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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: ($T_A = +25^\circ\text{C}$ 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/ $^\circ\text{C}$

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/ $^\circ\text{C}$

Total Device

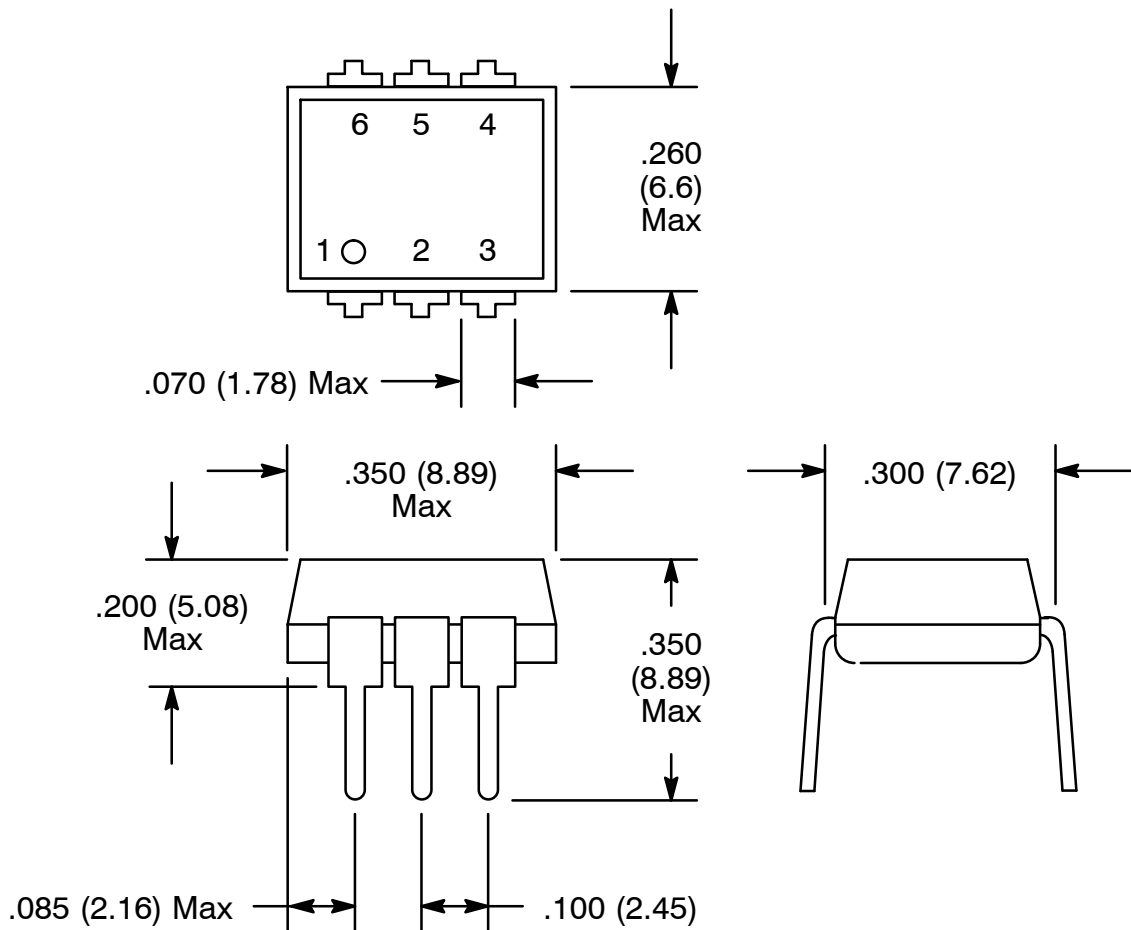
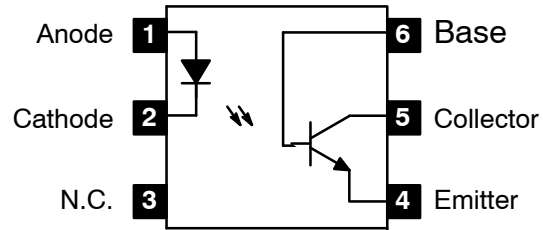
Isolation Source Voltage (Peak AC Voltage, 60Hz, 1sec Duration, Note 1), V_{ISO}	7500V
Total Device Power Dissipation, P_D	250mW
Derate Above 25°C	2.94mW/ $^\circ\text{C}$
Operating Ambient Temperature Range, T_A	-55° to $+100^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$
Lead Temperature (During Soldering, 1/16" from case, 10sec), T_L	$+260^\circ\text{C}$

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: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

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

Pin Connection Diagram



NOTE: Pin1 locator dot is for reference ONLY.
For additional Pin1 location options, [click here](#).