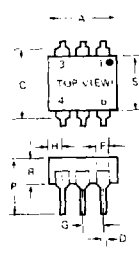
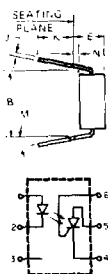


# H11C1, H11C2, H11C3 Optoisolator GaAs Infrared Emitting Diode and Light Activated SCR

The H11C1, H11C2 and H11C3 are gallium arsenide, infrared emitting diodes coupled with light activated silicon controlled rectifiers in a dual in-line package. These devices are also available in surface-mount packaging.

absolute maximum ratings: (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		5.64		.220	
D	.406	.508	.016	.020	2
E	1.01	1.78	.040	.070	
F	2.25	2.85	.090	.110	
G		2.16		.085	4
H	.203	.305	.008	.012	
K	2.54		.100		
N		15		.5	
N	361		.015		
P		9.53		.375	
R	2.92	3.43	.115	.135	
S	10	6.86	.240	.270	

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

INFRARED EMITTING DIODE		
Power Dissipation	*100	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak)	3	ampere
(Pulse width 1 μsec: 300 P Ps)		
Reverse Voltage	6	volts
*Derate 1.33 mW/°C above 25°C ambient.		

PHOTO-SCR		
Peak Forward Voltage	200	volts
RMS Forward Current	300	milliamps
Forward Current (Peak)	10	amperes
(100μsec 1% duty cycle)		
Surge Current (10m sec)	5	amperes
Reverse Gate Voltage	6	volts
Power Dissipation (25°C Ambient)	** 400	milliwatts
Power Dissipation (25°C Case)	***1000	milliwatts
**Derate 5.3mW/°C above 25°C ambient.		
***Derate 13.3mW/°C above 25°C case.		

TOTAL DEVICE	
Storage Temperature	-55 to 150°C
Operating Temperature	-55 to 100°C
Lead Soldering Time (at 260°C)	10 seconds
Surge Isolation Voltage (Input to Output)	
H11C1	5656V <sub>(peak)</sub> , 4000V <sub>(RMS)</sub>
H11C2-H11C3	3535V <sub>(peak)</sub> , 2500V <sub>(RMS)</sub>
Steady-State Isolation Voltage (Input to Output)	
H11C1	5300V <sub>(peak)</sub> , 3750V <sub>(RMS)</sub>
H11C2-H11C3	3180V <sub>(peak)</sub> , 2250V <sub>(RMS)</sub>

## individual electrical characteristics (25°C)

INFRARED EMITTING DIODE	TYP.	MAX.	UNITS
Forward Voltage V <sub>F</sub> (I <sub>F</sub> = 10mA)	1.2	1.5	volts
Reverse Current I <sub>R</sub> (V <sub>R</sub> = 3V)	-	10	microamps
Capacitance C <sub>J</sub> (V = 0, f = 1MHz)	50	-	picofarads

PHOTO-SCR	MIN.	TYP.	MAX.	UNITS
Off-State Voltage — V <sub>DM</sub> (R <sub>GK</sub> = 10KΩ, 100°C, I <sub>D</sub> = 50μA)	200	-	-	volts
Reverse Voltage — V <sub>RM</sub> (R <sub>GK</sub> = 10KΩ, 100°C, I <sub>R</sub> = 50μA)	200	-	-	volts
On-State Voltage — V <sub>TM</sub> (I <sub>TM</sub> = .3 amp)	-	1.1	1.3	volts
Off-state Current — I <sub>DM</sub> (V <sub>DM</sub> = 200V, T <sub>A</sub> = 100°C, R <sub>GK</sub> = 10K)	-	-	50	microamps
Reverse Current — I <sub>RM</sub> (V <sub>RM</sub> = 200V, T <sub>A</sub> = 100°C, R <sub>GK</sub> = 10K)	-	-	50	microamps
Capacitance (Anode-Gate)	-	20	-	picofarads
V = 0V, f = 1MHz (Gate-Cathode)	-	350	-	picofarads

## coupled electrical characteristics (25°C)

	MIN.	TYP.	MAX.	UNITS
Input Current to Trigger (V <sub>AK</sub> = 50V, R <sub>GK</sub> = 10KΩ)	-	-	20	milliamps
			30	milliamps
Input Current to Trigger (V <sub>AK</sub> = 100V, R <sub>GK</sub> = 27KΩ)	-	-	11	milliamps
			14	milliamps
Isolation Resistance (Input to Output Voltage = 500V <sub>DC</sub> )	100	-	-	gigaohms
Input to Output Capacitance (Input to Output Voltage = 0, f = 1MHz)	-	-	2	picofarads
Coupled dV/dt, Input to Output (See Figure 13)	500	-	-	volts/μsec

