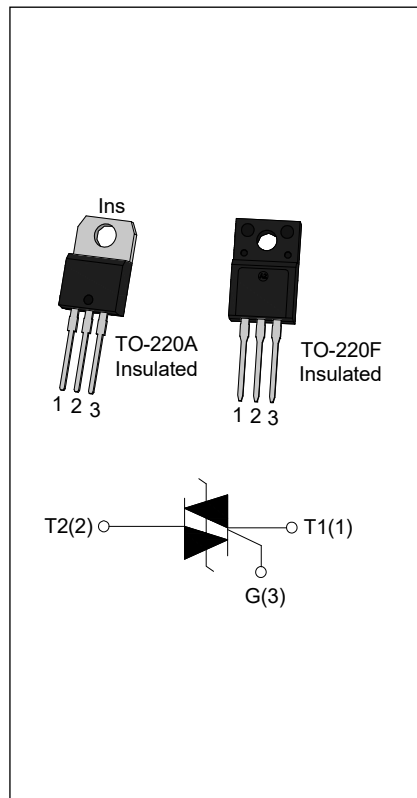




DESCRIPTION:

JST12 series provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on home appliances such as motor control of washing machine. JST12i provides insulation voltage rated at 2500V_{RMS} and JST12X provides insulation voltage rated at 2000V_{RMS}, from all three terminals to external heatsink complying with UL standards (File ref:E252906). Package TO-220A & TO-220F are RoHS compliant. (2011/65/EU)



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM} / V_{RRM}	800	V

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	$I_{T(RMS)}$	12	A
TO-220A (Ins)/ TO-220F (Ins) ($T_C=70^{\circ}C$)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	120	A
I^2t value for fusing ($t_p=10ms$)	I^2t	72	A ² s
Rate of rise of on-state current ($I_G=2 \times I_{GT}$)	di/dt	100	A/ μ s
Peak gate current	I_{GM}	4	A

Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	5	W
Peak pulse voltage ($T_j=25^{\circ}C$; non-repetitive, off-state; FIG.7)	V_{PP}	4	kV

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

Symbol	Test Condition	Quadrant		Value			Unit
				SW	CW	BW	
I_{GT}	$V_D=12V R_L=33\Omega$	I - II -III	MAX	10	35	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	30	50	70	mA
		II		40	60	100	
I_H	$I_T=100mA$		MAX	20	40	60	mA
dV/dt	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^{\circ}C$		MIN	500	1000	1500	V/ μs

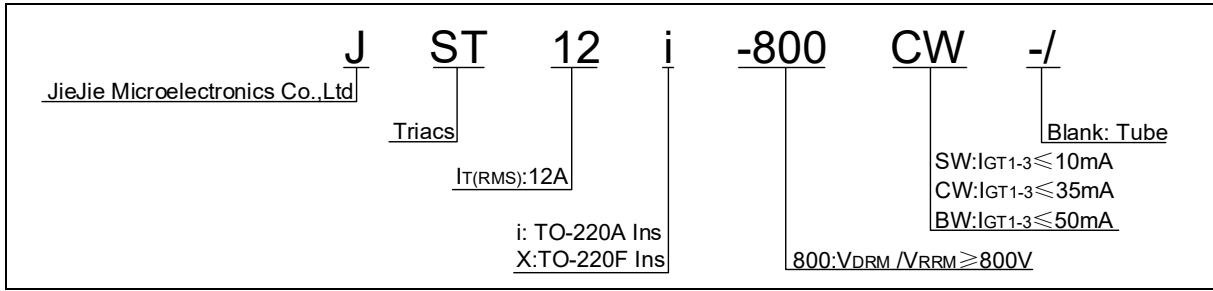
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM}=18A$ $t_p=380\mu s$	$T_j=25^{\circ}C$	1.5	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}C$	0.85	V
R_d	Dynamic resistance	$T_j=125^{\circ}C$	35	m Ω
I_{DRM}	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}C$	5	μA
I_{RRM}		$T_j=125^{\circ}C$	0.5	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A Ins	3.4	$^{\circ}C/W$
		TO-220F Ins		

