      | 5.0                     | 3.0                     | PNP-2550-L22-G |
|  | 2700                      | 2800                      | 25                       | 10000                              | 0.0                       | -126                                  | -18                      | 5.0                     | 3.0                     | PNP-2750-L22-G |
|  | 3900                      | 4000                      | 25                       | 10000                              | 0.0                       | -122                                  | -18                      | 5.0                     | 3.0                     | PNP-3950-L22-G |

## Plug-N-Play Wideband Synthesizers - PNP Series

- Internal microcontroller
- Programmable START/STOP/Step Size
- SPI BUS compatible
- Frequency: 500 to 4000 MHz
- Resonator: Microstrip or coaxial
- PCB: Rogers
- Package: 0.6 x 0.6 in. (15.2 x 15.2 mm)

### Applications

- Highly integrated radio designs
- High-performance radios
- Microwave radio IF conversion
- Instrumentation
- Frequency synthesizers

Table 47

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Step Size<br>(Min) (kHz) | Step Size<br>(Max) (kHz) | P <sub>OUT</sub><br>(dBm) | Phase Noise<br>at 100 kHz<br>(dBc/Hz) | 2nd<br>Harmonic<br>(dBc) | V <sub>CC1</sub><br>(V) | V <sub>CC2</sub><br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------|--------------------------|---------------------------|---------------------------------------|--------------------------|-------------------------|-------------------------|----------------|
|  | 750                       | 860                       | 1000                     | 10000                    | 0.0                       | -125                                  | -20                      | 12.0                    | 3.0                     | PNP-744-P22-G  |
|  | 1550                      | 1825                      | 5000                     | 10000                    | 0.0                       | -126                                  | -15                      | 12.0                    | 3.0                     | PNP-1623-P22-G |
|  | 1900                      | 2000                      | 250                      | 10000                    | 0.0                       | -134                                  | -15                      | 12.0                    | 3.0                     | PNP-1620-P22-G |
|  | 2525                      | 2735                      | 250                      | 10000                    | 3.0                       | -130                                  | -15                      | 12.5                    | 3.0                     | PNP-1622-P22-G |
|  | 4165                      | 4375                      | 2500                     | 10000                    | 3.0                       | -120                                  | -15                      | 12.5                    | 3.0                     | PNP-1617-P22-G |

## PLLs - PLL400 Series

- Low phase noise/fast settling time
- SPI BUS compatible
- Frequency: 700 to 2500 MHz
- Resonator: Aircoil
- PCB: FR-4
- Package: 0.6 X 0.6 in. (15.2 x 15.2 mm)

### Applications

- Cellular infrastructure
- RFID
- General wireless

Table 48

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Step Size<br>(Min) (kHz) | Settling<br>Time to<br><1 kHz (mS) | P <sub>OUT</sub><br>(dBm) | Phase Noise<br>at 100 kHz<br>(dBc/Hz) | 2nd<br>Harmonic<br>(dBc) | V <sub>CC1</sub><br>(V) | V <sub>CC2</sub><br>(V) | Part<br>Number |
|--|---------------------------|---------------------------|--------------------------|------------------------------------|---------------------------|---------------------------------------|--------------------------|-------------------------|-------------------------|----------------|
|  | 750                       | 1000                      | 250                      | 5.0                                | 0.0                       | -111                                  | -15                      | 5.0                     | —                       | PLL400-875Y    |
|  | 902                       | 928                       | 200                      | 5.0                                | 3.0                       | -133                                  | -15                      | 5.0                     | —                       | PLL400-915AY   |
|  | 951                       | 977                       | 30                       | 12.0                               | 3.0                       | -130                                  | -15                      | 5.0                     | —                       | PLL400-964AY   |
|  | 1450                      | 1550                      | 1000                     | 1.0                                | 1.0                       | -120                                  | -20                      | 5.0                     | —                       | PLL400-1500Y   |
|  | 2000                      | 2400                      | 1000                     | 1.5                                | 0.0                       | -110                                  | -11                      | 5.0                     | —                       | PLL400-2200AY  |

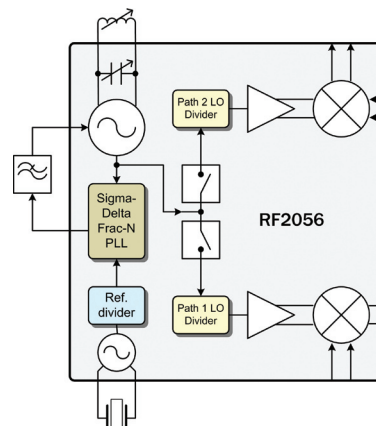
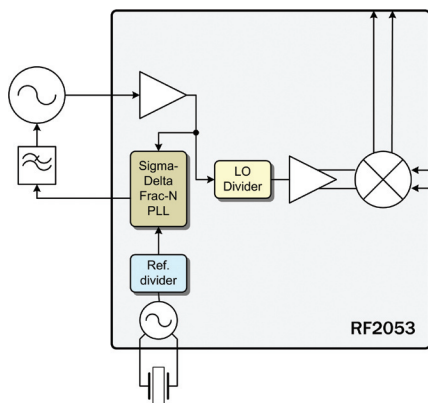
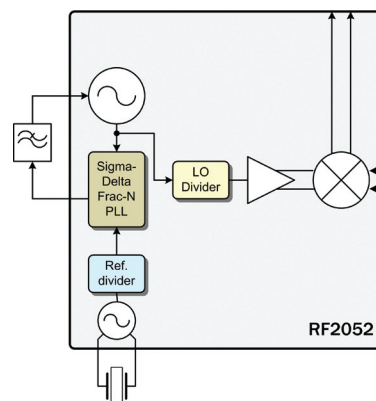
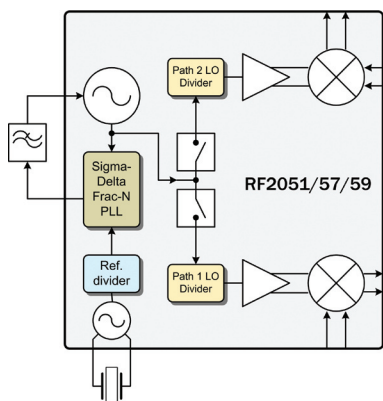
## Integrated Synthesizers with Mixers

- Single-placement wideband frequency conversion
- Programmable linearity mixers for power-saving
- Fractional-N PLL for flexibility and optimum spur performance



Table 49

|            | Description                                                                               | Mixer<br>RF/IF Freq<br>(Min) (MHz) | Mixer<br>RF/IF Freq<br>(Max) (MHz) | LO Freq<br>(Min)<br>(MHz) | LO Freq<br>(Max)<br>(MHz) | Mixer<br>Conversion<br>Gain<br>(dB) | Mixer<br>IIP3<br>(dBm) | V <sub>CC</sub><br>(V) | I <sub>CC</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|------------|-------------------------------------------------------------------------------------------|------------------------------------|------------------------------------|---------------------------|---------------------------|-------------------------------------|------------------------|------------------------|-------------------------|-----------------|----------------|
| <b>NEW</b> | High performance RF Synthesizer/<br>VCO with Integrated RF Mixers<br>for UHF applications | 30                                 | 500                                | 50                        | 500                       | -2.0                                | 18.0                   | 3.0                    | 65                      | QFN 5.0 x 5.0   | RF2056         |
|            | Wideband RF Synthesizer/VCO<br>with Integrated RF Mixers                                  | 30                                 | 2500                               | 300                       | 2400                      | -2.0                                | 18.0                   | 3.0                    | 65                      | QFN 5.0 x 5.0   | RF2051         |
|            | Wideband RF Synthesizer/VCO<br>with Integrated RF Mixer                                   | 30                                 | 2500                               | 300                       | 2400                      | -2.0                                | 18.0                   | 3.0                    | 65                      | QFN 5.0 x 5.0   | RF2052         |
|            | Wideband RF Synthesizer<br>with Integrated RF Mixer                                       | 30                                 | 2500                               | 300                       | 2400                      | -2.0                                | 18.0                   | 3.0                    | 42                      | QFN 5.0 x 5.0   | RF2053         |
|            | RF PLL/VCO with RF Mixers<br>for WLAN Band-Shifters                                       | 30                                 | 2500                               | 1550                      | 2050                      | -2.0                                | 18.0                   | 3.0                    | 65                      | QFN 5.0 x 5.0   | RF2059         |
|            | RF PLL/VCO with Integrated<br>RF Mixers for Repeaters                                     | 30                                 | 2500                               | 1900                      | 2400                      | -2.0                                | 18.0                   | 3.0                    | 65                      | QFN 5.0 x 5.0   | RF2057         |



## Mixers

- Small package size wide bandwidth operation
- High conversion gain



Table 50

|            | RF Freq<br>(Min)<br>(MHz) | RF Freq<br>(Max)<br>(MHz) | LO Freq<br>(Min)<br>(MHz) | LO Freq<br>(Max)<br>(MHz) | IF Freq<br>(Max)<br>(MHz) | Mixer<br>Conversion<br>Gain<br>(dB) | LO Level<br>(dBm) | P1dB<br>(dBm) | Mixer<br>IIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------------------|-------------------|---------------|------------------------|------------------------|-------------------------|-----------------|----------------|
| <b>NEW</b> | 700                       | 1000                      | 575                       | 1300                      | 300                       | 7.0                                 | 0.0               | 13.0          | 28.0                   | 5.0                    | 180                     | QFN 5.0 x 5.0   | RFMX0015       |
| <b>NEW</b> | 1700                      | 2200                      | 1400                      | 2500                      | 300                       | 7.0                                 | 0.0               | 13.0          | 28.0                   | 3.0                    | 180                     | QFN 5.0 x 5.0   | RFMX1015       |

## Modulators

- Cellular infrastructure-grade performance
- Low noise floor
- High linearity



Table 51

|            | RF/LO<br>(Min) (MHz) | RF/LO<br>(Max) (MHz) | OIP3<br>(dBm) | Broadband<br>Noise Floor<br>(dBm/Hz) | Carrier<br>Suppression<br>(dBc) | Sideband<br>Suppression<br>(dBc) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|------------|----------------------|----------------------|---------------|--------------------------------------|---------------------------------|----------------------------------|------------------------|-------------------------|-----------------|----------------|
| <b>NEW</b> | 700                  | 1000                 | 26.0          | -160                                 | 40.0                            | 40.0                             | 5.0                    | 185                     | QFN-24          | RFMD0014       |
|            | 800                  | 2000                 | 20.0          | -152                                 | 40.0                            | 40.0                             | 3.0                    | 112                     | QFN-24          | RF2705G        |
|            | 800                  | 2000                 | 20.0          | -152                                 | 40.0                            | 40.0                             | 3.0                    | 112                     | QFN-24          | RF3854         |
|            | 1700                 | 2500                 | 20.0          | -158                                 | 40.0                            | 40.0                             | 5.0                    | 60                      | QFN-16          | RF2850         |
| <b>NEW</b> | 1700                 | 2700                 | 26.0          | -160                                 | 40.0                            | 40.0                             | 5.0                    | 210                     | QFN-24          | RFMD2014       |

## ISM Band Transceiver, Transmitters, and Transverters

- High data rate transceivers integrated with PA and LNA
- 100 MHz transverters
- Low power consumption transmitters for battery-operated applications



Table 52

|     | Description                                                   | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Tx P <sub>OUT</sub> (dBm) | Rx I <sub>CC</sub> (mA) | Sensitivity (dBm) | V <sub>CC</sub> (min) (V) | V <sub>CC</sub> (max) (V) | Package (mm)                      | Part Number |
|-----|---------------------------------------------------------------|------------------------|------------------------|---------------------------|-------------------------|-------------------|---------------------------|---------------------------|-----------------------------------|-------------|
|     | VHF/UHF Transmitter                                           | 100                    | 1000                   | 1.0                       | 8.0                     | 1.0               | 2.25                      | 3.6                       | LCC 4.0 x 4.0                     | RF2514      |
|     | VHF/UHF Transmitter                                           | 100                    | 500                    | 10.0                      | 10.5                    | 10.0              | 2.25                      | 3.6                       | QSOP-16                           | RF2516      |
|     | 1.5 Mbps FSK Transceiver                                      | 902                    | 928                    | -1.0                      | 50.0                    | -95.0             | 2.7                       | 4.5                       | TQFP-32                           | ML2722      |
|     | 1.5 Mbps FSK Transceiver                                      | 2400                   | 2485                   | 3.0                       | 55.0                    | -81.0             | 2.7                       | 3.3                       | TQFP-32                           | ML2724      |
|     | 2.0 Mbps FSK Transceiver                                      | 2400                   | 2485                   | 3.0                       | 55.0                    | -81.0             | 2.7                       | 3.3                       | TQFP-32                           | ML2726      |
|     | 2.4 GHz to 5.8 GHz Frequency Translator                       | 2400                   | 5800                   | 5.5                       | 50.0                    | —                 | 2.8                       | 3.6                       | LPCC-28                           | ML5824      |
|     | 2.4 GHz to 5.8 GHz Frequency Translator                       | 2400                   | 5800                   | 5.5                       | 50.0                    | —                 | 2.8                       | 3.6                       | LPCC-28                           | ML5825      |
|     | Variable Data Rate FSK; Transceiver with PA                   | 5725                   | 5850                   | 0.0                       | 65.0                    | -94.0             | 2.7                       | 3.6                       | LPCC-32                           | ML5800      |
|     | 5.8 GHz Variable Data Rate FSK Transceiver with Integrated PA | 5725                   | 5850                   | 21.0                      | 69.0                    | -97.0             | 2.8                       | 3.6                       | QFN 6.0 x 6.0                     | ML5805      |
|     | Low Power Integrated 5.8 GHz; ASK/FSK Transmitter             | 5790                   | 5840                   | 4.0                       | 51.0                    | —                 | 2.9                       | 3.6                       | QFN 6.0 x 6.0                     | ML5830      |
| NEW | 2.0 Mbps FSK Transceiver                                      | 2400                   | 2485                   | 19.0                      | 63.0                    | -97.0             | 2.8                       | 3.6                       | QFN 6.0 x 6.0                     | ML2730      |
| NEW | 5.8 GHz Wireless Solution SiP                                 | 5725                   | 5850                   | 12.0                      | 120.0                   | -80.0             | 2.8                       | 3.6                       | "Surface Mount 20.3 x 14.3 x 1.2" | RFSM5805D   |

## SPL6036Z PLL Frequency Synthesizer

- Programmable prescaler (8/16/32/64) and charge pump currents
- Programmable via 3-wire serial interface



Table 53

|  | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Step Size (Min) (kHz) | Step Size (Max) (kHz) | Phase Noise at 100 kHz (dBc/Hz) | 2nd Harmonic (dBc) | V <sub>CC1</sub> (V) | V <sub>CC2</sub> (V) | Package   | Part Number |
|--|------------------------|------------------------|-----------------------|-----------------------|---------------------------------|--------------------|----------------------|----------------------|-----------|-------------|
|  | 500                    | 6000                   | 25                    | 10000                 | -117                            | -16.4              | 5.5                  | 2.7                  | TSSOP 16L | SPL6036Z    |

## Optical Network Components

- True media converter compliant with ISO/IEC 8802.3; IEEE 802.3; ITA/EIA 785
- Data quantizer compliant with IEEE 802.3; IEEE 802.5

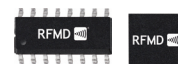


Table 54

|  | Description                 | Data Rate (Mbps) | Output Interface | Noise RMS Over Bandwidth (μV) | Standards Supported                                       | V <sub>CC</sub> (V) | Package (mm) | Part Number |
|--|-----------------------------|------------------|------------------|-------------------------------|-----------------------------------------------------------|---------------------|--------------|-------------|
|  | Fiber Optic Data Quantizer  | 40               | TTL/ECL          | 25                            | IEEE 802.3; IEEE 802.5                                    | 5.0 to -5.2         | SOIC-16      | ML4622CSN   |
|  | 10/100 Mbps Media Converter | 10/100           | PECL/LVPECL      | n/a                           | ISO/IEC 8802.3; IEEE 802.3; TIA/EIA 785; Auto-negotiation | 3.3                 | LPCC/QFN-44  | ML6652CM    |
|  | 10/100 Mbps Media Converter | 10/100           | PECL/LVPECL      | n/a                           | ISO/IEC 8802.3; IEEE 802.3; TIA/EIA 785; Auto-negotiation | 3.3                 | TQFP-44      | ML6652CH    |

## Circulators

- High isolation and low insertion loss
- Drop-in package providing reliable performance for low-cost solution
- Excellent IMD performance



Table 55

|  | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Insertion Loss (dB) | Isolation (dB) | Return Loss (dB) | IMD (dBc) 2T x 37.5 Watts | Reflected Power (W) | Max Rating (W) | Impedance ( $\Omega$ ) | SWR  | Temp ( $^{\circ}$ C) | Package (in) | Part Number  |
|--|------------------------|------------------------|---------------------|----------------|------------------|---------------------------|---------------------|----------------|------------------------|------|----------------------|--------------|--------------|
|  | 869                    | 894                    | <0.2                | >25.0          | >25.0            | -65                       | 200                 | 200            | 50                     | 1.15 | -20 to +85           | 1" Drop-In   | PC0882AG-21H |
|  | 920                    | 960                    | <0.2                | >25.0          | >25.0            | -65                       | 200                 | 200            | 50                     | 1.15 | -20 to +85           | 1" Drop-In   | PC0940AG-21H |
|  | 1805                   | 1880                   | <0.2                | >25.0          | >25.0            | -70                       | 200                 | 200            | 50                     | 1.15 | -40 to +85           | 1" Drop-In   | PC1843AG-21H |
|  | 1930                   | 1990                   | <0.2                | >25.0          | >25.0            | -75                       | 200                 | 200            | 50                     | 1.15 | -40 to +85           | 1" Drop-In   | PC1960AG-21H |
|  | 2090                   | 2190                   | <0.2                | >25.0          | >25.0            | -75                       | 200                 | 200            | 50                     | 1.15 | -40 to +85           | 1" Drop-In   | PC2140AG-21H |

## Isolators

- Robust construction for high-reliability wireless infrastructure environments
- Designed for applications in high-performance linear power amplifiers
- RoHS compliant



