



JST24 Series 25A TRIACs

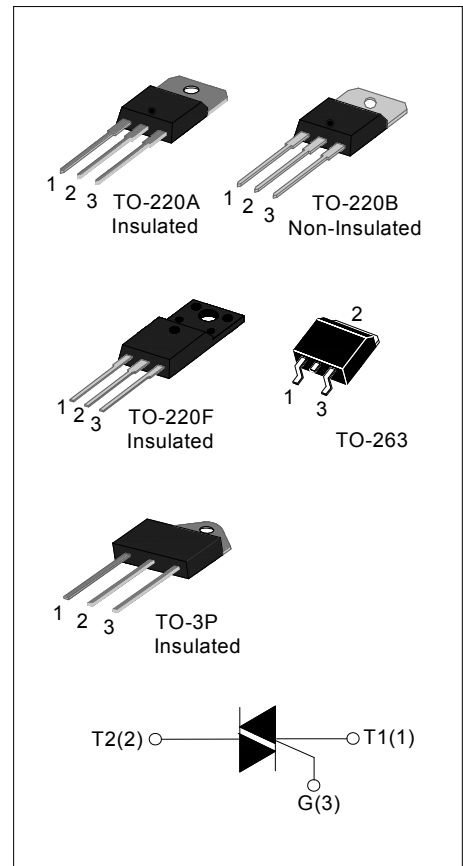
Rev.7.0

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 ($T_j=25^{\circ}C$)		V_{DRM}	600/800/1200/1600	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)		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) ($T_C=75^{\circ}C$)	$I_{T(RMS)}$	25	A
	TO-220B(Non-Ins) ($T_C=90^{\circ}C$)			
	TO-263 ($T_C=70^{\circ}C$)			
	TO-3P(Ins) ($T_C=105^{\circ}C$)			
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

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

Symbol	Test Condition	Quadrant		JST24-600/800V		Unit
				B	C	
I_{GT}	$V_{\text{D}}=12\text{V } R_{\text{L}}=33\Omega$	I - II -III	MAX	50	25	mA
		IV		70	50	
V_{GT}		ALL	MAX	1.3		V
V_{GD}	$V_{\text{D}}=V_{\text{DRM}} T_{\text{J}}=125^{\circ}\text{C}$ $R_{\text{L}}=3.3\text{K}\Omega$	ALL	MIN	0.2		V
I_{L}	$I_{\text{G}}=1.2I_{\text{GT}}$	I -III-IV	MAX	80	70	mA
		II		100	100	
I_{H}	$I_{\text{T}}=100\text{mA}$		MAX	75	60	mA
dV/dt	$V_{\text{D}}=2/3V_{\text{DRM}}$ Gate Open $T_{\text{J}}=125^{\circ}\text{C}$		MIN	500	200	V/ μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{\text{TM}}=35\text{A } t_{\text{p}}=380\mu\text{s}$	$T_{\text{J}}=25^{\circ}\text{C}$	1.5	V
I_{DRM}	$V_{\text{D}}=V_{\text{DRM}} V_{\text{R}}=V_{\text{RRM}}$	$T_{\text{J}}=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_{\text{J}}=125^{\circ}\text{C}$	3	mA

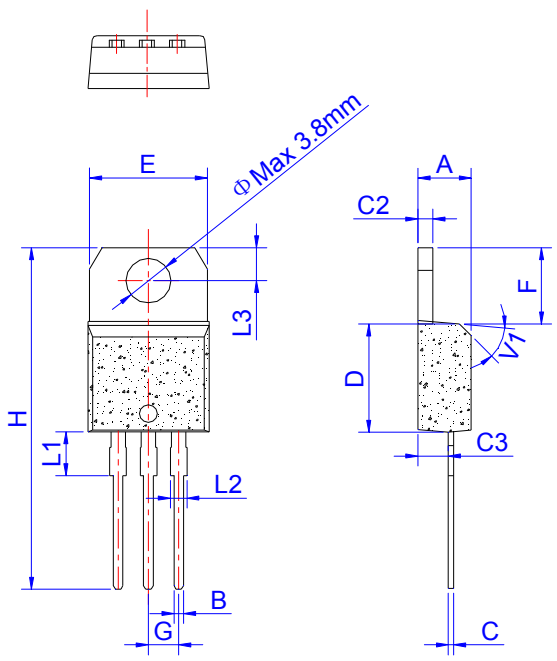
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{\text{th(j-c)}}$	junction to case(AC)	TO-220A(Ins)	1.5	$^{\circ}\text{C/W}$
		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	$I_{T(RMS)}:25A$			$BW:I_{GT1-3}\leq 50mA$ $CW:I_{GT1-3}\leq 35mA$ $B:I_{GT1-3}\leq 50mA\ I_{GT4}\leq 70mA$ $C:I_{GT1-3}\leq 25mA\ I_{GT4}\leq 50mA$
		E:TO-263 Z:TO-3P(Ins) A:TO-220A(Ins) F:TO-220F(Ins) B:TO-220B(Non-Ins)		600: $V_{DRM}/V_{RRM}\geq 600V$ 800: $V_{DRM}/V_{RRM}\geq 800V$ 1200: $V_{DRM}/V_{RRM}\geq 1200V$ 1600: $V_{DRM}/V_{RRM}\geq 1600V$	

