

H11M1, H11M2

**Optoisolator
GaAlAs Infrared Emitting Diode and
Light Activated SCR**

The H11M1 and H11M2 contain a gallium-aluminum-arsenide, infrared emitting diode coupled to a unique high voltage silicon controlled rectifier within a dual in-line package. These devices are optimized for high performance and long life. They are especially suited for the control of industrial AC power lines from low voltage logic integrated circuitry. These devices are also available in surface-mount packaging.

FEATURES

- High blocking voltage, 800 V minimum
- High isolation voltage, 3750 Vrms minimum (steady state)
- High efficiency, low degradation, liquid epitaxial IRED
- Logic compatible drive current, 7 mA at 1.5 V maximum
- Unique, high performance glass dielectric construction

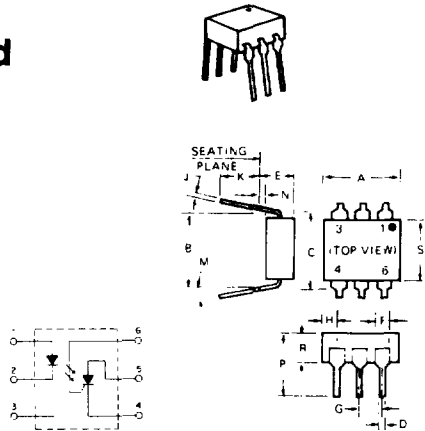
absolute maximum ratings: (25° C)

INFRARED EMITTING DIODE			
Power Dissipation	*100	milliWatts	
Forward Current (Continuous)	60	milliAmpere	
Forward Current (Peak) (Pulse width 10 μsec Duty Cycle 1%)	1	Ampere	
Reverse Voltage	6	volts	

*Derate 1.33mW/°C above 25°C ambient.

PHOTO-SCR			
Peak Forward Voltage	800	Volts	
RMS Forward Current	300	milliAmperes	
Peak On-State Current (1 cycle surge, 10 msec)	3	Amperes	
Peak Reverse Gate Voltage	5	Volts	
Power Dissipation (25° C Ambient)	**400	milliWatts	

**Derate 5.3 mW/°C above 25°C ambient.



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	8.38	8.89	.330	.350	1
B	7.62 REF.		.300 REF.		
C		8.64		.340	2
D	.406	.508	0.16	.020	
E		5.08		.200	3
F	1.01	1.78	.040	.070	
G	2.28	2.40	.090	.110	4
H		2.16		.085	
J		.305		.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° C to +150° C		
Operating Temperature	-55 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

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individual electrical characteristics (25°C) (unless otherwise indicated)

EMITTER	SYMBOL	TYP.	MAX.	UNITS
Forward Voltage ($I_f = 10 \text{ mA}$)	V_f	1.3	1.65	V
Reverse Current ($V_R = 5 \text{ V}$)	I_R	—	10	μA
Capacitance ($V_{AK} = 0 \text{ V}$, $F = 1 \text{ MHz}$)	C_j	50		pF

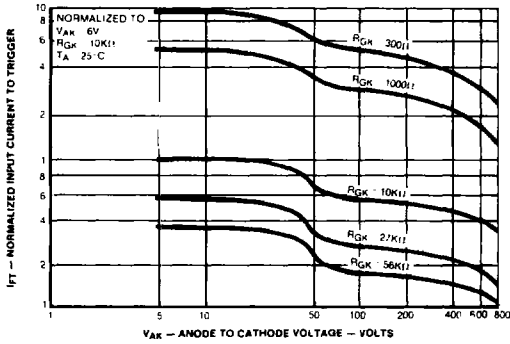
DETECTOR	SYMBOL	MIN.	TYP.	MAX.	UNITS
Off-State Voltage ($R_{GK} = 10 \text{ K}\Omega$, $I_D = 100 \mu\text{A}$, $T_A = 100^\circ\text{C}$)	V_{DM}	800			V
Reverse Voltage ($R_{GK} = 10 \text{ K}\Omega$, $I_R = 100 \mu\text{A}$, $T_A = 100^\circ\text{C}$)	V_{RM}	800			V
On-State Voltage ($I_{IM} = 300 \text{ mA}$)	V_{TM}	—		1.5	V
Off-State Current ($R_{GK} = 10 \text{ K}\Omega$, $V_{DM} = 800 \text{ V}$, $T_A = 100^\circ\text{C}$) ($T_A = 25^\circ\text{C}$)	I_{DM}	—		100 400	μA nA
Reverse Current ($R_{GK} = 10 \text{ K}\Omega$, $V_{RM} = 800 \text{ V}$, $T_A = 100^\circ\text{C}$) ($T_A = 25^\circ\text{C}$)	I_{RM}	—		100 400	μA nA
Critical Rate-of-Rise of Off-State Voltage ($V_{AK} = 800 \text{ V}$, $R_{GK} = 10 \text{ K}\Omega$)	dv/dt		25		V/ μsec
Holding Current ($R_{GK} = 10 \text{ K}\Omega$)	I_H			2	mA

