

H11J1-H11J5

**Optoisolator
GaAs Infrared Emitting Diode and
Light Activated Triac Driver**



The 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.

absolute maximum ratings: (25°C)

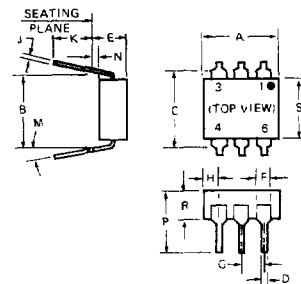
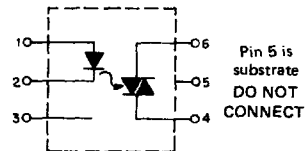
INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak)	3	amperes
(Pulse width 1 μsec. 300 pps)		
Reverse Voltage	3	volts

*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 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	565V _(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	4.06	5.08	0.16	0.20	
E	-	5.08	-	.200	3
F	1.01	1.78	0.40	0.70	
G	2.28	2.80	0.90	1.10	
H	-	2.16	-	.085	4
J	2.03	3.95	.008	0.12	
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.

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

H11J1-H11J5

individual electrical 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 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)

		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.

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TYPICAL CHARACTERISTICS

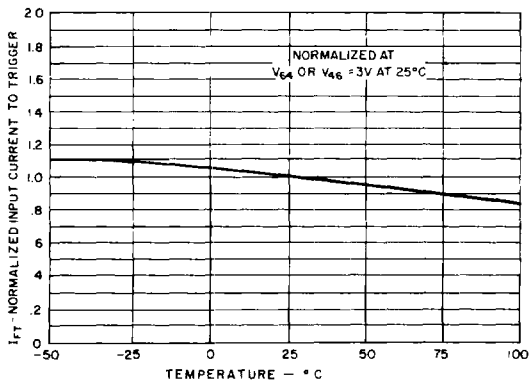


FIGURE 1. INPUT CURRENT TO TRIGGER VS. TEMPERATURE

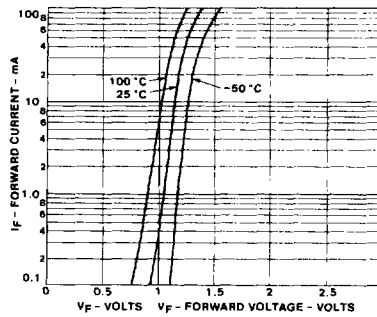


FIGURE 2. FORWARD VOLTAGE VS. FORWARD CURRENT

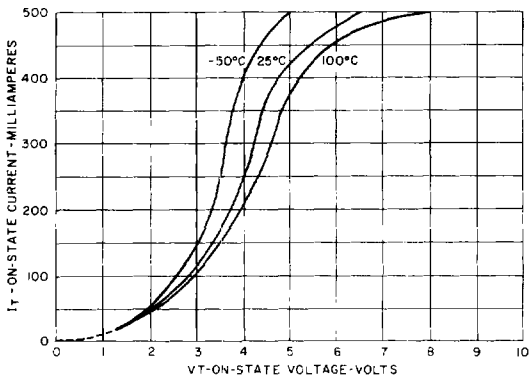


FIGURE 3. ON-STATE VOLTAGE VS. OUTPUT CURRENT

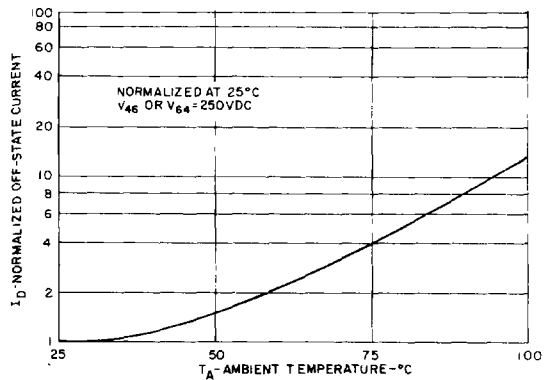


FIGURE 4. OFF-STATE CURRENT VS. TEMPERATURE

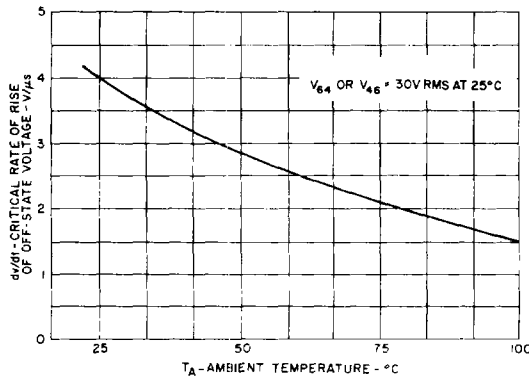


FIGURE 5. dv/dt VS. TEMPERATURE

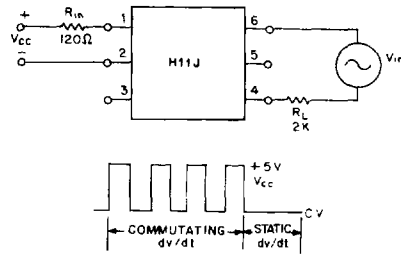
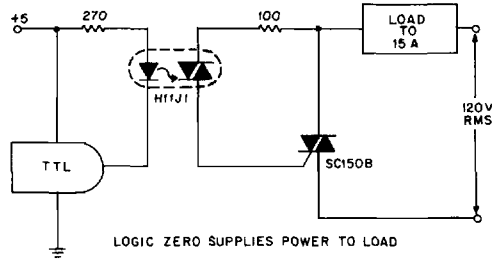
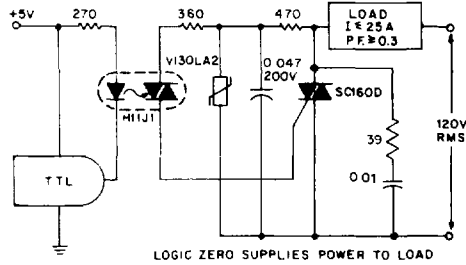


FIGURE 6. dv/dt - TEST CIRCUIT

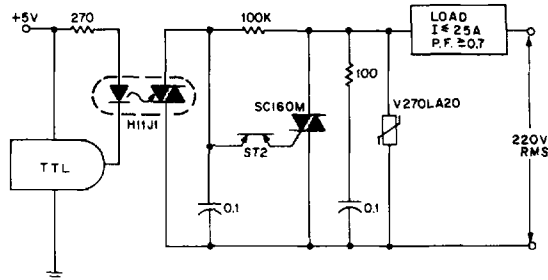
TYPICAL APPLICATION CIRCUITS
TTL COMPATIBLE LOGIC CONTROL OF POWER LINE



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



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