S6006DS2G

SCRs
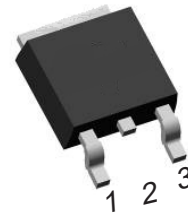
Description

Glass passivated, sensitive gate thyristors in a plastic envelope, intended for use in general purpose switching and phase control applications. These devices are intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits.

Features

- Blocking voltage to 600 V
- On-state RMS current to 6 A
- Ultra low gate trigger current

Applications

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

Simplified outline

TO-252

Symbol

Pin	Description
1	cathode
2	anode
3	gate
TAB	anode

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	600	V
$I_{T(RMS)}$	RMS on-state current （full sine wave）	6	A
I_{TAV}	Average on-state current	3.8	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Rth j-mb	Thermal resistance Junction to mounting base		-	-	2.0	K/W
Rth j-a	Thermal resistance Junction to am bient	In free air	-	70	-	K/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN	Value	UNIT
V_{RRM}	Repetitive peak reverse voltage		-	600	V
$I_{T(RMS)}$	RMS on-state current		-	6	A
I_{GM}	Peak gate current		-	2	A
I^2t	I^2t for fusing	RMS surge (non-repetitive)on-state current for period of 8.3ms for fusing	-	41	A^2s
I_{TSM}	Peak one-cycle forward surge current	60Hz	-	100	A
		50Hz	-	83	A
$P_{G(AV)}$	Average gate power dissipation		-	0.5	W
P_{GM}	Peak gate power dissipation		-	20	W
Tq	Circuit commutated turn-off time		-	35	μs
T_{tg}	Gate controlled turn-on time;gate pulse=100mA; minmum width=15μs with rise time=<0.1μs		-	20	μs

T_J =25 C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Static characteristics							
I_{GT}	Dc gate trigger current	VD=12V,RL=60Ω		-	-	200	μA
V_{GT}	DC gate trigger voltage	VD=12V dc,RL=60Ω		-	-	1.5	V
DI/Dt	Maximum rate-of-rise of on-state current;	IGT=150mA with<=0.1μs rise time,		-	-	100	A/μs
V_{TM}	On-state voltage	Ta=25℃,itm=0.6A,instantaneous value		-	-	1.6	V
I_H		V_D=12V; I_{GT}=0.1A		-	-	6	mA
I_{DRM}	Peak off-state forward and reverse current at V_{DRM} and V_{RRM}	Tc=125℃,V_{DRM}		-	-	0.5	mA
I_{RRM}		Tc=125℃,V_{RRM}		-	-	0.5	

Dynamic Characteristics

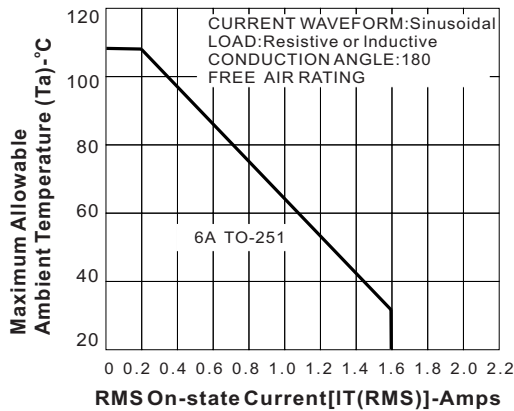|				MIN	TYP	MAX	UNIT
D_{VD}/dt	Critical rate of rise of Off-state voltage	V_{DM}=67% $V_{DRM(max)}$;Tj=125℃; Exponential wave form;R_{GK}=100Ω		50	100	-	V/μs
t_{gt}	Gate controlled turn-on time	I_{TM}=10A;V_D=$V_{DRM(max)}$; I_G=5mA; DI_G/dt=0.2A/μs		-	2	-	μs
t_g	Crcuit commutated turn-off time	V_{DM}=67% $V_{DRM(max)}$;Tj=125℃;I_{TM}=12A V_R=24V;dI_{TM}/dt=10A/μS dv_D/dt=2V/μs;R_{GK}=1kΩ		-	100	-	μs

