ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

NTE3042
Optoisolator
NPN Transistor Output

Description:
The NTE3042 is an optically coupled isolator consisting of a Gallium Arsenide infrared emitting diode and an NPN silicon phototransistor mounted in a standard 6–Lead DIP type package.

Features:
- 1500V Isolation
- High DC Current Transfer Ratio
- Low Cost Dual–In–Line (DIP) Package

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

Input LED

Reverse Voltage, V_R 3V
Forward Current, I_F
Continuous 60mA
Peak (1μs p.w. 300 pps) 3A
LED Power Dissipation, P_D 100mW
Derate Above 25°C . . . . . 1.33mW/°C

Output Transistor

Collector–Emitter Voltage, V_{CEO} 30V
Emitter–Collector Voltage, V_{ECO} 7V
Collector–Base Voltage, V_{CBO} 70V
Detector Power Dissipation, P_D 150mW
Derate Above 25°C . . . . . 2.0mW/°C

Total Device

Input–to–Output Isolation Voltage, V_{ISO} . . . . . ±1500V
Total Device Power Dissipation, P_D 250mW
Derate Above 25°C . . . . . 3.3mW/°C
Operating Ambient Temperature Range, T_A . . . . . –55° to +100°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Lead Temperature (During Soldering, 1/16” from case, 10sec), T_L . . . . . +260°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Characteristics						
Forward Voltage	V_F	I_F = 20mA	–	–	1.5	V
Reverse Current	I_R	V_R = 3V	–	–	10	μA
Reverse Breakdown Voltage	$V_{(BR)R}$	I_R = 10μA	3	–	–	V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA	30	–	–	V
Emitter–Collector Breakdown Voltage	$V_{(BR)ECO}$	I_E = 100µA	7	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA	70	–	–	V
Collector–Emitter Dark Current	I_{CEO}	V_{CE} = 10V, I_B = 0	–	–	50	nA
Collector–Base Dark Current	I_{CBO}	V_{CB} = 10V, I_E = 0	–	–	20	nA
Collector–Emitter Capacitance	C_{CE}	V_{CE} = 0	–	10	–	pF
DC Current Gain	h_{FE}	V_{CE} = 5V, I_C = 100µA	100	150	–	
Coupled Characteristics						
DC Current Transfer Ratio	I_C/I_F	I_F = 10mA, V_{CE} = 10V, I_B = 0	20	–	–	%
Input–to–Output Isolation Resistance	R_{IO}	V_{IO} = 500V, Note 1	10^{11}	–	–	Ω
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 16mA, I_C = 2mA	–	–	0.4	V
Input–to–Output Capacitance	C_{IO}	f = 1MHz, Note 1	–	0.6	–	pF
Output Rise Time	t_r	V_{CC} = 10V, I_C = 2mA, R_L = 100Ω	–	2.0	–	µs
Output Fall Time	t_f		–	2.0	–	µs
Input–to–Output Isolation Voltage	V_{ISO}	Note 1	1500	–	–	V

Note 1. Measured with input leads shorted together and output leads shorted together.

Pin Connection Diagram