



## JCT620X-FO Series 20A SCRs

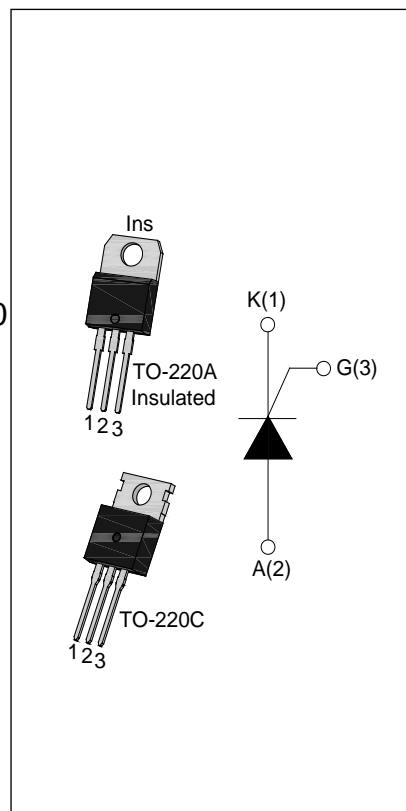
Rev.1.1

### DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT620X-FO SCRs provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. From all three terminals to external heatsink, JCT620A-FO provides a rated insulation voltage of 2500 V<sub>RMS</sub>, complying with UL standards (File ref: E252906). All the packages mentioned are RoHS compliant. (2011/65/EU)

### MAIN FEATURES

Symbol	JCT620
V <sub>DRM</sub> / V <sub>RPM</sub>	600V
I <sub>T(RMS)</sub>	20A
I <sub>GT</sub>	3~8mA



### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T <sub>stg</sub>	-40-150	°C
Operating junction temperature range		T <sub>j</sub>	-40-150	°C
Repetitive peak off-state voltage(T <sub>j</sub> =150°C)		V <sub>DRM</sub>	600	V
Repetitive peak reverse voltage(T <sub>j</sub> =150°C)		V <sub>RPM</sub>	600	V
RMS on-state current	TO-220A(Ins) (T <sub>c</sub> =100°C)	I <sub>T(RMS)</sub>	20	A
	TO-220C (T <sub>c</sub> =125°C)			
Average on-state current	TO-220A(Ins) (T <sub>c</sub> =100°C)	I <sub>T(AV)</sub>	13	A
	TO-220C (T <sub>c</sub> =125°C)			
Non repetitive surge peak on-state current (tp=10ms)		I <sub>TSM</sub>	250	A
I <sup>2</sup> t value for fusing (tp=10ms)		I <sup>2</sup> t	312.5	A <sup>2</sup> s

Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ )	di/dt	125	A/ $\mu$ s
Peak gate current	$I_{GM}$	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	5	W

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
$I_{GT}$	$V_D=12\text{V } R_L=33\Omega$	3	-	8	mA
$V_{GT}$		-	-	1.3	V
$V_{GD}$	$V_D=V_{DRM} T_j=150^\circ\text{C } R_L=3.3\text{K}\Omega$	0.2	-	-	V
$I_L$	$I_G=1.2I_{GT}$	-	-	70	mA
$I_H$	$I_T=500\text{mA}$	-	-	60	mA
dv/dt	$V_D=2/3V_{DRM}$ Gate Open $T_j=150^\circ\text{C}$	300	-	-	V/ $\mu$ s
$t_{on}$	$I_G=20\text{mA } I_A=200\text{mA } I_R=20\text{mA}$ $T_j=25^\circ\text{C}$	-	-	4	$\mu$ s
$t_{off}$		-	-	12	$\mu$ s

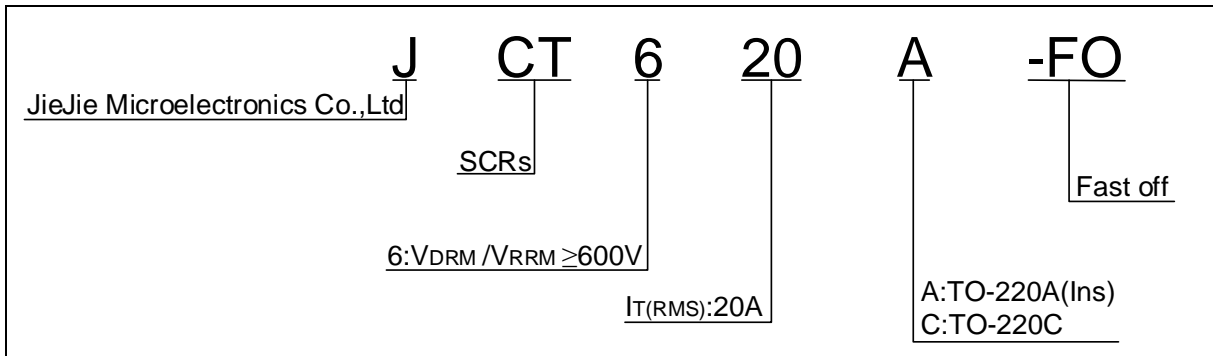
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_{TM}=40\text{A } t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.5	V
$V_{TO}$	Threshold voltage	$T_j=150^\circ\text{C}$	0.89	V
$R_d$	Dynamic resistance	$T_j=150^\circ\text{C}$	13.79	m $\Omega$
$I_{DRM}/I_{RRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	$\mu$ A
		$T_j=150^\circ\text{C}$	1	mA

