



JST04 Series 4A TRIACs

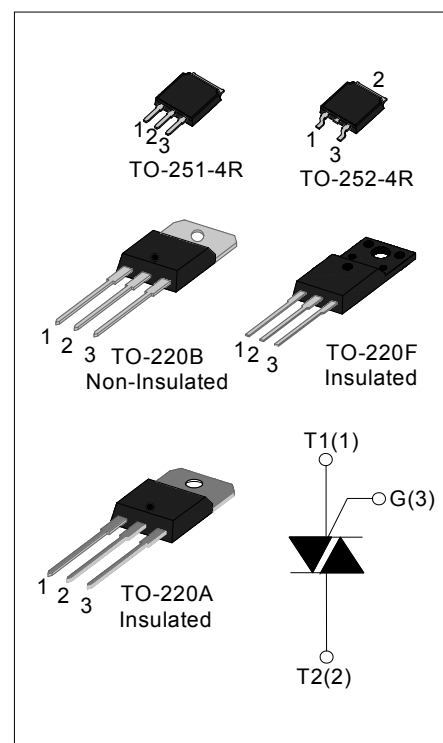
Rev.11.0

DESCRIPTION:

With high ability to withstand the shock loading of large current, JST04 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, JST04A provides a rated insulation voltage of 2500 V_{RMS}, and JST04F provides a rated insulation voltage of 2000 V_{RMS}, 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	°C
Operating junction temperature range		T _j	-40 - 125	°C
Repetitive peak off-state voltage (T _j =25°C)		V _{DRM}	600/800	V
Repetitive peak reverse voltage (T _j =25°C)		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-251-4R/ TO-252-4R(T _C =86°C)	I _{T(RMS)}	4	A
	TO-220B(Non-Ins) (T _C =95°C)			
	TO-220A(Ins)/ TO-220F(Ins) (T _C =80°C)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I _{TSM}	40	A

I ² t value for fusing (tp=10ms)	I ² t	8	A ² s
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°C 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°C 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°C		MIN	50	100	400	1000	V/μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V _{TM}	I _{TM} = 5.5A tp = 380μs	T _j = 25°C	1.5	V
I _{DRM}	V _D = V _{DRM} V _R = V _{RDM}	T _j = 25°C	10	μA
I _{RRM}		T _j = 125°C	0.75	mA

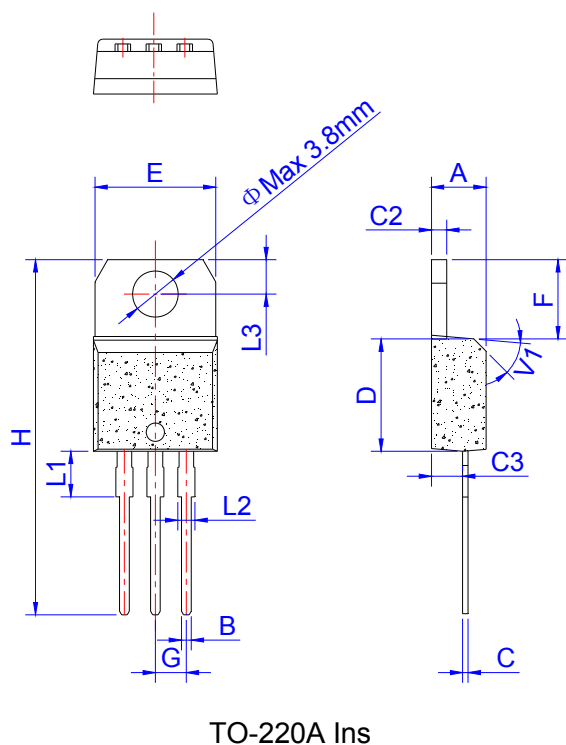
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-251-4R/ TO-252-4R	2.8	°C/W
		TO-220A(Ins)	3.0	
		TO-220B(Non-Ins)	2.5	
		TO-220F(Ins)	3.3	