ORDERING INFORMATION



MARKING

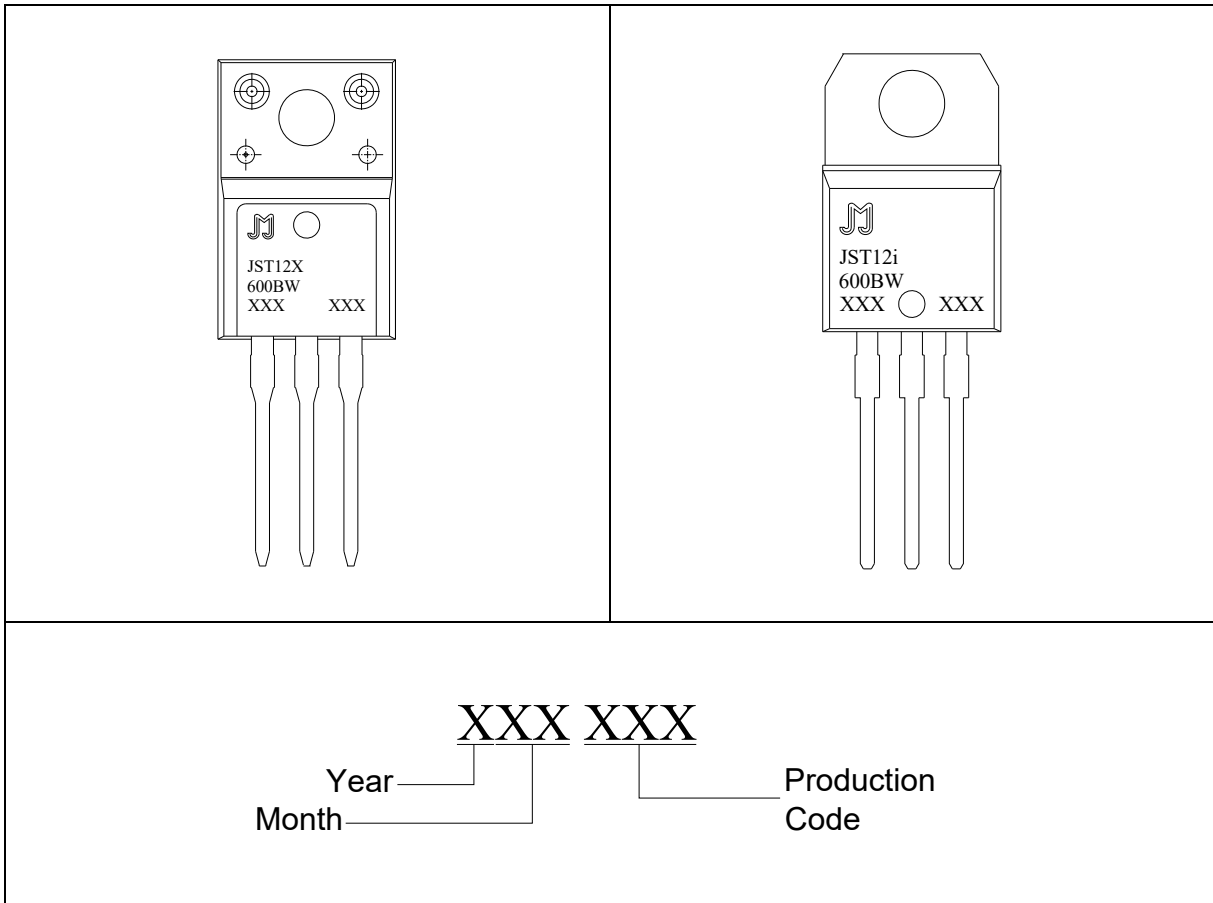


FIG.1: Maximum power dissipation versus RMS on-state current

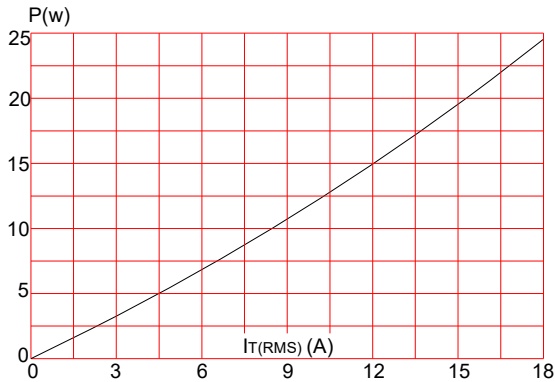


FIG.2: RMS on-state current versus case temperature

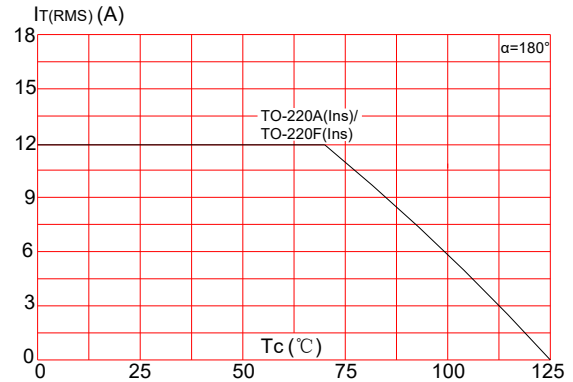


