

## NTE3047 Optoisolator TRIAC Driver Output

**Description:**

The NTE3047 optoisolator consists of a gallium arsenide infrared emitting diode, optically coupled to a silicon bilateral switch and is designed for applications requiring isolated TRIAC triggering, low current isolated AC switching, high electrical isolation (to 7500V peak), high detector standoff voltage, small size, and low cost.

**Applications:**

- Solenoid/Valve Controls
- Lamp Ballasts
- Motor Controls
- Static AC Power Switch
- Solid State Relays
- Incandescent lamp Dimmers
- Interfacing Microprocessors to 115VAC Preipherals

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

**Infrared Emitting Diode**

Reverse Voltage, $V_R$ .....	3V
Continuous Forward Current, $I_F$ .....	60mA
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ , Negligible Power in Transistor), $P_D$ .....	100mW
Derate Above $25^\circ\text{C}$ .....	1.33mW/ $^\circ\text{C}$

**Output Driver**

Off-State Output Terminal Voltage, $V_{DRM}$ .....	250V
Peak Repetitive Surge Current ( $PW = 1\text{ms}$ , 120pps), $I_{TSM}$ .....	1A
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	300mW
Derate Above $25^\circ\text{C}$ .....	4mW/ $^\circ\text{C}$

**Total Device**

Isolation Surge Voltage (Peak AC Voltage, 60Hz, 5sec Duration, Note 1), $V_{ISO}$ .....	7500VAC
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	330mW
Derate Above $25^\circ\text{C}$ .....	4.4mW/ $^\circ\text{C}$
Junction Temperature Range, $T_J$ .....	$-40^\circ$ to $+100^\circ\text{C}$
Operating Ambient Temperature Range, $T_A$ .....	$-40^\circ$ to $+85^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Lead Temperature (During Soldering, 10s), $T_L$ .....	$+260^\circ\text{C}$

Note 1. Isolation surge voltage,  $V_{ISO}$ , is an internal device dielectric breakdown rating. For this test, Pin1 and Pin2 are common, and Pin4, Pin5, and Pin6 are common.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Input LED</b>						
Reverse Leakage Current	$I_R$	$V_R = 3\text{V}$	–	0.05	100	$\mu\text{A}$
Forward Voltage	$V_F$	$I_F = 10\text{mA}$	–	1.15	1.5	V
<b>Output Detector</b> ( $I_F = 0$ unless otherwise specified)						
Peak Blocking Current, Either Direction	$I_{DRM}$	Rated $V_{DRM}$ , Note 2	–	10	100	nA
Peak On–State Voltage, Either Direction	$V_{TM}$	$I_{TM} = 100\text{mA}$ Peak	–	1.8	3.0	V
Critical Rate of Rise of Off–State Voltage	dv/dt	Note 3	–	10	–	$\text{V}/\mu\text{s}$
<b>Coupled</b>						
LED Trigger Current, Current Required to Latch Output	$I_{FT}$	Main Terminal Voltage = 3V, Note 4	–	8	15	mA
Holding Current, Either Direction	$I_H$		–	100	–	$\mu\text{A}$

**Note 2.** Test voltage must be applied within dv/dt rating.

**Note 3.** This is static dv/dt. Commutating dv/dt is a function of the load–driving thyristor(s) only.

**Note 4.** This device is guaranteed to trigger at an  $I_F$  value less than or equal to max.  $I_{FT}$ . Therefore, recommended operating  $I_F$  lies between max.  $I_{FT}$  (15mA) and absolute max.  $I_F$  (60mA).

