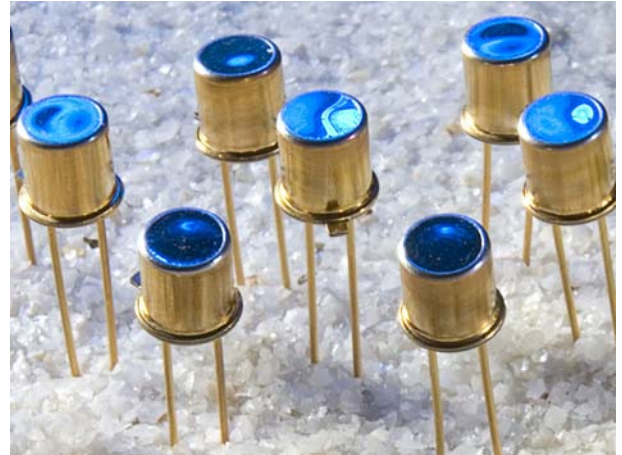


Silicon Avalanche Photodiode SARF-Series

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. The APD is hermetically sealed in a modified TO-46 package with integrated 905 nm filter.



FEATURES

- Very High Quantum Efficiency
- Very Low Noise
- Integrated Bandpass Filter
- Gradual Multiplication Curve
- Wide Operating Temperature Range

APPLICATIONS

- Rangefinding
- LIDAR
- Laser Scanners
- Speed Guns

GENERIC CHARACTERISTICS AT T= 25°C

	SARF			Units
	Min	Typ	Max	
Wavelength Range (with filter)	880		930	nm
Peak Sensitivity		905		nm



ABSOLUTE MAXIMUM RATINGS

	SARF500			Units
	Min	Typ	Max	
Storage Temperature	-55		100	°C
Operating Temperature	-30		75	°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 5 sec.)			200	°C

ELECTRICAL CHARACTERISTICS @ $V_{OP}= 160$ VOLTS, 25°C

	SARF500			Units
	Min	Typ	Max	
Diameter		500		μm
Gain	7.5	15		
Operating Voltage, V_{op}	150			V
Breakdown voltage @ $I_d= 10 \mu A$	300	400		V
Responsivity @ 905 nm	5	10		A/W
V_{br} Temperature Coefficient		2.5	3.2	V/°C
Dark Current		1.0		nA
Noise Current		0.05		pA/√Hz
Capacitance		1.0		pF
Rise Time		3		nsec



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

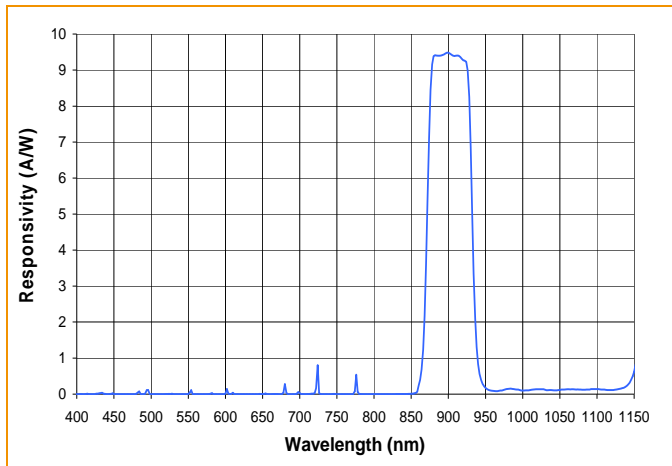


Fig. 2: Quantum Efficiency vs. Wavelength (no Filter)

