

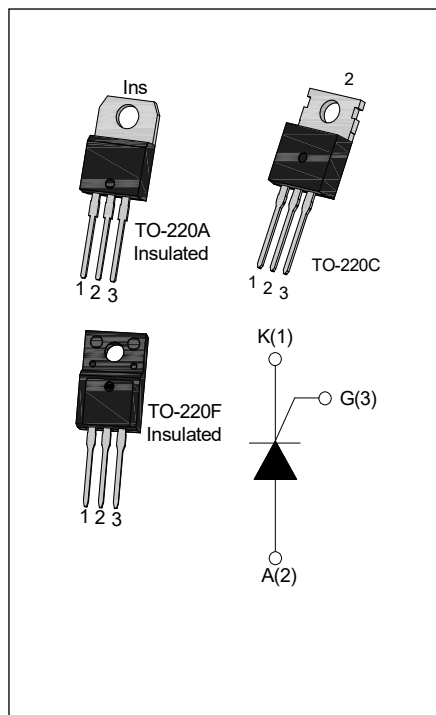


### DESCRIPTION:

JCT612T silicon controlled rectifiers is specifically designed for medium power switching and phase control applications. High current density due to mesa technology; SIPOS and Glass Passivation technology used has reliable operation up to 125°C junction temperature. Low I<sub>GT</sub> parts available. All the packages mentioned are RoHS compliant. (2011/65/EU)

### MAIN FEATURES

Symbol	Value	Unit
I <sub>T(RMS)</sub>	12	A
V <sub>DRM</sub> /V <sub>RRM</sub>	600/800	V
V <sub>TM</sub>	≤ 1.6	V



### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T <sub>stg</sub>	-40 to +150	°C
Operating junction temperature range		T <sub>j</sub>	-40 to +125	°C
Repetitive peak off-state voltage(T <sub>j</sub> =25°C)		V <sub>DRM</sub>	600/800	V
Repetitive peak reverse voltage(T <sub>j</sub> =25°C)		V <sub>RRM</sub>	600/800	V
Non repetitive surge peak Off-state voltage		V <sub>DSM</sub>	V <sub>DRM</sub> +100	V
Non repetitive peak reverse voltage		V <sub>RSM</sub>	V <sub>RRM</sub> +100	V
RMS on-state current	TO-220C (T <sub>c</sub> =105°C)	I <sub>T(RMS)</sub>	12	A
	TO-220A(Ins)/ TO-220F(Ins) (T <sub>c</sub> =85°C)			
Average on-state current		I <sub>T(AV)</sub>	8	A
Non repetitive surge peak on-state current ( half cycle, 50Hz )		I <sub>TSM</sub>	140	A
I <sup>2</sup> t value for fusing (tp=10ms, half cycle)		I <sup>2</sup> t	98	A <sup>2</sup> s
Critical rate of rise of on-state current		di/dt	50	A/μs

( $I_G=2 \times I_{GT}$ , $T_j=125^\circ\text{C}$ )			
Peak gate current ( $t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$ )	$I_{GM}$	4	A
Average gate power dissipation ( $T_j=125^\circ\text{C}$ )	$P_{G(AV)}$	1	W

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
$I_{GT}$	$V_D=6\text{V}$ $R_L=33\Omega$	-	-	5	mA
$V_{GT}$		-	-	1.3	V
$V_{GD}$	$V_D=V_{DRM}$ $T_j=125^\circ\text{C}$ $R_L=3.3\text{K}\Omega$	0.2	-	-	V
$I_L$	$I_G=1.2I_{GT}$	-	-	30	mA
$I_H$	$I_T=500\text{mA}$	-	-	15	mA
dV/dt	$V_D=67\%V_{DRM}$ Gate Open $T_j=125^\circ\text{C}$	40	-	-	V/ $\mu\text{s}$

**STATIC CHARACTERISTICS**

Symbol	Parameter	Value(MAX)	Unit
$V_{TM}$	$I_{TM}=24\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$ 1.6	V
$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ\text{C}$ 5	$\mu\text{A}$
$I_{RRM}$		$T_j=125^\circ\text{C}$ 2	mA

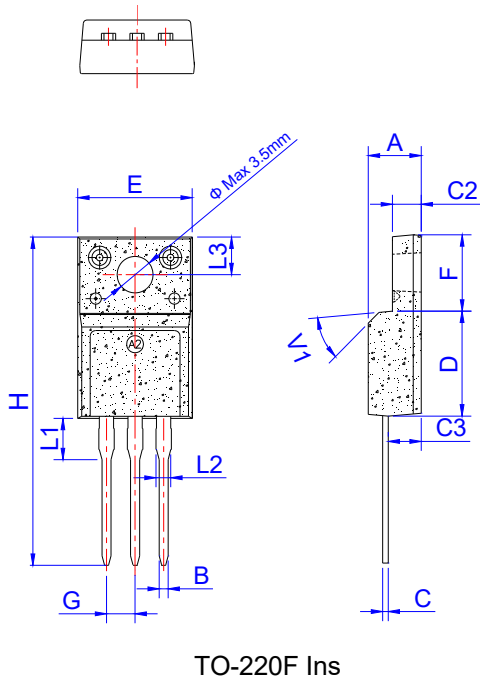
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	2.3
		TO-220C(Non-Ins)	1.3
		TO-220F(Ins)	2.5

