

**TO-220BK Plastic-Encapsulate Thyristors****CT412B** 4Q TRIACs**MAIN CHARACTERISTICS**

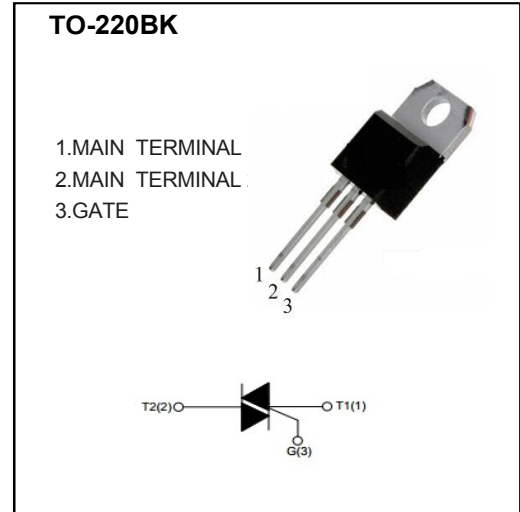
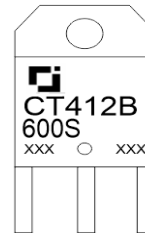
$I_{T(RMS)}$		12A
V_{DRM}/V_{RRM}	CT412B-600S/C/B	600V
	CT412B-800S/C/B	800V
V_{TM}		1.55V

FEATURES

- NPNPN 5-layer Structure TRIACs
- Mesa Glass Passivated Technology
- Multi Layers Metal Electrodes
- High Junction Temperature
- Good Commutation Performance

APPLICATIONS

- Heater Control
- Motor Speed Controller
- Mixer

**MARKING**

CT412B:Series Code
600S:Depends on V_{DRM}
and I_{GT}
XXX:Internal Code

ABSOLUTE RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test condition		Value	Unit
V_{DRM}/V_{RRM}	Repetitive peak off-state voltage	$T_j=25^\circ\text{C}$	CT412B-600S/C/B	600	V
			CT412B-800S/C/B	800	V
$I_{T(RMS)}$	RMS on-state current	TO-220BK($T_c \leq 110^\circ\text{C}$), Fig. 1,2		12	A
I_{TSM}	Non repetitive surge peak on-state current	Full sine wave , $T_j(\text{init})=25^\circ\text{C}$, $t_p=20\text{ms}$; Fig. 3,5		120	A
I^2t	I^2t value	$t_p=10\text{ms}$		78	A^2s
di_T/dt	Critical rate of rise of on-state current	$I_G=2 \cdot I_{GT}$, $t_r \leq 10\text{ns}$, $F=120\text{Hz}$, $T_j=125^\circ\text{C}$	I - II -III	50	$\text{A}/\mu\text{s}$
			IV	10	
I_{GM}	Peak gate current	$t_p=20\mu\text{s}$, $T_j=125^\circ\text{C}$		2	A
$P_{G(AV)}$	Average gate power	$T_j=125^\circ\text{C}$		0.5	W
T_{STG}	Storage temperature			-40~+150	$^\circ\text{C}$
T_j	Operating junction temperature			-40~+125	

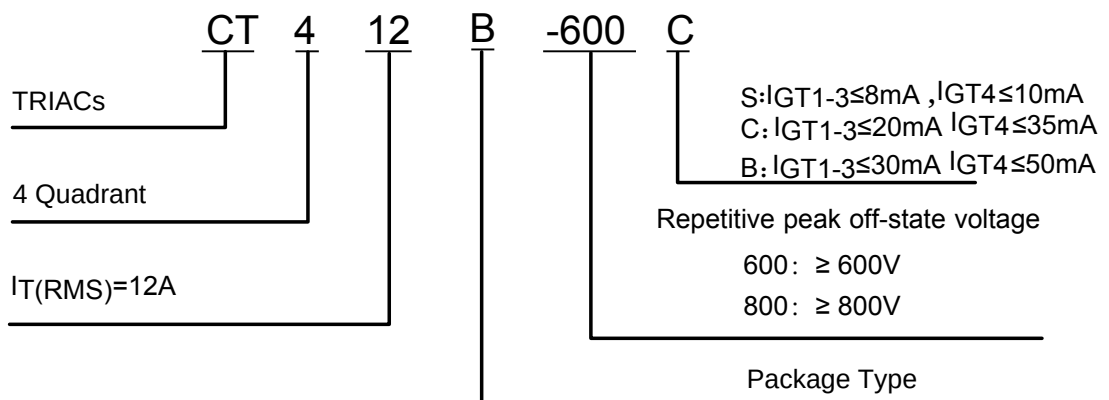
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Symbol	Parameter	Test condition		Value			Unit
				S	C	B	
I _{GT}	Gate trigger current	V _D =12V, I _T =1A, T _J =25°C, Fig. 6	I - II -III	≤8	≤20	≤30	mA
			IV	≤10	≤35	≤50	
V _{GT}	Gate trigger voltage		I - II -III - IV	≤1.3			V
V _{GD}	Non-triggering gate voltage	VD=VDRM, T _J =125°C		≥0.2			V
I _H	Holding current	V _D =12V, I _{GT} =0.1A, T _J =25°C, Fig. 6	I - II -III - IV	≤10	≤30	≤30	mA
I _L	Latching current		I -III - IV	≤15	≤30	≤40	mA
			II	≤20	≤40	≤60	mA
dV _D /dt	Critical rate of rise of off-state	V _D =67%V _{DRM} , Gate Open T _J =125°C		≥10	≥20	≥50	V/μs
V _{TM}	On-state Voltage	I _{TM} =15A, tp=380μs , Fig. 4		≤1.55			V
I _{DRM} / I _{RRM}	Repetitive peak off-state current	V _D =V _{DRM} /V _{RRM} , T _J =25°C		≤5	≤5	≤5	μA
		V _D =V _{DRM} /V _{RRM} , T _J =125°C		≤1	≤1	≤1	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th} (j-c)	Junction to case (AC)	TO-220BK	1.4 °C/W
R _{th} (j-a)	Junction to ambient	TO-220BK	60 °C/W

