

## Description

The SCA-HS16B is a high-speed silicon PIN photodiode with bandwidth of 1GHz and low capacitance with high responsivity across the spectral range of 320nm to 1100 nm. This N-type photodiode offers high speed, low capacitance, and high breakdown voltage characteristics. The standard version of model SCA-HS16B is housed in a hermetically sealed TO-18 metal case. It is also available in custom packages and in chip form for hybrid circuit boards. This device is capable of meeting MIL-PRF-19500 requirements for environmental integrity and reliability.

Please contact Semicoa for special configurations  
[www.SEMICOA.com](http://www.SEMICOA.com) or (714) 979-1900.

## Applications

- Fiber Optic Communications
- Fast Pulse Measurement
- Data Communications
- Optical Power Meters



## Features

- Photoconductive or Photovoltaic Regime
- High-Reliability Hermetic Package
- Available in Chip Form
- Spectral Response from 320 to 1100nm

## Benefits

- Low Dark Current
- Low Total Capacitance
- Low Cost
- 1 GHz response at 5 Volt bias

Absolute Maximum Ratings			
Parameter	Symbol	Rating	Unit
Operation Temperature	T <sub>OP</sub>	-50 to +120	°C
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C
Reverse Voltage	V <sub>R</sub>	100	V

## DEVICE CHARACTERISTICS

characteristics specified at  $T_A = 25^\circ\text{C}$

### Mechanical Characteristics

Active Diameter	d	0.020	Inches
Active Area	A	0.16	mm <sup>2</sup>

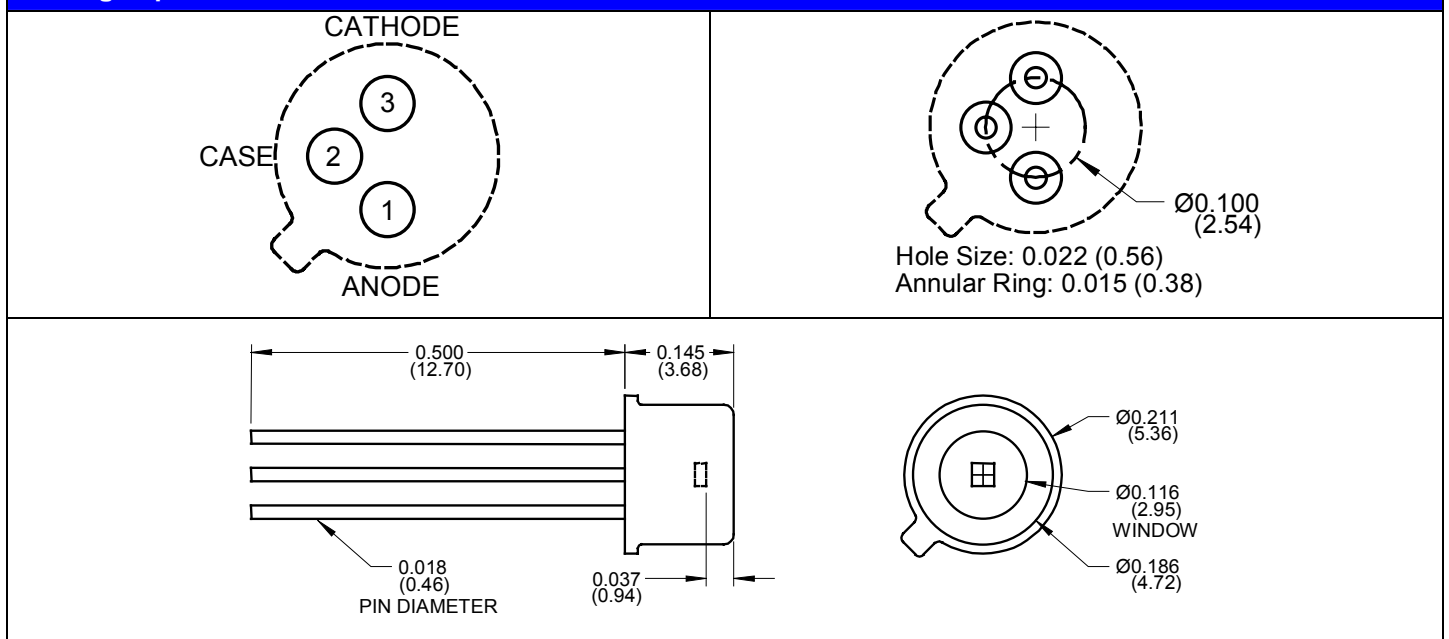
### Optical Characteristics

Spectral Response	$\lambda$	320 to 1100	nm
Peak Sensitive Wavelength	$\lambda_p$	820	nm

### Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Dark Current	$I_D$	$V_R = 1 \text{ mV}$ $V_R = 10 \text{ V}$		0.001 0.01	0.1 1.0	nA
Responsivity	R	$\lambda = 900 \text{ nm}$ $\lambda = 830 \text{ nm}$ $\lambda = 632 \text{ nm}$	0.2 0.3 0.25	0.25 0.4 0.3		A/W
Risetime	$t_r$	$V_R = 25 \text{ V}, R_L = 50 \Omega$		0.35	0.5	ns
Capacitance	$C_j$	$V_R = 25 \text{ V}, f = 1 \text{ MHz}$		1.5	2	pF
Reverse Breakdown Voltage	$V_{BR}$	$I_R = 10 \mu\text{A}$	50	100		V
Forward Voltage	$V_F$	$I_F = 1 \text{ mA}$		0.65	1.00	V
Shunt Resistance	$R_{sh}$	$V_R = 1 \text{ mV}$	1	10		$G\Omega$
Series Resistance	$R_S$	$I_F = 10 \text{ mA}$		6.0	10.0	$\Omega$
Noise Equivalent Power	NEP			$3 \times 10^{-15}$		$\text{W/Hz}^{1/2}$