Table 56

|  | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Insertion Loss (dB) | Isolation (dB) | Return Loss (dB) | IMD (dBc) 2T x 37.5 Watts | Reflected Power (W) | Max Rating (W) | Impedance ( $\Omega$ ) | SWR  | Temp ( $^{\circ}$ C) | Package (in) | Part Number  |
|--|------------------------|------------------------|---------------------|----------------|------------------|---------------------------|---------------------|----------------|------------------------|------|----------------------|--------------|--------------|
|  | 869                    | 894                    | <0.20               | >25.0          | >25.0            | -65                       | 30                  | 200            | 50                     | 1.15 | -20 to +85           | 1.0" x 1.0"  | PI0882AG-21H |
|  | 869                    | 894                    | <0.20               | >25.0          | >25.0            | -65                       | 100                 | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.25" | PI0882AA-21H |
|  | 920                    | 960                    | <0.20               | >25.0          | >25.0            | -65                       | 30                  | 200            | 50                     | 1.15 | -20 to +85           | 1.0" x 1.0"  | PI0940AG-21H |
|  | 920                    | 960                    | <0.20               | >25.0          | >25.0            | -65                       | 100                 | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.25" | PI0940AA-21H |
|  | 920                    | 960                    | <0.35               | >58.0          | >25.0            | -60 Fwd and -90 Rev       | 100                 | 200            | 50                     | 1.15 | -20 to +85           | 2.0" x 1.25" | PD0940AQ-21H |
|  | 1805                   | 1880                   | <0.20               | >25.0          | >25.0            | -70                       | 30                  | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.0"  | PI1843AG-21H |
|  | 1805                   | 1880                   | <0.20               | >25.0          | >25.0            | -70                       | 100                 | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.25" | PI1843AA-21H |
|  | 1805                   | 1880                   | <0.35               | >60.0          | >25.0            | -70 Fwd and -90 Rev       | 100                 | 200            | 50                     | 1.15 | -20 to +85           | 2.0" x 1.25" | PD1843AQ-21H |
|  | 1930                   | 1990                   | <0.20               | >25.0          | >25.0            | -75                       | 30                  | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.0"  | PI1960AG-21H |
|  | 1930                   | 1990                   | <0.20               | >25.0          | >25.0            | -75                       | 100                 | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.25" | PI1960AA-21H |
|  | 2090                   | 2190                   | <0.20               | >25.0          | >25.0            | -75                       | 30                  | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.0"  | PI2140AG-21H |
|  | 2090                   | 2190                   | <0.20               | >25.0          | >25.0            | -75                       | 100                 | 200            | 50                     | 1.15 | -40 to +85           | 1.0" x 1.25" | PI2140AA-21H |

## Couplers

- High directivity
- Low insertion loss
- Excellent return loss and coupling flatness



Table 57

|     | Characteristic Impedance ( $\Omega$ ) | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Nominal ( $\pm 0.5$ ) Coupling (dB) | Coupling Flatness (dB) | Typical Mainline Loss (dB) | Typical Directivity (dB) | Min Return Loss (dB) | Package | Part Number   |
|-----|---------------------------------------|------------------------|------------------------|-------------------------------------|------------------------|----------------------------|--------------------------|----------------------|---------|---------------|
|     | 50                                    | 5                      | 500                    | 10.0                                | $\pm 0.5$              | 0.8                        | 30.0                     | 15.0                 | S06     | CPA-0501-510H |
|     | 50                                    | 5                      | 1000                   | 6.5                                 | $\pm 0.5$              | 1.9                        | 15.0                     | 12.0                 | S06     | CPA-1001-56H  |
|     | 50                                    | 5                      | 1000                   | 10.0                                | $\pm 0.5$              | 1.2                        | 25.0                     | 14.0                 | S06     | CPA-1001-510H |
|     | 75                                    | 5                      | 1000                   | 8.5                                 | $\pm 0.5$              | 1.7                        | 20.0                     | 14.0                 | S06     | CPA-1001-708H |
|     | 75                                    | 5                      | 1000                   | 10.0                                | $\pm 0.5$              | 1.2                        | 14.0                     | 14.0                 | S06     | CPA-1001-710H |
|     | 75                                    | 5                      | 1000                   | 10.0                                | $\pm 0.5$              | 1.2                        | 25.0                     | 14.0                 | S01     | CPK-1001-710H |
|     | 75                                    | 5                      | 1000                   | 16.0                                | $\pm 0.5$              | 0.6                        | 30.0                     | 14.0                 | S06     | CPA-1001-716H |
|     | 75                                    | 5                      | 1000                   | 16.0                                | $\pm 0.5$              | 0.6                        | 30.0                     | 14.0                 | S01     | CPK-1001-716H |
|     | 75                                    | 5                      | 1000                   | 20.5                                | $\pm 0.7$              | 0.4                        | 20.0                     | 17.0                 | S06     | CPA-1001-720H |
|     | 75                                    | 5                      | 1000                   | 20.5                                | $\pm 0.5$              | 0.4                        | 20.0                     | 17.0                 | S01     | CPK-1001-720H |
| NEW | 75                                    | 5                      | 1200                   | 10.0                                | $\pm 0.5$              | 1.5                        | 14.0                     | 11.0                 | S18     | RFSP5742      |
| NEW | 75                                    | 5                      | 1200                   | 10.0                                | $\pm 0.5$              | 1.5                        | 14.0                     | 14.0                 | S20     | RFSP5743      |
| NEW | 75                                    | 5                      | 1200                   | 16.0                                | $\pm 0.5$              | 0.6                        | 20.0                     | 14.0                 | S18     | RFSP5762      |
| NEW | 75                                    | 5                      | 1200                   | 16.0                                | $\pm 0.5$              | 0.8                        | 20.0                     | 14.0                 | S20     | RFSP5763      |

## 2 Way Splitters

- High isolation, low insertion loss
- Excellent phase and amplitude balance
- Superior return loss



Table 58

|     | Characteristic Impedance ( $\Omega$ ) | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Min Return Loss (dB) | Typical Isolation (dB) | Typical Insertion Loss (dB) | Package | Part Number  |
|-----|---------------------------------------|------------------------|------------------------|----------------------|------------------------|-----------------------------|---------|--------------|
|     | 50                                    | 1                      | 500                    | 14.0                 | 25.0                   | 0.4                         | S06     | SPA-0501-25H |
|     | 50                                    | 1                      | 650                    | 14.0                 | 25.0                   | 0.4                         | S06     | SPA-0701-25H |
|     | 50                                    | 5                      | 1000                   | 9.6                  | 16.0                   | 0.4                         | S06     | SPA-1002-25H |
| NEW | 50                                    | 5                      | 1200                   | 14.0                 | 22.0                   | 1.0                         | S18     | RFSP5522     |
|     | 50                                    | 800                    | 980                    | 17.7                 | 23.0                   | 0.2                         | S06     | SPA-1001-25H |
|     | 50                                    | 1600                   | 2000                   | 11.0                 | 18.0                   | 0.4                         | S10     | SPC-2001-25H |
|     | 50                                    | 1700                   | 2500                   | 9.6                  | 24.0                   | 0.5                         | S06     | SPA-2501-25H |
|     | 50                                    | 1800                   | 2200                   | 11.0                 | 23.0                   | 0.5                         | S10     | SPC-2201-25H |
|     | 75                                    | 5                      | 65                     | 20.0                 | 35.0                   | 0.2                         | S06     | SPA-0101-27H |
|     | 75                                    | 5                      | 1000                   | 17.7                 | 30.0                   | 0.5                         | S06     | SPA-1002-27H |
| NEW | 75                                    | 5                      | 1200                   | 12.0                 | 28.0                   | 0.8                         | S18     | RFSP5722     |
|     | 75                                    | 30                     | 1000                   | 20.0                 | 30.0                   | 0.5                         | S06     | SPA-1003-27H |

## 3 Way Splitters

- High isolation, low insertion loss
- Excellent phase and amplitude balance



Table 59

|     | Characteristic Impedance ( $\Omega$ ) | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Min Return Loss (dB) | Typical Isolation (dB) | Typical Insertion Loss (dB) | Package | Part Number |
|-----|---------------------------------------|------------------------|------------------------|----------------------|------------------------|-----------------------------|---------|-------------|
| NEW | 75                                    | 5                      | 200                    | 21.0                 | 30.0                   | 0.35                        | S04     | RFSP2731    |
| NEW | 75                                    | 20                     | 1200                   | 14.0                 | 25.0                   | 1.5                         | S04     | RFSP5731    |

## Transformers

- Variety of impedance ratios and wiring configurations
- Low insertion loss and good balance
- Usable in 50- and 75-ohm applications

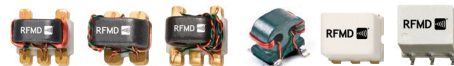


Table 60

|     | Type                    | Impedance Ratio | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Package | Part Number   |
|-----|-------------------------|-----------------|------------------------|------------------------|---------|---------------|
|     | Balanced - Balanced     | 1:1             | 0.008                  | 100                    | S06     | XFA-0101-1BH  |
|     | Balanced - Balanced     | 1:4             | 0.1                    | 240                    | S06     | XFA-0301-4BH  |
|     | Unbalanced - Balanced   | 1:1             | 0.05                   | 300                    | S06     | XFA-0301-1WH  |
|     | Unbalanced - Balanced   | 1:1             | 3.0                    | 200                    | S03     | XFM-0201-1WH  |
| NEW | Unbalanced - Balanced   | 1:1             | 3.0                    | 3000                   | S20     | RFXF9503      |
|     | Unbalanced - Balanced   | 1:1             | 5.0                    | 200                    | S20     | RFXF2713      |
| NEW | Unbalanced - Balanced   | 1:1             | 5.0                    | 1200                   | S18     | RFXF5702      |
|     | Unbalanced - Balanced   | 1:1             | 5.0                    | 1200                   | S20     | RFXF5703      |
| NEW | Unbalanced - Balanced   | 1:1             | 5.0                    | 1200                   | S21     | RFXF5704      |
| NEW | Unbalanced - Balanced   | 1:1             | 5.0                    | 1200                   | S18     | RFXF5712      |
| NEW | Unbalanced - Balanced   | 1:1             | 5.0                    | 1200                   | S18     | RFXF5792      |
| NEW | Unbalanced - Balanced   | 1:1             | 5.0                    | 1200                   | S20     | RFXF5793      |
| NEW | Unbalanced - Balanced   | 1:1             | 5.0                    | 1200                   | S21     | RFXF5794      |
| NEW | Unbalanced - Balanced   | 1:1             | 5.0                    | 3000                   | S21     | RFXF9504      |
|     | Unbalanced - Balanced   | 1:4             | 1.0                    | 1000                   | S03     | XFM-1001-4WH  |
|     | Unbalanced - Balanced   | 1:4             | 3.5                    | 700                    | S03     | XFM-0701-4WH  |
|     | Unbalanced - Balanced   | 1:4             | 5.0                    | 1000                   | S09     | XFP-1001-4WH  |
|     | Unbalanced - Balanced   | 1:4             | 5.0                    | 1200                   | S20     | RFXF5753      |
|     | Unbalanced - Balanced   | 1:4             | 8.0                    | 900                    | S01     | XFK-0901-4WH  |
| NEW | Unbalanced - Balanced   | 1:4             | 10.0                   | 1900                   | S20     | RFXF6553      |
|     | Unbalanced - Balanced   | 1:4             | 500.0                  | 2500                   | S03     | XFM-2501-4WH  |
| NEW | Unbalanced - Balanced   | 1:4             | 500.0                  | 2500                   | S20     | RFXF8553      |
|     | Unbalanced - Balanced   | 1:8             | 0.05                   | 125                    | S06     | XFA-0201-8WH  |
|     | Unbalanced - Balanced   | 1:16            | 13.0                   | 200                    | S01     | XFK-0201-16WH |
|     | Unbalanced - Unbalanced | 1:1             | 1.0                    | 400                    | S06     | XFA-0401-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 1.0                    | 2500                   | S09     | XFP-2501-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 2.5                    | 2000                   | S01     | XFK-2001-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 5.0                    | 1000                   | S09     | XFP-1001-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 5.0                    | 3000                   | S03     | XFM-3001-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 15.0                   | 1003                   | S03     | XFM-1001-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 40.0                   | 1000                   | S06     | XFA-1001-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 40.0                   | 1000                   | S01     | XFK-1001-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 40.0                   | 1000                   | S03     | XFM-1002-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 800.0                  | 1900                   | S03     | XFM-1901-1UH  |
|     | Unbalanced - Unbalanced | 1:1             | 5.0                    | 3000                   | S03     | XFM-3001-1UH  |
|     | Unbalanced - Unbalanced | 1:2.5           | 0.011                  | 100                    | S06     | XFA-0101-25UH |
|     | Unbalanced - Unbalanced | 1:4             | 0.05                   | 220                    | S06     | XFA-0301-4UH  |
|     | Unbalanced - Unbalanced | 1:16            | 0.165                  | 75                     | S06     | XFA-0101-16UH |

## ≥1 GHz Power Doublers

- High-output and low-current products featuring GaN technology
- Extremely low distortion and superior return loss
- Industry-standard SOT115J package



Table 61

|  | Freq Range (Min) (MHz) | Freq Range (Max) (MHz) | Min Power Gain (dB at Max Freq) | Max Current (mA) | Max NF (dB) | Package  | Part Number   |
|--|------------------------|------------------------|---------------------------------|------------------|-------------|----------|---------------|
|  | 40                     | 1000                   | 19.0                            | 375              | 6.5         | SOT-115J | D10040180GT   |
|  | 40                     | 1000                   | 19.0                            | 440              | 6.5         | SOT-115J | D10040180GTH  |
|  | 40                     | 1000                   | 20.0                            | 375              | 6.5         | SOT-115J | D10040200GT   |
|  | 40                     | 1000                   | 20.0                            | 440              | 6.5         | SOT-115J | D10040200GTH  |
|  | 45                     | 1000                   | 20.0                            | 380              | 4.0         | SOT-115J | D10040200PL1* |
|  | 45                     | 1000                   | 20.0                            | 450              | 4.0         | SOT-115J | D10040200PH1* |
|  | 40                     | 1000                   | 22.5                            | 375              | 6.5         | SOT-115J | D10040220GT   |
|  | 40                     | 1000                   | 22.5                            | 440              | 6.5         | SOT-115J | D10040220GTH  |

Continued on page 28.

## ≥1 GHz Power Doublers continued

Table 61 continued

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Min Power Gain<br>(dB at Max Freq) | Max Current<br>(mA) | Max NF<br>(dB) | Package  | Part<br>Number |
|-----|---------------------------|---------------------------|------------------------------------|---------------------|----------------|----------|----------------|
|     | 45                        | 1000                      | 22.5                               | 380                 | 4.0            | SOT-115J | D10040230PL1 * |
|     | 45                        | 1000                      | 22.5                               | 450                 | 4.0            | SOT-115J | D10040230PH1 * |
|     | 40                        | 1000                      | 24.0                               | 375                 | 6.0            | SOT-115J | D10040240GT    |
|     | 40                        | 1000                      | 24.0                               | 440                 | 6.0            | SOT-115J | D10040240GTH   |
|     | 40                        | 1000                      | 24.5                               | 375                 | 5.5            | SOT-115J | D10040250GT    |
|     | 40                        | 1000                      | 24.5                               | 440                 | 5.5            | SOT-115J | D10040250GTH   |
|     | 40                        | 1000                      | 27.0                               | 325                 | 5.0            | SOT-115J | D10040270GTL   |
|     | 40                        | 1000                      | 27.0                               | 375                 | 5.0            | SOT-115J | D10040270GT    |
|     | 40                        | 1000                      | 27.0                               | 440                 | 5.0            | SOT-115J | D10040270GTH   |
|     | 40                        | 1000                      | 30.5                               | 440                 | 4.5            | SOT-115J | D10040300GTH   |
| NEW | 45                        | 1200                      | 22.5                               | 450                 | 4.5            | SOT-115J | RFPD2580 *     |

\* Uses GaN technology for outstanding linearity

## 870 MHz Power Doublers

- Extremely low distortion
- Superior return loss
- Industry-standard SOT115J package



Table 62

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Min Power Gain<br>(dB at 870 MHz) | Max Current<br>(mA) | Max NF<br>(dB) | Package  | Part<br>Number |
|--|---------------------------|---------------------------|-----------------------------------|---------------------|----------------|----------|----------------|
|  | 40                        | 870                       | 18.5                              | 375                 | 6.5            | SOT-115J | D8740180GT     |
|  | 40                        | 870                       | 18.5                              | 440                 | 6.5            | SOT-115J | D8740180GTH    |
|  | 40                        | 870                       | 20.5                              | 375                 | 6.5            | SOT-115J | D8740200GT     |
|  | 40                        | 870                       | 20.5                              | 440                 | 6.5            | SOT-115J | D8740200GTH    |
|  | 40                        | 870                       | 22.0                              | 375                 | 6.5            | SOT-115J | D8740220GT     |
|  | 40                        | 870                       | 22.0                              | 440                 | 6.5            | SOT-115J | D8740220GTH    |
|  | 40                        | 870                       | 24.0                              | 375                 | 6.0            | SOT-115J | D8740240GT     |
|  | 40                        | 870                       | 24.0                              | 440                 | 6.0            | SOT-115J | D8740240GTH    |
|  | 40                        | 870                       | 25.0                              | 375                 | 5.5            | SOT-115J | D8740250GT     |
|  | 40                        | 870                       | 25.0                              | 440                 | 5.5            | SOT-115J | D8740250GTH    |
|  | 40                        | 870                       | 27.0                              | 375                 | 5.0            | SOT-115J | D8740270GT     |
|  | 40                        | 870                       | 27.0                              | 440                 | 5.0            | SOT-115J | D8740270GTH    |
|  | 40                        | 870                       | 30.5                              | 440                 | 4.5            | SOT-115J | D8740300GTH    |
|  | 40                        | 870                       | 32.0                              | 375                 | 4.5            | SOT-115J | D8740320GT     |
|  | 40                        | 870                       | 32.0                              | 440                 | 4.5            | SOT-115J | D8740320GTH    |

## ≥1 GHz Push-Pull Hybrid Amplifiers

- Extremely low distortion
- Superior return loss
- Industry-standard SOT115J package



Table 63

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Min Power Gain<br>(dB at Max Freq) | Max Current<br>(mA) | Max NF<br>(dB) | Package  | Part<br>Number |
|-----|---------------------------|---------------------------|------------------------------------|---------------------|----------------|----------|----------------|
|     | 40                        | 1000                      | 14.0                               | 260                 | 5.5            | SOT-115J | S10040140P1    |
|     | 40                        | 1000                      | 18.0                               | 260                 | 4.0            | SOT-115J | S10040180P1    |
|     | 40                        | 1000                      | 20.0                               | 260                 | 4.5            | SOT-115J | S10040200P     |
|     | 40                        | 1000                      | 22.0                               | 270                 | 3.5            | SOT-115J | S10040220P     |
|     | 40                        | 1000                      | 23.0                               | 240                 | 6.2            | SOT-115J | S10040220GT    |
|     | 40                        | 1000                      | 23.5                               | 250                 | 6.0            | SOT-115J | S10040230GT    |
|     | 40                        | 1000                      | 24.0                               | 255                 | 3.5            | SOT-115J | S10040240P     |
|     | 40                        | 1000                      | 28.0                               | 260                 | 5.0            | SOT-115J | S10040280GT    |
|     | 40                        | 1000                      | 34.5                               | 280                 | 4.5            | SOT-115J | S10040340      |
| NEW | 45                        | 1200                      | 23.0                               | 240                 | 6.5            | SOT-115J | RFPD2590       |

## 870 MHz Push-Pull Hybrid Amplifiers

- Extremely low distortion
- Superior return loss
- Industry-standard SOT115J package



