



JST12 Series 12A TRIACs

Rev.6.0

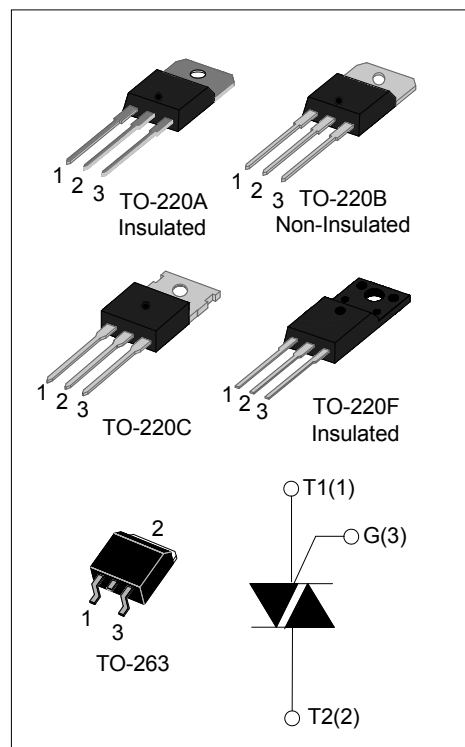
DESCRIPTION:

With high ability to withstand the shock loading of large current, JST12 series triacs provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended for use on inductive load.

From all three terminals to external heatsink, JST12A provides a rated insulation voltage of 2500 V_{RMS}, and JST12F provides a rated insulation voltage of 2000 V_{RMS}, complying with UL standards (File ref: E252906).

MAIN FEATURES

Symbol	Value	Unit
I _{T(RMS)}	12	A
V _{DRM} /V _{RRM}	600 and 800 and 1200	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°C)		V _{DRM}	600/800/1200	V
Repetitive peak reverse voltage (T _j =25°C)		V _{RRM}	600/800/1200	V
Non repetitive surge peak Off-state voltage		V _{DSM}	V _{DRM} +100	V
Non repetitive peak reverse voltage		V _{RSM}	V _{RRM} +100	V
RMS on-state current	TO-220A(Ins) (T _C =90°C)	I _{T(RMS)}	12	A
	TO-220B(Non-Ins)/ TO-220C(T _C =105°C)			
	TO-220F(Ins) (T _C =79°C)			
	TO-263 (T _C =115°C)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I _{TSM}	120	A

I ² t value for fusing (tp=10ms)		I ² t	78	A ² s
Critical rate of rise of on-state current (I _G =2×I _{GT})	I - II -III	dI/dt	50	A/μs
Peak gate current		I _{GM}	4	A
Average gate power dissipation		P _{G(AV)}	1	W
Peak gate power		P _{GM}	5	W

ELECTRICAL CHARACTERISTICS (T_j=25°C unless otherwise specified)

3 Quadrants

Symbol	Test Condition	Quadrant		Value				Unit
				BW	CW	SW	TW	
I _{GT}	V _D =12V R _L =33Ω	I - II -III	MAX	50	35	10	5	mA
V _{GT}		I - II -III	MAX	1.3				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	50	30	20	mA
		II		90	60	40	30	
I _H	I _T =100mA		MAX	60	40	20	15	mA
dV/dt	V _D =2/3V _{DRM} Gate Open T _j =125°C		MIN	1000	500	200	100	V/μs

4 Quadrants

Symbol	Test Condition	Quadrant		Value		Unit
				B	C	
I _{GT}	V _D =12V R _L =33Ω	I - II -III	MAX	50	25	mA
		IV		70	50	
V _{GT}	V _D =V _{DRM} T _j =125°C R _L =3.3KΩ	ALL	MAX	1.3		V
V _{GD}		ALL	MIN	0.2		V
I _L	I _G =1.2I _{GT}	I -III-IV	MAX	50	40	mA
		II		100	80	
I _H	I _T =100mA		MAX	50	25	mA
dV/dt	V _D =2/3V _{DRM} Gate Open T _j =125°C		MIN	500	200	V/μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM} = 17A$ $t_p = 380\mu s$	$T_j = 25^\circ C$	1.5	V
I_{DRM}	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_j = 25^\circ C$	5	μA
I_{RRM}		$T_j = 125^\circ C$	1	mA

