

NTE3088 Optoisolator Silicon NPN High Voltage Phototransistor Output

Description:

The NTE3088 is a gallium arsenide LED optically coupled to a high voltage, silicon phototransistor in a 6-Lead DIP type package designed for applications requiring high voltage output. This device is particularly useful in copy machines and solid state relays.

Features:

- High Voltage: 300V
- High Isolation Voltage: $V_{ISO} = 7500V$ (Peak)

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

Input LED

Continuous Forward Current, I_F	60mA
Peak Forward Current (Pulse Width = $1\mu s$, 330pps), I_F	1.2A
LED Power Dissipation ($T_A = +25^\circ C$), P_D	120mW
Derate Above $25^\circ C$	1.41mW/ $^\circ C$

Output Transistor

Collector–Emitter Voltage, V_{CER}	300V
Collector–Base Voltage, V_{CBO}	300V
Emitter–Collector Voltage, V_{ECO}	7V
Continuous Collector Current, I_C	100mA
Detector Power Dissipation ($T_A = +25^\circ C$), P_D	150mW
Derate Above $25^\circ C$	1.76mW/ $^\circ C$

Total Device

Isolation Surge Voltage (Peak AC Voltage, 60Hz, 1sec Duration, Note 1), V_{ISO}	7500V
Total Device Power Dissipation ($T_A = +25^\circ C$), P_D	250mW
Derate Above $25^\circ C$	2.94mW/ $^\circ C$
Operating Temperature Range, T_J	-55° to $+100^\circ C$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ C$
Lead Temperature (During Soldering for 10sec), T_L	$+260^\circ C$

Note 1. Isolation surge voltage is an internal device dielectric breakdown rating.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input LED						
Reverse Leakage Current	I_R	$V_R = 6\text{V}$	–	–	10	μA
Forward Voltage	V_F	$I_F = 10\text{mA}$	–	1.2	1.5	V
Capacitance	C	$V_R = 0, f = 1\text{MHz}$	–	18	–	pF
Photodarlington ($I_F = 0$ unless otherwise specified)						
Collector–Emitter Dark Current	I_{CER}	$V_{CE} = 200\text{V}, R_{BE} = 1\text{M}\Omega$	–	–	100	nA
		$V_{CE} = 200\text{V}, R_{BE} = 1\text{M}\Omega, T_A = +100^{\circ}\text{C}$	–	–	250	μA
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$	–	–	300	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CER}$	$I_C = 1\text{mA}, R_{BE} = 1\text{M}\Omega$	–	–	300	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$	5	–	–	V
Coupled						
Current Transfer Ratio	CTR	$V_{CE} = 10\text{V}, I_F = 10\text{mA}, R_{BE} = 1\text{M}\Omega$	20	–	–	%
Isolation Surge Voltage	V_{ISO}	60Hz Peak AC, 1sec, Note 2	7500	–	–	V
Isolation Resistance	R_{ISO}	$V = 500\text{V}$, Note 2	–	10^{11}	–	Ω
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 0.5\text{mA}, I_F = 10\text{mA}, R_{BE} = 1\text{M}\Omega$	–	–	0.4	V
Isolation Capacitance	C_{ISO}	$V = 0, f = 1\text{MHz}$, Note 2	–	0.2	–	pF
Switching						
Turn–On Time	t_{on}	$V_{CC} = 10\text{V}, I_F = 5\text{mA}, R_L = 100\Omega$	–	5	–	μs
Turn–Off Time	t_{off}		–	5	–	μs

Note 2. For this test LED Pin1 and Pin2 are common and phototransistor Pin4, Pin5, and Pin6 are common.