Table 64

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Min Power Gain<br>(dB) at 870 MHz | Max Current<br>(mA) | Max NF<br>(dB) | Package  | Part<br>Number |
|--|---------------------------|---------------------------|-----------------------------------|---------------------|----------------|----------|----------------|
|  | 40                        | 870                       | 18.5                              | 240                 | 5.0            | SOT-115J | S8740190       |
|  | 40                        | 870                       | 18.7                              | 240                 | 7.5            | SOT-115J | S8740180GT     |
|  | 40                        | 870                       | 20.0                              | 260                 | 4.5            | SOT-115J | S8740200P      |
|  | 40                        | 870                       | 22.0                              | 255                 | 3.5            | SOT-115J | S8740220P      |
|  | 40                        | 870                       | 22.7                              | 240                 | 6.2            | SOT-115J | S8740220GT     |
|  | 40                        | 870                       | 23.5                              | 255                 | 3.5            | SOT-115J | S8740240P      |
|  | 40                        | 870                       | 23.5                              | 450                 | 3.5            | SOT-115J | S8740240P12 *  |
|  | 40                        | 870                       | 24.2                              | 240                 | 6.5            | SOT-115J | S8740240GT     |
|  | 40                        | 870                       | 26.0                              | 240                 | 5.5            | SOT-115J | S8740260GT     |
|  | 40                        | 870                       | 28.0                              | 260                 | 5.0            | SOT-115J | S8740280GT     |
|  | 40                        | 870                       | 34.5                              | 280                 | 4.0            | SOT-115J | S8740340       |
|  | 40                        | 870                       | 34.5                              | 300                 | 4.0            | SOT-115J | S8740340PT     |

\* Operates at 12 V

## Reverse Path Hybrid Amplifiers

- Extremely low distortion
- Superior return loss
- Industry-standard SOT115J package



Table 65

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Min Power Gain<br>(dB) at $F_{MAX}$ | Max Current<br>(mA) | Max NF<br>(dB) | Package  | Part<br>Number |
|--|---------------------------|---------------------------|-------------------------------------|---------------------|----------------|----------|----------------|
|  | 5                         | 65                        | 24.3                                | 140                 | 3.0            | SOT-115J | R0605250L      |
|  | 5                         | 65                        | 24.7                                | 200                 | 3.0            | SOT-115J | R0605250       |
|  | 5                         | 65                        | 29.3                                | 140                 | 3.0            | SOT-115J | R0605300L      |
|  | 5                         | 65                        | 29.3                                | 200                 | 2.5            | SOT-115J | R0605300       |
|  | 5                         | 65                        | 40.0                                | 160                 | 4.5            | SOT-115J | R0605400L      |
|  | 5                         | 100                       | 24.6                                | 140                 | 3.4            | SOT-115J | R1005250L      |
|  | 5                         | 100                       | 29.3                                | 140                 | 3.0            | SOT-115J | R1005300L      |
|  | 5                         | 200                       | 19.5                                | 360                 | 5.0            | SOT-115J | R2005200P12 *  |
|  | 5                         | 200                       | 23.5                                | 360                 | 5.0            | SOT-115J | R2005240P12 *  |
|  | 5                         | 200                       | 23.7                                | 235                 | 3.5            | SOT-115J | R2005240       |
|  | 5                         | 200                       | 27.3                                | 140                 | 3.0            | SOT-115J | R2005280L      |
|  | 5                         | 200                       | 29.3                                | 140                 | 3.0            | SOT-115J | R2005300L      |
|  | 5                         | 200                       | 34.5                                | 160                 | 5.0            | SOT-115J | R2005350L      |
|  | 5                         | 300                       | 24.2                                | 140                 | 3.5            | SOT-115J | R3005250L      |
|  | 5                         | 300                       | 29.1                                | 160                 | 6.3            | SOT-115J | R3005300L      |

\* Operates at 12 V

## Optical Receivers (Forward Path)

- Extremely low distortion and superior return loss
- Low EINC
- Industry-standard SOT115J package



Table 66

|            | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Max Current<br>(mA) | EINC<br>(pA/sqrt (Hz))                                             | Part<br>Number |
|------------|---------------------------|---------------------------|---------------------|--------------------------------------------------------------------|----------------|
|            | 40                        | 870                       | 225                 | 7.5 (40 to 750 MHz), 8.0 (750 to 870 MHz)                          | OS8740230W     |
|            | 40                        | 1000                      | 255                 | 7.5 (40 to 1000 MHz)                                               | OS10040280GW   |
|            | 40                        | 1000                      | 260                 | 5.0 (40 to 400 MHz), 5.5 (400 to 1000 MHz)                         | OS10040320PW   |
| <b>NEW</b> | 45                        | 1200                      | 260                 | 5.0 (50 to 400 MHz), 5.5 (400 to 1000 MHz), 6.3 (1000 to 1200 MHz) | RFOS601X       |

## Optical Receivers (Reverse Path)

- Extremely low distortion and superior return loss
- Low EINC
- Industry-standard SOT115J package



Table 67

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Max Current<br>(mA) | EINC<br>(pA/sqrt (Hz))  | Part<br>Number |
|--|---------------------------|---------------------------|---------------------|-------------------------|----------------|
|  | 5                         | 300                       | 190                 | 7.5 (10 MHz to 300 MHz) | OR3005230W     |
|  | 5                         | 85                        | 105                 | 2.2 (5 MHz to 85 MHz)   | RFOS501X *     |

\* Operates at 12 V

## CATV 75 $\Omega$ Push-Pull Amplifier ICs

- Push-pull topology for excellent CSO
- 12 V amplification performance at 5 V supply voltage
- Positive gain slope available on some models



Table 68

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | Min CSO<br>(dBc)                | Min CTB<br>(dBc)                | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|---------------------------------|---------------------------------|------------------------|-------------------------|---------|----------------|
|  | 5                         | 65                        | 25.0         | 3.0        | 25.0           | 37.5          | -75, 7 Ch Flat<br>+50 dBmV out  | -62, 7 Ch Flat<br>+50 dBmV out  | 5.0 to 12.0            | 138                     | ESOP-8  | CGR-0118Z      |
|  | 5                         | 210                       | 17.0         | 4.0        | 24.0           | 42.0          | -80, 7 Ch Flat<br>+50 dBmV out  | -62, 7 Ch Flat<br>+50 dBmV out  | 5.0                    | 217                     | ESOP-8  | CGR-0218Z      |
|  | 5                         | 870                       | 12.5         | 4.5        | 20.0           | 38.0          | -70, 79 Ch Flat<br>+34 dBmV out | -68, 79 Ch Flat<br>+34 dBmV out | 8.0                    | 150                     | ESOP-8  | CGA-3318Z      |
|  | 48                        | 1002                      | 15.0         | 4.5        | 20.0           | 37.0          | -77, 79 Ch Flat<br>+34 dBmV out | -70, 79 Ch Flat<br>+34 dBmV out | 5.0                    | 150                     | ESOP-8  | CGA-1518Z      |
|  | 48                        | 1002                      | 17.0         | 4.0        | 23.0           | 41.0          | -80, 79 Ch Flat<br>+34 dBmV out | -78, 79 Ch Flat<br>+34 dBmV out | 5.0                    | 215                     | ESOP-8  | CGA-7718Z      |
|  | 50                        | 1000                      | 13.8         | 5.3        | 21.0           | 40.0          | -81, 79 Ch Flat<br>+34 dBmV out | -70, 79 Ch Flat<br>+34 dBmV out | 8.0                    | 150                     | ESOP-8  | CGA-6618Z      |

CATV 75  $\Omega$  Single-Ended Linear Amplifiers

- Excellent linearity
- Low power consumption
- Small footprint



Table 69

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | Min CSO<br>(dBc)                | Min CTB<br>(dBc)                | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|---------------------------------|---------------------------------|------------------------|-------------------------|---------|----------------|
|  | DC                        | 3000                      | 15.0         | 5.3        | 25.5           | 47.0          | -64 133 Ch flat<br>+25 dBmV out | -83 133 Ch Flat<br>+25 dBmV out | 9.0 to 12.0            | 180                     | CJ2BAT0 | RF2317         |
|  | 48                        | 1000                      | 16.0         | 3.5        | 18.0           | 35.0          | -65 79 Ch Flat<br>+25 dBmV out  | -77 79 Ch Flat<br>+25 dBmV out  | 5.0                    | 80                      | SOT-89  | CGB-1089Z      |
|  | 48                        | 1002                      | 16.3         | 3.0        | 18.5           | 36.0          | -64 79 Ch Flat<br>+25 dBmV out  | -86 79 Ch Flat<br>+25 dBmV out  | 5.0                    | 110                     | SOT-89  | RF2389         |
|  | 50                        | 1200                      | 13.0         | 3.0        | 18.5           | 38.5          | -66 110 Ch Flat<br>+28 dBmV out | -84 110 Ch Flat<br>+28 dBmV out | 5.0                    | 110                     | SOT-89  | CXE-1089Z      |

75  $\Omega$  Low Noise Amplifier

- Excellent linearity
- Low noise figure
- Small footprint



Table 70

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|-----------------|----------------|
|  | 5                         | 1500                      | 20.5         | 1.5        | 24.0           | 39.0          | 5.0 to 9.0             | 110                     | QFN 3.0 x 3.0   | RF3827         |
|  | 5                         | 1500                      | 20.5         | 1.5        | 24.0           | 39.0          | 5.0 to 9.0             | 110                     | SOT-89          | CXE-2089Z      |
|  | 5                         | 1500                      | 20.0         | 1.2        | 24.0           | 33.7          | 7.0                    | 120                     | SOP-16          | RF-2360        |
|  | 48                        | 1000                      | 17.5         | 1.2        | 1.3            | 17.5          | 2.7 to 3.3             | 20                      | QFN 2.0 x 2.0   | CXE-2022Z      |

## CATV Set-Top Application-Specific ICs

- Diverse RFICs for set-top specific applications



Table 71

|  | Description                     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB)  | NF<br>(dB) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package<br>(mm) | Part<br>Number |
|--|---------------------------------|---------------------------|---------------------------|---------------|------------|------------------------|-------------------------|-----------------|----------------|
|  | Upstream Programmable Amplifier | 5                         | 65                        | -32.0 to 31.0 | 10.0       | 3.3                    | 70 to 143               | QFN 4.0 x 4.0   | S518324-44Z *  |
|  | AGC Amplifier                   | 30                        | 100                       | 12.0 to 69.0  | 13.0       | 3.3                    | 78                      | MSOP-8          | S510069-28Z    |
|  | Out-of-Band Tuner               | 50                        | 150                       | 77.0          | 13.0       | 3.3                    | 95                      | QFN 3.0 x 3.0   | RFFC0085       |
|  | Out-of-Band Tuner               | 50                        | 150                       | 82.0          | 13.0       | 3.3                    | 117                     | QFN 5.0 x 5.0   | S510065-55Z    |
|  | 3-way Active CATV Splitter      | 50                        | 870                       | 2.0 to 8.0    | 7.0        | 5.0                    | 150                     | TSSOP-16        | CGA-0116Z      |
|  | Broadband MoCA PA               | 300                       | 3000                      | 19.0          | 3.0        | 5.0                    | 100                     | SOT-89          | RF3315         |
|  | IF LNA/Mixer                    | 0                         | 700                       | 70.0          | 5.0        | 5.0                    | 24                      | QFN 4.0 x 4.0   | RF3334         |

\* Operates at DOCSIS 3.0 capable up to 54 dBmV output

## High-Reliability Components for Space and Military

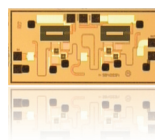
### Standard and custom products available

Wide range of testing capability to meet your needs

- AS9100 Certified
- DOD Cleared
- Class 10000 Clean Room, Class 100 Laminar Flow Hoods

| Standard                    | Application                                                                                                                                                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MIL-PRF-38534 Class H and K | Hybrids                                                                                                                                                     |
| MIL-PRF-38535 Class H and K | Die                                                                                                                                                         |
| MIL-STD-883 Class S and B   | Environmental Test Procedures                                                                                                                               |
| MIL-STD-202                 | Environmental Test Procedures                                                                                                                               |
| MIL-DTL-28837               | Mixers                                                                                                                                                      |
| MIL-DTL-23971               | Power Dividers                                                                                                                                              |
| MIL-T-55631/MIL-STD-202     | Transformers                                                                                                                                                |
| MIL-HDBK-1547               | DOD Electronic Parts, Materials, and Process for Space Vehicles                                                                                             |
| MIL-STD-5011                | MIL-STD-5011                                                                                                                                                |
|                             | <ul style="list-style-type: none"> <li>• Potting Material is STYCAST EFF-15, Emerson &amp; Cumming</li> <li>• Non Conductive Epoxy Ablebond 84-3</li> </ul> |

- Complete reliability and analysis lab
- Assembly and test in Class 100 environment
- Full in-house production and test capabilities



## High-Reliability VCOs

- Low phase noise
- Optimized tuning sensitivity
- Custom products available

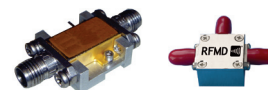


Table 72

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Phase Noise<br>(dBc/Hz)<br>at 10 kHz | Phase Noise<br>(dBc/Hz)<br>at 100 kHz | P <sub>OUT</sub><br>(dBm) | Package         | Part<br>Number            |
|-----|---------------------------|---------------------------|--------------------------------------|---------------------------------------|---------------------------|-----------------|---------------------------|
|     | 25                        | 50                        | -115.0                               | -135.0                                | 12.5                      | TO-8            | VCO-102 / VCO-102TC       |
|     | 25                        | 50                        | -115.0                               | -135.0                                | 12.5                      | SMT             | VCO-102SMT / VCO-102TCSMT |
| NEW | 25                        | 50                        | -115.0                               | -135.0                                | 12.5                      | SMA Conn Module | VCO-102S / VCO-102TCS     |
|     | 40                        | 809                       | -115.0                               | -133.0                                | 12.5                      | TO-8            | VCO-113 / VCO-113TC       |
|     | 40                        | 809                       | -115.0                               | -133.0                                | 12.5                      | SMT             | VCO-113SMT / VCO-113TCSMT |
| NEW | 40                        | 809                       | -115.0                               | -133.0                                | 12.5                      | SMA Conn Module | VCO-113S / VCO-113TCS     |
|     | 50                        | 100                       | -109.0                               | -128.0                                | 12.5                      | TO-8            | VCO-103 / VCO-103TC       |
|     | 50                        | 100                       | -109.0                               | -128.0                                | 12.5                      | SMT             | VCO-103SMT / VCO-103TCSMT |
| NEW | 50                        | 100                       | -109.0                               | -128.0                                | 12.5                      | SMA Conn Module | VCO-103S / VCO-103TCS     |
|     | 60                        | 120                       | -110.0                               | -130.0                                | 12.5                      | TO-8            | VCO-114 / VCO-114TC       |
|     | 60                        | 120                       | -110.0                               | -130.0                                | 12.5                      | SMT             | VCO-114SMT / VCO-114TCSMT |
| NEW | 60                        | 120                       | -110.0                               | -130.0                                | 12.5                      | SMA Conn Module | VCO-114S / VCO-114TCS     |
|     | 100                       | 200                       | -99.0                                | -122.0                                | 12.5                      | TO-8            | VCO-104 / VCO-104TC       |
|     | 100                       | 200                       | -99.0                                | -122.0                                | 12.5                      | SMT             | VCO-104SMT / VCO-104TCSMT |
| NEW | 100                       | 200                       | -99.0                                | -122.0                                | 12.5                      | SMA Conn Module | VCO-104S / VCO-104TCS     |
|     | 100                       | 200                       | -112.0                               | -135.0                                | 13.0                      | TO-8            | VCO-204 / VCO-204TC       |
|     | 100                       | 200                       | -112.0                               | -135.0                                | 13.0                      | SMT             | VCO-204SMT / VCO-204TCSMT |
| NEW | 100                       | 200                       | -112.0                               | -135.0                                | 13.0                      | SMA Conn Module | VCO-204S / VCO-204TCS     |
|     | 150                       | 300                       | -100.0                               | -120.0                                | 12.5                      | TO-8            | VCO-116 / VCO-116TC       |
|     | 150                       | 300                       | -100.0                               | -120.0                                | 12.5                      | SMT             | VCO-116SMT / VCO-116TCSMT |
| NEW | 150                       | 300                       | -100.0                               | -120.0                                | 12.5                      | SMA Conn Module | VCO-116S / VCO-116TCS     |
|     | 150                       | 300                       | -110.0                               | -130.0                                | 13.0                      | TO-8            | VCO-216 / VCO-216TC       |
|     | 150                       | 300                       | -110.0                               | -130.0                                | 13.0                      | SMT             | VCO-216SMT / VCO-216TCSMT |
| NEW | 150                       | 300                       | -110.0                               | -130.0                                | 13.0                      | SMA Conn Module | VCO-216S / VCO-216TCS     |
|     | 200                       | 400                       | -97.0                                | -120.0                                | 12.5                      | TO-8            | VCO-105 / VCO-105TC       |
|     | 200                       | 400                       | -97.0                                | -120.0                                | 12.5                      | SMT             | VCO-105SMT / VCO-105TCSMT |
| NEW | 200                       | 400                       | -97.0                                | -120.0                                | 12.5                      | SMA Conn Module | VCO-105S / VCO-105TCS     |
|     | 200                       | 400                       | -105.0                               | -130.0                                | 12.0                      | TO-8            | VCO-205 / VCO-205TC       |
|     | 200                       | 400                       | -105.0                               | -130.0                                | 12.0                      | SMT             | VCO-205SMT / VCO-205TCSMT |
| NEW | 200                       | 400                       | -105.0                               | -130.0                                | 12.0                      | SMA Conn Module | VCO-205S / VCO-205TCS     |
|     | 200                       | 400                       | -102.0                               | -125.0                                | 11.0                      | TO-8            | VCO-305 / VCO-305TC       |
|     | 200                       | 400                       | -102.0                               | -125.0                                | 11.0                      | SMT             | VCO-305SMT / VCO-305TCSMT |
| NEW | 200                       | 400                       | -102.0                               | -125.0                                | 11.0                      | SMA Conn Module | VCO-305S / VCO-305TCS     |
|     | 250                       | 500                       | -100.0                               | -123.0                                | 13.0                      | TO-8            | VCO-118 / VCO-118TC       |
|     | 250                       | 500                       | -100.0                               | -123.0                                | 13.0                      | SMT             | VCO-118SMT / VCO-118TCSMT |
| NEW | 250                       | 500                       | -100.0                               | -123.0                                | 13.0                      | SMA Conn Module | VCO-118S / VCO-118TCS     |

Continued on page 33.