ORDERING INFORMATION

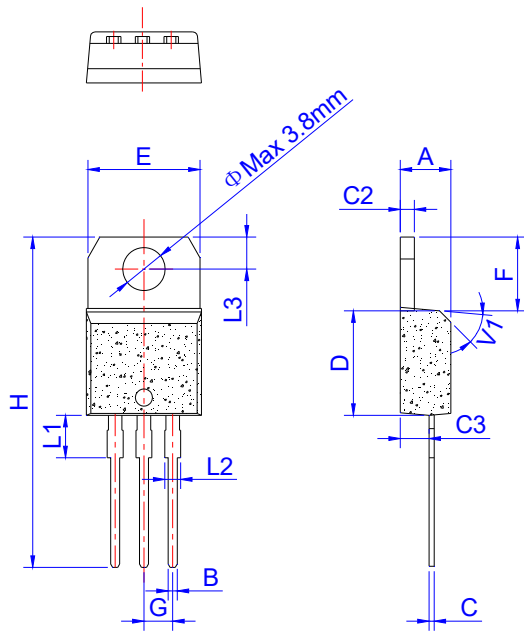
J	CT	6	12	T	C
JieJie Microelectronics Co.,Ltd	SCRs	6:V <sub>DRM</sub> /V <sub>RRM</sub> ≥600V 8:V <sub>DRM</sub> /V <sub>RRM</sub> >800V	I <sub>T(RMS)</sub> :12A	T:I <sub>GT</sub> ≤5mA	A:TO-220A C:TO-220C F:TO-220F

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

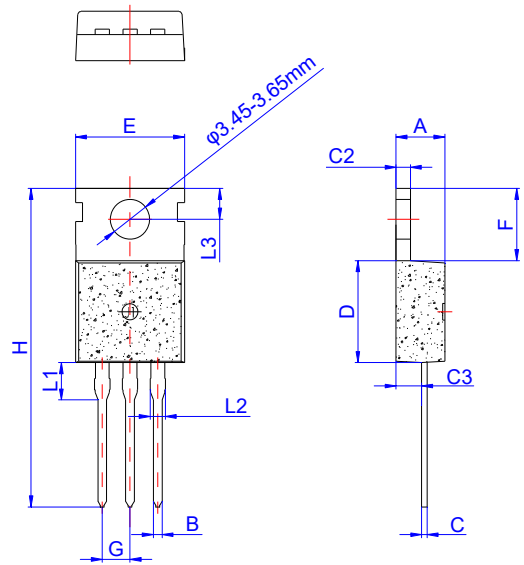
PACKAGE MECHANICAL DATA



TO-220A Ins

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

PACKAGE MECHANICAL DATA



TO-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.25		1.35	0.049		0.053
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	2.70		3.30	0.106		0.130
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116

PACKAGE INFORMATION

PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	8,000
TO-220C	TUBE	50	1,000	8,000
TO-220F	TUBE	50	1,000	8,000

