0.8 Amp SENSITIVE GATE SCR

2N5062

TO-92 Leaded
Plastic Package
RoHS compliant

TO-92

FEATURES:

Passivated Surface for Reliability and Uniformity

APPLICATION:

Annular PNPN device designed for high volume consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger Thyristors and sensing and detection circuits.

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER		SYMBOL	VALUE	UNIT
Peak Repetitive Off State Voltages (1) (T_C=- 40°C to +110°C, Sine Wave, 50 to 60Hz Gate Open)		V_{DRM}	100	V
		V_{RRM}	100	V
On-State Current RMS (180° Conduction Angles, T_C=80°C)		$I_{T(RMS)}$	0.8	A
Average On-State Current (180° Conduction Angles)	T_C=67°C	$I_{T(AV)}$	0.51	A
	T_C=102°C		0.255	A
Peak Non-Repetitive Surge Current, at T_A=25°C, (1/2 Cycle, Sine Wave, 60Hz)		I_{TSM}	10	A
Circuit Fusing Considerations (t=8.3ms)		I^2t	0.4	A^2s
Forward Peak Gate Power (Pulse Width ≤ 1.0mμs, T_A=25°C)		P_{GM}	0.1	W
Forward Average Gate Power (t=8.3ms, T_A=25°C)		$P_{G(AV)}$	0.01	W
Forward Peak Gate Current (Pulse Width ≤ 1.0μs, T_A=25°C)		I_{GM}	1	A
Forward Peak Gate Voltage (Pulse Width ≤ 1.0μs, T_A=25°C)		V_{RGM}	5	V
Operating Junction Temperature Range		T_J	-40 to +110	°C
Storage Temperature Range		T_{STG}	-40 to+150	°C
Thermal Resistance, Junction to Case (2)		R_{thJC}	75	°C/W
Thermal Resistance, Junction to Ambient		R_{thJA}	200	°C/W
Lead Solder Temperature (Lead Length > 1/16" from case, 10s max		T_J	230	°C

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	VALUE			UNIT
			MIN	TYP	MAX	
Peak Repetitive Forward or Reverse Blocking Current(3)	I_{DRM}, I_{RRM}	V_{AK}=Rated V_{DRM} and V_{RRM}	--	--	10	µA
Peak Forward On State Voltage(4)	V_{TM}	I_{TM}=1.2A	--	--	1.7	V
Continuous Gate Trigger Current(5)	I_{GT}	V_{AK}=7V, R_L=100Ω	--	--	200	µA
Continuous Gate Trigger Voltage(5)	V_{GT}	V_{AK}=7V, R_L=100Ω	--	--	0.8	V
Gate non-Trigger Voltage(4) (T_J=110°C)	V_{GD}	V_{AK}=Rated V_{DRM}, R_L=100Ω	0.1	--	--	V
Holding Current(5)	I_H	V_{AK}=7V, I_{HL}=20mA, V_D=12V	--	--	5	mA
Turn -On Delay Time	t_d	I_{GT}=1.0mA, V_D=Rated V_{DRM}, Forward Current = 1.0A, di/dt=6.0A/ms	--	3	--	µs
Turn -On Rise Time	t_r		--	0.2	--	
Turn -Off Time	t_q	Forward Current=1.0A pulse. Pulse Width = 50µs, 0.1% Duty Cycle, di/dt=6.0A/µs, dv/dt=20V/ms, I_{GT}=1mA	--	30	--	µs
Critical Rate of Rise of Off-State Voltage	dv/dt	V_{AK}=Rated V_{DRM}, Exponential Waveform	--	30	--	V/µs

Note:

Maximum Ratings are those values, beyond which device damage can occur. Maximum ratings applied to the devices are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

(1). V_{DRM} and V_{RRM} can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

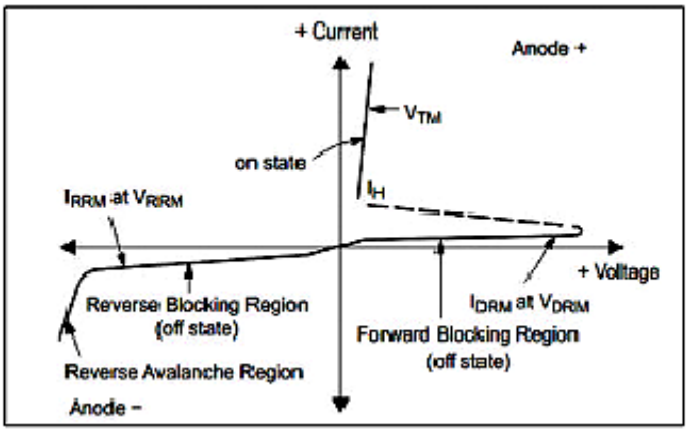
(2). This measurement is made with the case mounted "flat side down" on a heatsink and held in position by means of a metal clamp over the curved surface.