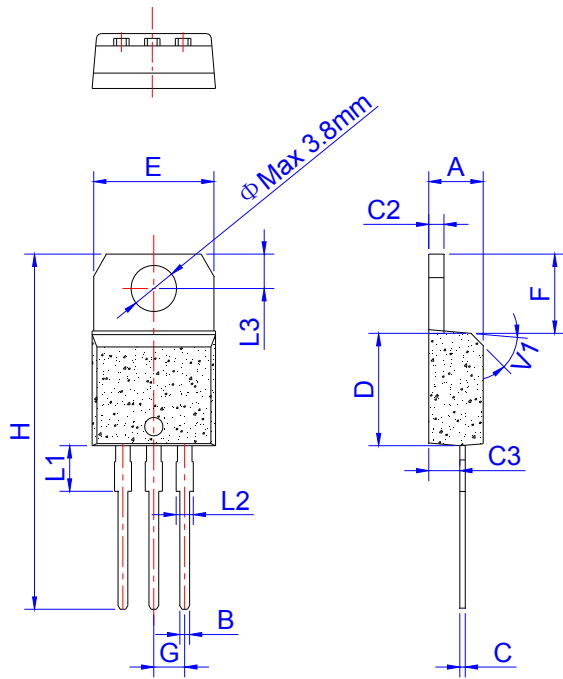
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	2.3	$^\circ C/W$
		TO-220B(Non-Ins)/ TO-220C/TO-263	1.4	
		TO-220F(Ins)	2.5	

ORDERING INFORMATION

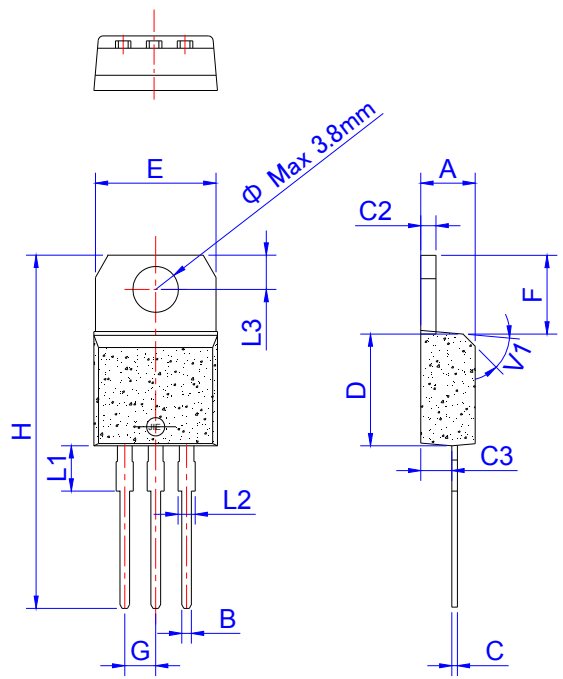
<p>JieJie Microelectronics Co.,Ltd</p>	<p>J</p> <p>Triacs</p> <p>$I_{T(RMS)}: 12A$</p> <p>A:TO-220A(Ins) F:TO-220F(Ins) B:TO-220B(Non-Ins) C:TO-220C E:TO-263</p>	<p>ST</p>	<p>12</p>	<p>A</p>	<p>-600</p> <p>600:$V_{DRM} / V_{RRM} \geq 600V$ 800:$V_{DRM} / V_{RRM} \geq 800V$ 1200:$V_{DRM} / V_{RRM} \geq 1200V$</p>	<p>BW</p> <p>BW:$I_{GT1-3} \leq 50mA$ CW:$I_{GT1-3} \leq 35mA$ SW:$I_{GT1-3} \leq 10mA$ TW:$I_{GT1-3} \leq 5mA$ B:$I_{GT1-3} \leq 50mA$ $I_{GT4} \leq 70mA$ C:$I_{GT1-3} \leq 25mA$ $I_{GT4} \leq 50mA$</p>
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PACKAGE MECHANICAL DATA



