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NTE3040 Optoisolator NPN Transistor Output

Description:

The NTE3040 is a gallium arsenide, infrared emitting diode in a 6-Lead DIP type package coupled with a silicon phototransistor.

Applications:

- Power Supply Regulators
- Digital Logic Inputs
- Microprocessor Inputs

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

Infrared Emitting Diode

Power Dissipation, P_D	150mW
Derate above 25°C ambient	2.0mW/ $^\circ\text{C}$
Forward Current, I_C	
Continuous	100mA
Peak (Pulse Width $1\mu\text{sec}$, 300pps)	3A
Reverse Voltage, V_R	6V

Phototransistor

Power Dissipation, P_D	150mW
Derate above 25°C ambient	2.0mW/ $^\circ\text{C}$
Collector-to-Emitter Voltage, V_{CEO}	30V
Collector-to-Base Voltage, V_{CBO}	70V
Emitter-to-Collector Voltage, V_{ECO}	7V

Total Device

Power Dissipation, P_D	250mW
Derate above 25°C ambient	3.3mW/ $^\circ\text{C}$
Storage Temperature, T_{stg}	-55° to $+150^\circ\text{C}$
Operating Temperature, T_{opr}	-55° to $+100^\circ\text{C}$
Lead Soldering Temperature (10 seconds)	$+260^\circ\text{C}$

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, Note 1, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Infrared Emitting Diode						
Input Forward Voltage	V_F	$I_F = 10\text{mA}$	-	1.18	1.50	V
Reverse Leakage Current	I_R	$V_R = 6\text{V}$	-	0.001	10	μA

Note 1. Typical values at $T_A = +25^\circ\text{C}$.

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$, Note 1, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Phototransistor						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1.0\text{mA}$, $I_F = 0$	30	100	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_F = 0$	70	120	–	V
Emitter–Collector Breakdown Voltage	$V_{(BR)ECO}$	$I_E = 100\mu\text{A}$, $I_F = 0$	7	10	–	V
Collector–Emitter Dark Current	I_{CEO}	$V_{CE} = 10\text{V}$, $I_F = 0$	–	1	50	nA
Collector–Base Dark Current	I_{CBO}	$V_{CEB} = 10\text{V}$	–	–	20	nA
Capacitance	C_{CE}	$V_{CE} = 10\text{V}$, $f = 1\text{MHz}$	–	8	–	pf
Isolation Characteristics						
Input–Output Isolation Voltage RMS	V_{ISO}	$f = 60\text{Hz}$, $t = 1 \text{ min.}$	5300	–	–	V_{AC}
		$f = 60\text{Hz}$, $t = 1 \text{ sec.}$	7500	–	–	V_{AC}
Isolation Resistance	R_{ISO}	$V_{I-O} = 500\text{V}_{DC}$	10^{11}	–	–	Ω
Isolation Capacitance	C_{ISO}	$V_{I-O} = 0$, $f = 1\text{MHz}$	–	0.5	–	pF
Transfer Characteristics						
DC Current Transfer Ratio	CTR	$I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$	20	–	–	%
Collector–Emitter Saturation Voltage	$V_{CEO(sat)}$	$I_F = 50\text{mA}$, $I_C = 2\text{mA}$	–	–	0.5	V
Switching Speeds	T_{ON} , T_{OFF}	$I_F = 10\text{mA}$, $V_{CC} = 10\text{V}$, $R_L = 100\Omega$	–	2	–	μs

Note 1. Typical values at $T_A = +25^\circ\text{C}$.

