BT152D Series

20A Standard SCRs

Product Summary

Symbol	Value	Unit
$I_{T(RMS)}$	20	A
V_{DRM} V_{RRM}	600 / 800	V
V_{TM}	1.6	V

Feature

With high ability to withstand the shock loading of large current, Provide high dv/dt rate with strong resistance to electromagnetic interference.

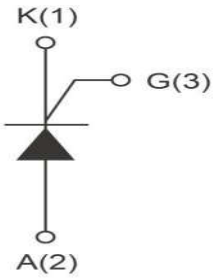
Application

Power charger, T-tools, massager, solid state relay, AC Motor speed regulation and so on.

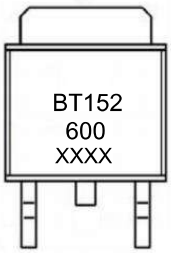
Package

TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Repetitive peak off-state voltage	V_{DRM}	600 / 800	V
Repetitive peak reverse voltage	V_{RRM}	600 / 800	V
RMS on-state current	$I_{T(RMS)}$	20	A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	200	A
I^2t value for fusing (tp=10ms)	I^2t	200	A^2s
Critical rate of rise of on-state current (I_G =2×I_{GT})	dI_T/dt	50	A/μs
Peak gate current	I_{GM}	5	A
Average gate power dissipation	$P_{G(AV)}$	5	W
Junction Temperature	T_J	-40 ~ +125	℃
Storage Temperature	T_{STG}	-40 ~ +150	℃

Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition		Value		Unit
Gate trigger current	I_{GT}	V_D =12V R_L = 140Ω		MAX.	10	mA
Gate trigger voltage	V_{GT}			MAX.	1.3	V
Gate non-trigger voltage	V_{GD}	V_D =V_{DRM} T_j =125℃		MIN.	0.2	V
latching current	I_L	I_G =1.2I_{GT}		MAX.	50	mA
Holding current	I_H	I_T = 50mA		MAX.	60	mA
Critical-rate of rise of commutation voltage	dV_D/dt	V_D=2/3V_{DRM} Gate Open T_j =125℃		MIN.	200	V/μs
STATIC CHARACTERISTICS						
Forward "on" voltage	V_{TM}	I_{TM} =32A tp=380μs		MAX.	1.6	V
Repetitive Peak Off-State Current	I_{DRM}	V_D =V_{DRM} V_R =V_{RRM}	T_j=25℃	MAX.	5	μA
Repetitive Peak Reverse Current	I_{RRM}		T_j=125℃	MAX.	1	mA
THERMAL RESISTANCES						
Thermal resistance	Rth(j-c)	Junction to case		TYP.	1.4	℃/W
	Rth(j-a)	Junction to ambient		TYP.	70	℃/W

Typical Characteristics

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

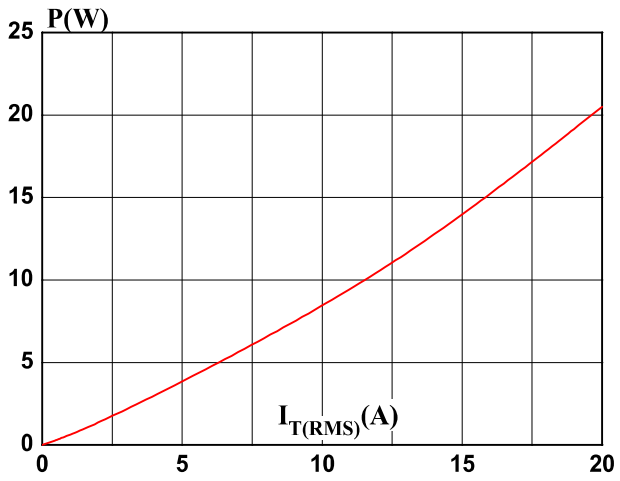


FIG.2: RMS on-state current versus case temperature (full cycle)

