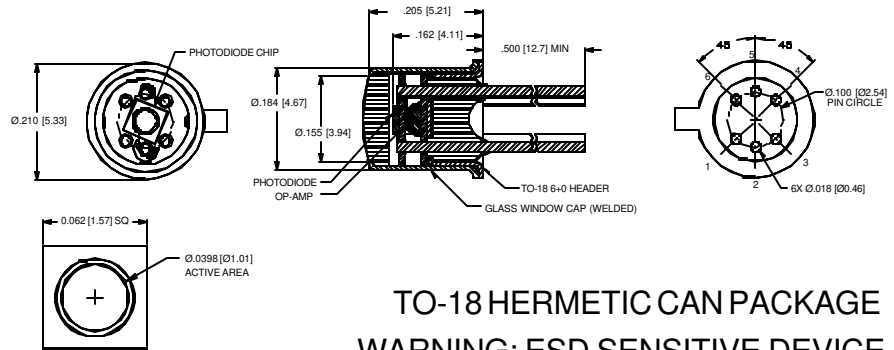


PHOTONIC DETECTORS INC.

High Speed Detector Amplifier Hybrid Type PDB-708



PACKAGE DIMENSIONS INCH [mm]



TO-18 HERMETIC CAN PACKAGE
WARNING: ESD SENSITIVE DEVICE

ACTIVE AREA = 0.80 mm²

FEATURES

- 24 MHz bandwidth
- single supply operation
- Wide dynamic range
- Low power: 5 V @ 25 mA

DESCRIPTION

The **PDB-708** is a high speed PIN photo-diode integrated with a wide band differential output transimpedance amplifier. It is packaged in a TO-18, 6 leaded hermetic package. Options include, SMA, ST & FC type fiber optic ADMs.

APPLICATIONS

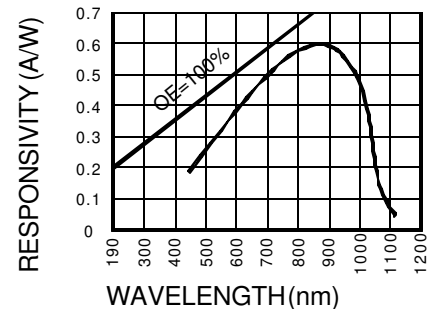
- Fiber optic receivers
- Industrial controls
- High speed optical coupling
- Local area network

PHOTODIODE ABSOLUTE MAXIMUM RATING (TA=25°C unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS
V _{BR}	Reverse Voltage		300	V
T _{STG}	Storage Temperature	-55	+125	°C
T _O	Operating Temperature Range	-40	+80	°C
T _S	Soldering Temperature*		+260	°C
I _L	Light Current		500	mA

*1/16 inch from case for 3 secs max

SPECTRAL RESPONSE



PHOTODIODE ELECTRO-OPTICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I _{SC}	Short Circuit Current	H = 100 fc, 2850 K	7	8.5		μA
I _D	Dark Current	H = 0, V _R = 10 V		2	10	nA
R _{SH}	Shunt Resistance	H = 0, V _R = 10 mV		500		MΩ
TC R _{SH}	RSH Temp. Coefficient	H = 0, V _R = 10 mV		-8		% / °C
C _J	Junction Capacitance	H = 0, V _R = 45 V**		2.2	2.4	pF
λ _{range}	Spectral Application Range	Spot Scan	400		1100	nm
λ _p	Spectral Response - Peak	Spot Scan		900		nm
V _{BR}	Breakdown Voltage	I = 1 μA	100	300		V
NEP	Noise Equivalent Power	V _R = 45 V @ Peak		1x10 ⁻¹⁴		W/√Hz
tr	Response Time	R _L = 50Ω V _R = 45 V λ = 900nm		3		nS

Information in this technical data sheet is believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject to change without notice. ** f = 1 MHz

AMPLIFIER SPECIFICATION (SO PACKAGE @T_A = 25° C and V_S = +5vdc UNLESS OTHERWISE NOTED)

CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
DYNAMIC PERFORMANCE					
BANDWIDTH	3 dB	180			MHz
PULSE WIDTH MODULATION	10 μA TO 200 μA PEAK		500		ps
RISE AND FALL TIME	10% TO 90% TO 3%,		1.5		ns
SETTLING TIME	0.5 V DIFF OUTPUT STEP		3		ns
INPUT					
LINEAR INPUT CURRENT RANGE			±30		μA
MAX INPUT CURRENT RANGE		±200	±350		μA
OPTICAL SENSITIVITY			-36		dBm
INPUT STRAY CAPACITANCE	DIE, BY DESIGN SOIC, BY DESIGN		0.2 0.4		pF pF
INPUT BIAS VOLTAGE	+V _S TO I _{IN} AND V _{BYP}	1.6		2.0	V
NOISE					
	DIE, SINGLE ENDED AT P _{OUT1} OR DIFFERENTIAL (P _{OUT} - N _{OUT}), C _{STRAY} = 0.3 pF				
INPUT CURRENT NOISE	f = 100 MHz		3.0		pA/√Hz
TOTAL INPUT RMS NOISE	DC TO 100 MHz		26.5		nA
TRANSFER CHARACTERISTICS					
TRANSRESISTANCE	SINGLE ENDED	8	10	12	KΩ
	DIFFERENTIAL	16	20	24	KΩ
POWER SUPPLY REJECTION RATIO	SINGLE ENDED		37.0		dB
	DIFFERENTIAL		40		dB
OUTPUT					
DIFFERENTIAL OFFSET			6	20	mV
OUTPUT COMMON-MODE VOLTAGE	FROM POSITIVE SUPPLY	-1.5	-1.3	-1.1	V
VOLTAGE SWING (DIFFERENTIAL)	POSITIVE INPUT CURRENT, R _L = ∞		1.0		V _{P-P}
	POSITIVE INPUT CURRENT, R _L = 50 Ω		600		mV _{P-P}
OUTPUT IMPEDANCE		40	50	60	Ω
POWER SUPPLY					
OPERATING RANGE	T _{MIN} TO T _{MAX} SINGLE SUPPLY	+4.5	+5	+11	V
CURRENT	DUAL SUPPLY	±2.25	25	±5.5 26	V mA

AMPLIFIER ABSOLUTE MAXIMUM RATING (TA=25°C UNLESS OTHERWISE NOTED)

PARAMETER	MIN	MAX	UNITS
SUPPLY VOLTAGE	±4.5	±12	V
POWER DISSIPATION		.9	μV
STORAGE TEMPERATURE	-55	+125	°C
OPERATING TEMPERATURE	-40	+85	°C

PIN CONNECTIONS	
1	OUTPUT (+)
2	PHOTODIODE CATHODE
3	OUTPUT (-)
4	GROUND/CASE
5	PHOTODIODE ANODE
6	Vcc (5V)

WARNING:
ESD SENSITIVE DEVICE