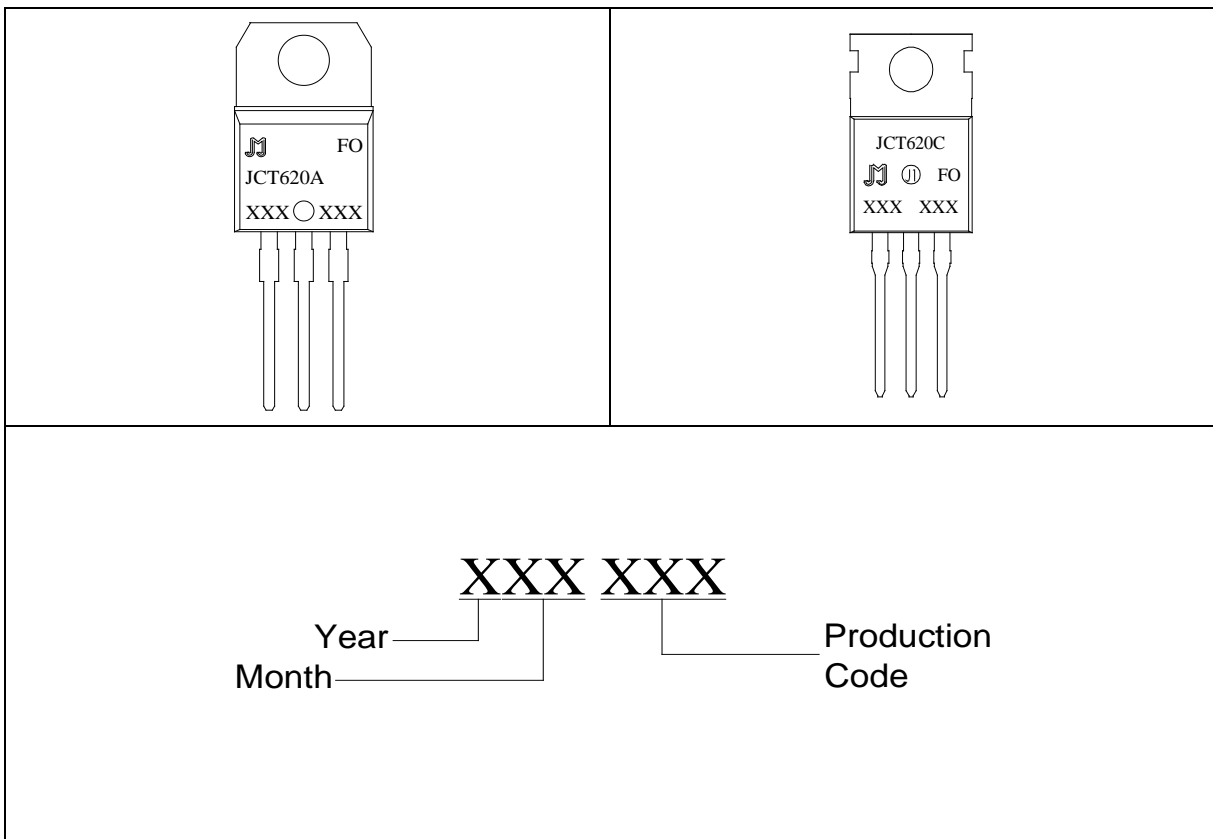
**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	2	$^\circ\text{C}/\text{W}$
		TO-220C	1	

