



JCT612A 12A SCR

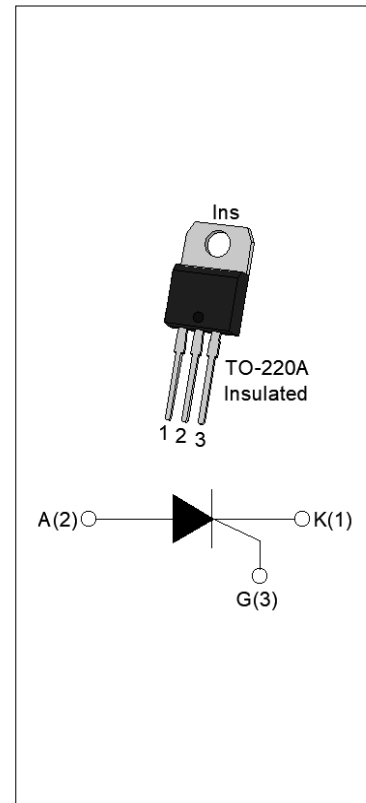
Rev.A.1.1

DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT612A of silicon controlled rectifiers provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. From all three terminals to external heatsink, JCT612A provides a rated insulation voltage of 2500 V_{RMS} , complying with UL standards (File ref: E252906). Package TO-220A is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600	V
I_{GT}	≤ 15	mA



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	$^{\circ}C$
Operating junction temperature range	T_j	-40-125	$^{\circ}C$
Repetitive peak off-state voltage ($T_j=25^{\circ}C$)	V_{DRM}	600	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	600	V
Average on-state current ($T_c \leq 89^{\circ}C$)	$I_{T(AV)}$	7.6	A
RMS on-state current ($T_c \leq 89^{\circ}C$)	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current ($t_p=10ms, T_j=25^{\circ}C$)	I_{TSM}	140	A
Non repetitive surge peak on-state current ($t_p=8.3ms, T_j=25^{\circ}C$)		154	
I^2t value for fusing ($t_p=10ms, T_j=25^{\circ}C$)	I^2t	98	A^2s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}, f=100Hz, T_j=125^{\circ}C$)	di/dt	150	$A/\mu s$

Peak gate current ($t_p=20\mu s$, $T_j=125^\circ C$)	I_{GM}	4	A
Average gate power dissipation ($T_j=125^\circ C$)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	10	W
Peak pulse voltage ($T_j=25^\circ C$; non-repetitive, off-state; FIG.7)	V_{pp}	0.5	kV

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12V$ $R_L=33\Omega$	-	-	15	mA
V_{GT}		-	-	1	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^\circ C$ $R_L=3.3k\Omega$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	60	mA
I_H	$I_T=500mA$	-	-	50	mA
dV/dt	$V_D=400V$ Gate Open $T_j=125^\circ C$	700	-	-	V/ μs
t_{on}	$I_G=20mA$ $I_A=200mA$ $I_R=20mA$ $T_j=25^\circ C$	-	5	-	μs
t_{off}		-	80	-	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=24A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.5	V
V_{TO}	Threshold voltage	$T_j=125^\circ C$	0.8	V
R_D	Dynamic resistance	$T_j=125^\circ C$	27	m Ω
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	5	μA
I_{RRM}		$T_j=125^\circ C$	0.2	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	2.3	$^\circ C/W$
$R_{th(j-a)}$	junction to ambient (DC)	65	$^\circ C/W$

ORDERING INFORMATION

<u>J</u>	<u>CT</u>	<u>6</u>	<u>12</u>	<u>A</u>
JieJie Microelectronics Co., Ltd.	SCRs	$6: V_{DRM} / V_{RRM} \geq 600V$	$I_T(RMS): 12A$	A: TO-220A(Ins)

