

JST139C-600F 16A TRIAC

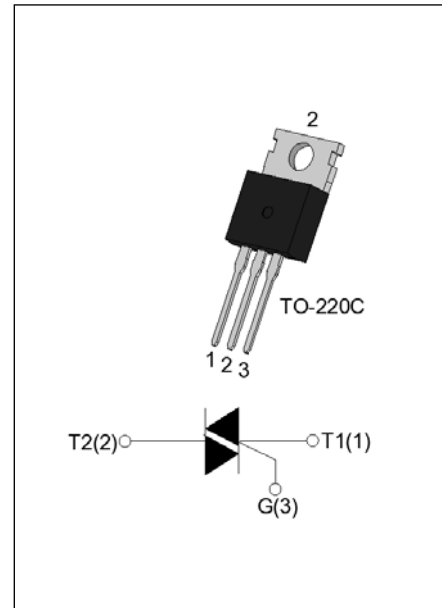
Rev.A.1.1

DESCRIPTION:

The JST139C-600F 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. From T2 terminals to external heatsink. Package TO-220C is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	16	A
V_{DRM}/V_{RRM}	600	V
$I_{GT\ I/II/III/IV}$	25/25/25/70	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}	600	V
Repetitive peak reverse voltage (T _j =25℃)		V _{RRM}	600	V
RMS on-state current (T _c ≤95℃)		I _{T(RMS)}	16	A
Non repetitive surge peak on-state current (full cycle , t _p =20ms , T _j =25℃)		I _{TSM}	140	A
Non repetitive surge peak on-state current (full cycle , t _p =16.6ms , T _j =25℃)			154	
I ² t value for fusing (t _p =10ms , T _j =25℃)		I ² t	98	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	100	A/μs
	III-IV		70	
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℃; non-repetitive,off-state;FIG.7)		V _{pp}	1	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.	25	mA
		IV		70	
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.	50	mA
		II		100	
I_H	$I_T=500\text{mA}$		MAX.	40	mA
dV/dt	$V_D=400\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$		MIN.	250	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	$(dI/dt)_c=7.2\text{A/ms}$, $T_j=110^{\circ}\text{C}$		MIN.	10	$\text{V}/\mu\text{s}$
t_{on}	$I_G=80\text{mA } I_A=400\text{mA } I_R=40\text{mA}$ $T_j=25^{\circ}\text{C}$		TYP.	10	μs
t_{off}				70	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=20\text{A } t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.75	V
R_D	Dynamic resistance	$T_j=125^{\circ}\text{C}$	27	$\text{m}\Omega$
I_{DRM}	$V_D=V_{DRM} \ V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	0.4	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

J	ST	139	C	-600	F
JieJie Microelectronics Co., Ltd.	Triacs	$I_{T(RMS)}:16A$	C:TO-220C	$600:V_{DRM}/V_{RRM} \geq 600V$	F: $I_{GT1-3} \leq 25mA$ $I_{GT4} \leq 70mA$

