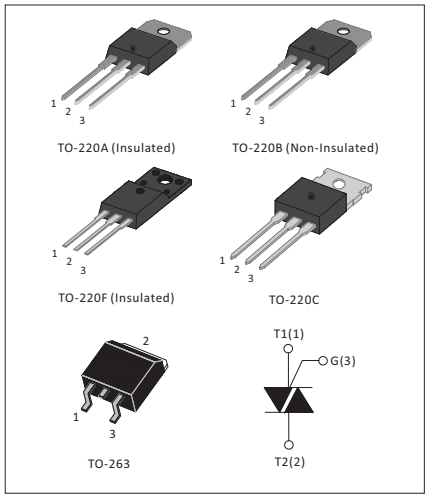
FEATURES

Available either in through hole or surface mount packages,the 12A series Triac is suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation,induction motor starting circuits...or for phase control operation in light dimmers, motor speed controllers...
The snubberless versions are specially recommended for use on inductive loads,thanks to their high commutation performances.



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{RRM}	600/800/1200	V
V_{DRM}	600/800/1200	V

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}	600/800/1200	V
Repetitive peak reverse voltage (T_j=25℃)		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℃)	$I_{T(RMS)}$	12	A
	TO-220B(Non-Ins)/TO-220C(T_C=105℃)			
	TO-220F(Ins)(T_C=79℃)			
	TO-263(T_C=115℃)			
Non repetitive surge peak on-state current(full cycle, F=50Hz)		I_{TSM}	120	A
I^2t value for fusing (t_p=10ms)		I^2t	78	A^2s
Critical rate of rise of on-state current(I_G =2×I_{GT})	Ⅰ-Ⅱ-Ⅲ	d_i/d_t	50	A/us
Peak gate current		I_{GM}	4	A
Average gate power dissipation		$P_{G(AV)}$	1	W
Peak gate power		P_{GM}	5	W

STATIC CHARACTERISTICS

Symbol	Parameter	Value(Max)	Unit
V_{TM}	I_{TM} =17A,t_p=380μs	1.5	V
I_{DRM}	V_D=V_{DRM} ,V_R =V_{RRM},T_j=25℃	5	uA
I_{RRM}	V_D=V_{DRM} ,V_R =V_{RRM},T_j=125℃	1	mA

ELECTRICAL CHARACTERISTICS(T_j=25℃ 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_{GD}	V_D=V_{DRM},R_L=3.3KΩ,T_j=125℃	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
d_v/d_t	V_D=2/3V_{DRM},Gate open,T_j=125℃		Min	1000	500	200	100	V/uS

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	Max	70	50	
V_{GT}	V_D=12V,R_L=33Ω	All	Max	1.3		V
V_{GD}	V_D=V_{DRM},R_L=3.3KΩ,T_j=125℃	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
d_v/d_t	V_D=2/3V_{DRM},Gate open,T_j=125℃		Min	500	200	V/uS

THERMAL RESISTANCES

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

PRODUCT IDENTIFICATION

ST A 12A 60 BW

I_{GT}
BW: I_{GT1-3}≤50mA CW: I_{GT1-3}≤35mA SW: I_{GT1-3}≤10mA TW: I_{GT1-3}≤5mA
B: I_{GT1-3}≤50mA,I_{GT4}≤70mA, C: I_{GT1-3}≤25mA,I_{GT4}≤50mA

