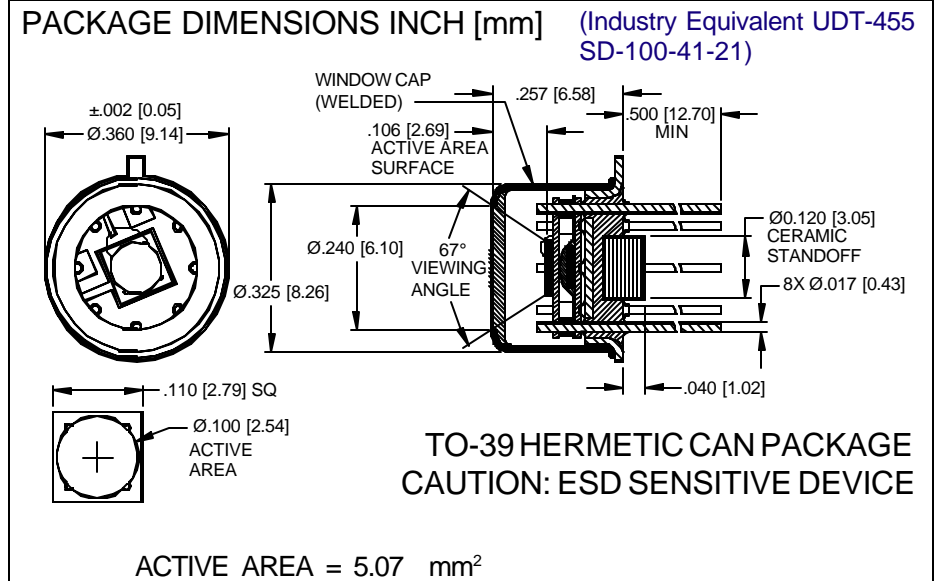


PHOTONIC DETECTORS INC.

Detector Amplifier Hybrid, Blue Enhanced (ref PDB-C705) Type PDB-705



FEATURES

- Low input bias current
- Low offset voltage
- 1 MHz bandwidth

DESCRIPTION

The **PDB-705** is a low noise, medium speed, blue enhanced silicon photodiode integrated with a low noise JFET monolithic trans-impedance op-amp. The feedback capacitor & resistor circuit are externally connected.

APPLICATIONS

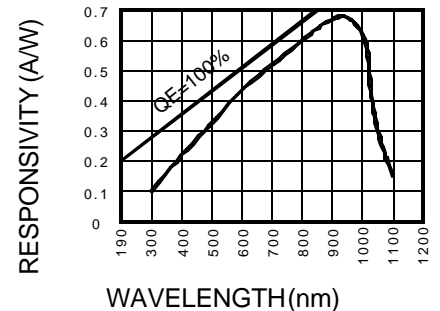
- Medical diagnostic
- Low signal level applications
- Spectroscopy

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
To	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
INPUT OFFSET VOLTAGE (V_{OS})	INITIAL OFFSET		0.75	2.0	mV
	LONG TERM OFFSET STABILITY		15		$\mu\text{V}/\text{MONTH}$
AVERAGE INPUT OFFSET DRIFT (TCV_{OS})	$R_L = 100\text{K}\Omega$			20	$\mu\text{V}/^\circ\text{C}$
INPUT BIAS CURRENT (I_b)	OFFSET CURRENT, $V_{CM}=0$		5	10	pA
INPUT OFFSET CURRENT (I_{OS})			5		pA
INPUT VOLTAGE RANGE (I_{VR})	COMMON MODE REJECTION $V_{CM} \pm 10\text{V}$	± 11	± 12		V
INPUT VOLTAGE NOISE	VOLTAGE 0, $f=100\text{Hz}$		40		$\text{nV}/\sqrt{\text{Hz}}$
	VOLTAGE 0, $f=1\text{KHz}$		30		$\text{nV}/\sqrt{\text{Hz}}$
INPUT CURRENT NOISE (i_n)	TYP $f=100\text{Hz}$		1.8		$\text{fA}/\sqrt{\text{Hz}}$
FREQUENCY RESPONSE	UNITY GAIN, SMALL SIGNAL	0.8	1.0		MHz
	SLEW RATE, UNITY GAIN	1.0	1.8		$\text{V}/\mu\text{S}$
CLOSED LOOP GAIN (CLBW)	$AV_{CL} = +5\text{V}$		9		MHz
SUPPLY CURRENT (I_{SV})					mP
SHORT CIRCUIT CURRENT			15		mA
POWER SUPPLY	OPERATING VOLTAGE	± 4.5		± 18	V

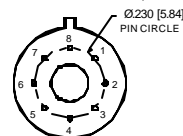
AMPLIFIER ABSOLUTE MAXIMUM RATING ($T_A=25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

PARAMETER	MIN	MAX	UNITS
SUPPLY VOLTAGE		18	V
DIFFERENTIAL INPUT VOLTAGE		± 20	V
STORAGE TEMPERATURE	-55	+125	$^\circ\text{C}$
OPERATING TEMPERATURE	0	+70	$^\circ\text{C}$

PIN CONNECTIONS

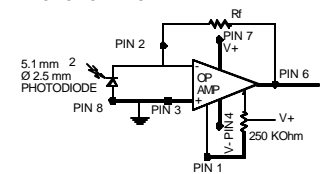
- 1- OFFSET ADJUSTMENT
- 2- INVERTING INPUT/ CATHODE OF PHOTODIODE
- 3- NON-INVERTING INPUT/ CASE GROUND
- 4- NEGATIVE SUPPLY VOLTAGE
- 5- OFFSET ADJUSTMENT
- 6- OUTPUT
- 7- POSITIVE SUPPLY VOLTAGE
- 8- ANODE OF PHOTODIODE

POWER SUPPLY RATED @ $\pm 15\text{V}$
RANGE $\pm 4.3\text{V} - \pm 18\text{V}$
QUIESCENT CURRENT $200\ \mu\text{A}$ MAX



BOTTOM VIEW

PHOTOVOLTAIC



PHOTOCONDUCTIVE

