

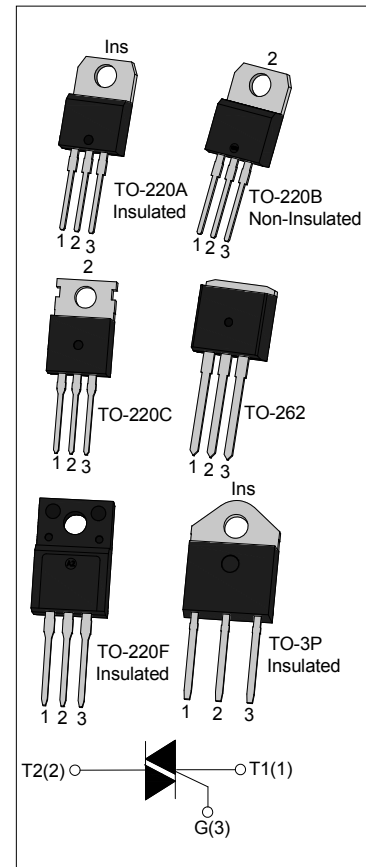


### DESCRIPTION:

With high ability to withstand the shock loading of large current, JST24 series triacs provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended focus on inductive load. From all three terminals to external heatsink, JST24A and JST24Z provide a rated insulation voltage of 2500 V<sub>RMS</sub>, and JST24F provides a rated insulation voltage of 2000 V<sub>RMS</sub>, complying with UL standards (File ref: E252906). All the packages listed above are RoHS compliant. (2011/65/EU)

### MAIN FEATURES

Symbol	Value	Unit
I <sub>T(RMS)</sub>	25	A
V <sub>DRM</sub> / V <sub>R<sub>RM</sub></sub>	600/800/1200/1600	V



### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T <sub>stg</sub>	-40-150	°C
Operating junction temperature range		T <sub>j</sub>	-40-125	°C
Repetitive peak off-state voltage (T <sub>j</sub> =25°C)		V <sub>DRM</sub>	600/800/1200/1600	V
Repetitive peak reverse voltage (T <sub>j</sub> =25°C)		V <sub>R<sub>RM</sub></sub>	600/800/1200/1600	V
RMS on-state current	TO-220A(Ins)/ TO-220F(Ins) (T <sub>c</sub> =70°C)	I <sub>T(RMS)</sub>	25	A
	TO-220C/ TO-220B(Non-Ins) (T <sub>c</sub> =85°C)			
	TO-262 (T <sub>c</sub> =50°C)			
	TO-3P(Ins) (T <sub>c</sub> =95°C)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I <sub>TSM</sub>	250	A
I <sup>2</sup> t value for fusing (t <sub>p</sub> =10ms)		I <sup>2</sup> t	340	A <sup>2</sup> s

Critical rate of rise of on-state current ( $I_G = 2 \times I_{GT}$ )	dI/dt	50	A/ $\mu$ s
Peak gate current	$I_{GM}$	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	10	W

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

$V_{DRM}/V_{RRM}$ : 600/800V

Symbol	Test Condition	Quadrant		JST24-600/800V		Unit
				BW	CW	
$I_{GT}$	$V_D = 12\text{V}$ $R_L = 33\Omega$	I - II - III	MAX	50	35	mA
$V_{GT}$		I - II - III	MAX	1.3		V
$V_{GD}$	$V_D = V_{DRM}$ $T_j = 125^\circ\text{C}$ $R_L = 3.3\text{K}\Omega$	I - II - III	MIN	0.2		V
$I_L$	$I_G = 1.2I_{GT}$	I - III	MAX	80	70	mA
		II		100	80	
$I_H$	$I_T = 100\text{mA}$		MAX	75	50	mA
dV/dt	$V_D = 2/3V_{DRM}$ Gate Open $T_j = 125^\circ\text{C}$		MIN	1000	500	V/ $\mu$ s

