

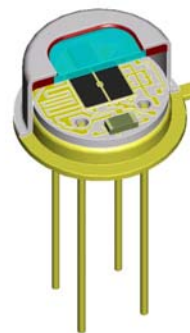
Datasheet - Extended Product

# LME-553-#

## fast pyroelectric detector

### Description:

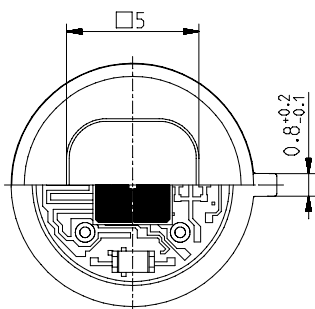
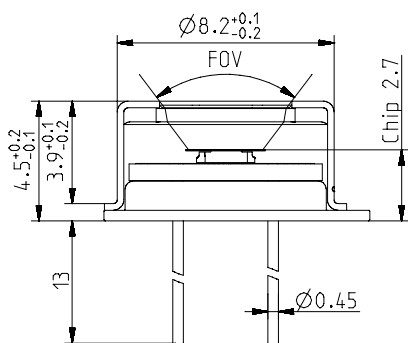
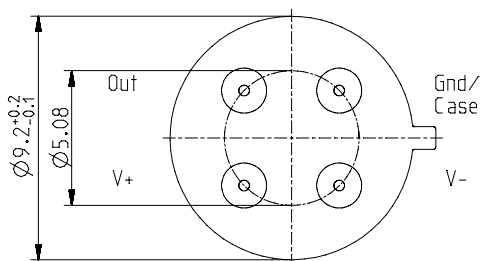
single channel; TO39 housing; large chip size; low Micro; OpAmp; current mode; feedback 5GOhm; expanded transimpedance amplifier (TIA) for 1Hz to 1kHz modulation frequency range



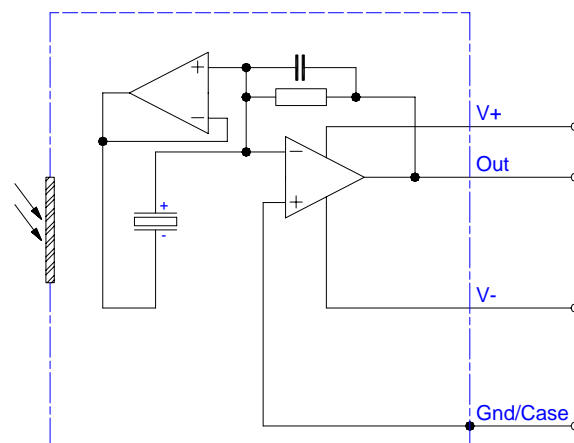
### HOUSING:

### PIN ASSIGNMENT:

TO39 4Pin  
Bottom view

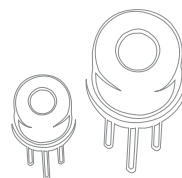
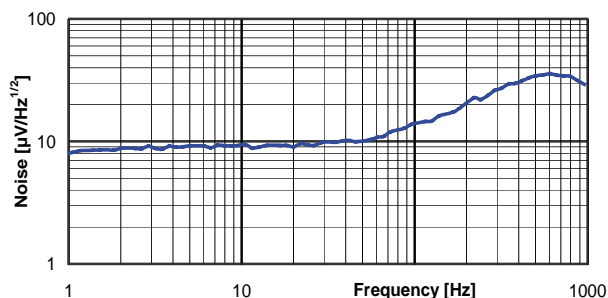
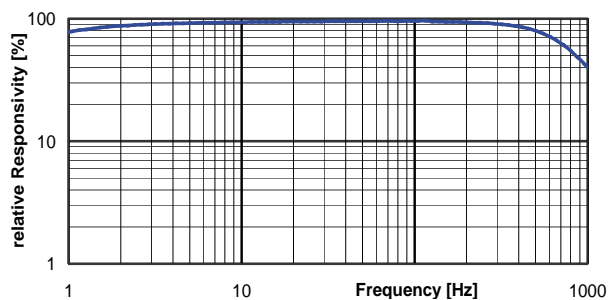


Top view



Maximum current between Case and the "Case"-Pin 10 mA!

