



Electro Optical Components, Inc.

5464 Skylane Boulevard, Suite D, Santa Rosa, CA 95403

Toll Free: 855-EOC-6300

www.eoc-inc.com | info@eoc-inc.com



CCSIRx09x Wideband Infrared Source

MID-IR SOURCE (250µm Diameter)

Benefits and Features

- High-stability broadband radiation source
- Radiation 2 – 14µm
- Built-in temperature-sensing diode
- Switching speed up 100Hz
- Lifetime @ 550°C >10 years
- Built-in FET Driver option
- Power consumption <0.12mW/°C

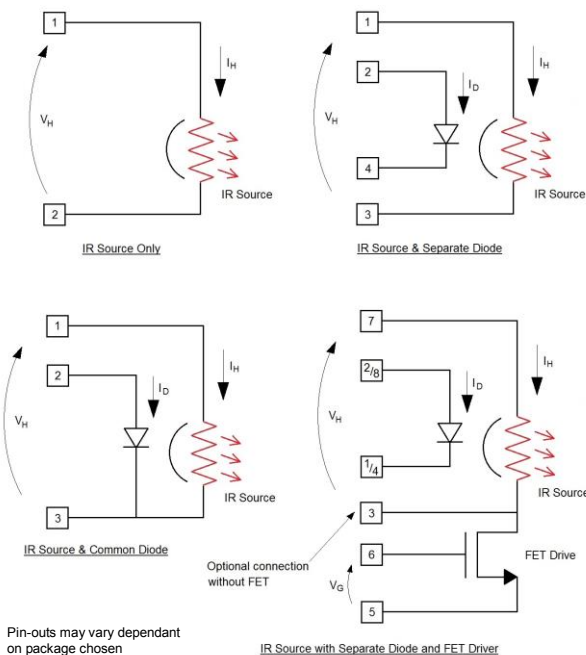
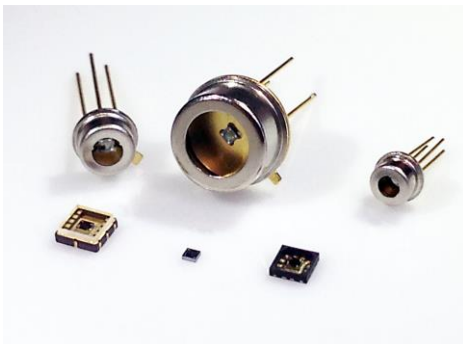
Applications

- NDIR Gas Sensor
- CO, CO₂, NO_x, SO_x
- Hydro-carbon
- Medical
- HVAC
- FTIR Spectroscopy
- ATR

Packaging Options

- Bare Die
- SMD
- Micro TO
- TO46
- Other packages available
- Options for reflectors, filters, sealing and encapsulation
- Array versions also available

MEMS CMOS IR radiation Source For Gas Sensing



Description

Basic Infrared Source where the heater temperature can be controlled by appropriately adjusting the current or the supply voltage. The device is fabricated on a 1mm x 1mm silicon die as a single-chip solution and can incorporate a temperature-sensing diode and/or FET driver.

Electrical/Optical specifications

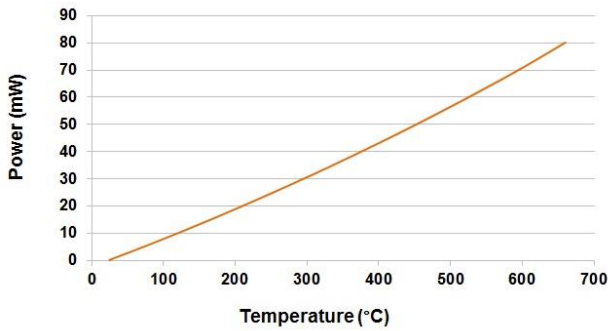
Parameter	Nominal Value
Power Consumption(DC) at 600°C	72mW ± 7mW
Thermal Rise Time (t ₉₀)	15ms ± 5ms
Thermal Fall Time (t ₁₀)	30ms ± 5ms
Operating Temperature	600°C
Ambient Resistance (R ₀)	40Ω ± 10Ω
Heater Resistance ^{Note1} (R) @ 600°C	80Ω ± 20Ω
Heater Voltage (V _H) @ 600°C	2.4V ± 0.3V
Heater Current (I _H) @ 600°C	30mA ± 4mA
Diode Temp Coefficient (d) @ 65µA	1.3mV/K
Minimum Emissivity	~ 0.7
Heated Area	0.05mm ² min
Modulation Frequency	DC to 100Hz
Frequency at 50% Modulation	~ 70Hz
Life Time (MTTF) @ 600°C	~ 50000 Hours