$V_{DRM}/V_{RRM}$ : 1200/1600V

Symbol	Test Condition	Quadrant		JST24-1200V/1600V		Unit
				BW	CW	
$I_{GT}$	$V_D = 12\text{V}$ $R_L = 33\Omega$	I - II - III	MAX	50	35	mA
$V_{GT}$		I - II - III	MAX	1.5		V
$V_{GD}$	$V_D = V_{DRM}$ $T_j = 125^\circ\text{C}$ $R_L = 3.3\text{K}\Omega$	I - II - III	MIN	0.2		V
$I_L$	$I_G = 1.2I_{GT}$	I - III	MAX	90	70	mA
		II		100	80	
$I_H$	$I_T = 100\text{mA}$		MAX	80	60	mA
dV/dt	$V_D = 2/3V_{DRM}$ Gate Open $T_j = 125^\circ\text{C}$		MIN	1500	1000	V/ $\mu$ s

$V_{DRM}/V_{RRM}$ : 600/800V

Symbol	Test Condition	Quadrant		JST24-600/800V		Unit
				B	C	
$I_{GT}$	$V_D = 12V R_L = 33\Omega$	I - II - III	MAX	50	25	mA
		IV		70	50	
$V_{GT}$		ALL	MAX	1.3		V
$V_{GD}$	$V_D = V_{DRM} T_j = 125^\circ C$ $R_L = 3.3K\Omega$	ALL	MIN	0.2		V
$I_L$	$I_G = 1.2I_{GT}$	I - III - IV	MAX	80	70	mA
		II		100	90	
$I_H$	$I_T = 100mA$		MAX	75	60	mA
$dV/dt$	$V_D = 2/3V_{DRM}$ Gate Open $T_j = 125^\circ C$		MIN	500	200	V/ $\mu s$

**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_{TM} = 35A$ $t_p = 380\mu s$	$T_j = 25^\circ C$	1.5	V
$I_{DRM}$	$V_D = V_{DRM} V_R = V_{RRM}$	$T_j = 25^\circ C$	5	$\mu A$
$I_{RRM}$		$T_j = 125^\circ C$	3	mA

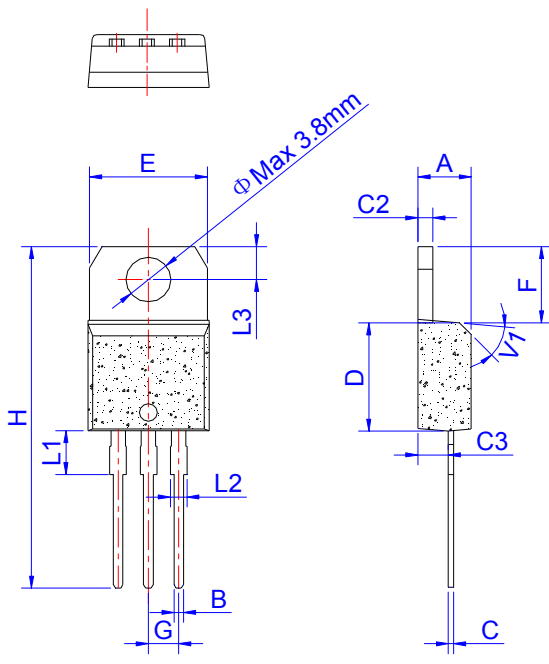
**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	1.5	$^\circ C/W$
		TO-220C/ TO-220B(Non-Ins)	1.1	
		TO-220F(Ins)	1.7	
		TO-262	2.1	
		TO-3P(Ins)	0.67	

