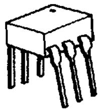
T-41-87

GE3009-GE3012

Optoisolator GaAs Infrared Emitting Diode and Light Activated Triac Driver

The GE3009-GE3012 series consists of a gallium arsenide, infrared emitting diode coupled with a light activated silicon bilateral switch, which functions like a triac, in a dual in-line package. These devices are also available in surface-mount packaging.

These devices are especially designed for triggering power triacs while maintaining dielectric isolation from the trigger control circuit.



absolute maximum ratings: (25° C)

INFRARED EMITTING DIODE

Power Dissipation	*100	milliwatts
Forward Current (Continuous)	50	milliamps
Forward Current (Peak)	3	amperes
(Pulse width 1 μsec. 300 pps)		
Reverse Voltage	3	volts

*Derate 1.33 mW/°C above 25°C ambient.

OUTPUT DRIVER

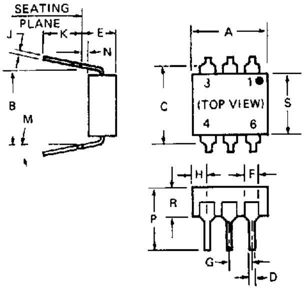
Off-State Output Terminal Voltage	250	volts
On-State RMS Current	100	milliamps
(Full Cycle Sine Wave, 50 to 60 Hz)		
Peak Nonrepetitive Surge Current	1.2	amperes
(PW = 10 ms, DC = 10%)		
Total Power Dissipation @ T_A = 25°C	**300	milliwatts

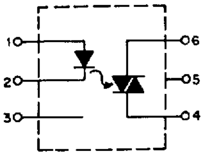
**Derate 4 0 mW/°C above 25°C.

TOTAL DEVICE

Storage Temperature -55°C to +150°C
Operating Temperature -40°C to +100°C
Lead Soldering Time (at 260°C) 10 seconds
Surge Isolation Voltage (Input to Output)
5656 $V_{(peak)}$ 4000 $V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output)
5300 $V_{(peak)}$ 3750 $V_{(RMS)}$

UL Covered under U.L. component recognition program, reference file E51868





Pin 5 is substrate DO NOT CONNECT

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN	MAX	MIN	MAX	
A	8 38	8 89	330	350	
B	7 62 REF		300 REF		1
C	–	8 64	–	340	2
D	406	508	016	020	
E	–	5 08	–	200	3
F	1 01	1 78	040	070	
G	2 28	2 80	090	110	
H	–	2 16	–	085	4
J	203	305	008	012	
K	2 54	–	100	–	
M	–	15		15	
N	381	–	015	–	
P	–	9 53	–	375	
R	2 92	3 43	115	135	
S	6 10	6 86	240	270	

NOTES
1 INSTALLED POSITION LEAD CENTERS
2 OVERALL INSTALLED DIMENSION.
3 THESE MEASUREMENTS ARE MADE FROM THE SEATING PLANE
4 FOUR PLACES

GE3009-GE3012

individual electric characteristics (25° C)

EMITTER	**SYMBOL**	**TYP.**	**MAX.**	**UNITS**
Forward Voltage (I_F = 10 mA)	V_F	1.2	1.5	volts
Reverse Current (V_R = 3V)	I_R	—	100	microamps
Capacitance (V = 0, f = 1 MHz)	C_J	50	—	picofarads

DETECTOR **See Note 1**		**SYMBOL**	**TYP.**	**MAX.**	**UNITS**
Peak Off-State Current	V_{DRM} = 250 V	I_{DRM}	—	100	nanoamps
Peak On-State Voltage	I_{TM} = 100 mA	V_{TM}	2.5	3.0	volts
Critical Rate-of-Rise of Off-State Voltage	V_{in} = 30 $V_{(RMS)}$ (See Figure 1)	dv/dt	10.0	—	volts/μsec.
Critical Rate-of-Rise of Commutating Off-State Voltage	I_{load} = 15 mA V_{in} = 30 $V_{(RMS)}$ (See Figure 1)	$dv/dt_{(C)}$	0.15	—	volts/μsec.
Critical Rate-of-Rise of Off-State Voltage	V_{in} = 140 $V_{(RMS)}$ JEDEC conditions	dv/dt	6.0	—	volts/μsec.

coupled electrical characteristics (25° C)

		SYMBOL	**TYP.**	**MAX.**	**UNITS**
IRED Trigger Current, Current Required to Latch Output (Main Terminal Voltage = 3.0V, R_L = 150 Ω)	GE3009	I_{FT}	—	30	milliamps
	GE3010	I_{FT}	—	15	milliamps
	GE3011	I_{FT}	—	10	milliamps
	GE3012	I_{FT}		5	milliamps
Holding Current, Either Direction		I_H	250	—	microamps

NOTE 1: Ratings apply for either polarity of Pin 6 — referenced to Pin 4

Voltages must be applied within dv/dt rating.

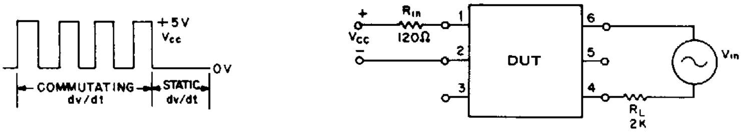


FIGURE 1. dv/dt — TEST CIRCUIT