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NTE3100

Photon Coupled Interrupter Module

Description:

The NTE3100 Interrupter Module is a gallium arsenide infrared emitting diode and a NPN silicon photo transistor mounted in a polycarbonate housing. The package is designed to optimize the mechanical resolution, coupling efficiency, ambient light rejection, cost and reliability. Operating on the principle that opaque to infrared will interrupt the transmission of light between an infrared emitting diode and a photo sensor switching the output from an "ON" state to an "OFF" state.

Features:

- High Gain
- 3mm Gap Between LED and Detector
- Polycarbonate Case Protected Against Ambient Light

Applications:

- Copiers, Printers, FAX Machines, Record Players, Cassette Decks, Optoelectronic Switches

Absolute Maximum Ratings: ($T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Total Device

Operating Temperature Range, T_J -25° to $+85^{\circ}\text{C}$
Storage Temperature Range, T_{stg} -40° to $+85^{\circ}\text{C}$
Lead Temperature (During Soldering, 1/16" (1.6mm) from case, 10sec max), T_L $+260^{\circ}\text{C}$

Input Diode

Power Dissipation, P_E 75mW
Forward Current, I_F 50mA
Reverse Voltage, V_R 5V

Output Transistor

Power Dissipation, P_D 75mW
Collector Current, I_C 20mA
Collector-Emitter Voltage, V_{CEO} 30V
Emitter-Collector Voltage, V_{ECO} 5V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input						
Forward Voltage	V_F	$I_F = 50\text{mA}$	–	1.2	1.7	V
Reverse Voltage	V_R	$I_R = 100\mu\text{A}$	5	–	–	V
Reverse Current	I_R	$V_R = 5\text{V}$	–	–	100	μA
Output						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}$	30	–	–	V
Emitter–Collector Breakdown Voltage	$V_{(BR)ECO}$	$I_E = 100\mu\text{A}$	6	–	–	V
Collector–Emitter Dark Current	I_{CEO}	$V_{CE} = 10\text{V}$	–	–	100	nA
Coupled						
Collector “ON” Current	$I_{CE(on)}$	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	0.15	–	–	mA
		$I_F = 20\text{mA}, V_{CE} = 5\text{V}$	1.0	–	–	mA
		$I_F = 30\text{mA}, V_{CE} = 5\text{V}$	1.9	–	–	mA
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 30\text{mA}, I_C = 1.8\text{mA}$	–	–	0.4	V
Turn–On Time	t_{on}	$V_{CC} = 5\text{V}, I_F = 30\text{mA}, R_L = 2.5\text{k}\Omega$	–	8	–	μs
Turn–Off Time	t_{off}		–	50	–	μs

