JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD

TO-220BK Plastic-Encapsulate Thyristors

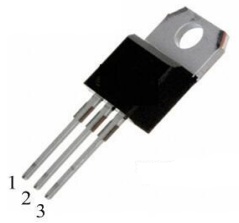
CR620B Standard SCRs

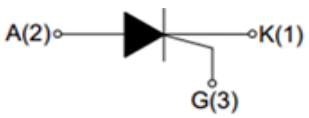
MAIN CHARACTERISTICS

$I_{T(AV)}$	13A
V_{DRM}/V_{RRM}	600V
V_{TM}	1.6V

TO-220BK

1.CATHODE
2.ANODE
3.GATE





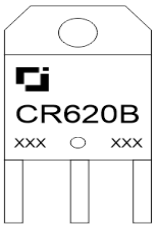
FEATURES

- PNPN 4-layer Structure SCRs
- Mesa Glass Passivated Technology
- Multi Layers Metal Electrodes

APPLICATIONS

- LED Controller
- Motorcycle Voltage Regulator
- Hair Straightener

MARKING



CR620B:Part Number
XXX:Internal Code

ABSOLUTE RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Test condition	Value	Unit
V_{DRM}/ V_{RRM}	Repetitive peak off-state voltage	T_j=25℃	600	V
$I_{T(AV)}$	Average on-state current	TO-220BK(T_C≤105℃)	13	A
$I_{T(RMS)}$	RMS on-state current	TO-220BK(T_C≤105℃),Fig. 1,2	20	A
I_{TSM}	Non repetitive surge peak on-state current	Full sine wave， T_j(init)=25℃, tp=20ms; Fig. 3,5	250	A
I^2t	I^2t value	tp=10ms	310	A^2s
dI_T/dt	Critical rate of rise of on-state current	I_G=2*I_{GT}, tr≤10ns, F=120H_Z, T_j=125℃	50	A/μs
I_{GM}	Peak gate current	tp=20μs, T_j=125℃	4	A
$P_{G(AV)}$	Average gate power	T_j=125℃	1	W
T_{STG}	Storage temperature		-40~+150	℃
T_j	Operating junction temperature		-40~+125	

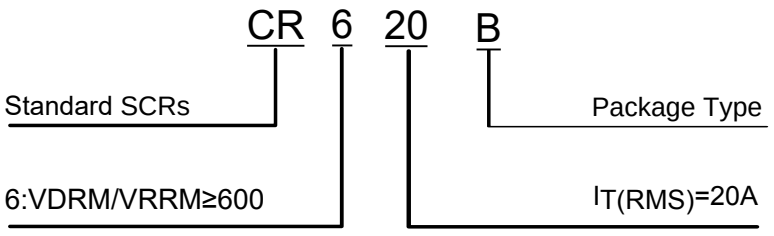
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Symbol	Parameter	Test condition	Value			Unit
			Min	Nom	Max	
I_{GT}	Gate trigger current	V_D=12V, R_L =33Ω, T_j=25℃, Fig. 6	2	-	25	mA
V_{GT}	Gate trigger voltage	V_D=12V, RL =33Ω, T_j=25℃	-	-	1.0	V
V_{GD}	Non-triggering gate voltage	VD=VDRM, RL =3.3kΩ, T_j=125℃	0.2	-	-	V
I_H	Holding current	I_T=500mA, T_j=25℃,	-	-	40	mA
I_L	Latching current	I_G=1.2I_{GT}, T_j=25℃,	-	-	60	mA
dV_D/dt	Critical rate of rise of off-state	V_D=67%V_{DRM}, Gate OPEN,Tj=125℃	200	-	-	V/μs
V_{TM}	On-state Voltage	I_{TM}=32A, Fig. 4	-	-	1.6	V
I_{DRM} / I_{RRM}	Repetitive peak off-state current	V_D=V_{DRM}/V_{RRM}, T_j=25℃	-	-	5	μA
		V_D=V_{DRM}/V_{RRM}, T_j=125℃	-	-	1	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case (AC)	TO-220BK	1.05	℃/W
Rth (j-a)	Junction to ambient	TO-220BK	60	℃/W

