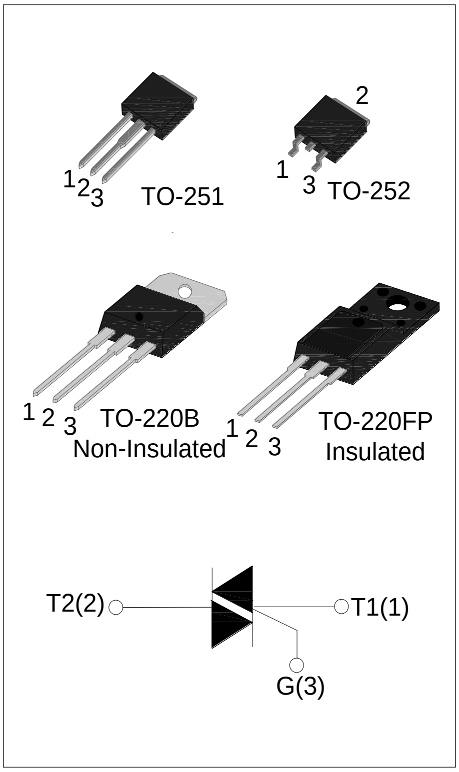
JST04 Series 4A TRIACs

Rev.4.0

DESCRIPTION:

JST04 series triacs, with high ability to withstand the shock loading of large current, 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. JST04F provides insulation voltage rated at 2000V RMS from all three terminals to external heatsink complying with UL standards (File ref: E252906).



MAIN FEATURES

Symbol	Value	Unit
V_{DRM} /V_{RRM}	600 and 800	V
$I_{T(RMS)}$	4	A

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40 - 150	℃
Operating junction temperature range		T_j	-40 - 125	℃
Repetitive peak off-state voltage (T_j=25℃)		V_{DRM}	600/800	V
Repetitive peak reverse voltage (T_j=25℃)		V_{RRM}	600/800	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-251/ TO-252 (T_C=86℃)	$I_{T(RMS)}$	4	A
	TO-220B(Non-Ins) (T_C=95℃)			
	TO-220FP(Ins) (T_C=80℃)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I_{TSM}	40	A
I^2t value for fusing (tp=10ms)		I^2t	8	A^2s

Critical rate of rise of on-state current (I_G =2×I_{GT})	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℃ unless otherwise specified)

Symbol	**Test Condition**	**Quadrant**		**Value**				**Unit**
				TW	**SW**	**CW**	**BW**	
I_{GT}	V_D =12V R_L =33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	5	10	35	50	mA
V_{GT}		Ⅰ-Ⅱ-Ⅲ	MAX	1.5				V
V_{GD}	V_D =V_{DRM} T_j =125℃ R_L =3.3KΩ	Ⅰ-Ⅱ-Ⅲ	MIN	0.2				V
I_L	I_G =1.2I_{GT}	Ⅰ-Ⅲ	MAX	10	20	50	70	mA
		Ⅱ		15	35	60	80	
I_H	I_T =100mA		MAX	10	15	35	60	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_j =125℃		MIN	20	40	400	1000	V/μs
(dV/dt)c	(dI/dt)c=1.8A/ms T_j =125℃		MIN	0.5	1	/	/	V/μs

