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NTE3086
Optoisolator
Dual NPN Transistor Output

Description:

The NTE3086 is a standard dual optocoupler consisting of a GaAs Infrared LED and a silicon phototransistor per channel. This device is constructed with a high voltage insulation, double molded packaging process which offers 7.5KV withstand test capability.

Features:

- Two isolated Channels per Package
- 7500V Withstand Test Voltage
- CTR Minimum: 20%

Absolute Maximum Ratings:

Gallium Arsenide LED (Each Channel)

Power Dissipation (T_A = +25°C), P_D 100mW
Derate Above 25°C . . . . . 1.3mW/°C
Forward Current, I_F
Continuous 60mA
Peak (Pulse Width 1μs, 300pps) 3A

Phototransistor (Each Channel)

Power Dissipation (T_A = +25°C), P_D 150mW
Derate Above 25°C . . . . . 2.0mW/°C
Collector–Emitter Breakdow Voltage, $V_{(BR)CEO}$ 30V
Collector–Base Breakdow Voltage, $V_{(BR)CBO}$ 80V
Emitter–Collector Breakdow Voltage, $V_{(BR)ECO}$ 6V

Total Device

Power Dissipation (T_A = +25°C), P_D 400mW
Derate Above 25°C . . . . . 5.33mW/°C
Operating Temperature Range, T_{opr} . . . . . –55° to +100°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Lead Temperature (During Soldering, 10sec Max), T_L . . . . . +250°C

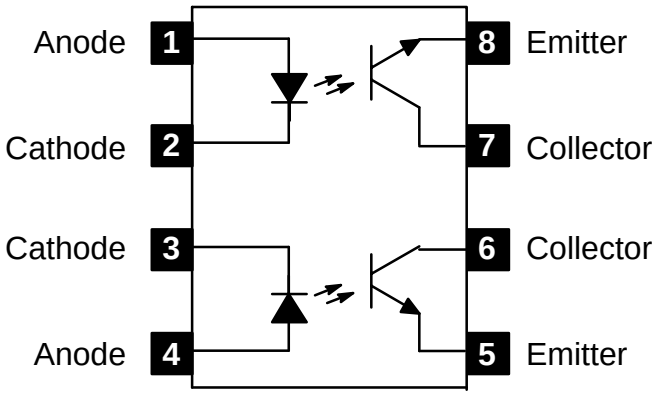
Electrical Characteristics: (T_A = +25°C unless otherwise specified)

