

JST24E-600BW 25A TRIAC

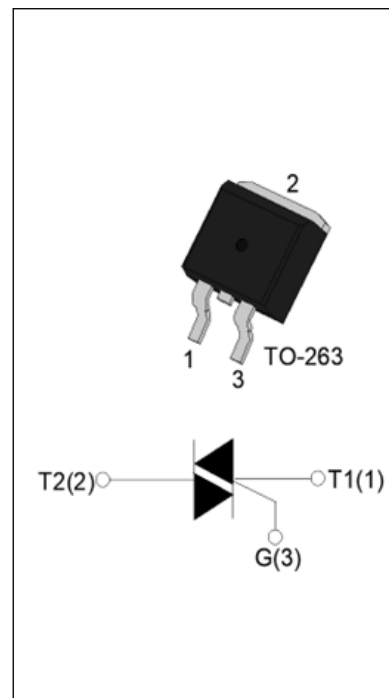
Rev.A.1.1

DESCRIPTION:

The JST24E-600BW 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. JST24E-600BW snubberless triac is especially recommended for use on inductive loads. Package TO-263 is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	25	A
V_{DRM}/V_{RRM}	600	V
$I_{GT\ I/II/III}$	50/50/50	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}	600	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	600	V
RMS on-state current ($T_c \leq 97^{\circ}C$)	$I_{T(RMS)}$	25	A
Non repetitive surge peak on-state current (full cycle , $t_p=20ms$, $T_j=25^{\circ}C$)	I_{TSM}	250	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6ms$, $T_j=25^{\circ}C$)		275	
I^2t value for fusing ($t_p=10ms$, $T_j=25^{\circ}C$)	I^2t	340	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	100	$A/\mu s$
Peak gate current ($t_p=20\mu s$, $T_j=125^{\circ}C$)	I_{GM}	4	A
Average gate power dissipation ($T_j=125^{\circ}C$)	$P_{G(AV)}$	0.5	W
Peak gate power	P_{GM}	10	W
Peak pulse voltage	V_{pp}	2.5	kV

(T _j =25°C; non-repetitive, off-state; FIG.8)			
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ELECTRICAL CHARACTERISTICS (T_j=25°C unless otherwise specified)

Symbol	Test Condition	Quadrant	Value		Unit
I _{GT}	V _D =12V R _L =33Ω	I - II - III	MAX.	50	mA
V _{GT}		I - II - III	MAX.	1	V
V _{GD}	V _D =V _{DRM} T _j =125°C R _L =3.3kΩ	I - II - III	MIN.	0.2	V
I _L	I _G =1.2I _{GT}	I - III	MAX.	80	mA
		II		100	
I _H	I _T =500mA		MAX.	75	mA
dV/dt	V _D =400V Gate Open T _j =125°C		MIN.	2500	V/μs
(dI/dt) _c	(dV/dt) _c =20V/μs T _j =125°C		MIN.	25	A/ms
t _{on}	I _G =80mA I _A =400mA I _R =40mA T _j =25°C		TYP.	10	μs
t _{off}				70	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V _{TM}	I _{TM} =35A t _p =380μs	T _j =25°C	1.5	V
V _{TO}	Threshold voltage	T _j =125°C	0.75	V
R _D	Dynamic resistance	T _j =125°C	18	mΩ
I _{DRM}	V _D =V _{DRM} V _R =V _{RDM}	T _j =25°C	5	μA
I _{RRM}		T _j =125°C	1.5	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th(j-c)}	junction to case (AC)	0.8	°C/W
R _{th(j-a)}	junction to ambient (AC, in free air, S=2cm ²)	45	°C/W

ORDERING INFORMATION

<u>J</u>	<u>ST</u>	<u>24</u>	<u>E</u>	<u>-600</u>	<u>BW</u>	<u>-/</u>
JieJie Microelectronics Co., Ltd.	Triacs					Blank:Tube -TR:Tape & Reel
	IT(RMS):25A					
		E:TO-263			BW:IGT1-3≤50mA	
				600:VDRM /VRRM≥600V		