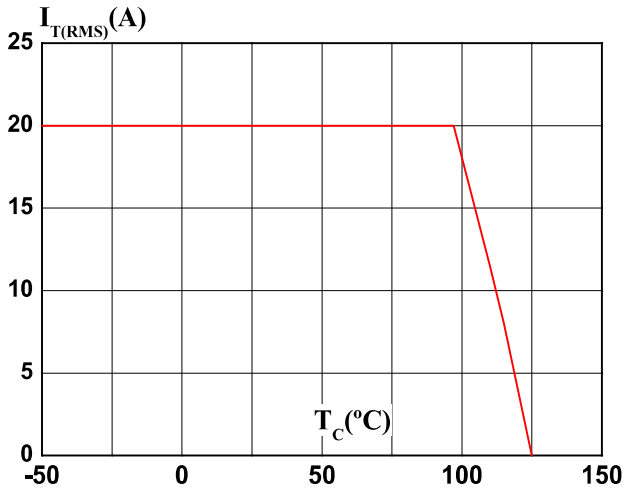


FIG.3: Surge peak on-state current versus number of cycles

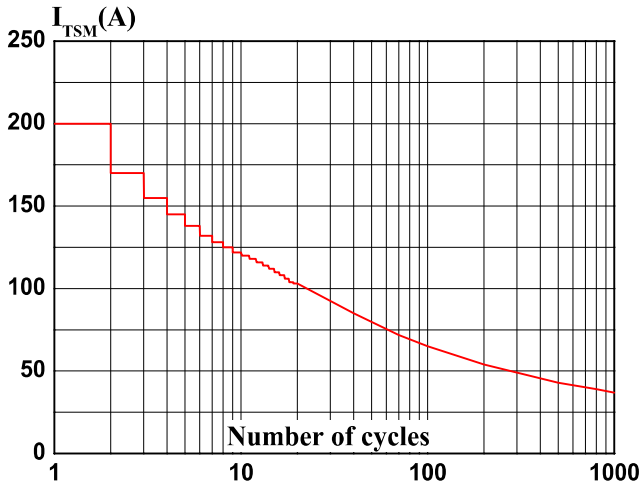


FIG.4: On-state characteristics (maximum values)

