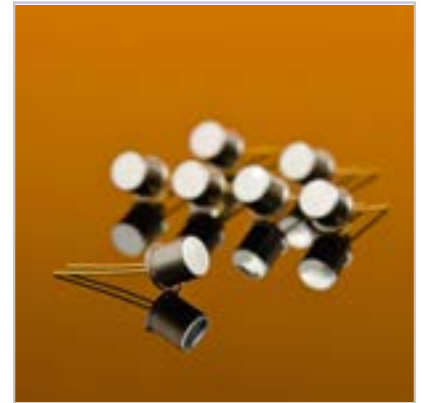


Silicon Avalanche Photodiode SARF-Series

Description

The SARF-Series is based on a "reach-through" structure for excellent quantum efficiency and high speed, and has been optimised for 905 nm range finding applications. The device is ideal for low-gain applications with high levels of background light, particularly where temperature compensation is not possible. A variety of package options is available.



Features

- Very high quantum efficiency
- Very low noise
- Integrated bandpass filter available
- Gradual multiplication curve
- Wide operating temperature range

Applications

- Ranging
- LIDAR
- Laser scanners
- Speed guns

Generic Characteristics at T= 25 °C

	SARF			
	Min	Typ	Max	Units
Wavelength range	400		1100	nm
Wavelength range (with filter)	870		940	nm
Peak sensitivity		905		nm
Diameter		500		µm

Absolute Maximum Ratings

	SARF500		
	Min	Max	Units
Storage temperature	-55	100	°C
Operating temperature	-40	85	°C
Reverse current Peak value (CW operation)		200	µA
Reverse current Peak value (1 sec duration)		1	mA
Forward current I_F at 25 °C Average value (CW operation)		5	mA
Forward current I_F at 25 °C Peak value (1 sec duration)		50	mA
Max. total power dissipation		60	mW
Soldering (for 15 sec.)		260	°C

Electrical Characteristics @ $V_{OP} = 160$ Volts, $T_a = 25$ °C

	SARF500			
	Min	Typ	Max	Units
Gain	7.5	15		
Breakdown voltage @ $I_d = 10$ µA	300	400		V
Responsivity @ 905 nm	5	10		A/W
V_{br} temperature coefficient		1	3.2	V/°C
Dark current		1.0	10	nA
Noise current		0.05		pA/√Hz
Capacitance		1.0		pF
Rise time		3		nsec

Fig. 1: Spectral Response (with Filter, Gain = 18)

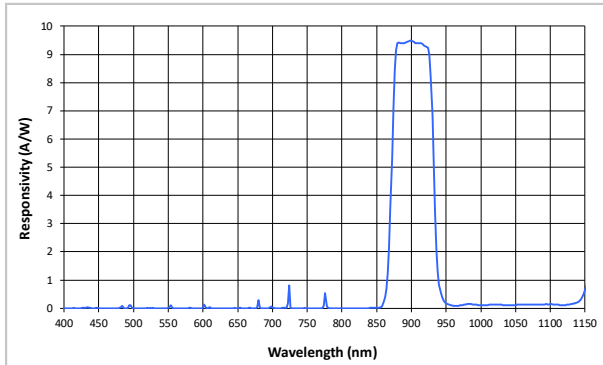


Fig. 2: Quantum Efficiency vs. Wavelength (no Filter)