ORDERING INFORMATION

<p><b>J</b></p> <p>JieJie Microelectronics Co.,Ltd</p>	<p><b>ST</b></p> <p>Triacs</p> <p><math>I_{T(RMS)}:25A</math></p> <p>D:TO-262 C:TO-220C Z:TO-3P(Ins) A:TO-220A(Ins) F:TO-220F(Ins) B:TO-220B(Non-Ins)</p>	<p><b>24</b></p>	<p><b>A</b></p>	<p><b>-600</b></p>	<p><b>BW</b></p> <p>BW:IGT1-3<math>\leq</math>50mA CW:IGT1-3<math>\leq</math>35mA B:IGT1-3<math>\leq</math>50mA IGT4<math>\leq</math>70mA C:IGT1-3<math>\leq</math>25mA IGT4<math>\leq</math>50mA</p> <p>600:VDRM/VRRM<math>\geq</math>600V 800:VDRM/VRRM<math>\geq</math>800V 1200:VDRM/VRRM<math>\geq</math>1200V 1600:VDRM/VRRM<math>\geq</math>1600V</p>
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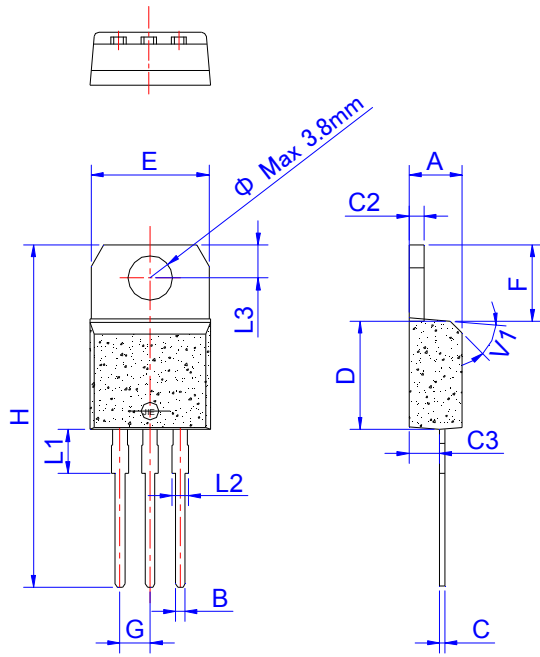
PACKAGE MECHANICAL DATA



TO-220A Ins

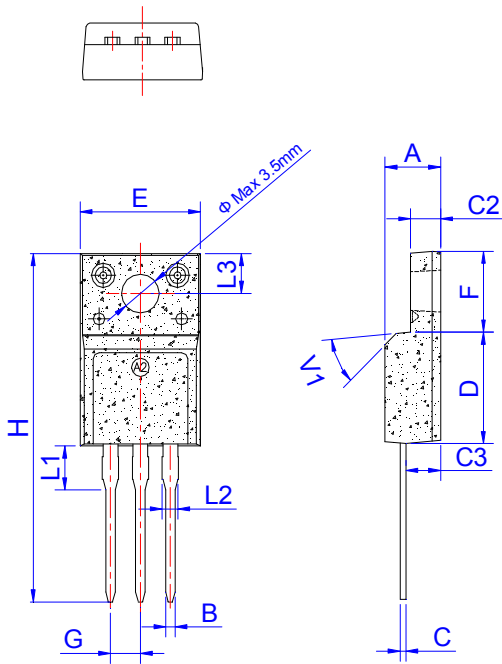
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

PACKAGE MECHANICAL DATA



TO-220B Non-Ins

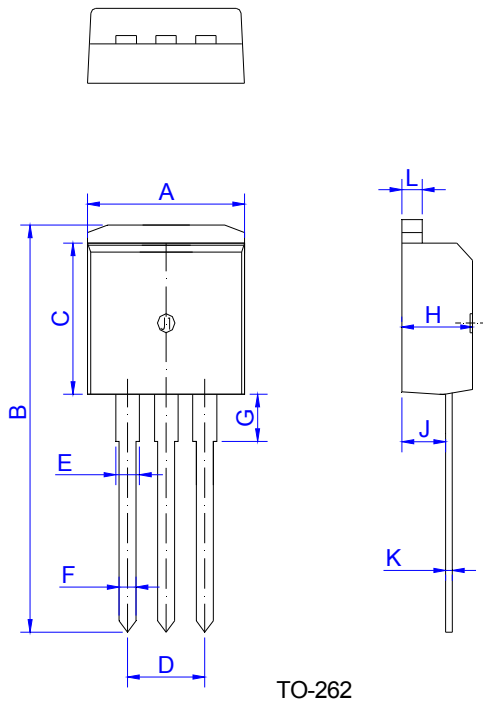
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	