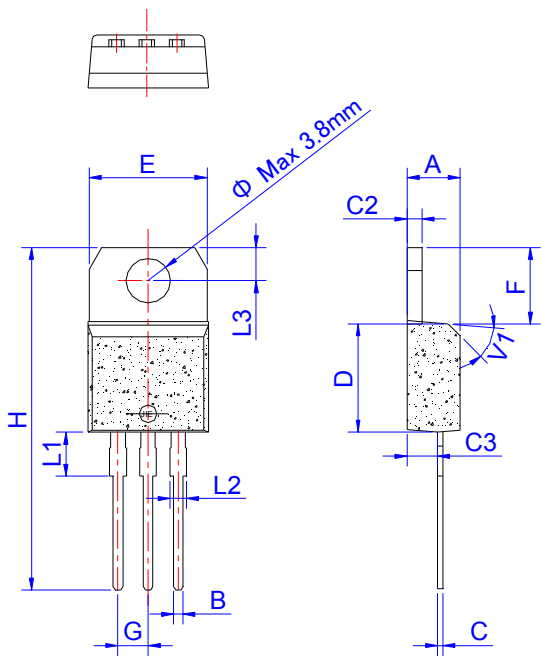
PACKAGE MECHANICAL DATA



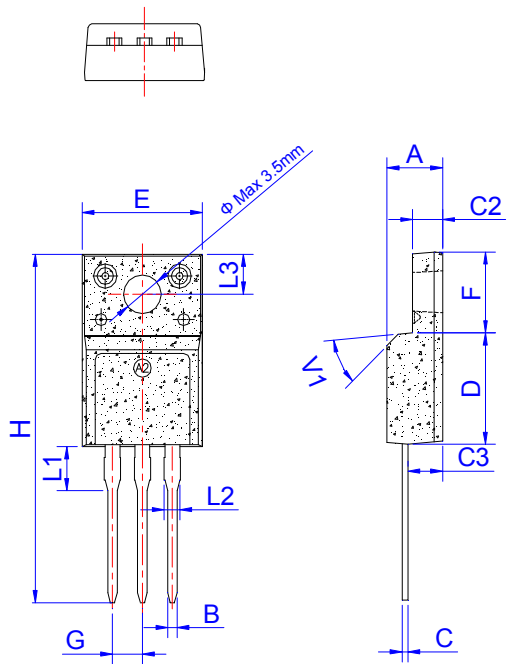
TO-220A Ins

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

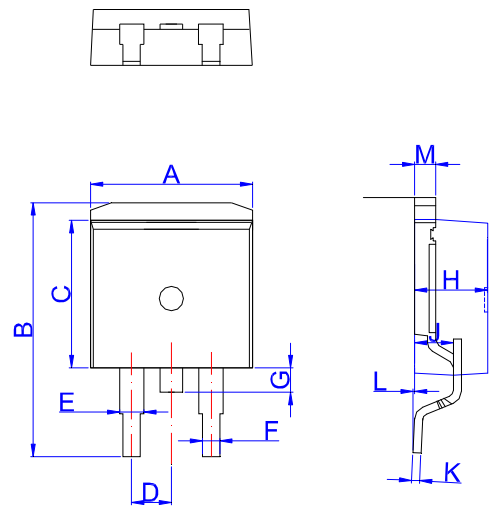


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	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



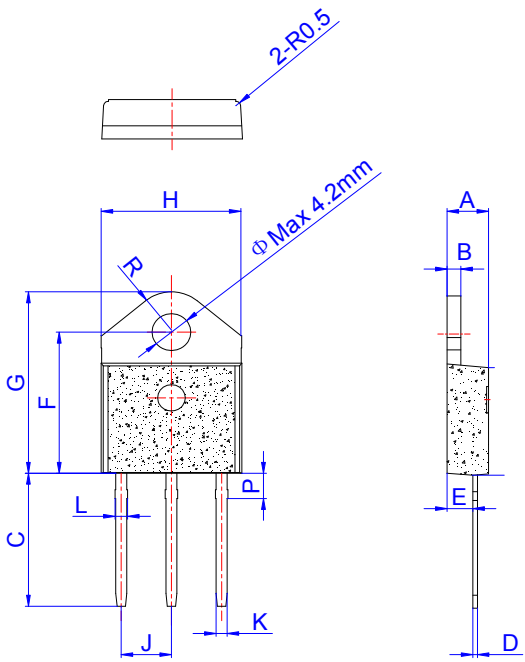
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54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