V_{DRM}/V_{RRM}
60: 600V 80:800V 120:1200V

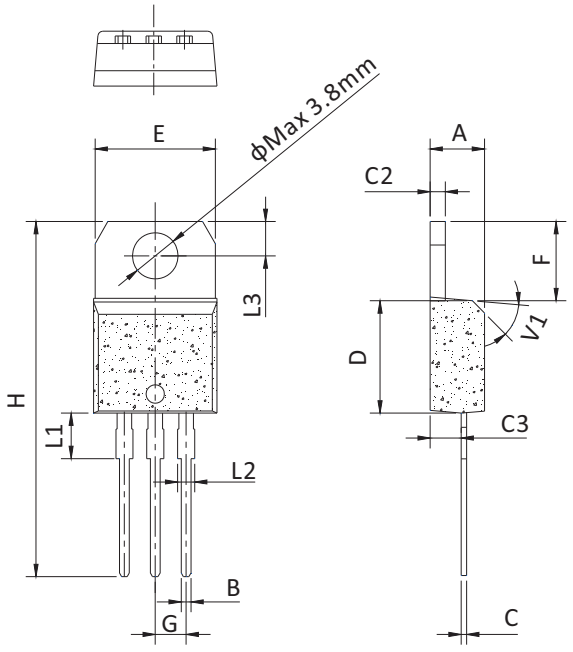
$I_{T(RMS)}$
12A: 12A

Package
A: TO-220A B:TO-220B C:TO-220C F:TO-220F E:TO-263

Product Line
ST: Semiware Triacs

PACKAGE MECHANICAL DATA

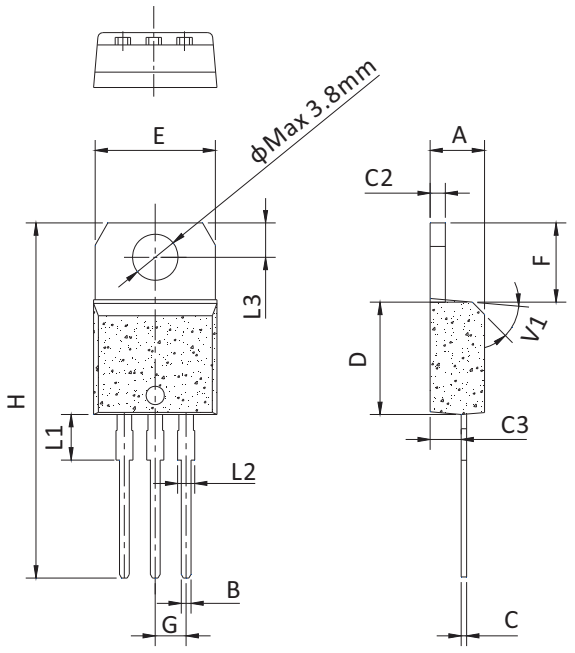
TO-220A (Insulated)



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°	

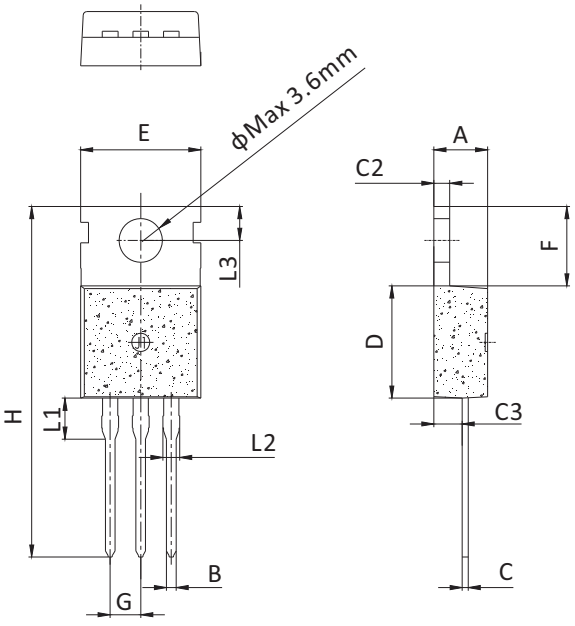
PACKAGE MECHANICAL DATA

TO-220B (Non-Insulated)