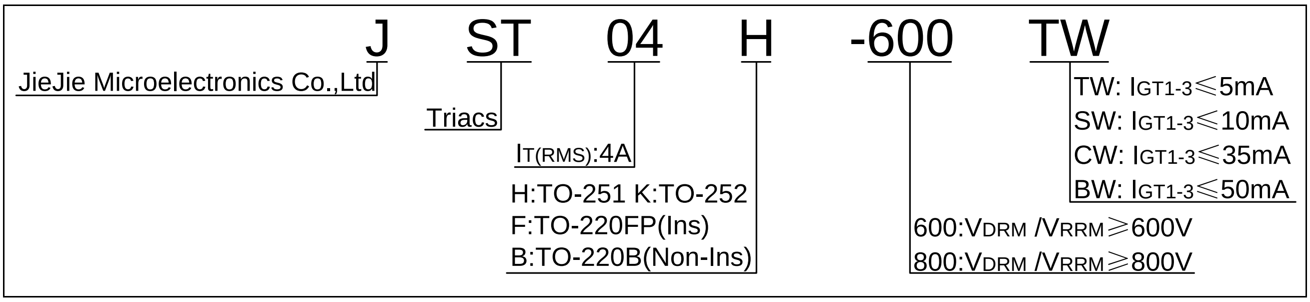
STATIC CHARACTERISTICS

Symbol	**Parameter**		**Value(MAX)**	**Unit**
V_{TM}	I_{TM} =5.5A tp=380μs	T_j=25℃	1.55	V
I_{DRM}	V_D =V_{DRM} V_R =V_{RRM}	T_j=25℃	10	μA
I_{RRM}		T_j=125℃	0.75	mA

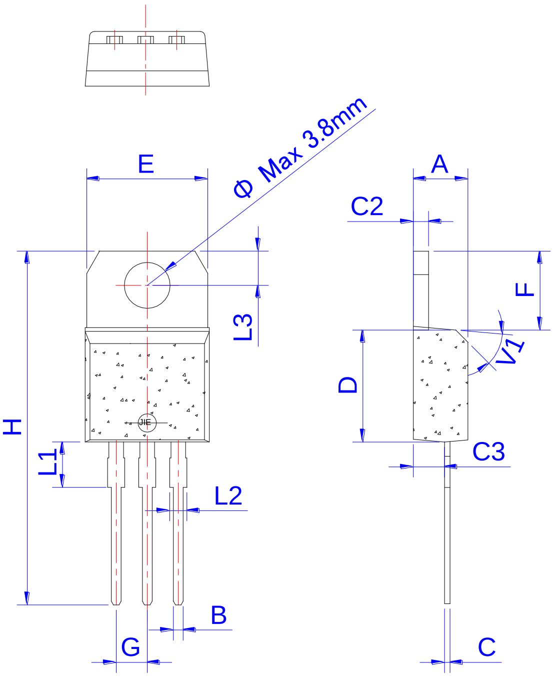
THERMAL RESISTANCES

Symbol	**Parameter**		**Value**	**Unit**
$R_{th(j-c)}$	junction to case(AC)	TO-251/ TO-252	4.2	℃/W
		TO-220B(Non-Ins)	2.4	
		TO-220FP(Ins)	4.5	