FIG.1 Maximum power dissipation versus RMS on-state current

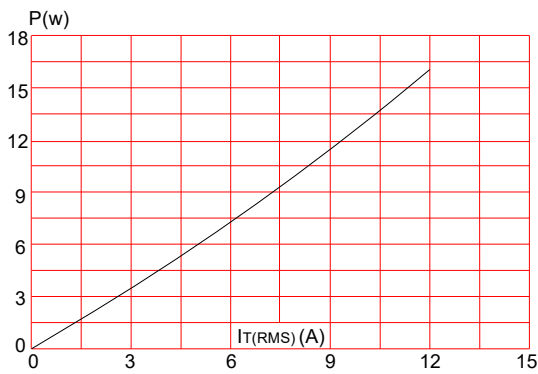


FIG.2: RMS on-state current versus case temperature

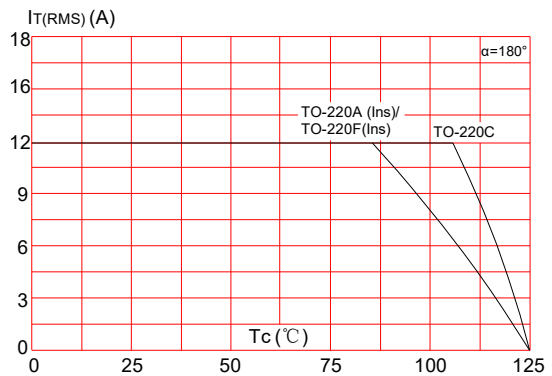


FIG.3: Surge peak on-state current versus number of cycles

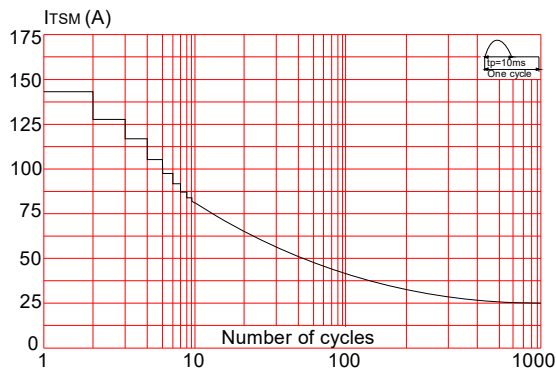


FIG.4: On-state characteristics (maximum values)

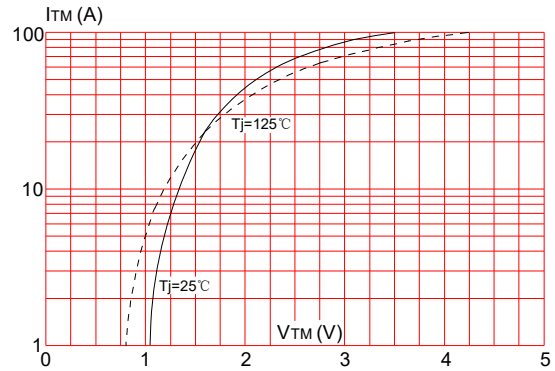


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponding value of I²t

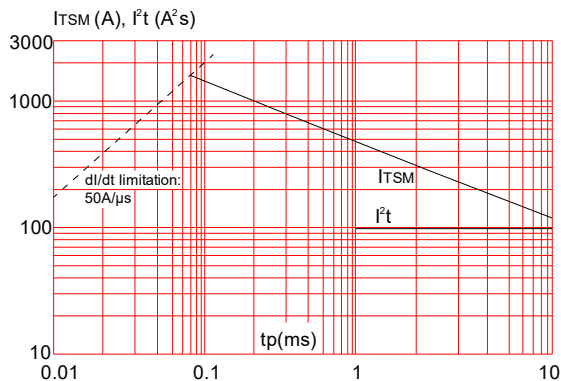
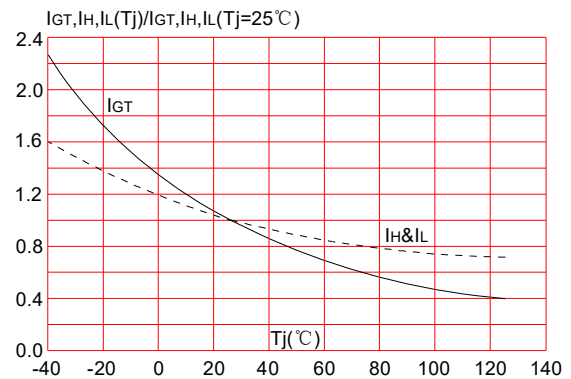
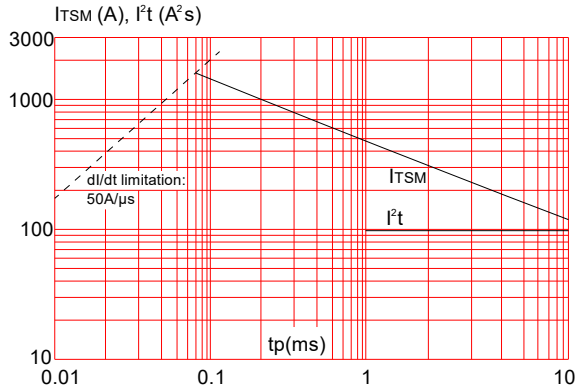


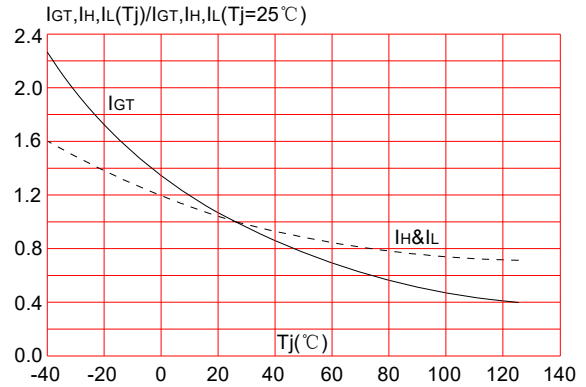
FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature



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