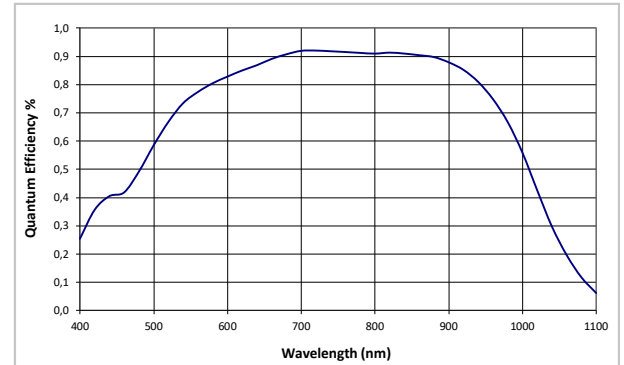


Fig. 3: Typical Dark Current Characteristics, 25 °C

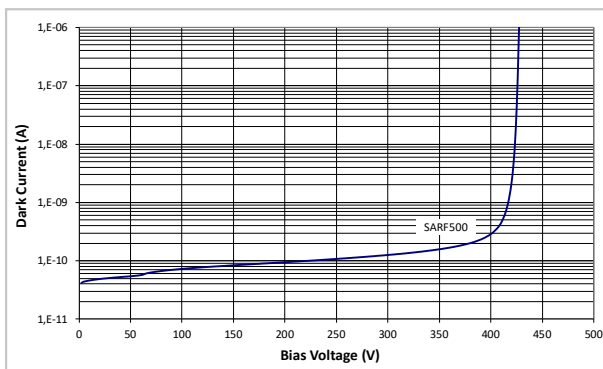


Fig. 4: Gain - Voltage Characteristics @ 905 nm

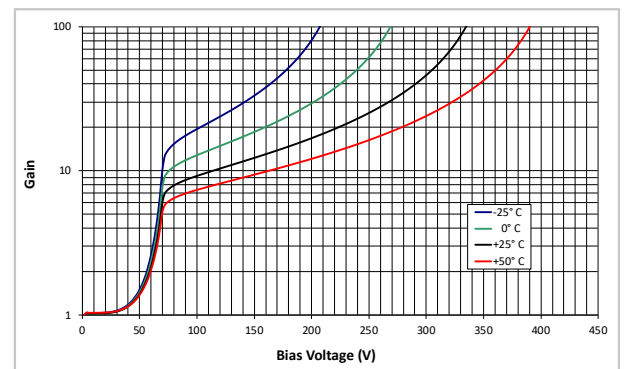


Fig. 5: Capacitance vs. Reverse Voltage

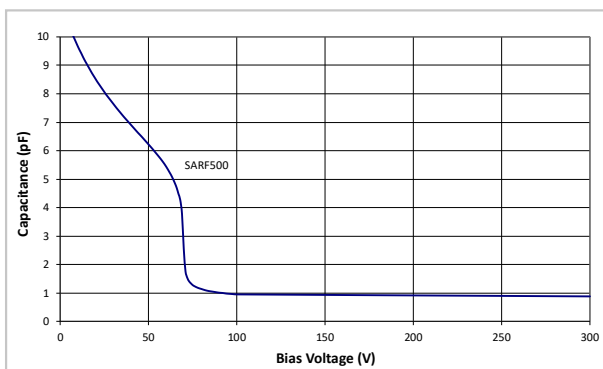
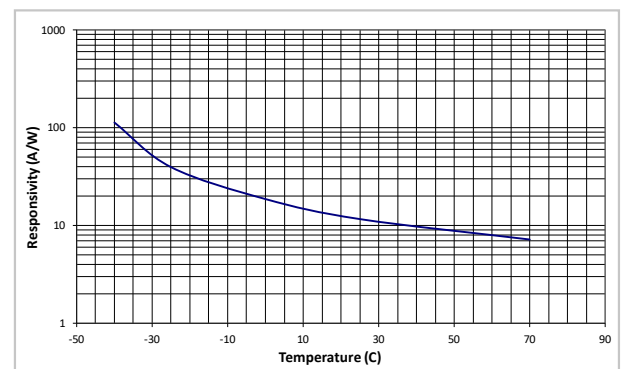
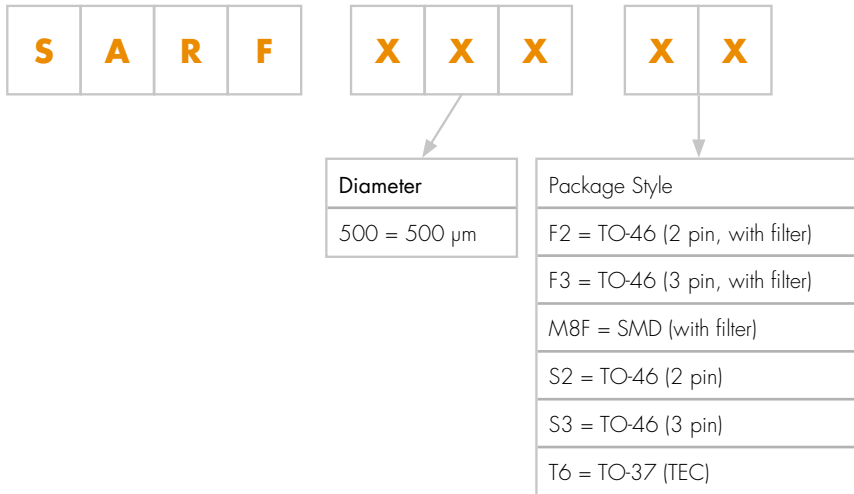


