

# Large Area InGaAs PIN Photodiodes

## Linear above 20 dBm Input Power

### Features

#### Electro-Optical

- InGaAs PIN Photodiode with high responsivity at 1300 and 1550 nm
- 17 dB attenuation neutral density filter
- $\pm 0.15$  dB linearity to power  $> 20$  dBm
- Proprietary, low noise PIN diode structure
- 1 and 2 mm active diameters

#### Packaging

- Hermetically sealed TO package
- Absorption filter on internal side of TO window

- Chip centered to  $\pm 125$   $\mu\text{m}$  relative to header

### Applications

- Optical power meters: 1300 and 1550 nm
- YAG laser test equipment
- Fiber amplifier test gear
- Optical bench instrumentation

### Specifications

Conditions (unless noted): 25°C,  $V_R = 0\text{V}$

Model	ETX 10LIN24-T5			ETX 20LIN22-T5			
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Active Diameter		1.0			2.0		mm
Responsivity @ 1300 nm <sup>1</sup>	8.5	18	29.5	8.5	18	29.5	$\mu\text{A}/\text{mW}$
Responsivity @ 1550 nm <sup>2</sup>	9.5	19.0	33	9.5	19.0	33	$\mu\text{A}/\text{mW}$
Saturation power @ 1300 nm <sup>3,4</sup>	24.0	26.0	29.0	22.2	24.0	27.0	dBm
Saturation power @ 1300 nm <sup>3,4</sup>	24.2	26.2	29.2	22.4	24.2	27.2	dBm
Shunt Resistance <sup>6</sup>	2.0	50		0.8	3.0		$\text{M}\Omega$
Dark Current <sup>7</sup>		50			900		nA
Total Capacitance		100	150		400	600	pF
Bandwidth <sup>8</sup>		35			5.3		MHz
Sensitivity <sup>2</sup>		-38	-36		-38.5	-36.5	dBm
Field of View <sup>9</sup>		15			15		degrees
Reflectance			10			10	%

#### NOTES

<sup>1</sup> Measured at 300  $\mu\text{W}$  nominal input power.

<sup>2</sup> Can be measured as an option.

<sup>3</sup> Saturation power is defined in accordance with Bellcore advisory #TA-NWT-001092. Saturation power is the upper optical power limit at which the deviation from the median linear range of the L-I curve (see Figure 1) is greater than  $\pm 0.15$  dB.

<sup>4</sup> Value given for shipped device computed from measured values of power at which unfiltered photodiode saturates and of absorption of filter.

<sup>5</sup> Computed value available as an option.

<sup>6</sup>  $V_R = 10$  mV.

<sup>7</sup>  $V_R = 5$  V for ETX 10LIN24-T5;  $V_R = 1$  V for ETX 20LIN22-T5.

<sup>8</sup> -3 dB point into a 50  $\Omega$  load.

<sup>9</sup> Angle of incidence at which responsivity decreases 10% relative to normal.

**Maximum Ratings**

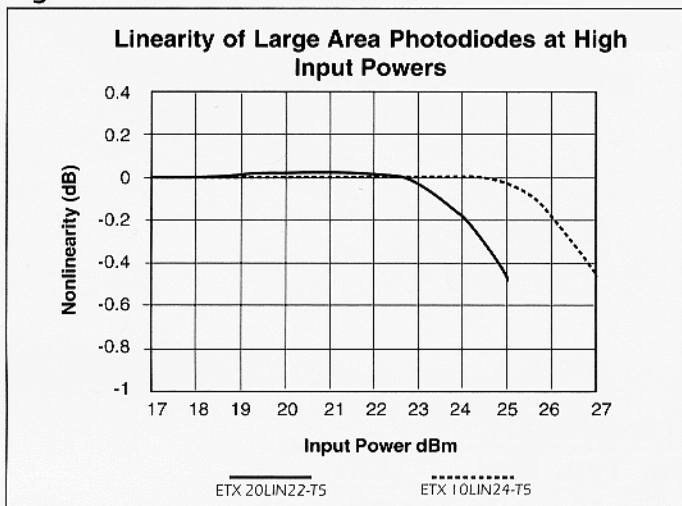
Parameter	ETX 10LIN24-T5	ETX20LIN22-T5	Units
Reverse Voltage	20	2	V
Reverse Current <sup>A</sup>	10	10	mA
Forward Current <sup>B</sup>	10	10	mA
Power Dissipation	100	50	mW
Operating Temperature	-40 / +85	-40 / +85	°C
Storage Temperature	-40 / +85	-40 / +85	°C

**Notes:**

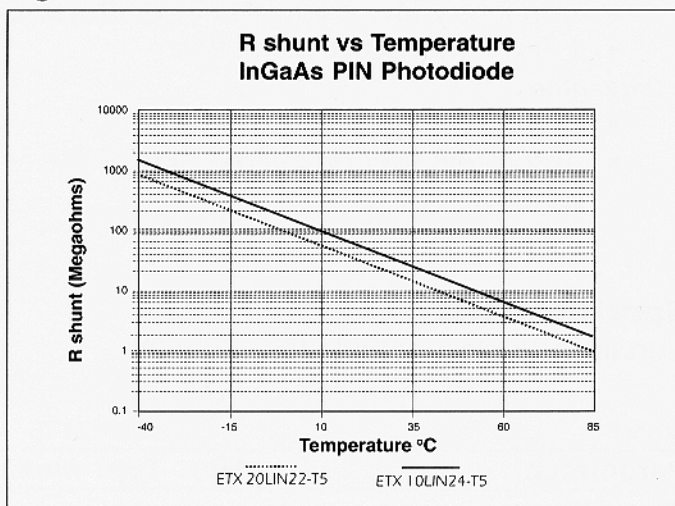
<sup>A</sup> Under reverse bias, current at which device may be damaged.

<sup>B</sup> Under forward bias, current at which device may be damaged.

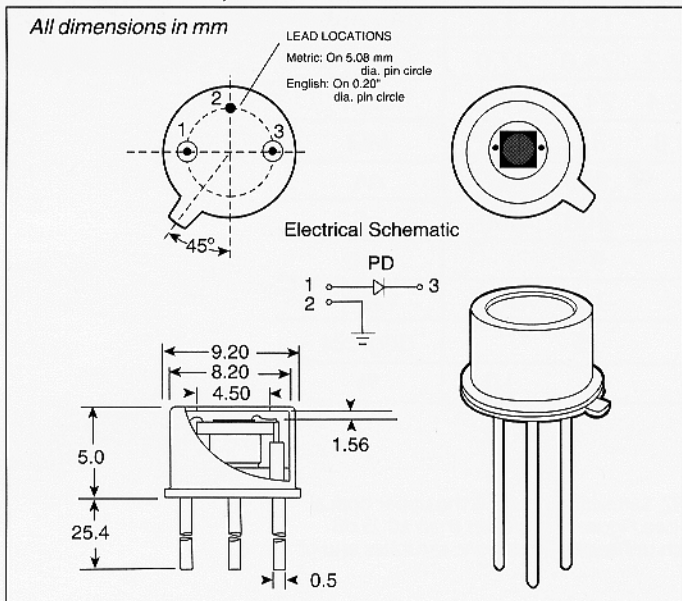
**Figure 1**



**Figure 2**



**ETX 10LIN24-T5, ETX 20LIN22-T5**



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**OPTOELECTRONIC DEVICES**

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