

JST12A-1000C 12A TRIAC

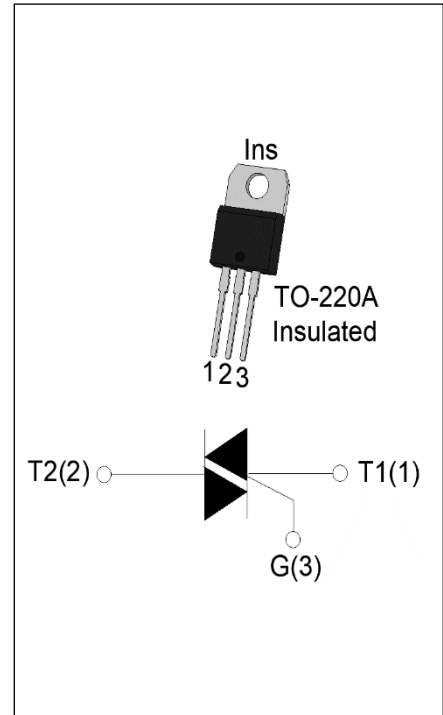
Rev.A.1.1

DESCRIPTION:

The JST12A-1000C triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers. By using an internal ceramic pad, JST12A-1000C provides a rated insulation voltage of 2500 VRMS, 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}	1000	V
$I_{GT\ I / II / III / IV}$	25/25/25/50	mA


ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T _{stg}	-40-150	℃
Operating junction temperature range		T _j	-40-125	℃
Repetitive peak off-state voltage (T _j =25℃)		V _{DRM}	1000	V
Repetitive peak reverse voltage (T _j =25℃)		V _{RRM}	1000	V
RMS on-state current (T _c ≤87℃)		I _{T(RMS)}	12	A
Non repetitive surge peak on-state current (full cycle , t _p =20ms , T _j =25℃)		I _{TSM}	120	A
Non repetitive surge peak on-state current (full cycle , t _p =16.6ms , T _j =25℃)			132	
I ² t value for fusing (t _p =10ms , T _j =25℃)		I ² t	72	A ² s
Critical rate of rise of on-state current (I _G =2×I _{GT} , f=100Hz , T _j =125℃)	I - II	di/dt	80	A/μs
	III-IV		40	
Peak gate current (t _p =20μs , T _j =125℃)		I _{GM}	4	A
Average gate power dissipation (T _j =125℃)		P _{G(AV)}	0.5	W
Peak gate power		P _{GM}	10	W

Peak pulse voltage ($T_j=25^{\circ}\text{C}$; non-repetitive, off-state; FIG.7)	V_{pp}	1	kV
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ELECTRICAL CHARACTERISTICS ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Condition	Quadrant	Value		Unit
I_{GT}	$V_D=12\text{V}$ $R_L=33\Omega$	I - II - III	MAX.	25	mA
		IV		50	
V_{GT}		ALL	MAX.	1	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$ $R_L=3.3\text{k}\Omega$	ALL	MIN.	0.2	V
I_L	$I_G=1.2I_{GT}$	I - III - IV	MAX.	40	mA
		II		90	
I_H	$I_T=500\text{mA}$		MAX.	30	mA
dV/dt	$V_D=670\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$		MIN.	300	V/ μs
$(dV/dt)_c$	$(dI/dt)_c=5.3\text{A/ms}$, $T_j=125^{\circ}\text{C}$		MIN.	6	V/ μs
t_{on}	$I_G=80\text{mA}$ $I_A=400\text{mA}$ $I_R=40\text{mA}$ $T_j=25^{\circ}\text{C}$		TYP.	5	μs
t_{off}				50	