ORDERING INFORMATION



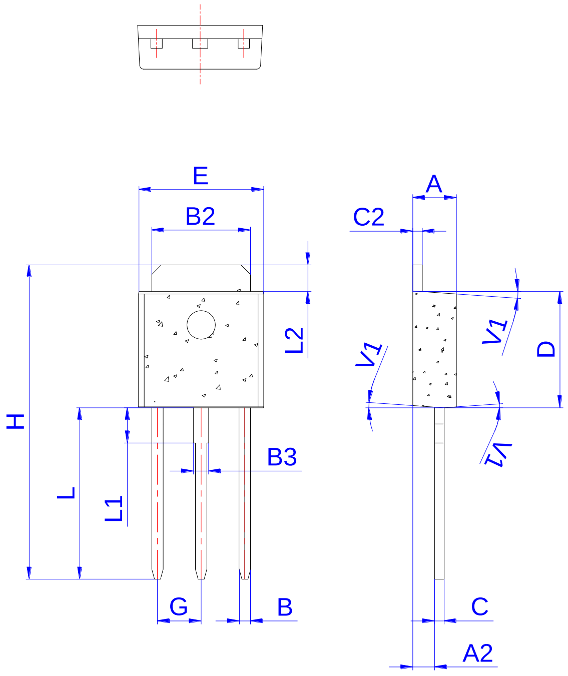
PACKAGE MECHANICAL DATA



TO-220B Non-Ins

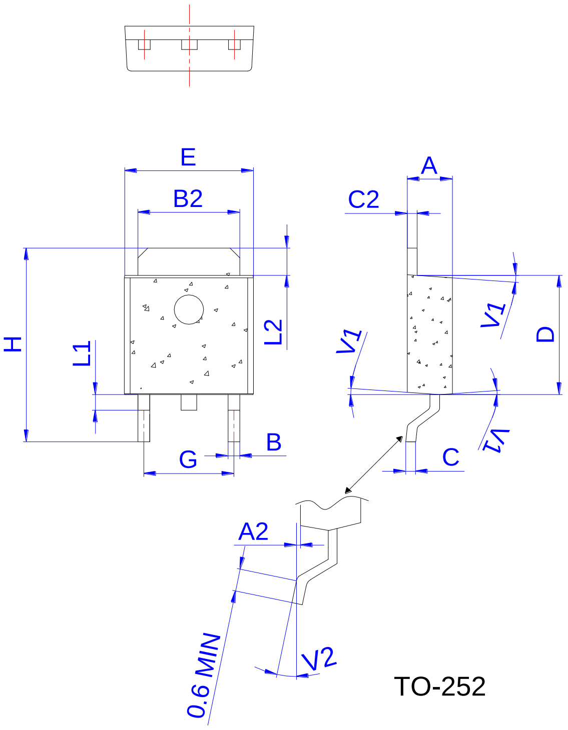
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
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°	

PACKAGE MECHANICAL DATA



TO-251

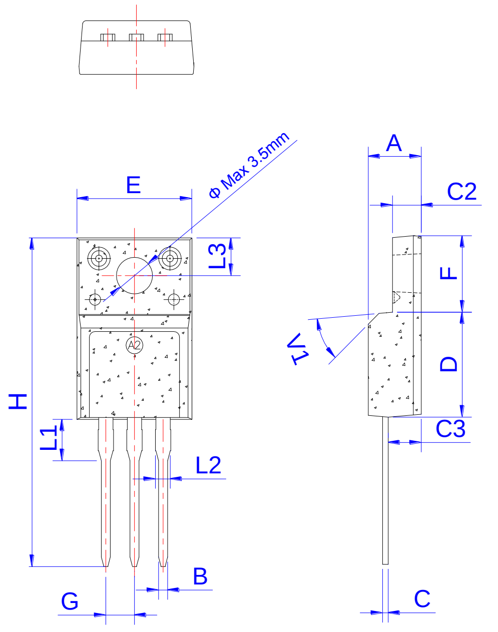
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°