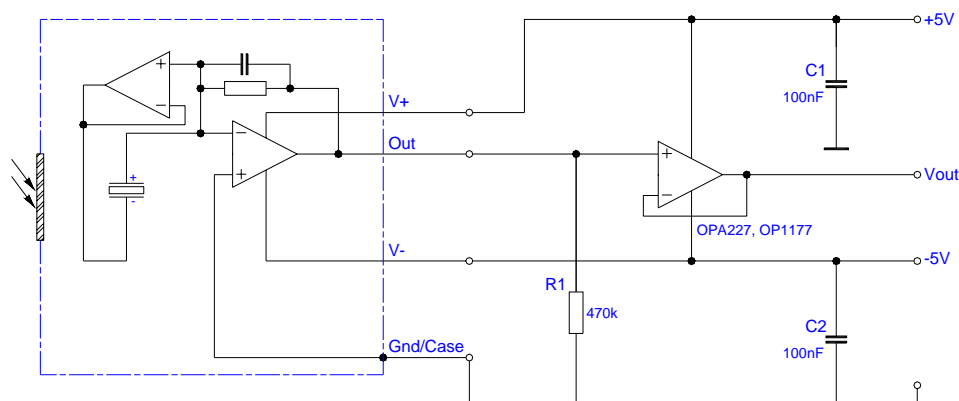
### FREQUENCY RESPONSE:



# LME-553-#

## fast pyroelectric detector

### TEST CIRCUIT:



### PARAMETERS:

Aperture size	nom	5.0 mm sq.
Element size / type	nom	3.0x3.0 mm <sup>2</sup> lithium-tantalate with black layer
Thermal time constant	typ	200 ms
Feedback resistor	nom	5 GOhm ±10%
Feedback capacitor	nom	80 fF ±30 fF
Polarity	nom	negative signal by positive IR flux change
Voltage responsivity (rms) {500K, 100 Hz, 25 °C, without window}	min	6,500 V/W
Roll-off [-3dB / -6dB]	typ	650 Hz / 900 Hz
Noise density (rms) {100 Hz, BW 1 Hz, 25 °C}	max	18 μV/(sqrt[Hz])
Noise density (rms)	typ	35 μV/(sqrt[Hz]) / 30 μV/(sqrt[Hz])
Detectivity {500K, 100 Hz, 1 Hz, 25 °C, without window}	min	1.1E+08 cm(sqrt[Hz])/W
Detectivity @ 650 Hz / 900 Hz	typ	4.3E+07 cm(sqrt[Hz])/W / 3.3E+07 cm(sqrt[Hz])/W
Acceleration response {100Hz}	typ	300 μV/g; g = 9.81 m/s <sup>2</sup>
Acceleration response @ 650 Hz / 900 Hz	typ	1500 μV/g / 1500 μV/g; g = 9.81 m/s <sup>2</sup>
CMOS operational amplifier	nom	OpAmp2 (for characteristics see application note)
Supply voltage V+ - V-	max	16 V
Operating supply voltage V+ / V-		+2.2 ... 8.0 V / -2.2 ... -8.0 V
Recommended supply voltage V+ / V-	nom	V+ = +5 V; V- = -5 V
Supply current {output load 1MOhm}	max	150 μA
Offset voltage {25 °C; output load 1MOhm}		-5 mV ... +5 mV
Optimal output load	nom	330 kOhm
Absolute output current	max	±0.4 mA
Operating / Storage temperature	nom	-25 ... +85°C
IR window		All InfraTec windows and filters are available (except KBr and CsI). Customized filters upon request.
Filter sizes	nom	rectangular filters: (5.25 x 5.25) mm +0/-0.05 mm circular filters: ø6.5 mm ±0.1 mm standard thickness: 0.50 mm +0.2/-0.1 mm thickness range 0.70 ... 1.10 mm on request
Field of View	min	CaF <sub>2</sub> or BaF <sub>2</sub> ; 0.4 mm thick: 60° Silicon substrate; 0.5 mm thick: 70°