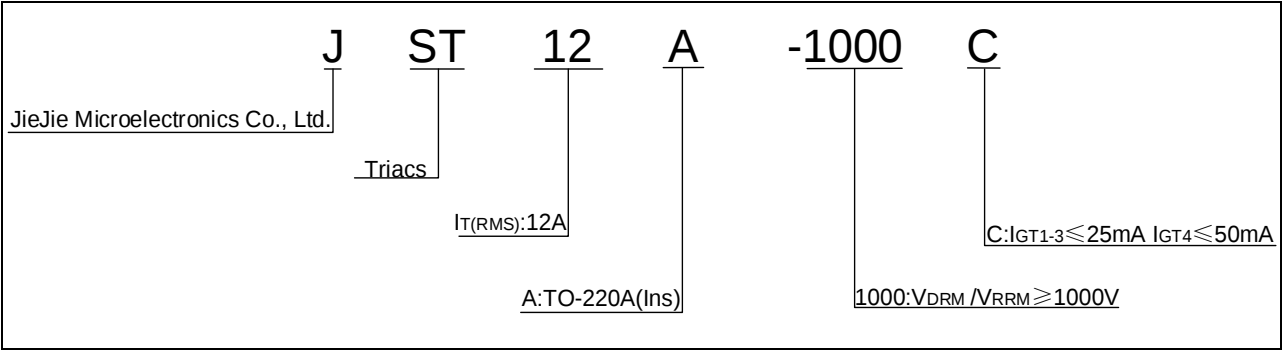
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=17\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.77	V
R_D	Dynamic resistance	$T_j=125^{\circ}\text{C}$	35	$\text{m}\Omega$
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	1	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	2.3	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	junction to ambient (AC)	60	$^{\circ}\text{C/W}$