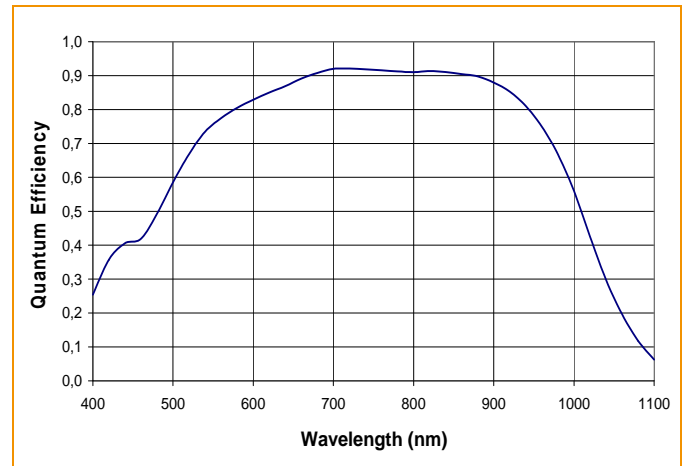


Fig. 3: Typical Dark Current Characteristics, 25°C

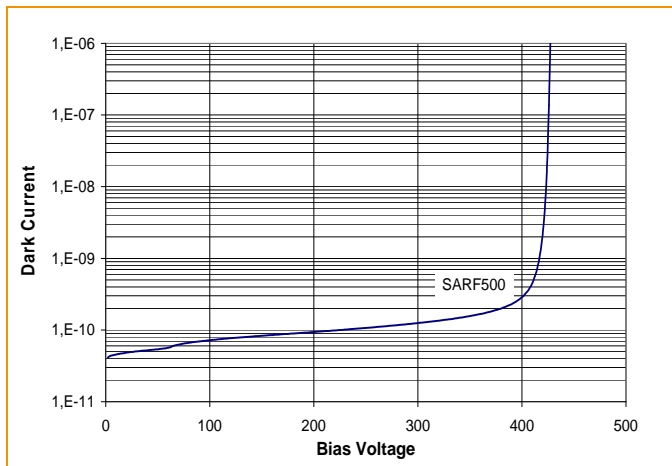


Fig. 4: Gain – Voltage Characteristics

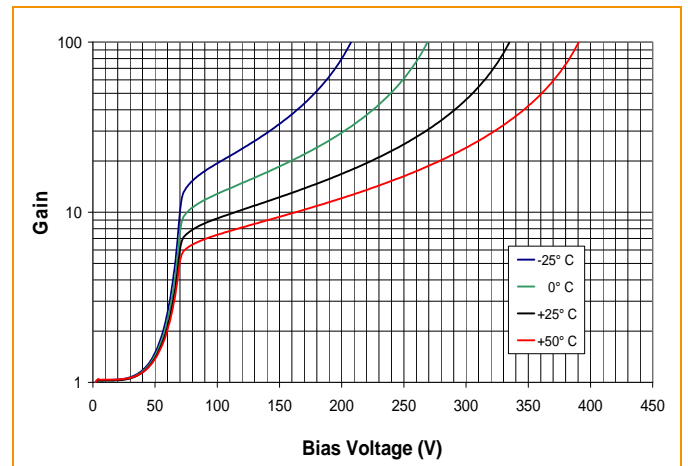


Fig. 5: Capacitance vs. Reverse Voltage

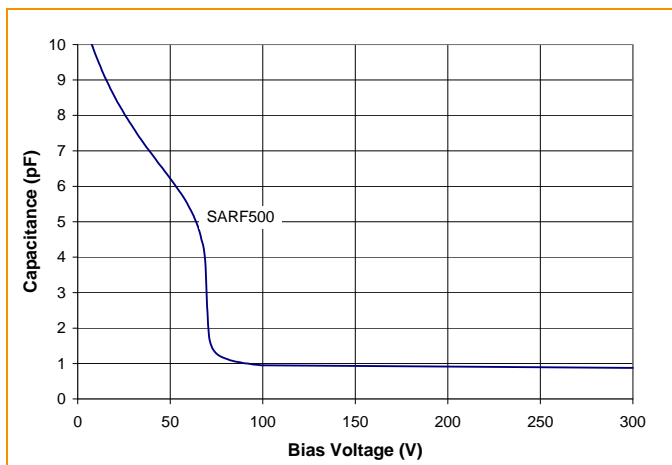
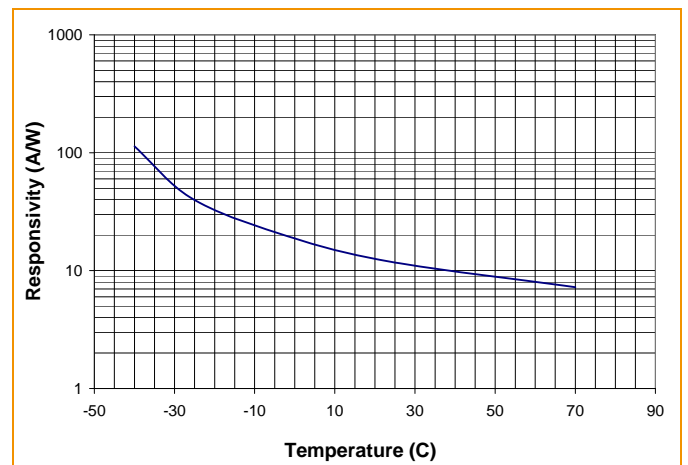
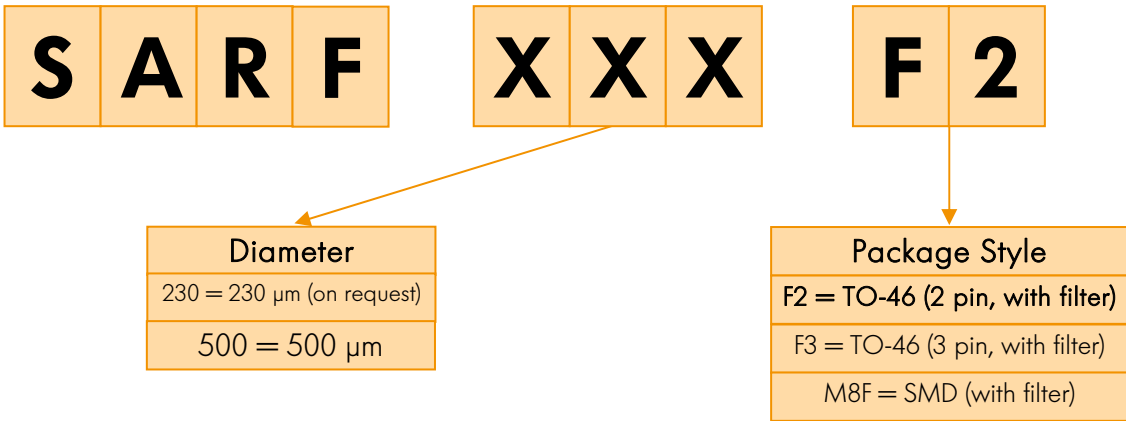


