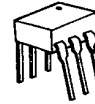


# Photon Coupled Isolator GE3009-GE3012

Ga As Infrared Emitting Diode & Light Activated Triac Driver

The GE Solid State 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

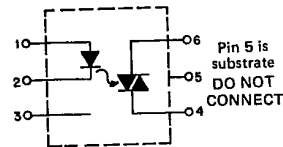
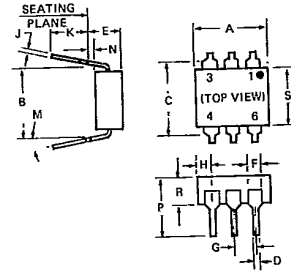
\*Derate 1.33 mW/°C above 25°C ambient.

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 <sub>A</sub> = 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 <sub>(peak)</sub>	4000 V <sub>(RMS)</sub>
Steady-State Isolation Voltage (Input to Output)	
5300 V <sub>(peak)</sub>	3750 V <sub>(RMS)</sub>

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



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	8.38	8.89	.330	.350	1
B	7.62 REF.	8.64	.300 REF.		
C	-	.508	-	.020	2
D	.406	.508	.016	.200	
E	-	5.08	-	200	3
F	1.01	1.78	.040	.070	
G	2.28	2.80	.090	.110	4
H	-	2.16	-	.085	
J	.203	.305	.008	.012	4
K	2.54	-	.100	-	
M	-	15°	-	15°	4
N	.381	-	.015	-	
P	-	9.53	-	.375	4
R	2.92	3.43	.115	.135	
S	6.10	6.86	.240	.270	4

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

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Individual electric characteristics (25° C)

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

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

coupled electrical characteristics (25° C)

		SYMBOL	TYP.	MAX.	UNITS
IRED Trigger Current, Current Required to Latch Output (Main Terminal Voltage = 3.0V, $R_L = 150 \Omega$ )	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

10

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

Voltages must be applied within  $dv/dt$  rating.

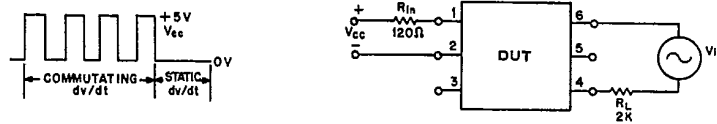


FIGURE 1.  $dv/dt$  — TEST CIRCUIT