ORDERING INFORMATION

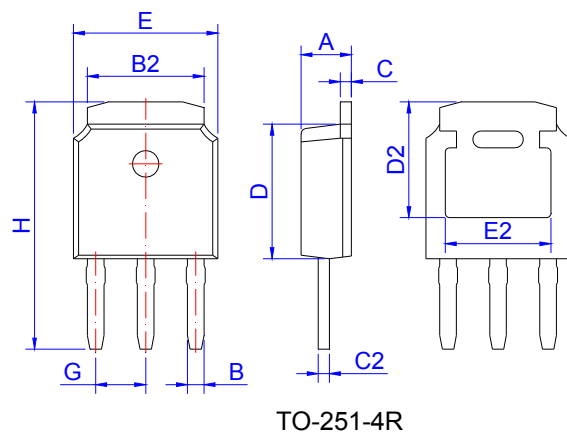
J		ST	04	H	-600	TW
JieJie Microelectronics Co.,Ltd		Triacs	$I_{T(RMS)}:4A$			TW: $I_{GT1-3} \leq 5mA$ SW: $I_{GT1-3} \leq 10mA$ CW: $I_{GT1-3} \leq 35mA$ BW: $I_{GT1-3} \leq 50mA$
		B:TO-220B(Non-Ins) H:TO-251-4R K:TO-252-4R A:TO-220A(Ins) F:TO-220F(Ins)			600: $V_{DRM} \setminus V_{RRM} \geq 600V$ 800: $V_{DRM} \setminus V_{RRM} \geq 800V$	

PACKAGE MECHANICAL DATA

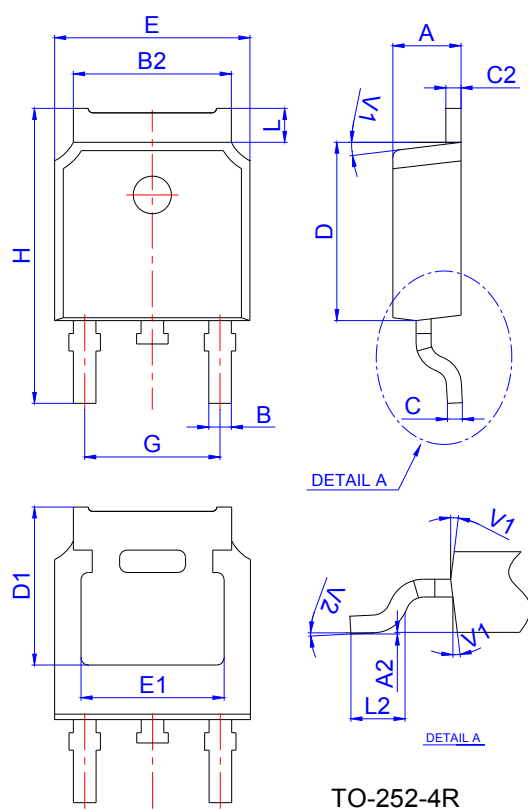


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	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

