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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,  $T_J$  .....  $-25^{\circ}$  to  $+85^{\circ}\text{C}$   
 Storage Temperature Range,  $T_{stg}$  .....  $-40^{\circ}$  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
<b>Input</b>						
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	$\mu\text{A}$
<b>Output</b>						
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
<b>Coupled</b>						
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	-	$\mu\text{s}$
Turn-Off Time	$t_{off}$		-	50	-	$\mu\text{s}$

