

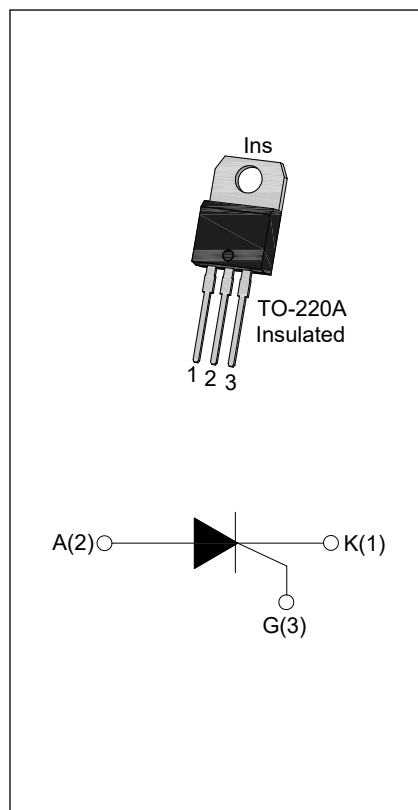


DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT612A-FO of silicon controlled rectifiers 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, JCT612A-FO provides a rated insulation voltage of 2500 V_{RMS}, complying with UL standards (File ref: E252906). Package TO-220A is RoHS compliant. (2011/65/EU)

MAIN FEATURES

Symbol	JCT612A-FO
V _{DRM} / V _{RPM}	600V
I _{T(RMS)}	12A
I _{GT}	3~6mA



ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T _{stg}	-40-150	°C
Operating junction temperature range		T _j	-40-150	°C
Repetitive peak off-state voltage(T _j =150°C)		V _{DRM}	600	V
Repetitive peak reverse voltage(T _j =150°C)		V _{RPM}	600	V
RMS on-state current	TO-220A(Ins) (T _c =110°C)	I _{T(RMS)}	12	A
Average on-state current	TO-220A(Ins) (T _c =110°C)	I _{T(AV)}	8	A
Non repetitive surge peak on-state current (tp=10ms)		I _{TSM}	140	A
I ² t value for fusing (tp=10ms)		I ² t	98	A ² s
Critical rate of rise of on-state current (I _G =2 × I _{GT})		di/dt	100	A/μs
Peak gate current		I _{GM}	4	A

Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	5	W
Peak pulse voltage ($T_j=25^{\circ}C$; non-repetitive, off-state; FIG.7)	V_{pp}	0.6	kV

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12V R_L=33\Omega$	3	-	6	mA
V_{GT}		-	-	1.5	V
V_{GD}	$V_D=V_{DRM} T_j=150^{\circ}C R_L=3.3K\Omega$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	60	mA
I_H	$I_T=500mA$	-	-	50	mA
dv/dt	$V_D=2/3V_{DRM}$ Gate Open $T_j=150^{\circ}C$	300	-	-	V/ μs
t_{on}	$I_G=20mA I_A=200mA I_R=20mA$ $T_j=25^{\circ}C$	-	-	4	μs
t_{off}		-	-	12	μs

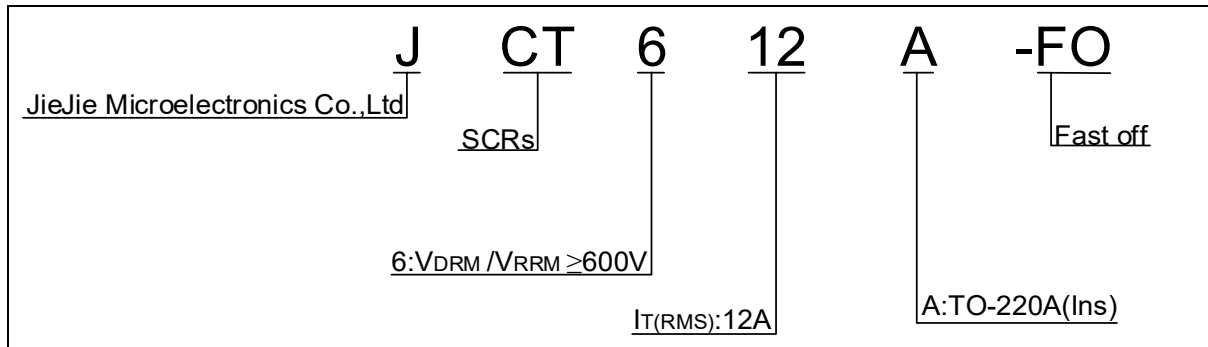
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM}=23A t_p=380\mu s$	$T_j=25^{\circ}C$	1.4	V
V_{TO}	Threshold voltage	$T_j=150^{\circ}C$	0.9	V
R_d	Dynamic resistance	$T_j=150^{\circ}C$	22.4	m Ω
I_{DRM}/I_{RRM}	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}C$	5	μA
		$T_j=150^{\circ}C$	1	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	2.7	$^{\circ}C/W$

