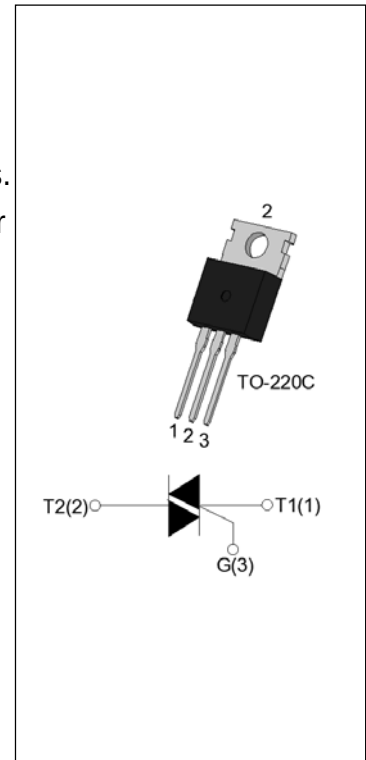


JST12C-800SW 12A TRIAC

Rev.A.1.1

DESCRIPTION:

The JST12C-800SW 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. JST12C-800SW snubberless triac is especially recommended for use on inductive loads. It can be driven directly through the MCU I/O port. From T2 terminals to external heatsink. Package TO-220C is RoHS compliant.


MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	800	V
$I_{GT\ I/II/III}$	10/10/10	mA

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	°C
Operating junction temperature range	T_j	-40-125	°C
Repetitive peak off-state voltage ($T_j=25^{\circ}C$)	V_{DRM}	800	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	800	V
RMS on-state current ($T_c \leq 103^{\circ}C$)	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current (full cycle , $t_p=20ms$, $T_j=25^{\circ}C$)	I_{TSM}	120	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6ms$, $T_j=25^{\circ}C$)		132	
I^2t value for fusing ($t_p=10ms$, $T_j=25^{\circ}C$)	I^2t	72	A ² s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$, $f=100Hz$, $T_j=125^{\circ}C$)	di/dt	50	A/ μs
Peak gate current ($t_p=20\mu s$, $T_j=125^{\circ}C$)	I_{GM}	4	A
Average gate power dissipation ($T_j=125^{\circ}C$)	$P_{G(AV)}$	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}	4	kV
--	----------	---	----

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.	10	mA
V_{GT}		I - II -III	MAX.	1	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$ $R_L=3.3\text{k}\Omega$	I - II -III	MIN.	0.2	V
I_L	$I_G=1.2I_{GT}$	I -III	MAX.	25	mA
		II		30	
I_H	$I_T=500\text{mA}$		MAX.	15	mA
dV/dt	$V_D=540\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$		MIN.	400	V/ μs
$(dI/dt)_c$	$(dV/dt)_c=10\text{V}/\mu\text{s}$ $T_j=125^{\circ}\text{C}$		MIN.	3	A/ms
t_{on}	$I_G=20\text{mA}$ $I_A=200\text{mA}$ $I_R=20\text{mA}$ $T_j=25^{\circ}\text{C}$		TYP.	2.5	μs
t_{off}				25	

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}		$T_j=125^{\circ}\text{C}$	0.5	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	1.3	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (AC)	60	$^{\circ}\text{C}/\text{W}$

ORDERING INFORMATION

<u>J</u>	<u>ST</u>	<u>12</u>	<u>C</u>	<u>-800</u>	<u>SW</u>
JieJie Microelectronics Co., Ltd.	Triacs				
	<u>IT(RMS):12A</u>				
		<u>C:TO-220C</u>			
					<u>SW:IGT1-3≤10mA</u>
				<u>800:VDRM /VRRM≥800V</u>	

MARKING

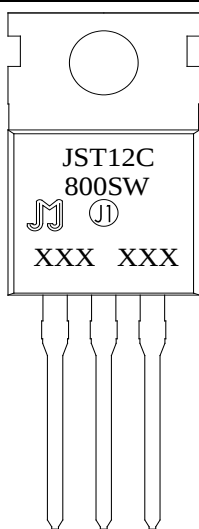
 Diagram showing the marking on the JST12C-800SW component. The marking includes the part number JST12C 800SW, the JieJie logo, a circled J, and two sets of XXX.	XXX XXX Year Month Production Code
---	---