Description

Figure E6.1 Maximum allowable ambient temperature versus RMS On-state current
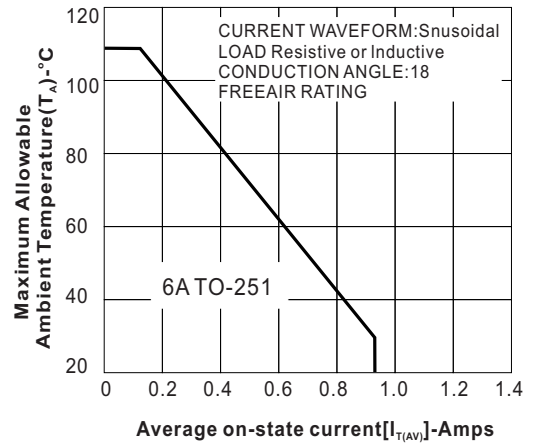

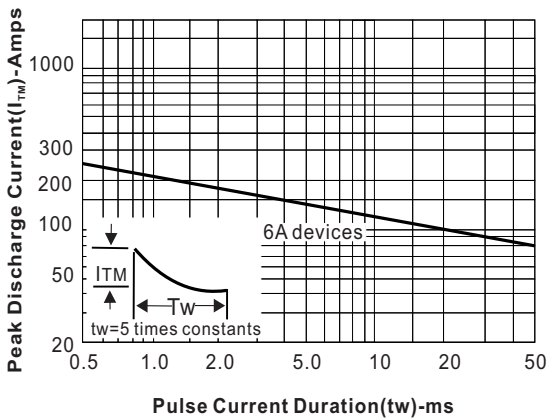**Figure E6.2 Maximum Allowable Ambient Temperature Versus Average on-state Current**

Figure E6.3 Peak Capacitor Discharge Current(6A)
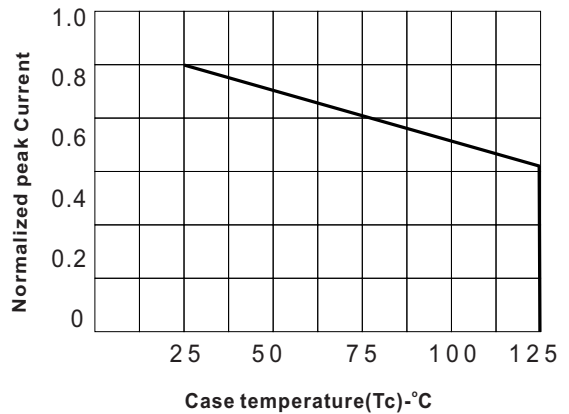

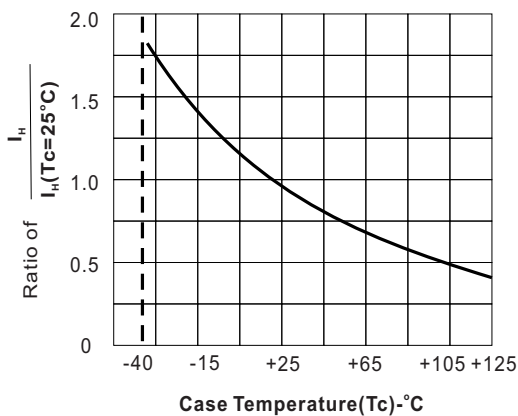**Figure E6.4 peak capacitor discharge current derating(6A)**

