

Photo Coupled Isolator H11J1- H11J5

Ga As Infrared Emitting Diode & Light Activated Triac Driver



6-T-41-87

The GE Solid State H11J 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.

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

absolute maximum ratings: (25°C)

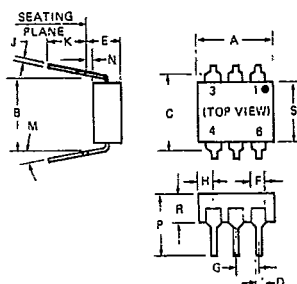
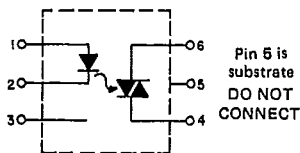
INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak) (Pulse width 1 μsec, 300 pps)	3	amperes
Reverse Voltage	3	volts

*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 to 150°C	
Operating Temperature	-40 to 100°C	
Lead Soldering Time (at 260°C)	10 seconds	
Surge Isolation Voltage (Input to Output)		
H11J1, H11J2	5656V _(peak)	4000V _(RMS)
H11J3, H11J4, H11J5	3535V _(peak)	2500V _(RMS)
Steady-State Isolation Voltage (Input to Output)		
H11J1, H11J2	5100V _(peak)	3600V _(RMS)
H11J3, H11J4, H11J5	3200V _(peak)	2250V _(RMS)



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.

individual electrical characteristics (25°C)

T-41=87

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 6)	dv/dt	4.0	—	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 6)	$dv/dt_{(C)}$	0.15	—	volts/ $\mu\text{sec.}$
Critical Rate-of-Rise of Off-State Voltage	$V_{in} = 120\text{V}_{(RMS)}$ JEDEC conditions	dv/dt	2.0	—	volts/ $\mu\text{sec.}$

coupled electrical characteristics (25°C)

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		SYMBOL	TYP.	MAX.	UNITS
IRED Trigger Current, Current Required to Latch Output (Main Terminal Voltage = 3.0V, $R_L = 150 \Omega$)	H11J1, H11J3	I_{FT}	—	10	milliamps
	H11J2, H11J4	I_{FT}	—	15	milliamps
	H11J5	I_{FT}	—	25	milliamps
Holding Current, Either Direction (Main Terminal Voltage 3.0V, Initiating Current — 10 mA)		I_H	250	—	microamps

