

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°C ambient	$2.6\text{mW}/^{\circ}\text{C}$
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°C ambient	$2.6\text{mW}/^{\circ}\text{C}$
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° to $+150^{\circ}\text{C}$
Operating Temperature, T_{opr}	-55° 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
Infrared Emitting Diode						
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	
Phototransistor							
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	
Coupled Characteristics							
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	$R_{(I-O)}$	$V_{(I-O)} = 500V_{DC}$	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	–	μs
			$I_{CB} = 50\mu\text{A}$	–	3	–	μs

Pin Connection Diagram

