InGaAs 50, 80 and 200 µm Avalanche Photodiode in Hermetic Package

CMC 264-339767 SERIES ILLUSTRATION

CMC Electronics' 264-33767-VAR series is an InGaAs APD with low k factor and high responsivity, in a TO-hermetic package.

Based on an industry proven design and improved for fast overload recovery, the 264-339767 InGaAs APDs have a high QE (Quantum Efficiency) over the band of 1000 to 1600 nm. The APD's junction offers more than 1dB optical sensitivity improvement over classical InGaAs multiplication APDs. With low leakage current, the high temperature NEP is maintained even with reduced cooling requirements.

Temperature compensation for constant responsivity is eased by the large delta V (defined as V_{BR} - V_{OP} @ M = 10) of these APDs. This large delta V is more significant if the APDs are operated at gains greater than M = 10.

Customization such as detector size, noise or responsivity screening or selection is available.

Features

- Low k factor of 0.17
- V_{BR} - V_{OP} @ M = 10 > 5V
- Low NEP
- Wide Operating Temp Range
- Hermetic TO-46 Case

Applications

- Range Finding
- LiDAR
- Laser Profiling
- Instrumentation
- Industrial, Analytical

Table 1. Electro-Optical Characteristics

Conditions: T_A = 25°C, M = 10 unless otherwise specified

		200 µm DIA VAR -001			80 µm DIA VAR -002			50 µm DIA VAR -003			
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Min.**	**Typ.**	**Max.**	**Min.**	**Typ.**	**Max.**	**Units**
Operating Voltage	V_{OP}	25	Note 1	80	25	Note 1	80	25	Note 1	80	V
Operating point from Breakdown (V_{BR} - V_{OP})	ΔV	5	8		5	8		5	8		V
Temperature Coefficient of V_{OP}	ΔV/ΔT		0.070						0.070		V/°C
Dark current	I_d		15	50		10	30		5	25	nA
Quantum Efficiency 1064-1550 nm	QE	75	83		75	83		75	83		%
Responsivity at 1550 nm	R		9.4			9.4			9.4		A/W
Capacitance	C_d		2.0	2.4		0.65	0.7		0.55	0.6	pF
Spectral Noise Current	i_n		0.3	0.9		0.1	0.4			0.3	pA/√Hz
Excess Noise Factor	F		3.2			3.2			3.2		
Bandwidth	f_{-3dB}		1.0			2.0			2.5		GHz
Recommended Operating Gain (Note 2)	M	10	20		10	20		10	20		
Operating Temperature	T_A	-45		+85	-45		+85	-45		+85	°C
Storage Temperature	T_{stg}	-55		+125	-55		+125	-55		+125	°C

Notes: 1. V_{OP} is specified on datasheet of each device.
2. Noise increases with gain and depends on bulk and surface currents.

Table 2. Absolute-Maximum Ratings, Limiting Values

Parameter	Symbol	Max.	Units
Forward Current	I_F	5	mA
Total Power Dissipation	P_{TOT}	20	mW
Soldering Temperature (10 seconds, leads only)		260	°C

