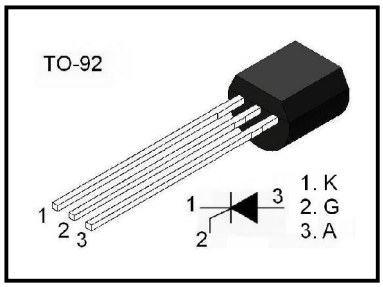
Silicon Controlled Rectifiers

PNPN devices designed for high volume, linepowered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive plastic TO-92 package which isreladily adaptable for use in automatic insertion equipment.



Features

- Sensitive Gate Allows Triggering by Microcontrollers and Other Logic Circuits
- Blocking Voltage to 600 V
- On-State Current Rating of 0.8 A RMS at 80°C
- High Surge Current Capability -10 A
- Minimum and Maximum Values of I_{GT}, V_{GT} and I_H Specified for Ease of Design

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Value	Unit
Peak Repetitive Forward Voltage	V_{DRM}	600	V
Reverse Blocking Voltage	V_{RRM}	600	V
On-State Current	$I_{T(RMS)}$	0.8	A
Peak Forward Surge Current	I_{TSM}	10	A
Circuit Fusing Consideration, (t = 8.3 ms)	I^2t	0.415	A^2s
Peak Reverse Gate Voltage	V_{GRM}	5.0	V
Peak Gate Current	I_{GM}	1.0	A
Gate Dissipation	$P_{G(AV)}$	0.1	W
Operating Junction Temperature	T_j	-40～+110	℃
Storage Temperature	T_{stg}	-40～+150	℃

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. V_{DRM} for all types 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. See ordering information for exact device number options.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance,Junction−to−Case Junction−to−Ambient	$R_{\theta JC}$ $R_{\theta JA}$	75 200	℃/W
Lead Solder Temperature (<1/16" from case, 10 secs max)	T_L		℃

Electrical Characteristics (T_C=25℃, unless otherwise noted)

Parameter		Symbol	Conditions	Value		Unit
				Min	Max	
Peak Repetitive Off−State Voltage		V_{DRM} V_{RRM}		600		V
Peak Repetitive Forward or Reverse Blocking Current (Note 2)		I_{DRM} I_{RRM}	T_C=25℃ T_C=110℃		10 100	μA
On state voltage		V_{TM}	I_T = 1A, T_A=25℃		1.7	V
Gate trigger current		I_{GT}	V_{AK} = 7V, R_L=100Ω		200	μA
Holding current	T_C= 25℃ T_C= -40℃	I_H	V_{AK} = 7V , I_H=20mA		5 10	mA
Latch Current	T_C= 25℃ T_C= -40℃	I_L	V_{AK} = 7V , I_G= 200μA		10 15	mA
Gate trigger voltage	T_C= 25℃ T_C= -40℃	V_{GT}	V_{AK} = 7V, R_L=100Ω		0.8 1.2	V
Critical Rate of Rise of Off−State Voltage		dV/dt	V_D = Rated V_{DRM}, Exponential Waveform, R_{GK} = 1kΩ	10		V/μs
Critical Rate of Rise of On−State Current		di/dt	I_{PK} = 20A, P_W=10μs dI_G/dt=1A/μs, I_{GT}=20mA		50	A/μs

*Indicates Pulse Test: Pulse Width ≤1.0 ms, Duty Cycle ≤ 1%.

3.R_{GK} = 1 kΩ included in measurement.

4.Does not include R_{GK} in measurement.