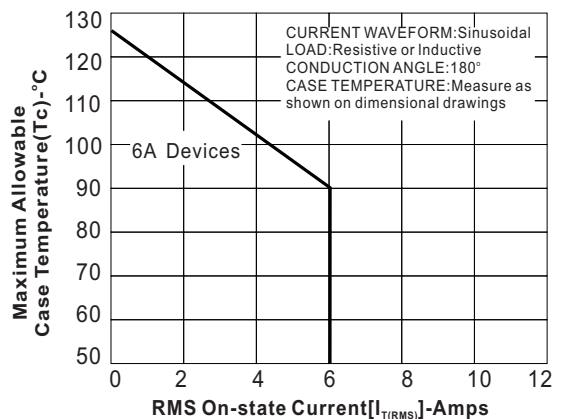**Figure E6.5 Normalized dc Holding Current versus Case Temperature**

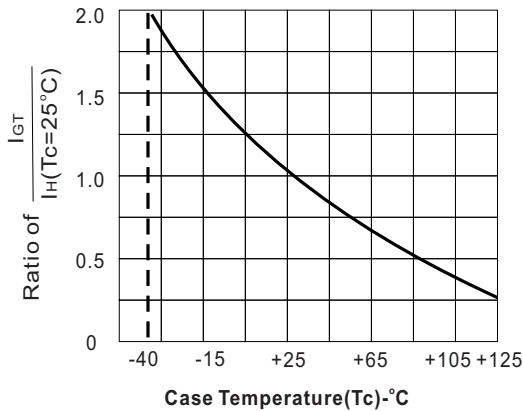**Figure E6.6 Maximum Allowable case temperature versus RMS On-state current 6A**

Description

Figure E6.7 Normalized dc Gate-Trigger Current versus Case Temperature
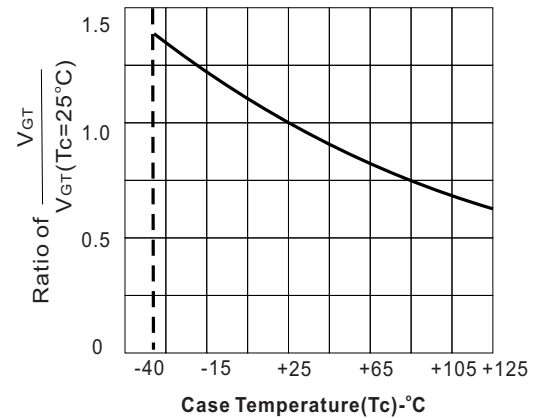

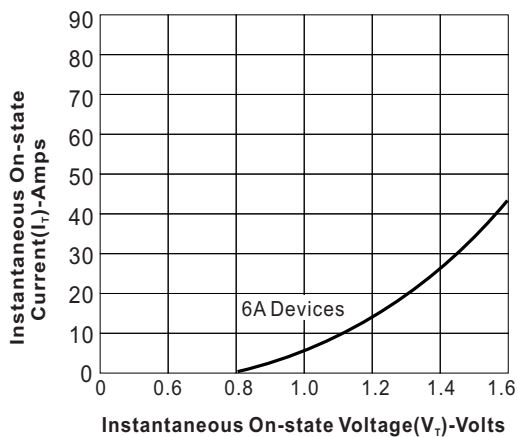**Figure E6.8 Normalized dc Gate-trigger Voltage versus Case Temperature**

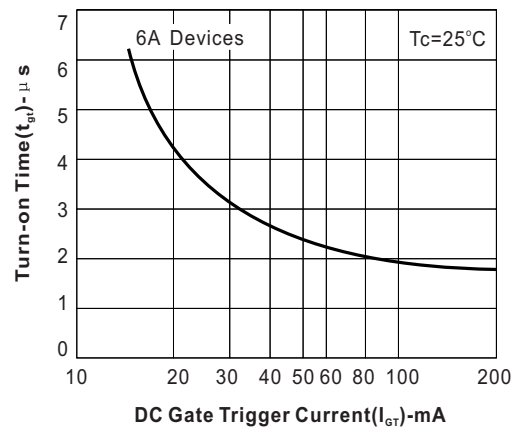**Figure E6.9 Instantaneous On-state Current versus On-state Voltage (Typical) 6A**