## High-Reliability VCOs continued

Table 72 continued

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Phase Noise<br>(dBc/Hz)<br>at 10 kHz | Phase Noise<br>(dBc/Hz)<br>at 100 kHz | P <sub>OUT</sub><br>(dBm) | Package         | Part<br>Number              |
|-----|---------------------------|---------------------------|--------------------------------------|---------------------------------------|---------------------------|-----------------|-----------------------------|
|     | 300                       | 600                       | -100.0                               | -122.0                                | 13.0                      | TO-8            | VCO-117 / VCO-117TC         |
|     | 300                       | 600                       | -100.0                               | -122.0                                | 13.0                      | SMT             | VCO-117SMT / VCO-117TCSMT   |
| NEW | 300                       | 600                       | -100.0                               | -122.0                                | 13.0                      | SMA Conn Module | VCO-117S / VCO-117TCS       |
|     | 400                       | 800                       | -95.0                                | -120.0                                | 12.5                      | TO-8            | VCO-106 / VCO-106TC         |
|     | 400                       | 800                       | -95.0                                | -120.0                                | 12.5                      | SMT             | VCO-106SMT / VCO-106TCSMT   |
| NEW | 400                       | 800                       | -95.0                                | -120.0                                | 12.5                      | SMA Conn Module | VCO-106S / VCO-106TCS       |
|     | 400                       | 800                       | -100.0                               | -125.0                                | 15.0                      | TO-8            | VCO-206 / VCO-206102TC      |
|     | 400                       | 800                       | -100.0                               | -125.0                                | 15.0                      | SMT             | VCO-206SMT / VCO-206TCSMT   |
| NEW | 400                       | 800                       | -100.0                               | -125.0                                | 15.0                      | SMA Conn Module | VCO-206S / VCO-206TCS       |
|     | 500                       | 1000                      | -92.0                                | -117.0                                | 13.5                      | TO-8            | VCO-107 / VCO-107TC         |
|     | 500                       | 1000                      | -92.0                                | -117.0                                | 13.5                      | SMT             | VCO-107SMT / VCO-107TCSMT   |
| NEW | 500                       | 1000                      | -92.0                                | -117.0                                | 13.5                      | SMA Conn Module | VCO-107S / VCO-107TCS       |
|     | 600                       | 1200                      | -90.0                                | -113.0                                | 13.0                      | TO-8            | VCO-120 / VCO-120TC         |
|     | 600                       | 1200                      | -90.0                                | -113.0                                | 13.0                      | SMT             | VCO-120SMT / VCO-120TCSMT   |
| NEW | 600                       | 1200                      | -90.0                                | -113.0                                | 13.0                      | SMA Conn Module | VCO-120S / VCO-120TCS       |
|     | 700                       | 1400                      | -88.0                                | -115.0                                | 13.0                      | TO-8            | VCO-121 / VCO-121TC         |
|     | 700                       | 1400                      | -88.0                                | -115.0                                | 13.0                      | SMT             | VCO-121SMT / VCO-121TCSMT   |
| NEW | 700                       | 1400                      | -88.0                                | -115.0                                | 13.0                      | SMA Conn Module | VCO-121S / VCO-121TCS       |
|     | 800                       | 1600                      | -92.0                                | -115.0                                | 13.0                      | TO-8            | VCO-108 / VCO-108TC         |
|     | 800                       | 1600                      | -92.0                                | -115.0                                | 13.0                      | SMT             | VCO-108SMT / VCO-108TCSMT   |
| NEW | 800                       | 1600                      | -92.0                                | -115.0                                | 13.0                      | SMA Conn Module | VCO-108S / VCO-108TCS       |
|     | 900                       | 1800                      | -90.0                                | -112.0                                | 12.5                      | TO-8            | VCO-109 / VCO-109TC         |
|     | 900                       | 1800                      | -90.0                                | -112.0                                | 12.5                      | SMT             | VCO-109SMT / VCO-109TCSMT   |
| NEW | 900                       | 1800                      | -90.0                                | -112.0                                | 12.5                      | SMA Conn Module | VCO-109S / VCO-109TCS       |
|     | 1000                      | 2000                      | -88.0                                | -112.0                                | 13.0                      | TO-8            | VCO-110 / VCO-110TC         |
|     | 1000                      | 2000                      | -88.0                                | -112.0                                | 13.0                      | SMT             | VCO-110SMT / VCO-110TCSMT   |
| NEW | 1000                      | 2000                      | -88.0                                | -112.0                                | 13.0                      | SMA Conn Module | VCO-110S / VCO-110TCS       |
|     | 1500                      | 2725                      | -78.0                                | -100.0                                | 12.0                      | TO-8            | VCO-111 / VCO-111TC         |
|     | 1500                      | 2725                      | -78.0                                | -100.0                                | 12.0                      | SMT             | VCO-111SMT / VCO-111TCSMT   |
| NEW | 1500                      | 2725                      | -78.0                                | -100.0                                | 12.0                      | SMA Conn Module | VCO-111S / VCO-111TCS       |
|     | 2000                      | 3200                      | -85.0                                | -105.0                                | 12.5                      | TO-8            | VCO-112 / VCO-112TC         |
|     | 2000                      | 3200                      | -85.0                                | -105.0                                | 12.5                      | SMT             | VCO-112SMT / VCO-112TCSMT   |
| NEW | 2000                      | 3200                      | -85.0                                | -105.0                                | 12.5                      | SMA Conn Module | VCO-112S / VCO-112TCS       |
|     | 2500                      | 4000                      | -84.0                                | -106.0                                | 0.5                       | TO-8            | VCO-215 / VCO-215TC         |
|     | 2500                      | 4000                      | -84.0                                | -106.0                                | 0.5                       | SMT             | VCO-215SMT / VCO-215TCSMT   |
| NEW | 2500                      | 4000                      | -84.0                                | -106.0                                | 0.5                       | SMA Conn Module | VCO-215S / VCO-215TCS       |
|     | 2700                      | 3200                      | -90.0                                | -115.0                                | 1.0                       | TO-8            | VCO-500 / VCO-500TC         |
|     | 2700                      | 3200                      | -90.0                                | -115.0                                | 1.0                       | SMT             | VCO-500SMT / VCO-500TCSMT   |
| NEW | 2700                      | 3200                      | -90.0                                | -115.0                                | 1.0                       | SMA Conn Module | VCO-500S / VCO-500TCS       |
|     | 3000                      | 4800                      | -67.0                                | -97.0                                 | 13.0                      | TO-8            | VCO-119 / VCO-119TC         |
|     | 3000                      | 4800                      | -67.0                                | -97.0                                 | 13.0                      | SMT             | VCO-119SMT / VCO-119TCSMT   |
| NEW | 3000                      | 4800                      | -67.0                                | -97.0                                 | 13.0                      | SMA Conn Module | VCO-119S / VCO-119TCS       |
|     | 3000                      | 4800                      | -81.0                                | -103.0                                | 0.5                       | TO-8            | VCO-219 / VCO-219TC         |
|     | 3000                      | 4800                      | -81.0                                | -103.0                                | 0.5                       | SMT             | VCO-219SMT / VCO-219TCSMT   |
| NEW | 3000                      | 4800                      | -81.0                                | -103.0                                | 0.5                       | SMA Conn Module | VCO-219S / VCO-219TCS       |
|     | 3490                      | 3510                      | -100.0                               | -122.0                                | 0.5                       | TO-8            | VCO-3500 / VCO-3500TC       |
|     | 3490                      | 3510                      | -100.0                               | -122.0                                | 0.5                       | SMT             | VCO-3500SMT / VCO-3500TCSMT |
| NEW | 3490                      | 3510                      | -100.0                               | -122.0                                | 0.5                       | SMA Conn Module | VCO-3500S / VCO-3500TCS     |
|     | 4490                      | 5510                      | -98.0                                | -120.0                                | 1.5                       | TO-8            | VCO-4500 / VCO-4500TC       |
|     | 4490                      | 5510                      | -98.0                                | -120.0                                | 1.5                       | SMT             | VCO-4500SMT / VCO-4500TCSMT |
| NEW | 4490                      | 5510                      | -98.0                                | -120.0                                | 1.5                       | SMA Conn Module | VCO-4500S / VCO-4500TCS     |
|     | 4700                      | 5100                      | -81.0                                | -105.0                                | 0.0                       | TO-8            | VCO-510 / VCO-510TC         |
|     | 4700                      | 5100                      | -81.0                                | -105.0                                | 0.0                       | SMT             | VCO-510SMT / VCO-510TCSMT   |
| NEW | 4700                      | 5100                      | -81.0                                | -105.0                                | 0.0                       | SMA Conn Module | VCO-510S / VCO-510TCS       |
|     | 4900                      | 5900                      | -77.0                                | -102.0                                | -1.0                      | TO-8            | VCO-520 / VCO-520TC         |
|     | 4900                      | 5900                      | -77.0                                | -102.0                                | -1.0                      | SMT             | VCO-520SMT / VCO-520TCSMT   |
| NEW | 4900                      | 5900                      | -77.0                                | -102.0                                | -1.0                      | SMA Conn Module | VCO-520S / VCO-520TCS       |
|     | 5490                      | 5510                      | -96.0                                | -118.0                                | 0.5                       | TO-8            | VCO-5500 / VCO-5500TC       |
|     | 5490                      | 5510                      | -96.0                                | -118.0                                | 0.5                       | SMT             | VCO-5500SMT / VCO-5500TCSMT |
| NEW | 5490                      | 5510                      | -96.0                                | -118.0                                | 0.5                       | SMA Conn Module | VCO-5500S / VCO-5500TCS     |
|     | 5700                      | 6700                      | -74.0                                | -99.0                                 | -1.0                      | TO-8            | VCO-530 / VCO-530TC         |
|     | 5700                      | 6700                      | -74.0                                | -99.0                                 | -1.0                      | SMT             | VCO-530SMT / VCO-530TCSMT   |
| NEW | 5700                      | 6700                      | -74.0                                | -99.0                                 | -1.0                      | SMA Conn Module | VCO-530S / VCO-530TCS       |

## High-Reliability Mixers

- Wide bandwidth, low conversion loss
- Rugged packaging

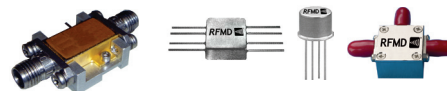


Table 73

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | IF Freq Range<br>(Min) (MHz) | IF Freq Range<br>(Max) (MHz) | Conversion<br>Loss<br>(dB) | IIP3<br>(dBm) | Isolation<br>(dB) | Package         | Part<br>Number |
|-----|---------------------------|---------------------------|------------------------------|------------------------------|----------------------------|---------------|-------------------|-----------------|----------------|
|     | 0.4                       | 400                       | DC                           | 100                          | 5.3                        | 10.0          | 30.0              | TO-5            | DBM-141        |
|     | 0.5                       | 500                       | DC                           | 100                          | 7.5                        | 13.0          | 25.0              | SMT             | CM-1           |
|     | 0.5                       | 500                       | DC                           | 400                          | 7.0                        | 25.0          | 30.0              | SMT             | CM-1H8         |
| NEW | 0.5                       | 500                       | DC                           | 500                          | 7.0                        | 13.0          | 45.0              | BNC Conn Module | DBM-100B       |
|     | 0.5                       | 450                       | DC                           | 100                          | 6.0                        | 30.0          | 25.0              | SMT             | DBM-188        |
| NEW | 1.0                       | 3000                      | 10                           | 500                          | 9.0                        | 10.0          | 20.0              | SMA Conn Module | DBM-400        |
|     | 1.0                       | 3500                      | 50                           | 800                          | 8.5                        | 17.0          | 20.0              | SMA Conn Module | DBM-700        |
|     | 1.0                       | 3500                      | 50                           | 800                          | 8.5                        | 20.0          | 15.0              | Flatpack        | DBM-700H       |
|     | 1.0                       | 3500                      | 50                           | 800                          | 8.5                        | 17.0          | 20.0              | TO-8            | DBM-701        |
| NEW | 1.0                       | 3500                      | 50                           | 800                          | 8.5                        | 17.0          | 20.0              | SMA Conn Module | DBM-701S       |
|     | 2.0                       | 3000                      | 5                            | 100                          | 8.0                        | 20.0          | 20.0              | Flatpack        | DBM-184        |
|     | 10.0                      | 1000                      | DC                           | 200                          | 7.5                        | 13.0          | 20.0              | SMT             | CM-2           |
|     | 10.0                      | 1000                      | DC                           | 500                          | 7.0                        | 25.0          | 25.0              | SMT             | CM-2H8         |
|     | 10.0                      | 1000                      | DC                           | 1000                         | 7.5                        | 10.0          | 30.0              | Flatpack        | DBM-142        |
|     | 10.0                      | 1000                      | DC                           | 250                          | 9.0                        | 7.0           | 15.0              | Flatpack        | DBM-190        |
|     | 5.0                       | 1500                      | DC                           | 300                          | 5.8                        | 25.0          | 30.0              | TO-8            | DBM-176        |
|     | 5.0                       | 1500                      | DC                           | 500                          | 5.9                        | 10.0          | 35.0              | TO-8            | DBM-177        |
|     | 10.0                      | 1500                      | DC                           | 1000                         | 8.5                        | 10.0          | 35.0              | Flatpack        | DBM-143        |
|     | 10.0                      | 1500                      | DC                           | 500                          | 7.2                        | 12.0          | 30.0              | Flatpack        | DBM-145        |
|     | 10.0                      | 1500                      | DC                           | 500                          | 6.3                        | 25.0          | 30.0              | Flatpack        | DBM-178        |
|     | 10.0                      | 4000                      | 50                           | 400                          | 8.5                        | 20.0          | 30.0              | Flatpack        | DBM-183        |
|     | 10.0                      | 4000                      | 50                           | 1000                         | 8.5                        | 17.0          | 15.0              | TO-8            | DBM-186        |
| NEW | 50.0                      | 13000                     | 5                            | 5000                         | 8.0                        | 15.0          | 25.0              | SMA Conn Module | DBM-1200       |
| NEW | 200.0                     | 18000                     | 5                            | 6000                         | 9.0                        | 16.0          | 25.0              | SMA Conn Module | DBM-1800       |
|     | 250.0                     | 5000                      | 5                            | 400                          | 9.5                        | 20.0          | 15.0              | Flatpack        | DBM-600        |
| NEW | 300.0                     | 1500                      | DC                           | 700                          | 6.0                        | 12.0          | 30.0              | BNC Conn Module | DBM-300B       |
|     | 500.0                     | 8000                      | 5                            | 1000                         | 10.5                       | 16.0          | 17.0              | Flatpack        | DBM-601        |
| NEW | 500.0                     | 8000                      | 5                            | 1000                         | 10.5                       | 16.0          | 17.0              | SMA Conn Module | DBM-601S       |
|     | 600.0                     | 2000                      | DC                           | 500                          | 7.1                        | 13.0          | 35.0              | Flatpack        | DBM-182        |
|     | 600.0                     | 2000                      | DC                           | 1000                         | 7.5                        | 11.0          | 15.0              | TO-5            | DBM-185        |
| NEW | 1700.0                    | 4200                      | DC                           | 100                          | 6.5                        | 8.0           | 10.0              | SMA Conn Module | DBM-500        |

## High-Reliability Power Dividers

- Low insertion loss
- Outstanding amplitude and phase balance
- Miniature flatpack packaging style

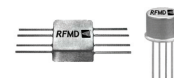


Table 74

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Insertion Loss<br>(dB) | Isolation<br>(dB) | VSWR   | Package                  | Type                  | Part<br>Number |
|-----|---------------------------|---------------------------|------------------------|-------------------|--------|--------------------------|-----------------------|----------------|
|     | 1.00                      | 300                       | 0.90                   | 17.0              | 1.75:1 | Leaded                   | Impedance Transformer | HYB-1          |
|     | 0.50                      | 150                       | 0.80                   | 20.0              | 1.75:1 | Leaded                   | Impedance Transformer | HYB-3          |
|     | 0.25                      | 200                       | 0.65                   | 20.0              | 1.75:1 | TO-5                     | Impedance Transformer | HYB-11         |
|     | 1.00                      | 200                       | 0.50                   | 25.0              | 1.5:1  | Flatpack                 | Impedance Transformer | HYB-16         |
|     | 10.00                     | 500                       | 0.30                   | 35.0              | 1.2:1  | Flatpack                 | 2-Way Power Divider   | PS-2-500F      |
|     | 5.00                      | 1000                      | 0.30                   | 35.0              | 1.2:1  | Flatpack                 | 2-Way Power Divider   | PS-2-1000F     |
|     | 5.00                      | 2000                      | 0.40                   | 25.0              | 1.3:1  | Flatpack                 | 2-Way Power Divider   | PS-2-2000F     |
|     | 20.00                     | 2000                      | 1.00                   | 25.0              | —      | Flatpack                 | 2-Way Power Divider   | PS-2-2000AF    |
| NEW | 5.00                      | 2000                      | 0.75                   | 15.0              | 1.75:1 | SMA Connectorized Module | 2-Way Power Divider   | PS-2-2000S     |
|     | 20.00                     | 4000                      | 0.40                   | 25.0              | 1.3:1  | Flatpack                 | 2-Way Power Divider   | PS-2-4000F     |
| NEW | 20.00                     | 4000                      | 0.80                   | 23.0              | 1.3:1  | SMA Connectorized Module | 2-Way Power Divider   | PS-2-4000S     |
|     | 1.00                      | 500                       | 0.30                   | 30.0              | 1.3:1  | Flatpack                 | 3-Way Power Divider   | PS-3-500F      |
| NEW | 25.00                     | 550                       | 0.50                   | 25.0              | 1.75:1 | SMA Connectorized Module | 3-Way Power Divider   | PS-3-500S      |
|     | 10.00                     | 1000                      | 0.40                   | 30.0              | 1.3:1  | Flatpack                 | 3-Way Power Divider   | PS-3-1000F     |
| NEW | 25.00                     | 1000                      | 0.50                   | 17.0              | 1.75:1 | SMA Connectorized Module | 3-Way Power Divider   | PS-3-1000S     |
|     | 1.00                      | 500                       | 0.30                   | 30.0              | 1.3:1  | Flatpack                 | 4-Way Power Divider   | PS-4-500F      |
|     | 25.00                     | 1000                      | 0.50                   | 25.0              | 1.5:1  | Flatpack                 | 4-Way Power Divider   | PS-4-1000F     |
| NEW | 10.00                     | 1000                      | 0.50                   | 15.0              | 1.75:1 | SMA Connectorized Module | 4-Way Power Divider   | PS-4-1000S     |

## High-Reliability Transformers

- Outstanding for harsh environmental conditions
- Low insertion loss with high VSWR