ORDERING INFORMATION



MARKING

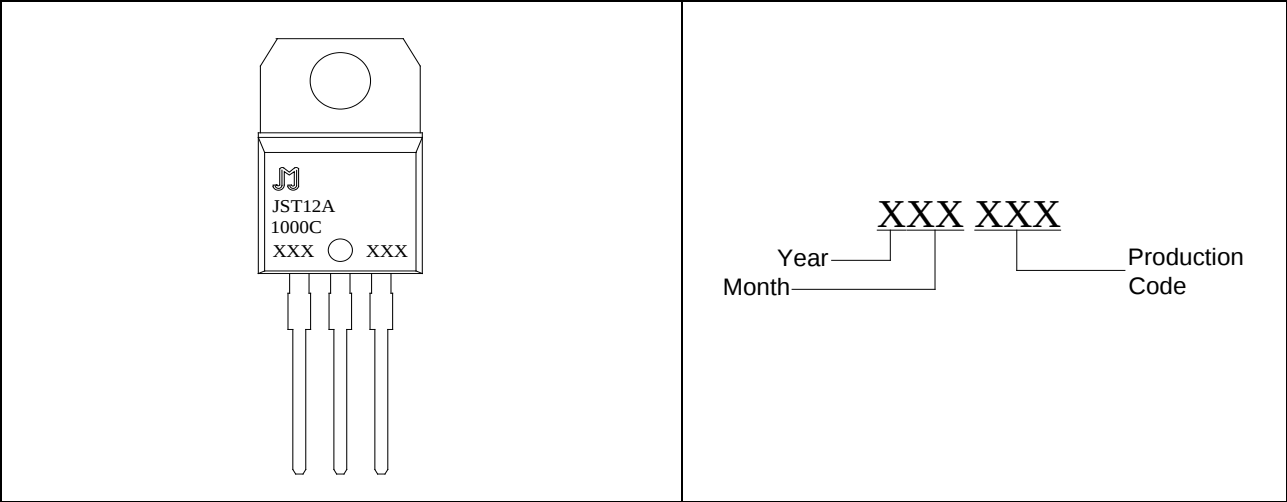


FIG.1: Maximum power dissipation versus RMS on-state current

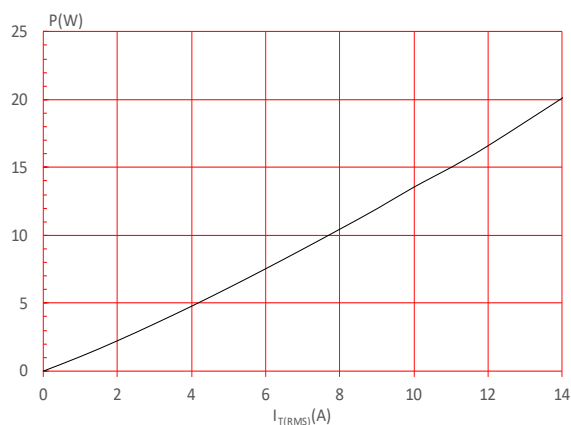


FIG.2: RMS on-state current versus case temperature

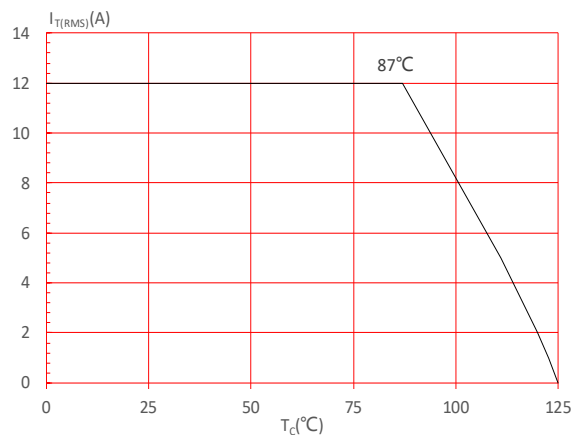


FIG.3: Surge peak on-state current versus number of cycles

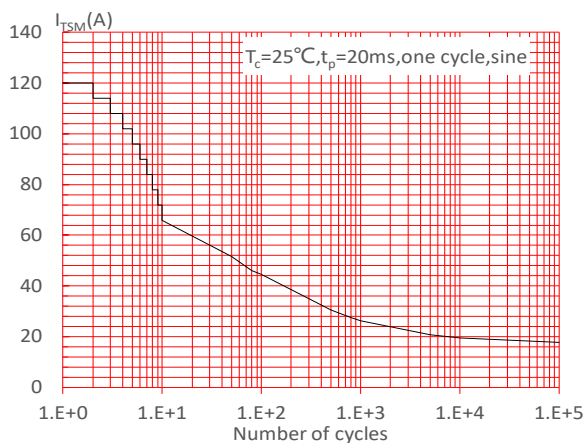


FIG.4: On-state characteristics

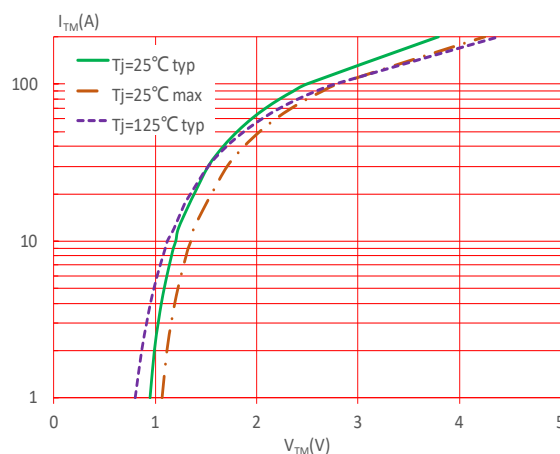


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t (I - II: $di/dt < 80\text{A}/\mu\text{s}$; III-IV: $di/dt < 40\text{A}/\mu\text{s}$)