MARKING

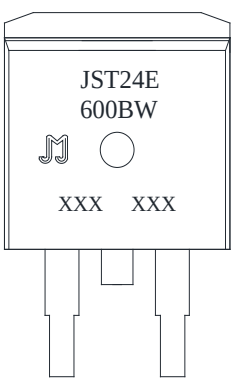
 JST24E 600BW   XXX XXX	XXX XXX Year Month Production Code
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FIG.1: Maximum power dissipation versus RMS on-state current

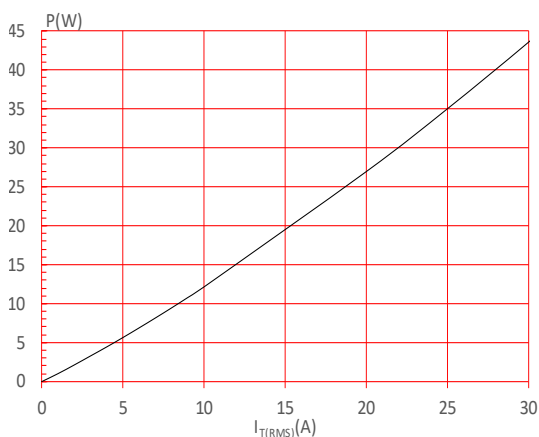


FIG.2: RMS on-state current versus case temperature

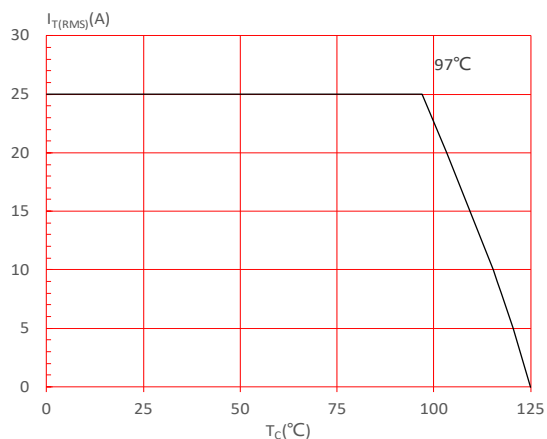


FIG.3: RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35μm)(full cycle)

