InGaAs 2 – 3 mm Quadrant PIN Preamplifier Module

CMC Electronics' 264-339838 series is a combination of InGaAs quadrant PIN receivers with four (4) built-in trans-impedance amplifiers in a 1-inch 12-lead TO-can package.

Customizations to bandwidth, rise time and responsivity will be available upon request.

Features

- 2 – 3 mm diameter quadrant InGaAs PIN
- 40 MHz bandwidth
- Low noise Equivalent Power (NEP)
- Spectral Response: 1000 – 1600 nm
- Eye safe operating band
- Common Cathode configuration
- Hermetically Sealed 1-inch TO-can

Applications

- Free-Space Optical (FSO) Communication
- Precision Guided Munition (PGM)
- Laser Warning Systems (LWS)
- Laser Range Finding (LRF)
- Laser Spot Tracking
- Laser Alignment
- Position Sensor

Table 1. Electro-Optical Common Characteristics

Conditions: T_{case} = 25 °C, V+ = 5.0 V, V- = -5.0 V, V_PIN = 3.0, λ = 1570 nm ± 10 nm

Parameter	Symbol	Min.	Typ.	Max.	Units
Output impedance	R_{out}		50		Ω
Bandwidth, f_{-3dB}	BW		40		MHz
Rise time (10-90 %) & Fall time (90-10 %)	t_{rise}		10		ns
Linear Output Voltage Swing (Pulse)			1.0		V
Output Offset Voltage	V_{oo}	-0.1	0.0	0.1	V
Supply current V+	I_{pos}		35		mA
Supply current V-	I_{neg}		-65		mA
Channel-to-channel crosstalk			5		%
Channel uniformity				5	%

Table 2. Electro-Optical Characteristics for 2 mm quadrant diameter

Conditions: T_{case} = 25 °C, V+ = 5.0 V, V- = -5.0 V, V_PIN = 3.0, λ = 1570 nm ± 10 nm

Parameter	Symbol	Min.	Typ.	Max.	Units
Responsivity					
1060 nm	R		6.0		kV/W
1550 nm			9.0		kV/W
Noise equivalent power (DC - 40 MHz) (Note 1)					
Dark conditions	NEP		12		pW/√Hz
1-sun background illumination			20		

Note: 1. Integration of the noise calculation is based on f_{-3dB} bandwidth.

Table 3. Electro-Optical Characteristics for 3 mm quadrant diameter

Conditions: T_{case} = 25 °C, V+ = 5.0 V, V- = -5.0 V, V_PIN = 3.0, λ = 1570 nm ± 10 nm

Parameter	Symbol	Min.	Typ.	Max.	Units
Responsivity					
1060 nm	R		4.5		kV/W
1550 nm			6.5		kV/W
Noise equivalent power (DC - 40 MHz) (Note 1)					
Dark conditions	NEP		20		pW/√Hz
1-sun background illumination			30		

Note: 1. Integration of the noise calculation is based on f_{-3dB} bandwidth.

Table 3. Absolute-Maximum Ratings, Limiting Values

Parameter	Symbol	Min.	Max.	Units
Average photocurrent	I_{ave}		5	mA
Preamplifier Voltage V+	V_{pos}		6.5	V
Preamplifier Voltage V-	V_{neg}	-6.5		V
Quadrant PIN Breakdown Voltage	V_{br}		12	V
Operating Temperature	T_{op}	-40	85	°C
Storage Temperature	T_{stor}	-55	125	°C
Soldering Temperature (5 s, leads only)			250	°C