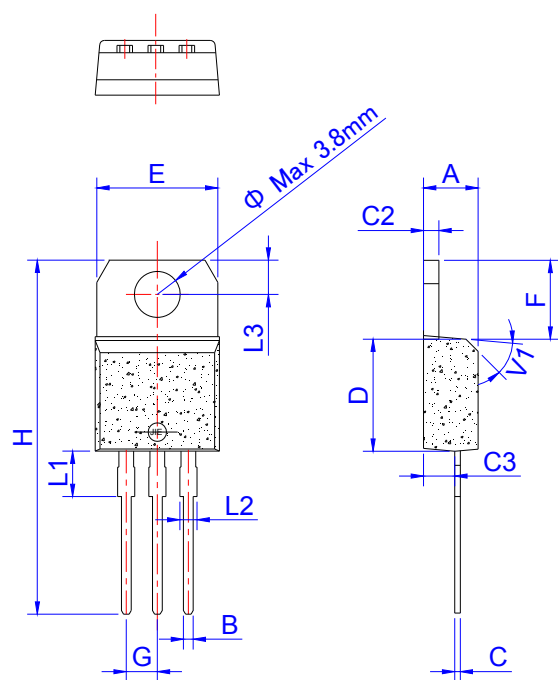


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10	2.30	2.50	0.083	0.091	0.098
B	0.66	0.76	0.86	0.026	0.030	0.034
B2	5.15	5.33	5.48	0.203	0.210	0.216
C	0.44	0.51	0.58	0.017	0.020	0.023
C2	0.44	0.51	0.58	0.017	0.020	0.023
D	5.90	6.10	6.30	0.232	0.240	0.248
D2	5.30 REF			0.209 REF		
E	6.40	6.60	6.80	0.252	0.260	0.268
E2	4.83 REF			0.190 REF		
G	2.19	2.29	2.39	0.086	0.090	0.094
H	10.60	11.20	11.80	0.417	0.441	0.465



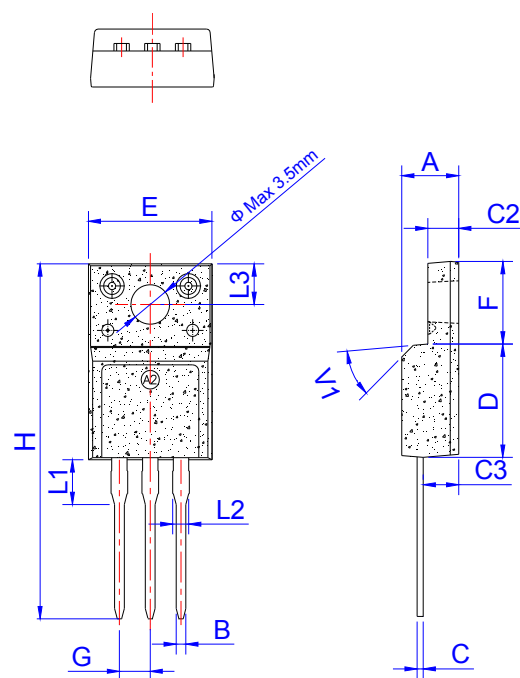
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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°	