MARKING

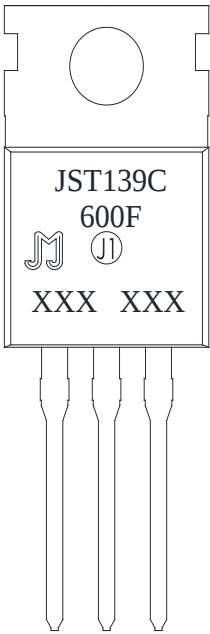
 Diagram showing the marking on the JST139C-600F triac package. The marking includes the part number JST139C, 600F, the JieJie logo (J), a circled J, and two XXX XXX codes.	XXX XXX Year _____ Month _____ Production Code
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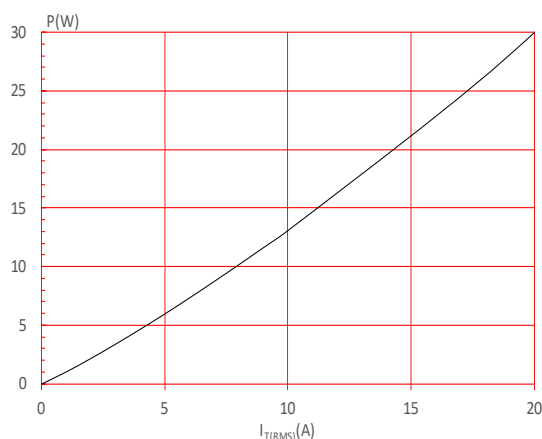
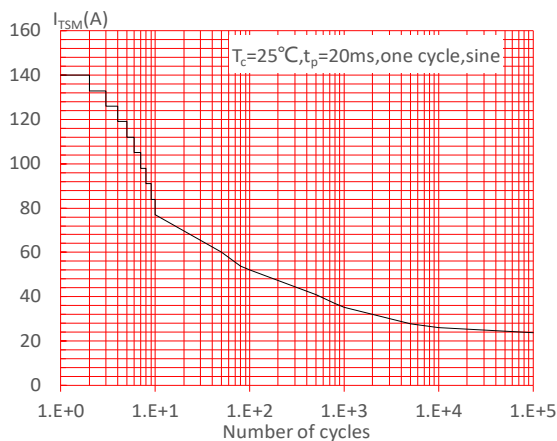
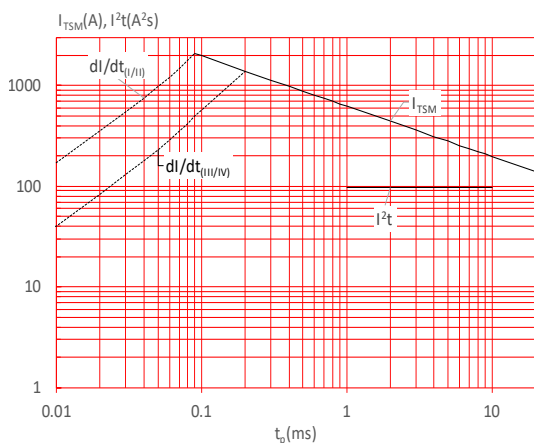
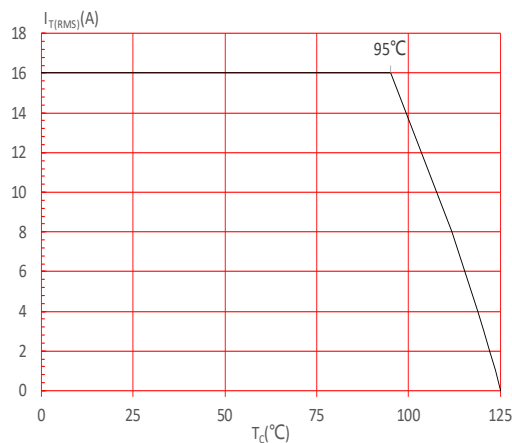
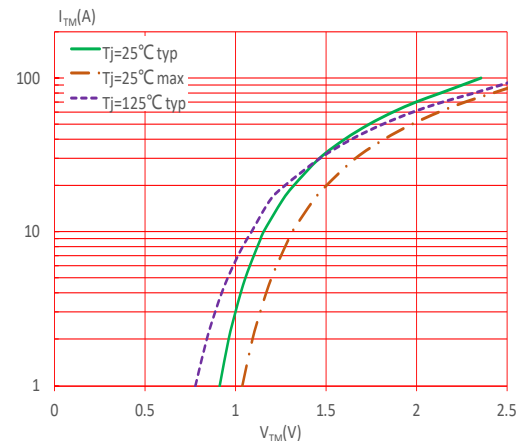
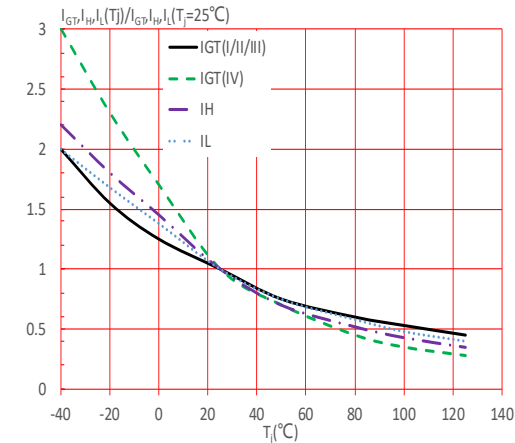
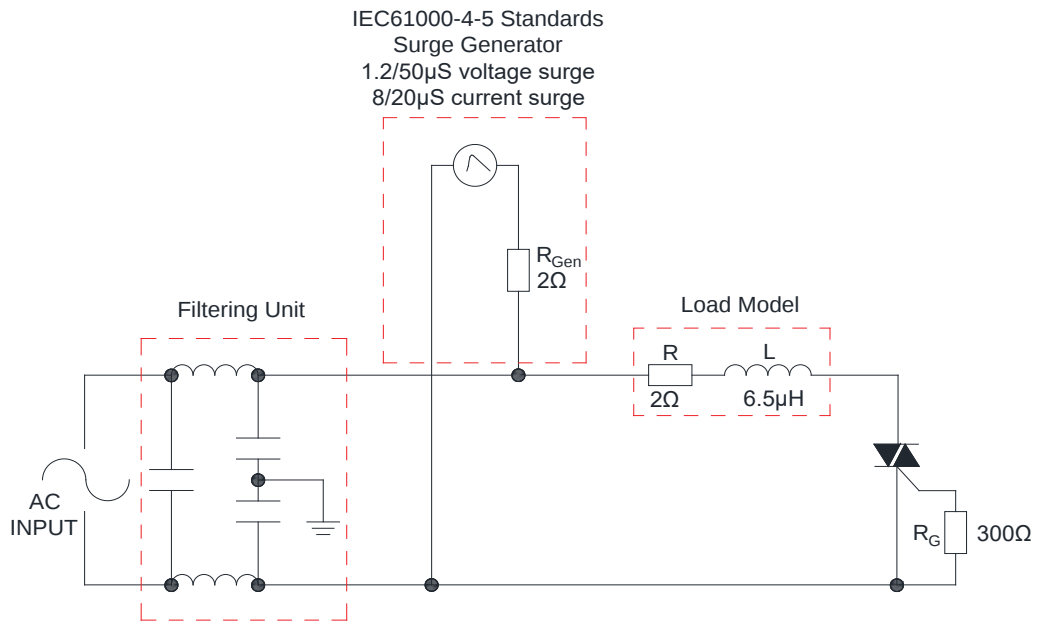
FIG.1: Maximum power dissipation versus RMS on-state current