FIG.3: Surge peak on-state current versus number of cycles

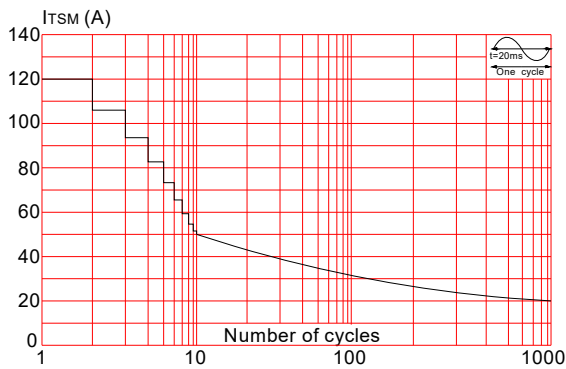


FIG.4: On-state characteristics (maximum values)

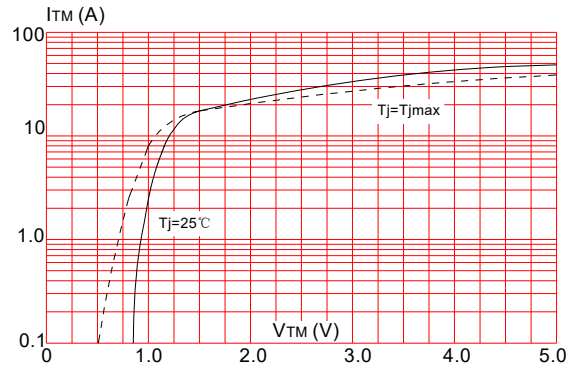


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t ($di/dt < 100\text{A}/\mu\text{s}$)

