



JST24 Series 25A TRIACs

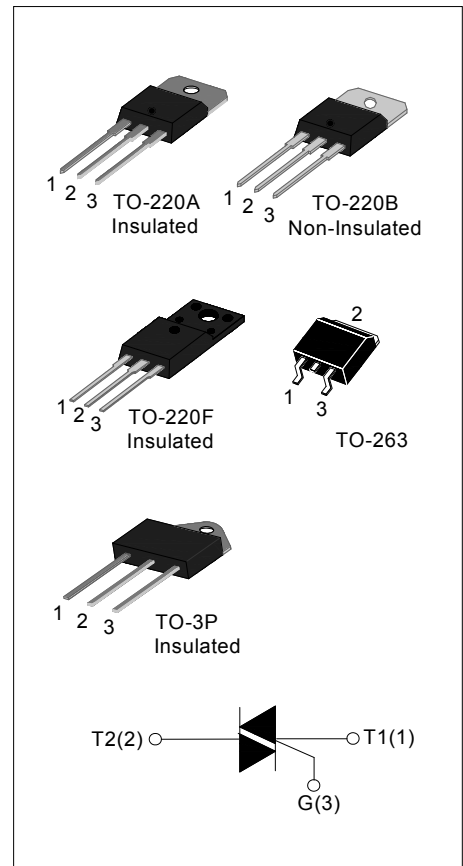
Rev.7.0

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_{RMS}, and JST24F provides a rated insulation voltage of 2000 V_{RMS}, complying with UL standards (File ref: E252906).

MAIN FEATURES

Symbol	Value	Unit
I _{T(RMS)}	25	A
V _{DRM} /V _{RRM}	600/800/1200/1600	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}	600/800/1200/1600	V
Repetitive peak reverse voltage (T _j =25°C)		V _{RRM}	600/800/1200/1600	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)/ TO-220F(Ins) (T _C =75°C)	I _{T(RMS)}	25	A
	TO-220B(Non-Ins) (T _C =90°C)			
	TO-263 (T _C =70°C)			
	TO-3P(Ins) (T _C =105°C)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I _{TSM}	250	A

I ² t value for fusing (tp=10ms)	I ² t	340	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}	10	W

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

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

Symbol	Test Condition	Quadrant		JST24-600/800V		Unit
				BW	CW	
I _{GT}	V _D =12V R _L =33Ω	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°C R _L =3.3KΩ	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 =100mA		MAX	75	50	mA
dV/dt	V _D =2/3V _{DRM} Gate Open T _j =125°C		MIN	1000	500	V/μs

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

Symbol	Test Condition	Quadrant		JST24-1200V/1600V		Unit
				BW	CW	
I _{GT}	V _D =12V R _L =33Ω	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°C R _L =3.3KΩ	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 =100mA		MAX	80	60	mA
dV/dt	V _D =2/3V _{DRM} Gate Open T _j =125°C		MIN	1500	1000	V/μs

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

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	100	
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/ μs

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	μA
I_{RRM}		$T_j = 125^\circ C$	3	mA

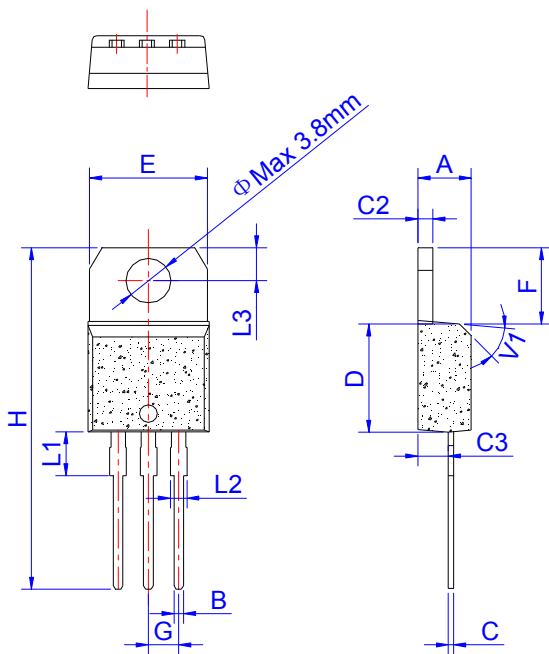
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	1.5	$^\circ C/W$
		TO-220B(Non-Ins)	1.1	
		TO-220F(Ins)	1.7	
		TO-263	2.1	
		TO-3P(Ins)	0.67	

ORDERING INFORMATION

J	ST	24	A	-600	BW
JieJie Microelectronics Co.,Ltd	Triacs IT(RMS):25A E:TO-263 Z:TO-3P(Ins) A:TO-220A(Ins) F:TO-220F(Ins) B:TO-220B(Non-Ins)				BW:IGT1-3≤50mA CW:IGT1-3≤35mA B:IGT1-3≤50mA IGT4≤70mA C:IGT1-3≤25mA IGT4≤50mA 600:VDRM/VRRM≥600V 800:VDRM/VRRM≥800V 1200:VDRM/VRRM≥1200V 1600:VDRM/VRRM≥1600V

