

**NTE3040**  
**Optoisolator**  
**NPN Transistor Output**

**Description:**

The NTE3040 is a gallium arsenide, infrared emitting diode in a 6-Lead DIP type package coupled with a silicon phototransistor.

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

**Infrared Emitting Diode**

Power Dissipation, $P_D$ .....	200mW
Derate above $25^\circ\text{C}$ ambient .....	2.6mW/ $^\circ\text{C}$
Forward Current (Continuous), $I_C$ .....	60mA
Forward Current (Peak), $I_C$ .....	3A
(Pulse Width $1\mu\text{sec}$ , 300pps)	
Reverse Voltage, $V_R$ .....	3V

**Phototransistor**

Power Dissipation, $P_D$ .....	200mW
Derate above $25^\circ\text{C}$ ambient .....	2.6mW/ $^\circ\text{C}$
Collector to Emitter Voltage, $V_{CEO}$ .....	30V
Collector to Base Voltage, $V_{CBO}$ .....	70V
Emitter to Collector Voltage, $V_{ECO}$ .....	7V
Collector Current (Continuous), $I_C$ .....	100mA

**Total Device**

Storage Temperature, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Operating Temperature, $T_{opr}$ .....	$-55^\circ$ to $+100^\circ\text{C}$
Lead Soldering Temperature (10 seconds) .....	$+260^\circ\text{C}$
Surge Isolation Voltage (Input to Output)	
(Peak) .....	1500V
(RMS) .....	1060V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Infrared Emitting Diode</b>						
Forward Voltage	$V_F$	$I_F = 10\text{mA}$	–	1.1	1.5	V
Reverse Current	$I_R$	$V_R = 3\text{V}$	–	–	10	mA
Capacitance	$C_J$	$V = 0, f = 1\text{MHz}$	–	50	–	pf

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
<b>Phototransistor</b>							
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_F = 0$	30	–	–	V	
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_F = 0$	70	–	–	V	
Emitter–Collector Breakdown Voltage	$V_{(BR)ECO}$	$I_E = 100\mu\text{A}, I_F = 0$	7	–	–	V	
Collector Dark Current	$I_{CEO}$	$V_{CE} = 10\text{V}, I_F = 0$	–	5	50	nA	
Capacitance	$C_J$	$V_{CE} = 10\text{V}, f = 1\text{MHz}$	–	2	–	pf	
<b>Coupled Characteristics</b>							
DC Current Transfer Ratio	CTR	$I_F = 10\text{mA}, V_{CE} = 10\text{V}$	6	–	–	%	
Collector–Emitter Saturation Voltage	$V_{CEO(sat)}$	$I_F = 60\text{mA}, I_C = 1.6\text{mA}$	100	–	–	V	
Isolation Resistance	$R_{(I-O)}$	$V_{(I-O)} = 500\text{V}_{DC}$	100	–	–	$G\Omega$	
Input to Output Capacitance	$C_{(I-O)}$	$V_{(I-O)} = 0, f = 1\text{MHz}$	–	–	2	pf	
Switching Speeds	$t_r, t_f$	$V_{CE} = 10\text{V}, R_L = 100\Omega$	$I_{CE} = 2\text{mA}$	–	5	–	$\mu\text{s}$
			$I_{CB} = 50\mu\text{A}$	–	3	–	$\mu\text{s}$

**Pin Connection Diagram**