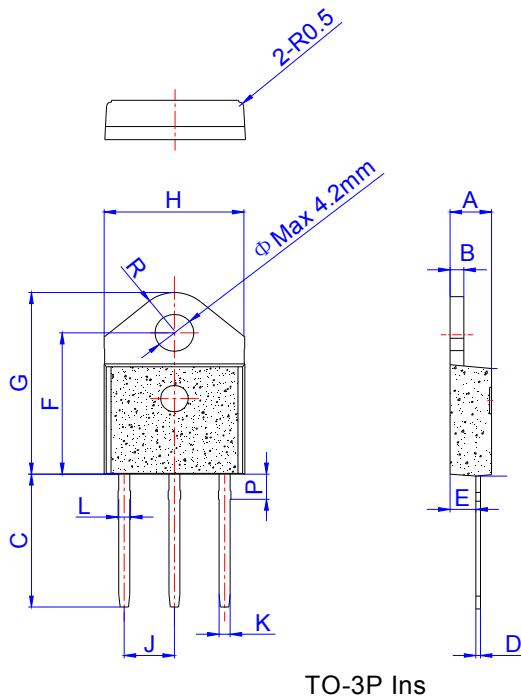
TO-220F Ins

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		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

PACKAGE MECHANICAL DATA

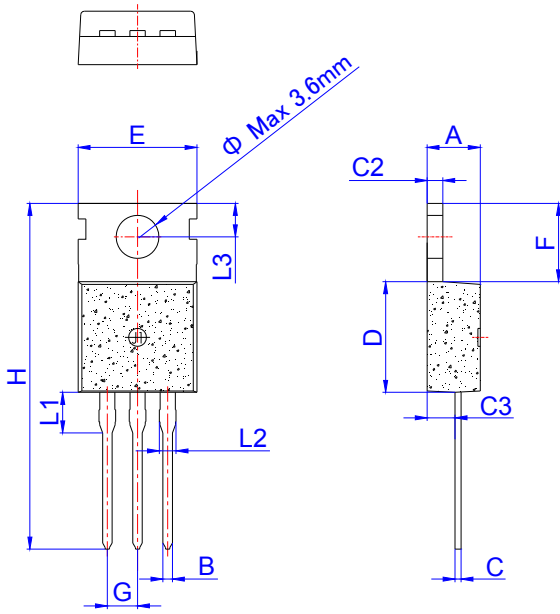


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.95		10.20	0.392		0.402
B	23.25		23.45	0.915		0.923
C	8.90		9.10	0.35		0.358
D	5.00		5.20	0.197		0.205
E	1.20		1.35	0.047		0.053
F	0.80		0.85	0.031		0.033
G	3.30		3.60	0.130		0.142
H	4.45		4.55	0.175		0.179
J	2.50		2.70	0.098		0.106
K	0.38		0.42	0.015		0.017
L	1.25		1.29	0.049		0.051



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	1.35		1.50	0.053		0.059
P	2.80		3.00	0.110		0.118
R		4.35			0.171	