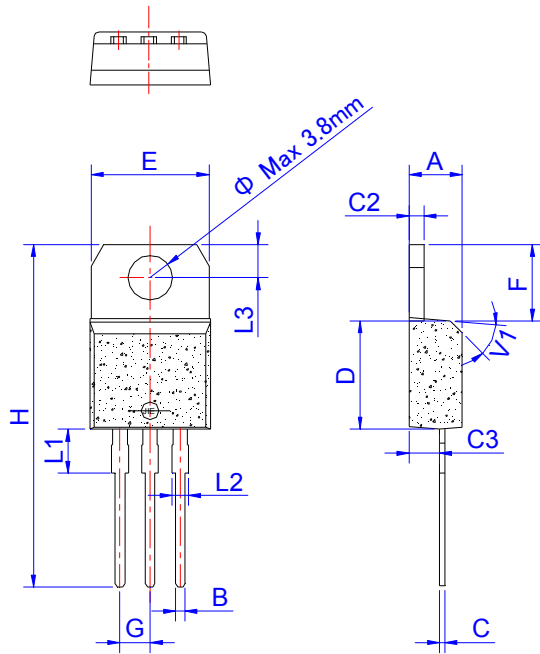
PACKAGE MECHANICAL DATA



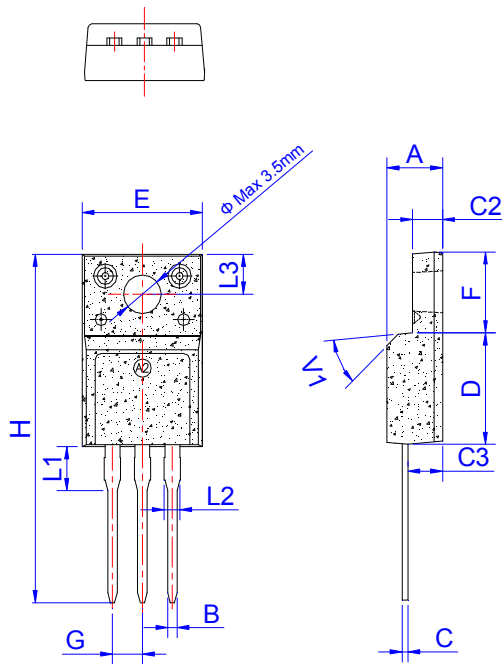
TO-220A Ins

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

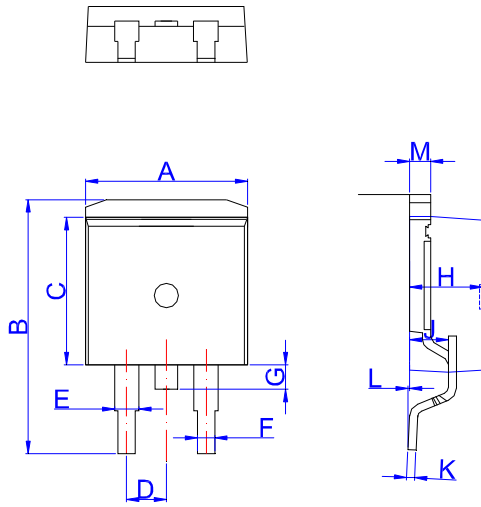


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	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



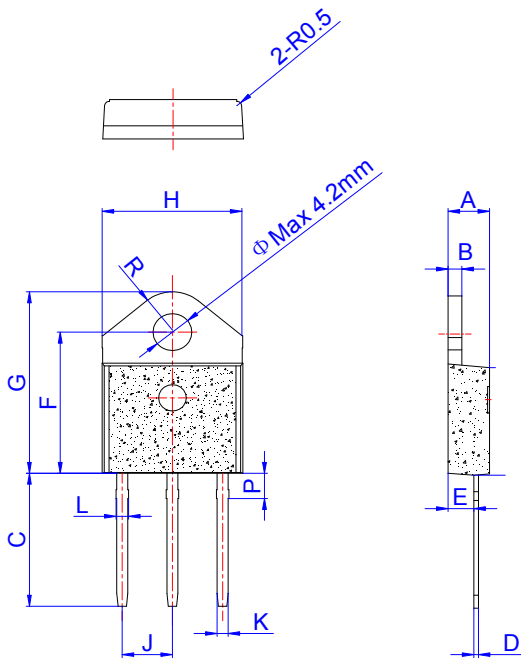
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			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