PART NUMBER



CHARACTERISTICS CURVES

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

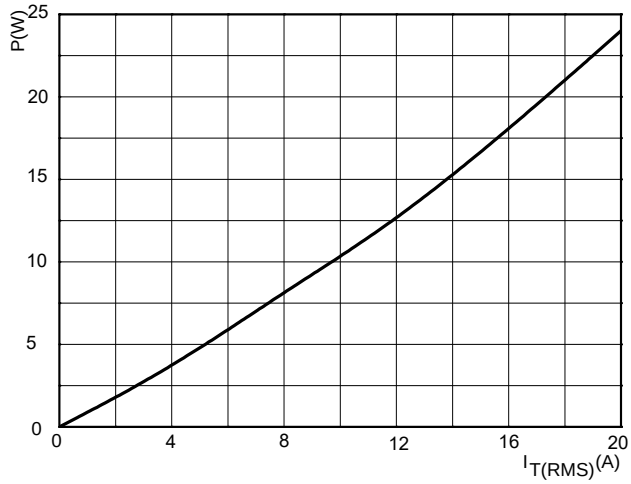


FIG.2: RMS on-state current versus case temperature (full cycle)

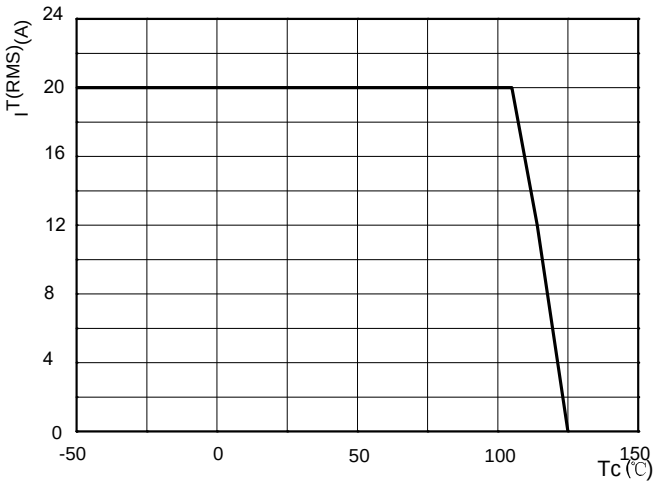


FIG.3: Surge peak on-state current versus number of cycles

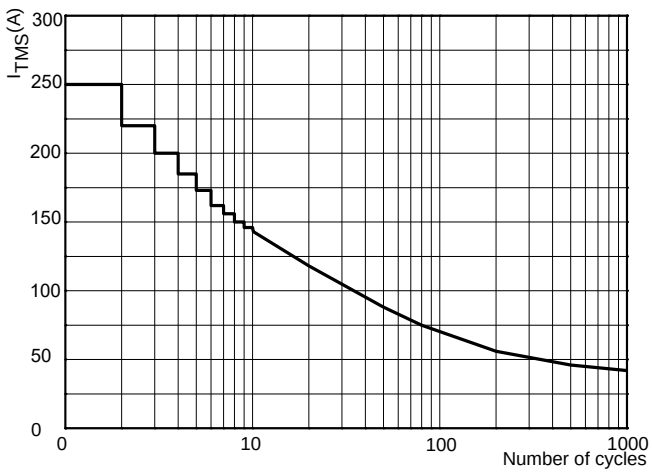


FIG.4: On-state characteristics (maximum values)