MARKING

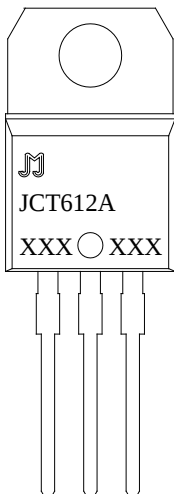
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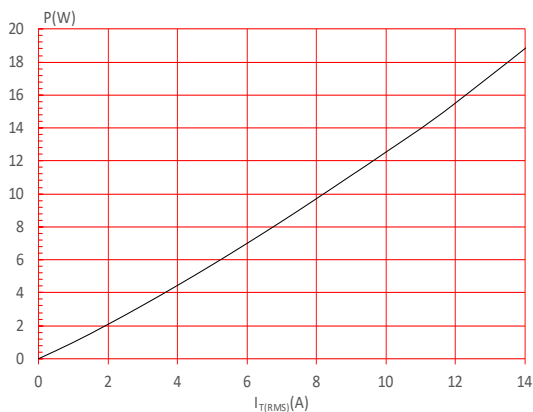
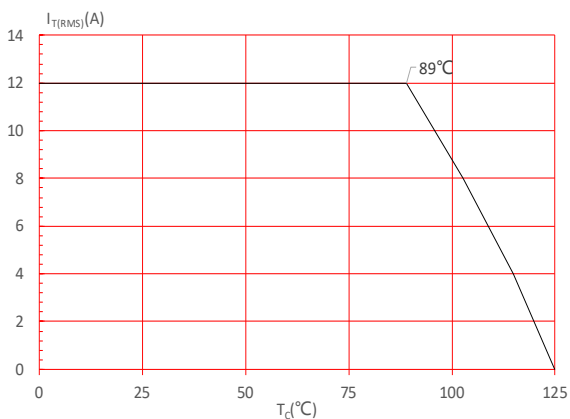
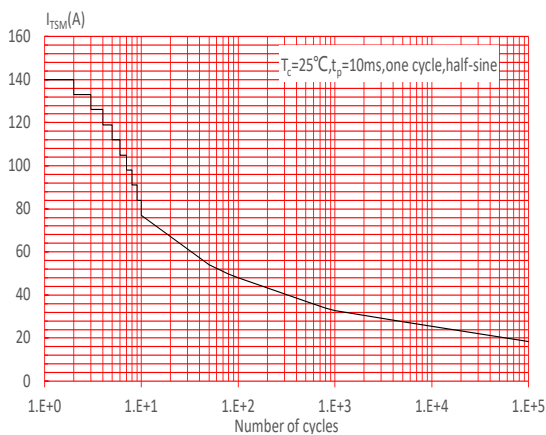
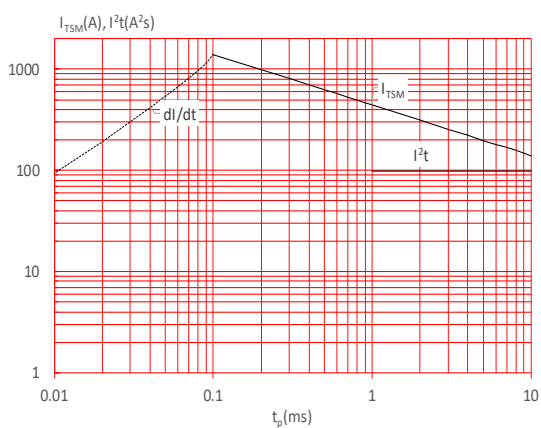
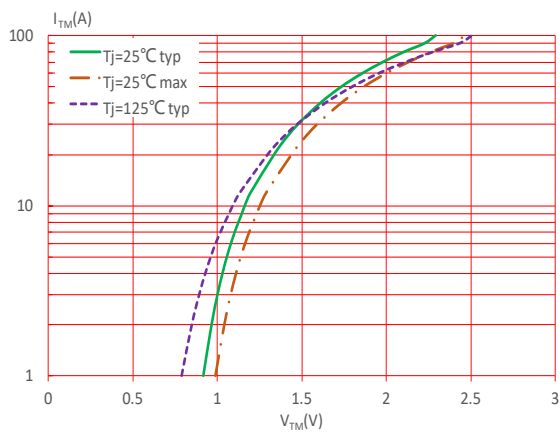
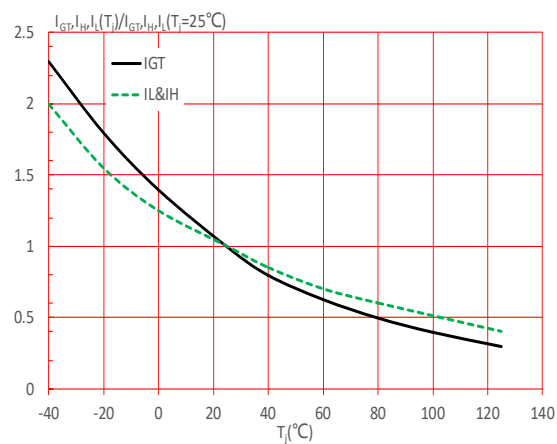
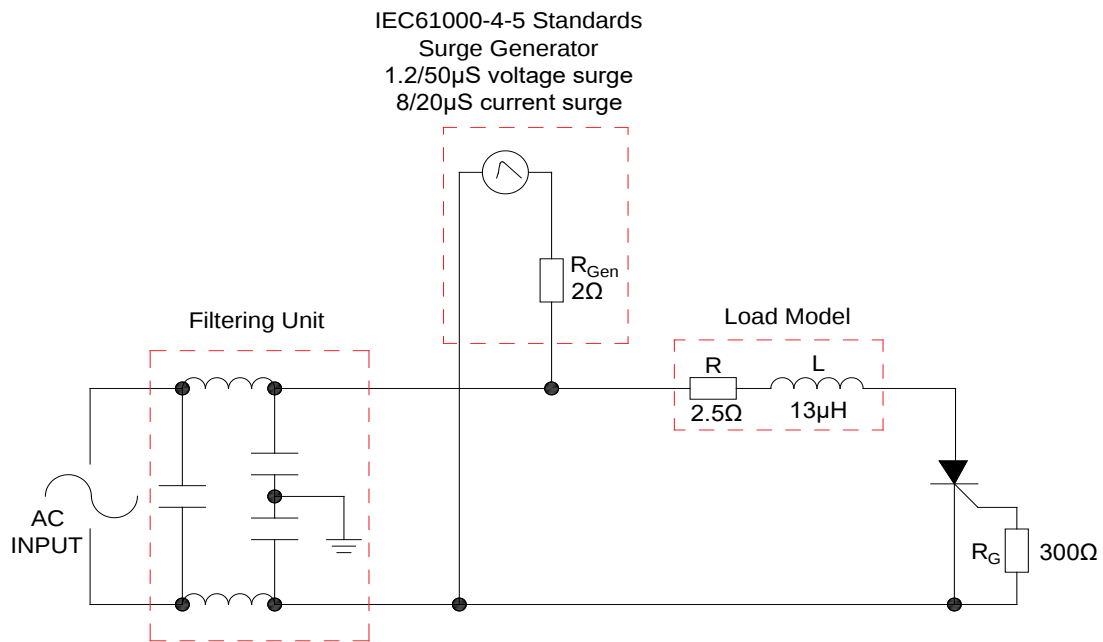
FIG.1: Maximum power dissipation versus RMS on-state current**FIG.2:** RMS on-state current versus case temperature**FIG.3:** Surge peak on-state current versus number of cycles**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t ($di/dt < 150A/\mu s$)**FIG.4:** On-state characteristics**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.



LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package” released by JieJie Microelectronics

ORDERING INFORMATION

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT612A	600	15	TO-220A(Ins)	50	Tube

Document Revision History

Date	Revision	Changes
Apr.13, 2023	A.1.0	Last update
Oct.10, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

Technical drawing of a 4-pin DIN connector. The drawing includes a top view, a front view, and a side view. Dimensions are indicated by blue lines and labels: E (total width), I (width of the top flange), L3 (height of the top flange), L2 (height of the main body), J (height of the main body), K (height of the base), B (width of the base), G (width of the base), H1 (height of the base), E1 (width of the base), A (width of the side flange), C2 (height of the side flange), D (height of the main body), C3 (height of the main body), C (width of the main body), F (height of the main body), and a hole diameter of $\Phi 3.7-3.9\text{mm}$.

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		10.40	0.386		0.409
E1	1.00		1.40	0.039		0.055
F	6.25		6.85	0.246		0.270
G	2.40		2.70	0.094		0.106
H	28.00		29.80	1.102		1.173
H1	1.80		2.20	0.071		0.087
I	4.80		5.20	0.189		0.205
J	9.55		9.95	0.376		0.392
K	4.80		5.20	0.189		0.205
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°	

Technical drawing of a 3D printed part, showing three views: top, front, and side. The dimensions are as follows:

- Top View:**
 - Overall width: 520 ± 0.5
 - Overall height: 530 ± 0.5
 - Distance from left edge to center of circular feature: 5
 - Distance from top edge to center of circular feature: 80
 - Radius of circular feature: $\phi 4.5$
 - Distance from center of circular feature to right edge: 5.5
 - Distance from center of circular feature to bottom edge: 5.5
 - Distance from left edge to center of circular feature: 3
 - Label: "printing area"
- Front View:**
 - Overall width: 520 ± 0.5
 - Overall height: 530 ± 0.5
 - Distance from left edge to center of circular feature: 5
 - Distance from top edge to center of circular feature: 80
 - Radius of circular feature: $\phi 4.5$
 - Distance from center of circular feature to right edge: 5.5
 - Distance from center of circular feature to bottom edge: 5.5
 - Distance from left edge to center of circular feature: 3
 - Label: "printing area"
- Side View:**
 - Overall width: 7 ± 0.2
 - Overall height: 33
 - Distance from top edge to center of circular feature: 2.4
 - Distance from center of circular feature to right edge: 3.8
 - Distance from center of circular feature to bottom edge: 0.6
 - Distance from left edge to center of circular feature: 3.8
 - Distance from center of circular feature to bottom edge: 180
 - Radius of circular feature: $\phi 3.0 \pm 0.05$

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

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