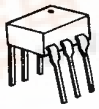
Photon Coupled Isolator GE3009-GE3012

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.

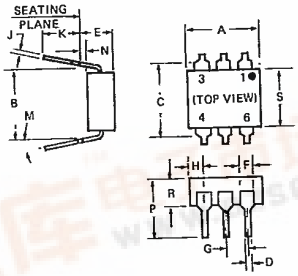
These devices are especially designed for triggering power triacs while maintaining dielectric isolation from the trigger control circuit.



absolute maximum ratings: (25° C)

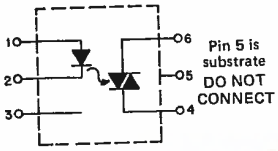
INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	50	milliamps
Forward Current (Peak) (Pulse width 1 μsec. 300 pps)	3	amperes
Reverse Voltage	3	volts

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



OUTPUT DRIVER		
Off-State Output Terminal Voltage	250	volts
On-State RMS Current (Full Cycle Sine Wave, 50 to 60 Hz)	100	milliamps
Peak Nonrepetitive Surge Current (PW = 10 ms, DC = 10%)	1.2	amperes
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 $V_{(RMS)}$

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

SYMBOL	MILLIMETERS MIN.	MILLIMETERS MAX.	INCHES MIN.	INCHES MAX.	NOTES
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.

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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 = O, 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.

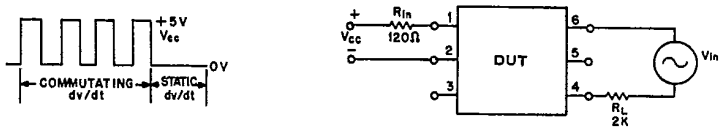

FIGURE 1. dv/dt — TEST CIRCUIT

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