

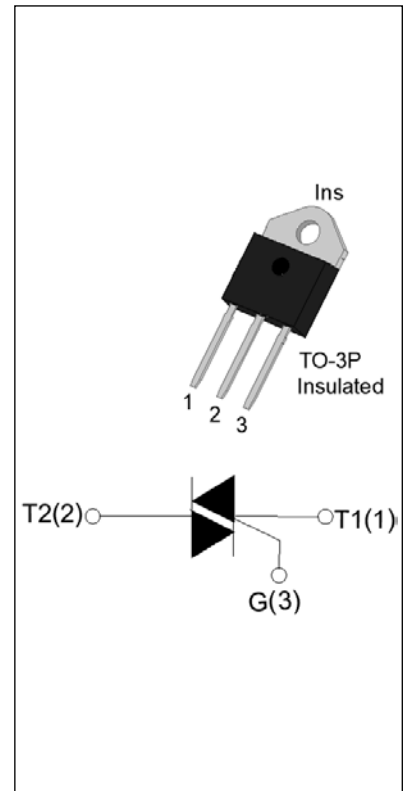


## JST60Z-1600BW 60A TRIAC

Rev.A.1.0

### DESCRIPTION:

The JST60Z-1600BW 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. JST60Z-1600BW snubberless triac is especially recommended for use on inductive loads. By using an internal ceramic pad, JST60Z-1600BW provides a rated insulation voltage of 2500 VRMS. Package TO-3P is RoHS compliant.



### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	60	A
$V_{DRM}/V_{RRM}$	1600	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 ( $T_j=25^\circ\text{C}$ )	$V_{DRM}$	1600	V
Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )	$V_{RRM}$	1600	V
RMS on-state current ( $T_c \leq 78^\circ\text{C}$ )	$I_{T(RMS)}$	60	A
Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$ , $T_j=25^\circ\text{C}$ )	$I_{TSM}$	600	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$ , $T_j=25^\circ\text{C}$ )		660	
$I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^\circ\text{C}$ )	$I^2t$	1800	$\text{A}^2\text{s}$
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ , $f=100\text{Hz}$ , $T_j=125^\circ\text{C}$ )	$di/dt$	100	$\text{A}/\mu\text{s}$
Peak gate current ( $t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$ )	$I_{GM}$	8	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 ( $T_j=25^{\circ}C$ ; non-repetitive, off-state; FIG.7)	$V_{pp}$	2	kV

**ELECTRICAL CHARACTERISTICS**( $T_j=25^{\circ}C$  unless otherwise specified)

Symbol	Test Condition	Quadrant	Value		Unit
$I_{GT}$	$V_D=12V R_L=33\Omega$	I - II -III	MAX.	50	mA
$V_{GT}$		I - II -III	MAX.	1.3	V
$V_{GD}$	$V_D=V_{DRM} T_j=125^{\circ}C$ $R_L=3.3K\Omega$	I - II -III	MIN.	0.2	V
$I_L$	$I_G=1.2I_{GT}$	I -III	MAX.	120	mA
		II		120	
$I_H$	$I_T=1A$		MAX.	80	mA
dV/dt	$V_D=1070V$ Gate Open $T_j=125^{\circ}C$		MIN.	1500	V/ $\mu s$
(dI/dt) <sub>c</sub>	(dV/dt) <sub>c</sub> =20V/ $\mu s$ $T_j=125^{\circ}C$		MIN.	28	A/ms
$t_{on}$	$I_G=80mA I_A=400mA I_R=40mA$ $T_j=25^{\circ}C$		TYP.	7	$\mu s$
$t_{off}$				100	

