

NTE3043 Optoisolator NPN Transistor Output

Description:

The NTE3043 is an optically coupled isolator consisting of a Gallium Arsenide infrared emitting diode and an NPN silicon phototransistor mounted in a standard 4-Lead DIP type package.

Features:

- High Output Voltage: $V_{(BR)CEO} = 80V$
- Controlled Current Transfer Ratio
- Maximum Specified Switching Times
- High Isolation Voltage
- Low Cost DIP Type Package

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

Input LED

DC Forward Current, I_F	
Continuous	60mA
Peak (1 μ s p.w. 300pps)	3A
DC Reverse Voltage, V_R	3V
Power Dissipation, P_D	90mW
Derate Above 25 $^{\circ}C$	1.2mW/ $^{\circ}C$

Output Transistor

Collector-Emitter Voltage, V_{CEO}	80V
Emitter-Base Voltage, V_{EBO}	5V
Collector-Base Voltage, V_{CBO}	100V
Power Dissipation, P_D	200mW
Derate Above 25 $^{\circ}C$	2.67mW/ $^{\circ}C$

Coupled

Power Dissipation, P_D	260mW
Derate Above 25 $^{\circ}C$	3.5mW/ $^{\circ}C$
Operating Temperature Range, T_{opr}	-55 $^{\circ}$ to +100 $^{\circ}C$
Storage Temperature Range, T_{stg}	-55 $^{\circ}$ to +150 $^{\circ}C$
Lead Temperature (During Soldering, 1/16" from case, 10sec), T_L	+260 $^{\circ}C$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input LED						
Reverse Leakage Current	I _R	V _R = 3V	—	—	10	μA
Forward Voltage	V _F	I _F = 20mA	—	—	1.5	V
Reverse Breakdown Voltage	V _R	I _R = 10μA	3.0	—	—	V
Forward Voltage Temperature Coefficient			—	−1.8	—	mV/°C
Junction Capacitance	C _J	V _F = 0, f = 1MHz	—	50	—	pF
		V _F = 1V, f = 1MHz	—	65	—	pF
Output Transistor						
Collector–Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 1mA, I _F = 0	80	—	—	V
Emitter–Base Breakdown Voltage	V _{(BR)EBO}	I _E = 100μA, I _F = 0	5	—	—	V
Collector–Base Breakdown Voltage	V _{(BR)CBO}	I _C = 10μA	100	—	—	V
Collector–Emitter Dark Current	I _{CEO}	V _{CE} = 10V, I _F = 0	—	—	60	nA
DC Current Gain	h _{FE}	V _{CE} = 6V, I _C = 100μA	—	170	—	
Collector–Emitter Capacitance		V _{CE} = 0, f = 1MHz	—	8	—	pF
Collector–Base Capacitance		V _{CE} = 5V, f = 1MHz	—	20	—	pF
Emitter–Base Capacitance		V _{EB} = 0, f = 1MHz	—	10	—	pF
Coupled						
DC Current Transfer Ratio	I _C /I _F	I _F = 10mA, V _{CE} = 10V	70	125	210	%
		I _F = 16mA, V _{CE} = 0.4V	—	12.5	—	%
Current Transfer Ratio, Collector–Base		I _F = 10mA, V _{CB} = 10V	—	0.15	—	%
Input–Output Isolation Resistance	R _{IO}	V _{ISO} = 500V _{DC}	10	—	—	Ω
Collector–Emitter Saturation Voltage	V _{CE(sat)}	I _F = 16mA, I _C = 2mA	—	—	0.4	V
Input–Output Capacitance	C _{IO}	f = 1MHz	—	0.5	—	pF
Surge Isolation		Relative Humidity < 50%, I ₁₋₀ < 10μb	4000	—	—	V _{DC}
		t = 1sec	3000	—	—	V _{AC}
Steady State Isolation		Relative Humidity < 50%	3500	—	—	V _{DC}
		t = 1min	2500	—	—	V _{AC}
Switching Times						
Non–Saturated Turn–On Time	t _{on}	R _L = 100, I _C = 200mA, V _{CC} = 5V	—	4.5	15	μs
Non–Saturated Turn–Off Time	t _{off}		—	3.5	15	μs
Saturated Turn–On Time	t _{on}	R _L = 1.9kΩ, I _F = 16mA	—	3.2	—	μs
Saturated Turn–Off Time	t _{off}		—	50	—	μs

Pin Connection Diagram

