

JST137C-600D 8A TRIAC

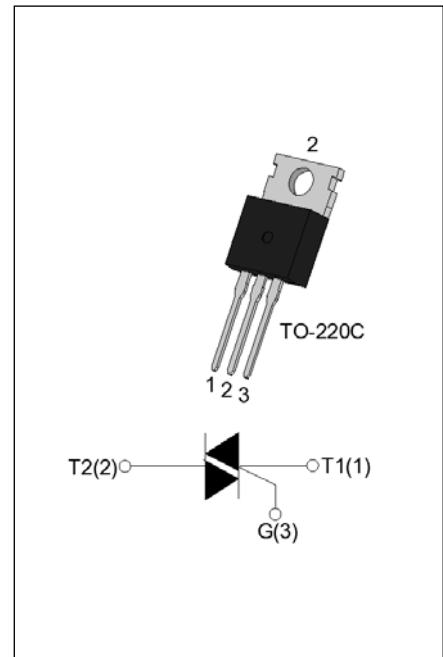
Rev.A.1.2

DESCRIPTION:

The JST137C-600D 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
$I_{T(RMS)}$	8	A
V_{DRM}/V_{RRM}	600	V
$I_{GT\ I}/II/III/IV$	5/5/5/10	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 ($T_j=25^\circ\text{C}$)	V_{DRM}	600	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)	V_{RRM}	600	V
RMS on-state current ($T_c \leq 101^\circ\text{C}$)	$I_{T(RMS)}$	8	A
Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$, $T_j=25^\circ\text{C}$)	I_{TSM}	65	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$, $T_j=25^\circ\text{C}$)		72	
I^2t value for fusing ($t_p=10\text{ms}$, $T_j=25^\circ\text{C}$)	I^2t	21	A^2s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$, $f=100\text{Hz}$, $T_j=125^\circ\text{C}$)	I - II - III	50	$\text{A}/\mu\text{s}$
	IV	20	
Peak gate current ($t_p=20\mu\text{s}$, $T_j=125^\circ\text{C}$)	I_{GM}	4	A
Average gate power dissipation ($T_j=125^\circ\text{C}$)	$P_{G(AV)}$	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
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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.	5	mA
		IV		10	
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.	15	mA
		II		20	
I_H	$I_T=500\text{mA}$		MAX.	10	mA
dV/dt	$V_D=400\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$		MIN.	80	V/ μs
$(dV/dt)_c$	$(dI/dt)_c=2.7\text{A/ms}$, $T_j=125^{\circ}\text{C}$		MIN.	2	V/ μs
t_{on}	$I_G=20\text{mA}$ $I_A=200\text{mA}$ $I_R=20\text{mA}$ $T_j=25^{\circ}\text{C}$		TYP.	1.2	μs
t_{off}				15	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=10\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.8	V
R_D	Dynamic resistance	$T_j=125^{\circ}\text{C}$	53	$\text{m}\Omega$
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	0.35	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	2.1	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	junction to ambient (AC)	60	$^{\circ}\text{C/W}$

ORDERING INFORMATION

J	ST	137	C	-600	D
JieJie Microelectronics Co., Ltd.	Triacs	$I_{T(RMS)}:8A$	C:TO-220C	$600:V_{DRM}/V_{RRM}\geq 600V$	D: $I_{GT1-3}\leq 5mA$ $I_{GT4}\leq 10mA$

MARKING

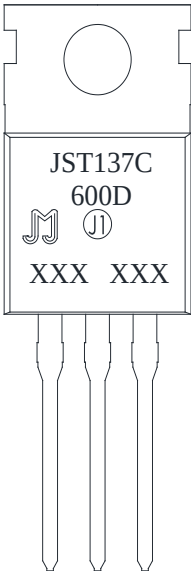
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FIG.1: Maximum power dissipation versus RMS on-state current

