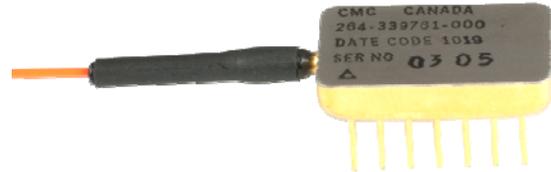


# Pigtailed InGaAs Avalanche Photodiode Preamplifier Module

## Description

CMC Electronics' 264-339761-000 uses an InGaAs APD with a GaAs FET frontend transimpedance amplifier in a DIL-14 package. The InGaAs APD has a low ionization ratio for lower shot noise. The amplifier internal feedback resistor is listed in the characteristics' table. The amplifier has an overload input protection circuit for fast recovery. The output can be AC or DC coupled to a 100 ohm load.



## Features

- Low k of 0.17 (Low excess noise) APD
- 62.5um Core Fibre, other size available
- High Quantum Efficiency 1000-1600nm
- Low noise (NEP) TIA
- Fast overload recovery
- Hermetically-Sealed Package

## Applications

- Range Finding / LIDAR
- Instrumentation
- Laser Profiling
- Free -Space Communications
- Industrial, Medical
- Photometry

## Diagram

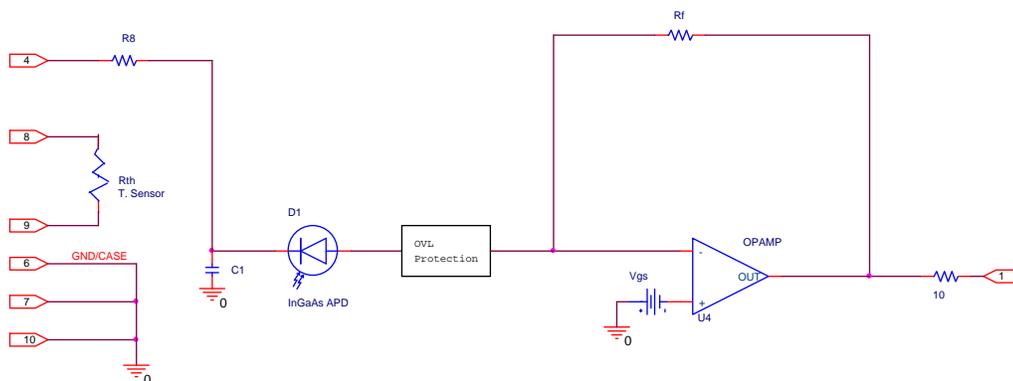


Figure 1: CMC 264-339761 SERIES BLOCK DIAGRAM

# Pigtailed InGaAs Avalanche Photodiode Preamplifier Module

## Electro-Optical Characteristics at $T_A=22^\circ\text{C}$

Unless otherwise specified:  $V_+=5\text{V}$ ,  $V_-=-5\text{V}$ ,  $V_R$ ,  $R_L=100\Omega$  AC.  
(Externally AC coupled through 4.7uF)

	Min.	Typ.	Max.	Unit.
$V_R$ for specified responsivity.....	25	NOTE 1	80	V
Temperature Coefficient of $V_R$ .....	-	0.080	-	$\text{V}/^\circ\text{C}$
$I_d$ APD dark current		10	50	nA
Responsivity (R) 1550 nm, M=10	455	580	-	kV/W
Noise Equivalent Power (NEP = $E_n/R$ ) 1550 nm, M=10	-	100	135	fW/ $\sqrt{\text{Hz}}$
Output Spectral Noise Voltage Density ( $E_n$ ): Average over 100 kHz to 50Mhz ...	-	60	80	nV/ $\sqrt{\text{Hz}}$
Output Impedance .....	-	10	-	$\Omega$
Bandwidth, $f_{3dB}$ .....	50	60	-	MHz
Rise Time (10-90%)	-	6	8	ns
Fall Time $t_f$ (90-10%)	-	6	8	ns
Linear Output Voltage Swing (Pulse)	1.5	2.5	-	V
Output Offset Voltage .....	-0.5	0	0.5	V
Recovery Time within 250mV of initial $V_{oo}$ (-000) At 1mW, 15ns ovl pulse	-	-	200	ns
TH (Thermistor sensor) $R_{TH}$ 25 $^\circ\text{C}$ Temperature slope	-	10 -4	-	k $\Omega$ %/ $^\circ\text{C}$
Supply current V+	-	25	40	mA
V-	-	12	20	mA
Internal Components				
R8		10		k $\Omega$
C1		10		nF
Rf		68		k $\Omega$

Note : 1 -  $V_r$  as specified on datasheet of each module.

## Absolute-Maximum Ratings, Limiting Values

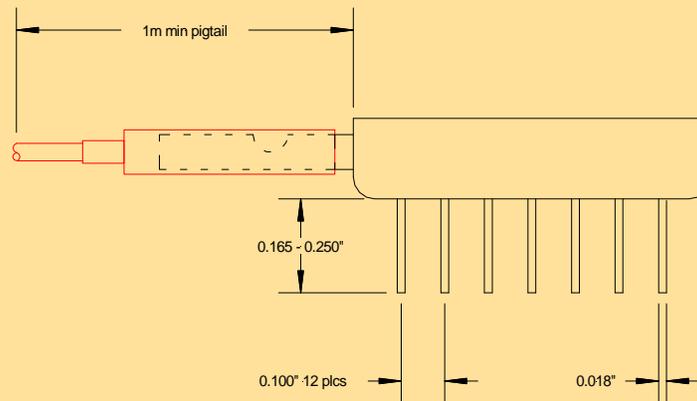
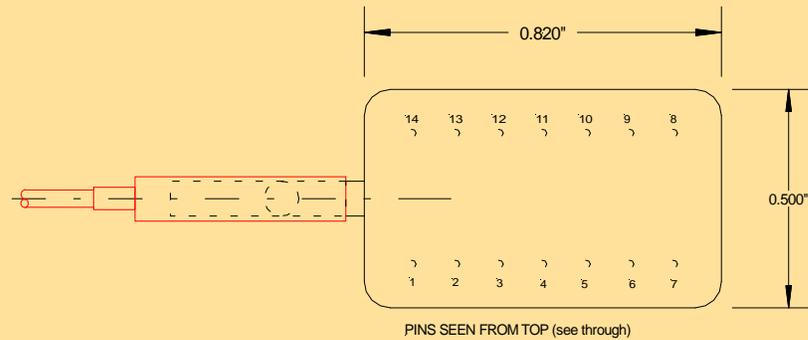
Photodiode Total Current (All temp.)			Preamplifier Voltage:	
Average .....	100	$\mu\text{A}$	V+ Max .....	6 V
Peak (1s).....	1	mA	V- Max .....	6 V
Incident Radiant Flux, $\ddot{O}_M$			Ambient Temperature:	
Average value .....	10	$\mu\text{W}$	Storage, $T_{stg}$ .....	-55 to +125 $^\circ\text{C}$
Peak value, 20ns pulses < 100Hz	100	$\text{kW}/\text{cm}^2$	Operating, $T_A$ .....	-40 to + 85 $^\circ\text{C}$

# Pigtailed InGaAs Avalanche Photodiode Preamplifier Module

MICROELECTRONICS

276-339761-000

## PACKAGE OUTLINE and



## PINOUT

1	+HV APD	8	GND
2	NC	9	NC
3	GND	10	+5V
4	-5V	11	NC
5	GND	12	NC
6	NC	13	THERMISTOR
7	OUTPUT	14	THERMISTOR

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