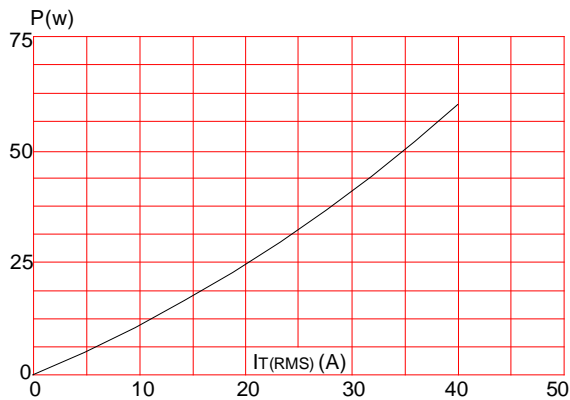
**ORDERING INFORMATION**



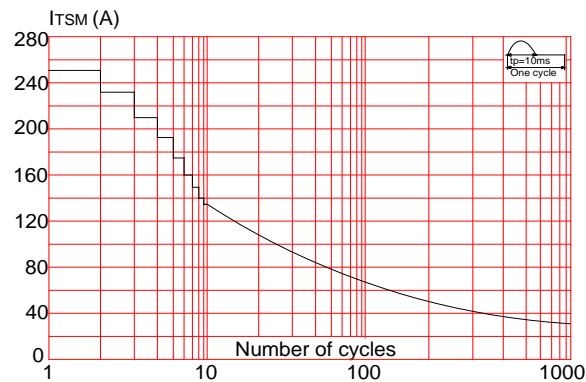
**MARKING**



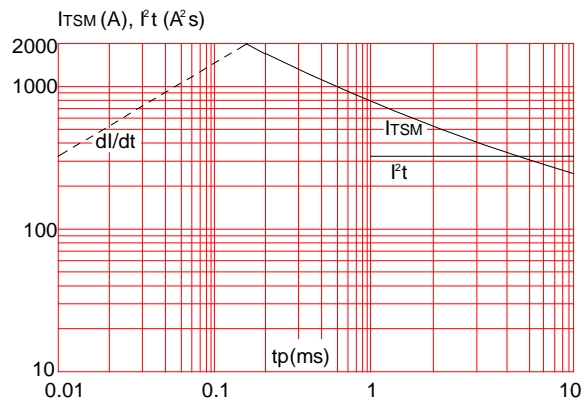
**FIG.1:** Maximum power dissipation versus RMS on-state current



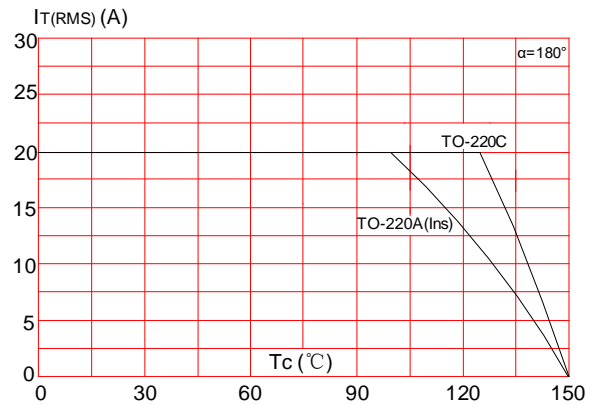
**FIG.3:** Surge peak on-state current versus number of cycles



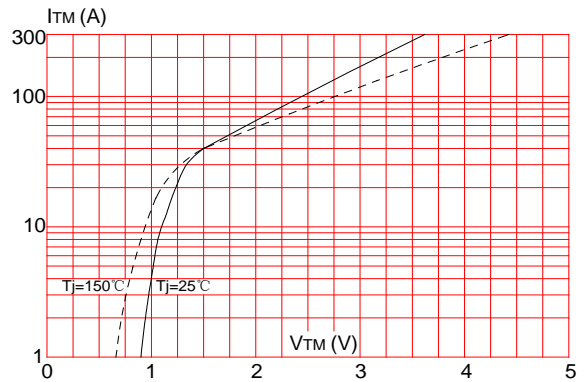
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $\int i^2 t$  ( $di/dt < 125\text{A}/\mu\text{s}$ )



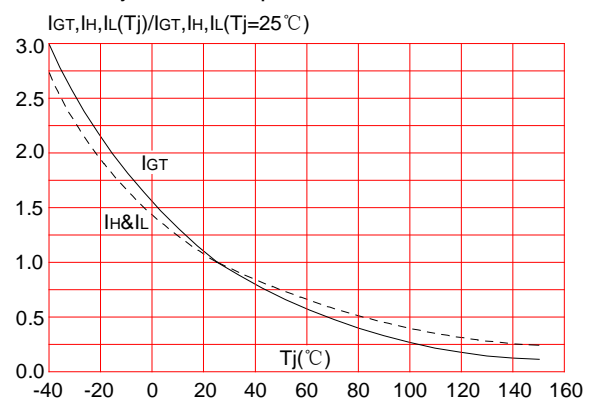
**FIG.2:** RMS on-state current versus case temperature



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



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



**ORDERING INFORMATION**

Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT620A-FO	600	3~8	TO-220A(Ins)	50	Tube
JCT620C-FO			TO-220C		

**Document Revision History**

Date	Revision	Changes
Jun 21, 2022	1	Last update
Sept 5, 2022	1.1	Add $I_{T(AV)}$