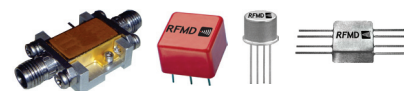


Table 75

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Insertion Loss<br>(dB) | VSWR   | Package         | Part<br>Number |
|-----|---------------------------|---------------------------|------------------------|--------|-----------------|----------------|
|     | 0.25                      | 400                       | 0.50                   | 1.75:1 | Flatpack        | DP-312         |
|     | 0.50                      | 500                       | 1.00                   | 2:1    | Flatpack        | DP-322         |
|     | 0.50                      | 150                       | 0.75                   | 1.5:1  | Flatpack        | DP-330         |
|     | 1.00                      | 500                       | 0.50                   | 1.3:1  | Flatpack        | FP-504         |
|     | 1.00                      | 1000                      | 0.75                   | 1.5:1  | Flatpack        | FP-510         |
|     | 1.00                      | 1200                      | 0.75                   | 1.3:1  | Flatpack        | FP-512         |
|     | 1.00                      | 500                       | 0.50                   | 1.3:1  | Flatpack        | FP-514         |
|     | 1.00                      | 750                       | 0.50                   | 1.3:1  | Flatpack        | FP-518         |
|     | 2.00                      | 750                       | 1.00                   | 1.3:1  | Flatpack        | FP-522         |
|     | 1.00                      | 250                       | 0.75                   | 1.3:1  | Flatpack        | FP-528         |
|     | 1.00                      | 100                       | 0.50                   | 1.3:1  | Flatpack        | FP-530         |
|     | 1.00                      | 80                        | 1.00                   | 2:1    | Flatpack        | FP-532         |
|     | 0.50                      | 1000                      | 0.75                   | 2.5:1  | Leaded          | HF-102         |
|     | 0.10                      | 500                       | 0.50                   | 2:1    | Flatpack        | HF-110         |
|     | 0.15                      | 600                       | 0.75                   | 2:1    | Leaded          | HF-112         |
|     | 0.50                      | 400                       | 0.75                   | 2.5:1  | Leaded          | HF-118         |
|     | 1.00                      | 700                       | 1.20                   | 1.5:1  | Leaded          | HF-122         |
|     | 0.50                      | 200                       | 1.00                   | 2.5:1  | Leaded          | HF-128         |
|     | 0.10                      | 80                        | 1.25                   | 2:1    | Leaded          | HF-130         |
|     | 0.10                      | 100                       | 1.50                   | 1.5:1  | Leaded          | HF-132         |
|     | 0.01                      | 100                       | 0.50                   | 1.5:1  | Leaded          | LF-402         |
|     | 0.01                      | 100                       | 0.50                   | 2:1    | Leaded          | LF-410         |
|     | 0.01                      | 25                        | 0.50                   | 1.5:1  | Leaded          | LF-412         |
| NEW | 0.01                      | 25                        | 0.50                   | 1.5:1  | SMA Conn Module | LF-412S        |
|     | 0.01                      | 100                       | 0.50                   | 2:1    | Leaded          | LF-418         |
| NEW | 0.01                      | 100                       | 0.50                   | 2:1    | SMA Conn Module | LF-418S        |
|     | 0.01                      | 80                        | 0.75                   | 1.3:1  | Leaded          | LF-422         |
| NEW | 0.01                      | 80                        | 0.75                   | 1.3:1  | SMA Conn Module | LF-422S        |
|     | 0.01                      | 50                        | 1.00                   | 1.5:1  | Leaded          | LF-428         |
| NEW | 0.01                      | 50                        | 1.00                   | 1.5:1  | SMA Conn Module | LF-428S        |
|     | 0.01                      | 25                        | 0.75                   | 1.5:1  | Leaded          | LF-432         |
| NEW | 0.01                      | 25                        | 0.75                   | 1.3:1  | SMA Conn Module | LF-432S        |
|     | 0.01                      | 10                        | 0.75                   | 2:1    | Leaded          | LF-452         |
|     | 0.10                      | 5                         | 1.00                   | 2.5:1  | Leaded          | LF-454         |
|     | 0.50                      | 650                       | 0.50                   | 1.75:1 | TO-5            | TO-212         |
|     | 0.50                      | 500                       | 0.75                   | 2.25:1 | TO-5            | TO-218         |
|     | 0.50                      | 450                       | 1.25                   | 2.25:1 | TO-5            | TO-222         |
|     | 0.25                      | 200                       | 0.75                   | 2:1    | TO-5            | TO-228         |
|     | 0.50                      | 100                       | 0.75                   | 2.5:1  | TO-5            | TO-230         |
|     | 0.50                      | 100                       | 0.75                   | 2.25:1 | TO-5            | TO-232         |

## High-Reliability Amplifiers

- Wide bandwidth, low voltage amplifiers
- Packaged and tested for harsh environments

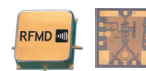


Table 76

|  | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | Gain<br>(dB) | NF<br>(dB) | OP1dB<br>(dBm) | OIP3<br>(dBm) | V <sub>cc</sub><br>(V) | I <sub>cc</sub><br>(mA) | Package | Part<br>Number |
|--|---------------------------|---------------------------|--------------|------------|----------------|---------------|------------------------|-------------------------|---------|----------------|
|  | 50                        | 850                       | 20.1         | 2.9        | 19.5           | 40.3          | 5.0                    | 81                      | SMT 2   | SBB-2082S      |
|  | 50                        | 6000                      | 15.6         | 4.6        | 19.1           | 37.0          | 5.0                    | 77                      | SMT 2   | SBB-4082S      |
|  | 50                        | 6000                      | 16.0         | 3.9        | 15.0           | 29.0          | 5.0                    | 42                      | SMT 2   | SBB-3082S      |
|  | 700                       | 2200                      | 14.4         | 6.0        | 32.4           | 50.5          | 5.0                    | 435                     | Die     | SPB-2054S      |

## 2G Cellular Power Amplifier Based Products

- Low current, complete power control solution
- Multiple-band PA components
- No external components or routing required



Table 77

| Description                                                                                      | Transmit Band | Number of Receive Ports | Package (mm)             | Typical Output Power (Low Band) (dBm) | Typical Output Power (High Band) (dBm) | Nominal Battery Voltage | Part Number |
|--------------------------------------------------------------------------------------------------|---------------|-------------------------|--------------------------|---------------------------------------|----------------------------------------|-------------------------|-------------|
| Dual-Band GSM900/DCS Power Amp Module                                                            | Dual-Band EU  | —                       | Module 6.0 x 6.0         | 34.5                                  | 32.0                                   | 3.5                     | RF3166D     |
| Quad-Band GSM850/GSM900/DCS/PCS Power Amp Module                                                 | Quad-Band     | —                       | Module 6.0 x 6.0         | 35.0                                  | 33.0                                   | 3.5                     | RF3166      |
| Quad-Band GSM850/GSM900/DCS/PCS Power Amp Module                                                 | Quad-Band     | —                       | Module 6.0 x 6.0         | 34.8                                  | 32.7                                   | 3.5                     | RF3196      |
| Quad-Band GSM850/GSM900/DCS/PCS EDGE Power Amp Module                                            | Quad-Band     | —                       | Module 6.0 x 6.0         | 35.0                                  | 33.0                                   | 3.6                     | RF3158      |
| Quad-Band GSM850/GSM900/DCS/PCS EDGE Power Amp Module                                            | Quad-Band     | —                       | Module 6.0 x 6.0         | 35.0                                  | 33.5                                   | 3.6                     | RF3159      |
| Quad-Band GSM850/GSM900/DCS/PCS EDGE Power Amp Module                                            | Quad-Band     | —                       | Module 5.0 x 5.0 x 1.0   | 35.0                                  | 33.0                                   | 3.6                     | RF3189      |
| Quad-Band GSM850/GSM900/DCS/PCS LS Polar Mod Power Amp Module                                    | Quad-Band     | —                       | Module 6.0 x 6.0         | 35.0                                  | 33.0                                   | 3.6                     | RF3161      |
| Quad-Band GSM850/EGSM900/DCS1800/PCS1900 LS Polar Mod Tx, Quad-Band Rx Module with 2 WCDMA Ports | Quad-Band     | 4 Rx, 2 TRx             | Module 7.0 x 6.0 x 1.0   | 33.5                                  | 31.0                                   | 3.6                     | RF3171      |
| Dual-Band GSM900/DCS1800 Tx, Dual-Band Rx Module                                                 | Dual-Band EU  | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7166      |
| Dual-Band GSM850/PCS1900 Tx, Dual-Band Rx Module                                                 | Dual-Band AM  | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7167      |
| Dual-Band GSM900/DCS1800 Tx, Dual-Band Rx Module                                                 | Dual-Band EU  | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7168      |
| Dual-Band GSM850/PCS1900 Tx, Dual-Band Rx Module                                                 | Dual-Band AM  | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7169      |
| Quad-Band GSM850/EGSM900/DCS1800/PCS1900 Tx, Dual-Band Rx Module                                 | Quad-Band     | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7170      |
| Quad-Band GSM850/EGSM900/DCS1800/PCS1900 Tx, Dual-Band RX Module                                 | Quad-Band     | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7171      |
| Quad-Band GSM850/EGSM900/DCS1800/PCS1900 Tx, Dual-Band Rx Module                                 | Quad-Band     | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7172      |
| Dual-Band GSM900/DCS1800/EDGE Tx, Dual-Band Rx Module                                            | Dual-Band EU  | 2 Rx                    | Module 6.63 x 5.24 x 1.0 | 33.7                                  | 31.0                                   | 3.6                     | RF9801      |
| Dual-Band GSM900/DCS1800 Transmit Module with WCDMA Port                                         | Dual-Band EU  | 2 Rx, 1 TRx             | Module 6.63 x 5.24 x 1.0 | 33.8                                  | 31.2                                   | 3.5                     | RF3231      |
| Quad-Band GSM850/GSM900/DCS/PCS TxM with Integrated Receive SAW Filters                          | Quad-Band     | 4 Rx                    | Module 6.63 x 7.25 x 1.0 | 33.7                                  | 31.5                                   | 3.5                     | RF7178      |

## 3G Cellular Handset Application Components

- High-power, high-efficiency, linear PA modules
- Optimally designed for 3 V handheld solutions



Table 78

| Description                                                       | Transmit Band                  | Package (mm)           | High Band Output Power (dBm) | Low Band Output Power (dBm) | V <sub>CC</sub> (V) | Part Number |
|-------------------------------------------------------------------|--------------------------------|------------------------|------------------------------|-----------------------------|---------------------|-------------|
| 3 V W-CDMA Linear Power Amp Module with Integrated Coupler        | 1 (with 20 dB coupler)         | QFN 3.0 x 3.0 x 0.85   | 28.0                         | —                           | 3.4                 | RF3267      |
| 3 V W-CDMA Linear Power Amp Module with Power Detector            | 1 (TD-SCDMA-capable 33 and 34) | QFN 3.0 x 3.0 x 0.85   | 28.0                         | —                           | 3.4                 | RF3266      |
| 3 V W-CDMA Linear Power Amp Module                                | 5, 8                           | QFN 3.0 x 3.0 x 0.85   | 28.0                         | —                           | 3.4                 | RF6266      |
| 3 V 1950 MHz UMTS Linear Quadrature Power Amp Module              | 1, 2                           | Module 4.0 x 4.0 x 1.0 | 27.0                         | —                           | 3.4                 | RF6281      |
| 3 V Multi-Band UMTS Linear Quadrature Power Amp Module            | 1, 2, 5, 8                     | Module 5.5 x 6.0 x 1.0 | 27.0                         | —                           | 3.4                 | RF6285      |
| 3 V WCDMA and TD-SCDMA                                            | WCDMA 1<br>TD-SCDMA 33 and 34  | Module 3.0 x 3.0 x 1.0 | 28.0<br>27.5.0               | 19.0                        | 3.4                 | RF7234      |
| 3 V W-CDMA Band 1 Linear PA Module with Integrated Coupler        | 1                              | Module 3.0 x 3.0 x 1.0 | 28.0                         | —                           | 3.4                 | RF7200      |
| 3 V W-CDMA Band 3/4 Linear PA Module with Integrated Coupler      | 3, 4                           | Module 3.0 x 3.0 x 1.0 | 28.0                         | —                           | 3.4                 | RF7203      |
| 3 V W-CDMA Band 2 Linear PA Module with Integrated Coupler        | 2                              | Module 3.0 x 3.0 x 1.0 | 28.5                         | —                           | 3.4                 | RF7206      |
| 3 V W-CDMA Band 11/21 Linear PA Module with Integrated Coupler    | 11, 21                         | Module 3.0 x 3.0 x 1.0 | 28.0                         | —                           | 3.4                 | RF7211      |
| 3 V W-CDMA Dual Band 1/8 Linear PA Module with Integrated Coupler | 1, 8                           | Module 4.0 x 5.0 x 1.0 | 28.0                         | 28.5                        | 3.4                 | RF7201      |
| 3 V W-CDMA Dual Band 2/5 Linear PA Module with Integrated Coupler | 2, 5                           | Module 4.0 x 5.0 x 1.0 | 28.5                         | 28.0                        | 3.4                 | RF7202      |
| 3 V W-CDMA Dual Band 1/5 Linear PA Module with Integrated Coupler | 1, 5                           | Module 4.0 x 5.0 x 1.0 | 28.0                         | 28.0                        | 3.4                 | RF7205      |

## Cellular Power Management Products

- Used in conjunction with power amplifiers in 3 V handheld systems
- Automatic bypass mode
- Variable output voltage



Table 79

| Switching Freq (MHz) | Max I <sub>CC</sub> (mA) | Voltage Range (V) | Efficiency (%) | Package (mm)                               | Part Number |
|----------------------|--------------------------|-------------------|----------------|--------------------------------------------|-------------|
| 2.5                  | 650                      | 3.7               | 96             | 15-Bump WLCSP (4.0 x 4.0 array), 2.0 x 2.0 | RF6280      |

**NOTE:** Cellular LNAs are located in Table 7, page 6. Cellular Switches are located in Table 32, page 15.

## High-Power GaN Unmatched Power Transistors

- Using an advanced 0.5  $\mu\text{m}$  GaN process
- Excellent peak drain efficiency
- Excellent gain flatness over broadband frequency



Table 80

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | SS Gain<br>(dB) | OP3dB<br>(dBm) | Drain Eff<br>(%) | $V_D$<br>(V) | $I_{DQ}$<br>(mA) | Package | Condition    | Part<br>Number |
|-----|---------------------------|---------------------------|-----------------|----------------|------------------|--------------|------------------|---------|--------------|----------------|
| NEW | DC                        | 3000                      | 15.0            | 46.5           | 65.0             | 48           | 130              | RF360-2 | CW at 2.1GHz | RF3931         |
| NEW | DC                        | 3000                      | 14.0            | 48.5           | 65.0             | 48           | 220              | RF360-2 | CW at 2.1GHz | RF3932         |
| NEW | DC                        | 3000                      | 14.0            | 50.0           | 60.0             | 48           | 310              | RF360-2 | CW at 2.1GHz | RF3933         |
| NEW | DC                        | 3000                      | 13.0            | 50.8           | 55.0             | 48           | 440              | RF360-2 | CW at 2.1GHz | RF3934         |
| NEW | DC                        | 3000                      | 15.0            | 41.5           | 65.0             | 48           | 90               | Die     | CW at 2.1GHz | RF3930D        |
| NEW | DC                        | 3000                      | 15.0            | 46.5           | 65.0             | 48           | 130              | Die     | CW at 2.1GHz | RF3931D        |
| NEW | DC                        | 3000                      | 14.0            | 48.5           | 60.0             | 48           | 220              | Die     | CW at 2.1GHz | RF3932D        |
| NEW | DC                        | 3000                      | 14.0            | 50.0           | 60.0             | 48           | 310              | Die     | CW at 2.1GHz | RF3933D        |
| NEW | DC                        | 3000                      | 13.0            | 50.8           | 55.0             | 48           | 440              | Die     | CW at 2.1GHz | RF3934D        |

## High-Power GaN Matched Power Transistors

- High peak pulsed power
- High peak drain efficiency
- Optimized I/O match for broadband performance



Table 81

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | SS Gain<br>(dB) | OP3dB<br>(dBm) | Drain Eff<br>(%) | $V_D$<br>(V) | $I_{DQ}$<br>(mA) | Package | Condition                     | Part<br>Number |
|-----|---------------------------|---------------------------|-----------------|----------------|------------------|--------------|------------------|---------|-------------------------------|----------------|
| NEW | 2800                      | 3400                      | 13.0            | 54.8           | 50.0             | 48           | 440              | RF565-2 | 100 $\mu\text{sec}$ PW 10% DC | RF3928         |
| NEW | 1200                      | 1400                      | 15.0            | 55.4           | 60.0             | 48           | 440              | RF565-2 | 100 $\mu\text{sec}$ PW 10% DC | RFHA1020       |

## High-Power GaN Power IC

- Excellent broadband power performance
- High peak power added efficiency
- Small form factor, 50-ohm input match



Table 82

|     | Freq Range<br>(Min) (MHz) | Freq Range<br>(Max) (MHz) | SS Gain<br>(dB) | OP3dB<br>(dBm) | Power-Added<br>Eff<br>(%) | $V_D$<br>(V) | $I_{DQ}$<br>(mA) | Package    | Condition           | Part<br>Number |
|-----|---------------------------|---------------------------|-----------------|----------------|---------------------------|--------------|------------------|------------|---------------------|----------------|
| NEW | 30                        | 2500                      | 11.0            | 39.5           | 40.0                      | 28           | 55               | AIN SOIC-8 | CW Instantaneous BW | RF3826         |
| NEW | 50                        | 1000                      | 18.0            | 42.0           | 60.0                      | 28           | 88               | AIN SOIC-8 | CW Instantaneous BW | RFHA1000       |
| NEW | 30                        | 512                       | 19.0            | 39.5           | 70.0                      | 28           | 55               | AIN SOIC-8 | CW Instantaneous BW | RFHA1003       |
| NEW | 30                        | 2100                      | 13.0            | 44.0           | 45.0                      | 48           | 88               | RF270-10   | CW Instantaneous BW | RF3833         |



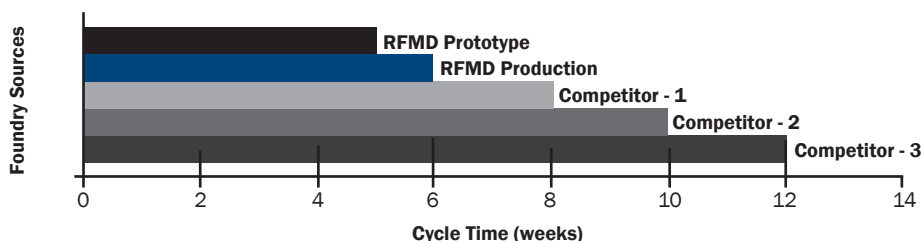
RFMD develops and manufactures unmatched compound semiconductor technologies and is now offering foundry services for our industry-leading 0.5  $\mu\text{m}$  GaN on SiC process. RFMD's world-class manufacturing scale, supported by the largest III-V factory in the world, enables best-in-class cycle times backed by our on-time shipment pledge. RFMD's track record as a high-volume, reliable supplier has earned us "preferred partner" status with the industry's top OEMs while our extraordinary level of customer service continues to set us apart from the competition.

## Applications benefiting from RFMD GaN technology

- Wireless Infrastructure
- Broadband Communications
- Defense Communications and Systems
- CATV Distribution
- SATCOM

RFMD GaN is production ready. It's a mature, robust technology with extraordinary reliability. Compared to GaAs and Si, RFMD GaN has much higher breakdown voltage and power densities, enabling applications not possible with competing technology. RFMD's GaN high power density also allows for smaller devices, reducing the capacitance while enabling high impedances, wider bandwidths, and reduced cost. Additional benefits include reduced circuit complexity, industry-leading efficiency of operation, reduced cooling requirements, and lighter weight.