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

☞ VDE Approved to 0883:b.80 0110b Certificate = 35025

H11C1, H11C2, H11C3

TYPICAL CHARACTERISTICS

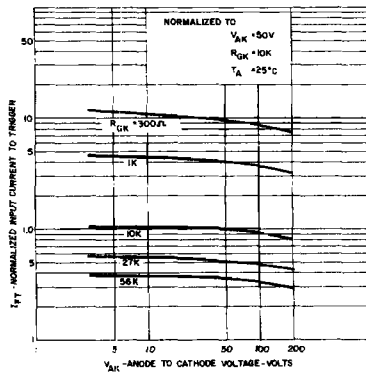


FIGURE 1. INPUT CURRENT TO TRIGGER VS ANODE-CATHODE VOLTAGE

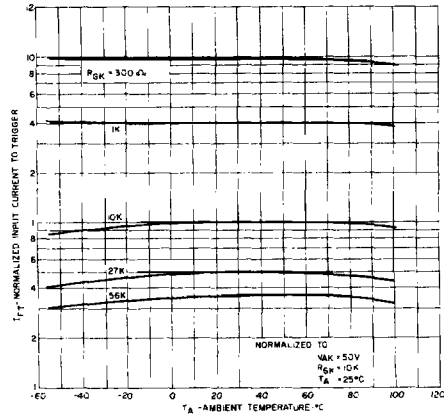


FIGURE 2. INPUT CURRENT TO TRIGGER VS TEMPERATURE

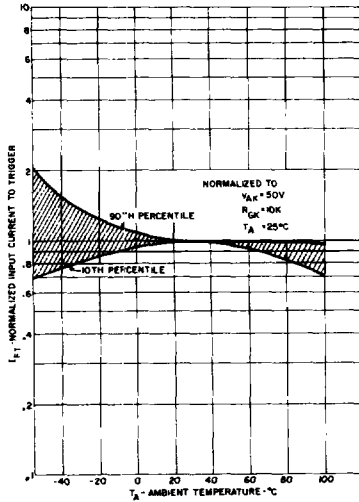


FIGURE 3. INPUT CURRENT TO TRIGGER DISTRIBUTION VS TEMPERATURE

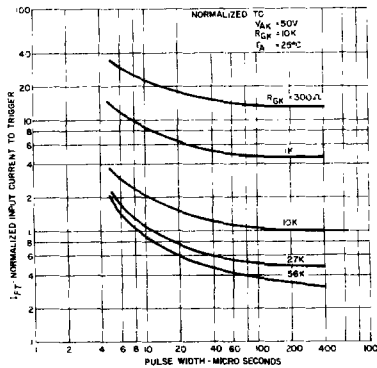


FIGURE 4. INPUT CURRENT TO TRIGGER VS PULSE WIDTH

12

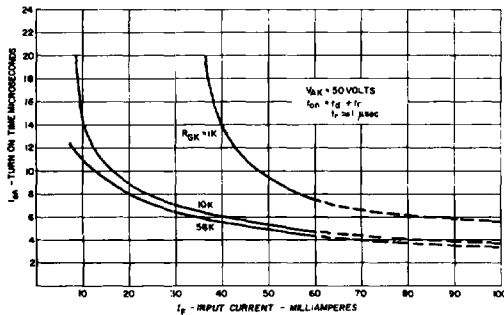


FIGURE 5. TURN ON TIME VS INPUT CURRENT

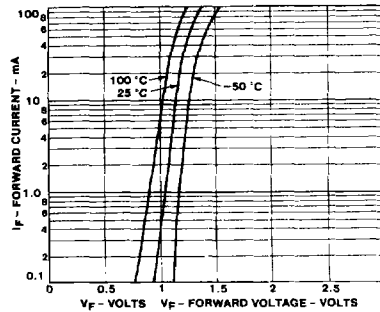


FIGURE 6. INPUT CHARACTERISTICS I<sub>F</sub> VS V<sub>F</sub>

H11C1, H11C2, H11C3

TYPICAL CHARACTERISTICS OF OUTPUT (SCR)

