

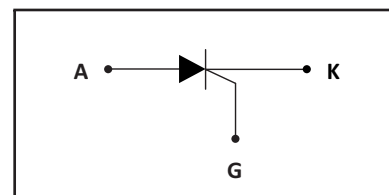
SENSITIVE GATE SILICON CONTROLLED RECTIFIERS

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/ μ sec minimum at 110°C
- Glass-passivated surface for reliability and uniformity



SCHEMATIC SYMBOL



SOT-223 PACKAGE

ABSOLUTE MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE SPECIFIED)

Symbol	Parameter	Condition	Ratings	Units
VDRM	Repetitive Peak Off-State Voltage		600	V
$I_T(AV)$	Average On-State Current	Half Sine Wave : $T_C = 74^\circ\text{C}$	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	$t = 8.3\text{ms}$	0.415	A ² s
PGM	Forward Peak Gate Power Dissipation		0.1	W
$P_G(AV)$	Forward Average Gate Power Dissipation		0.1	W
IFGM	Forward Peak Gate Current		1	A
VRGM	Reverse Peak Gate Voltage		5	V
T_J	Operating Junction Temperature		-40 ~ 125	$^\circ\text{C}$
TSTG	Storage Temperature		-40 ~ 125	$^\circ\text{C}$

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to Case	SOT-23	60	$^\circ\text{C/W}$
$R_{th(j-a)}$	Junction to Ambient	SOT-23	150	$^\circ\text{C/W}$

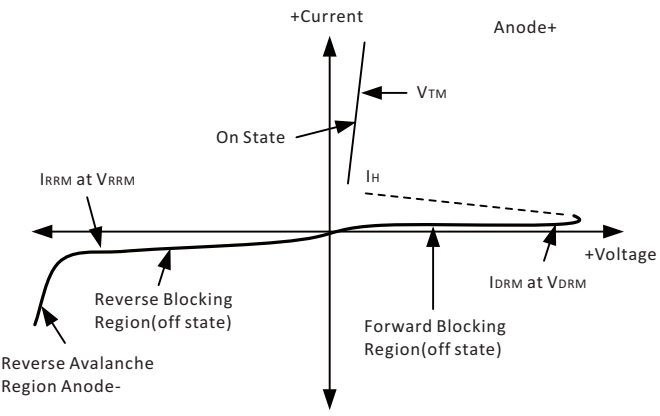
ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ UNLESS OTHERWISE NOTED)

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

Notes: 1. Pulse Width $\leq 1.0\text{ ms}$, Duty cycle $\leq 1\%$
2. Does not include R_{GK} 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	1.5 TYP	1.70	0.059 TYP	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	2.3 TYP		0.091 TYP	
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°	10°	0°	10°

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