PART NUMBER



CHARACTERISTICS CURVES

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

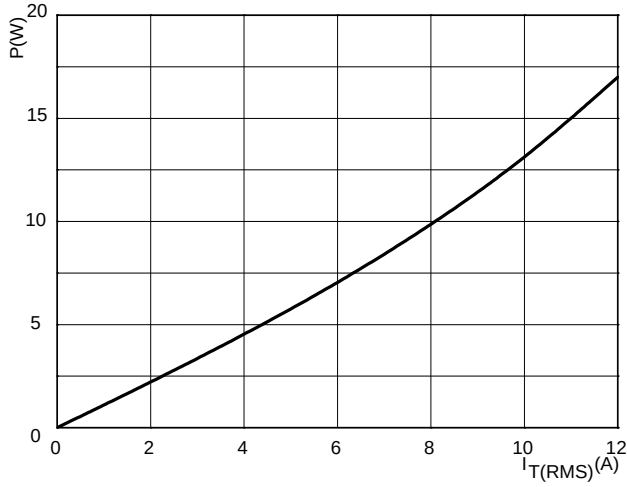


FIG.2: RMS on-state current versus case temperature (full cycle)

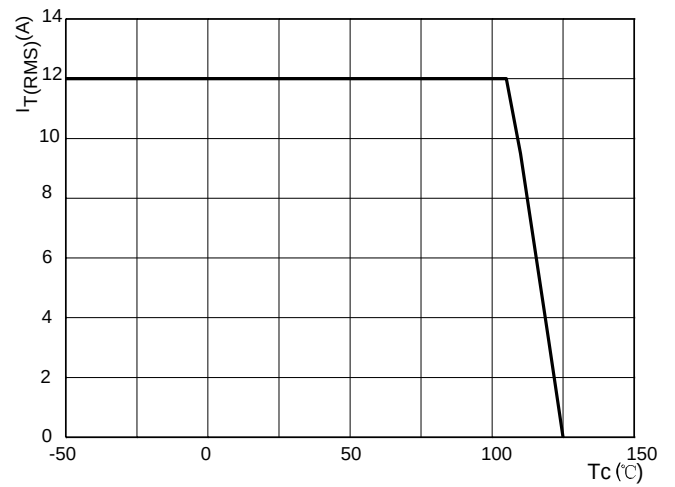


FIG.3: Surge peak on-state current versus number of cycles

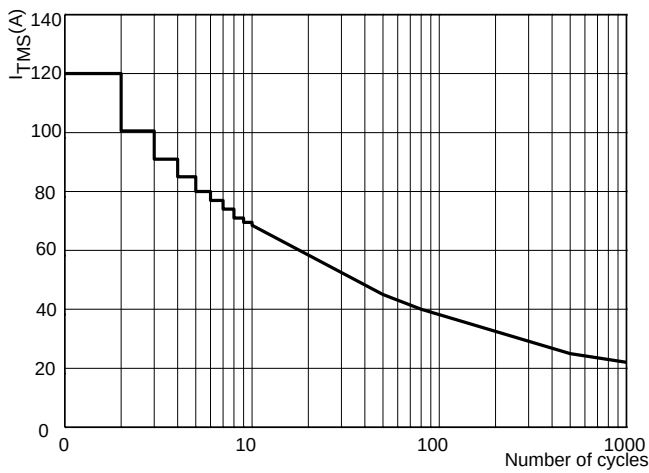


FIG.4: On-state characteristics (maximum values)