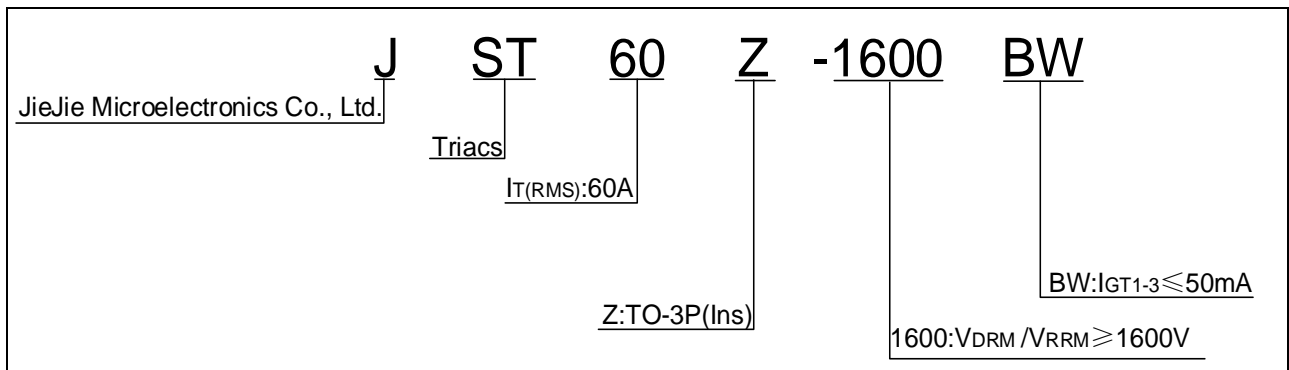
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=85A t_p=380\mu s$	$T_j=25^{\circ}C$	1.75	V
$V_{TO}$	Threshold voltage	$T_j=125^{\circ}C$	0.71	V
$R_D$	Dynamic resistance	$T_j=125^{\circ}C$	24	m $\Omega$
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}C$	15	$\mu A$
$I_{RRM}$		$T_j=125^{\circ}C$	10	mA

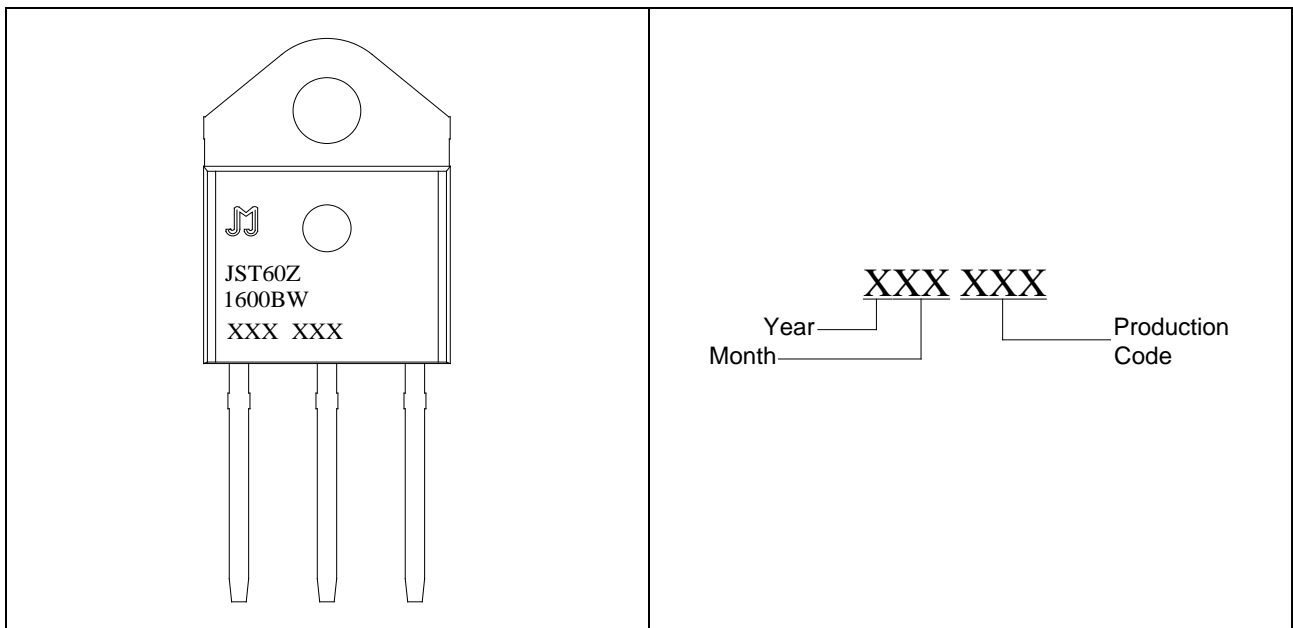
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	0.5	$^{\circ}C/W$
$R_{th(j-a)}$	junction to ambient (AC)	50	$^{\circ}C/W$

