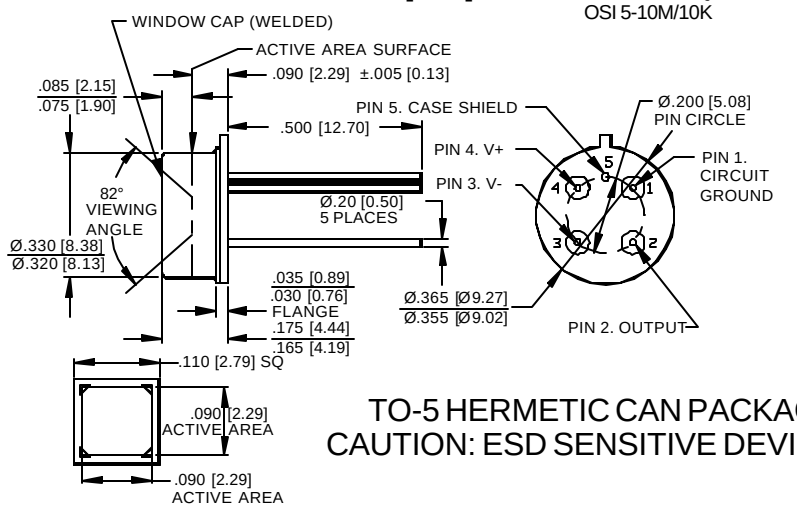
PHOTONIC DETECTORS INC.

Detector Amplifier Hybrid, Blue Enhanced
Type PDB-711-10

PACKAGE DIMENSIONS INCH [mm]

INDUSTRY EQUIVALENT:
OSI 5-10M/10K



TO-5 HERMETIC CAN PACKAGE
CAUTION: ESD SENSITIVE DEVICE

ACTIVE AREA = 5.09 mm²

FEATURES

- 10 Khz bandwidth
- Internal10 MOhm gain
- Low offset voltage
- Low input bias current

DESCRIPTION: The **PDB-711-10** is a low noise, medium speed, blue enhanced silicon photodiode integrated with a low noise JFET monolithic transimpedance op-amp. There is an internal 10 MOhm feedback gain resistor which limits the bandwidth to 10KHz.

APPLICATIONS

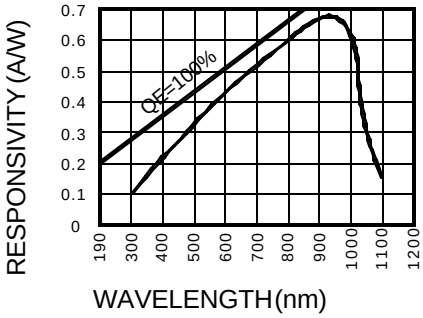
- Medical diagnostic
- Low signal applications
- Color analysis
- Analytical chemistry

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

SYMBOL	PARAMETER	MIN	MAX	UNITS
V_{BR}	Reverse Voltage		15	V
T_{STG}	Storage Temperature	-55	+125	°C
T_O	Operating Temperature Range	0	+70	°C
T_S	Soldering Temperature*		+240	°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	45	65		μA
I_D	Dark Current	H = 0, V_R = 10 V		1.0	5.0	nA
R_{SH}	Shunt Resistance	H = 0, V_R = 10 mV	.5	2		GΩ
TC R_{SH}	RSH Temp. Coefficient	H = 0, V_R = 10 mV		-8		% / °C
C_J	Junction Capacitance	H = 0, V_R = 10 V**		15		pF
λrange	Spectral Application Range	Spot Scan	350		1100	nm
λp	Spectral Response - Peak	Spot Scan		950		nm
V_{BR}	Breakdown Voltage	I = 10 μA	100	125		V
NEP	Noise Equivalent Power	VR = 10 V @ Peak		$2.5x10^{-14}$		W/$\sqrt{Hz}$
tr	Response Time	RL = 1 KΩ V_R = 10 V		15		nS

 ** f = 1 MHz

[FORM NO. 100-PDB-711-10 REV A]

AMPLIFIER SPECIFICATION TA = 25° C and VS = ± 15 vdc UNLESS OTHERWISE NOTED

CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
FEEDBACK NETWORK 10 MEG Ω RESISTER, 1pF* CAPACITOR	THIN FILM RESISTOR TRIMMED TO ±5% *TOL ±5%		10		MEG Ω
INPUT OFFSET VOLTAGE	INITIAL OFFSET		0.75	2.0	mV
	LONG TERM OFFSET STABILITY		15		mV/MONTH
INPUT BIAS CURRENT	OFFSET CURRENT, VCM=0		5	20	pA
INPUT IMPEDANCE	DIFFERENTIAL		$1 \times 10^{12} \| 3$		Ω‖pF
	COMMON MODE		$1 \times 10^{12} \| 3$		
INPUT VOLTAGE RANGE	COMMON MODE	±11	±12		V
	COMMON MODE REJECTION VCM ±10 V	76	90		
INPUT VOLTAGE NOISE	VOLTAGE 0, 1 Hz TO 10 Hz		2		µV p-p
	VOLTAGE 0, f=10 Khz		30		nV/√Hz
INPUT CURRENT NOISE	f=1 Khz		1.8		fA / √Hz
FREQUENCY RESPONSE	UNITY GAIN, SMALL SIGNAL	0.8	1.0		MHz
	SLEW RATE, UNITY GAIN	1.0	1.8		V/µs
OPEN LOOP GAIN	vo= ±10 V, R_L=10 KΩ	300	1000		V/mV
OUTPUT CHARACTERISTICS	VOLTAGE @ R_L=10 KΩ	±12	±13		V
	VOLTAGE @ R_L>5 KΩ	±11	±12.3		V
POWER SUPPLY	OPERATING RANGE	±4.5	±15	±18	V

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

PARAMETER	MIN	MAX	UNITS
SUPPLY VOLTAGE	±4.5	±18	V
INTERNAL POWER DISSIPATION		500	mW
STORAGE TEMPERATURE	-55	+150	° C
OPERATING TEMPERATURE	0	+70	° C