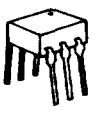
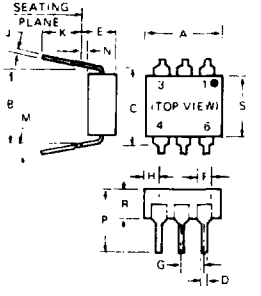
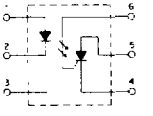
H11M1, H11M2

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.

SYMBOL	MILLIMETERS MIN.	MILLIMETERS MAX.	INCHES MIN.	INCHES MAX.	NOTES
A	8.38	8.89	.330	.350	
B	7.62 REF.		.300 REF.		1
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	2.90	.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.

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.

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

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

EMITTER	SYMBOL	TYP.	MAX.	UNITS
Forward Voltage (I_F = 10 mA)	V_F	1.3	1.65	V
Reverse Current (V_R = 5V)	I_R	—	10	μA
Capacitance (V_{AK} = 0V, F = 1 MHz)	C_J	50		pF

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

coupled electrical characteristics (25° C)

COUPLED		SYMBOL	MIN.	TYP.	MAX.	UNITS
Input Current to Trigger (V_{AK} = 6V, R_{GK} = 10KΩ	H11M1 H11M2	I_{FT}			10 20	mA mA
Input Current to Trigger (V_{AK} = 6V, R_{GK} = 27KΩ	H11M1 H11M2	I_{FT}			7 15	mA mA
Isolation Resistance (Input to Output) (V_{IO} = 500V)		r_{io}	100			GΩ
Isolation Capacitance (Input to Output) (V_{IO} = 0V, F = 1 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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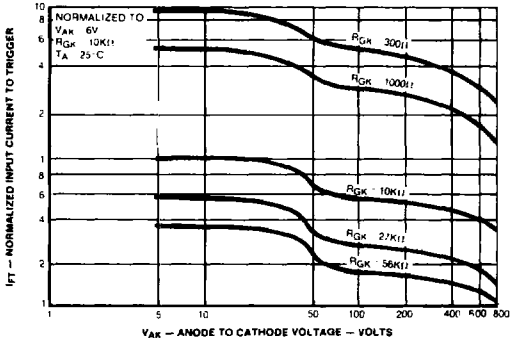
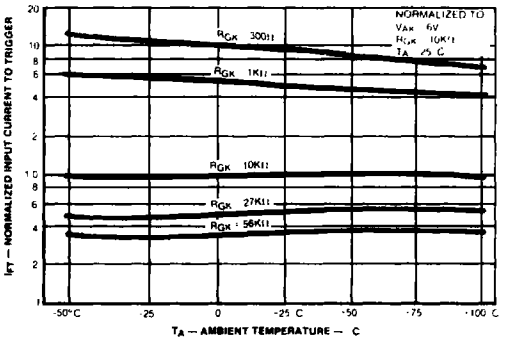
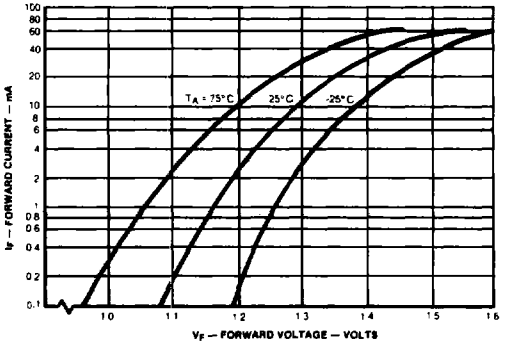
H11M1, H11M2



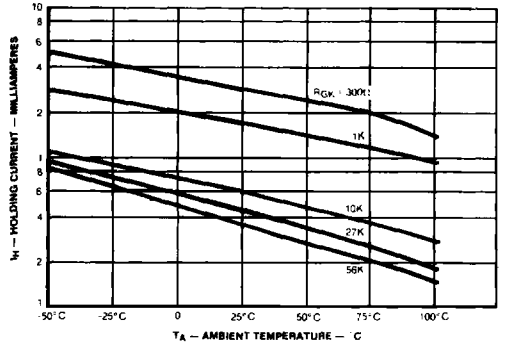
1. INPUT CURRENT TO TRIGGER VS. ANODE TO CATHODE VOLTAGE