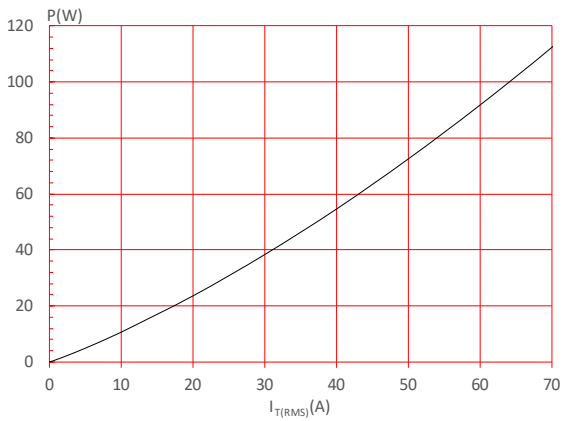
**ORDERING INFORMATION**



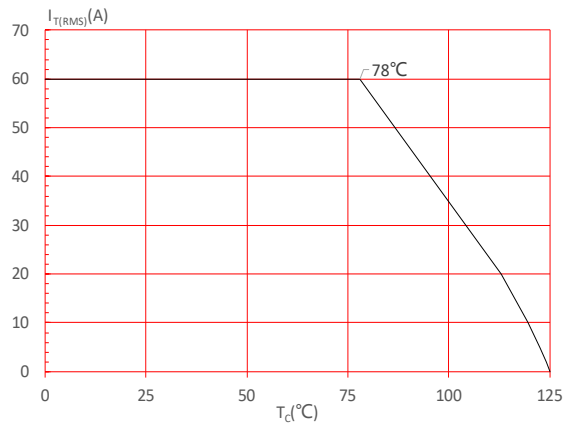
**MARKING**



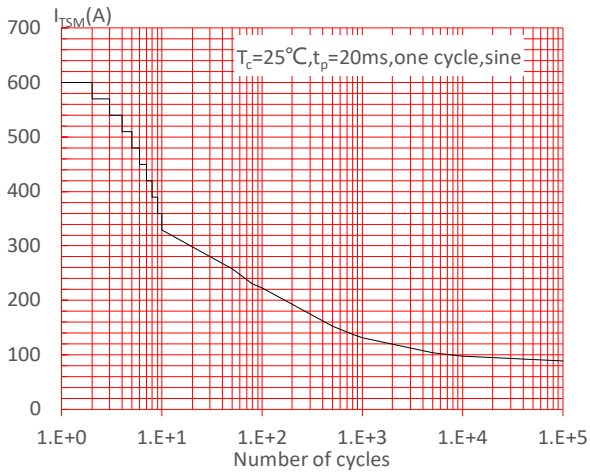
**FIG.1** Maximum power dissipation versus RMS on-state current



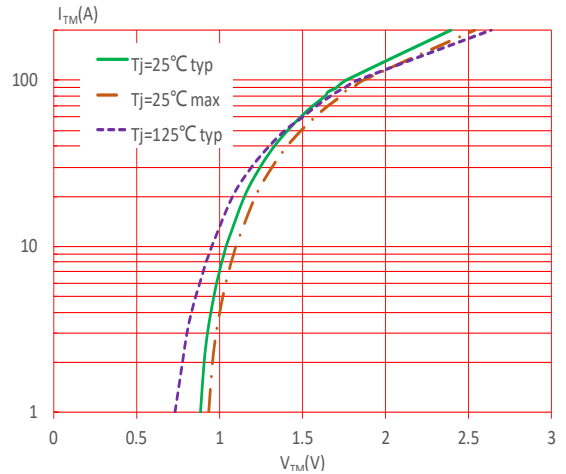
**FIG.2:** RMS on-state current versus case temperature