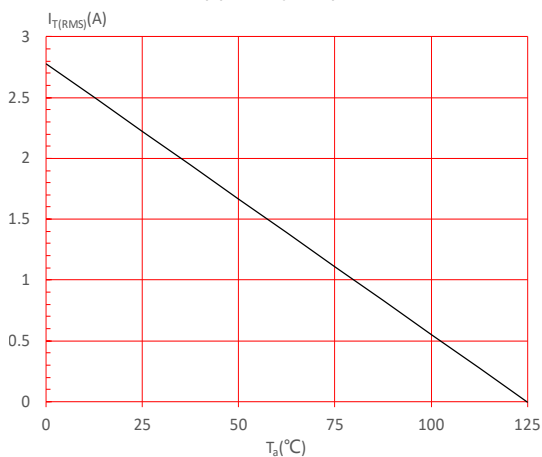


FIG.4: Surge peak on-state current versus number of cycles

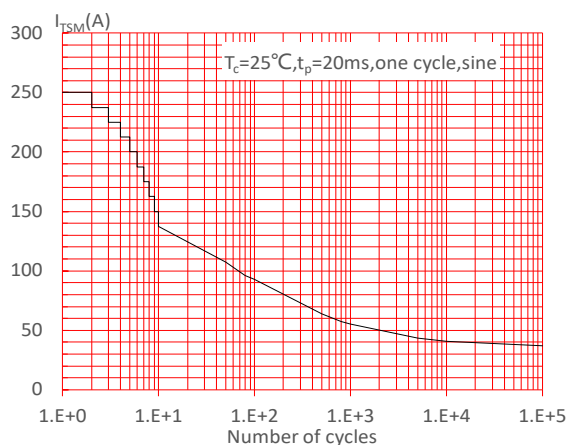


FIG.5: On-state characteristics

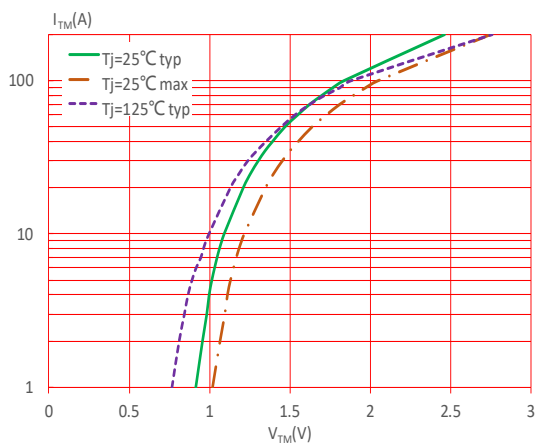


FIG.6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of I^2t ($dI/dt < 100A/\mu s$)

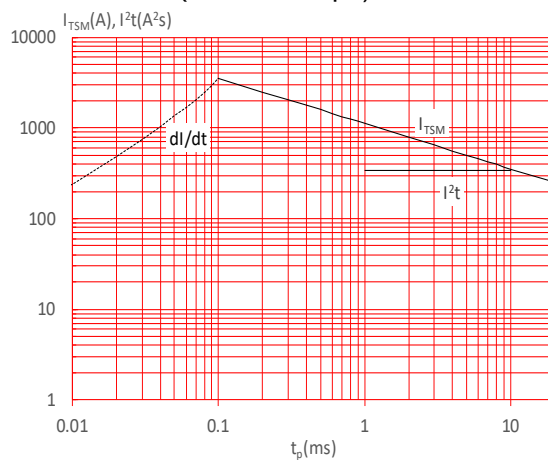


FIG.7: Relative variations of gate trigger current, holding current and latching current versus junction temperature

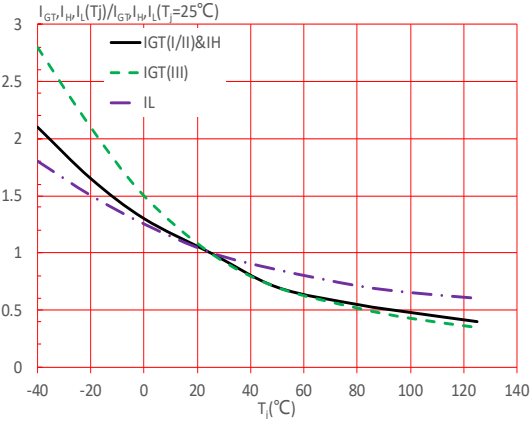
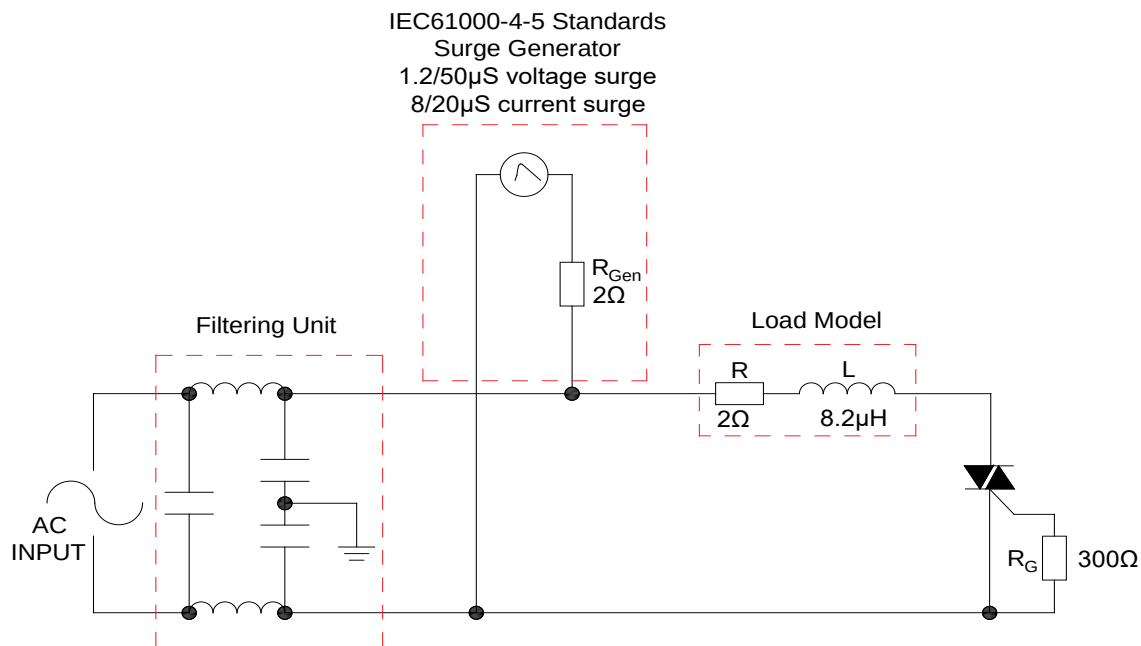
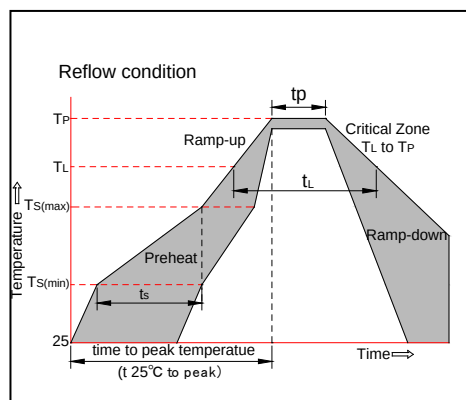