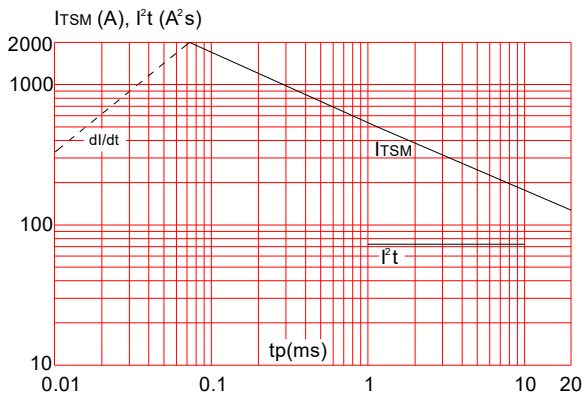


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

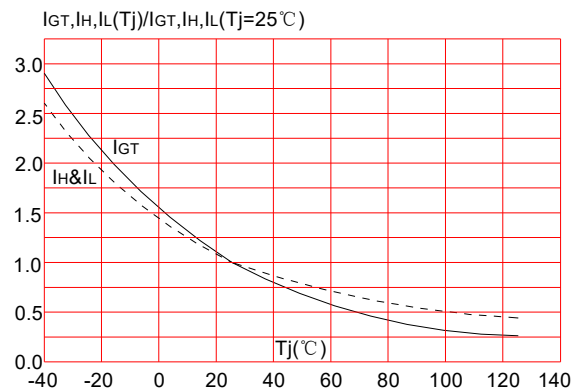
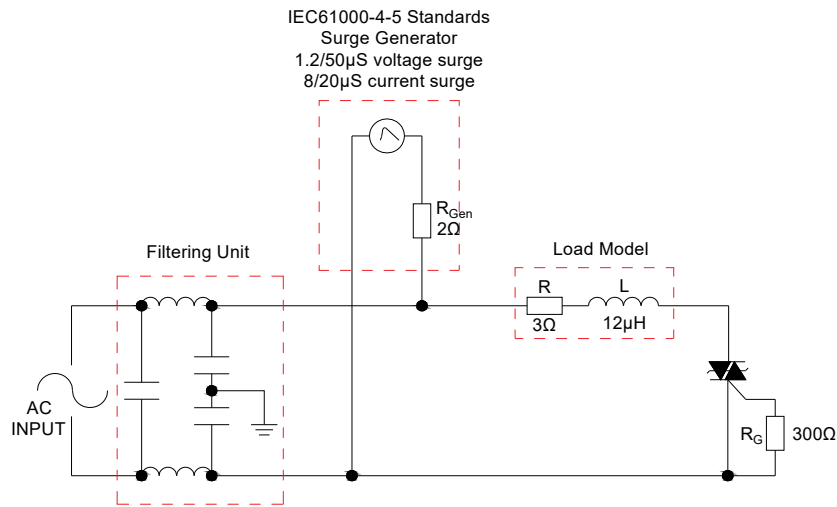


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



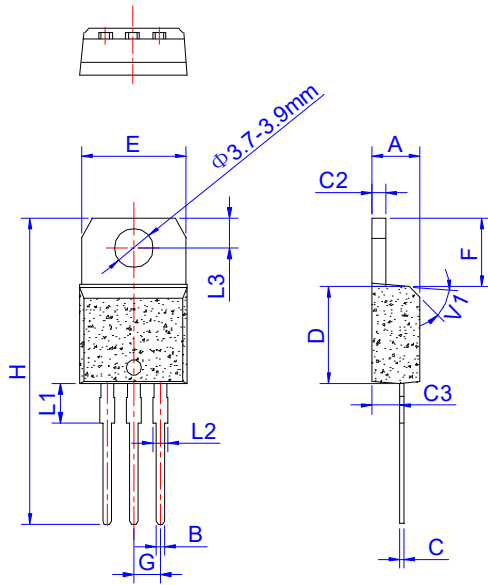
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JST12i-800SW	800	10	TO-220A(Ins)	50	Tube
JST12i-800CW		35			
JST12i-800BW		50			
JST12X-800SW		10	TO-220F(Ins)		
JST12X-800CW		35			
JST12X-800BW		50			