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

TYPICAL CHARACTERISTICS

T-4-87

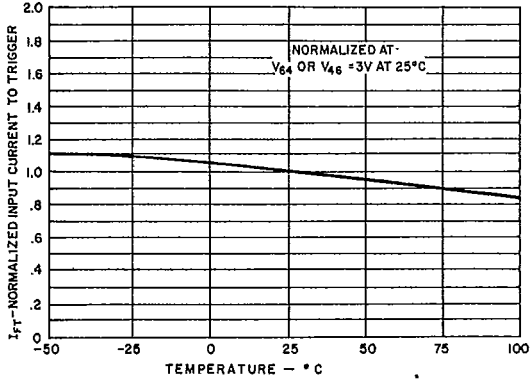


FIGURE 1. INPUT CURRENT TO TRIGGER VS. TEMPERATURE

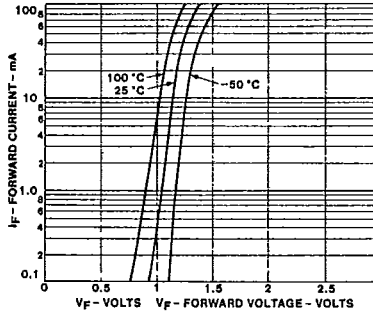


FIGURE 2. FORWARD VOLTAGE VS. FORWARD CURRENT

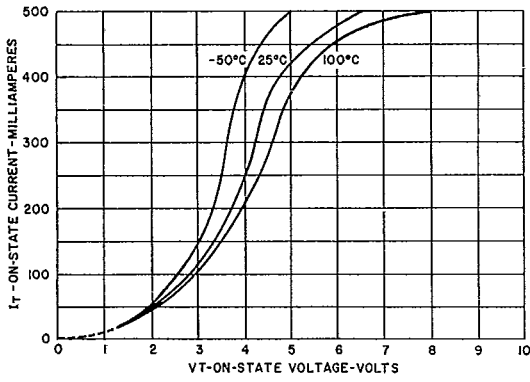


FIGURE 3. ON-STATE VOLTAGE VS. OUTPUT CURRENT

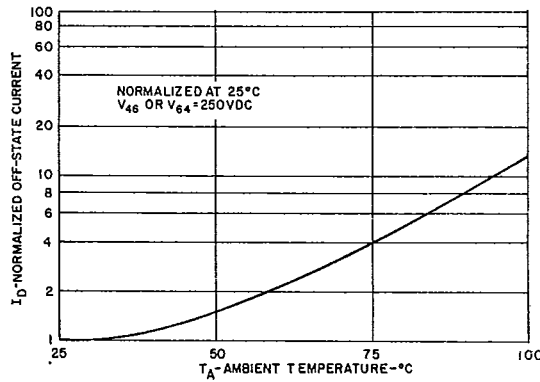


FIGURE 4. OFF-STATE CURRENT VS. TEMPERATURE

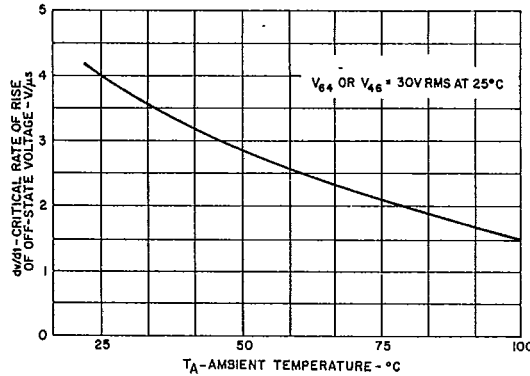


FIGURE 5. dv/dt VS. TEMPERATURE

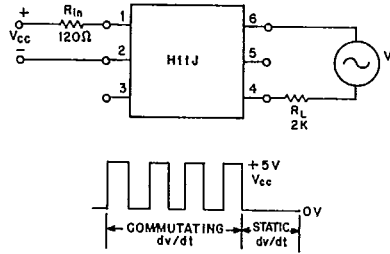
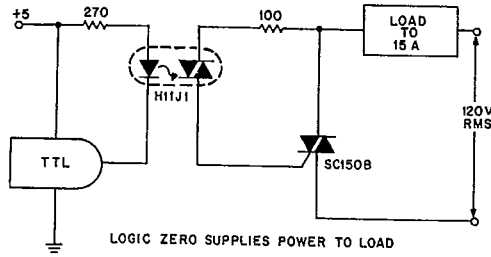


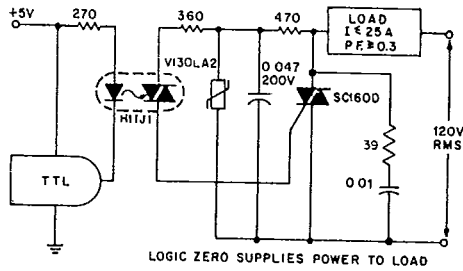
FIGURE 6. dv/dt - TEST CIRCUIT

TYPICAL APPLICATION CIRCUITS
TTL COMPATIBLE LOGIC CONTROL OF POWER LINE

T-41-87

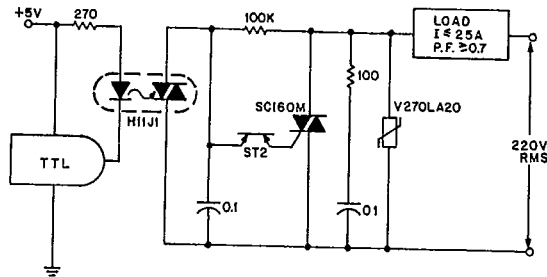


RESISTIVE LOAD AND NON-CRITICAL APPLICATIONS
LOW COST, LIMITED NOISE AND dv/dt IMMUNITY



INDUCTIVE LOADS AND CRITICAL APPLICATIONS
GOOD dv/dt AND NOISE IMMUNITY

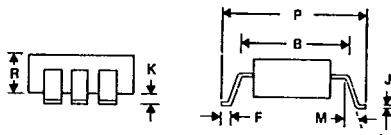
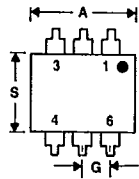
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INDUSTRIAL VOLTAGES AND CRITICAL APPLICATIONS
EXCELLENT dv/dt , NOISE AND OVERVOLTAGE CAPABILITY

T-91-20

Surface-Mount Optoisolators



Surface-mount packaging for the entire 6-pin DIP optoisolator line!

Add the "SMA" or "SMB" suffix to any 6-pin optoisolator part number when ordering.

DIMENSIONAL OUTLINE NO. 298
All Surface-Mount Types

SMB (Standard)
Surface-Mount Package

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	0.330	0.350	8.38	8.89	
B	0.330 REF		8.38 REF		
F	0.020	0.040	0.508	1.02	
J	0.008	0.012	0.203	0.305	
K	0.0040	0.0098	0.102	0.249	
M	—	15°	—	15°	
P	0.375	0.395	9.53	10.03	
R	0.115	0.135	2.92	3.43	
S	0.240	0.270	6.10	6.86	
Coplanarity	0	0.002	0	0.051	1

92CS-42862

1. Coplanarity is the distance from a plane, defined by the end of the three longest legs to the end of the shortest leg.

SMA (Low Profile)
Surface-Mount Package

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	0.330	0.350	8.38	8.89	
B	0.330 REF		8.38 REF		
F	0.020	0.040	0.508	1.02	
J	0.008	0.012	0.203	0.305	
K	0.0005	0.0040	0.013	0.102	
M	—	15°	—	15°	
P	0.373	0.393	9.47	9.98	
R	0.115	0.135	2.92	3.43	
S	0.240	0.270	6.10	6.86	
Coplanarity	0	0.002	0	0.051	1

92CS-42861

1. Coplanarity is the distance from a plane, defined by the end of the three longest legs to the end of the shortest leg.