Fig. 6: Response vs. Temp. at VOP = 160 V @ 905 nm

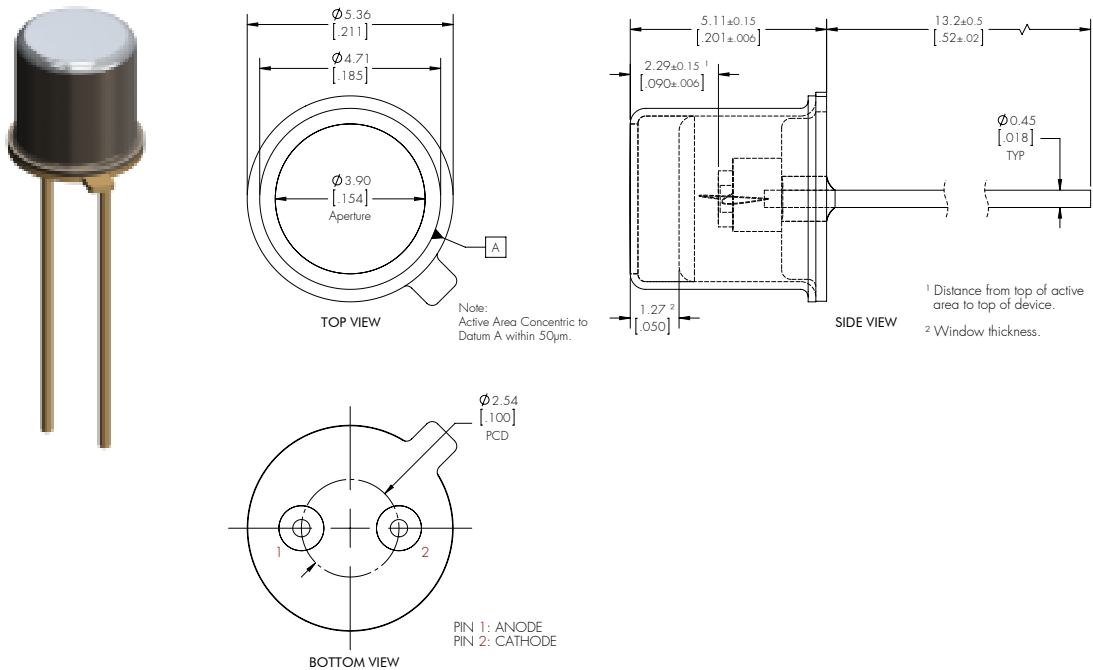


Product Number Designations

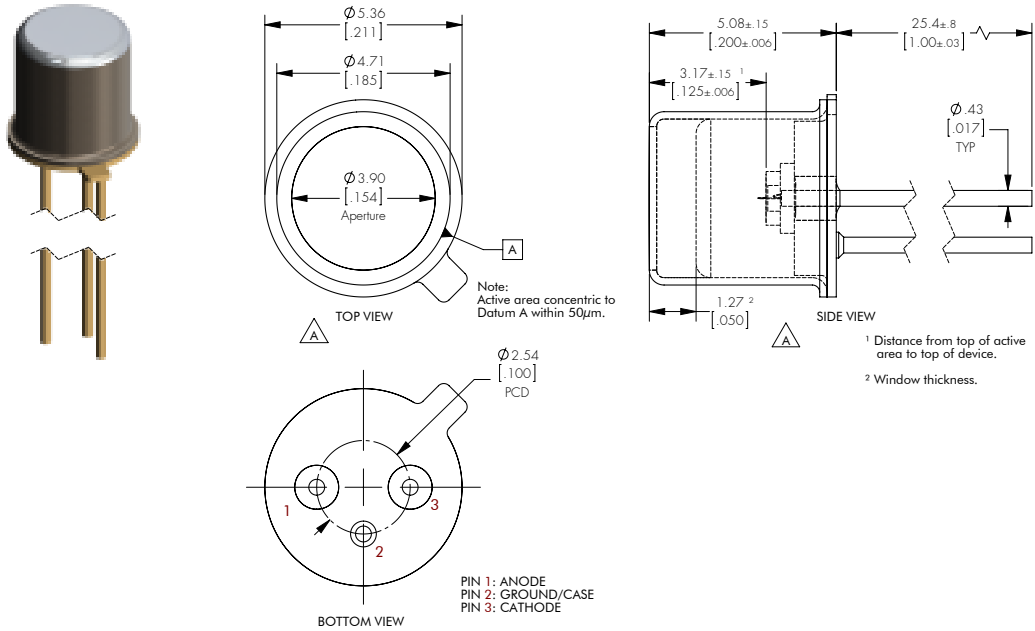