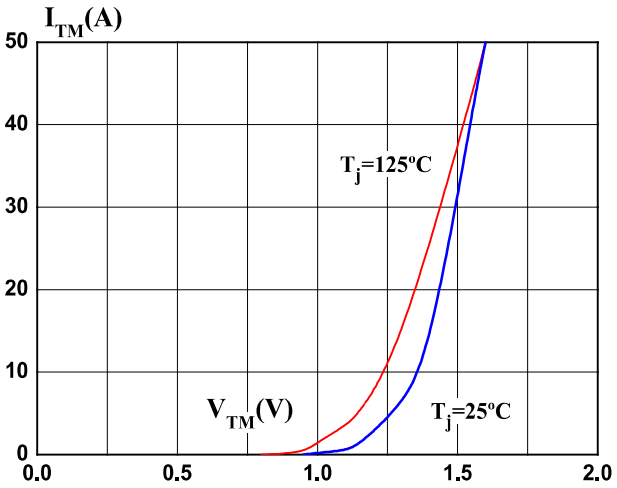


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms

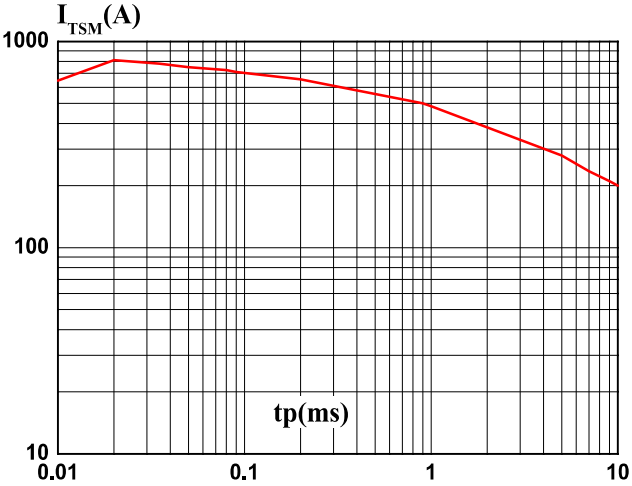
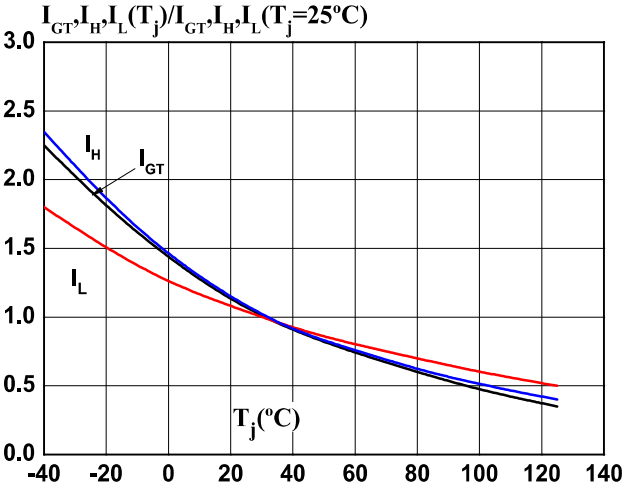
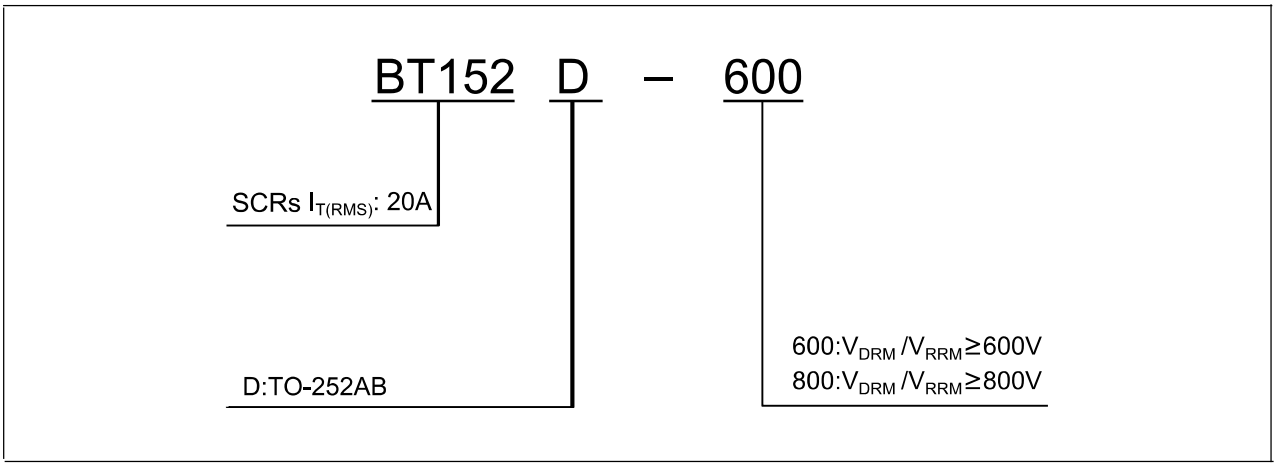


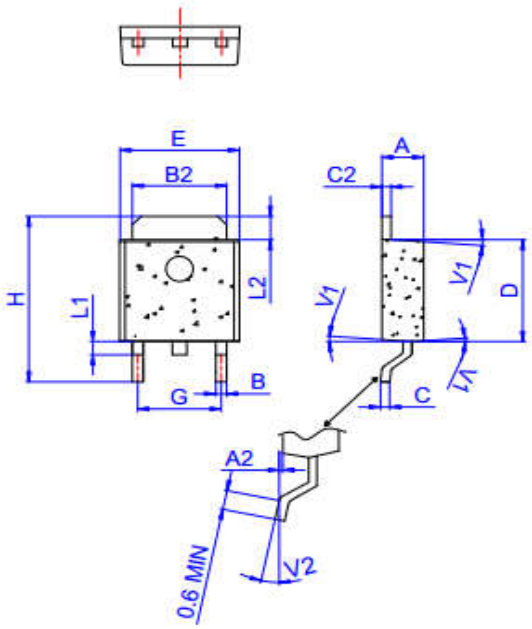
FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



Ordering Information



TO-252AB Package Information



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.85	0.019		0.034
D	5.30		6.20	0.208		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°