Document Revision History

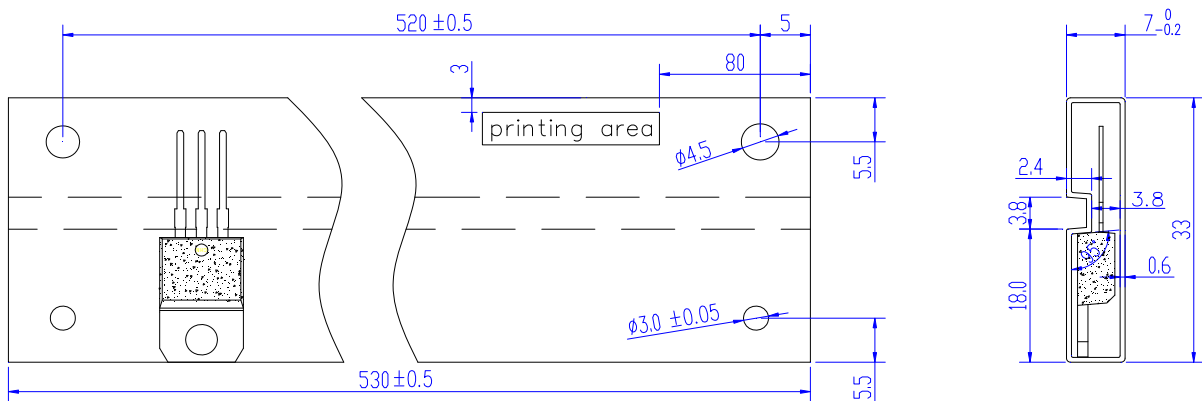
Date	Revision	Changes
Mar 25, 2019	5	Last update
Feb 16, 2022	6	Add Vpp, Vto & Rd value

PACKAGE MECHANICAL DATA



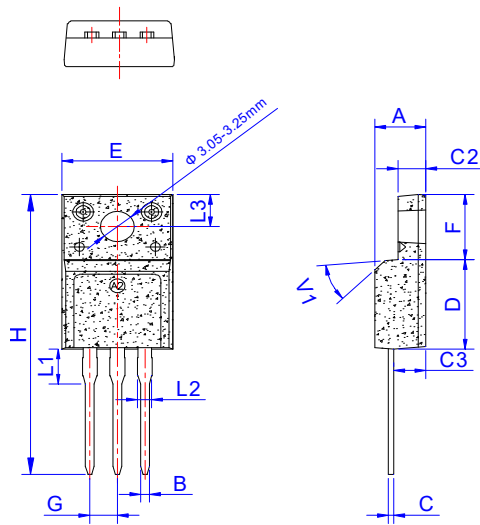
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.25		6.85	0.246		0.270
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	3.45		4.05	0.136		0.159
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

DELIVERY MODE



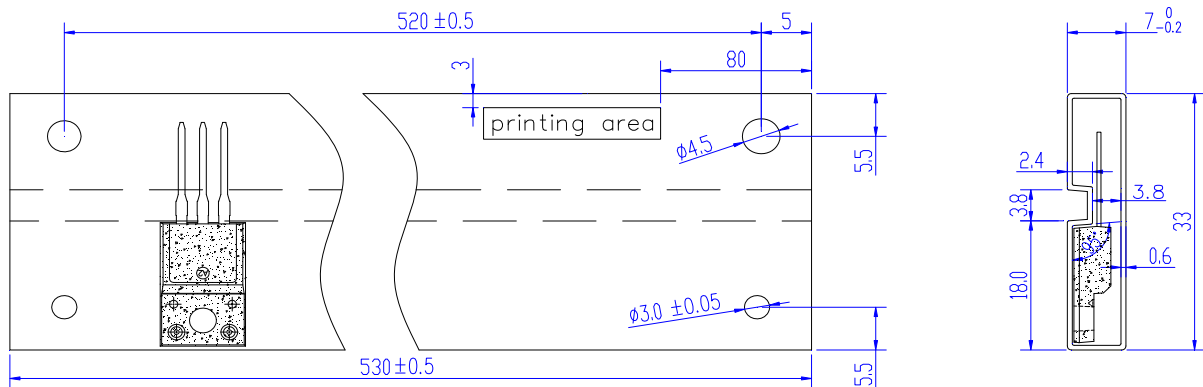
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	5,000

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	3.20		3.80	0.126		0.150
L2	1.14		1.70	0.045		0.067
L3	3.20		3.60	0.126		0.142
V1		45°			45°	

DELIVERY MODE



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



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