TO-263

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



TO-3P Ins

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	

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

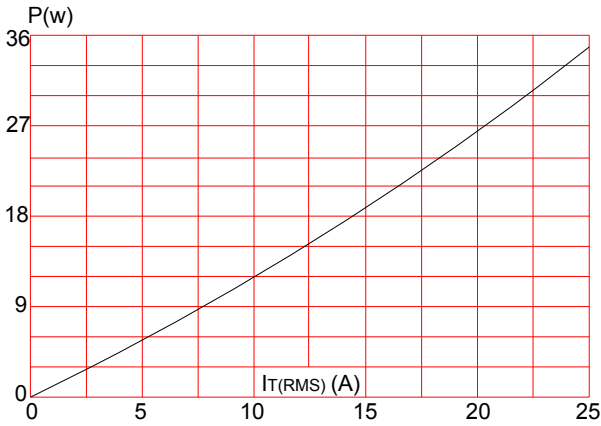


FIG.2: RMS on-state current versus case temperature

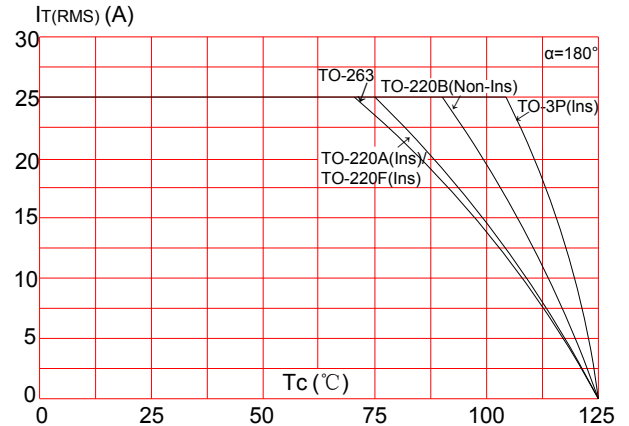


FIG.3: Surge peak on-state current versus number of cycles

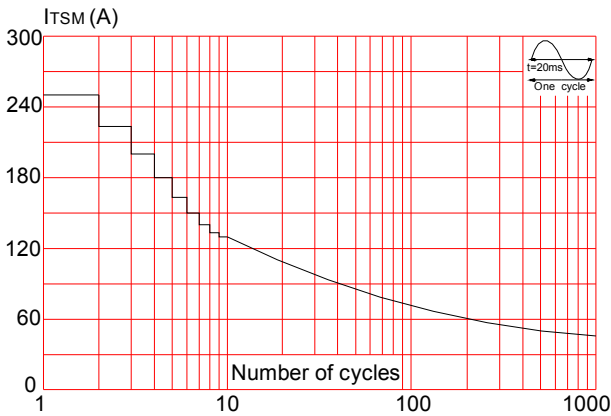


FIG.4: On-state characteristics (maximum values)

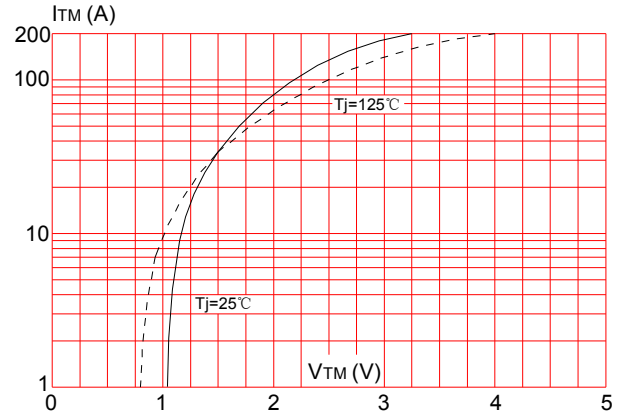


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

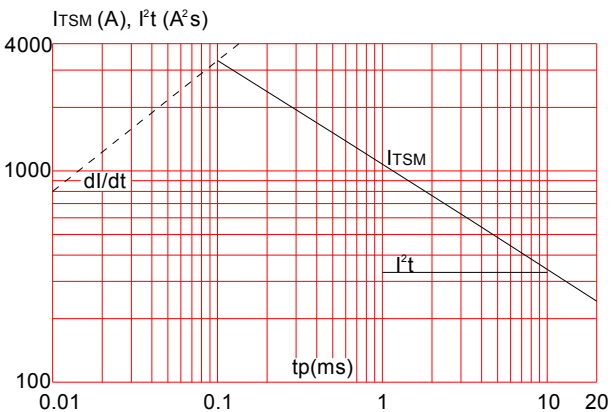
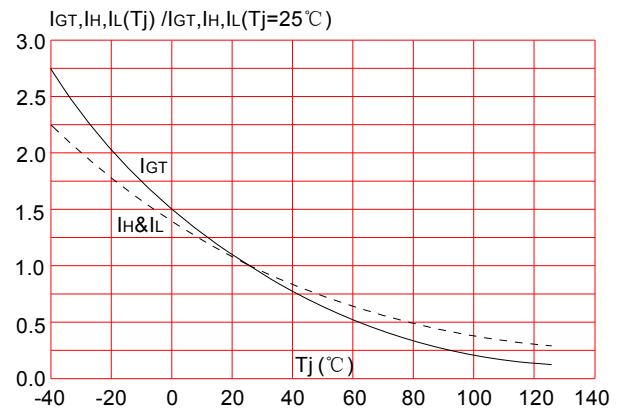


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature




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