Package Drawings

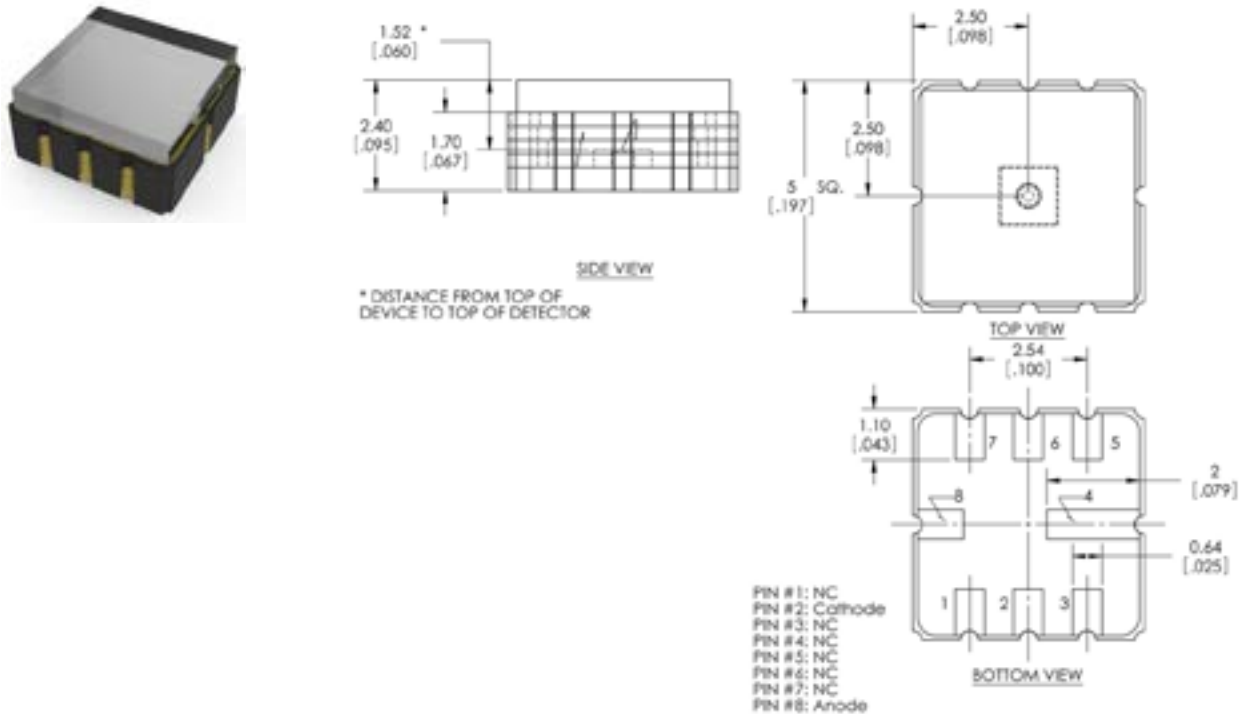
Package F2 TO-46 (2 pin, with filter)



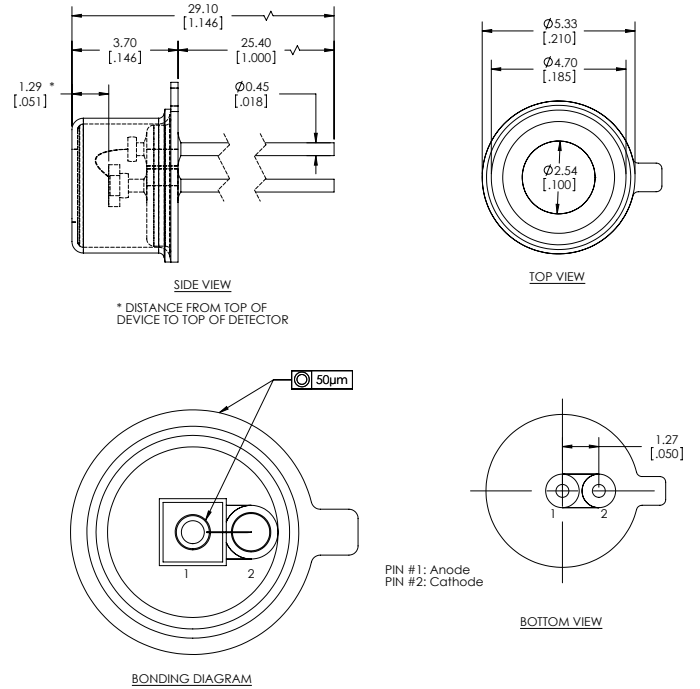
Package F3 TO-46 (3 pin, with filter)