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

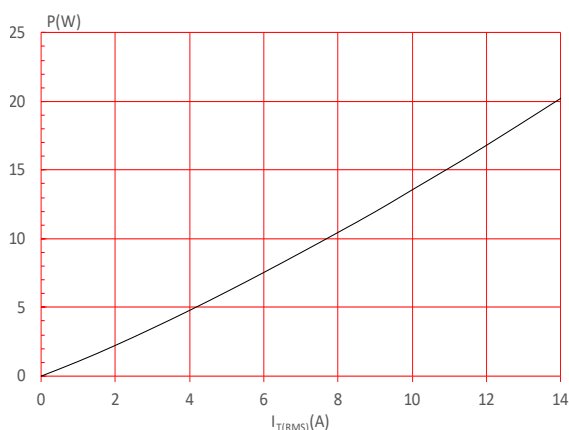


FIG.3: Surge peak on-state current versus number of cycles

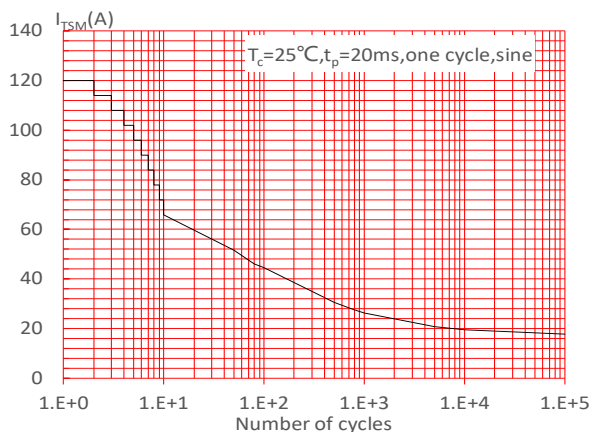


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($dI/dt < 50\text{A}/\mu\text{s}$)

