

## Features

- Planar Diffused Structure
- Oxide Passivated
- Guard Ring Construction
- Wide Spectral Range
- Wide Dynamic Range
- Low Noise
- Large Area
- Fast Rise Time
- High Responsivity

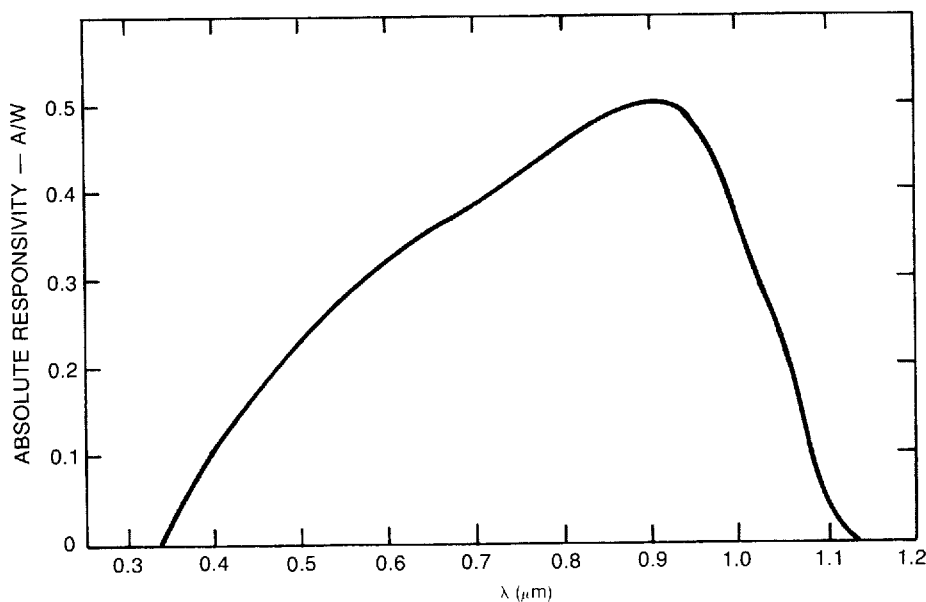
## Operating Data and Specifications at 23°C: Typical Performance at 100 V Bias

Characteristic	SGD-040 A,B and L	SGD-100A	SGD-200	SGD-444	Units
Active Area	0.81	5.1	20.0	100	Sq. mm
Spectral Range	← 400-1150 →				nm
Responsivity	>0.5	>0.5	>0.5	>0.5	A/W
Bandwidth	26	45	45	45	MHz into 50 ohms
Rise Time	3	5	8	10	nS into 50 ohms
Operating Voltage	0-180	0-180	0-180	0-180	V
Breakdown Voltage <sup>1</sup>	>200	>200	>200	>200	V
Capacitance	1.2	4.0	14	70	pF
Dark Current	<3	<10	<100	<200	nA
Channel Resistance	>25	>3.0	>1.5	>1.0	Megohms
Series Resistance	5000	300	200	50	ohms
Noise Current	4	9	20	30	10 <sup>-14</sup> A/Hz <sup>1/2</sup>
NEP (900,10 MHz,1)	8	18	40	60	10 <sup>-14</sup> W/Hz <sup>1/2</sup>
Response Linearity	← <1% →				Over 7 decades
Operating Temperature	← -55 to +125 →				°C
Package Style	TO-18 or TO-5 <sup>2</sup>	TO-5	TO-8	TO-36	

### Notes

- 1 Breakdown voltage measured at 100 microamps dark current
- 2 SGD-040A TO-5  
SGD-040L Lensed TO-5  
SGD-040B TO-18