Fig. 6: Response vs. Temp. at $V_{op} = 160V$

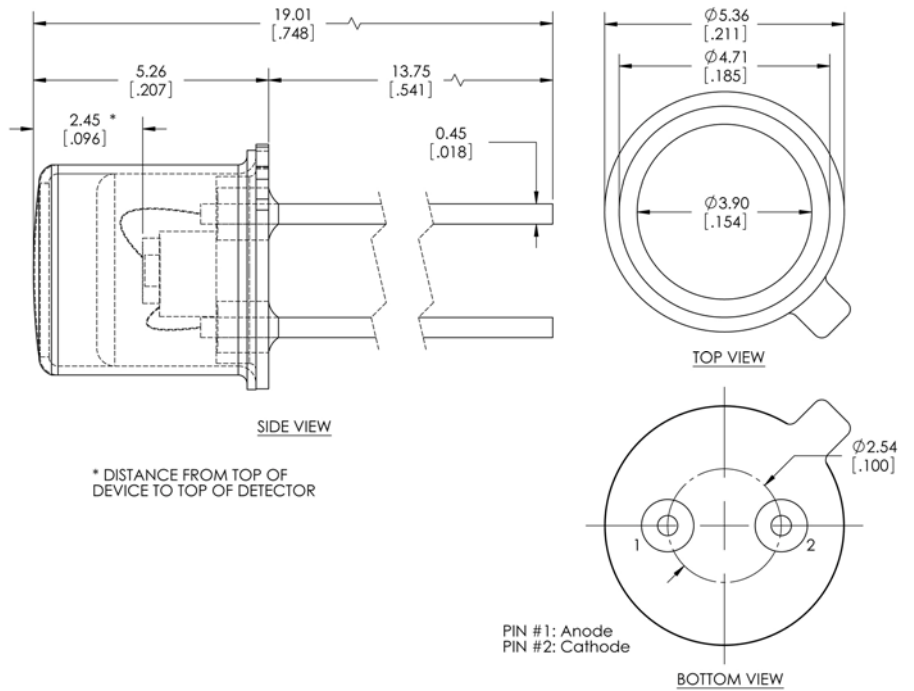


PRODUCT NUMBER DESIGNATIONS

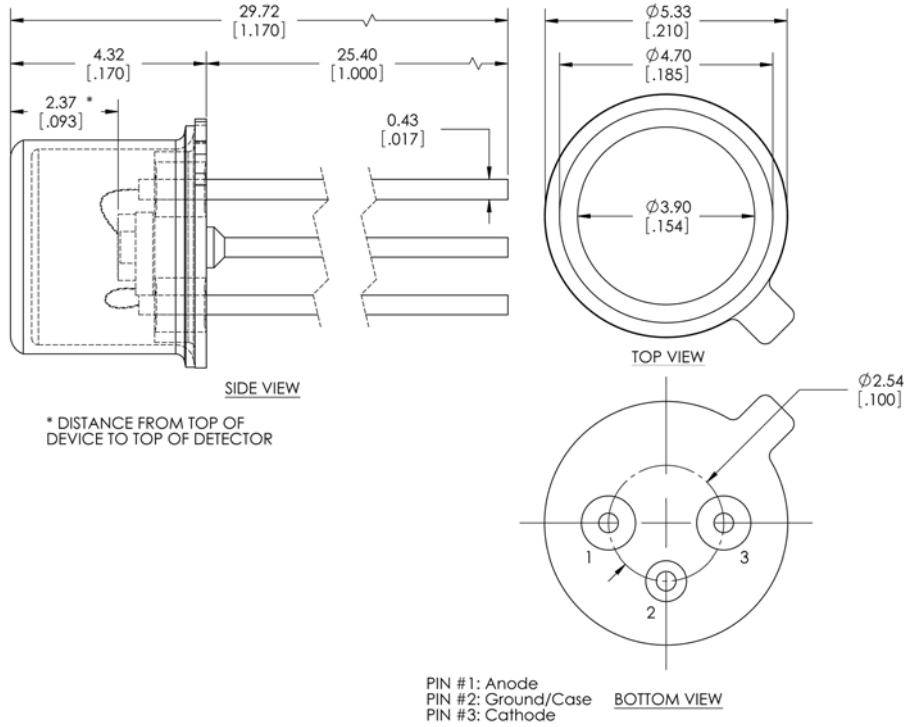


PACKAGE DRAWINGS

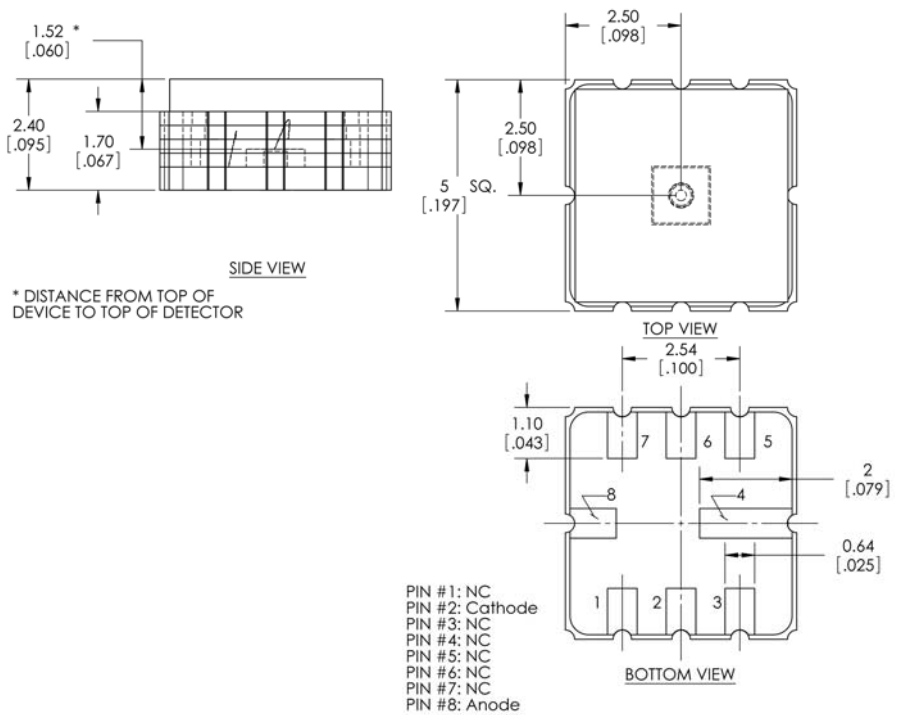
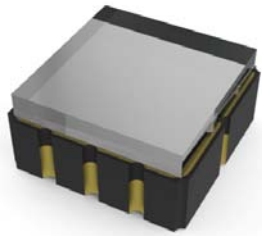
Package F2 TO-46 (2 pin, with filter)



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



Package M8F SMD (with filter)



PRODUCT CHANGES

LASER COMPONENTS reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

ORDERING INFORMATION

Products can be ordered directly from LASER COMPONENTS or its representatives. For a complete listing of representatives, visit our website at www.lasercomponents.com .

Custom designed products are available on request.

04/09 / V6 / HW / lcd/ sarf-series.doc