PACKAGE MECHANICAL DATA



TO-220FP 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°	

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

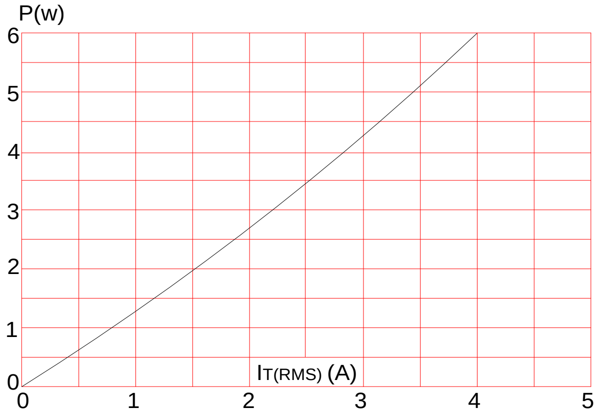


FIG.2: RMS on-state current versus case temperature

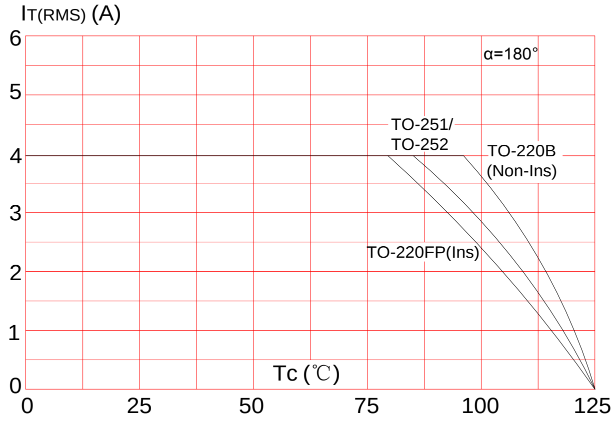


FIG.3: Surge peak on-state current versus number of cycles

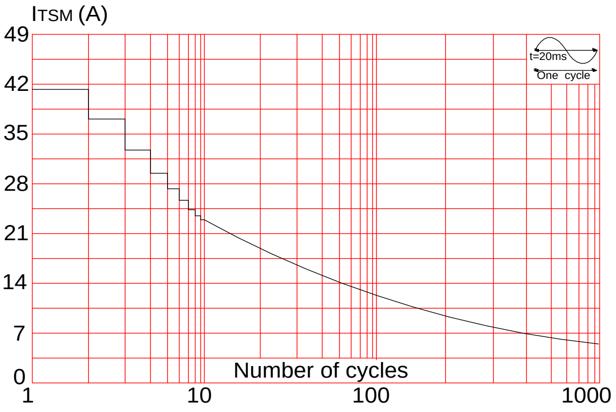


FIG.4: On-state characteristics (maximum values)

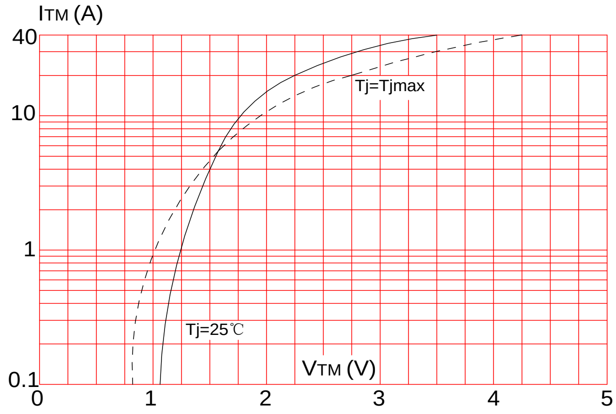


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms and corresponding value of I^2t (dI/dt < 50A/μs)

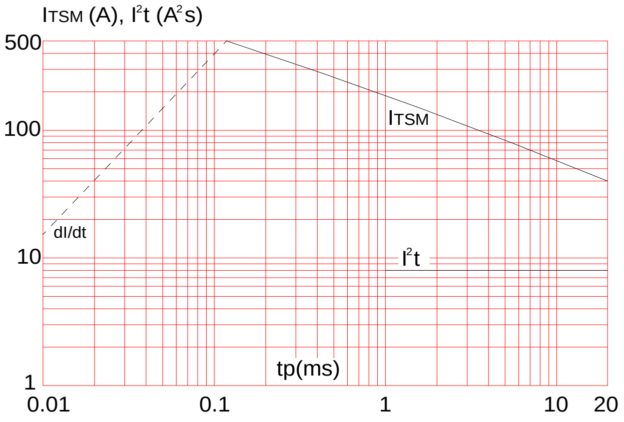
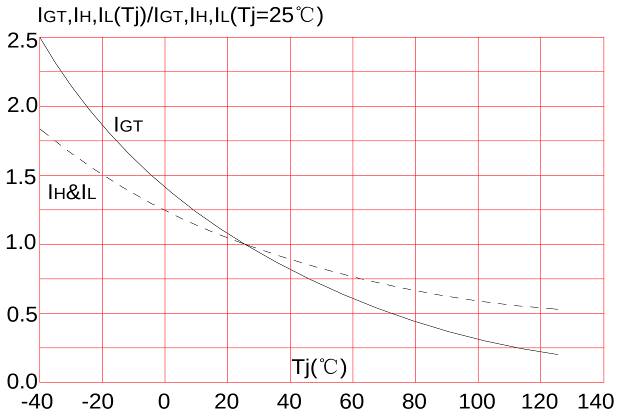


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



This document is the fourth version which is made in 6-June-2015. This document supersedes and replaces all information previously supplied.