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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°C unless otherwise specified)

Input LED

DC Forward Current, I_F
- Continuous 60mA
- Peak (1µs p.w. 300pps) 3A

DC Reverse Voltage, V_R 3V

Power Dissipation, P_D 90mW
- Derate Above 25°C . . . . . 1.2mW/°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°C . . . . . 2.67mW/°C

Coupled

Power Dissipation, P_D 260mW
- Derate Above 25°C . . . . . 3.5mW/°C

Operating Temperature Range, T_{opr} . . . . . –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 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