



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



CCSIRx80x Wideband Infrared Source

MID-IR SOURCE (1000µm Diameter)

Benefits and Features

- High-stability broadband radiation source
- Radiation 2 – 14µm
- Built-in temperature-sensing diode
- Switching speed up 80Hz
- Lifetime @ 450°C >10 years
- Built-in FET Driver option
- Power consumption <0.4mW/°C

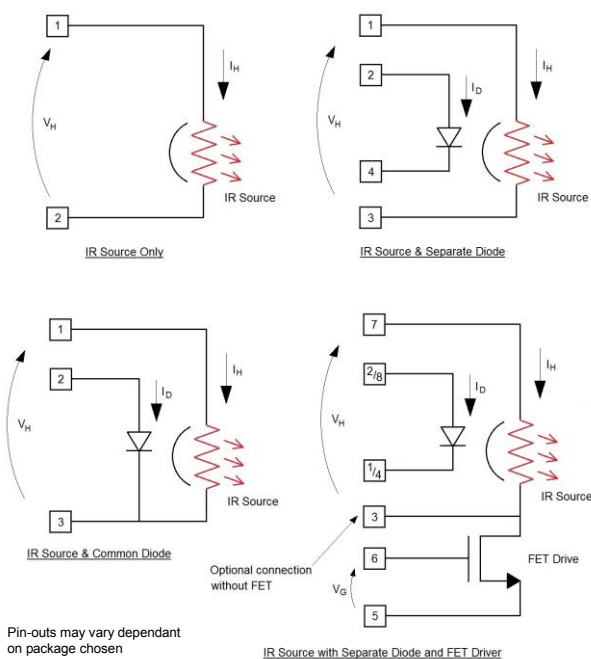
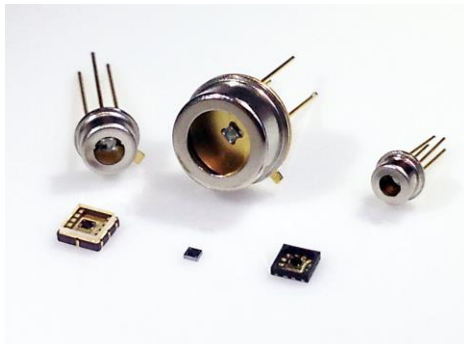
Applications

- NDIR Gas Sensor
- CO, CO₂, NOx, SOx
- Hydro-carbon
- Medical
- HVAC
- FTIR Spectroscopy
- ATR

Packaging Options

- Bare Die
- SMD
- TO39
- TO46
- 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 1.76mm x 1.76mm silicon die as a single-chip solution and can incorporate a temperature-sensing diode and/or FET driver.

Electrical/Optical specifications

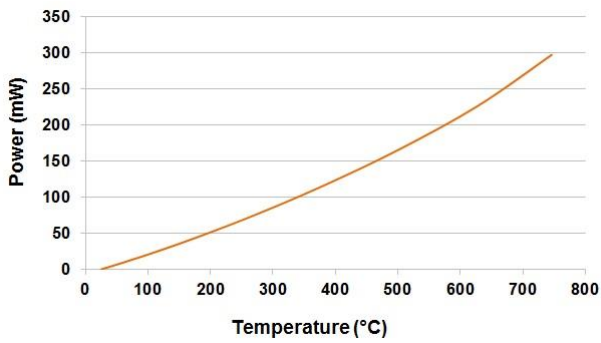
Parameter	Nominal Value
Power Consumption(DC) at 500°C	170mW ± 20mW
Thermal Rise Time (t ₉₀)	50ms ± 10ms
Thermal Fall Time (t ₁₀)	60ms ± 10ms
Operating Temperature	500°C
Ambient Resistance (R ₀)	28Ω ± 6Ω
Heater Resistance ^{Note1} (R) @ 500°C	56Ω ± 12Ω
Heater Voltage (V _H) @ 500°C	3.1V ± 0.4V
Heater Current (I _H) @ 500°C	55mA ± 10mA
Diode Temp Coefficient (d) @ 65µA	1.17mV/K
Minimum Emissivity	~ 0.7
Heated Area	0.79mm ² min
Modulation Frequency	DC to 80Hz
Frequency at 50% Modulation	~ 30Hz
Life Time (MTTF) @ 500°C	~ 50000 Hours

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

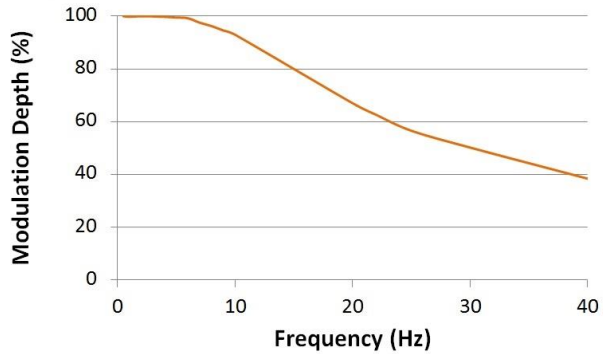
R_T (Track Resistance) = 1.7Ω ± 0.5Ω @ 25°C, T₀ = 25°C
 $\alpha = 2.05 \times 10^{-3} K^{-1}$, $\beta = 0.3 \times 10^{-6} K^{-2}$



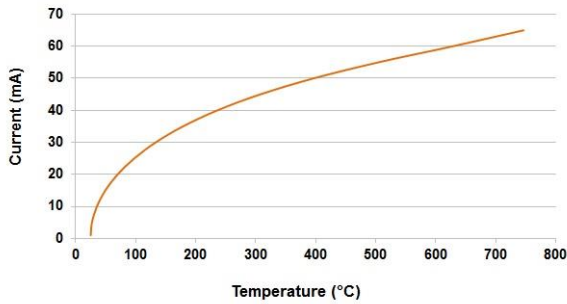
Power Consumption v Temperature



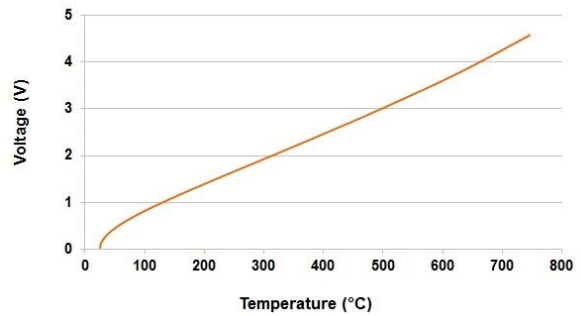
Modulation Depth v Frequency



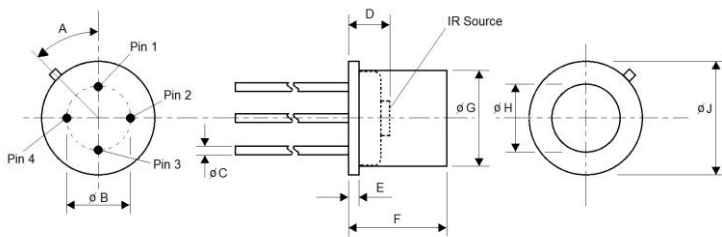
Current v Temperature



Voltage v Temperature

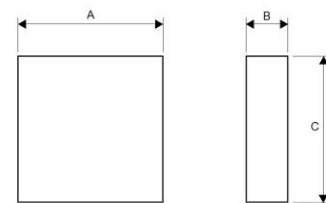


TO Package dimensions



	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

SMD Package dimensions



	A	B	C
LCC	3.80	1.45	3.80

Various pin-outs available

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