TO-220A Ins

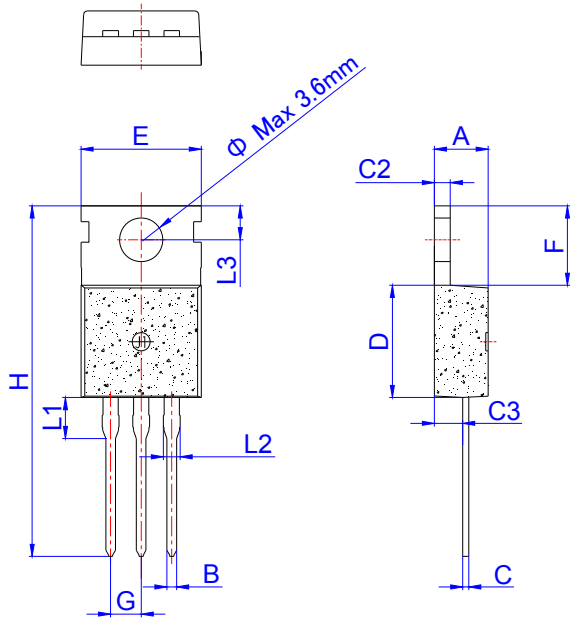
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
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°	



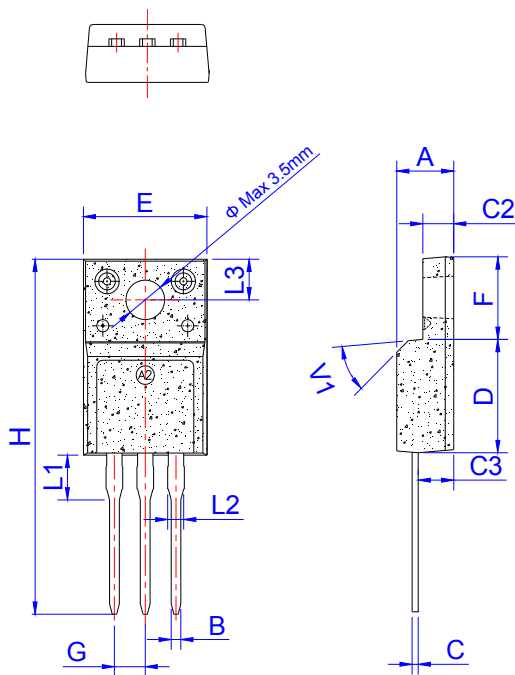
TO-220B Non-Ins

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°	

PACKAGE MECHANICAL DATA

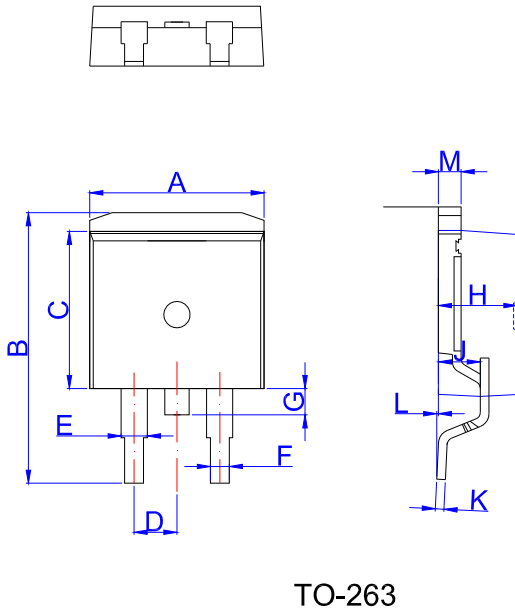


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
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	



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	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
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
M	1.25		1.35	0.049		0.053