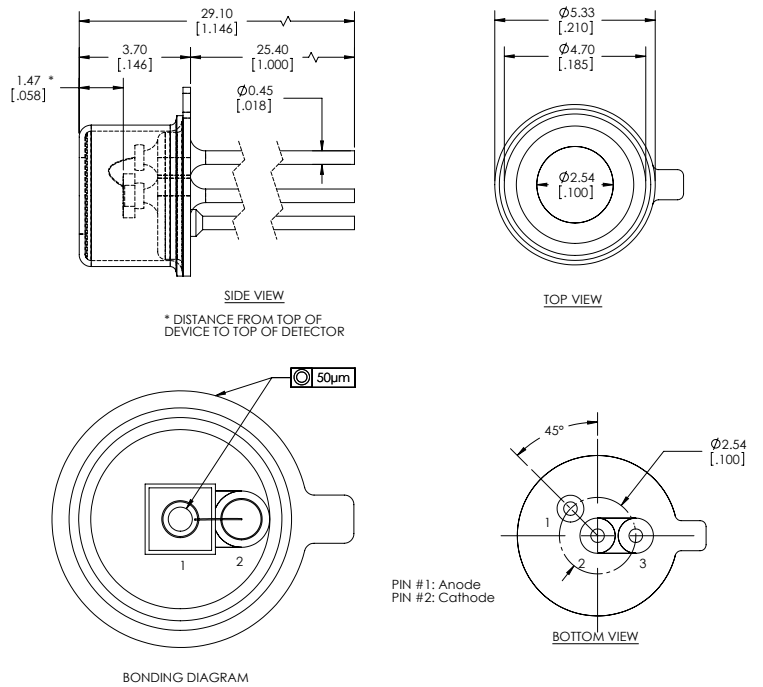
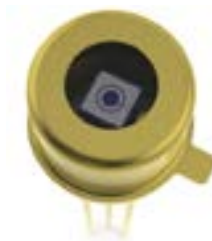
Package M8F SMD (with filter)



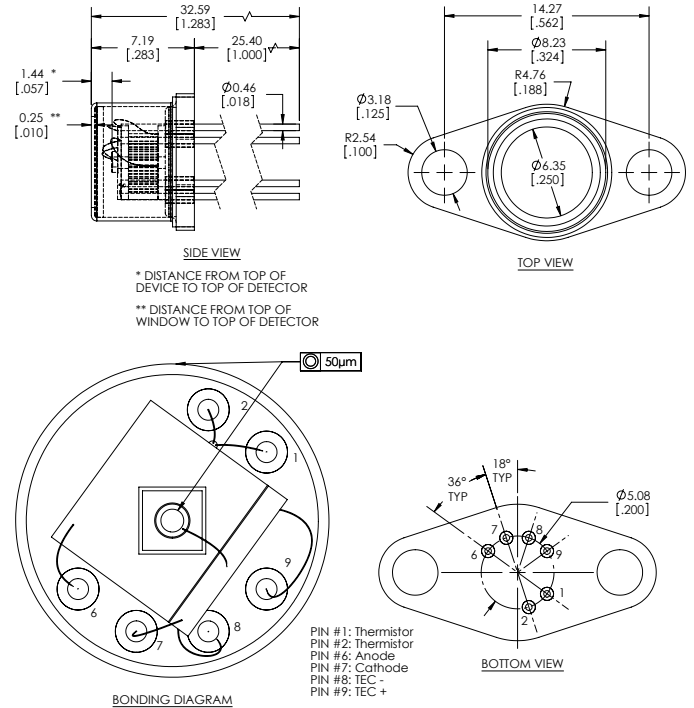
Package S2 TO-46 (2 pin)



Package S3 TO-46 (3 pin)



Package T6 TO-37 (TEC)



Product Changes

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No liability is assumed as a result of their use or application.

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