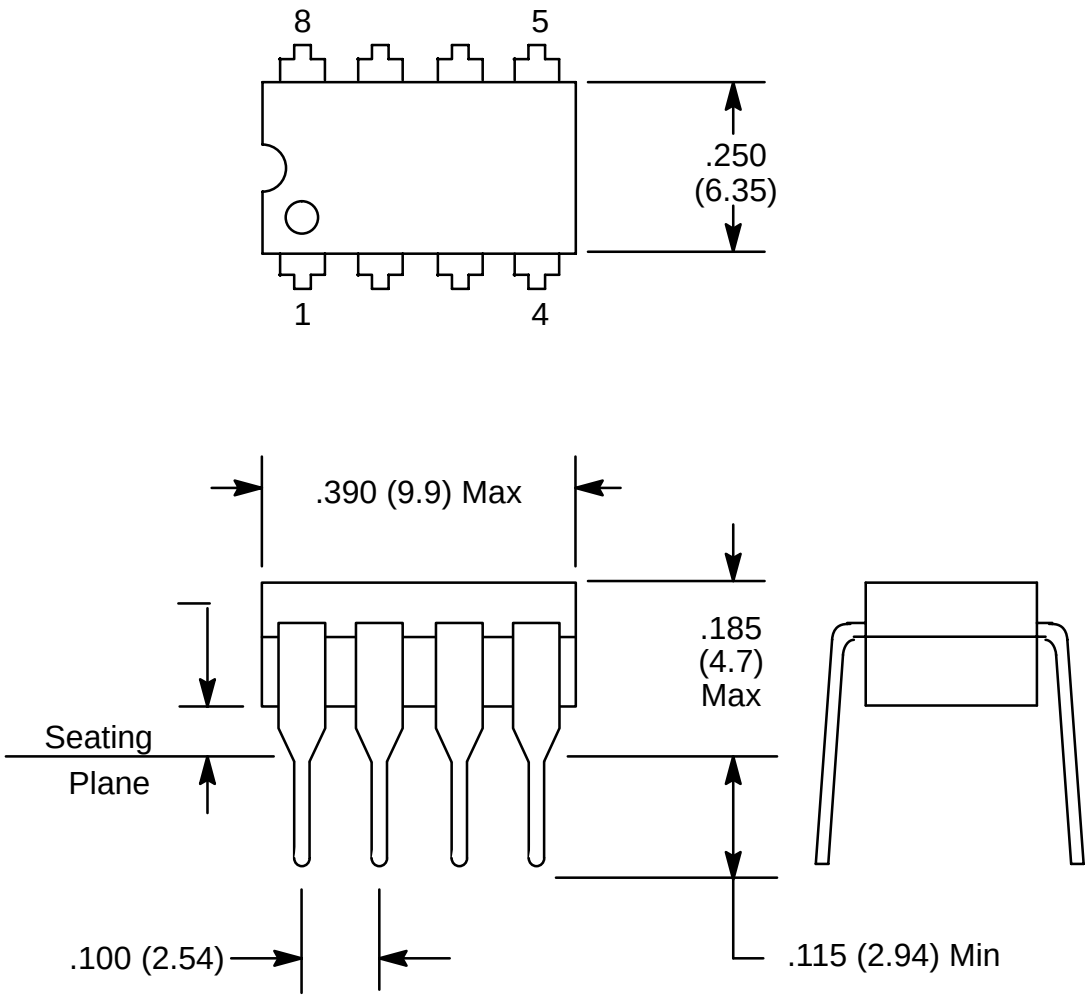
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gallium Arsenide LED						
Forward Voltage	V_F	I_F = 20mA	–	1.1	1.5	V
Reverse Voltage	V_R	I_R = 10μA	3	25	–	V
Reverse Current	I_R	V_R = 3V	–	–	10	μA
Junction Capacitance		V = 0, f = 1MHz	–	80	–	pF

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Phototransistor Detector						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 100μA, I_F = 0	30	85	–	V
Emitter–Collector Breakdown Voltage	$V_{(BR)ECO}$	I_E = 100μA, I_F = 0	6	13	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_F = 0	80	–	–	V
Collector–Emitter Leakage Current	I_{CEO}	V_{CE} = 10V, I_F = 0	–	5	100	nA
Collector–Emitter Capacitance	C_{CE}	V_{CE} = 0, I_F = 0	–	8	–	pF
Coupled Electrical Characteristics						
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 2mA, I_F = 16mA	–	0.2	0.4	V
DC Current Transfer Ratio	CTR	V_{CE} = 10V, I_F = 10mA	20	50	–	%
Isolation Voltage	$V_{(BR)(I–O)}$	t = 1sec	1500	2500	–	V
Isolation Resistance	$R_{(I–O)}$	$V_{I–O}$ = 500V	10^{11}	10^{12}	–	Ω
Input to Output Capacitance		f = 1MHz	–	0.4	–	pF
Bandwidth	BW	I_C = 2mA, V_{CC} = 10V, R_L = 100Ω	–	150	–	kHz
Switching Times						
Non–Saturated Rise Time, Fall Time	t_r, t_f	V_{CC} = 10V, I_C = 2mA, R_L = 100Ω, Note 1	–	2.4	–	μs
Non–Saturated Rise Time, Fall Time	t_r, t_f	V_{CC} = 10V, I_C = 2mA, R_L = 1kΩ, Note 1	–	15	–	μs
Saturated Turn–On Time (From 5V to 0.8V)	$t_{on(sat)}$	R_L = 2kΩ, I_F = 40mA	–	5	–	μs
Saturated Turn–Off Time (From Saturation to 2V)	$t_{off(sat)}$	R_L = 2kΩ, I_F = 40mA	–	25	–	μs

Note 1. The frequency at which I_C is 3dB down from the 1kHz value.




8
5
.250
(6.35)
1
4
.390 (9.9) Max
.185
(4.7)
Max
Seating
Plane
.100 (2.54)
.115 (2.94) Min