Figure 1. Typical quantum efficiency

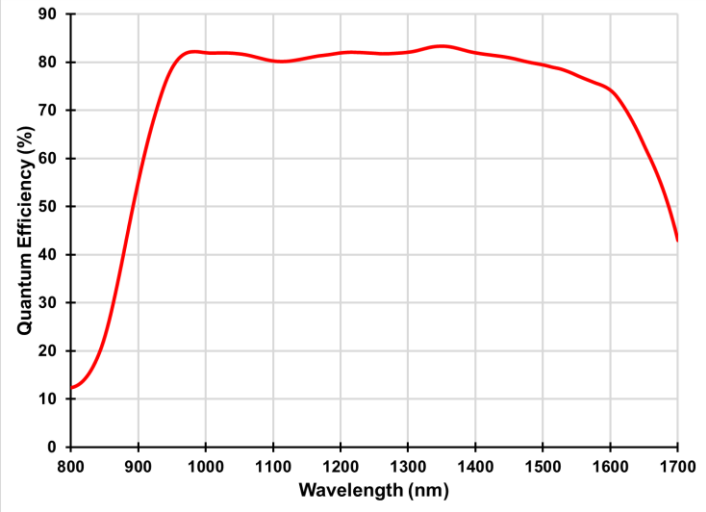


Figure 2. Typical responsivity

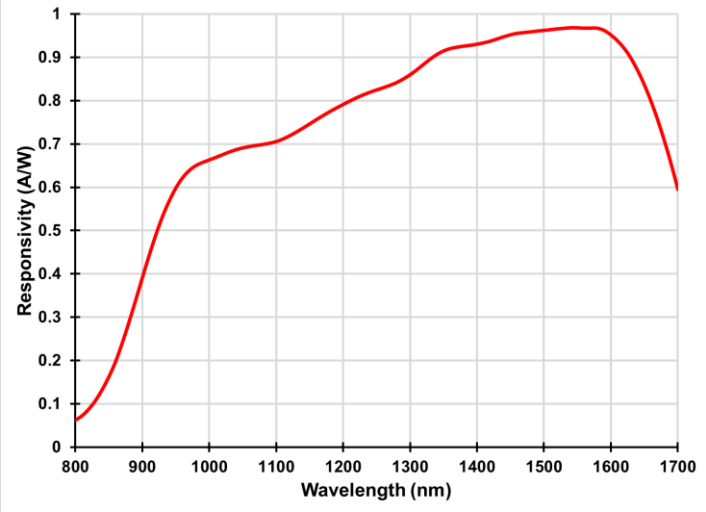


Figure 3. Typical Gain and Dark Current

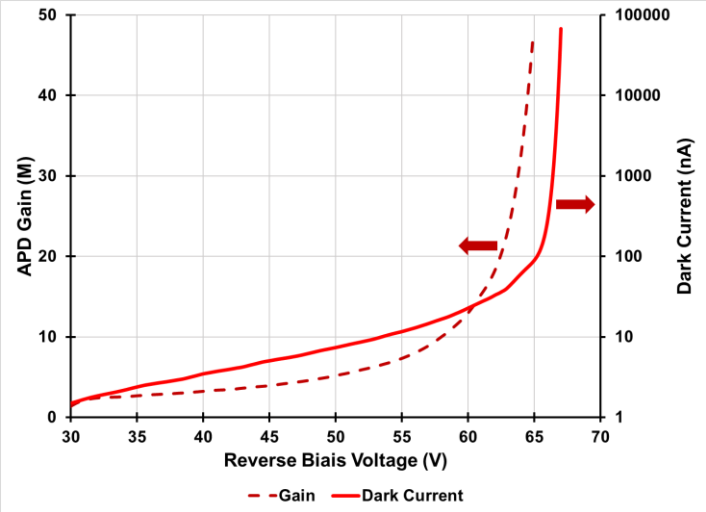


Figure 4. Typical Capacitance

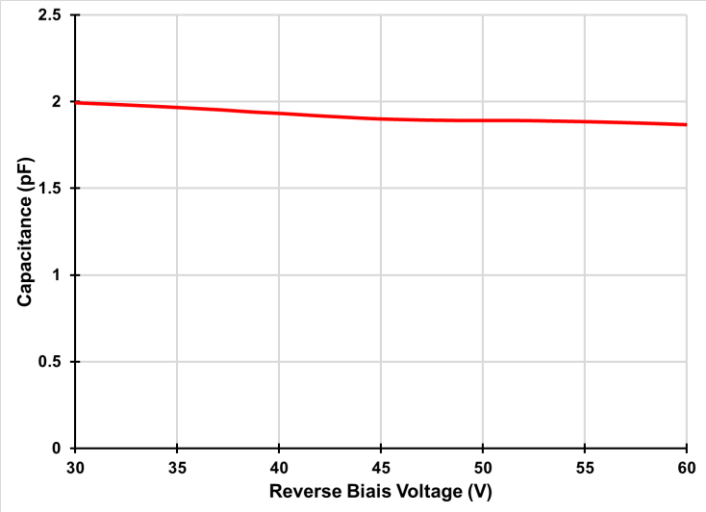