(3). R_{GK} = 1000W is included in measurement

(4). Forward Current applied for 1ms maximum duration, duty cycle < 1%

(5). R_{GK} Current is not included in measurement

Voltage Current Characteristics of SCR



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TYPICAL CHARACTERISTICS CURVES

Fig 1: Maximum Case Temperature

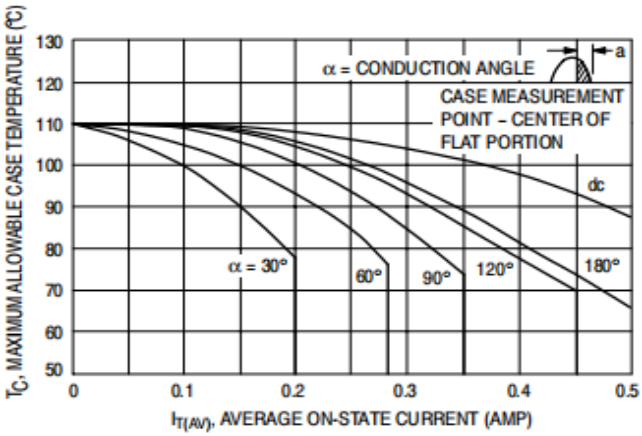


Fig 2: Maximum Ambient Temperature

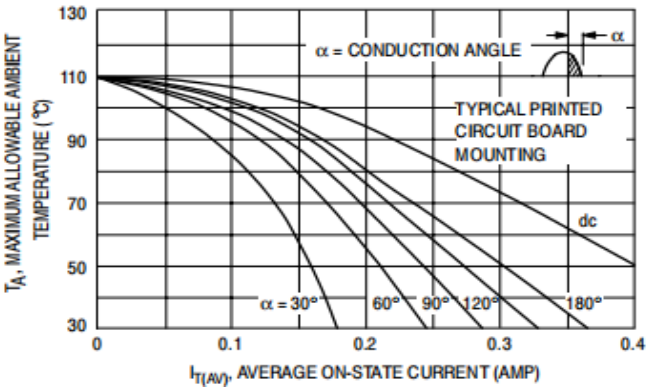


Fig 3: Typical Forward Voltage

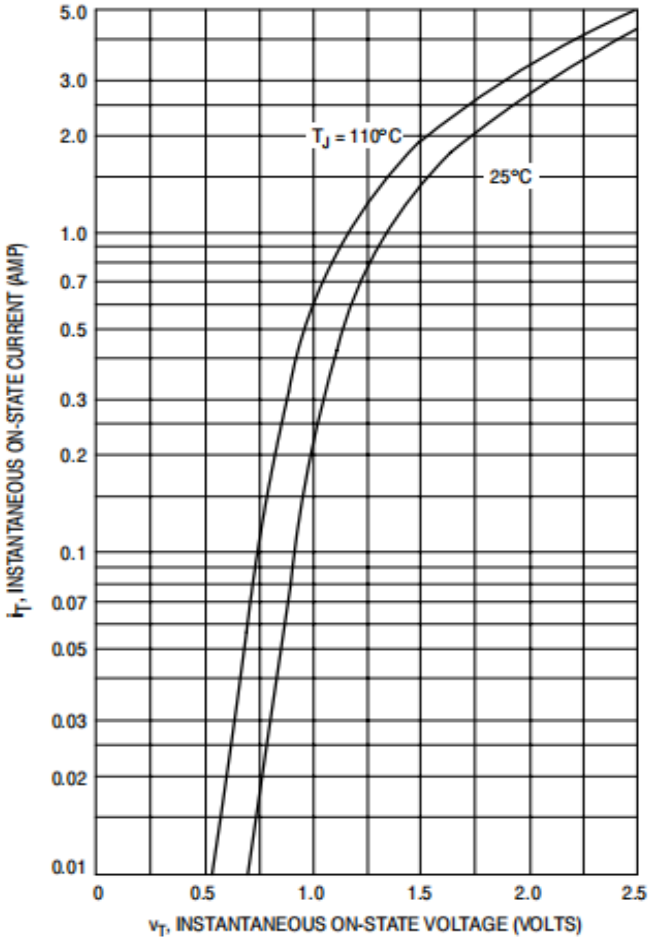


Fig 4: Maximum Non−Repetitive Surge Current

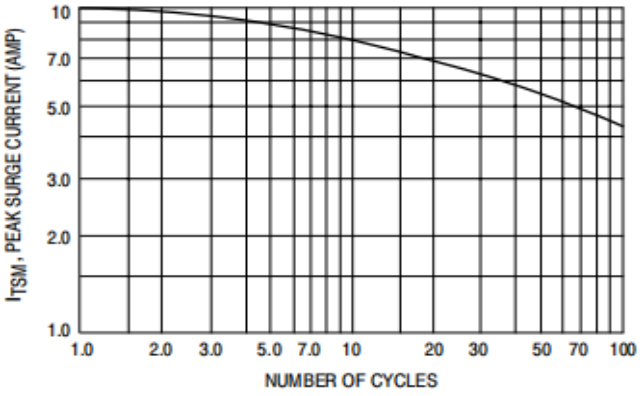
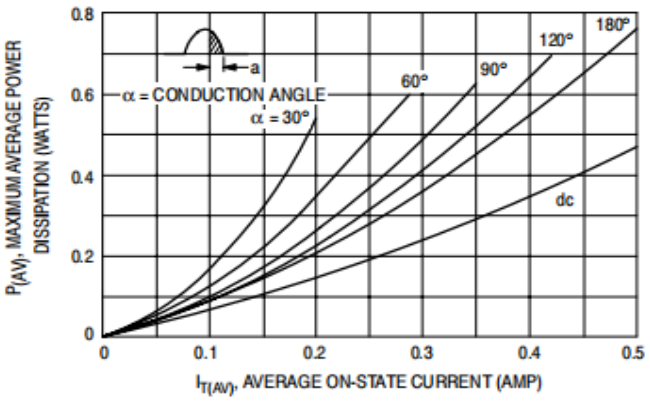