ORDERING INFORMATION



MARKING

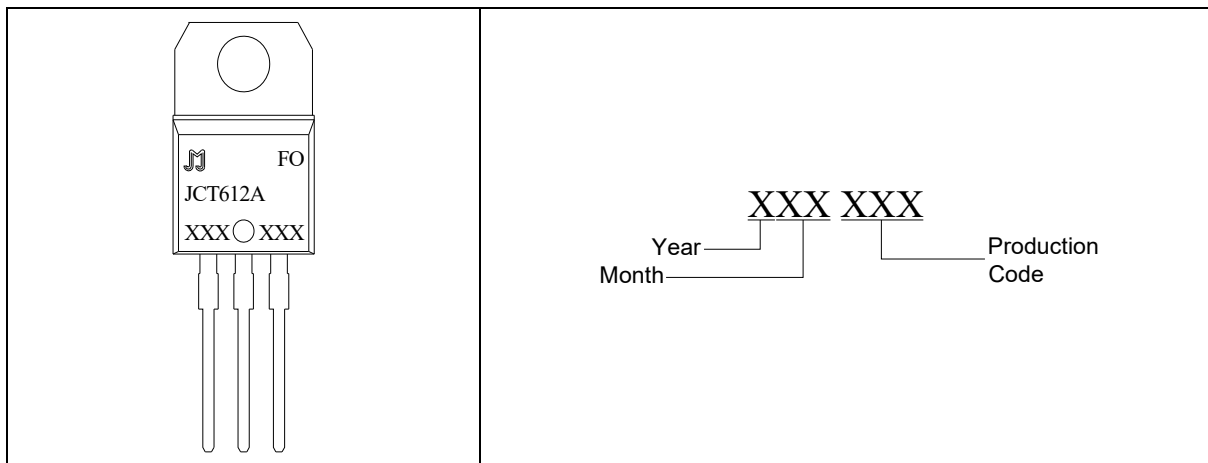


FIG.1: Maximum power dissipation versus RMS on-state current

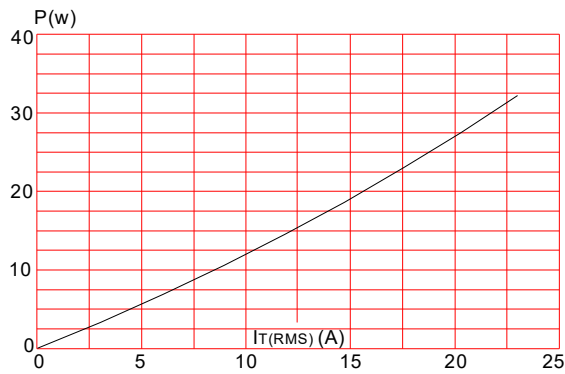


FIG.3: Surge peak on-state current versus number of cycles

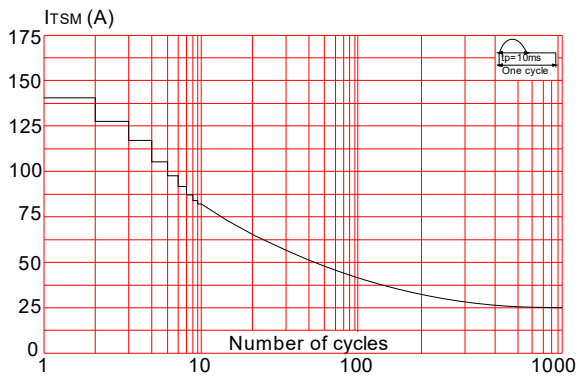


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of $f \cdot t$ ($di/dt < 100\text{A}/\mu\text{s}$)

