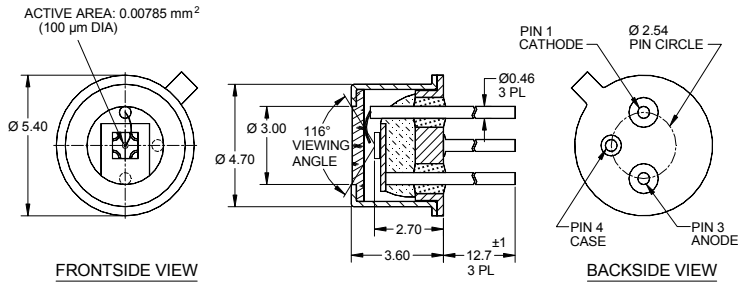
PACIFIC SILICON SENSOR Incorporated

Pacific Silicon Sensor Series 9 Data Sheet
Part Description AD100-9-TO52-S1
Order # 06-095



FEATURES
- ∅ 100 µm active area
- Low slope multiplication curve
- High speed, low noise
- NIR enhanced

DESCRIPTION
0.00785 mm^2 High Speed, Low Noise Avalanche Photodiode with N on P construction. Hermetically packaged in a TO-52-S1 with a clear borosilicate glass window cap.

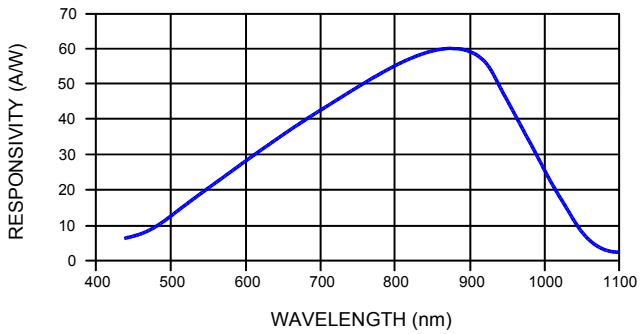
APPLICATIONS
- High speed optical communications
- Laser range finder
- Medical equipment
- High speed photometry

RoHS COMPLIANT

ABSOLUTE MAXIMUM RATING

SYMBOL	PARAMETER	MIN	MAX	UNITS
T_{STG}	Storage Temp	-55	+125	°C
T_{OP}	Operating Temp	-40	+100	°C
$T_{SOLDERING}$	Soldering Temp 10 seconds		+260	°C
	Electrical Power Dissipation @ 22°C	-	100	mW
	Optical Peak Value, once for 1 second	-	200	mW
I_{PH} (DC)	Continuous Optical Operation	-	250	µA
I_{PH} (AC)	Pulsed Signal Input 50 µs "on" / 1 ms "off"	-	1	mA

SPECTRAL RESPONSE at M = 100



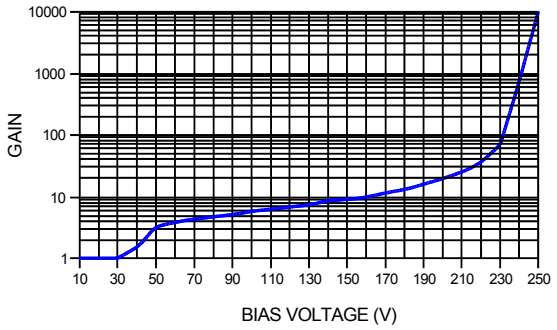
ELECTRO-OPTICAL CHARACTERISTICS @ 22 °C

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_D	Dark Current	M = 100*	---	0.1	0.5	nA
C	Capacitance	M = 100*	---	0.6	---	pF
V_{BR}	Breakdown Voltage	I_D = 2 µA	180	240	---	V
	Temperature Coefficient of V_{BR}		---	1.55	---	V/K
	Responsivity	M = 100; = 0 V; λ = 905 nm	55	60	---	A/W
Δf_{3dB}	Bandwidth	-3dB	---	0.7	---	GHz
t_r	Rise Time	M = 100	---	500	---	ps
	Optimum Gain		50	60	---	
	"Excess Noise" factor	M = 100	---	2.5	---	
	"Excess Noise" index	M = 100	---	0.2	---	
	Noise Current	M = 100	---	0.3	---	pA/Hz$^{1/2}$
	Max Gain		200	---	---	
NEP	Noise Equivalent Power	M = 100; λ = 905 nm	---	6.0 X 10^{-15}	---	W/Hz$^{1/2}$

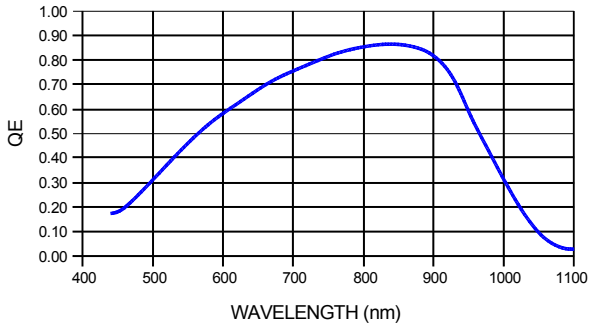
* Measurement conditions: Setup of photo current 1 nA at M = 1 and irradiated by a 880 nm, 80 nm bandwidth LED. Increase the photo current up to 100 nA, (M = 100) by internal multiplication due to an increasing bias voltage.

Disclaimer: Due to our policy of continued development, specifications are subject to change without notice.

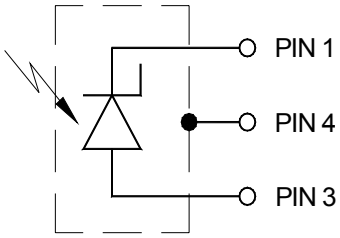
TYPICAL GAIN vs BIAS VOLTAGE



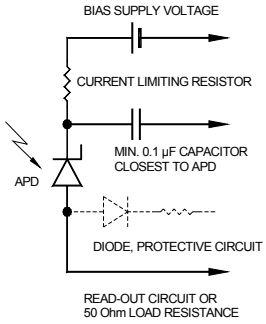
QUANTUM EFFICIENCY for M = 100



DEVICE SCHEMATIC



SUGGESTED CIRCUIT SCHEMATIC



APPLICATION NOTES

- Current should be limited by a protecting resistor or current limiting IC inside the power supply.
- Use of low noise read-out IC.
- For high gain applications (M>50) bias voltage should be temperature compensated.
- For low light level applications, blocking of ambient light should be used.

HANDLING PRECAUTIONS:

- Soldering temperature - 260°C for 10 seconds max. The device must be protected against solder flux vapor.
- Minimum pin length - 2 mm
- ESD protection - Standard precautionary measures are sufficient.
- Storage - Store devices in conductive foam.
- Avoid skin contact with window.
- Clean window with Ethyl alcohol if necessary.
- Do not scratch or abrade window.

USA:
Pacific Silicon Sensor, Inc.
5700 Corsa Avenue, #105
Westlake Village, CA 91362 USA
Phone (818) 706-3400
Fax (818) 889-7053
Email: sales@pacific-sensor.com
www.pacific-sensor.com

International sales:
Silicon Sensor International AG
Wilhelminenhofstrasse 76-77
D-12459 Berlin, Germany
Phone +49 (0)30-63 99 23 10
Fax +49 (0)30-63 99 23 33
Email: sales@silicon-sensor.de
www.silicon-sensor.de