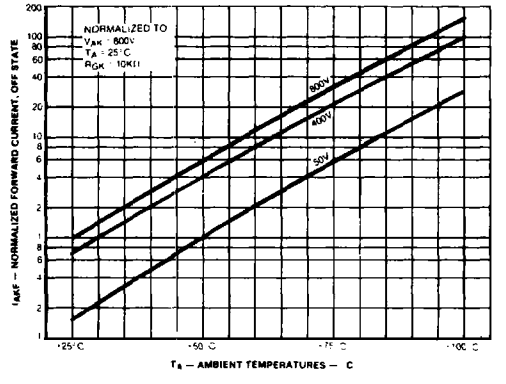
2. INPUT CURRENT TO TRIGGER VS. TEMPERATURE



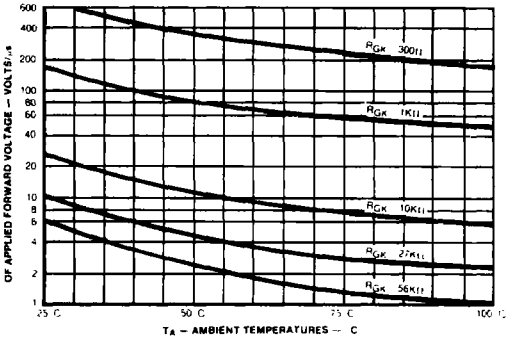
3. INPUT VOLTAGE VS. INPUT CURRENT



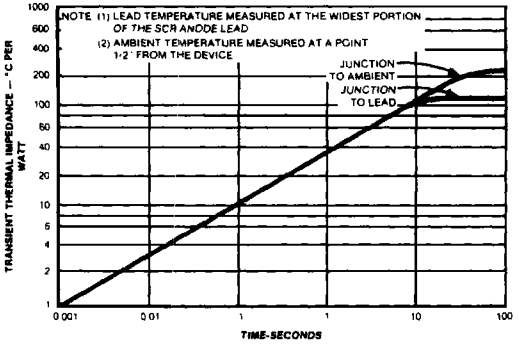
4. HOLDING CURRENT VS. TEMPERATURE



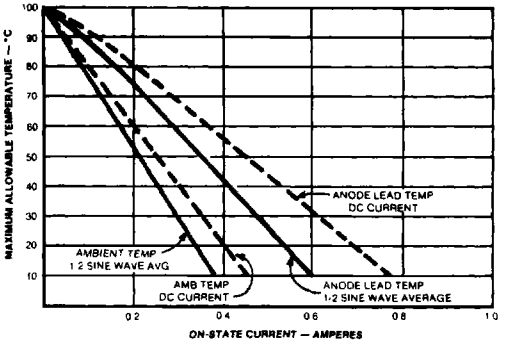
5. OFF-STATE LEAKAGE VS. TEMPERATURE



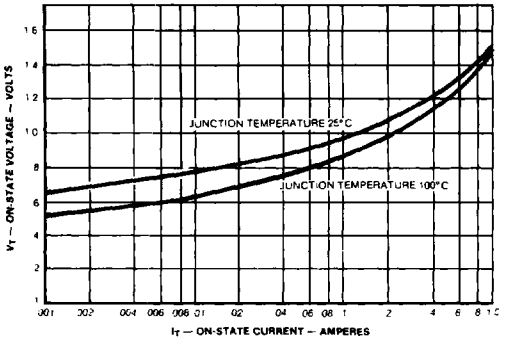
6. dv/dt VS. TEMPERATURE



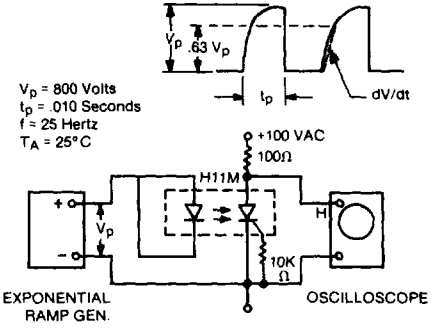
7. MAXIMUM TRANSIENT THERMAL IMPEDANCE



8. ON-STATE CURRENT VS. MAXIMUM ALLOWABLE TEMPERATURE



9. ON-STATE CHARACTERISTICS



10. ISOLATION dv/dt IMMUNITY TEST CIRCUIT

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