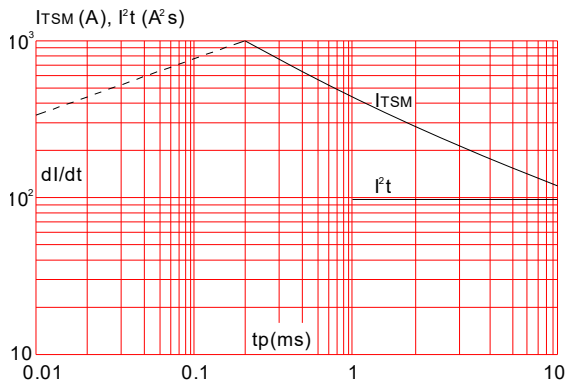


FIG.2: RMS on-state current versus case temperature

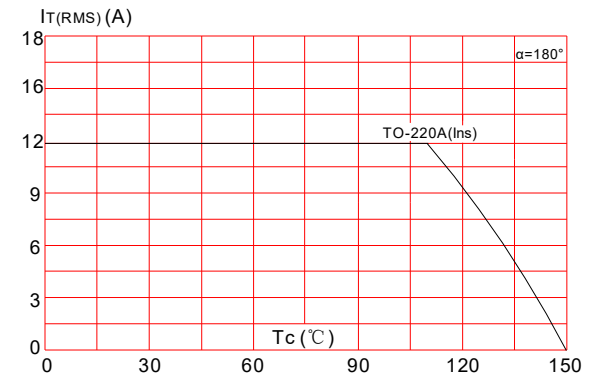


FIG.4: On-state characteristics (maximum values)

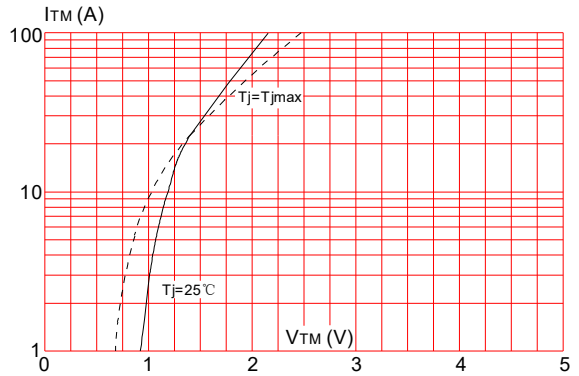


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

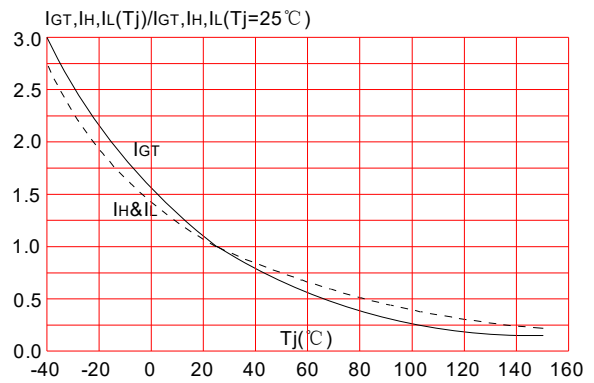
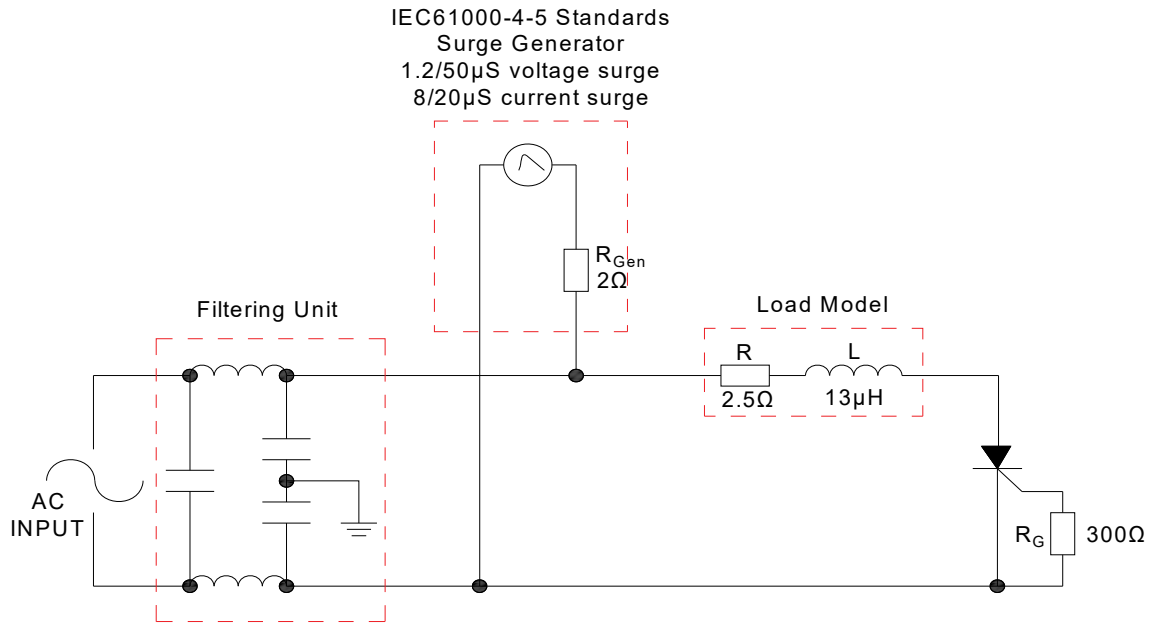