Typical Characteristics

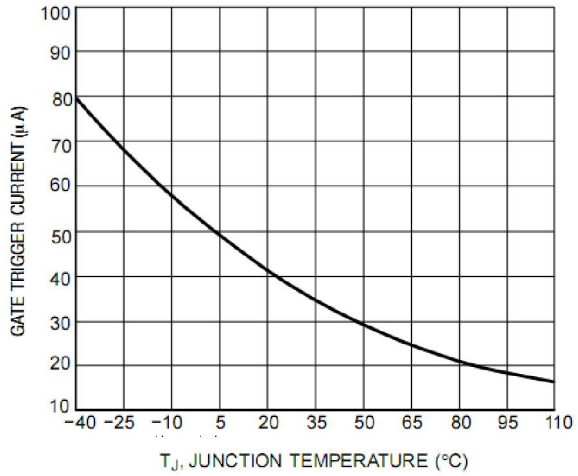


Figure 1. Typical Gate Trigger Current vs Junction Temperature

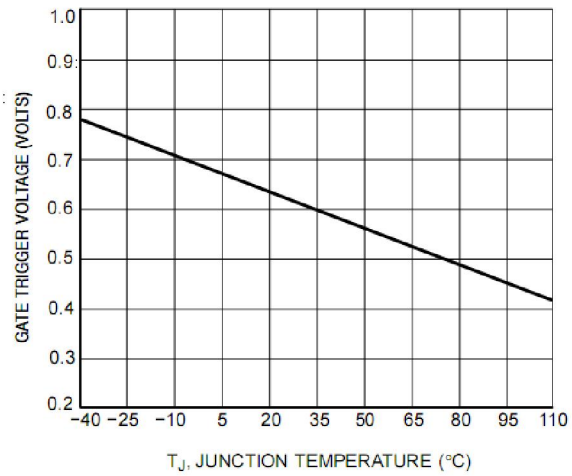


Figure 2. Typical Gate Trigger Voltage vs Junction Temperature

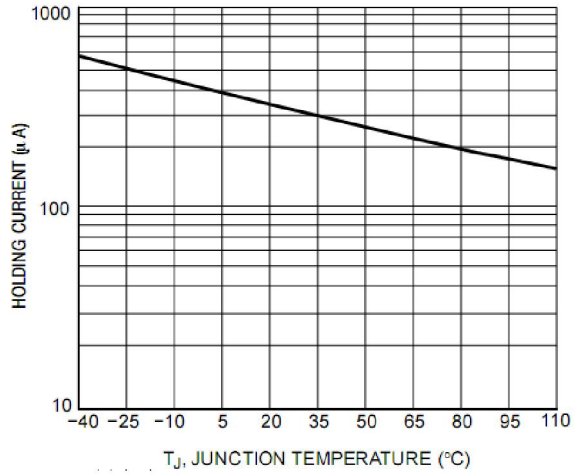


Figure 3. Typical Holding Current vs Junction Temperature

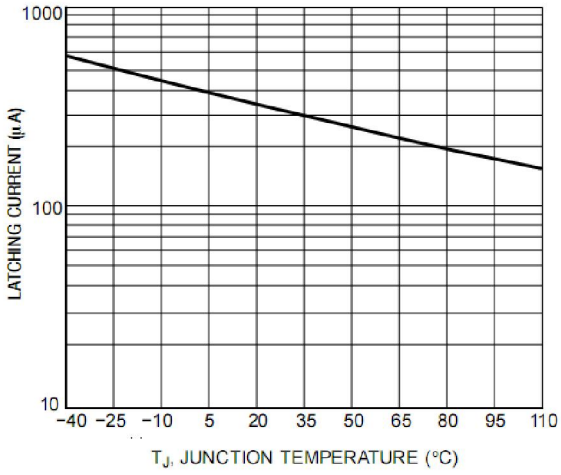


Figure 4. Typical Latching Current vs Junction Temperature

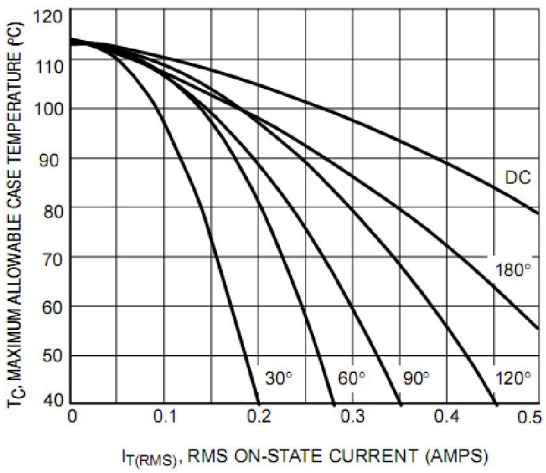


Figure 5. Typical RMS Current Derating

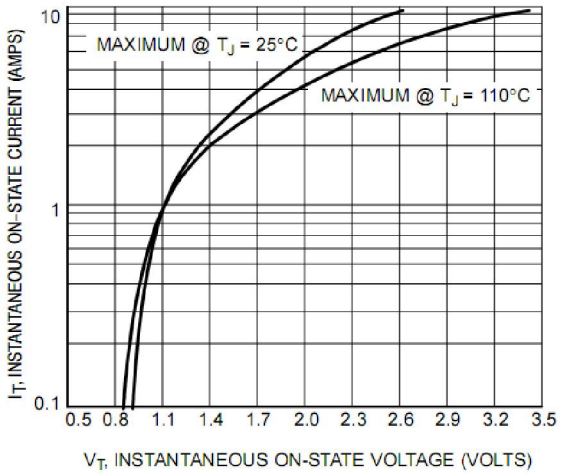
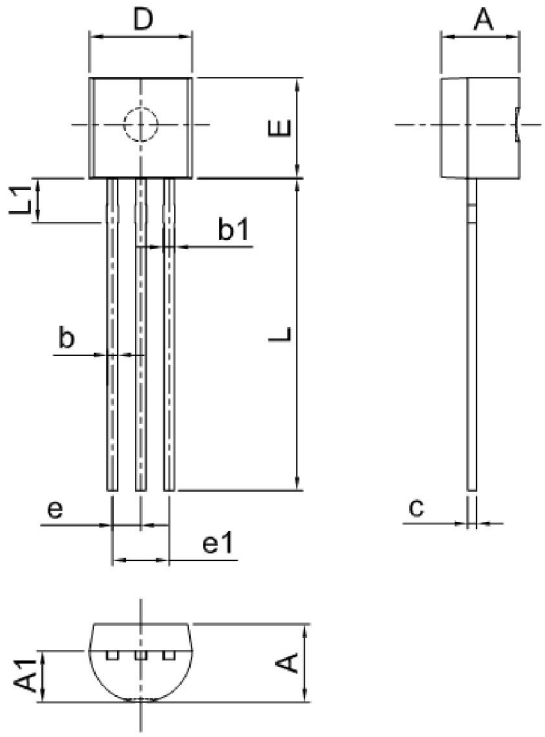


Figure 6. Typical On−State Characteristics

Package Dimensions



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	3.30	3.70	0.130	0.146
A1	2.30	2.70	0.091	0.106
b	0.40	0.50	0.016	0.020
b1	0.50	0.70	0.020	0.028
c	0.35	0.45	0.014	0.018
D	4.45	4.70	0.175	0.185
E	4.40	4.65	0.173	0.183
e	1.17	1.37	0.046	0.054
e1	2.34	2.64	0.092	0.104
L	13.50	14.50	0.531	0.571
L1	1.80	2.20	0.071	0.087