coupled electrical characteristics (25°C)

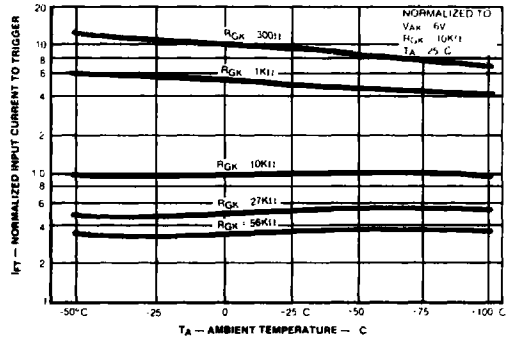
COUPLED	SYMBOL	MIN.	TYP.	MAX.	UNITS
Input Current to Trigger ($V_{AK} = 6 \text{ V}$, $R_{GK} = 10 \text{ K}\Omega$)	H11M1 H11M2 I_{F1}			10 20	mA mA
Input Current to Trigger ($V_{AK} = 6 \text{ V}$, $R_{GK} = 27 \text{ K}\Omega$)	H11M1 H11M2 I_{F1}			7 15	mA mA
Isolation Resistance (Input to Output) ($V_{IM} = 500 \text{ V}$)	r_o	100			G Ω
Isolation Capacitance (Input to Output) ($V_{IO} = 0 \text{ V}$, $F = 1 \text{ MHz}$)	c_{io}			2	pF
Isolation dv/dt Immunity (Input to Output) See Figure 10			500		V/ μsec

Tests of input to output isolation voltage, isolation resistance, and isolation capacitance are performed with the input terminals (pins 1, 2 & 3) shorted together and the output terminals (pins 4, 5 & 6) shorted together.

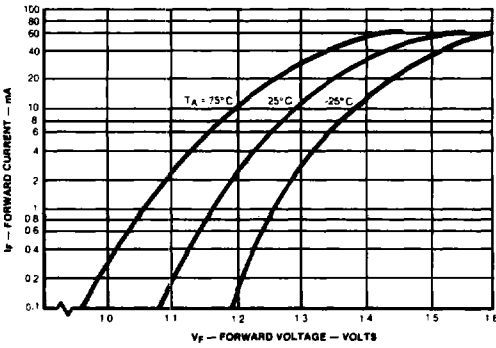
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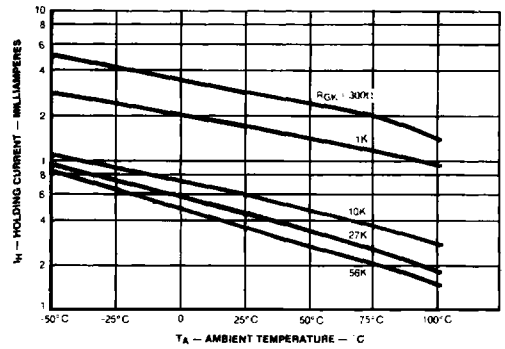
1. INPUT CURRENT TO TRIGGER VS. ANODE TO CATHODE VOLTAGE