## RFMD's GaN industry-leading cycle time accelerates time-to-market



**Prototype and shuttle lot cycle time:** 5 weeks (37.5% less than industry average)

**Production lots cycle time:** 6 weeks (25% less than industry average)



For a discussion of RFMD's robust technology roadmap and opportunities, contact our Foundry Services Team: [RFMDFoundryServices@rfmd.com](mailto:RFMDFoundryServices@rfmd.com)

## RFMD Leading with Excellence

- **Process design kits** available for both ADS and Microwave Office
- **Multi-project wafer shuttle** runs available monthly and dedicated mask sets at customer's convenience
- **Secure customer e-business website**
- **Dedicated Foundry Team** provides rigorous firewall between Foundry customers and product lines
- **Committed, robust roadmap** expanding the suite of services and technologies available to foundry customers

## RFMD GaN Multiple Efficiency Benefits

- **Scale**  
GaN built in existing fabs — scale-driven cost
- **Linearity and Bandwidth**  
Improved performance — especially for LTE/WiMAX
- **Green**  
More power efficient per mW of RF power
- **Power and Size**  
More RF power per mm<sup>2</sup>
- **Opex/Capex**  
BOM and running costs reduced — minimized total cost of ownership

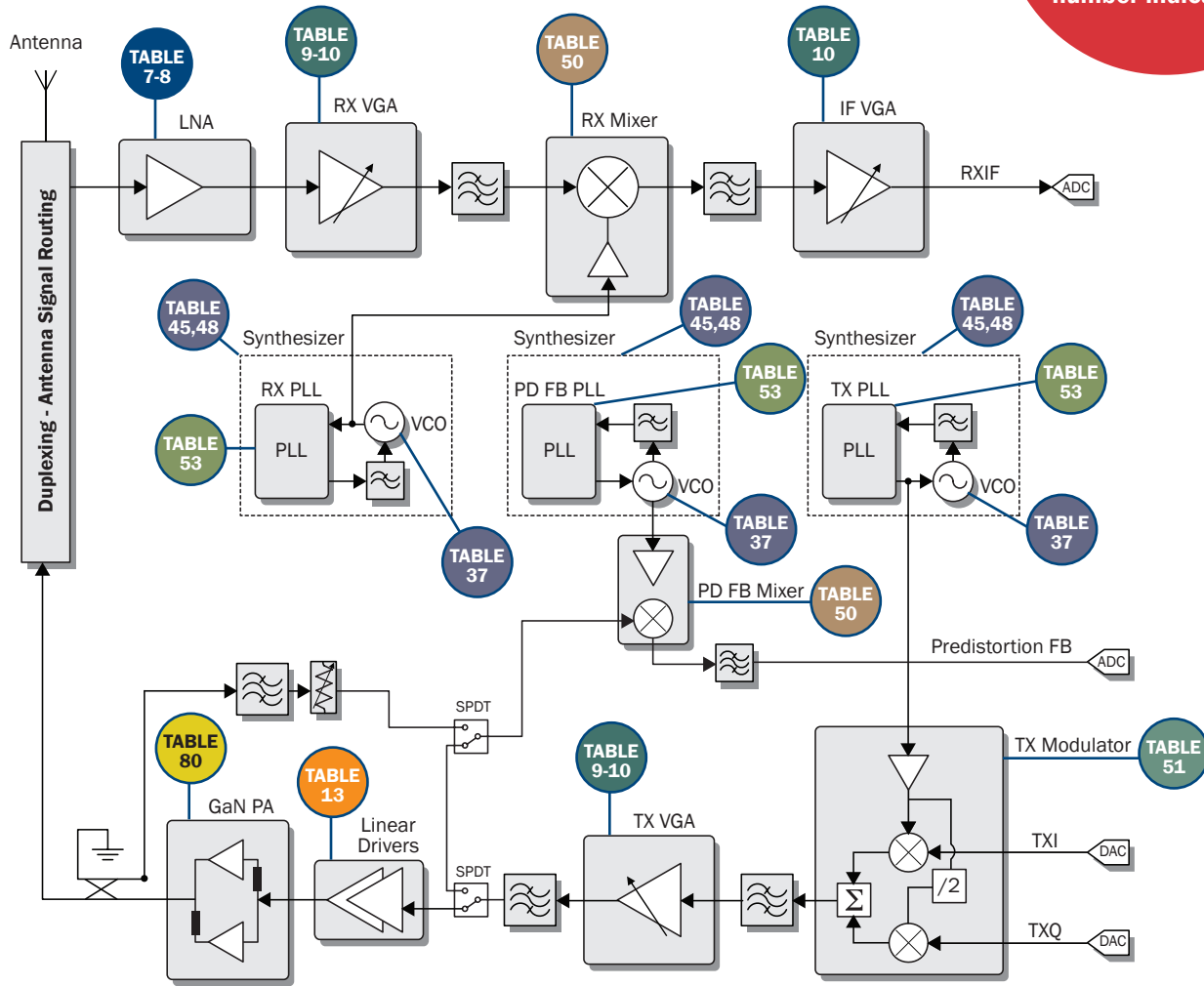
## RFMD MIMIC Technologies

- **GaN 1**  
Gallium Nitride, 48 V, 7.5 W/mm, up to 6 GHz, MTTF >  $1.1 \times 10^7$  hours at  $T_{\text{channel}} = 200^\circ\text{C}$
- **GaN 2**  
Gallium Nitride, 28 V, 5 W/mm, up to 6 GHz, MTTF >  $1.7 \times 10^7$  hours at  $T_{\text{channel}} = 200^\circ\text{C}$
- **IPC3**  
Integrated Passives, 3-layer metal, up to 5  $\mu\text{m}$  thick Au, 135 or 430 pF/mm<sup>2</sup> capacitance density
- **Options**
  - Backside vias
  - AuSn back metal

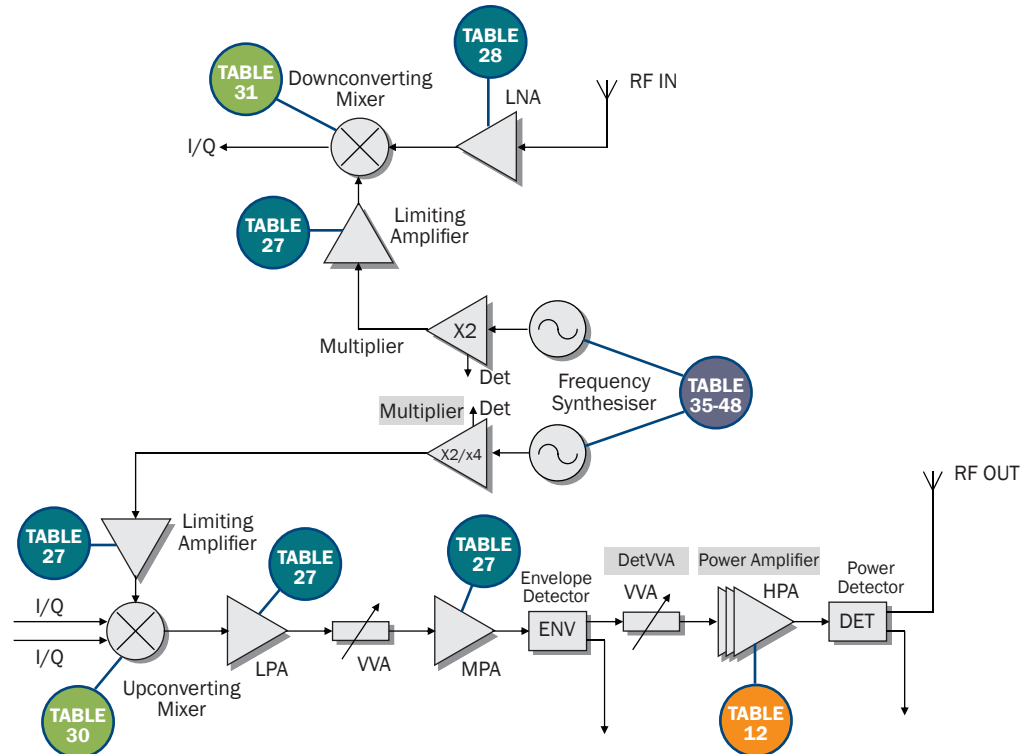
# Wireless Infrastructure

## Cellular Infrastructure Base Station

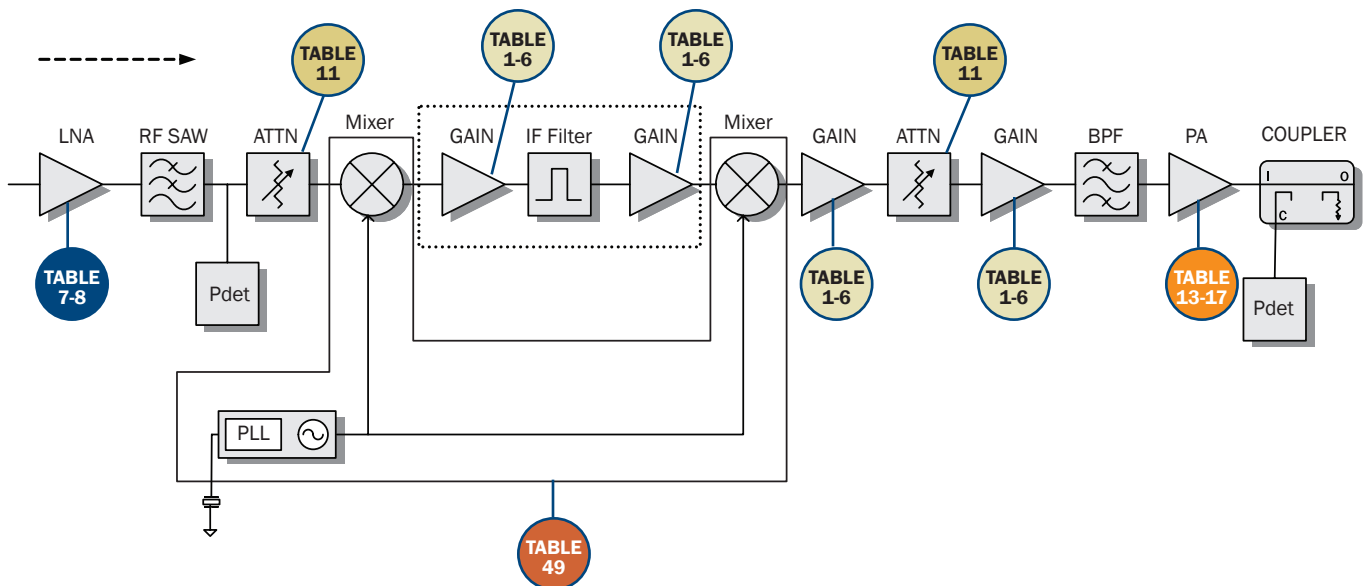
Parts shown in the diagrams in this section can be cross-referenced throughout the product guide using the table number indications.



## Point-to-Point



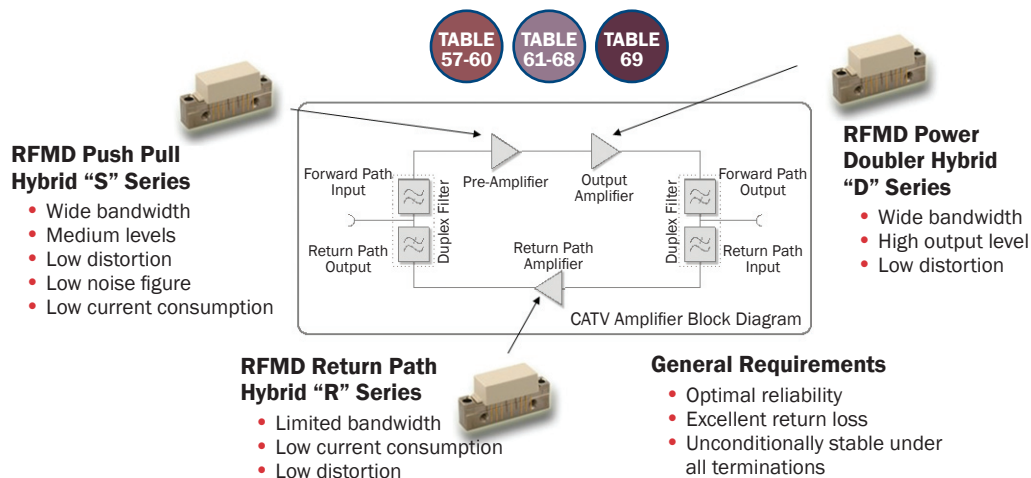
## Wireless Repeater



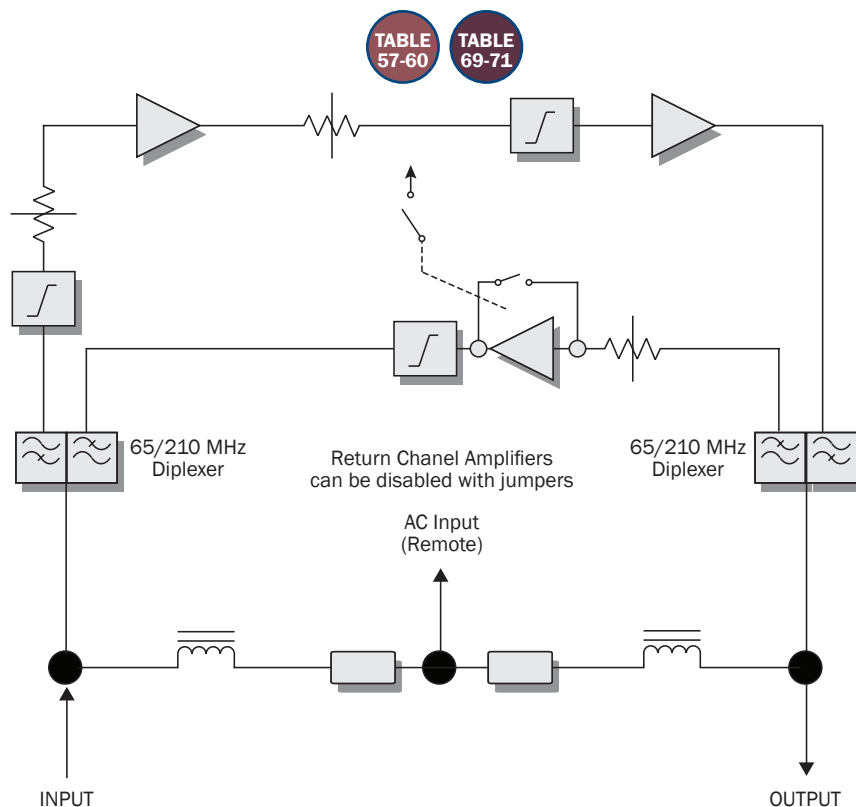
# Broadband

## CATV Transmission

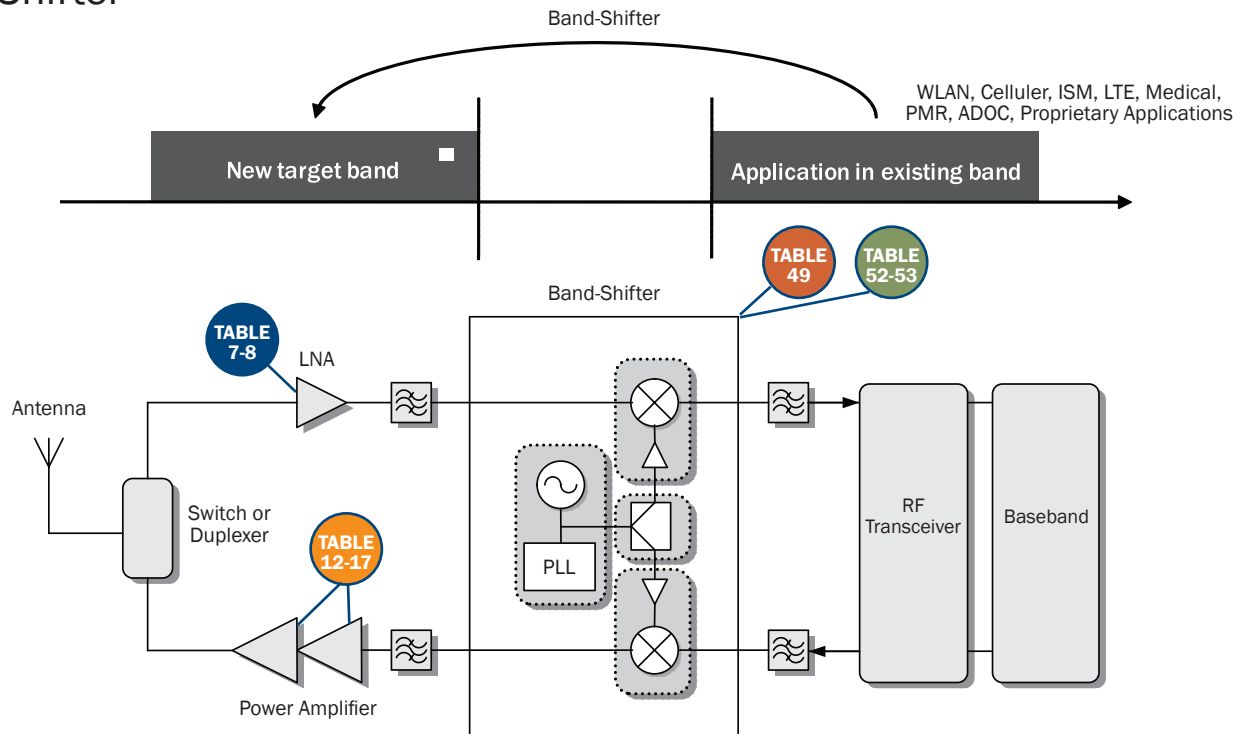
**CATV Line Extender Amplifier Block Diagram Using RFMD Hybrid CATV Amplifier Modules**