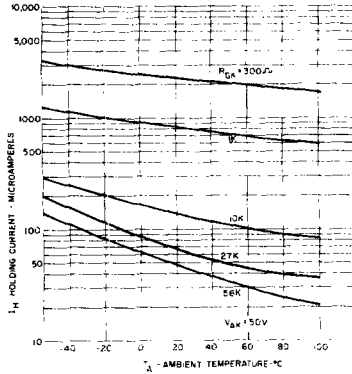


FIGURE 7. HOLDING CURRENT VS TEMPERATURE

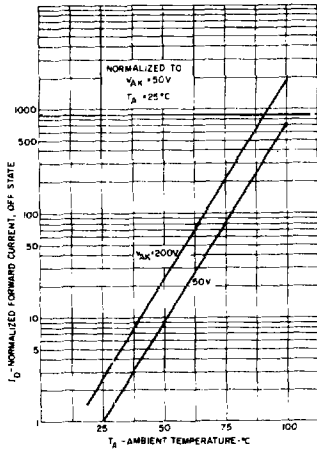


FIGURE 9. OFF STATE FORWARD CURRENT VS TEMPERATURE

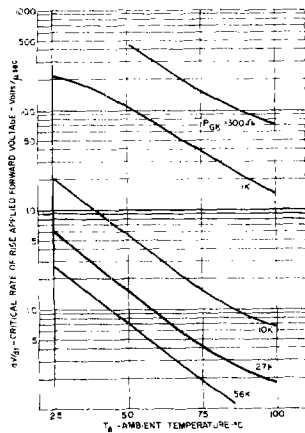


FIGURE 11.  $dv/dt$  VS TEMPERATURE

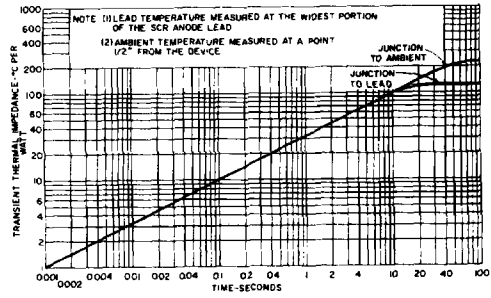


FIGURE 8. MAXIMUM TRANSIENT THERMAL IMPEDANCE

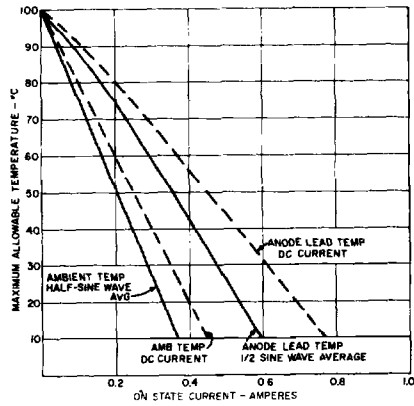


FIGURE 10. ON STATE CURRENT VS MAXIMUM ALLOWABLE TEMPERATURE

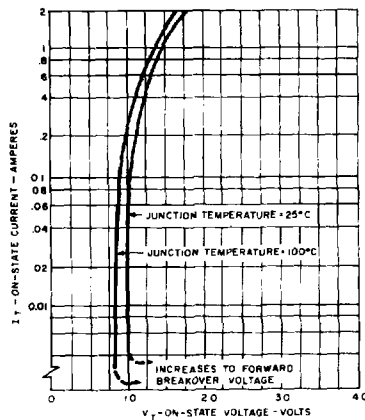


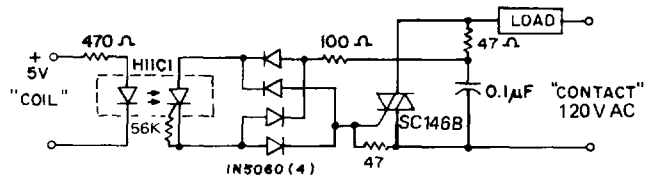
FIGURE 12. ON-STATE CHARACTERISTICS

H11C1, H11C2, H11C3

TYPICAL APPLICATIONS

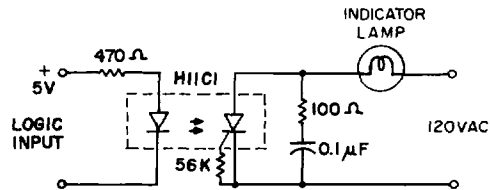
10A, T<sup>2</sup>L COMPATIBLE, SOLID STATE RELAY

Use of the H11C1 for high sensitivity, 2500 v isolation capability, provides this highly reliable solid state relay design. This design is compatible with 74, 74S and 74H series T<sup>2</sup>L logic systems inputs and 120VAC loads up to 10 A.



25W LOGIC INDICATOR LAMP DRIVER

The high surge capability and non-reactive input characteristics of the H11C allow it to directly couple, without buffers, T<sup>2</sup>L and DTL logic to indicator and alarm devices, without danger of introducing noise and logic glitches.



200V SYMMETRICAL TRANSISTOR COUPLER

Use of the high voltage PNP portion of the H11C provides a 200V transistor capable of conducting positive and negative signals with current transfer ratios of over 1%. This function is useful in remote instrumentation, high voltage power supplies and test equipment. Care should be taken not to exceed the H11C 400 mW power dissipation rating when used at high voltages.

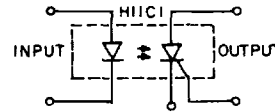


FIGURE 13  
COUPLED  $dV/dt$  - TEST CIRCUIT

- $V_p = 800$  Volts
- $t_p = .010$  Seconds
- $f = 25$  Hertz
- $T_A = 25^\circ C$