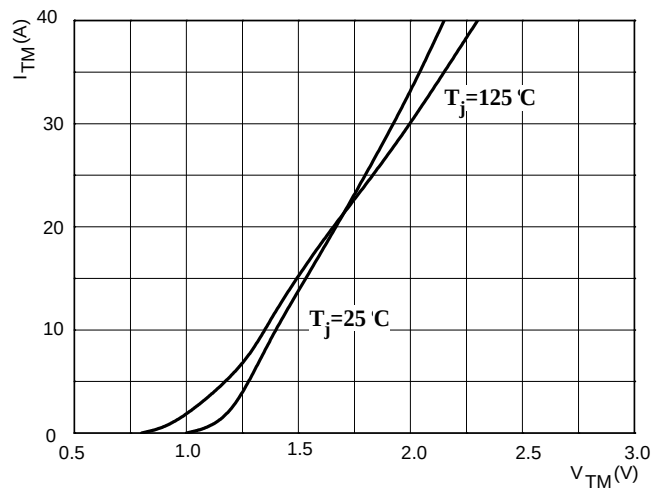


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$

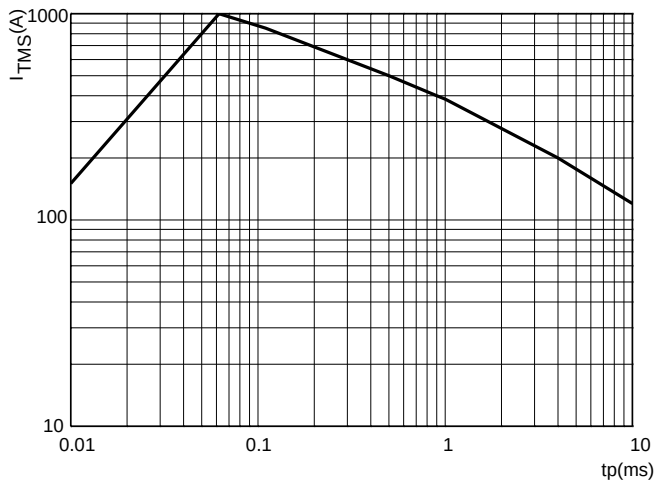
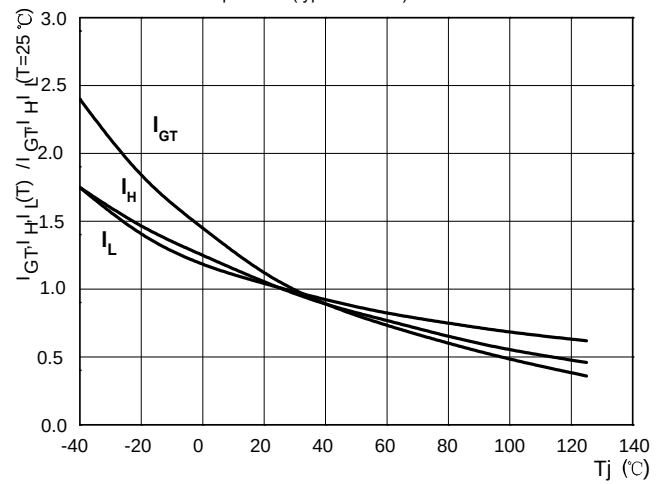
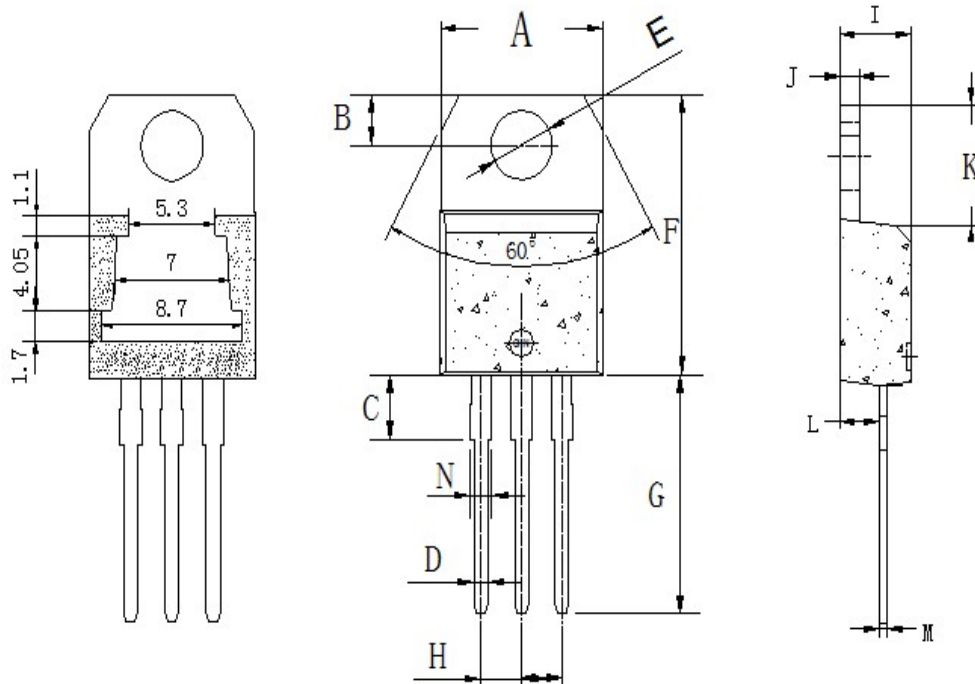


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



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