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## NTE3028 Infrared Emitting Diode PN Gallium Arsenide

**Description:**

The NTE3028 is designed for applications requiring high power output, low drive power, and very fast response time. This device is used in industrial processing and control, light modulators, shaft or position encoders, punched card readers, optical switching, and logic circuits. It is spectrally matched for use with silicon detectors.

**Features:**

- High Power Output
- Infrared Emission
- Low Drive Current
- Popular TO18 Type Package for Easy Handling and Mounting

**Absolute Maximum Ratings:**

Reverse Voltage, $V_R$ .....	6V
Forward Current, $I_F$	
Continuous .....	60mA
Peak (PW = 100 $\mu$ s, Duty Cycle = 2%) .....	1A
Total Device Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	250mW
Derate Above 25 $^\circ\text{C}$ (Note 1) .....	2.27mW/ $^\circ\text{C}$
Operating Temperature Range, $T_A$ .....	-55 $^\circ$ to +125 $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	-65 $^\circ$ to +150 $^\circ\text{C}$

Note 1. Printed circuit board mounting.

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Leakage Current	$I_R$	$V_R = 3V$	-	2	-	nA
Reverse Breakdown Voltage	$V_{(BR)R}$	$I_R = 100\mu\text{A}$	6	20	-	V
Forward Voltage	$V_F$	$I_F = 50\text{mA}$	-	1.32	1.5	V
Total Capacitance	$C_T$	$V_R = 0V, f = 1\text{MHz}$	-	18	-	pF

**Optical Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Output Power	$P_O$	$I_F = 60\text{mA}$ , Note 2	–	2.5	–	mW
		$I_F = 100\text{mA}$ , Note 2, Note 3	1.0	4.0	–	mW
Radiant Intensity	$I_O$	$I_F = 100\text{mA}$ , Note 3, Note 4	–	1.5	–	mW/steradian
Peak Emission Wavelength	$\lambda_P$		–	940	–	nm
Spectral Line Half Width	$\Delta\lambda$		–	40	–	nm

Note 2. Power Output,  $P_O$ , is the total power radiated by the device into a solid angle of  $2\pi$  steradians. It is measured by directing all radiation leaving the device, within this solid angle, onto a calibrated silicon solar cell.

Note 3.  $PW = 100\mu\text{s}$ , Duty Cycle = 2%.

Note 4. Irradiance from a Light Emitting Diode (LED) can be calculated by:

$$H = \frac{I_e}{d^2}$$

where

H is irradiance in  $\text{mW}/\text{cm}^2$

$I_e$  is radiant intensity in  $\text{mW}/\text{steradian}$

$d^2$  is distance from LED to the detector in cm