### Package Specifications



## CHARACTERISTIC CURVES

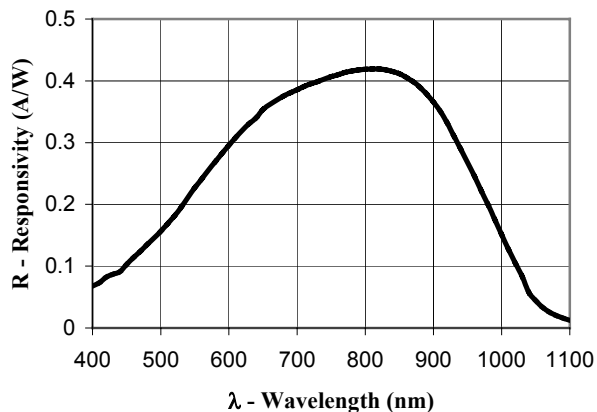


Figure 1 Responsivity vs Wavelength

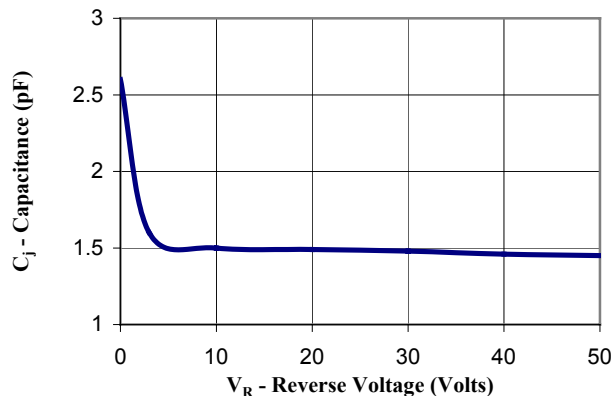


Figure 2 Capacitance vs Reverse Voltage

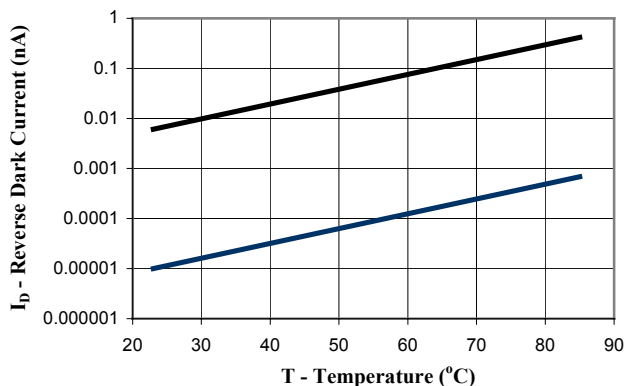


Figure 3. Reverse Current vs Temperature

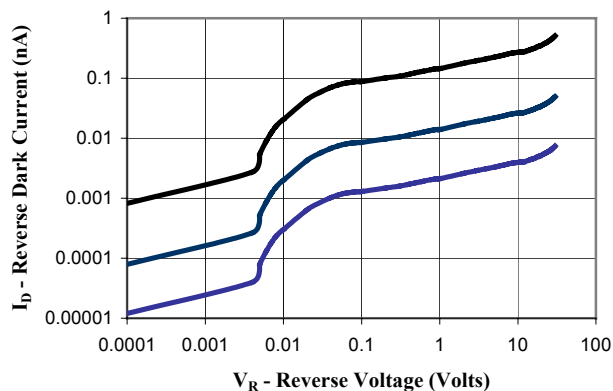


Figure 4. Reverse Current vs Reverse Voltage

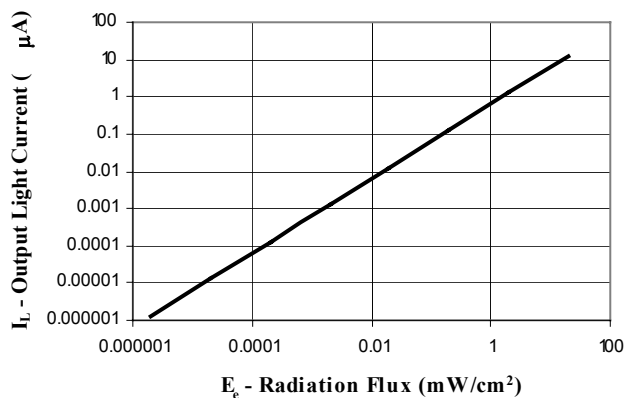


Figure 5. Light Current vs Irradiance @  $\lambda = 950 \text{ nm}$

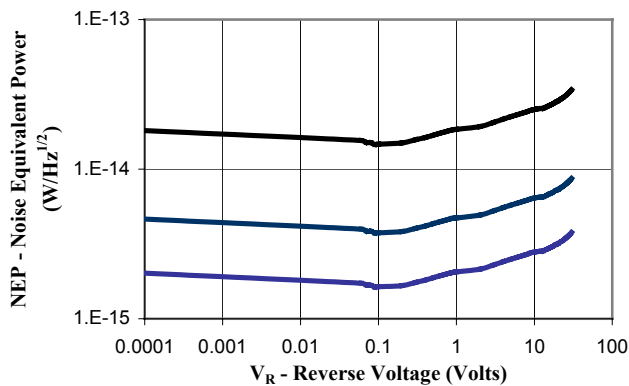


Figure 6 Noise Equivalent Power vs Reverse Voltage

Specifications are subject to change without notice. Please consult the website or factory for current information.