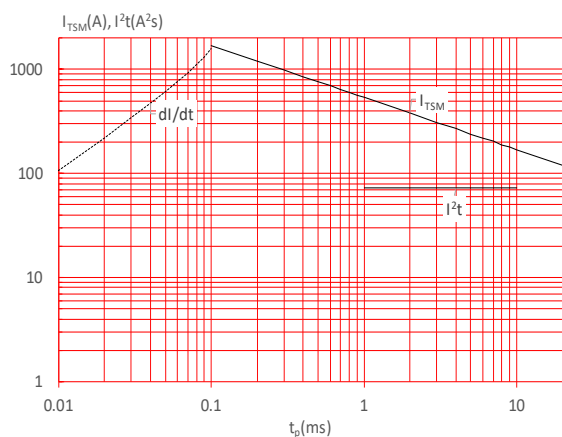


FIG.2: RMS on-state current versus case temperature

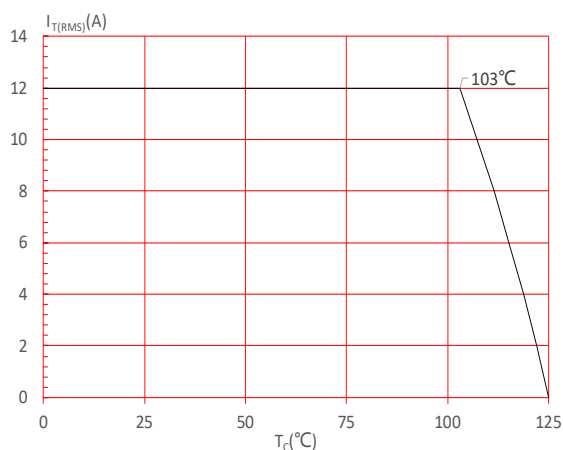


FIG.4: On-state characteristics

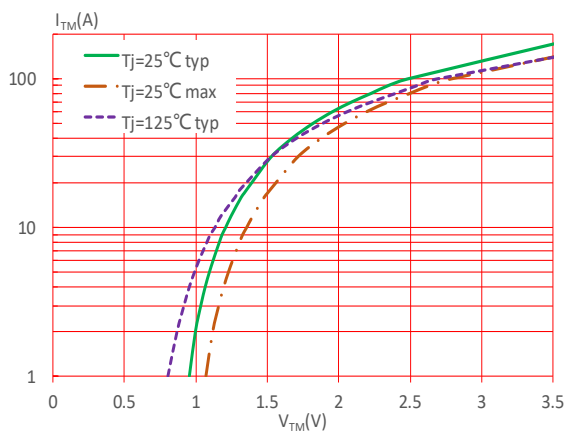


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

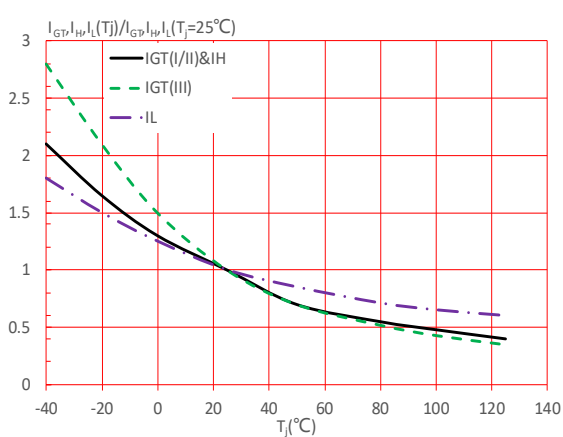
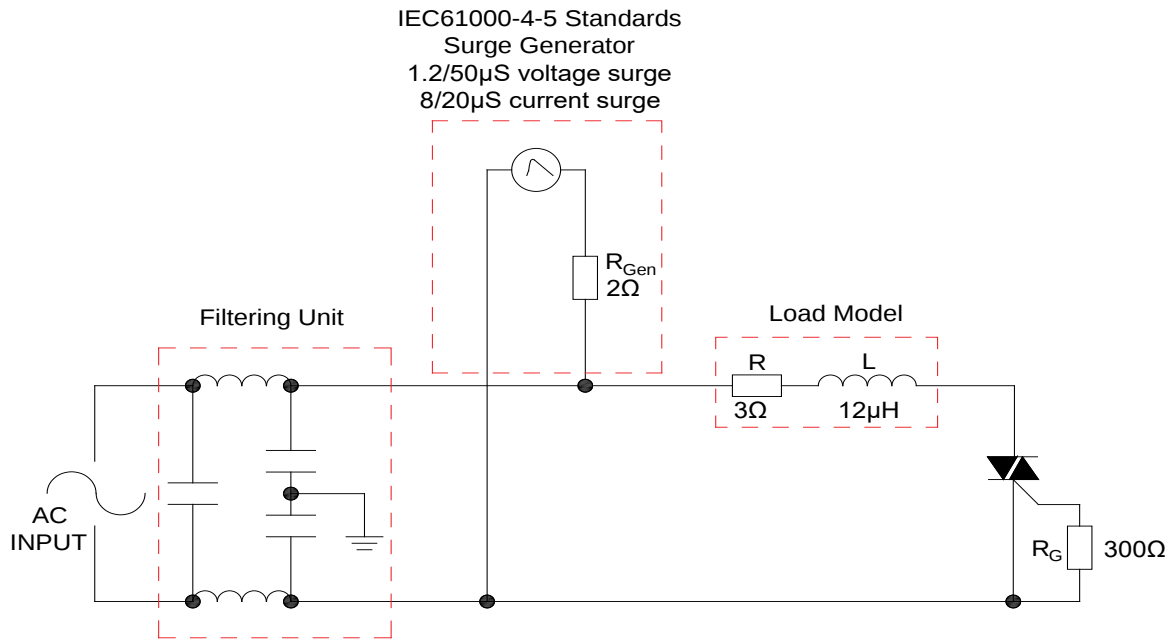


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



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
		I - II - III			
JST12C-800SW	800	10	TO-220C	50	Tube

Document Revision History

Date	Revision	Changes
Apr.11, 2023	A.1.0	Last updated
Oct.15, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