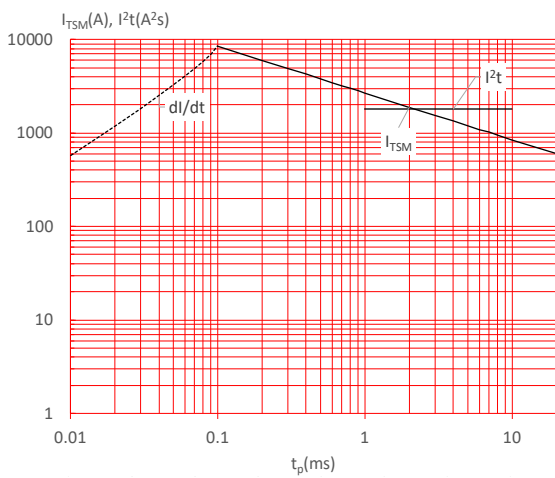
**FIG.3:** Surge peak on-state current versus number of cycles



**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  $I^2t$  ( $di/dt < 100\text{A}/\mu\text{s}$ )



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

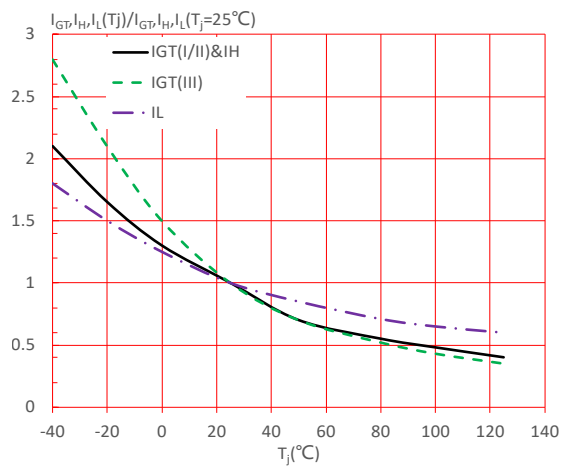
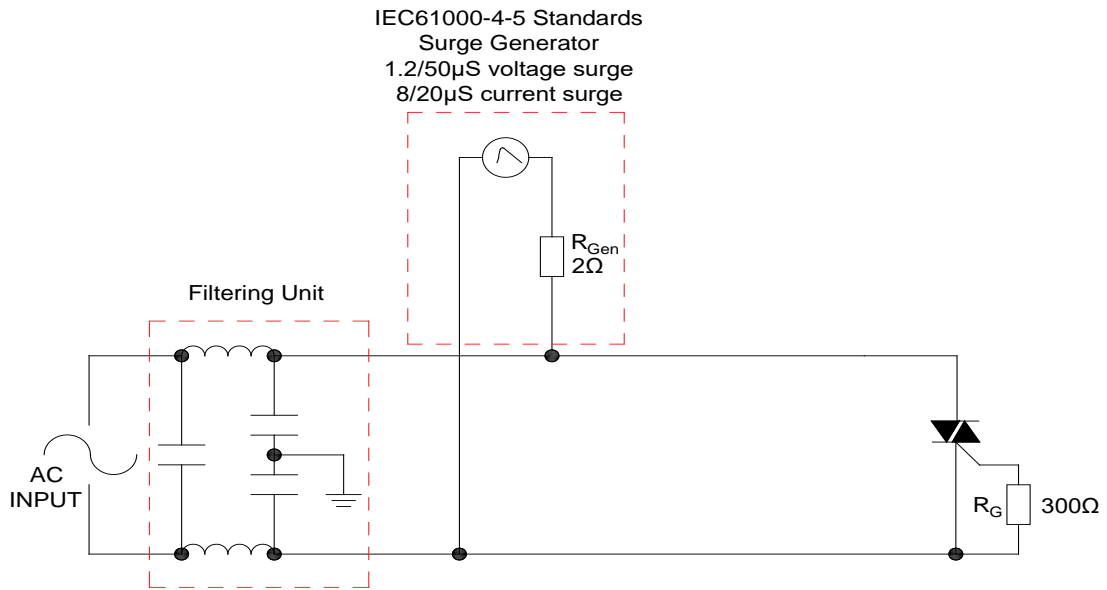