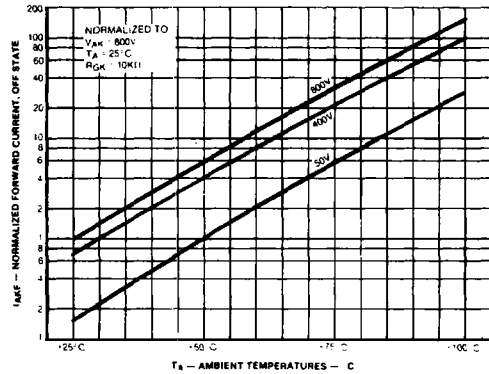
2. INPUT CURRENT TO TRIGGER VS. TEMPERATURE



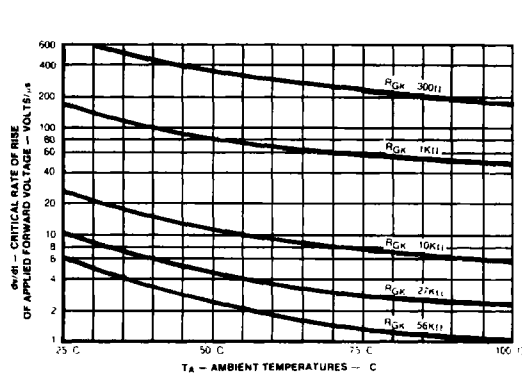
3. INPUT VOLTAGE VS. INPUT CURRENT



4. HOLDING CURRENT VS. TEMPERATURE

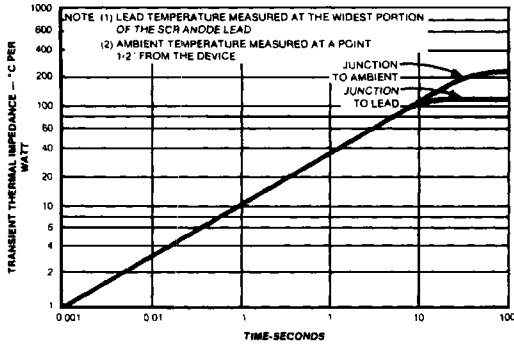


5. OFF-STATE LEAKAGE VS. TEMPERATURE

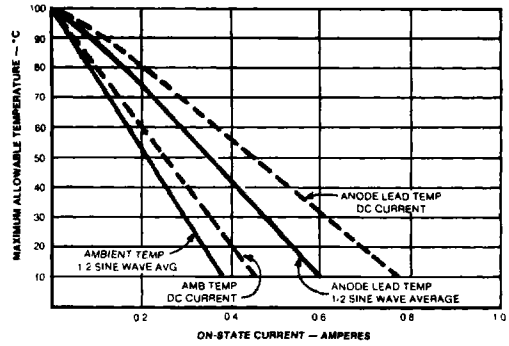


6. dv/dt VS. TEMPERATURE

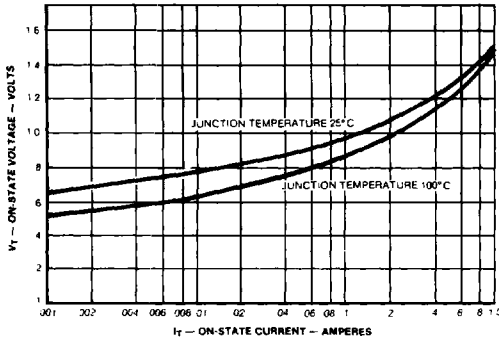
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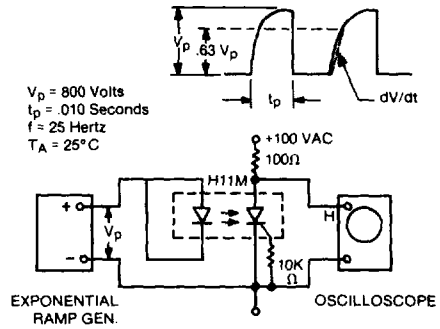
7. MAXIMUM TRANSIENT THERMAL IMPEDANCE



8. ON-STATE CURRENT VS. MAXIMUM ALLOWABLE TEMPERATURE



9. ON-STATE CHARACTERISTICS



10. ISOLATION dv/dt IMMUNITY TEST CIRCUIT