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 $t_p < 20ms$, and corresponding value of I^2t ($I - II: di/dt < 100A/\mu s; III - IV: di/dt < 70A/\mu s$)

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	IV			
JST139C-600F	600	25	70	TO-220C	50	Tube

Document Revision History

Date	Revision	Changes
Apr.14, 2023	A.1.0	Last updated
Oct.16, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

Technical drawing of a 3-pin plug, showing three views: front, side, and top. The drawing includes the following dimensions and labels:

- Front View (Top):** Shows the plug body with a circular hole. Dimensions include E (total width), L (hole diameter), $L3$ (height of the plug body), and H (total height). A note indicates the hole diameter is $\varnothing 3.45-3.65\text{mm}$.
- Side View (Right):** Shows the plug body with a circular hole. Dimensions include A (width of the plug body), $C2$ (height of the plug body), D (height of the plug body), $C3$ (height of the plug body), and C (width of the plug body).
- Top View (Bottom):** Shows the plug body with a circular hole. Dimensions include $E1$ (width of the plug body), $H1$ (height of the plug body), $L1$ (height of the plug body), $L2$ (height of the plug body), K (height of the plug body), G (height of the plug body), B (height of the plug body), and M (height of the plug body).

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 top, front, and side views with dimensions.

Top View:

- Overall width: 520 ± 0.5
- Overall height: 530 ± 0.5
- Printing area dimensions: 80 (width) and 5 (height).
- Radius of the printing area: $R4.5 \pm 0.05$.
- Distance from the bottom edge to the printing area: 3 .
- Distance from the right edge to the printing area: 5.5 .
- Distance from the bottom edge to the bottom hole: 5.5 .
- Distance from the right edge to the bottom hole: 5.5 .
- Bottom hole diameter: $\phi 3 \pm 0.05$.

Front View:

- Overall height: 33 .
- Top flange width: 7 ± 0.2 .
- Top flange thickness: 2.4 .
- Top flange height: 3.8 .
- Bottom flange width: 3.8 .
- Bottom flange thickness: 0.6 .
- Bottom flange height: 18 .
- Bottom flange radius: $R9$.

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

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