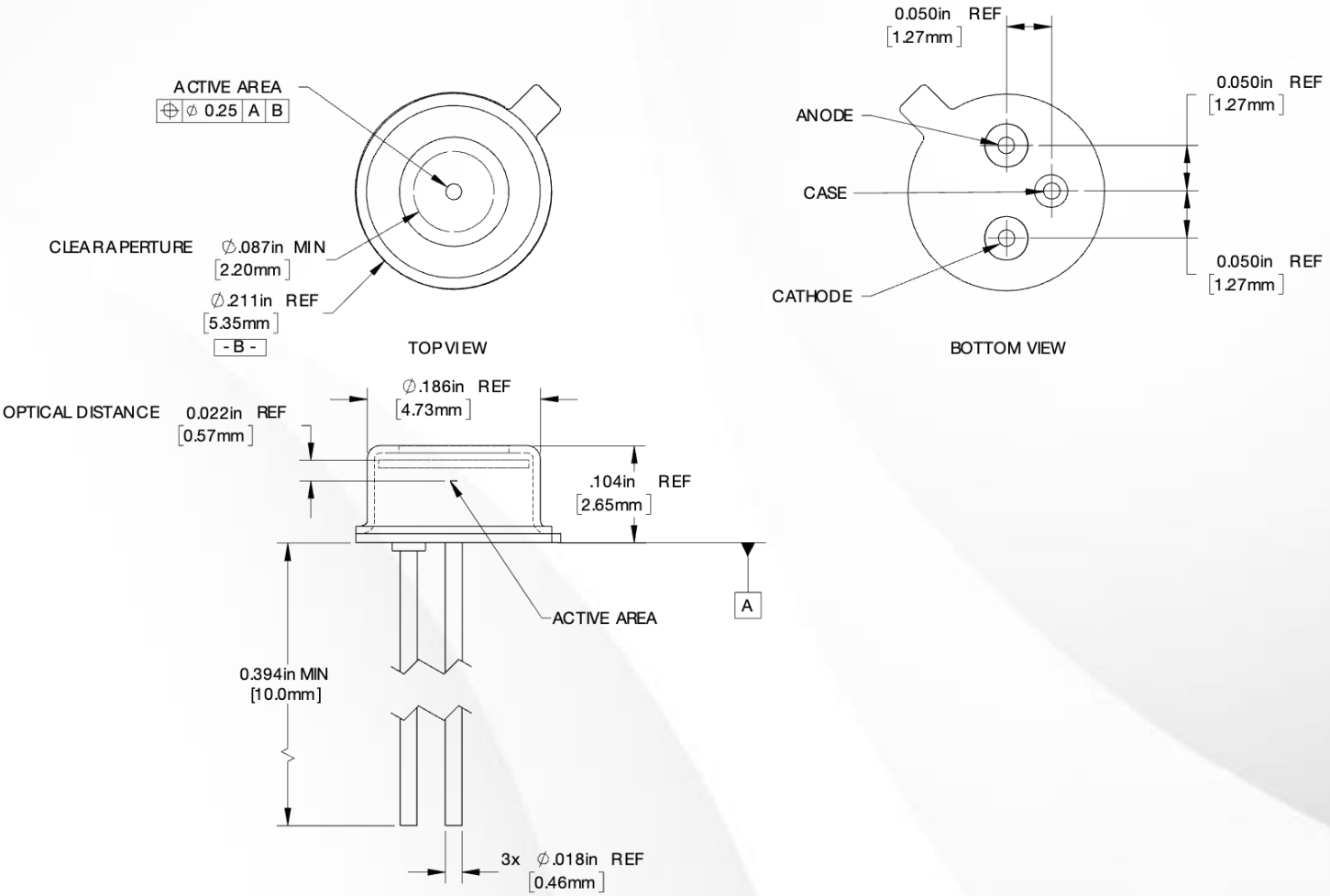


Figure 5. Package Dimension and Pinout

Unless otherwise specified, dimensions are in inches [mm] and are for reference only.



VAR Options

-001	200 µm	TO-46
-002	80 µm	TO-46
-003	50 µm	TO-46

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

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