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NTE3089
Optoisolator
AC Input, Silicon NPN
Phototransistor Output

Description:

The NTE3089 consists of two gallium arsenide LEDs connected in inverse parallel and coupled with a silicon phototransistor in a 6–Lead DIP type package.

Features:

- AC or Polarity Insensitive Inputs
- Fast Switching Speeds
- Built–In Reverse Polarity Input Protection
- High Isolation Voltage
- High Isolation Resistance
- I/O Compatible with Integrated Circuits

Absolute Maximum Ratings: (T_A = +25°C, unless otherwise specified)

Infrared Emitting Diode (LED)

Continuous Forward Current, I_F 60mA
Peak Forward Current (Pulse Width = 1μs, 330pps), I_F . . . . . ±1A
Power Dissipation (T_A = +25°C, Note 1), P_D 100mW
Derate Above 25°C . . . . . 1.33mW/°C

Phototransistor

Collector–Emitter Voltage, V_{CEO} 30V
Collector–Base Voltage, V_{CBO} 70V
Emitter–Base Voltage, V_{EBO} 5V
Continuous Collector Current, I_C 100mA
Power Dissipation (T_A = +25°C), P_D 300mW
Derate Above 25°C . . . . . 4.0mW/°C
Power Dissipation (T_A = +25°C, Note 1), P_D 500mW
Derate Above 25°C . . . . . 6.7mW/°C

Total Device

Steady–State Isolation Voltage (Input–to–Output)
Peak 1500V
RMS 1060V
Surge Isolation Voltage (Input–to–Output)
Peak 2500V
RMS 1770V
Operating Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Lead Temperature (During Soldering for 10sec), T_L . . . . . +250°C

Note 1. T_C indicates Collector lead temperature 1/32” from case.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Infrared Emitting Diode (LED)						
Forward Voltage	V_F	I_F = ±10mA	–	–	1.5	V
Capacitance	C_J	V_R = 0, f = 1MHz	–	–	100	pF
Phototransistor						
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA, I_F = 0	70	–	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_F = 0	30	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100µA, I_F = 0	5	–	–	V
Collector Dark Current	I_{CEO}	V_{CE} = 10V, I_F = 0	–	–	100	nA
Coupled						
DC Current Transfer Ratio	CTR	V_{CE} = 10V, I_F = ±10mA	20	–	–	%
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 0.5mA, I_F = ±10mA	–	–	0.4	V
Isolation Resistance	$R_{(I–O)}$	$V_{(I–O)}$ = 500V, Note 2	100	–	–	GΩ

Note 2. Tests of Input–to–Output isolation current resistance, and capacitance are performed with the input terminals (diode) shorted together and the output terminals (transistors) shorted together.

Pin Connection Diagram