FIG.8: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 $^{\circ}$ C
	-Temperature Max ($T_{s(max)}$)	+200 $^{\circ}$ C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L) to peak)		3 $^{\circ}$ C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 $^{\circ}$ C/sec. Max
Reflow	-Temperature (T_L) (Liquidus)	+217 $^{\circ}$ C
	-Temperature (t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5) $^{\circ}$ C
Time within 5 $^{\circ}$ C of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6 $^{\circ}$ C/sec. Max
Time 25 $^{\circ}$ C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260 $^{\circ}$ C



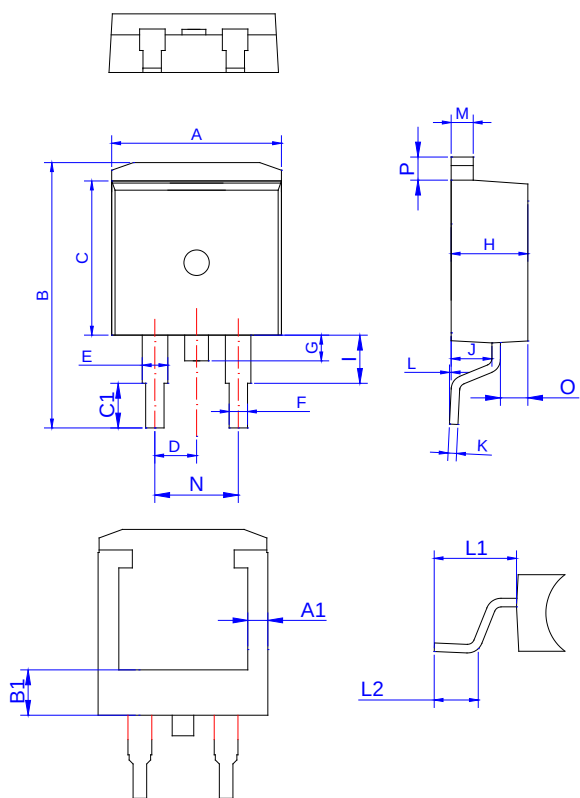
ORDERING INFORMATION

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
		I - II - III			
JST24E-600BW	600	50	TO-263	50	Tube
JST24E-600BW-TR				800	Tape & Reel