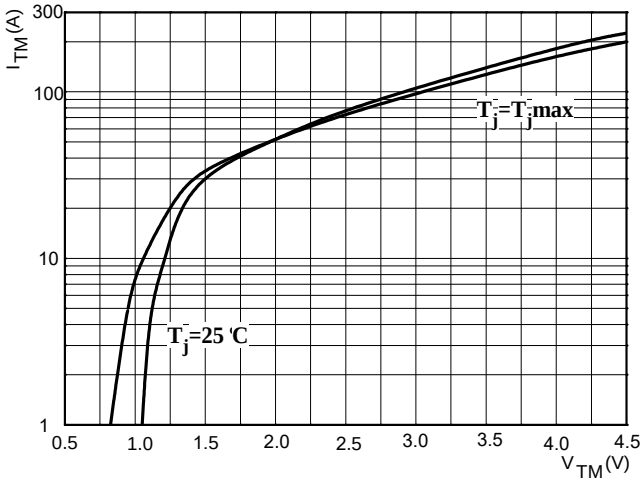


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms

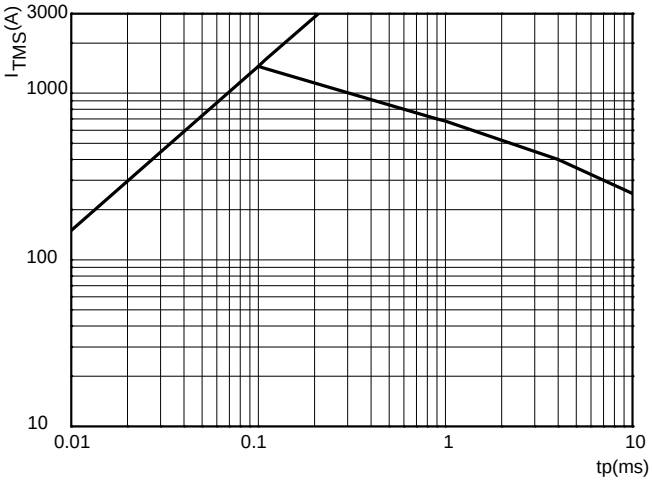
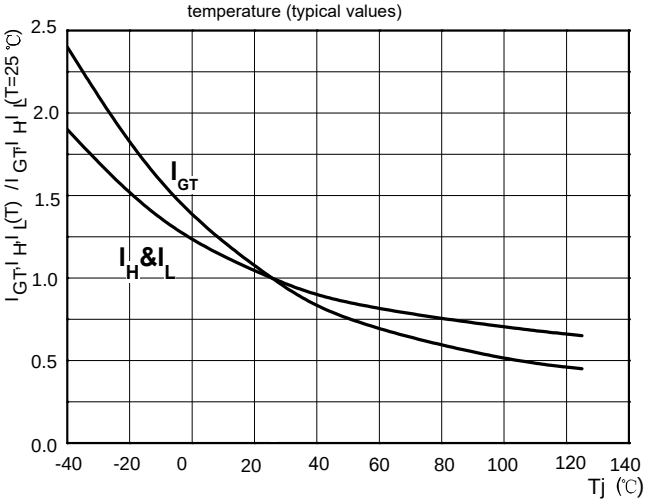
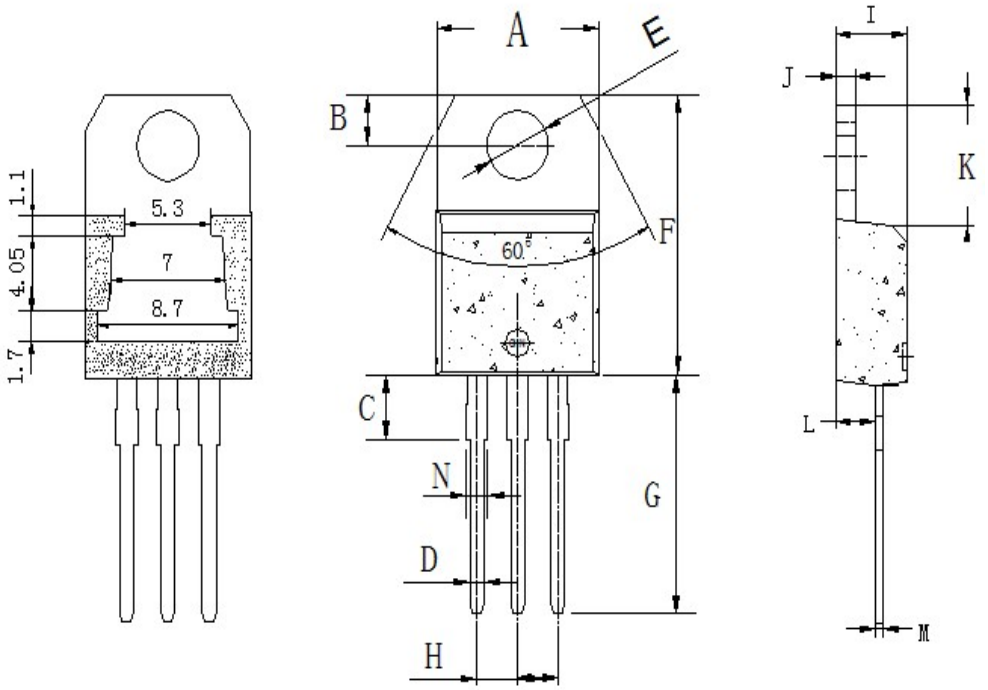


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



TO-220BK PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	9.8	10.4	0.385	0.409
B	2.65	3.1	0.104	0.122
C	2.8	4.2	0.110	0.165
D	0.7	0.92	0.027	0.036
E	3.75	3.95	0.147	0.155
F	14.8	16.1	0.582	0.633
G	13.05	13.6	0.513	0.535
H	2.4	2.7	0.094	0.106
I	4.38	4.61	0.172	0.181
J	1.15	1.36	0.045	0.053
K	5.85	6.82	0.230	0.268
L	2.35	2.75	0.092	0.108
M	0.35	0.65	0.013	0.025
N	1.18	1.42	0.046	0.055