## Typical Spectral Response

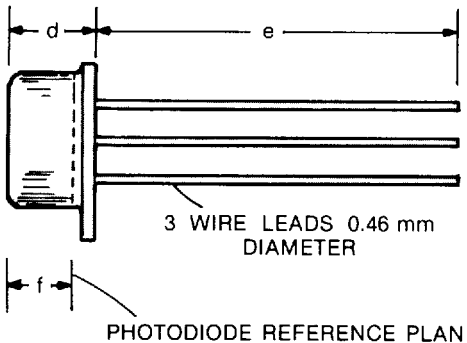


## Responsivity/Temperature Coefficient-SGD Series at 90 Volts

Wavelength	Temperature Coefficient
Nanometers	%/°C
400	-0.14
450	-0.06
500	-0.003
550	-0.002
600	-0.001
650	0
700	0
750	+0.003
800	+0.010
850	+0.015
900	+0.03
950	+0.06
1000	+0.30
1060	+1.01

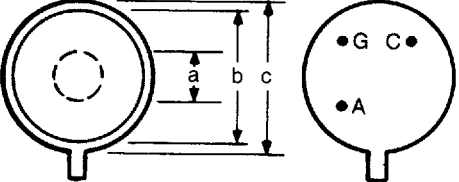
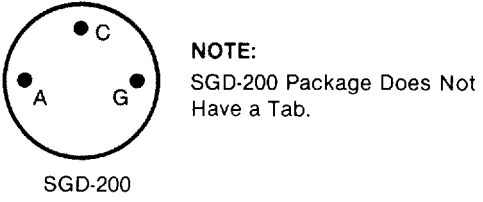
## Mechanical Data and Pin Configurations

### SGD-040, 100, 200 Series



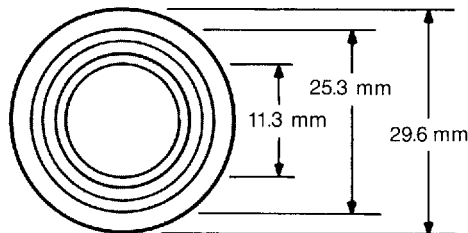
Dimension (mm)	SGD-040A SGD-040L	SGD-040B	SGD-100A	SGD-200
a (Active Dia.)	1.0	1.0	2.5	5.08
b	8.4	4.6	8.4	12.6
c	9.1	6.2	9.1	14.6
d	4.2	5.1	4.2	5.9
e	>19.0	>19.0	>19.0	>19.0
f	2.3	3.7	2.3	3.5
Pin Circle Radius	2.5	1.3	2.5	5.3
Window Thickness	1.3 *	0.9	1.3	1.3
Window Diameter	6.1	3.5	6.1	9.65

Gold plated Kovar leads, base and cap.  
Window — Corning 7052 glass.  
\* SGD-040L has lensed cap for ~20X optical gain

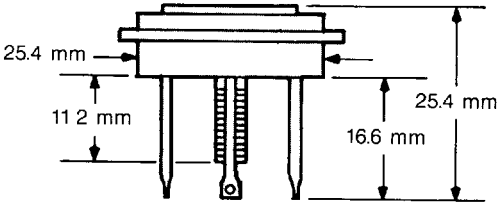
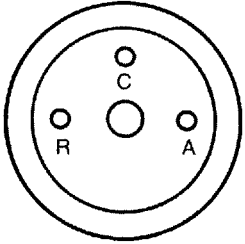
**NOTE:**  
SGD-200 Package Does Not Have a Tab.

### SGD-444 Series



**Package:** Goldplated copper base and cap.  
Goldplate steel pins.  
Pin radius 8.76 mm  
No. 10-32 Stud and case electrically isolated

**Window Aperture:** 11.6 mm dia., 1.0 mm thick, quartz  
Distance, outer window to active surface: 3.8 mm nominal.

**SGD-444 Pin Location**  
C – Common Anode  
A – Active Cathode  
R – Guard Ring Cathode

## Guaranteed Environmental Performance

Document	Inspection	Method	Test Condition
MIL-STD-750B	Vibration	2056	20 g Amplitude
	Shock	2016	1500 g Half Sinusoidal
	Thermal-Temp Cycling	1056.1 B	0°C to 100°C, 5 Cycles
	Constant Acceleration	2006	5000 g
MIL-STD-202D	Moisture Resistance	106	25-65°C; 90-98% RH