Figure 1. Typical Normalized Responsivity

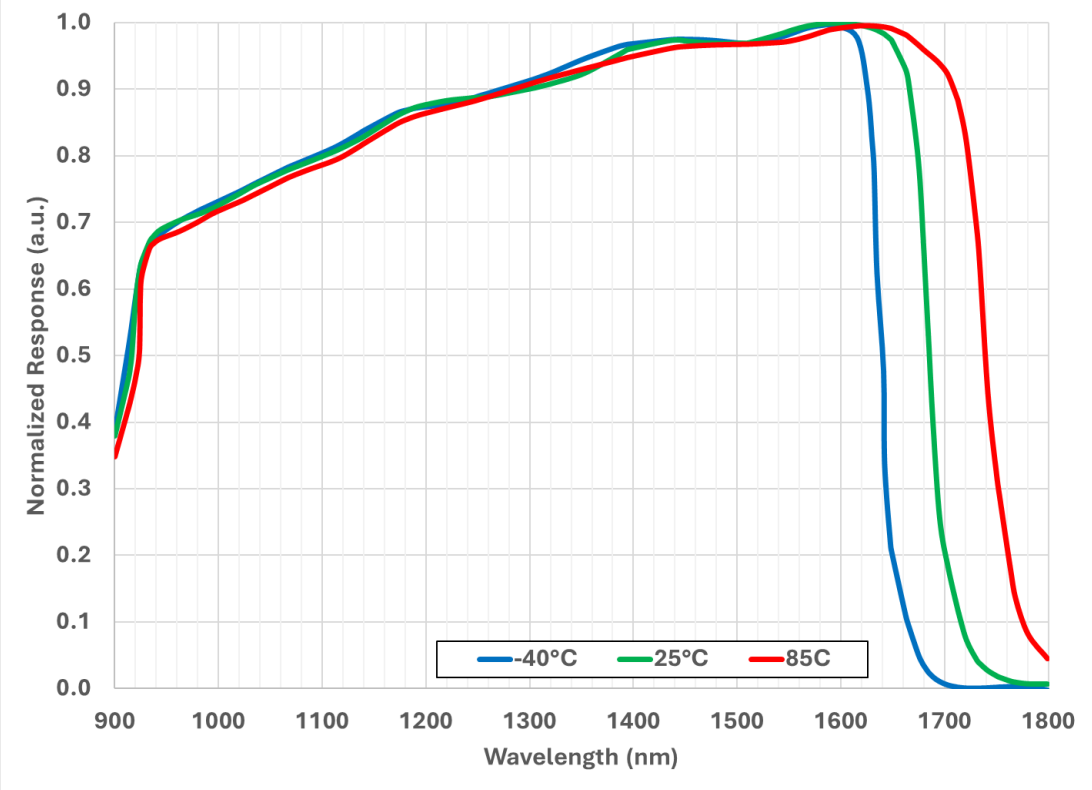
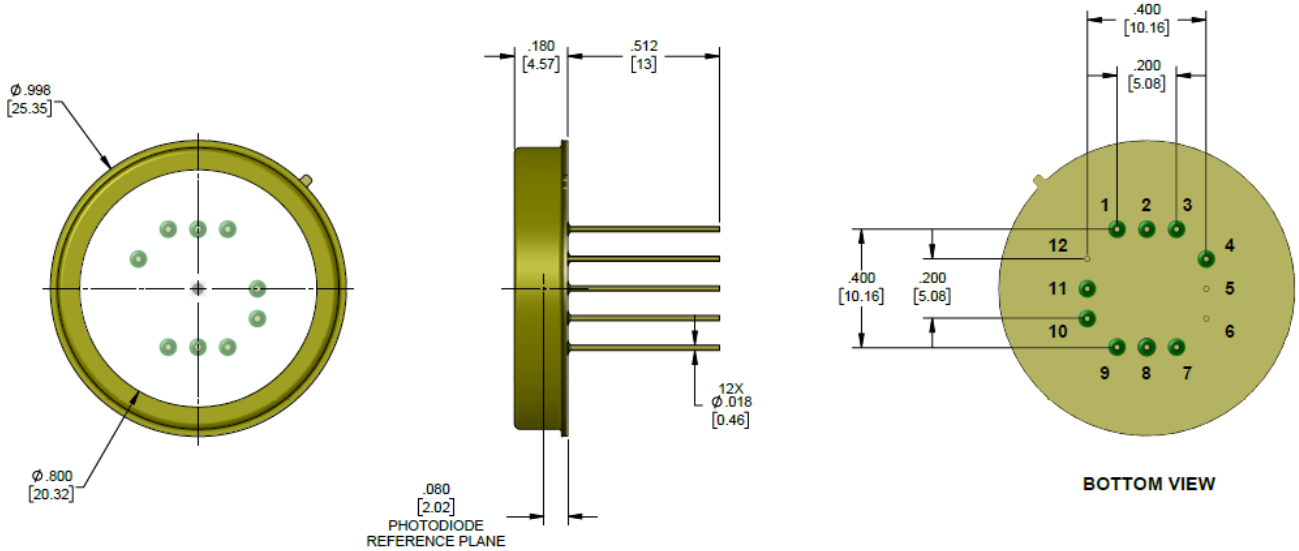
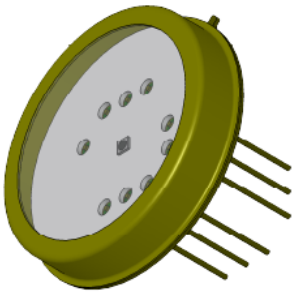


Figure 2. Package Dimension and Pinout

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





PINOUT			
1	OUT1	7	OUT3
2	V+	8	V-
3	OUT2	9	OUT4
4	N/C	10	V_PIN
5	GND	11	N/C
6	GND	12	GND

DIMENSIONS ARE IN INCHES [MILLIMETERS]
AND ARE FOR REFERENCE ONLY

Table 4. Ordering Guide

VAR	Typical Bandwidth	Active Diameter	Comments
264-339838-001	40 MHz	3 mm	
264-339838-002	40 MHz	2 mm	

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