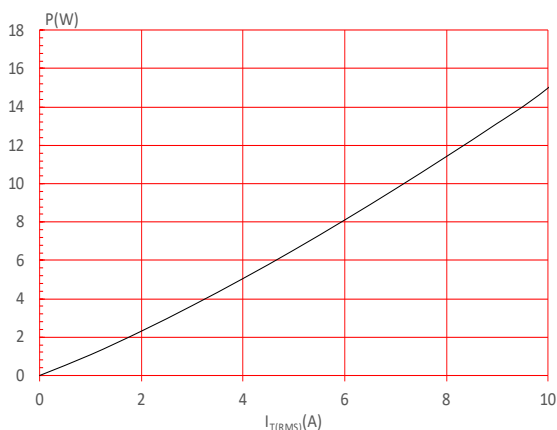


FIG.3: Surge peak on-state current versus number of cycles

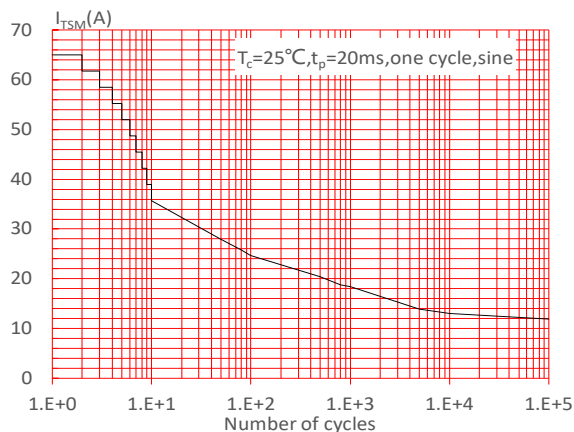


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t (I - II - III: $di/dt < 50\text{A}/\mu\text{s}$; IV: $di/dt < 20\text{A}/\mu\text{s}$)