Document Revision History

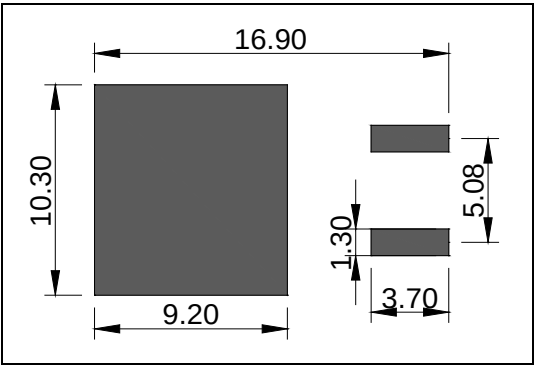
Date	Revision	Changes
Apr.12, 2023	A.1.0	Last updated
Oct.20, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90		10.20	0.390		0.402
A1	0.80		1.20	0.031		0.047
B	14.70		15.80	0.579		0.622
B1	2.15		2.55	0.085		0.100
C	9.40		9.60	0.370		0.378
C1	2.40		2.80	0.094		0.110
D	2.40		2.70	0.094		0.106
E	1.20		1.50	0.047		0.059
F	0.75		0.85	0.029		0.033
G	1.00		1.50	0.039		0.059
H	4.40		4.70	0.173		0.185
I	1.80		2.20			
J	2.30		2.70	0.091		0.106
K	0.38		0.55	0.015		0.022
L	0	0.10	0.25	0	0.004	0.010
L1	4.65		5.05	0.183		0.199
L2	1.90			0.075		
M	1.25		1.35	0.049		0.053
N	4.80		5.20			
O	1.30		1.50			
P	1.20		1.50	0.047		0.059

FOOTPRINT-TO-263 (dimensions in mm)



Technical drawing of a mechanical part, showing three views: front view, side view, and cross-sectional view.

Front View Dimensions:

- Overall width: 530 ± 0.5
- Distance from left edge to center of hole: 518
- Distance from center of hole to right edge: 12.9
- Hole diameter: $\varnothing 3.0$
- Surface finish symbol: $\sqrt{0.05}$

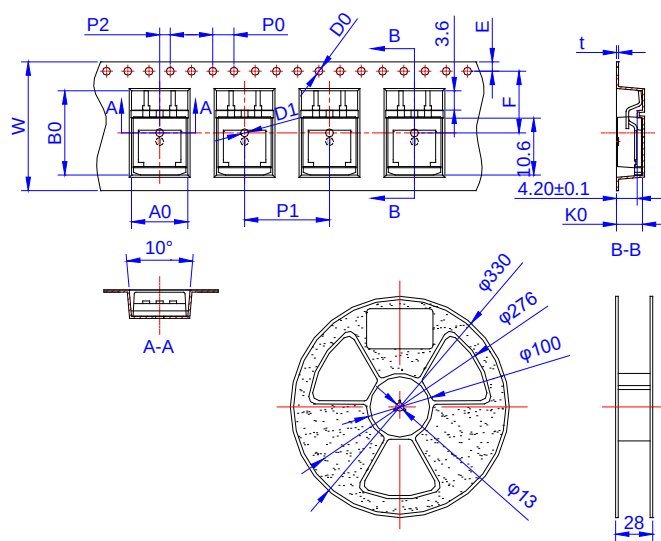
Side View Dimensions:

- Overall height: 33
- Distance from top edge to center of hole: 17
- Distance from center of hole to bottom edge: 10
- Distance from left edge to center of hole: 1.5
- Distance from center of hole to right edge: 1.5
- Distance from left edge to center of hole: 0.6
- Distance from center of hole to right edge: 2.6

Cross-sectional View Dimensions:

- Overall width: $7 - 0.2$
- Distance from left edge to center of hole: 1.5
- Distance from center of hole to right edge: 1.5
- Distance from left edge to center of hole: 0.6
- Distance from center of hole to right edge: 2.6

PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-263	TUBE	50	1,000	5,000



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	23.70	24.00	24.30	0.933	0.945	0.957
E	1.65	1.75	1.85	0.065	0.069	0.073
F	11.40	11.50	11.60	0.449	0.453	0.457
D0	-	1.50	1.60	-	0.059	0.063
D1	-	1.50	1.60	-	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	15.90	16.00	16.10	0.626	0.630	0.634
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	10.80	10.90	11.00	0.425	0.429	0.433
B0	16.20	16.30	16.40	0.638	0.642	0.646
K0	4.80	4.90	5.00	0.189	0.193	0.197
t	0.35	0.40	0.45	0.014	0.016	0.018

PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
TO-263	TAPING	800	4,000	13 inch

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