



# Electro Optical Components, Inc.

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

Toll Free: 855-EOC-6300

[www.eoc-inc.com](http://www.eoc-inc.com) | [info@eoc-inc.com](mailto:info@eoc-inc.com)



## CCSIRx61x Wideband Infrared Source

### MID-IR SOURCE (600µm Diameter)

#### Benefits and Features

High-stability broadband radiation source  
Radiation 2 – 14µm  
Switching speed up 80Hz  
Lifetime @ 450°C >10 years  
Power consumption <0.36mW/°C

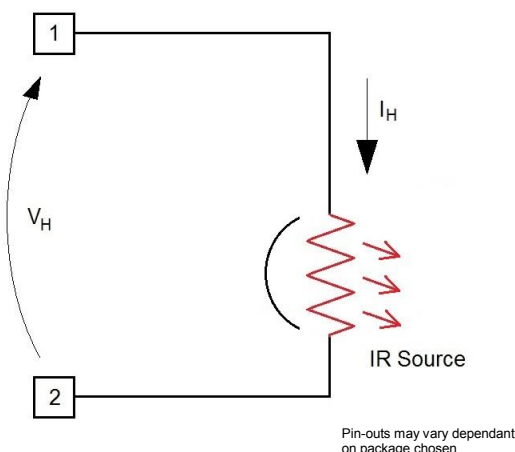
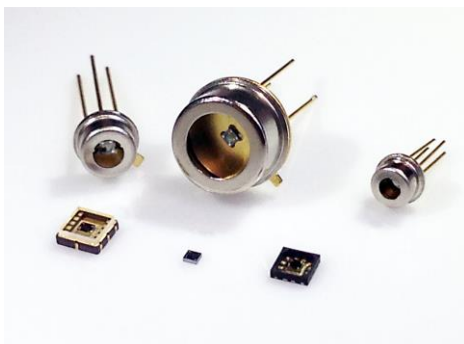
#### Applications

NDIR Gas Sensor  
CO, CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>  
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.

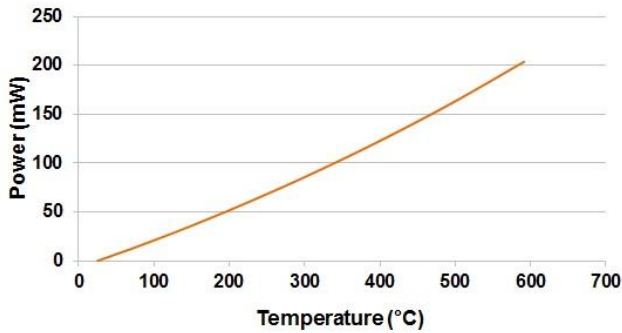
#### Electrical/Optical specifications

Parameter	Nominal Value
Power Consumption(DC) at 500°C	160mW ± 15mW
Thermal Rise Time (t <sub>90</sub> )	20ms ± 5ms
Thermal Fall Time (t <sub>10</sub> )	45ms ± 5ms
Operating Temperature	500°C
Ambient Resistance (R <sub>0</sub> )	17.5Ω ± 3.5Ω
Heater Resistance <sup>Note1</sup> (R) @ 500°C	33Ω ± 8Ω
Heater Voltage (V <sub>H</sub> ) @ 500°C	2.3V ± 0.3V
Heater Current (I <sub>H</sub> ) @ 500°C	70mA ± 15mA
Minimum Emissivity	~ 0.7
Heated Area	0.28mm <sup>2</sup> min
Modulation Frequency	DC to 80Hz
Frequency at 50% Modulation	~ 35Hz
Life Time (MTTF) @ 500°C	~ 50000 Hours

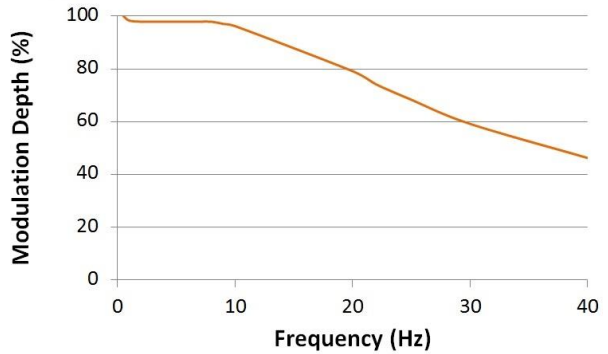
Note1:  $R = (R_0 - R_T)[1 + \alpha(T - T_0) + \beta(T - T_0)^2] + R_T$   
 $R_T$  (Track Resistance) = 4Ω ± 0.5Ω @ 25°C, T<sub>0</sub> = 25°C  
 $\alpha = 2.05 \times 10^{-3} \text{ K}^{-1}$   $\beta = 0.3 \times 10^{-6} \text{ K}^{-2}$



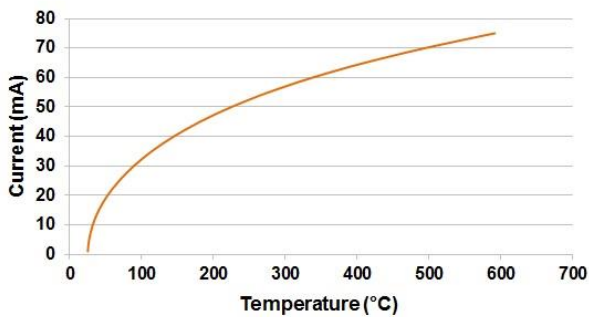
### Power Consumption v Temperature



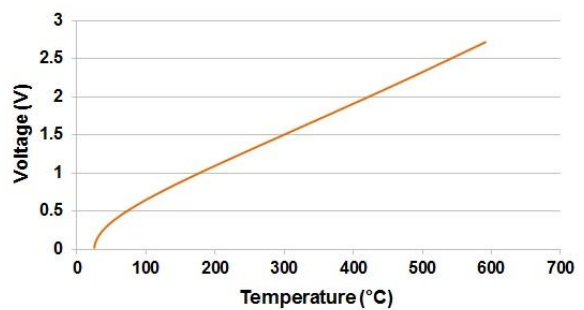
### Modulation Depth v Frequency



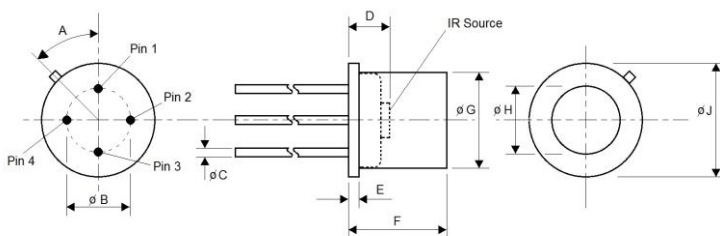
### Current v Temperature



### Voltage v Temperature

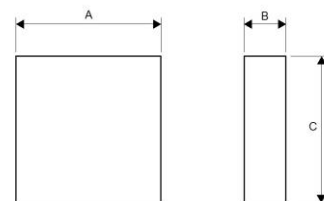


### TO Package dimensions



	A	B	C	D	E	F	G	H	J
TO39	45 <sup>0</sup>	5.08	0.45	1.92	0.38	4.35	8.31	5.30	9.20
TO46	45 <sup>0</sup>	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.