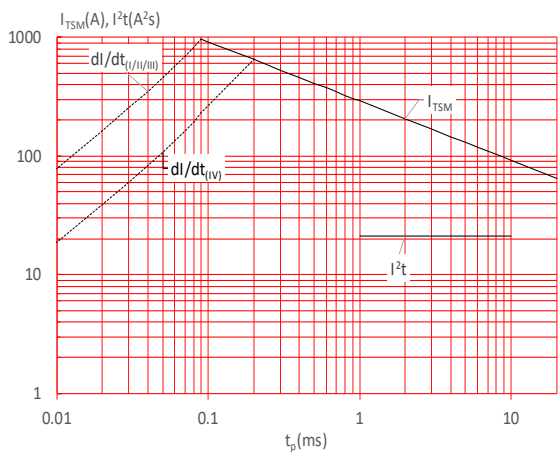


FIG.2: RMS on-state current versus case temperature

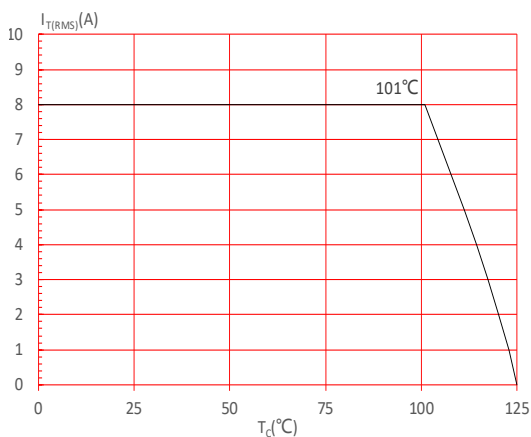


FIG.4: On-state characteristics

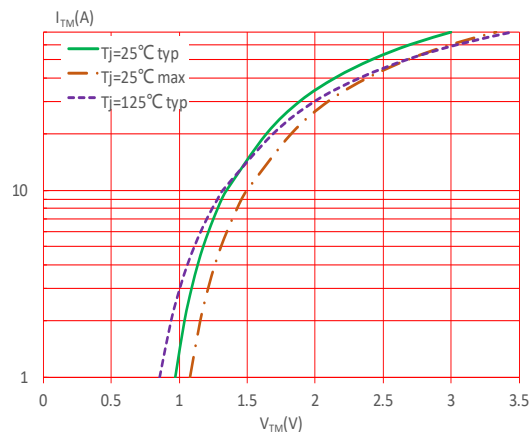


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

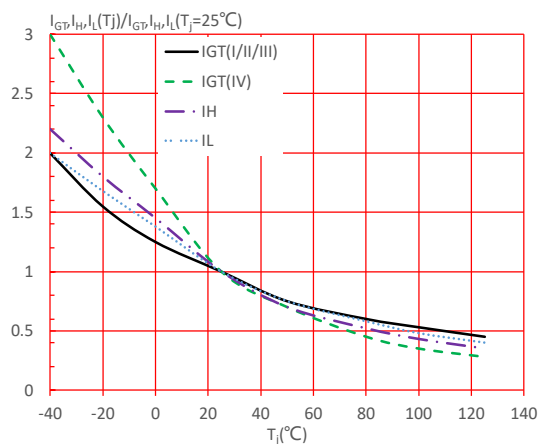
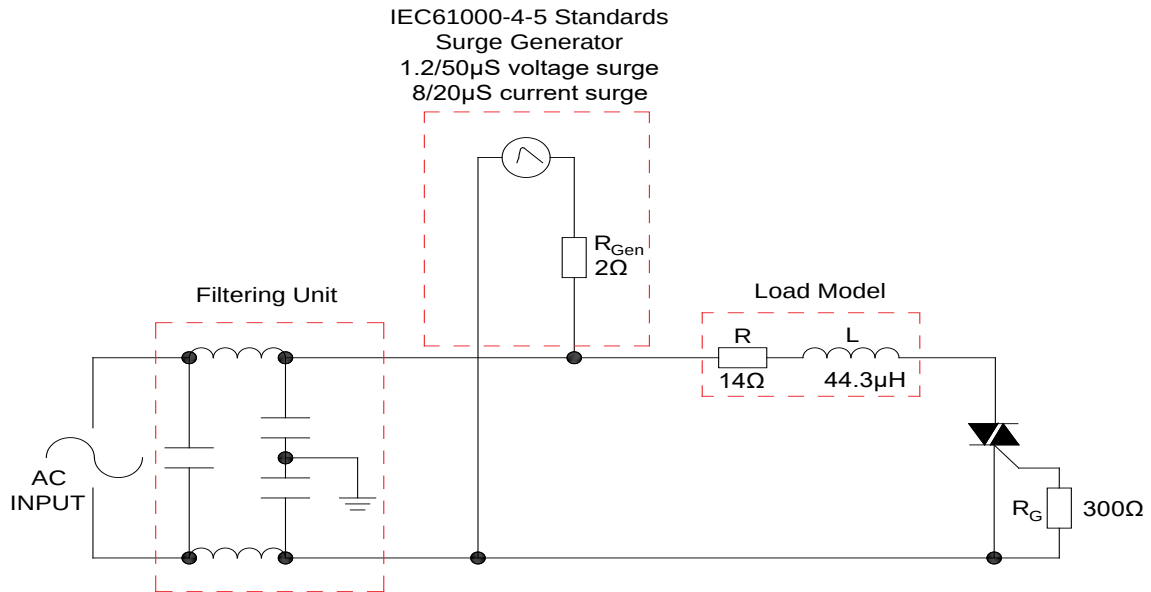


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



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	IV			
JST137C-600D	600	5	10	TO-220C	50	Tube

Document Revision History

Date	Revision	Changes
Apr.14, 2023	A.1.0	Last updated
Sept.11, 2025	A.1.1	Revise dI/dt
Oct.16, 2025	A.1.2	Revise PACKAGE MECHANICAL DATA

Technical drawing of a 3-core cable with dimensions and labels:

- Top View:** Shows the cross-section of the cable with three conductors (E) and a central ground conductor (G). The overall diameter is labeled $\varnothing 3.45-3.65\text{mm}$.
- Front View:** Shows the length of the cable with dimensions:
 - H:** Total length of the cable.
 - E:** Length of the outer jacket.
 - L1:** Length of the first section of the conductors.
 - K:** Length of the second section of the conductors.
 - L2:** Length of the third section of the conductors.
 - G:** Length of the ground conductor section.
 - M:** Total length of the conductors.
 - B:** Diameter of the conductors.
 - L3:** Length of the insulation layer.
- Side View:** Shows the cross-section of the cable with dimensions:
 - A:** Diameter of the outer jacket.
 - C2:** Length of the first section of the conductors.
 - D:** Length of the second section of the conductors.
 - C3:** Length of the third section of the conductors.
 - C:** Length of the ground conductor section.
- Bottom View:** Shows the cross-section of the cable with dimensions:
 - H1:** Length of the first section of the conductors.
 - E1:** Length of the second section of the conductors.

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 drawing includes dimensions and a label for the "printing area".

Top View Dimensions:

- 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: 3
- Distance from right edge to center of circular feature: 80
- Radius of circular feature: $\phi 4.5 \pm 0.05$
- Distance from bottom edge to center of circular feature: 5.5
- Distance from left edge to center of circular feature: 530 ± 0.5
- Radius of circular feature: $\phi 3 \pm 0.05$

Front View Dimensions:

- Overall height: 33
- Distance from top edge to center of circular feature: 7 ± 0.2
- Distance from left edge to center of circular feature: 2.4
- Distance from top edge to center of circular feature: 3.8
- Distance from left edge to center of circular feature: 3.8
- Distance from bottom edge to center of circular feature: 0.6
- Distance from left edge to center of circular feature: 18
- Radius of circular feature: $\phi 3 \pm 0.05$

Side View Dimensions:

- 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: 3
- Distance from right edge to center of circular feature: 80
- Radius of circular feature: $\phi 4.5 \pm 0.05$
- Distance from bottom edge to center of circular feature: 5.5
- Distance from left edge to center of circular feature: 530 ± 0.5
- Radius of circular feature: $\phi 3 \pm 0.05$

Printing Area:

- Label: "printing area"
- Dimensions: 80 (width) and 5.5 (height)

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

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