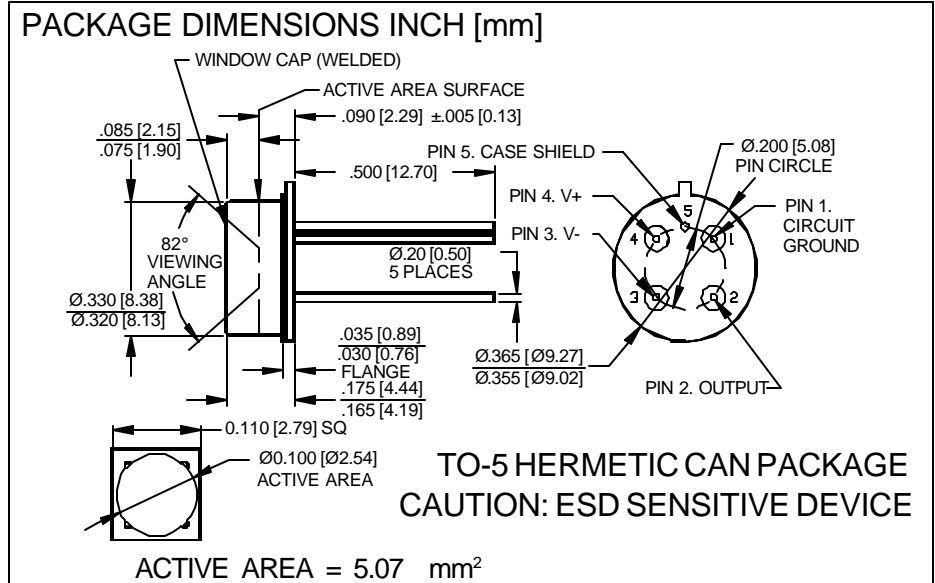


PHOTONIC DETECTORS INC.

Detector Amplifier Hybrid, Blue Enhanced (ref PDB-C715-100) Type PDB-715-100



FEATURES

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

DESCRIPTION:

The **PDB-715-100** 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

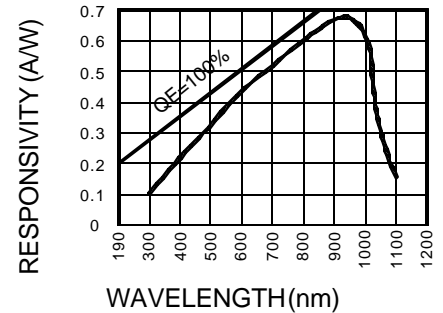
- Medical diagnostic
- Low signal applications
- Color analysis
- Analytical chemistry

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

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
INPUT OFFSET VOLTAGE	INITIAL OFFSET		0.75	2.0	mV
	LONG TERM OFFSET STABILITY		15		mv/MONTH
INPUT BIAS CURRENT	OFFSET CURRENT, $V_{CM}=0$		5	20	pA
INPUT IMPEDANCE	DIFFERENTIAL		$1 \times 10^{12} \parallel 3$		$\Omega \parallel \text{pF}$
	COMMONMODE		$1 \times 10^{12} \parallel 3$		
INPUT VOLTAGE RANGE	COMMONMODE	± 11	± 12		V
	COMMONMODE REJECTION $V_{CM} \pm 10\text{V}$	76	90		
INPUT VOLTAGE NOISE	VOLTAGE 0, 1 Hz TO 10 Hz		2		$\mu\text{V p-p}$
	VOLTAGE 0, $f=10\text{Khz}$		30		nV/ $\sqrt{\text{Hz}}$
INPUT CURRENT NOISE	$f=1\text{Khz}$		1.8		fA / $\sqrt{\text{Hz}}$
FREQUENCY RESPONSE	UNITY GAIN, SMALL SIGNAL	0.8	1.0		MHz
	SLEW RATE, UNITY GAIN	1.0	1.8		V/ μs
OPEN LOOP GAIN	$v_o = \pm 10\text{V}$, $R_L = 10\text{K}\Omega$	300	1000		V/mV
OUTPUT CHARACTERISTICS	VOLTAGE @ $R_L = 10\text{K}\Omega$	± 12	± 13		V
	VOLTAGE @ $R_L > 5\text{K}\Omega$	± 11	± 12.3		V
POWER SUPPLY	OPERATING RANGE	± 4.5	± 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	$^\circ\text{C}$