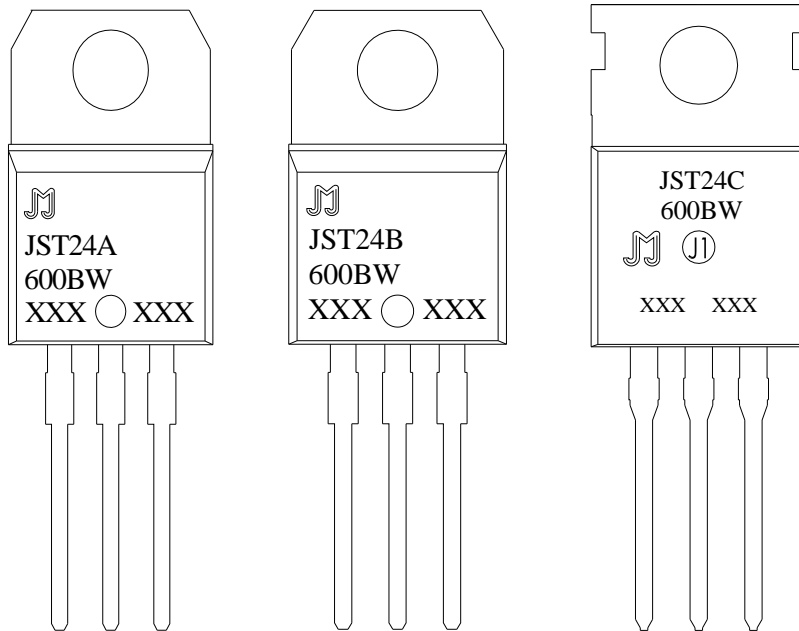
## PACKAGE MECHANICAL DATA

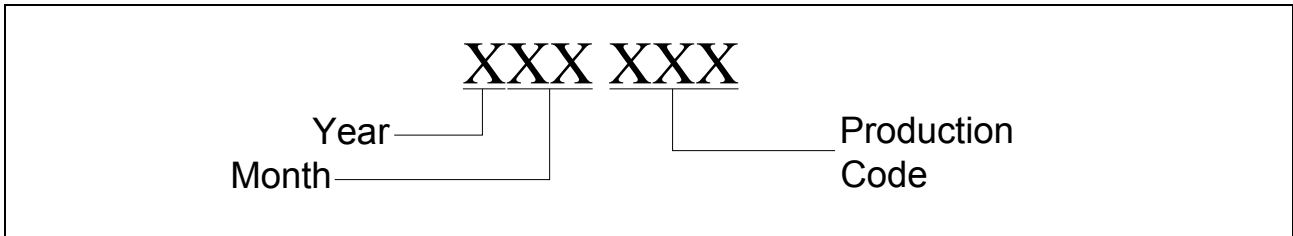
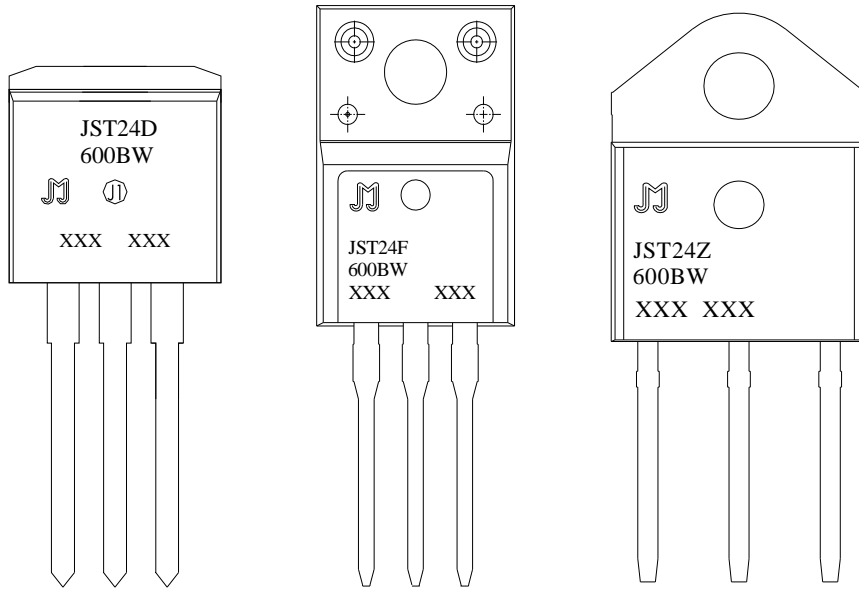


TO-220C

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	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

## MARKING



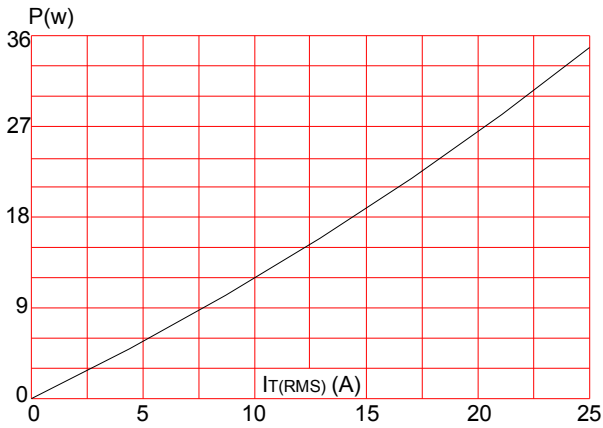


**PACKAGE INFORMATION**

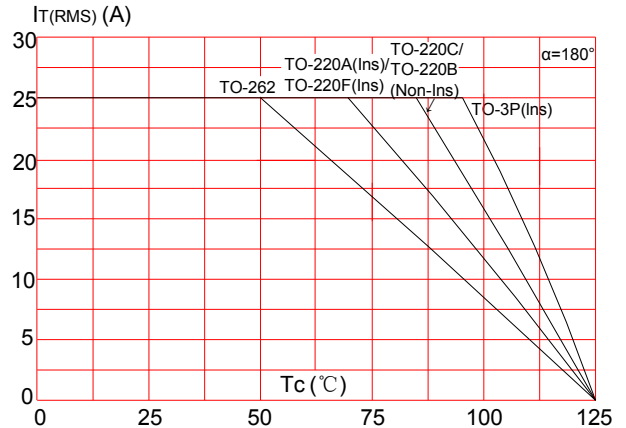
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	8,000
TO-220B	TUBE	50	1,000	8,000
TO-220C	TUBE	50	1,000	8,000
TO-262	TUBE	50	1,000	6,000
TO-220F	TUBE	50	1,000	8,000
TO-3P	TUBE	30	450	3,600



