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NTE3081
Optoisolator
NPN Transistor Output

Description:

The NTE3081 consists of a gallium arsenide infrared emitting diode coupled with a silicon phototransistor in a low cost plastic package with lead spacing compatible with dual–in–line packages.

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

Total Device

Surge Isolation Voltage (Input to Output), V_{ISO}
- Peak 6000V
- RMS 4242V

Steady–State Isolation Voltage (Input to Output), V_{ISO}
- Peak 4500V
- RMS 3200V

Operating Temperature Range, T_J . . . . . –55° to +85°C

Storage Temperature Range, T_{stg} . . . . . –55° to +85°C

Lead Temperature (During Soldering, 5sec Max), T_L . . . . . +260°C

Infrared Emitting Diode (Emitter)

Forward Current, I_F
- Continuous 60mA
- Peak (Pulse Width ≤ 1μs, PRR ≤ 300pps) 3A

Reverse Voltage, V_R 4V

Power Dissipation, P_E 100mW
- Derate Above 25°C . . . . . 1.67mW/°C

Phototransistor (Detector)

Continuous Collector Current, I_C 100mA

Collector–Emitter Voltage, V_{CEO} 30V

Emitter–Collector Voltage, V_{ECO} 6V

Power Dissipation, P_D 150mW
- Derate Above 25°C . . . . . 2.5mW/°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Infrared Emitting Diode						
Reverse Breakdown Voltage	$V_{(BR)R}$	I_R = 10μA	4	–	–	V
Forward Voltage	V_F	I_F = 60mA	–	–	1.7	V
Reverse Current	I_R	V_R = 3V	–	–	1.0	μA
Capacitance	C_j	V = 0, f = 1MHz	–	30	–	pF
Phototransistor						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_F = 0	30	–	–	V
Emitter–Collector Breakdown Voltage	$V_{(BR)ECO}$	I_E = 100μA, I_F = 0	6	–	–	V
Collector Dark Current	I_{CEO}	V_{CE} = 10V, I_F = 0	–	5	100	nA
Capacitance	C_{ce}	V_{CE} = 5V, f = 1MHz	–	3.3	–	pF
Coupled Characteristics						
DC Current Transfer Ratio	CTR	I_F = 10mA, V_{CE} = 10V	20	–	–	%
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 10mA, I_C = 500mA	–	0.1	0.4	V
Isolation Resistance	R_{IO}	Input to Output Voltage = 500V_{DC}, Note 1	100	–	–	GΩ
Input to Output Capacitance	C_{io}	Input to Output Voltage = 0, f = 1MHz, Note 1	–	0.5	–	pF
Turn–On Time	t_{on}	V_{CE} = 10V, I_C = 2mA, R_L = 100Ω	–	9	–	μs
		V_{CE} = 5V, I_F = 10mA, R_L = 10kΩ	–	4	–	μs
Turn–Off Time	t_{off}	V_{CE} = 10V, I_C = 2mA, R_L = 100Ω	–	6.5	–	μs
		V_{CE} = 5V, I_F = 10mA, R_L = 10kΩ	–	165	–	μs

Note 1. Measured with input diode leads shorted together, and output detector leads shorted together.