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



### LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package” released by JieJie Microelectronics

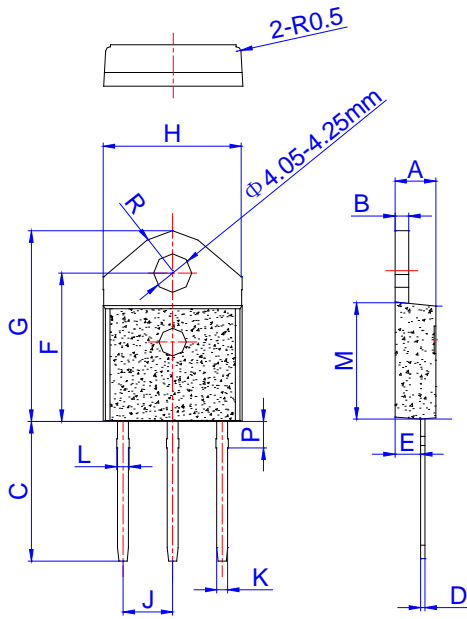
**ORDERING INFORMATION**

Order code	Voltage $V_{DRM}/V_{RRM}(V)$	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
		I - II - III			
<b>JST60Z-1600BW</b>	<b>1600</b>	<b>50</b>	<b>TO-3P(Ins)</b>	<b>30</b>	<b>Tube</b>

**Document Revision History**

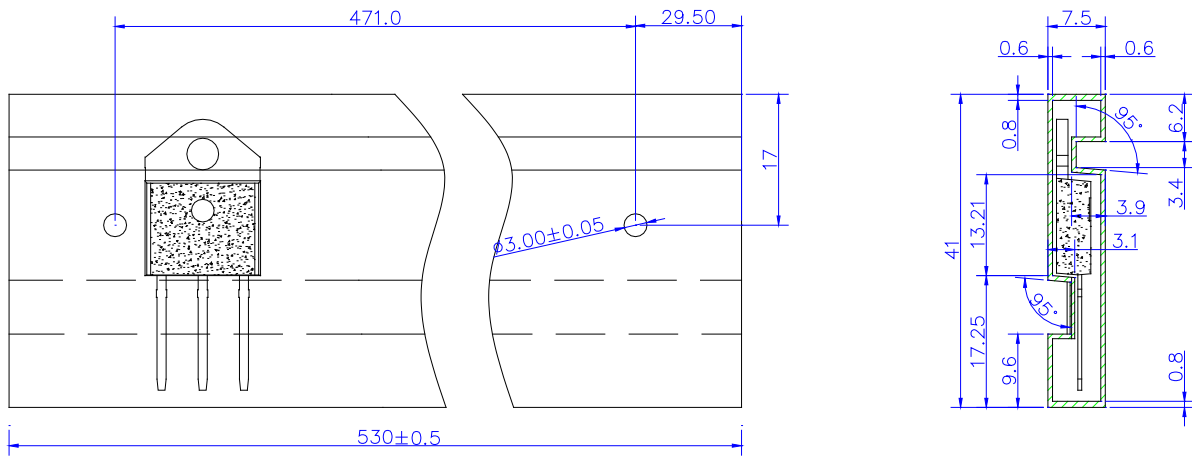
Date	Revision	Changes
Apr.11, 2023	A.1.0	Last updated

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.60	0.565		0.614
D	0.50		0.70	0.020		0.028
E	2.70		2.90	0.106		0.114
F	15.80		16.50	0.622		0.650
G	20.40		21.10	0.803		0.831
H	15.10		15.50	0.594		0.610
J	5.40		5.65	0.213		0.222
K	1.10		1.40	0.043		0.055
L	1.25		1.45	0.049		0.057
M	12.37		12.77	0.487		0.503
P	2.80		3.00	0.110		0.118
R		4.35			0.171	

DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-3P	TUBE	30	450	2,250

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