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

NTE3041
Optoisolator
NPN Transistor Output

Description:

The NTE3041 is an optoisolator in a 6–Lead DIP type package consisting of a gallium arsenide infrared emitting diode optically coupled to a monolithic silicon phototransistor detector.

Features:

- High Current Transfer Ratio: 100% Min @ Spec Conditions
- Guaranteed Switching Speeds

Applications:

- General Purpose Switching Circuits
- Interfacing and Coupling Systems of Different Potentials and Impedances
- Regulation Feedback Circuits
- Monitor & Detection Circuits
- Solid State Relays

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

Input LED

Reverse Voltage, V_R 6V
Continuous Forward Current, I_F 60mA
LED Power Dissipation (With Negligible Power in Output Detector), P_D 120mW
Derate Above 25°C . . . . . 1.41mW/°C

Output Transistor

Collector–Emitter Voltage, V_{CEO} 30V
Emitter–Base Voltage, V_{EBO} 7V
Collector–Base Voltage, V_{CBO} 70V
Continuous Collector Current, I_C 150mA
Detector Power Dissipation (With Negligible Power in Output Detector), P_D 150mW
Derate Above 25°C . . . . . 1.76mW/°C

Total Device

Isolation Source Voltage (Peak AC Voltage, 60Hz, 1sec Duration, Note 1), V_{ISO} 7500V
Total Device Power Dissipation, P_D 250mW
Derate Above 25°C . . . . . 2.94mW/°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

Note 1. Isolation Surge Voltage is an internal device dielectric breakdown rating. For this test, Pin1 and Pin2 are common, and Pin4, Pin5, and Pin6 are common.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input LED						
Forward Voltage	V_F	I_F = 10mA	0.8	1.15	1.5	V
		I_F = 10mA, T_A = –55°C	0.9	1.3	1.7	V
		I_F = 10mA, T_A = +100°C	0.7	1.05	1.4	V
Reverse Leakage Current	I_R	V_R = 6V	–	–	10	µA
Capacitance	C_J	V = 0, f = 1MHz	–	18	–	pF
Output Transistor						
Collector–Emitter Dark Current	I_{CEO}	V_{CE} = 10V	–	1	50	nA
		V_{CE} = 30V, T_A = +100°C	–	–	500	µA
Collector–Base Dark Current	I_{CBO}	V_{CB} = 10V	–	0.2	20	nA
		V_{CB} = 10V, T_A = +100°C	–	100	–	nA
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA	30	45	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA	70	100	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100µA	7.0	7.8	–	V
DC Current Gain	h_{FE}	I_C = 2mA, V_{CE} = 5V	–	400	–	
Collector–Emitter Capacitance	C_{CE}	V_{CE} = 5V, f = 1MHz	–	7	–	pF
Collector–Base Capacitance	C_{CB}	V_{CB} = 0, f = 1MHz	–	19	–	pF
Emitter–Base Capacitance	C_{EB}	V_{EB} = 0, f = 1MHz	–	9	–	pF
Coupled						
Output Collector Current	I_C	I_F = 10mA, V_{CE} = 10V	10	30	–	mA
		I_F = 10mA, V_{CE} = 10V, T_A = –55°C	4	–	–	mA
		I_F = 10mA, V_{CE} = 10V, T_A = +100°C	4	–	–	mA
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 0.5mA, I_F = 10mA	–	0.14	0.3	V
Turn–On Time	t_{on}	I_C = 2mA, V_{CC} = 10V, R_L = 100Ω	–	7.5	10	µs
Turn–Off Time	t_{off}		–	5.7	10	µs
Rise Time	t_r		–	3.2	–	µs
Fall Time	t_f		–	4.7	–	µs
Isolation Voltage	V_{ISO}	f = 60Hz, t = 1sec	7500	–	–	V
Isolation Current	I_{ISO}	$V_{I–O}$ = 3550V_{pk}	–	–	100	µA
Isolation Resistance	R_{ISO}	V = 500V	10^{11}	–	–	Ω
Isolation Capacitance	C_{ISO}	V = 0, f = 1MHz	–	0.2	2.0	pF

Pin Connection Diagram