Note1: $R = (R_0 - R_T)[1 + \alpha(T - T_0) + \beta(T - T_0)^2] + R_T$

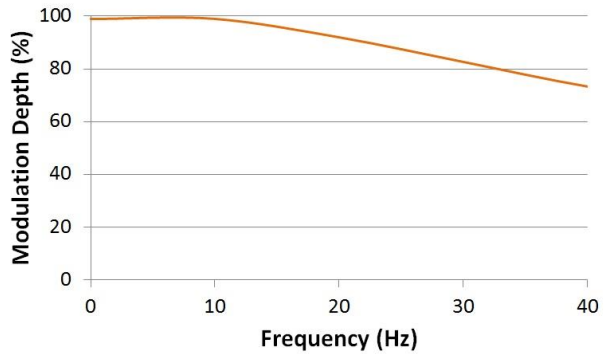
R_T (Track Resistance) = 12Ω ± 0.5Ω @ 25°C, T₀ = 25°C
 $\alpha = 2.05 \times 10^{-3} \text{ K}^{-1}$, $\beta = 0.3 \times 10^{-6} \text{ K}^{-2}$



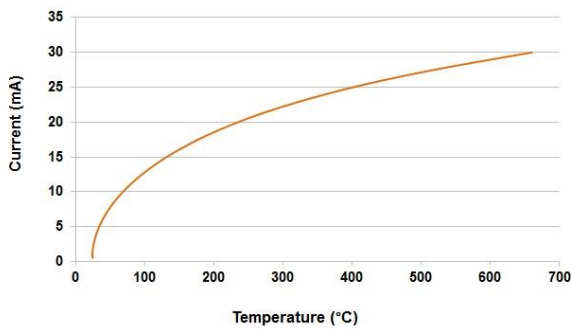
Power Consumption v Temperature



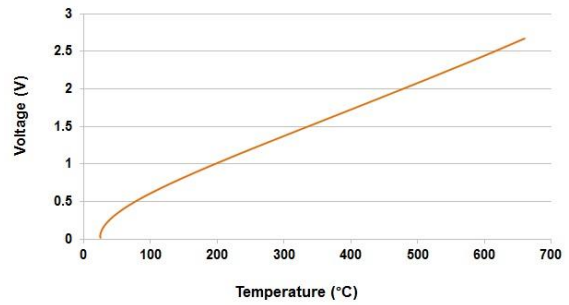
Modulation Depth v Frequency



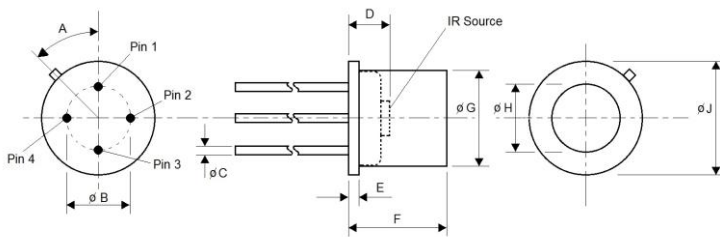
Current v Temperature



Voltage v Temperature

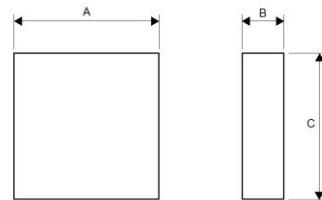


TO Package dimensions



	A	B	C	D	E	F	G	H	J
TO39	45 ⁰	5.08	0.45	1.92	0.38	4.35	8.31	5.30	9.20
TO46	45 ⁰	2.54	0.45	1.55	0.25	2.70	4.70	2.55	5.40
Micro TO	-	1.80	0.30	1.28	0.38	2.30	3.10	1.80	4.10

SMD Package dimensions



	A	B	C
LCC	3.80	1.45	3.80
QFN	3.00	0.84	3.00

Various pin-outs available

The contents of this document are subject to change without notice. Customers are advised to consult with Cambridge CMOS Sensors (CCS) Ltd sales representatives before ordering or considering the use of CCS devices where failure or abnormal operation may directly affect human lives or cause physical injury or property damage, or where extremely high levels of reliability are demanded. CCS will not be responsible for damage arising from such use. As any devices operated at high temperature have inherently a certain rate of failure, it is therefore necessary to protect against injury, damage or loss from such failures by incorporating appropriate safety measures.