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

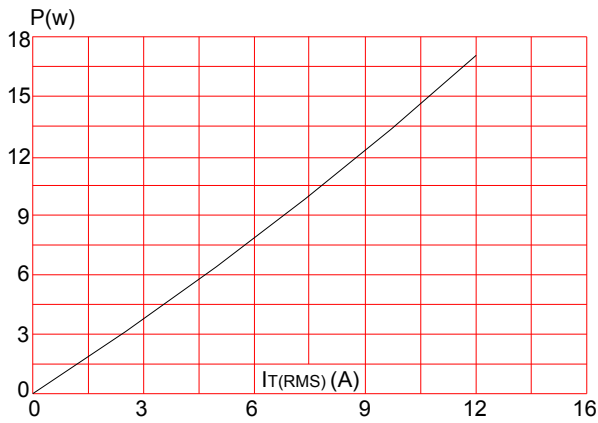


FIG.2: RMS on-state current versus case temperature

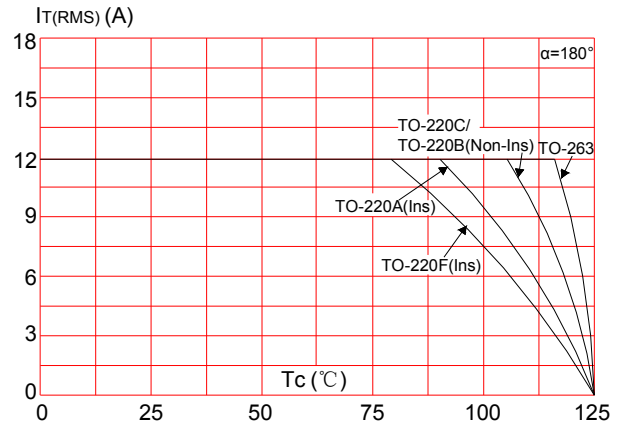


FIG.3: Surge peak on-state current versus number of cycles

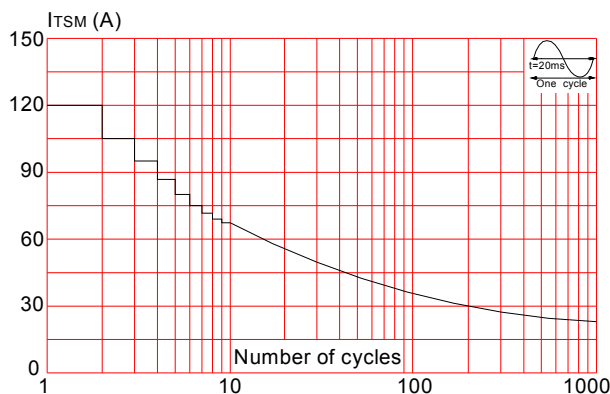


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($dI/dt(I-II-III) < 50\text{A}/\mu\text{s}$)

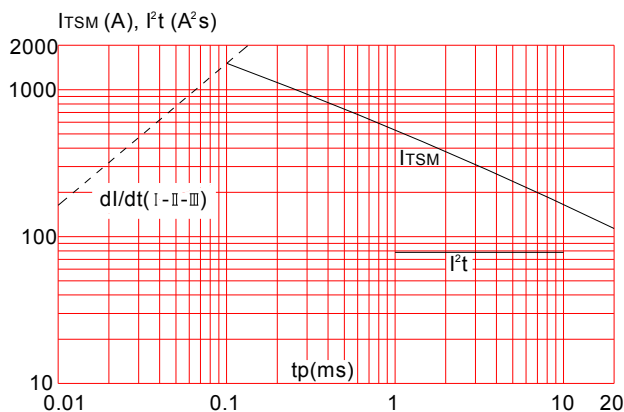


FIG.4: On-state characteristics (maximum values)

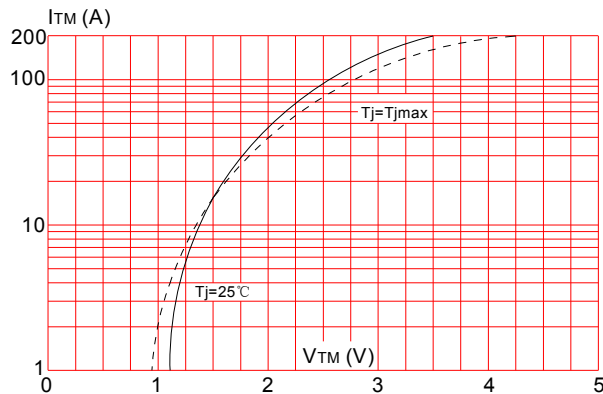
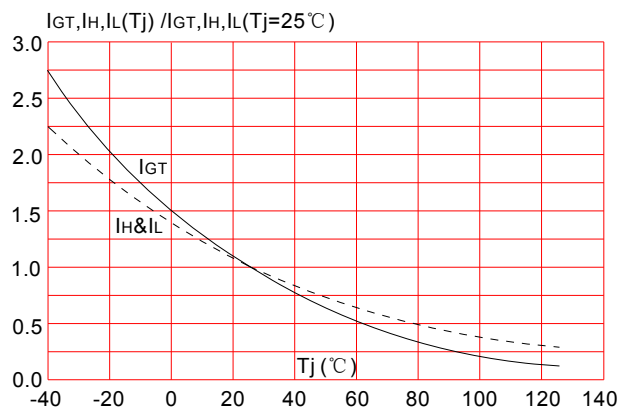


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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