## Broadband Customer Premise Equipment (CPE)

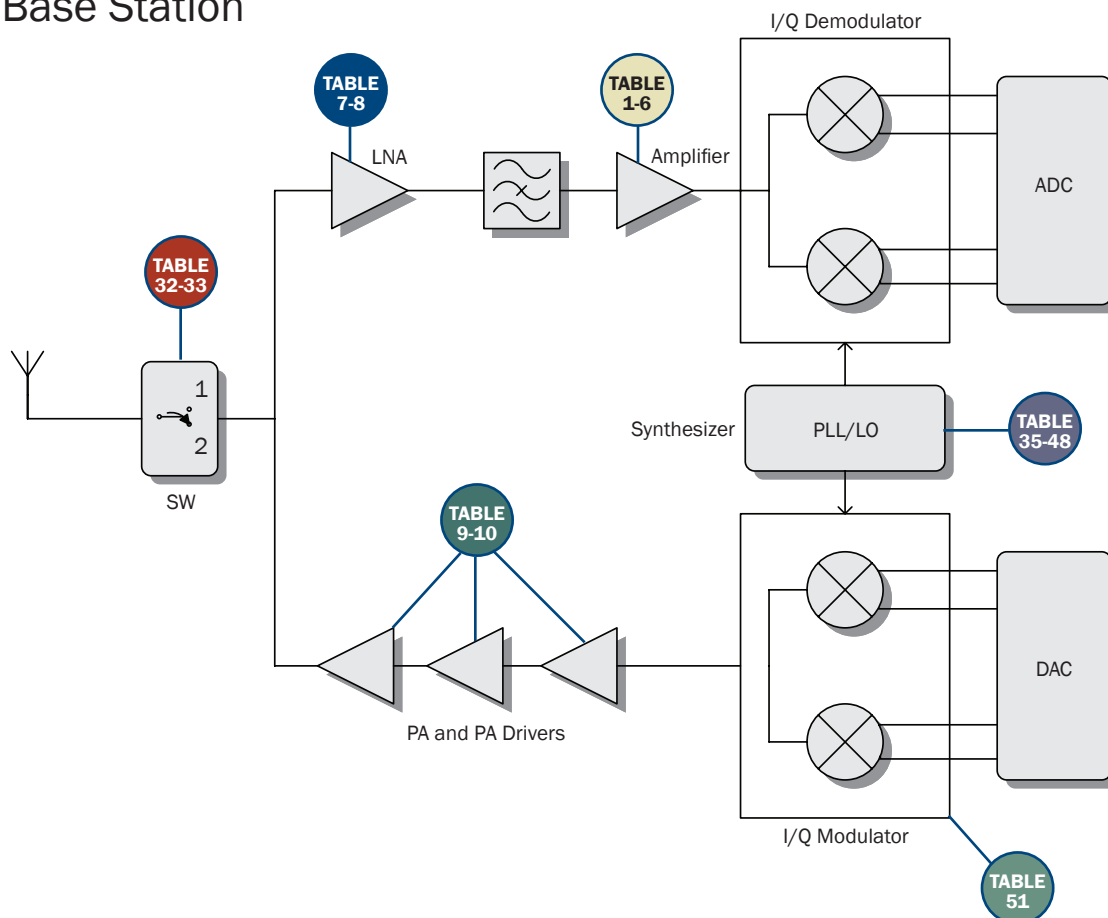


## Band-Shifter

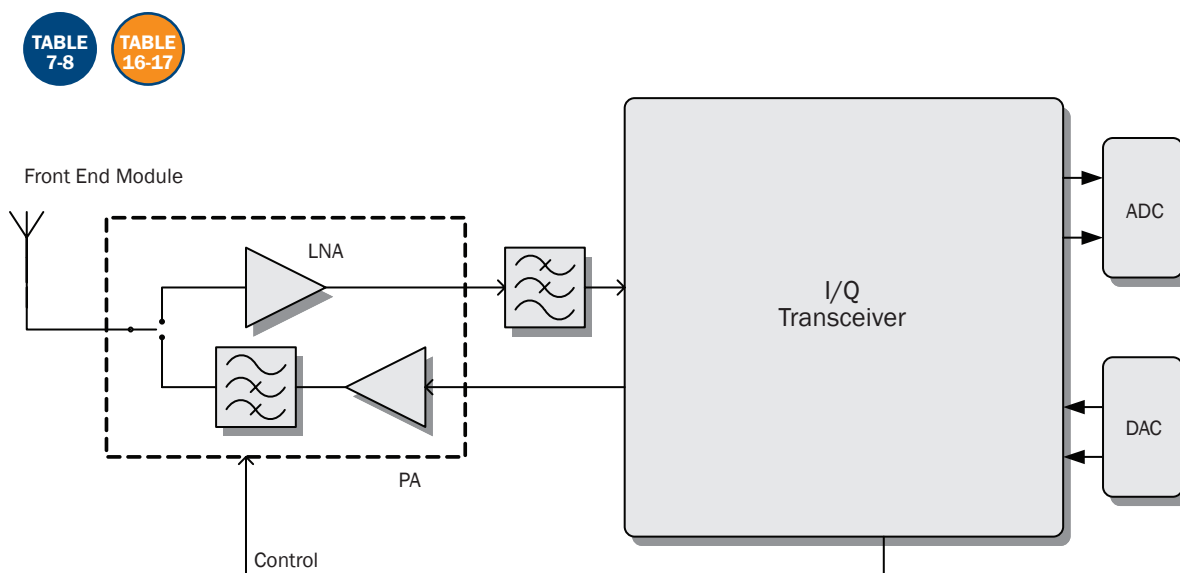


# WiFi, WiMAX, ZigBee®, and *Bluetooth*®

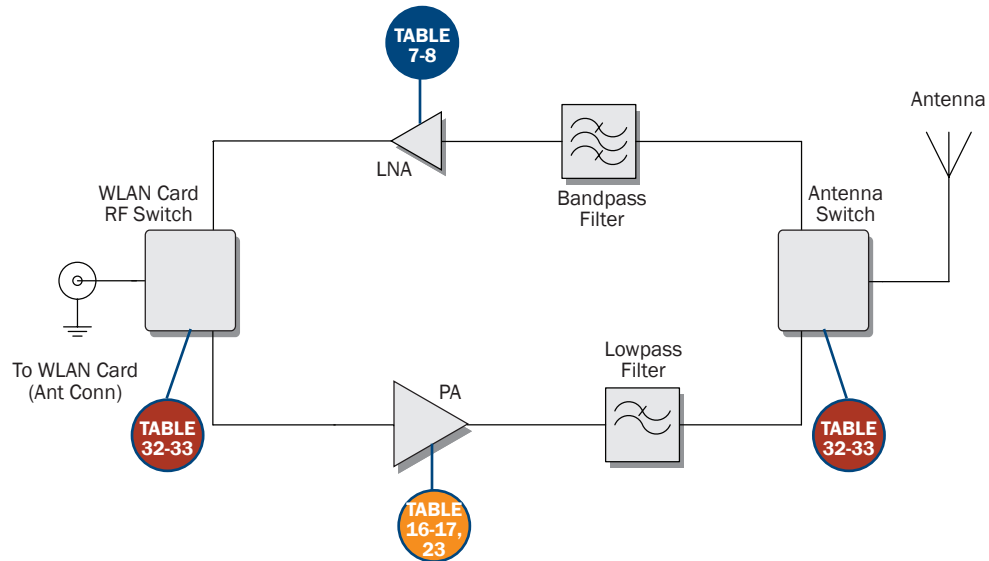
## WiMAX Base Station



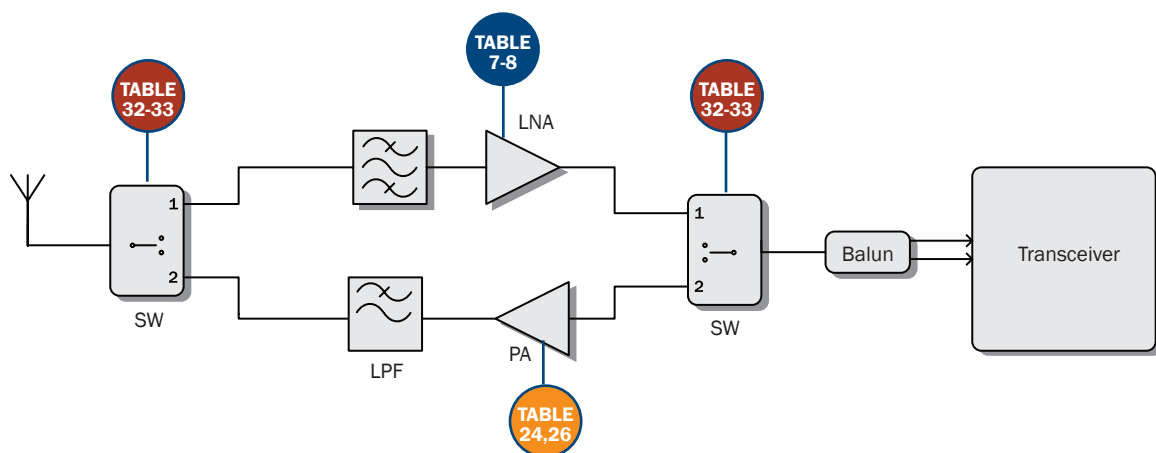
## WiFi



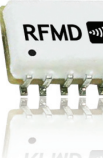
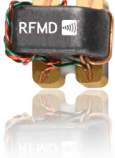
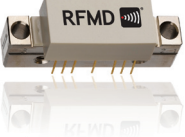
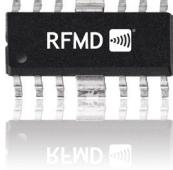
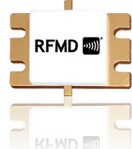
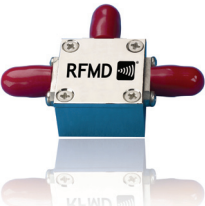
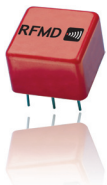
## WiFi Booster



## SmartEnergy AMI



## PACKAGE INFORMATION

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |    |
| QFN/LPCC                                                                            | Ceramic Micro-X                                                                     | P70                                                                                 | SOT-363/SC70                                                                        | SOT-343                                                                               | SOT-86                                                                                |
|    |    |    |    |    |    |
| SOT-89                                                                              | SOT-23                                                                              | S01                                                                                 | S06                                                                                 | S10                                                                                   | S20                                                                                   |
|   |    |   |   |   |   |
| S21                                                                                 | SOT-115J                                                                            | DFN                                                                                 | Ceramic MPGA                                                                        | SOIC-8                                                                                | MSOP-8                                                                                |
|  |  |  |  |  |  |
| SOP Batwing                                                                         | CJBATO                                                                              | TSSOP                                                                               | Circulator                                                                          | Isolator                                                                              | RF565-2                                                                               |
|  |  |  |  |  |  |
| PLL                                                                                 | VCO                                                                                 | Optical Receiver                                                                    | Module                                                                              | SOF                                                                                   | TO-5                                                                                  |
|  |  |  |  |  |  |
| LQFP/TQFP                                                                           | Flatpack                                                                            | TO-8/SMA                                                                            | LF                                                                                  | MMIC VCO                                                                              | DBM                                                                                   |

## CONVERSION TABLES

VSWR / Return Loss Conversion Table

| Return Loss (dB) | VSWR | Return Loss (dB) | VSWR | Return Loss (dB) | VSWR | Return Loss (dB) | VSWR | Return Loss (dB) | VSWR |
|------------------|------|------------------|------|------------------|------|------------------|------|------------------|------|
| 46.064           | 1.01 | 13.842           | 1.51 | 9.485            | 2.01 | 7.327            | 2.51 | 5.999            | 3.01 |
| 40.086           | 1.02 | 13.708           | 1.52 | 9.428            | 2.02 | 7.294            | 2.52 | 5.970            | 3.02 |
| 36.607           | 1.03 | 13.577           | 1.53 | 9.372            | 2.03 | 7.262            | 2.53 | 5.956            | 3.03 |
| 34.151           | 1.04 | 13.449           | 1.54 | 9.317            | 2.04 | 7.230            | 2.54 | 5.935            | 3.04 |
| 32.256           | 1.05 | 13.324           | 1.55 | 9.262            | 2.05 | 7.198            | 2.55 | 5.914            | 3.05 |
| 30.714           | 1.06 | 13.201           | 1.56 | 9.208            | 2.06 | 7.167            | 2.56 | 5.893            | 3.06 |
| 29.417           | 1.07 | 13.081           | 1.57 | 9.155            | 2.07 | 7.135            | 2.57 | 5.872            | 3.07 |
| 28.299           | 1.08 | 12.964           | 1.58 | 9.103            | 2.08 | 7.105            | 2.58 | 5.852            | 3.08 |
| 27.318           | 1.09 | 12.849           | 1.59 | 9.051            | 2.09 | 7.074            | 2.59 | 5.832            | 3.09 |
| 26.444           | 1.10 | 12.736           | 1.60 | 8.999            | 2.10 | 7.044            | 2.60 | 5.811            | 3.10 |
| 25.658           | 1.11 | 12.625           | 1.61 | 8.949            | 2.11 | 7.014            | 2.61 | 5.791            | 3.11 |
| 24.943           | 1.12 | 12.518           | 1.62 | 8.899            | 2.12 | 6.984            | 2.62 | 5.771            | 3.12 |
| 24.289           | 1.13 | 12.412           | 1.63 | 8.849            | 2.13 | 6.954            | 2.63 | 5.751            | 3.13 |
| 23.686           | 1.14 | 12.308           | 1.64 | 8.800            | 2.14 | 6.925            | 2.64 | 5.732            | 3.14 |
| 23.127           | 1.15 | 12.207           | 1.65 | 8.752            | 2.15 | 6.896            | 2.65 | 5.712            | 3.15 |
| 22.607           | 1.16 | 12.107           | 1.66 | 8.705            | 2.16 | 6.867            | 2.66 | 5.693            | 3.16 |
| 22.120           | 1.17 | 12.009           | 1.67 | 8.657            | 2.17 | 6.839            | 2.67 | 5.674            | 3.17 |
| 21.664           | 1.18 | 11.913           | 1.68 | 8.611            | 2.18 | 6.811            | 2.68 | 5.654            | 3.18 |
| 21.234           | 1.19 | 11.818           | 1.69 | 8.565            | 2.19 | 6.783            | 2.69 | 5.635            | 3.19 |
| 20.828           | 1.20 | 11.725           | 1.70 | 8.519            | 2.20 | 6.755            | 2.70 | 5.617            | 3.20 |
| 20.443           | 1.21 | 11.634           | 1.71 | 8.474            | 2.21 | 6.728            | 2.71 | 5.598            | 3.21 |
| 20.079           | 1.22 | 11.545           | 1.72 | 8.430            | 2.22 | 6.700            | 2.72 | 5.579            | 3.22 |
| 19.732           | 1.23 | 11.457           | 1.73 | 8.386            | 2.23 | 6.673            | 2.73 | 5.561            | 3.23 |
| 19.401           | 1.24 | 11.370           | 1.74 | 8.342            | 2.24 | 6.646            | 2.74 | 5.542            | 3.24 |
| 19.085           | 1.25 | 11.285           | 1.75 | 8.299            | 2.25 | 6.620            | 2.75 | 5.524            | 3.25 |
| 18.783           | 1.26 | 11.202           | 1.76 | 8.257            | 2.26 | 6.594            | 2.76 | 5.506            | 3.26 |
| 18.493           | 1.27 | 11.120           | 1.77 | 8.215            | 2.27 | 6.567            | 2.77 | 5.488            | 3.27 |
| 18.216           | 1.28 | 11.039           | 1.78 | 8.173            | 2.28 | 6.541            | 2.78 | 5.470            | 3.28 |
| 17.949           | 1.29 | 10.960           | 1.79 | 8.138            | 2.29 | 6.516            | 2.79 | 5.452            | 3.29 |
| 17.690           | 1.30 | 10.881           | 1.80 | 8.091            | 2.30 | 6.490            | 2.80 | 5.435            | 3.30 |
| 17.445           | 1.31 | 10.804           | 1.81 | 8.051            | 2.31 | 6.465            | 2.81 | 5.417            | 3.31 |
| 17.207           | 1.32 | 10.729           | 1.82 | 8.011            | 2.32 | 6.440            | 2.82 | 5.400            | 3.32 |
| 16.977           | 1.33 | 10.654           | 1.83 | 7.972            | 2.33 | 6.415            | 2.83 | 5.383            | 3.33 |
| 16.755           | 1.34 | 10.581           | 1.84 | 7.933            | 2.34 | 6.390            | 2.84 | 5.365            | 3.34 |
| 16.540           | 1.35 | 10.509           | 1.85 | 7.894            | 2.35 | 6.366            | 2.85 | 5.348            | 3.35 |
| 16.332           | 1.36 | 10.437           | 1.86 | 7.856            | 2.36 | 6.341            | 2.86 | 5.331            | 3.36 |
| 16.131           | 1.37 | 10.367           | 1.87 | 7.818            | 2.37 | 6.317            | 2.87 | 5.315            | 3.37 |
| 15.936           | 1.38 | 10.298           | 1.88 | 7.781            | 2.38 | 6.293            | 2.88 | 5.298            | 3.38 |
| 15.747           | 1.39 | 10.230           | 1.89 | 7.744            | 2.39 | 6.270            | 2.89 | 5.281            | 3.39 |
| 15.563           | 1.40 | 10.163           | 1.90 | 7.707            | 2.40 | 6.246            | 2.90 | 5.265            | 3.40 |
| 15.385           | 1.41 | 10.097           | 1.91 | 7.671            | 2.41 | 6.223            | 2.91 | 5.248            | 3.41 |
| 15.211           | 1.42 | 10.032           | 1.92 | 7.635            | 2.42 | 6.200            | 2.92 | 5.232            | 3.42 |
| 15.043           | 1.43 | 9.968            | 1.93 | 7.599            | 2.43 | 6.177            | 2.93 | 5.216            | 3.43 |
| 14.879           | 1.44 | 9.904            | 1.94 | 7.564            | 2.44 | 6.154            | 2.94 | 5.200            | 3.44 |
| 14.719           | 1.45 | 9.842            | 1.95 | 7.529            | 2.45 | 6.131            | 2.95 | 5.184            | 3.45 |
| 14.564           | 1.46 | 9.780            | 1.96 | 7.494            | 2.46 | 6.109            | 2.96 | 5.168            | 3.46 |
| 14.412           | 1.47 | 9.720            | 1.97 | 7.460            | 2.47 | 6.086            | 2.97 | 5.152            | 3.47 |
| 14.264           | 1.48 | 9.660            | 1.98 | 7.426            | 2.48 | 6.064            | 2.98 | 5.137            | 3.48 |
| 14.120           | 1.49 | 9.601            | 1.99 | 7.393            | 2.49 | 6.042            | 2.99 | 5.121            | 3.49 |
| 13.979           | 1.50 | 9.542            | 2.00 | 7.360            | 2.50 | 6.021            | 3.00 | 5.105            | 3.50 |

dBm to Watts Conversion Table

| dBm | Watts  | dBm | Watts  | dBm | Watts |
|-----|--------|-----|--------|-----|-------|
| 0   | 1.0 mW | 16  | 40 mW  | 32  | 1.6 W |
| 1   | 1.3 mW | 17  | 50 mW  | 33  | 2.0 W |
| 2   | 1.6 mW | 18  | 63 mW  | 34  | 2.5 W |
| 3   | 2.0 mW | 19  | 79 mW  | 35  | 3 W   |
| 4   | 2.5 mW | 20  | 100 mW | 36  | 4 W   |
| 5   | 3.2 mW | 21  | 126 mW | 37  | 5 W   |
| 6   | 4 mW   | 22  | 158 mW | 38  | 6 W   |
| 7   | 5 mW   | 23  | 200 mW | 39  | 8 W   |
| 8   | 6 mW   | 24  | 250 mW | 40  | 10 W  |
| 9   | 8 mW   | 25  | 316 mW | 41  | 13 W  |
| 10  | 10 mW  | 26  | 398 mW | 42  | 16 W  |
| 11  | 13 mW  | 27  | 500 mW | 43  | 20 W  |
| 12  | 16 mW  | 28  | 630 mW | 44  | 25 W  |
| 13  | 20 mW  | 29  | 800 mW | 45  | 32 W  |
| 14  | 25 mW  | 30  | 1.0 W  | 46  | 40 W  |
| 15  | 32 mW  | 31  | 1.3 W  | 47  | 50 W  |

