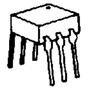
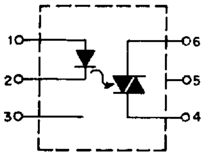
T-41-87

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.

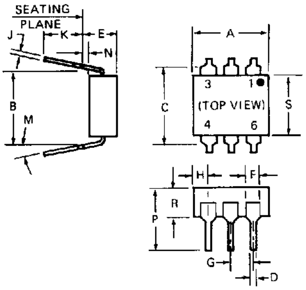


Pin 5 is substrate DO NOT CONNECT

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.

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

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$_{(RMS)}$

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

individual electrical 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} = 250V	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	Vin = 30V$_{(RMS)}$ (See Figure 6)	dv/dt	4.0	–	volts/μsec.
Critical Rate-of-Rise of Commutating Off-State Voltage	I_{load} = 15 mA Vin = 30V$_{(RMS)}$ (See Figure 6)	dv/dt$_{(C)}$	0.15	–	volts/μsec.
Critical Rate-of-Rise of Off-State Voltage	V_{in} = 120V$_{(RMS)}$ JEDEC conditions	dv/dt	2.0	–	volts/μsec.

coupled electrical characteristics (25°C)

		SYMBOL	TYP.	MAX.	UNITS
IRED Trigger Current, Current Required to Latch Output	H11J1, H11J3	I_{FT}	–	10	milliamps
(Main Terminal Voltage = 3.0V, R_L = 150 Ω)	H11J2, H11J4	I_{FT}	–	15	milliamps
	H11J5	I_{FT}	–	25	milliamps
					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.

H11J1-H11J5

TYPICAL CHARACTERISTICS

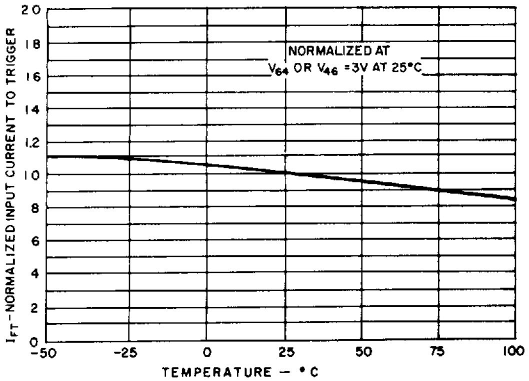


FIGURE 1. INPUT CURRENT TO TRIGGER VS. TEMPERATURE

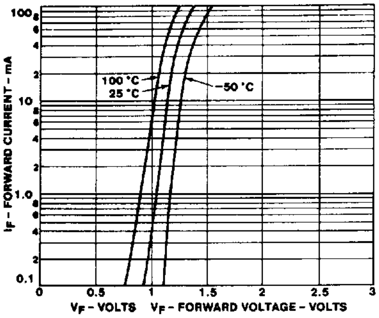


FIGURE 2. FORWARD VOLTAGE VS. FORWARD CURRENT

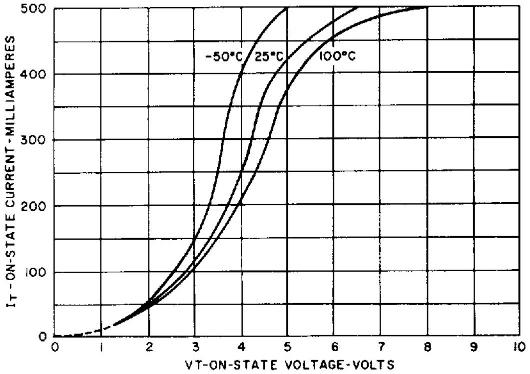


FIGURE 3. ON-STATE VOLTAGE VS. OUTPUT CURRENT

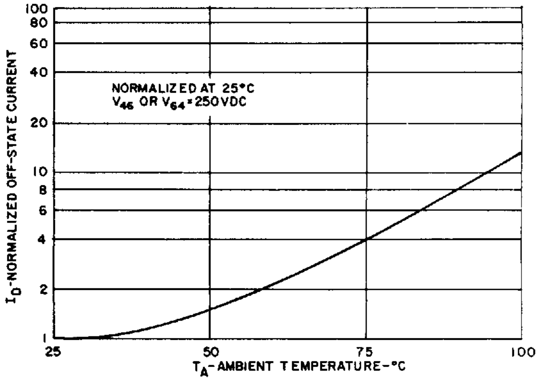


FIGURE 4. OFF-STATE CURRENT VS. TEMPERATURE

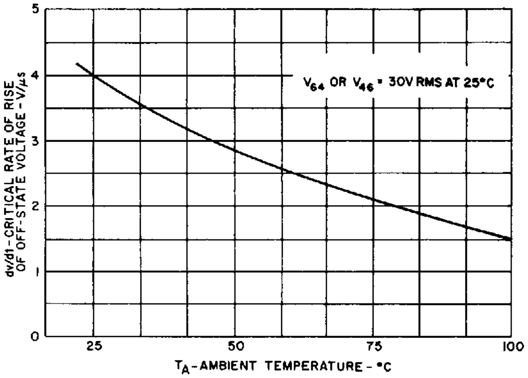


FIGURE 5. dv/dt VS. TEMPERATURE

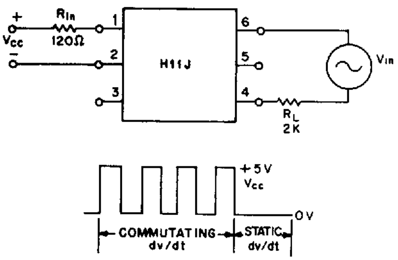
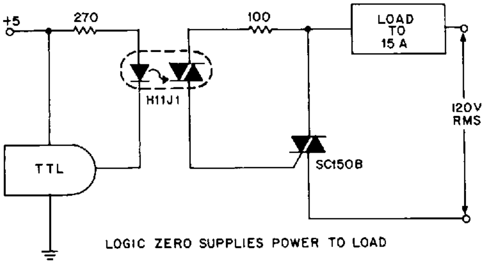


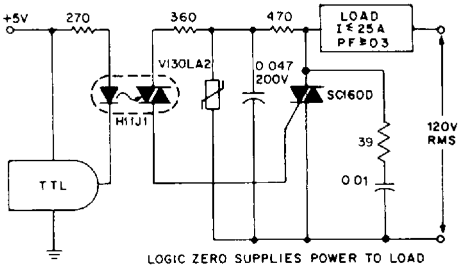
FIGURE 6. dv/dt – TEST CIRCUIT

TYPICAL APPLICATION CIRCUITS
TTL COMPATIBLE LOGIC CONTROL OF POWER LINE



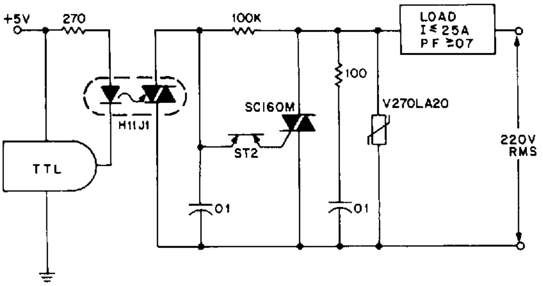
LOGIC ZERO SUPPLIES POWER TO LOAD

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



LOGIC ZERO SUPPLIES POWER TO LOAD

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



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