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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 μ 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 $^{\circ}$ to +100 $^{\circ}C$
Storage Temperature Range, T_{stg}	-55 $^{\circ}$ 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.