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



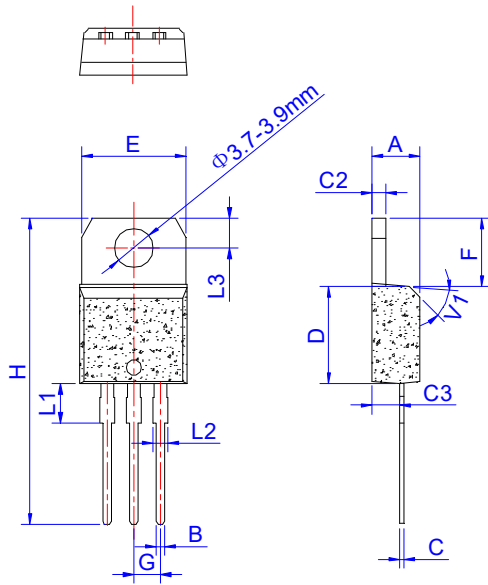
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT612A-FO	600	3~6	TO-220A	50	Tube

Document Revision History

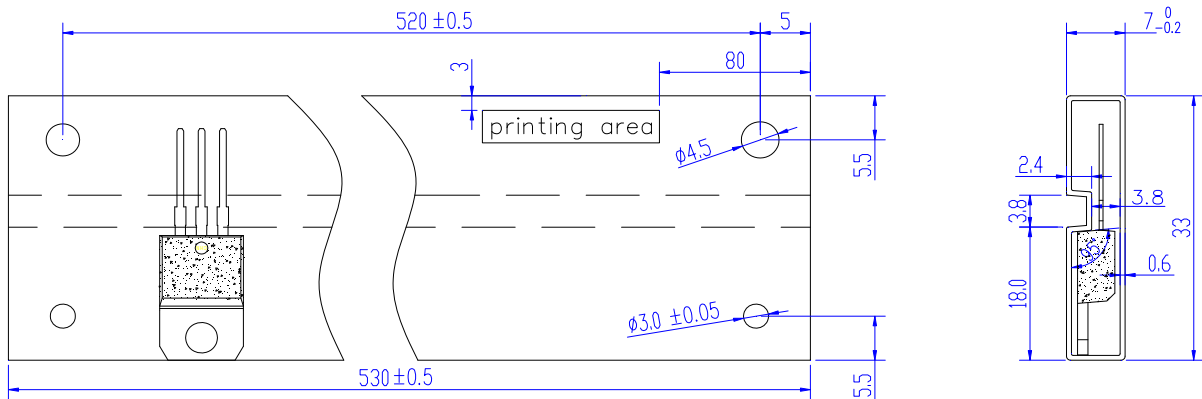
Date	Revision	Changes
Jun 21, 2022	1	Last update
Sept 5, 2022	1.1	Add $I_{T(AV)}$

PACKAGE MECHANICAL DATA



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	6.25		6.85	0.246		0.270
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	3.45		4.05	0.136		0.159
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	5,000



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