S6012R

SCRs

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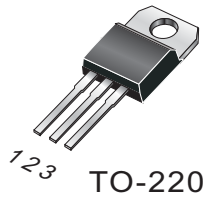
Description

Standard gate triggering SCR is fully isolated package suitable for the application where requiring high bidirectional blocking voltage capability and also suitable for over voltage protection ,motor control circuit in power tool, inrush current limit circuit and heating control system.

Symbol	Simplified outline
	

Pin	Description
1	Cathode
2	Anode
3	Gate

Applications:

- Motor control
- Industrial and domestic lighting
- Heating
- Static switching

Features

- Blocking voltage to 600 V
- On-state RMS current to 12 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	600	V
$I_{T\ (RMS)}$	RMS on-state current （full sine wave）	12	A
I_{TSM}	Non-repetitive peak on-state current (full cycle,Tj initial=25℃)	120	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Rth(j-c)	Junction to case(AC)		-	1.3	-	℃/W
Rth(j-a)	Junction to ambient		-	60	-	℃/W

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Limiting values in accordance with the Maximum system(IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN	Value	UNIT
V_{DRM}	Repetitive peak off-state Voltages		-	600	V
$I_{T(RMS)}$	RMS on-state current		-	12	A
I_{TSM}	Non repetitive surge peak on-statecurrent	F=50H_z	-	100	A
		F=60H_z	-	120	A
I^2t	I^2t for fusing	T_p=10ms	-	60	A^2S
DI/dt	Critical rate of rise of on-state current	IG=2x I_{GT},tr<=100ns F=120H_z Tc=125℃	-	100	A/μs
I_{GM}	Peak gate current		-	2	A
I_{DRM} I_{RRM}	V_{DRM}=V_{RRM}	Tc=25℃ Tc=100℃ Tc=125℃	-	0.01 0.5 1	mA
$P_{G(AV)}$	Average gate power		-	0.5	W
P_{GM}			-	20	W

T_J=25°C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}			1	-	20	mA
V_{GT}		Tc=25℃	-	-	1.5	V
I_H			-	-	40	mA
V_{TM}		Tc=25℃	-	-	1.6	V
dV/dt		Tc=100℃	300 225	-	-	V/μs

Dynamic Characteristics

Tgt			-	2	-	μs
tq			-	-	35	μs

Description

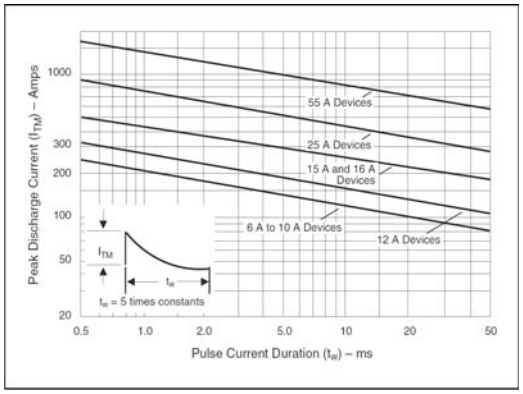

Figure E6.1 Peak Capacitor Discharge Current (6A through 55A)