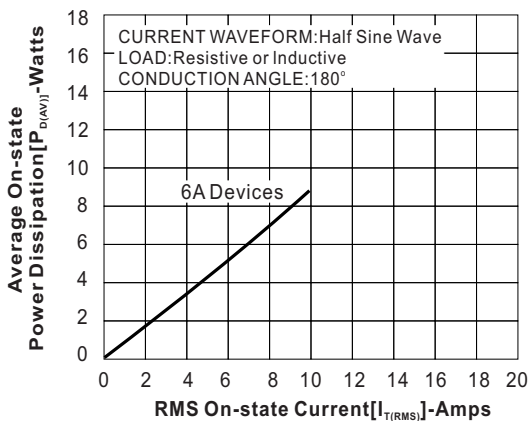**Figure E6.10 Typical Turn-on Time versus Gate-trigger Current**

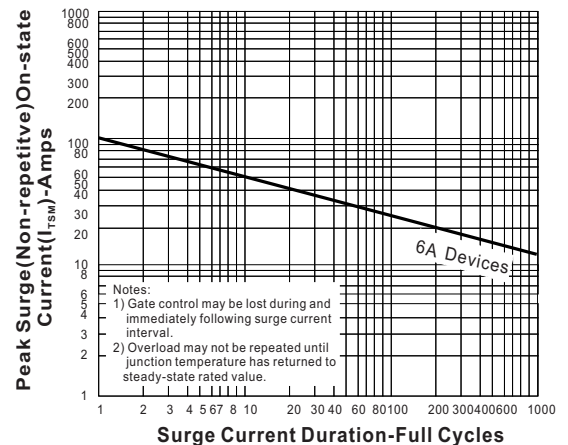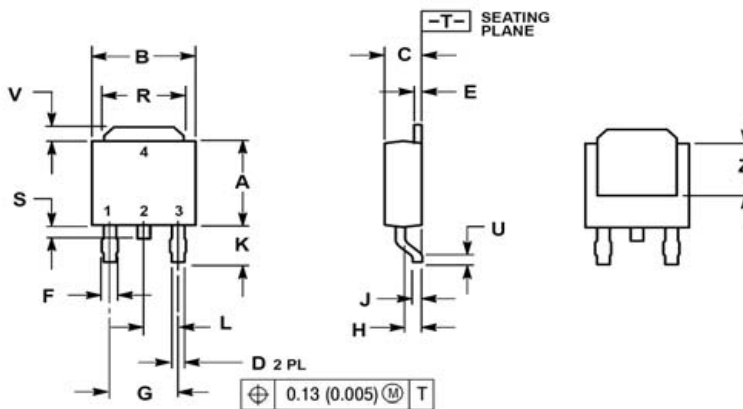**Figure E6.11 Power Dissipation(Typical) versus RMS On-state Current (6A)**

Figure E6.12 Peak Surge Current versus Surge Current Duration

Mechanical Data

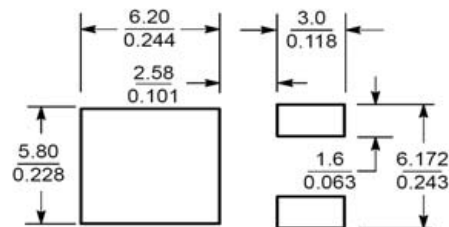TO-252

Dimensions in mm
Net Mass: 0.45 g

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	0.235	0.245	5.97	6.22
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.018	0.023	0.46	0.58
F	0.037	0.045	0.94	1.14
G	0.180 BSC		4.58 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.180	0.215	4.57	5.45
S	0.025	0.040	0.63	1.01
U	0.020	---	0.51	---
V	0.035	0.050	0.89	1.27
Z	0.155	---	3.93	---

STYLE 6:
PIN 1. MT1
     2. MT2
     3. GATE
     4. MT2

SOLDERING FOOTPRINT

SCALE 3:1 $\left(\frac{mm}{inches}\right)$