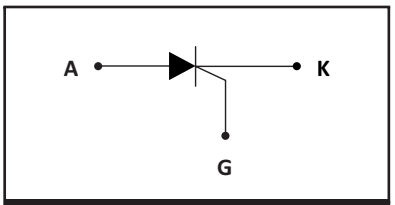
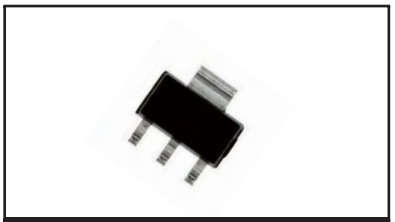
SENSITIVE GATE SILICON CONTROLLED RECTIFIERS



SCHEMATIC SYMBOL


SOT-223 PACKAGE

DESCRIPTION

PNPN devices designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits.

FEATURES

- Sensitive gate allows triggering by micro controllers and other logic circuits
- Blocking voltage to 600V
- On-state current rating of 0.8A RMS at 80°C
- High surge current capability – 10A
- Minimum and maximum values of IGT, VGT and IH specified for ease of design
- Immunity to dV/dt – 20V/µsec minimum at 110°C
- Glass-passivated surface for reliability and uniformity

ABSOLUTE MAXIMUM RATINGS (T_J = 25°C UNLESS OTHERWISE SPECIFIED)

Symbol	Parameter	Condition	Ratings	Units
V_{DRM}	Repetitive Peak Off-State Voltage		600	V
$I_{T(AV)}$	Average On-State Current	Half Sine Wave : T_C = 74 °C	0.5	A
$I_{T(RMS)}$	R.M.S On-State Current	All Conduction Angle	0.8	A
I_{TSM}	Surge On-State Current	1/2 Cycle, 60Hz, Sine Wave Non-Repetitive	10	A
I^2t	I^2t for Fusing	t = 8.3ms	0.415	A2s
P_{GM}	Forward Peak Gate Power Dissipation		0.1	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation		0.1	W
I_{FGM}	Forward Peak Gate Current		1	A
V_{RGM}	Reverse Peak Gate Voltage		5	V
T_J	Operating Junction Temperature		- 40 ~ 125	°C
T_{STG}	Storage Temperature		- 40 ~ 125	°C

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth(j-c)	Junction to Case	SOT-23	60	°C/W
Rth(j-a)	Junction to Ambient	SOT-23	150	°C/W

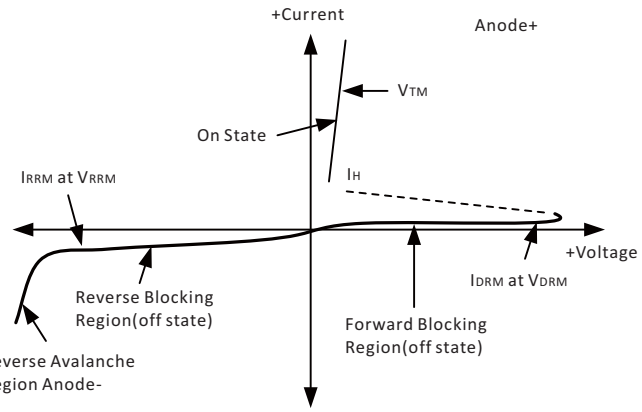
ELECTRICAL CHARACTERISTICS (TC = 25 °C UNLESS OTHERWISE NOTED)

Symbol	Items	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
I_{DRM}	Repetitive Peak Off-State Current	V_{AK} = V_{DRM} or V_{RRM} ; R_{GK} = 1000ohm T_C = 25 °C T_C = 125 °C	— —	— —	10 200	uA
V_{TM}	Peak On-State Voltage (1)	(I_{TM} = 1 A, Peak)	—	1.2	1.7	V
I_{GT}	Gate Trigger Current(2)	V_{AK} = 6 V, R_L=100ohm , T_C = 25 °C, T_C = - 40 °C	— —	— —	200 500	uA
V_{GT}	Gate Trigger Voltage (2)	V_D=7 V, R_L=100ohm , T_C = 25 °C, T_C = - 40 °C	— —	— —	0.8 1.2	V
V_{GD}	Non-Trigger Gate Voltage (1)	V_{AK} = 12 V, R_L=100ohm, T_C = 125 °C	0.2	—	—	V
dv/dt	Critical Rate of Rise Off-State Voltage	V_D = Rated V_{DRM} , Exponential wave form, R_{GK} = 1000ohm, T_J = 125°C	20	35	—	V/uS
di/dt	Critical Rate of Rise Off-State Voltage	I_{PK} = 20A ; di/dt= 1A/uS ; Igt = 20mA	—	—	50	A/uS
I_H	Holding Current	V_{AK}=12V, Gate Open Initiating Curent=20mA T_C = 25°C T_C = - 40 °C	— —	2 —	5.0 10	mA

Notes: 1. Pulse Width ≤1.0 ms , Duty cycle ≤ 1%
2. Does not include RGK in measurement

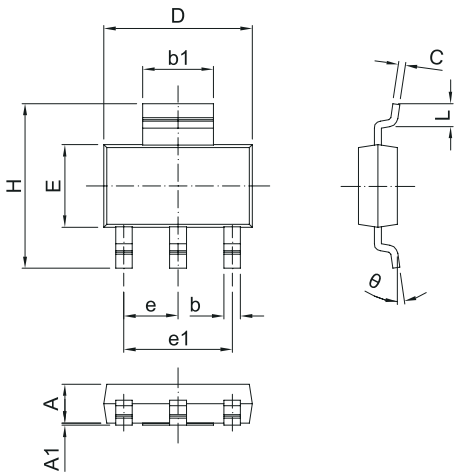
VOLTAGE CURRENT CHARACTERISTIC OF SCR

PARAMETER	SYMBOL
Peak Repetitive Off Stat Forward Voltage	V_{DRM}
Peak Forward Blocking Current	I_{DRM}
Peak Repetitive Off State Reverse Voltage	V_{RRM}
Peak Reverse Blocking Current	I_{RRM}
Peak On State Voltage	V_{TM}
Holding Current	I_H



PACKAGE MECHANICAL DATA

SOT-223



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.5TYP	1.70	0.059TYP	0.067
A1	-	0.10	-	0.004
b	0.60	0.82	0.024	0.032
b1	2.90	3.10	0.114	0.122
C	0.24	0.35	0.009	0.014
D	6.15	6.65	0.242	0.262
E	3.30	3.70	0.130	0.146
e	2.3TYP		0.091TYP	
e1	4.50	4.70	0.177	0.185
H	6.70	7.30	0.264	0.287
L	0.80	1.15	0.031	0.045
F	0^O	10^O	0^O	10^O

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