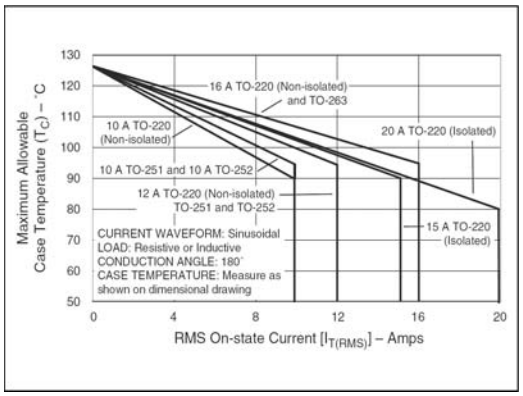

Figure E6.2 Maximum Allowable Case Temperature versus RMS on-state current

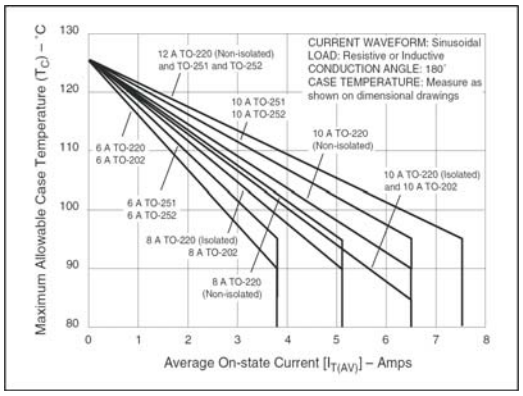

Figure E6.3 Maximum Allowable Case Temperature Versus Average On-state Current

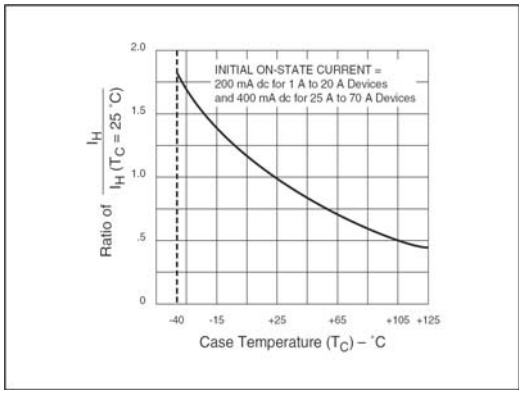

Figure E6.4 Normalized dc Holding Current versus Case Temperature

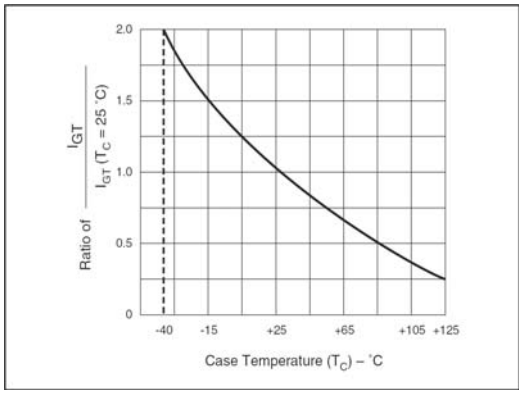

Figure E6.5 Normalized DC Gate-Trigger Current versus Case Temperature

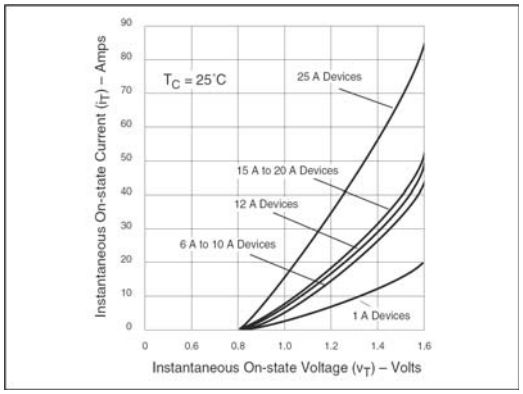

Figure E6.6 Instantaneous On-state Current versus On-state Voltage(typical)

Description

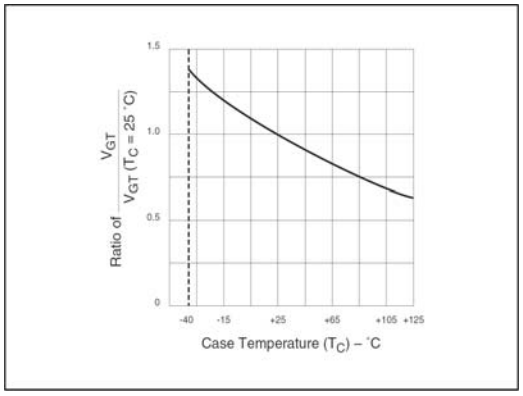

Figure E6.7 Normalized DC Gate-trigger Voltage versus Case Temperature

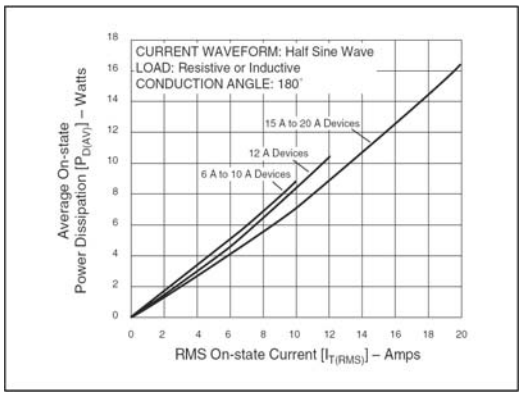

Figure E6.8 Power Dissipation (Typical)versus RMS Pn-state Current (6Athrough 20A)

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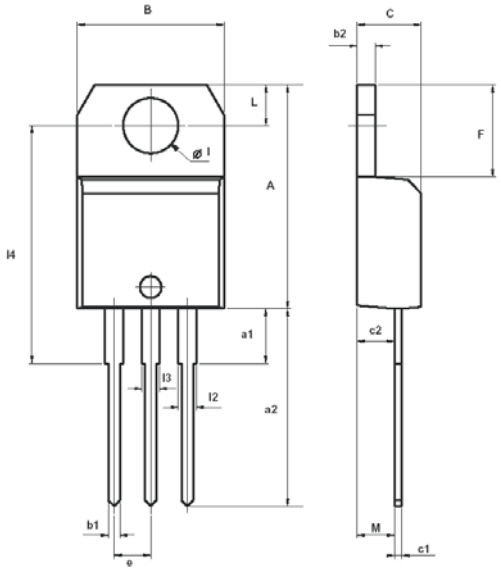
MECHANICAL DATA

Dimensions in mm
Net Mass: 2 g
TO-220



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	