



ELECTRONICS, INC.

44 FARRAND STREET  
BLOOMFIELD, NJ 07003  
(973) 748-5089  
<http://www.nteinc.com>

## NTE3222 Optoisolator NPN Transistor Output

### **Description:**

The NTE3222 is an optically coupled isolator in a 4-Lead DIP type package containing a GaAs light emitting diode and an NPN silicon phototransistor.

### **Features:**

- High Isolation Voltage
- High Collector–Emitter Voltage
- High Speed Switching

### **Applications:**

- Power Supplies
- Telephone/FAX
- FA/FO Equipment
- Programmable Logic Controller

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

#### **Diode**

Reverse Voltage, $V_R$ .....	6V
DC Forward Current, $I_F$ .....	80mA
Power Dissipation (Per Channel) $P_D$ .....	150mW
Derate Above $25^\circ\text{C}$ .....	1.5mW/ $^\circ\text{C}$
Peak Forward Current (Note 1), $I_{FP}$ .....	1A

#### **Transistor**

Collector–Emitter Voltage, $V_{CEO}$ .....	80V
Emitter–Collector Voltage, $V_{ECO}$ .....	7V
Collector Current (Per Channel), $I_C$ .....	50mA
Power Dissipation (Per Channel) $P_C$ .....	150mW
Derate Above $25^\circ\text{C}$ .....	1.5mW/ $^\circ\text{C}$

#### **Total Device**

Isolation Voltage (Note 2), BV .....	$5000V_{rms}$
Operating Ambient Temperature Range, $T_A$ .....	$-55^\circ$ to $+100^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$

Note 1. Pulse width = 100 $\mu\text{s}$ , duty cycle = 1%.

Note 2. AC voltage for 1 minute at  $T_A = +25^\circ\text{C}$ , RH = 60% between input and output.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Diode</b>						
Forward Voltage	$V_F$	$I_F = 10\text{mA}$	–	1.17	1.40	V
Reverse Current	$I_R$	$V_R = 5\text{V}$	–	–	5	$\mu\text{A}$
Terminal capacitance	$C_t$	$V = 0\text{V}, f = 1\text{MHz}$	–	50	–	pF
<b>Transistor</b>						
Collector–Emitter Dark Current	$I_{CEO}$	$V_{CE} = 80\text{V}, I_F = 0\text{mA}$	–	–	100	nA
<b>Coupled</b>						
Current Transfer Ratio ( $I_C/I_F$ )	CTR	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	80	300	600	%
Collector Saturation Voltage	$V_{CE(sat)}$	$I_F = 10\text{mA}, I_C = 2\text{mA}$	–	–	0.3	V
Isolation Resistance	$R_{I-O}$	$V_{I-O} = 1\text{kV}_{DC}$	$10^{11}$	–	–	$\Omega$
Isolation Capacitance	$C_{I-O}$	$V = 0\text{V}, f = 1\text{MHz}$	–	0.5	–	pF
Rise Time	$t_r$	$V_{CC} = 10\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$	–	3	–	$\mu\text{s}$
Fall Time	$t_f$		–	5	–	$\mu\text{s}$

**Pin Connection Diagram**

