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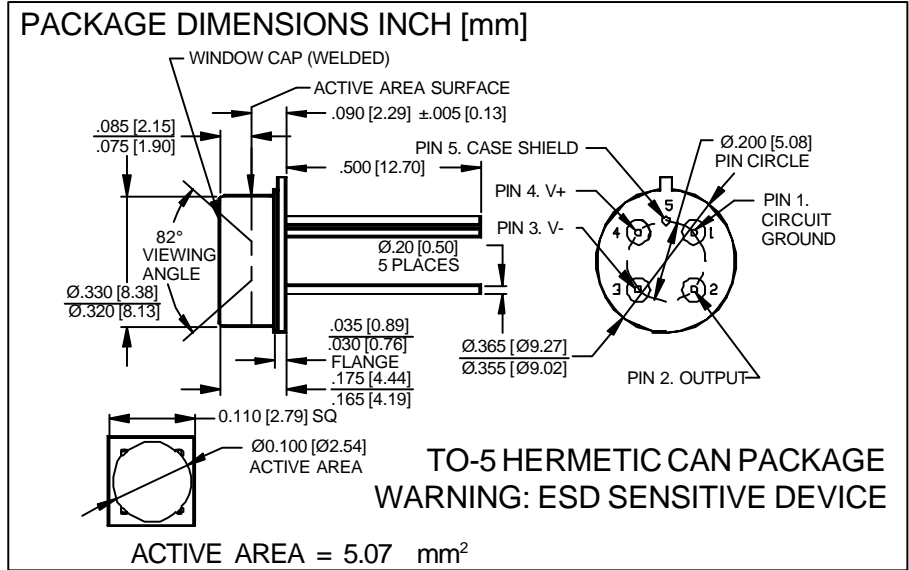
[Advanced Photonix, Inc.](#)
[PDB-716-100](#)

For any questions, you can email us directly:

sales@integrated-circuit.com

PHOTONIC DETECTORS INC.

Detector Amplifier Hybrid, Blue Enhanced Type PDB-716-100



FEATURES

- 10 KHz bandwidth
- Internal 100 MOhm gain
- Low offset voltage
- Low input bias current

DESCRIPTION: The PDB-716-100 is a low noise, medium speed, blue enhanced silicon photodiode integrated with a low noise JFET monolithic transimpedance op-amp. There is an internal 100 MOhm feedback gain resistor which limits the bandwidth to 10KHz.

APPLICATIONS

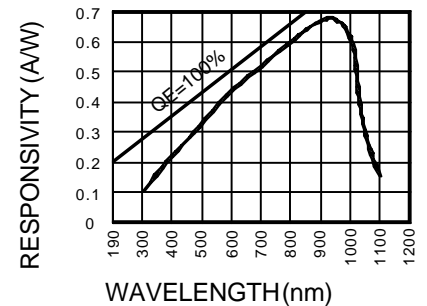
- Medical diagnostic
- Low signal applications
- Color analysis
- Analytical chemistry

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
λ _{range}	Spectral Application Range	Spot Scan	350		1100	nm
λ _p	Spectral Response - Peak	Spot Scan		950		nm
V _{BR}	Breakdown Voltage	I = 10 μA	100	125		V
NEP	Noise Equivalent Power	V _R = 10 V @ Peak		2.5x10 ⁻¹⁴		W/√Hz
tr	Response Time	R _L = 1 KΩ V _R = 10 V		15		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

PHOTONIC DETECTORS INC.

Detector Amplifier Hybrid Type PDB-716-100

AMPLIFIER SPECIFICATION $T_A=25^\circ\text{C}$ and $V_S=\pm 15\text{Vdc}$ UNLESS OTHERWISE NOTED

CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
FEEDBACK NETWORK 100 MEG Ω RESISTOR, 1pF* CAPACITOR	THINFILMRESISTOR TRIMMED TO $\pm 5\%$ *TOL $\pm 5\%$		100		MEG Ω
V_{IO} INPUT OFFSET VOLTAGE	INITIAL OFFSET FULL RANGE		0.6	3.9	mV
	LONG TERM OFFSET STABILITY		.04		mV/MONTH
I_{IB} INPUT BIAS CURRENT	OFFSET CURRENT, $V_{CM}=0$		4		pA
R_i INPUT RESISTANCE	DIFFERENTIAL		1×10^{12}		Ω
	COMMONMODE		1×10^{12}		
V_{ICR} INPUT VOLTAGE RANGE	COMMONMODE	-12	+16		V
	COMMONMODE REJECTION $V_{CM} \pm 10\text{V}$	72	90		
$V_{N(PP)}$ INPUT VOLTAGE NOISE	VOLTAGE 0, $f=1\text{ KHz}$		2		μV_{PP}
	VOLTAGE 0, $f=10\text{ KHz}$		40		nV/ $\sqrt{\text{Hz}}$
I_N INPUT CURRENT NOISE	$f=1\text{ KHz}$		1		fA / $\sqrt{\text{Hz}}$
B_{OM} FREQUENCY RESPONSE	UNITY GAIN, SMALL SIGNAL $R_L=10\text{ K}\Omega$ $C_L=100\text{ pF}$		2		MHz
	SLEW RATE, UNITY GAIN	2.6	3.4		V/ μs
A_{VD} OPEN LOOP GAIN	$v_o = \pm 10\text{ V}$, $R_L=10\text{ K}\Omega$	20	230		V/mV
$V_{OM\pm}$ OUTPUT CHARACTERISTICS	VOLTAGE @ $R_L=10\text{ K}\Omega$	± 13.2	± 13.7		V
	VOLTAGE @ $R_L=600\ \Omega$	± 12.5	± 13		V
$V_{CC\pm}$ POWER SUPPLY	OPERATING RANGE	± 3.5	± 15	± 18	V

AMPLIFIER ABSOLUTE MAXIMUM RATING ($T_A=25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

PARAMETER	MIN	MAX	UNITS
SUPPLY VOLTAGE	± 4.5	± 18	V
INTERNAL POWER DISSIPATION		500	mW
STORAGE TEMPERATURE	-55	+150	$^\circ\text{C}$
OPERATING TEMPERATURE	0	+70	$^\circ\text{C}$

