

### 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

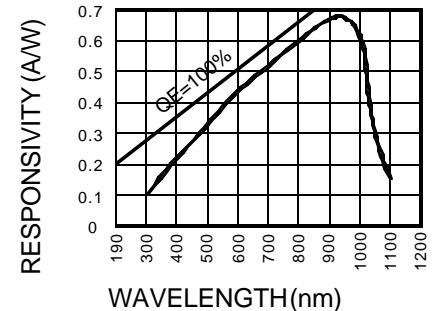
- Medical diagnostic
- Low signal applications
- Color analysis
- Analytical chemistry

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

SYMBOL	PARAMETER	MIN	MAX	UNITS
V <sub>BR</sub>	Reverse Voltage		15	V
T <sub>STG</sub>	Storage Temperature	-55	+125	°C
T <sub>O</sub>	Operating Temperature Range	0	+70	°C
T <sub>S</sub>	Soldering Temperature*		+240	°C
I <sub>L</sub>	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 <sub>SC</sub>	Short Circuit Current	H = 100 fc, 2850 K	45	65		μA
I <sub>D</sub>	Dark Current	H = 0, V <sub>R</sub> = 10 V		1.0	5.0	nA
R <sub>SH</sub>	Shunt Resistance	H = 0, V <sub>R</sub> = 10 mV	.5	2		GΩ
TC R <sub>SH</sub>	RSH Temp. Coefficient	H = 0, V <sub>R</sub> = 10 mV		-8		% / °C
C <sub>J</sub>	Junction Capacitance	H = 0, V <sub>R</sub> = 10 V**		15		pF
λ <sub>range</sub>	Spectral Application Range	Spot Scan	350		1100	nm
λ <sub>p</sub>	Spectral Response - Peak	Spot Scan		950		nm
V <sub>BR</sub>	Breakdown Voltage	I = 10 μA	100	125		V
NEP	Noise Equivalent Power	V <sub>R</sub> = 10 V @ Peak		2.5x10 <sup>-14</sup>		W/√Hz
tr	Response Time	R <sub>L</sub> = 1 KΩ V <sub>R</sub> = 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 $\Omega$ RESISTOR, 1pF* CAPACITOR	THINFILMRESISTOR TRIMMED TO $\pm 5\%$ *TOL $\pm 5\%$		100		MEG $\Omega$
$V_{IO}$ INPUT OFFSET VOLTAGE	INITIAL OFFSET FULL RANGE		0.6	3.9	mV
	LONG TERM OFFSET STABILITY		.04		%/MONTH
$I_{IB}$ INPUT BIAS CURRENT	OFFSET CURRENT, $V_{CM}=0$		4		pA
$R_i$ INPUT RESISTANCE	DIFFERENTIAL		$1 \times 10^{12}$		$\Omega$
	COMMONMODE		$1 \times 10^{12}$		
$V_{ICR}$ 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		$\mu\text{V}_{PP}$
	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 $R_i = 10\text{ K}\Omega$ $C_i = 100\text{ pF}$		2		MHz
	SLEW RATE, UNITY GAIN	2.6	3.4		V/ $\mu\text{s}$
$A_{VD}$ 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 @ $R_L = 10\text{ K}\Omega$	$\pm 13.2$	$\pm 13.7$		V
	VOLTAGE @ $R_L = 600\ \Omega$	$\pm 12.5$	$\pm 13$		V
$V_{CC\pm}$ POWER SUPPLY	OPERATING RANGE	$\pm 3.5$	$\pm 15$	$\pm 18$	V

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

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