Fig 5: Power Dissipation



TYPICAL CHARACTERISTICS CURVES

Fig 6: Thermal Response

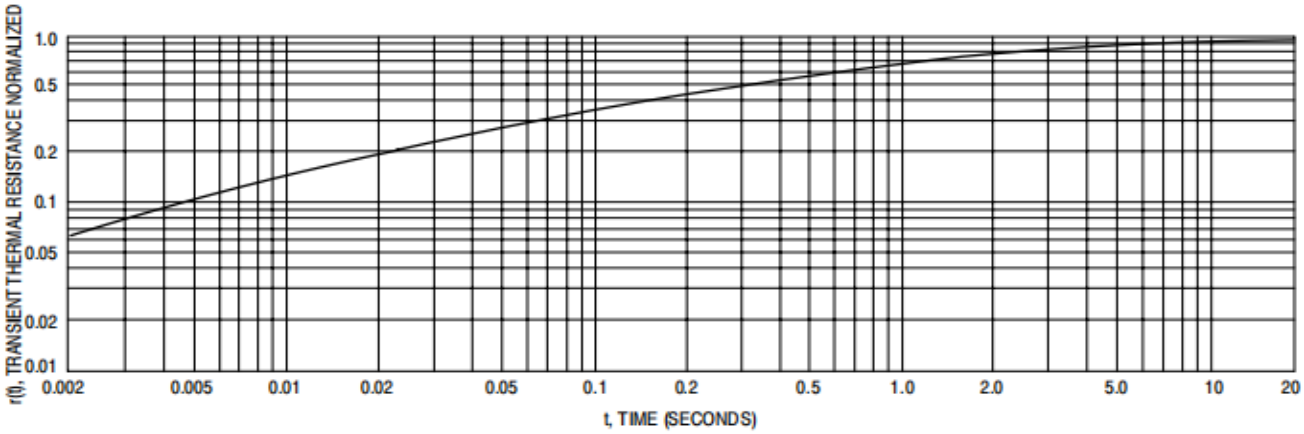


Fig 7: Typical Gate Trigger Voltage

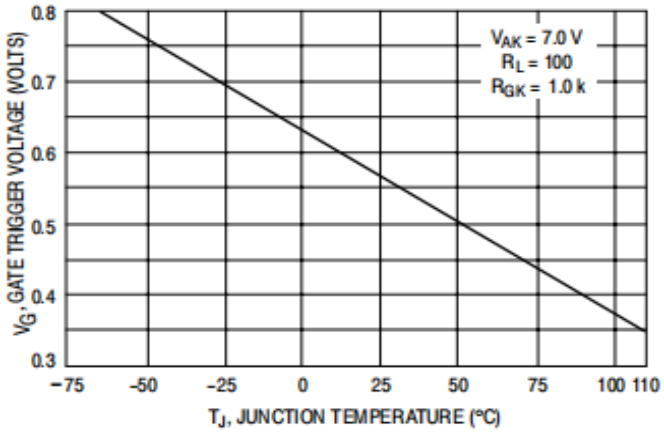


Fig 8: Typical Gate Trigger Current

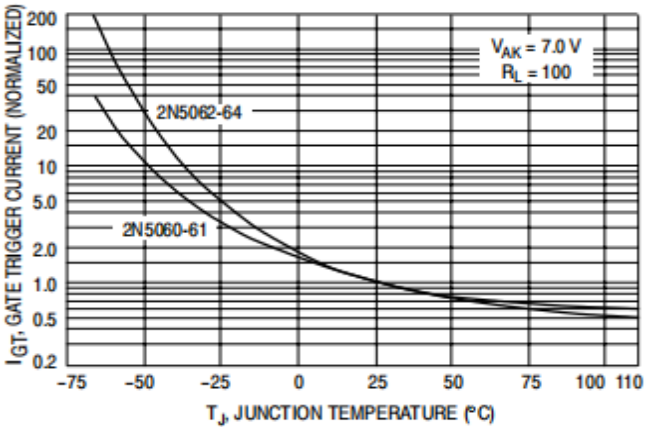
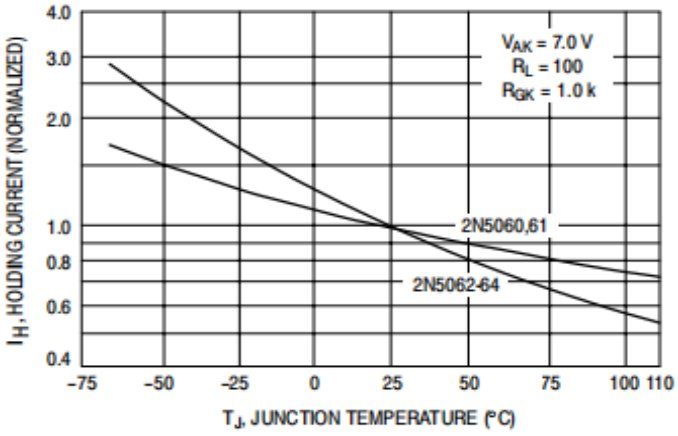
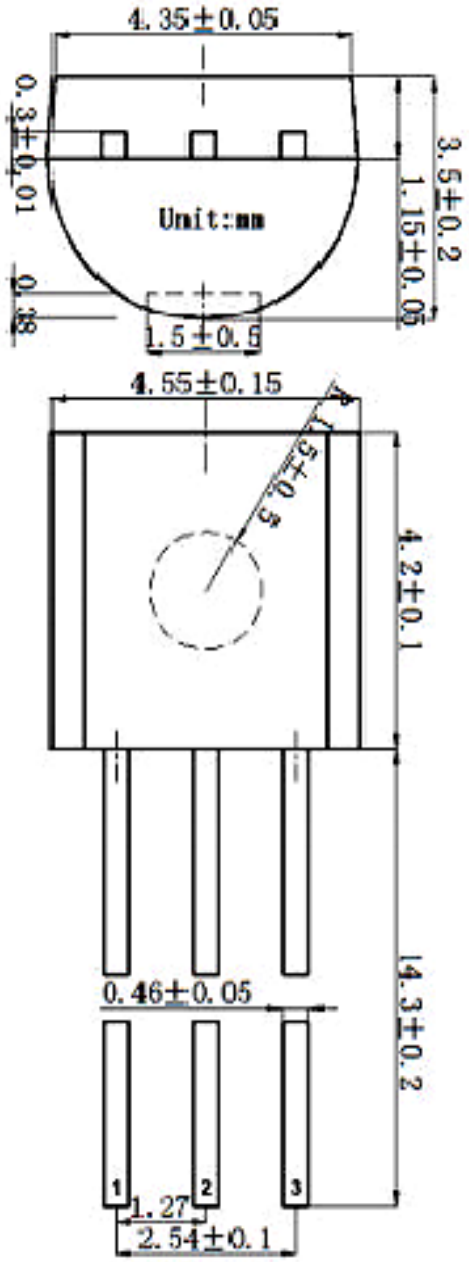


Fig 9: Typical Holding Current



PACKAGE DETAIL

TO-92 Plastic Package



All Dimensions are in mm

PIN CONFIGURATION

1. CATHODE
2. GATE
3. ANODE

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Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.
If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.
The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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