Technical drawing of a 3-pin connector, showing three views: a top view, a side view, and a front view. The top view shows a rectangular body with a circular hole in the center, a width dimension E , and a height dimension H . A dimension $L3$ indicates the distance from the top edge to the center of the hole. A dimension I indicates the distance from the left edge to the center of the hole. A dimension $L1$ indicates the distance from the top edge to the top of the pins. A dimension K indicates the distance from the top of the pins to the bottom of the body. A dimension G indicates the distance from the left edge to the center of the pins. A dimension M indicates the distance from the right edge to the center of the pins. A dimension B indicates the width of the pins. A dimension $L2$ indicates the length of the pins. A dimension A indicates the width of the body. A dimension $C2$ indicates the distance from the left edge to the center of the pins. A dimension D indicates the distance from the top of the pins to the bottom of the body. A dimension $C3$ indicates the distance from the right edge to the center of the pins. A dimension C indicates the width of the pins. A dimension $E1$ indicates the distance from the left edge to the center of the pins. A dimension $H1$ indicates the height of the pins. A dimension $q3.45-3.65mm$ indicates the diameter of the pins.

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		10.30	0.390		0.406
E1	0.80		1.20	0.031		0.047
F	6.30		6.90	0.248		0.272
G	2.40		2.70	0.094		0.106
H	28.00		29.80	1.102		1.173
H1	2.15		2.55	0.085		0.100
I	4.70		5.10	0.185		0.201
K	9.90		10.30	0.390		0.406
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
M	4.80		5.20	0.189		0.205

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
 - Printing area: 80×5.5
 - Distance from left edge to printing area: $520 \pm 0.5 - 80 = 440$
 - Distance from top edge to printing area: $530 \pm 0.5 - 5.5 = 524.5$
 - Distance from right edge to printing area: 5
 - Distance from bottom edge to printing area: 5.5
 - Distance from left edge to bottom hole: $520 \pm 0.5 - 80 = 440$
 - Distance from top edge to bottom hole: $530 \pm 0.5 - 5.5 = 524.5$
 - Distance from right edge to bottom hole: 5
 - Distance from bottom edge to bottom hole: 5.5
 - Distance from left edge to top hole: $520 \pm 0.5 - 80 = 440$
 - Distance from top edge to top hole: $530 \pm 0.5 - 5.5 = 524.5$
 - Distance from right edge to top hole: 5
 - Distance from bottom edge to top hole: 5.5
- Front View:**
 - Overall width: 520 ± 0.5
 - Overall height: 530 ± 0.5
 - Printing area: 80×5.5
 - Distance from left edge to printing area: $520 \pm 0.5 - 80 = 440$
 - Distance from top edge to printing area: $530 \pm 0.5 - 5.5 = 524.5$
 - Distance from right edge to printing area: 5
 - Distance from bottom edge to printing area: 5.5
 - Distance from left edge to bottom hole: $520 \pm 0.5 - 80 = 440$
 - Distance from top edge to bottom hole: $530 \pm 0.5 - 5.5 = 524.5$
 - Distance from right edge to bottom hole: 5
 - Distance from bottom edge to bottom hole: 5.5
 - Distance from left edge to top hole: $520 \pm 0.5 - 80 = 440$
 - Distance from top edge to top hole: $530 \pm 0.5 - 5.5 = 524.5$
 - Distance from right edge to top hole: 5
 - Distance from bottom edge to top hole: 5.5
- Side View:**
 - Overall width: 7 ± 0.2
 - Overall height: 33
 - Distance from left edge to printing area: 2.4
 - Distance from top edge to printing area: 3.8
 - Distance from right edge to printing area: 3.8
 - Distance from bottom edge to printing area: 0.6
 - Distance from left edge to bottom hole: 2.4
 - Distance from top edge to bottom hole: 3.8
 - Distance from right edge to bottom hole: 3.8
 - Distance from bottom edge to bottom hole: 0.6
 - Distance from left edge to top hole: 2.4
 - Distance from top edge to top hole: 3.8
 - Distance from right edge to top hole: 3.8
 - Distance from bottom edge to top hole: 0.6

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

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co., Ltd. assumes no responsibility for the consequences of use without consideration for such information nor use beyond it. Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.

Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.



is a registered trademark of Jiangsu JieJie Microelectronics Co., Ltd.

Copyright © 2025 Jiangsu JieJie Microelectronics Co., Ltd. All rights reserved.