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| CGA-0116Z     | 31    | DBM-178       | 34    | HF-110       | 35    | PS-2-1000F  | 34    |
| CGA-1518Z     | 30    | DBM-1800      | 34    | HF-112       | 35    | PS-2-2000AF | 34    |
| CGA-3318Z     | 8     | DBM-182       | 34    | HF-118       | 35    | PS-2-2000F  | 34    |
| CGA-3318Z     | 30    | DBM-183       | 34    | HF-122       | 35    | PS-2-2000S  | 34    |
| CGA-6618Z     | 30    | DBM-184       | 34    | HF-128       | 35    | PS-2-4000F  | 34    |
| CGA-7718Z     | 30    | DBM-185       | 34    | HF-130       | 35    | PS-2-4000S  | 34    |
| CGB-1089Z     | 31    | DBM-186       | 34    | HF-132       | 35    | PS-2-500F   | 34    |
| CGR-0118Z     | 8     | DBM-188       | 34    | HYB-1        | 34    | PS-3-1000F  | 34    |
| CGR-0118Z     | 30    | DBM-190       | 34    | HYB-11       | 34    | PS-3-1000S  | 34    |
| CGR-0218Z     | 30    | DBM-300B      | 34    | HYB-16       | 34    | PS-3-500F   | 34    |
| CM-1          | 34    | DBM-400       | 34    | HYB-3        | 34    | PS-3-500S   | 34    |
| CM-1H8        | 34    | DBM-500       | 34    | LF-402       | 35    | PS-4-1000F  | 34    |
| CM-2          | 34    | DBM-600       | 34    | LF-410       | 35    | PS-4-1000S  | 34    |
| CM-2H8        | 34    | DBM-601       | 34    | LF-412       | 35    | PS-4-500F   | 34    |
| CPA-0501-510H | 26    | DBM-601S      | 34    | LF-412S      | 35    | R0605250    | 29    |
| CPA-1001-510H | 26    | DBM-700       | 34    | LF-418       | 35    | R0605250L   | 29    |
| CPA-1001-56H  | 26    | DBM-700H      | 34    | LF-418S      | 35    | R0605300    | 29    |
| CPA-1001-708H | 26    | DBM-701       | 34    | LF-422       | 35    | R0605300L   | 29    |
| CPA-1001-710H | 26    | DBM-701S      | 34    | LF-422S      | 35    | R0605400L   | 29    |
| CPA-1001-716H | 26    | DP-312        | 35    | LF-428       | 35    | R1005250L   | 29    |
| CPA-1001-720H | 26    | DP-322        | 35    | LF-428S      | 35    | R1005300L   | 29    |
| CPK-1001-710H | 26    | DP-330        | 35    | LF-432       | 35    | R2005200P12 | 29    |
| CPK-1001-716H | 26    | FMA219        | 6     | LF-432S      | 35    | R2005240    | 29    |
| CPK-1001-720H | 26    | FMA246        | 13    | LF-452       | 35    | R2005240P12 | 29    |
| CXE-1089Z     | 31    | FMA3007       | 13    | LF-454       | 35    | R2005280L   | 29    |
| CXE-2022Z     | 6     | FMA3008       | 13    | ML2722       | 24    | R2005300L   | 29    |
| CXE-2022Z     | 31    | FMA3011       | 13    | ML2724       | 24    | R2005350L   | 29    |
| CXE-2089Z     | 31    | FMA3014       | 13    | ML2726       | 24    | R3005250L   | 29    |
| D10040180GT   | 27    | FMA3051       | 13    | ML2730       | 24    | R3005300L   | 29    |
| D10040180GTH  | 27    | FMA3058       | 13    | ML4622CSN    | 24    | RDA1005L    | 7     |
| D10040200GT   | 27    | FMS 2020-001  | 15    | ML5800       | 24    | RDA1005L    | 7     |
| D10040200GTH  | 27    | FMS 2023      | 15    | ML5805       | 24    | RDA2032Z    | 7     |
| D10040200PH1  | 27    | FMS 2024      | 15    | ML5824       | 24    | RDA2032Z    | 7     |
| D10040200PL1  | 27    | FMS 2027      | 15    | ML5825       | 24    | RFOX501     | 30    |
| D10040220GT   | 27    | FMS 2028      | 15    | ML5830       | 24    | RF1126      | 15    |
| D10040220GTH  | 27    | FMS 2029-000  | 15    | ML6652CH     | 24    | RF1127      | 15    |
| D10040230PH1  | 28    | FMS2014-001   | 15    | ML6652CM     | 24    | RF1128      | 15    |
| D10040230PL1  | 28    | FMS2016-001   | 15    | NBB-300      | 5     | RF1130      | 15    |
| D10040240GT   | 28    | FMS2016-005   | 15    | NBB-302      | 5     | RF1131      | 15    |
| D10040240GTH  | 28    | FMS2031-001   | 15    | NBB-310      | 5     | RF1132      | 15    |
| D10040250GT   | 28    | FP-504        | 35    | NBB-312      | 5     | RF1136      | 15    |
| D10040250GTH  | 28    | FP-510        | 35    | NBB-400      | 5     | RF1140      | 15    |
| D10040270GT   | 28    | FP-512        | 35    | NBB-402      | 5     | RF1146      | 15    |
| D10040270GTH  | 28    | FP-514        | 35    | NBB-500      | 5     | RF1147      | 15    |
| D10040270GTL  | 28    | FP-518        | 35    | NBB-502      | 5     | RF1156      | 15    |
| D10040300GTH  | 28    | FP-522        | 35    | NLB-300      | 5     | RF1200      | 15    |
| D8740180GT    | 28    | FP-528        | 35    | NLB-310      | 5     | RF1201      | 15    |
| D8740180GTH   | 28    | FP-530        | 35    | NLB-400      | 5     | RF1450      | 15    |
| D8740200GT    | 28    | FP-532        | 35    | OR3005230W   | 30    | RF1480      | 15    |
| D8740200GTH   | 28    | FPD1050       | 13    | OS10040280GW | 30    | RF1603      | 15    |
| D8740220GT    | 28    | FPD1500       | 13    | OS10040320PW | 30    | RF2051      | 22    |
| D8740220GTH   | 28    | FPD1500SOT89  | 6     | OS8740230W   | 30    | RF2052      | 22    |
| D8740240GT    | 28    | FPD200        | 13    | PC0882AG-21H | 25    | RF2053      | 22    |
| D8740240GTH   | 28    | FPD200P70     | 6     | PC0940AG-21H | 25    | RF2056      | 22    |
| D8740250GT    | 28    | FPD2250       | 13    | PC1843AG-21H | 25    | RF2057      | 22    |
| D8740250GTH   | 28    | FPD2250SOT89  | 6     | PC1960AG-21H | 25    | RF2059      | 22    |
| D8740270GT    | 28    | FPD3000       | 13    | PC2140AG-21H | 25    | RF2172      | 12    |
| D8740270GTH   | 28    | FPD3000SOT89  | 6     | PD0940AQ-21H | 25    | RF2304      | 6     |
| D8740300GTH   | 28    | FPD6836       | 13    | PD1843AQ-21H | 25    | RF2312      | 8     |
| D8740320GT    | 28    | FPD6836P70    | 6     | PI0882AA-21H | 25    | RF2314      | 6     |
| D8740320GTH   | 28    | FPD6836SOT343 | 6     | PI0882AG-21H | 25    | RF2317      | 8     |
| DBM-100B      | 34    | FPD750        | 13    | PI0940AA-21H | 25    | RF2317      | 31    |
| DBM-1200      | 34    | FPD750SOT343  | 6     | PI0940AG-21H | 25    | RF2320      | 8     |
| DBM-141       | 34    | FPD750SOT89   | 6     | PI1843AA-21H | 25    | RF2360      | 8     |
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| RF3861  | 6     | RF5745     | 12    | RFSP5522  | 26    | S8740200P   | 28    |
| RF3861  | 8     | RF5755     | 10    | RFSP5722  | 26    | S8740200P   | 29    |
| RF3863  | 6     | RF5924     | 10    | RFSP5731  | 26    | S8740220GT  | 28    |
| RF3863  | 8     | RF6266     | 37    | RFSW2040  | 15    | S8740220GT  | 29    |
| RF3865  | 6     | RF6280     | 37    | RFSW2040D | 15    | S8740220P   | 28    |
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| RF5110G | 12    | RF7203     | 37    | RFVC-1803 | 16    | SBA-4089Z   | 5     |
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| SBB-4000  | 3     | SGC-2386Z    | 3     | TO-218                    | 35    | VCO-206S / VCO-206TCS       | 33    |
| SBB-4082S | 35    | SGC-2463Z    | 3     | TO-222                    | 35    | VCO-206SMT / VCO-206TCSMT   | 33    |
| SBB-4089Z | 3     | SGC-2486Z    | 3     | TO-228                    | 35    | VCO-215 / VCO-215TC         | 33    |
| SBB-5000  | 3     | SGC-4263Z    | 4     | TO-230                    | 35    | VCO-215S / VCO-215TCS       | 33    |
| SBB-5089Z | 3     | SGC-4363Z    | 3     | TO-232                    | 35    | VCO-215SMT / VCO-215TCSMT   | 33    |
| SBF-4089Z | 5     | SGC-4386Z    | 3     | VCO-102 / VCO-102TC       | 32    | VCO-216 / VCO-216TC         | 32    |
| SBF-5089Z | 5     | SGC-4463Z    | 3     | VCO-102S / VCO-102TCS     | 32    | VCO-216S / VCO-216TCS       | 32    |
| SDA-1000  | 13    | SGC-4486Z    | 4     | VCO-102SMT / VCO-102TCSMT | 32    | VCO-216SMT / VCO-216TCSMT   | 32    |
| SDA-2000  | 13    | SGC-4563Z    | 4     | VCO-103 / VCO-103TC       | 32    | VCO-219 / VCO-219TC         | 33    |
| SDA-3000  | 13    | SGL-0163Z    | 6     | VCO-103S / VCO-103TCS     | 32    | VCO-219S / VCO-219TCS       | 33    |
| SDA-4000  | 13    | SGL-0263Z    | 6     | VCO-103SMT / VCO-103TCSMT | 32    | VCO-219SMT / VCO-219TCSMT   | 33    |
| SDA-5000  | 13    | SGL-0363Z    | 6     | VCO-104 / VCO-104TC       | 32    | VCO-305 / VCO-305TC         | 32    |
| SDA-6000  | 13    | SGL-0622Z    | 6     | VCO-104S / VCO-104TCS     | 32    | VCO-305S / VCO-305TCS       | 32    |
| SDA-7000  | 13    | SHF-0189Z    | 9     | VCO-104SMT / VCO-104TCSMT | 32    | VCO-305SMT / VCO-305TCSMT   | 32    |
| SGA-0163Z | 4     | SHF-0289Z    | 9     | VCO-105 / VCO-105TC       | 32    | VCO-3500 / VCO-3500TC       | 33    |
| SGA-0363Z | 4     | SPA-0101-27H | 26    | VCO-105S / VCO-105TCS     | 32    | VCO-3500S / VCO-3500TCS     | 33    |
| SGA-1263Z | 4     | SPA-0501-25H | 26    | VCO-105SMT / VCO-105TCSMT | 32    | VCO-3500SMT / VCO-3500TCSMT | 33    |
| SGA-2163Z | 4     | SPA-0701-25H | 26    | VCO-106 / VCO-106TC       | 33    | VCO-4500 / VCO-4500TC       | 33    |
| SGA-2186Z | 4     | SPA-1001-25H | 26    | VCO-106S / VCO-106TCS     | 33    | VCO-4500S / VCO-4500TCS     | 33    |
| SGA-2263Z | 4     | SPA-1002-25H | 26    | VCO-106SMT / VCO-106TCSMT | 33    | VCO-4500SMT / VCO-4500TCSMT | 33    |
| SGA-2286Z | 4     | SPA-1002-27H | 26    | VCO-107 / VCO-107TC       | 33    | VCO-500 / VCO-500TC         | 33    |
| SGA-2363Z | 4     | SPA-1003-27H | 26    | VCO-107S / VCO-107TCS     | 33    | VCO-500S / VCO-500TCS       | 33    |
| SGA-2386Z | 4     | SPA-1318Z    | 8     | VCO-107SMT / VCO-107TCSMT | 33    | VCO-500SMT / VCO-500TCSMT   | 33    |
| SGA-2463Z | 4     | SPA-1426Z    | 8     | VCO-108 / VCO-108TC       | 33    | VCO-510 / VCO-510TC         | 33    |
| SGA-2486Z | 4     | SPA-1526Z    | 8     | VCO-108S / VCO-108TCS     | 33    | VCO-510S / VCO-510TCS       | 33    |
| SGA-3263Z | 4     | SPA-2118Z    | 8     | VCO-108SMT / VCO-108TCSMT | 33    | VCO-510SMT / VCO-510TCSMT   | 33    |
| SGA-3286Z | 4     | SPA-2318Z    | 8     | VCO-109 / VCO-109TC       | 33    | VCO-520 / VCO-520TC         | 33    |
| SGA-3363Z | 4     | SPA-2501-25H | 26    | VCO-109S / VCO-109TCS     | 33    | VCO-520S / VCO-520TCS       | 33    |
| SGA-3386Z | 4     | SPB-2026Z    | 8     | VCO-109SMT / VCO-109TCSMT | 33    | VCO-520SMT / VCO-520TCSMT   | 33    |
| SGA-3463Z | 4     | SPB-2054S    | 35    | VCO-110 / VCO-110TC       | 33    | VCO-530 / VCO-530TC         | 33    |
| SGA-3486Z | 4     | SPC-2001-25H | 26    | VCO-110S / VCO-110TCS     | 33    | VCO-530S / VCO-530TCS       | 33    |
| SGA-3563Z | 4     | SPC-2201-25H | 26    | VCO-110SMT / VCO-110TCSMT | 33    | VCO-530SMT / VCO-530TCSMT   | 33    |
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| SGA-4163Z | 4     | SPF-5122Z    | 6     | VCO-111S / VCO-111TCS     | 33    | VCO-5500S / VCO-5500TCS     | 33    |
| SGA-4186Z | 4     | SPF-5189Z    | 6     | VCO-111SMT / VCO-111TCSMT | 33    | VCO-5500SMT / VCO-5500TCSMT | 33    |
| SGA-4263Z | 4     | SPF-5344Z    | 6     | VCO-112 / VCO-112TC       | 33    | XFA-0101-16UH               | 27    |
| SGA-4286Z | 4     | SPL6036Z     | 24    | VCO-112S / VCO-112TCS     | 33    | XFA-0101-1BH                | 27    |
| SGA-4363Z | 4     | STA-5063Z    | 9     | VCO-112SMT / VCO-112TCSMT | 33    | XFA-0101-25UH               | 27    |
| SGA-4386Z | 4     | SUF-1000     | 13    | VCO-113 / VCO-113TC       | 32    | XFA-0201-8WH                | 27    |
| SGA-4463Z | 4     | SUF-1033     | 13    | VCO-113S / VCO-113TCS     | 32    | XFA-0301-1WH                | 27    |
| SGA-4486Z | 4     | SUF-2000     | 13    | VCO-113SMT / VCO-113TCSMT | 32    | XFA-0301-4BH                | 27    |
| SGA-4563Z | 4     | SUF-3000     | 13    | VCO-114 / VCO-114TC       | 32    | XFA-0301-4UH                | 27    |
| SGA-4563Z | 6     | SUF-4000     | 13    | VCO-114S / VCO-114TCS     | 32    | XFA-0401-1UH                | 27    |
| SGA-4586Z | 4     | SUF-5000     | 13    | VCO-114SMT / VCO-114TCSMT | 32    | XFA-1001-1UH                | 27    |
| SGA-4586Z | 6     | SUF-5033     | 13    | VCO-116 / VCO-116TC       | 32    | XFK-0201-16WH               | 27    |
| SGA-5263Z | 4     | SUF-6000     | 13    | VCO-116S / VCO-116TCS     | 32    | XFK-0901-4WH                | 27    |
| SGA-5286Z | 4     | SUF-8033     | 13    | VCO-116SMT / VCO-116TCSMT | 32    | XFK-1001-1UH                | 27    |
| SGA-5289Z | 4     | SUF-8533     | 13    | VCO-117 / VCO-117TC       | 33    | XFK-2001-1UH                | 27    |
| SGA-5386Z | 4     | SXA-3318BZ   | 8     | VCO-117S / VCO-117TCS     | 33    | XFM-0201-1WH                | 27    |
| SGA-5389Z | 4     | SXA-389BZ    | 8     | VCO-117SMT / VCO-117TCSMT | 33    | XFM-0701-4WH                | 27    |
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| SGA-5489Z | 4     | SXB-4089Z    | 8     | VCO-118S / VCO-118TCS     | 32    | XFM-1001-4WH                | 27    |
| SGA-5586Z | 4     | SXE-1089Z    | 8     | VCO-118SMT / VCO-118TCSMT | 32    | XFM-1002-1UH                | 27    |
| SGA-5589Z | 4     | SZA-2044Z    | 9     | VCO-119 / VCO-119TC       | 33    | XFM-1901-1UH                | 27    |
| SGA-6286Z | 4     | SZA-3044Z    | 9     | VCO-119S / VCO-119TCS     | 33    | XFM-2501-4WH                | 27    |
| SGA-6289Z | 4     | SZA-5044Z    | 9     | VCO-119SMT / VCO-119TCSMT | 33    | XFM-3001-1UH                | 27    |
| SGA-6386Z | 4     | SZM-2066Z    | 9     | VCO-120 / VCO-120TC       | 33    | XFM-3001-1UH                | 27    |
| SGA-6389Z | 4     | SZM-2166Z    | 9     | VCO-120S / VCO-120TCS     | 33    | XFP-1001-1UH                | 27    |
| SGA-6486Z | 4     | SZM-3066Z    | 9     | VCO-120SMT / VCO-120TCSMT | 33    | XFP-1001-4WH                | 27    |
| SGA-6489Z | 4     | SZM-3166Z    | 9     | VCO-121 / VCO-121TC       | 33    | XFP-2501-1UH                | 27    |
| SGA-6586Z | 4     | SZM5066-WD   | 10    | VCO-121S / VCO-121TCS     | 33    |                             |       |

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## 2010 DATES

### **Expo-Electronica**

Moscow, Russia  
Apr 20-23, 2010

### **IWPC China Mobile Workshop**

Newark, NJ  
Apr 30, 2010

### **Int'l Reliability Physics Symposium (IRPS)**

Anaheim, CA  
May 2-6, 2010

### **Reliability of Compound Semiconductors Workshop (ROCS)**

Portland, OR  
May 17, 2010

### **CS Mantech**

Portland, OR  
May 17-20, 2010

### **IEEE IMS MTT-S**

Anaheim, CA  
May 25-27, 2010

### **Wireless Japan**

Tokyo, Japan  
July 14-16, 2010

### **Electronics System Integration Technology Conference**

Berlin, Germany  
Sep 13-16, 2010

### **IEEE Power Amplifier Symposium**

Tempe, AZ  
Sep 13-14, 2010

### **Compound Semiconductor IC Symposium (CSICS)**

Monterey, CA  
Oct 3-6, 2010

### **Electrostatic Discharge Symposium**

Reno, NV  
Oct 3-8, 2010

### **Ultrasonics Symposium**

San Diego, CA  
Oct 11-14, 2010

### **Bipolar/BiCMOS Circuits & Technology Meeting (BCTM)**

Austin, TX  
Oct 12-14, 2010

### **SCTE Cable-Tec Expo**

New Orleans, LA  
Oct 17-19, 2010

### **PT/Expo Comm**

Beijing, China  
Oct 19-23, 2010

### **iMAPS**

Raleigh, NC  
Oct 31- Nov 4, 2010

### **Electronica**

Munich, Germany  
Nov 9-12, 2010

### **Wireless Innovative Forum**

Washington, DC  
Nov 30-Dec 3, 2010

### **Asia-Pacific Microwave Conference**

Pacifico Yokohama, Japan  
Dec 8-10, 2010

### **Int'l Symposium on Microwaves (ISM)**

Bangalore, India  
Dec 11-14, 2010

## 2011 DATES

### **Radio & Wireless Week**

Phoenix, AZ  
Jan 16-20, 2011

### **Mobile World Congress**

Barcelona, Spain  
Feb 14-17, 2011

### **International Solid-State Circuits Conference (ISSCC)**

San Francisco, CA  
Feb 20-24, 2011

### **COMCAS**

Tel Aviv, Israel  
May 16-18, 2011

For more information about these events, go to [www.rfmd.com/press](http://www.rfmd.com/press) and click on the Events link.

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