

High-Response 1064-nm Silicon Avalanche Photodiode Preamplifier Module with/without Thermoelectric Cooler

HIGH 1064 NM SENSITIVITY • LOW NOISE • TEMPERATURE CONTROL • ROHS COMPLIANT

A distance-detecting device should provide you with accurate and consistent readings under a variety of conditions and wavelengths. Whether you are dealing with low or high signals, warm or cold weather, near or far distances, your decision-making depends on the speed and precision of the information you receive.

CMC's new family of *Silicon Avalanche Photodiode (APD) Preamplifier Module* has a high signal to noise ratio at 1064 nm. They supports designs that detect farther distances more accurately than other devices of its kind. They are compact and practical, operating quietly and efficiently in wavelength ranges of 400 to 1100 nm. This series offers two commercial-off-the-shelf (COTS) options: with or without a built-in thermoelectric cooler (TEC).

Fast, accurate and practical all rolled into one receiver

- High-density microcircuit combined with advanced optoelectronics
- Nanosecond recovery from laser bursts without damage
- Ability to detect signal power in fW
- Low NEP at high temperatures
- Compact design minimizing parasitic noise

CMC is committed to:

- Work closely with your engineering team throughout the project
- Develop a solution tailored to your design needs
- Take the time required to deliver a quality product



FEATURES

High sensitivity at 1064 nm

Works well in YAG wavelength

Sensitive for ultra-low light signals

Detects longer distances more quickly, accurately, and consistently

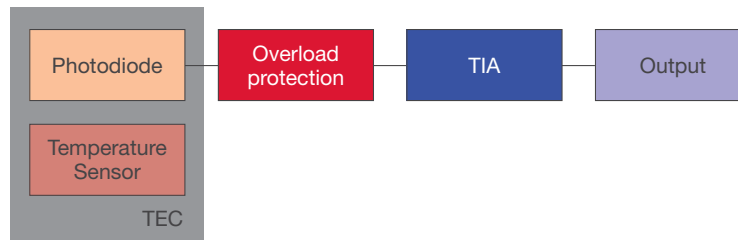
Fast overload recovery Minimizes receiver damage and usage interruption from high laser bursts

KEY APPLICATIONS

- Long-distance rugged laser range finding
- Airborne LIDAR
- High-speed low-light level detection

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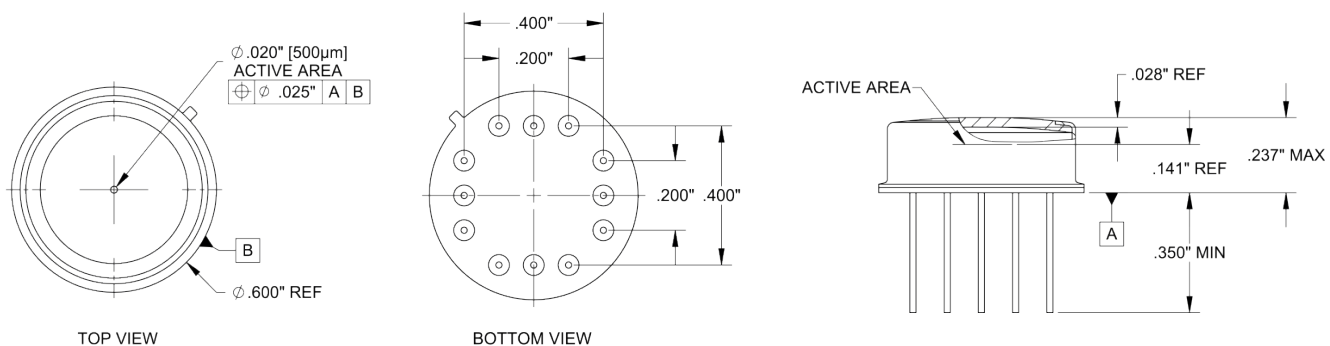
How it works – Device Block Diagram



Electro-Optical Characteristics at $T_A = 25^\circ\text{C}$

Parameter/Condition	Minimum	Typical	Maximum	Unit
Active area		500		μm
Responsivity (Re)	1000	-	-	kV/W
Noise equivalent power (NEP @ 1000kV/W)				
1064 nm, Cooler OFF [Tcase = 25 °C]	-	100	120	fW/ $\sqrt{\text{Hz}}$
1064 nm, Cooler OFF [Tcase = 85 °C]	75	220	575	fW/ $\sqrt{\text{Hz}}$
1064 nm, Cooler ON [Tcase = 85 °C]	50	125	195	fW/ $\sqrt{\text{Hz}}$
Bandwidth = $f_{-3\text{dB}}$	60	80	100	MHz
Storage temperature range, T_{stg}	-55	-	+125	$^\circ\text{C}$
Operating temperature range, T_A	-40	-	+85	$^\circ\text{C}$

Mechanical Specifications – Package Dimensions and Pinout (option with TEC)



PINOUT			
1	NC	7	HV_POSITIVE
2	TEC-	8	GND
3	TEC+	9	OUTPUT
4	TSensor RTH1	10	V_POS (+5V)
5	TSensor RTH2	11	V_NEG (-5V)
6	GND	12	GND

Unless otherwise specified, dimensions are in inches (in.) and are for reference purposes only.

For more information, visit www.cmcelectronics.ca or email us at opto@cmcelectronics.ca

For information purposes only. To accommodate product improvements, specifications are subject to change without notice.

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