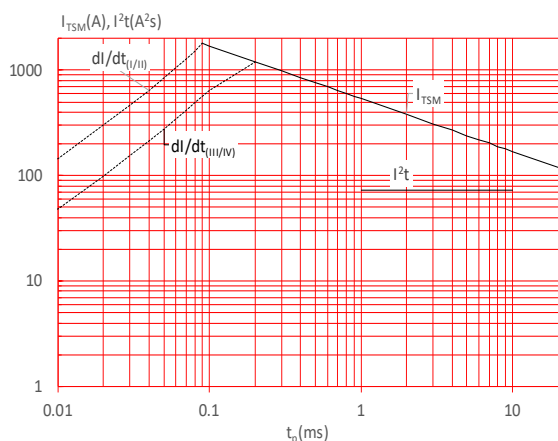


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

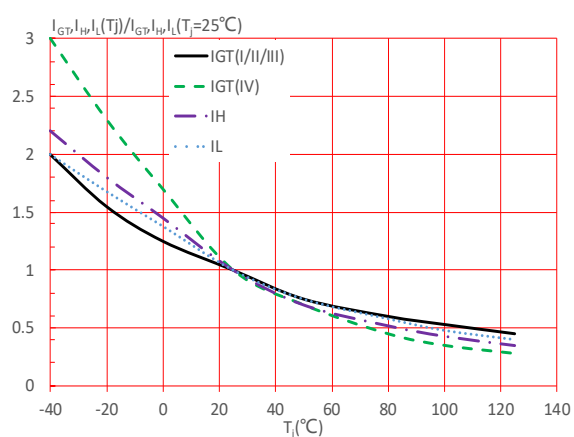
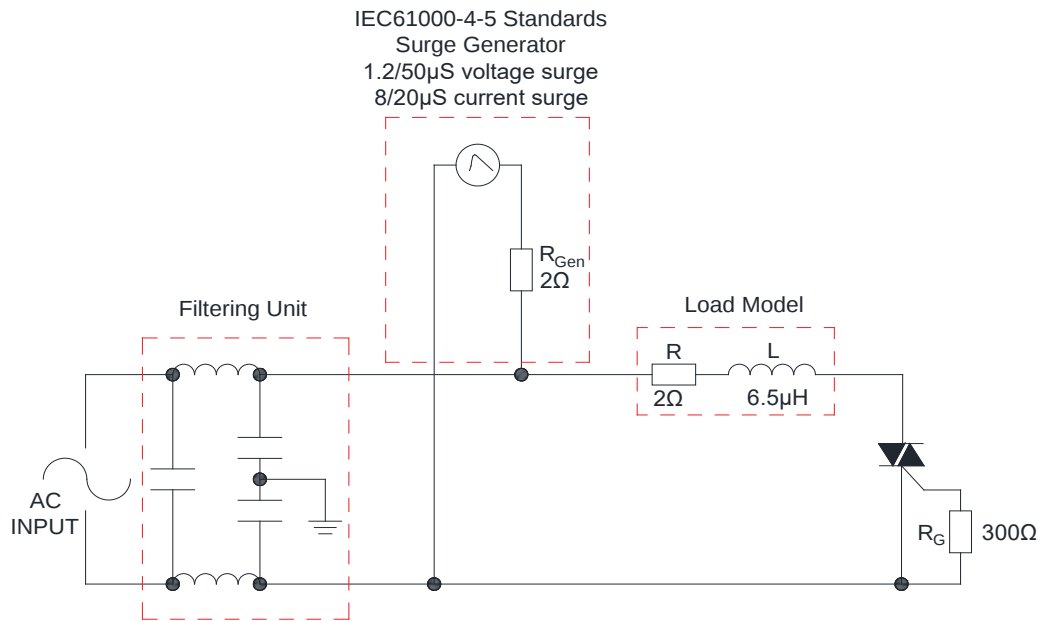


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



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
		I - II - III	IV			
JST12A-1000C	1000	25	50	TO-220A(Ins)	50	Tube

Document Revision History

Date	Revision	Changes
May 17, 2023	A.1.0	Last updated
Oct.13, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

Technical drawing of a 3-pin connector. The drawing includes a top view, a side view, and a front view. Dimensions are labeled as follows:

- Top View:** Shows a rectangular connector with three pins. Dimensions include E (total width), $L3$ (height of the top section), and a hole diameter of $\text{Ø}3.7-3.9\text{mm}$.
- Side View:** Shows the profile of the connector. Dimensions include A (width of the top section), $C2$ (width of the middle section), E (height of the middle section), D (height of the bottom section), $V1$ (fillet radius), $C3$ (width of the bottom section), and C (width of the pins).
- Front View:** Shows the connector from the front. Dimensions include H (total height), $L1$ (height of the top section), J (height of the middle section), $L2$ (width of the pins), B (width of the bottom section), K (width of the pins), G (width of the bottom section), and $E1$ (width of the top section).

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

- Top View:**
 - Overall width: 520 ± 0.5
 - Overall height: 530 ± 0.5
 - Distance from left edge to center of hole: 5
 - Distance from center of hole to right edge: 80
 - Radius of hole: $\phi 4.5$
 - Distance from center of hole to bottom edge: 5.5
 - Distance from left edge to center of hole: 3
 - Label: "printing area"
- Front View:**
 - Overall width: 530 ± 0.5
 - Overall height: 5.5
 - Distance from center of hole to bottom edge: $\phi 3.0 \pm 0.05$
- Side View:**
 - Overall width: $7.0_{-0.2}^0$
 - Overall height: 33
 - Distance from top edge to center of hole: 2.4
 - Distance from center of hole to bottom edge: 3.8
 - Distance from center of hole to right edge: 0.6
 - Distance from top edge to bottom edge: 18.0

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