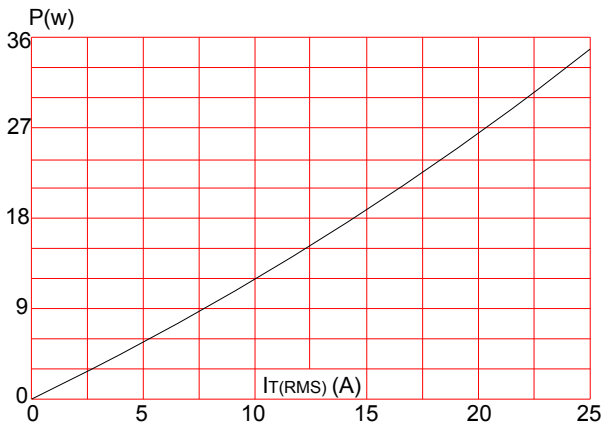


FIG.3: Surge peak on-state current versus number of cycles

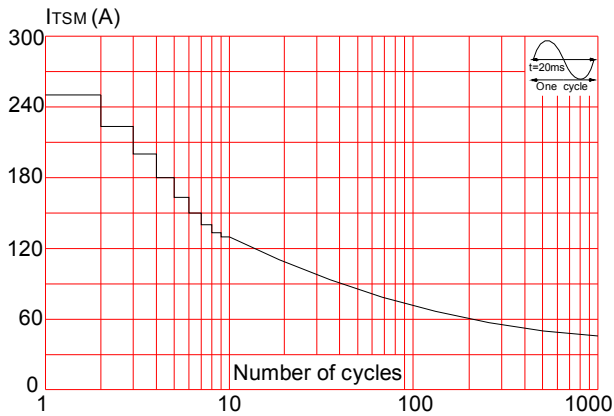


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

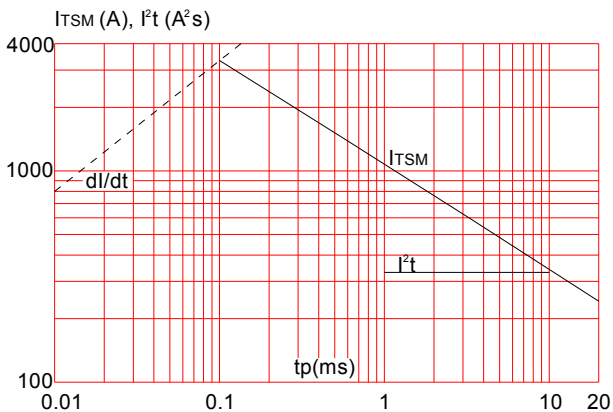


FIG.2: RMS on-state current versus case temperature

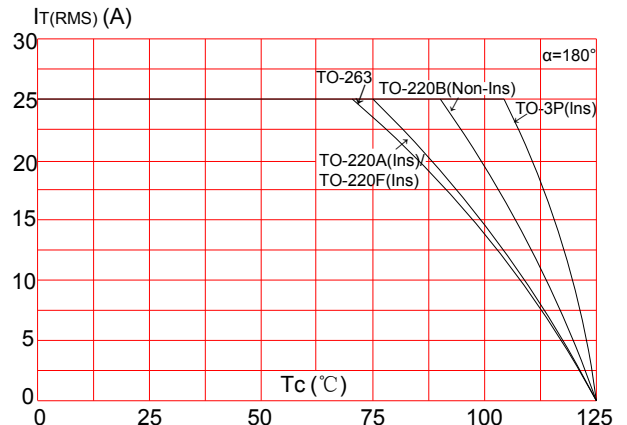


FIG.4: On-state characteristics (maximum values)

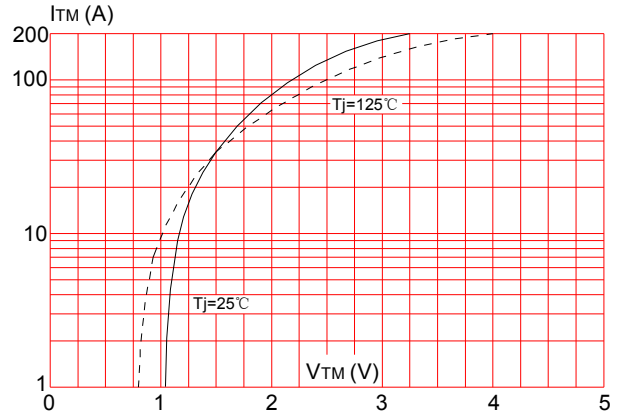
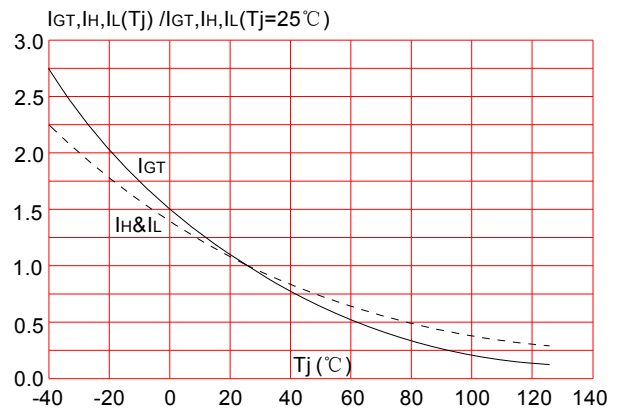


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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