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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 voltge, 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°C, unless otherwise specified)

Input LED

Continuous Forward Current, I_F 60mA
Peak Forward Current (Pulse Width = 1µs, 330pps), I_F 1.2A
LED Power Dissipation (T_A = +25°C), P_D 120mW
Derate Above 25°C . . . . 1.41mW/°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°C), P_D 150mW
Derate Above 25°C . . . . 1.76mW/°C

Total Device

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

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

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

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