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

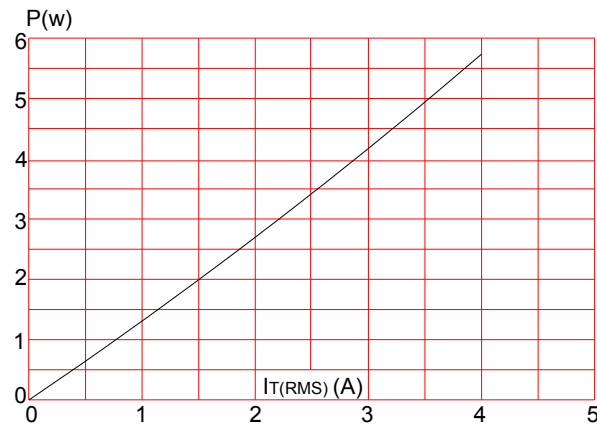


FIG.3: Surge peak on-state current versus number of cycles

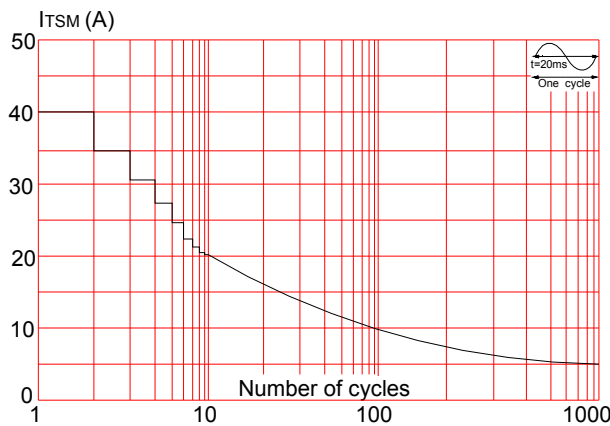


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

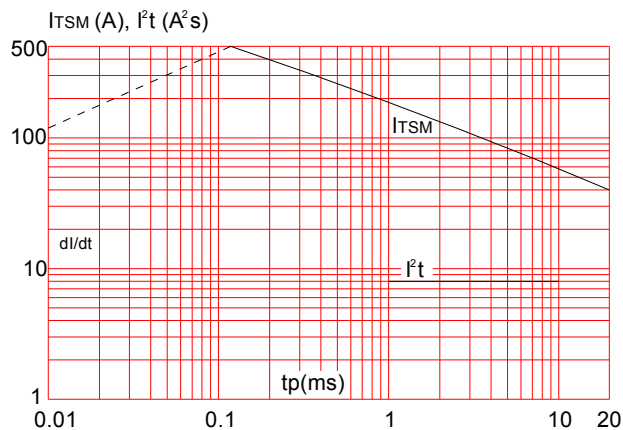


FIG.2: RMS on-state current versus case temperature

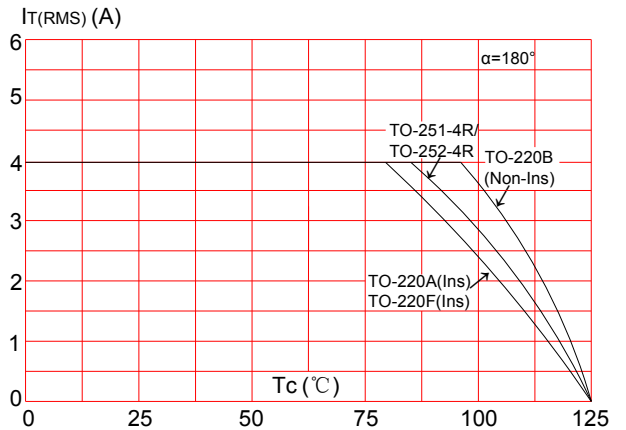


FIG.4: On-state characteristics (maximum values)

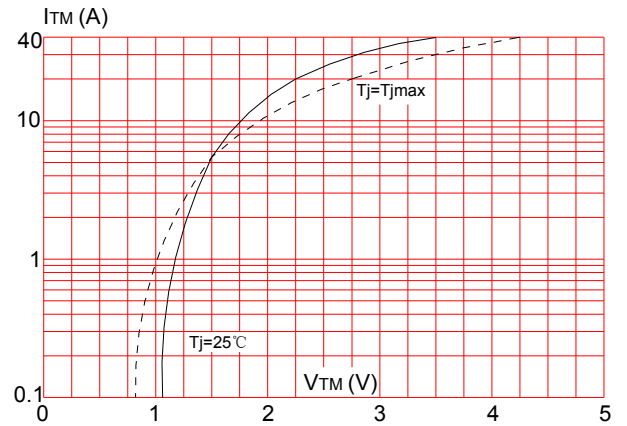
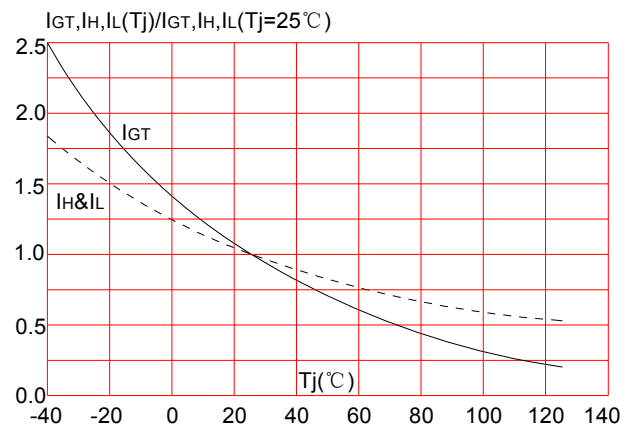


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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