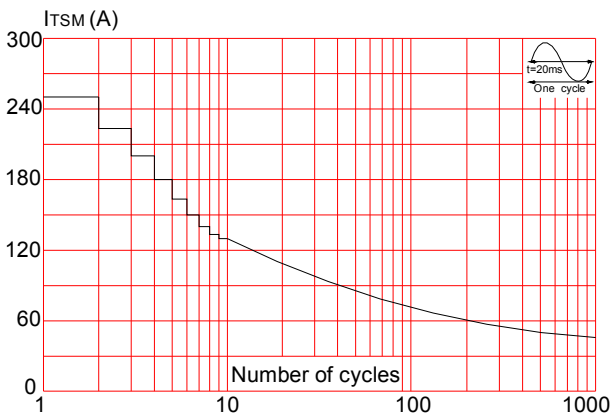
**FIG.1:** Maximum power dissipation versus RMS on-state current



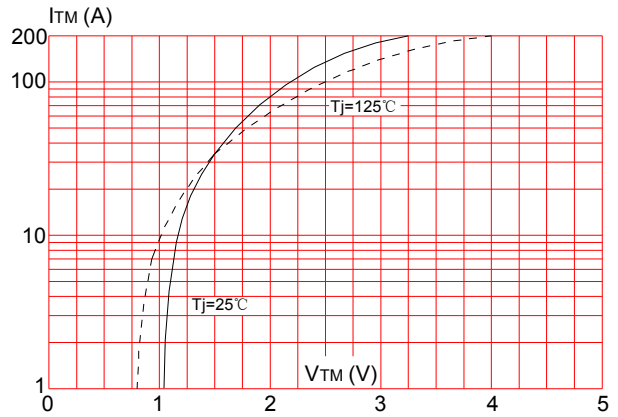
**FIG.2:** RMS on-state current versus case temperature



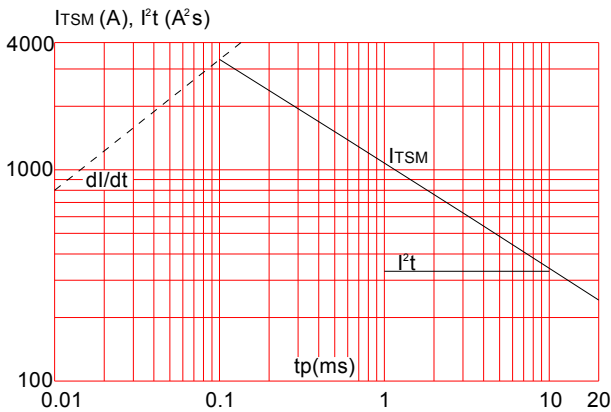
**FIG.3:** Surge peak on-state current versus number of cycles



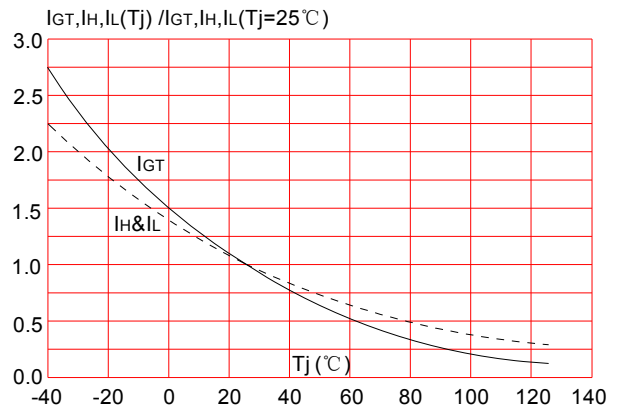
**FIG.4:** On-state characteristics (maximum values)



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



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




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