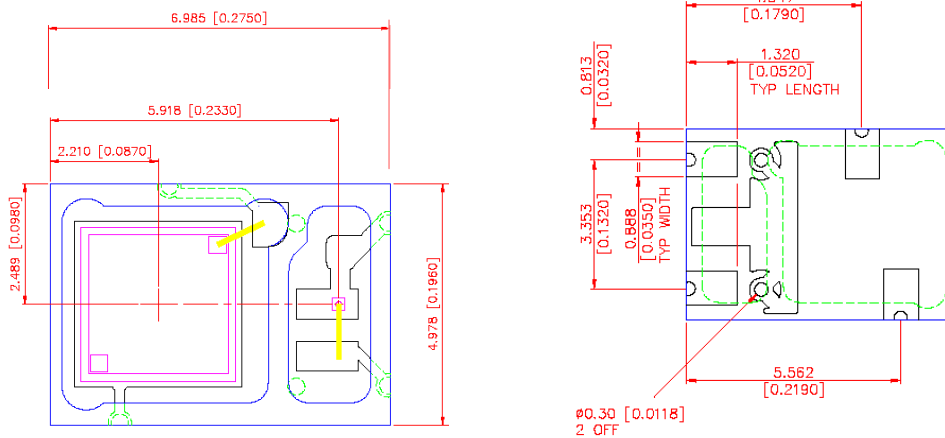
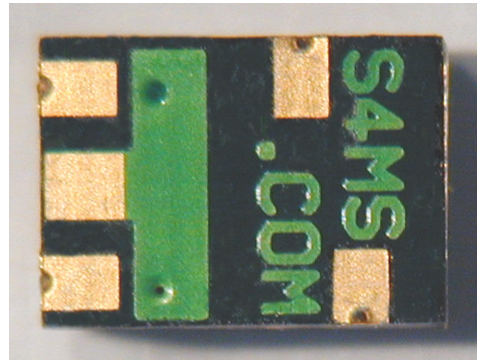
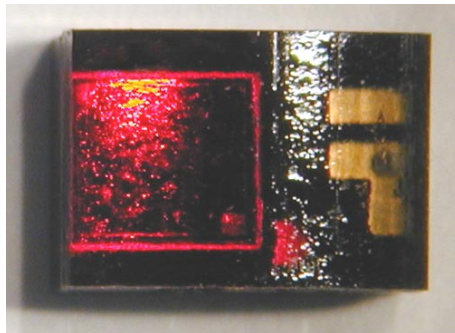


# Oxygen Sensor



## Miniature Fast Response Low Power Fluorescent Oxygen Sensor



### Absolute Maximum Ratings (At 25°C unless noted)

LED Reverse Voltage (Pin 4 to Pin 1)	5V	Temperature Storage	10 to 50°C*
LED supply current (Pin 1 to Pin 4)	30mA	Temperature Operation	10 to 40°C*
LED Peak Current (Pin1 to Pin 4)	100mA		
Photodiode Reverse Voltage	100V		
Photodiode Light Current	.5mA		

\* Values based on test results to date - SMSI expects the full performance range may exceed these values.

### Mechanical Characteristics

Parameter	Value	Units
Length	0.275	in
Width	0.196	in
Height	0.180	in
Weight	0.21	g

## Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
LED supply current	I			1	30 Note 1.	mA
LED peak wavelength	$\lambda_{\text{peak}}$	I = 20mA	465	470	475	nm
LED spectral bandwidth	$\lambda_{\text{D}}$	I = 20mA		26		nm
LED power	W			3.4	50	mW
LED reverse breakdown voltage	$V_{\text{R}}$		5.0			V
LED intensity	$I_{\text{led}}$	I = 20mA		440		mlm
LED forward voltage	$V_{\text{led}}$	Across pin 1 to pin 4 I = 20 mA		3.5	3.9	V
LED frequency	f	In typical transimpedance application circuit		20		kHz Note 2.
Photodiode dark current	$I_{\text{pd}}$	H=0, $V_{\text{R}} = 5\text{V}$			5	nA
Photodiode shunt resistance	$R_{\text{sh}}$	H=0, $V_{\text{R}} = 10\text{mV}$	.25	1		M $\Omega$
Photodiode junction capacitance	$C_{\text{J}}$	H=0, $V_{\text{R}} = 0\text{V}$		50	70	pF
Photodiode forward voltage	$V_{\text{fpd}}$	I = 100mA			1	V
Photodiode responsivity	A/W	$\lambda = 900\text{nm}$ , $V_{\text{R}} = 0\text{V}$ $\lambda = 660\text{nm}$ , $V_{\text{R}} = 0\text{V}$	.50 .40	.55 .45		Amps/Watt
Photodiode Response Time	$t_{\text{r}}$	$V_{\text{R}} = 0\text{V}$ RL = 1k $\Omega$		5	7	nS
Photodetector filter cutoff	$\lambda_{\text{pd}}$			600		nm
Sensor output	$V_{\text{o}}$	LED current = 1mA. Using typical transimpedance application circuit. Peak to Peak square wave	3	8	18	mV
Operating Temperature	T	LED current = 1mA	10	25	40	$^{\circ}\text{C}$
Oxygen Response time	RT	Step change in [O <sub>2</sub> ] 0% to 20.95% O <sub>2</sub>			120	mS

Notes:

1. Nominal LED current is 1mA. The LED can be run as high as 30mA with an increase in signal and a decrease in lifetime.
2. The LED can be driven at a frequency that is compatible with the final device circuitry. Low frequencies are better for amplitude measurements, higher frequencies favor phase measurements. Running at 20kHz allows amplitude and phase to be measured.