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°	

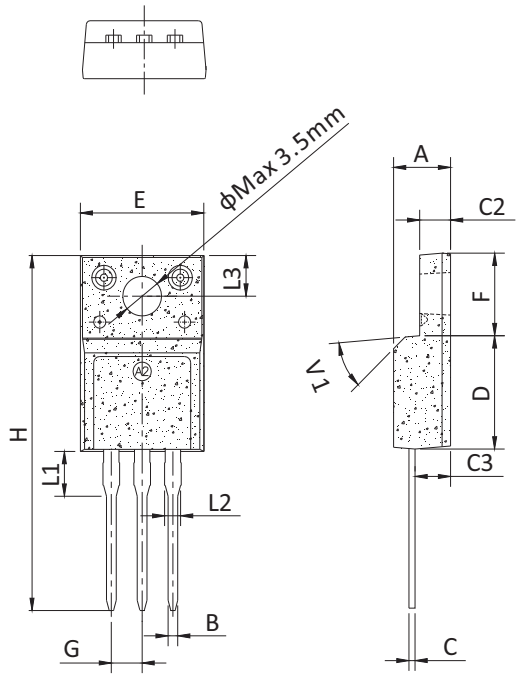
TO-220C



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	

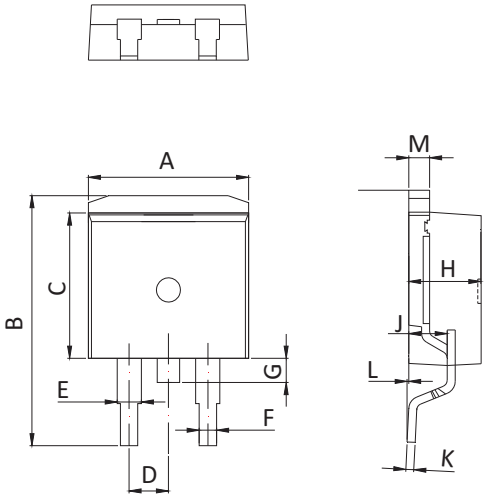
PACKAGE MECHANICAL DATA

TO-220F (Insulated)



Ref.	Dimensions					
	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	4.50		4.90	0.177		0.193
B	0.74		0.83	0.029		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		0.409
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°	

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	9.40		9.60	0.370		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		0.25	0		0.010
M	1.25		1.35	0.049		0.053

FIG.1 Maximum Power Dissipation Versus RMS On-state Current

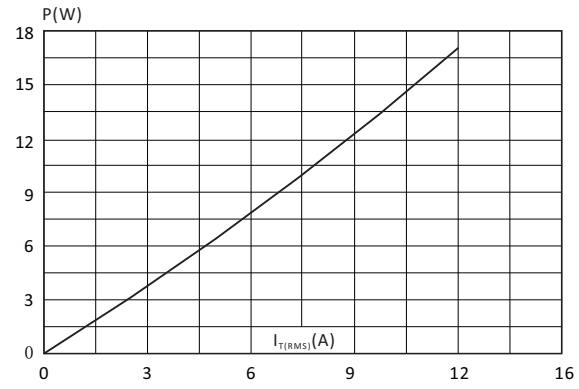


FIG.2 RMS On-state Current Versus Case Temperature

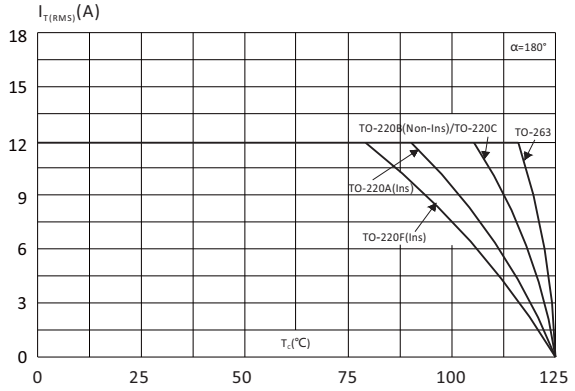


FIG.3 Surge Peak On-state Current Versus Number Of Cycles

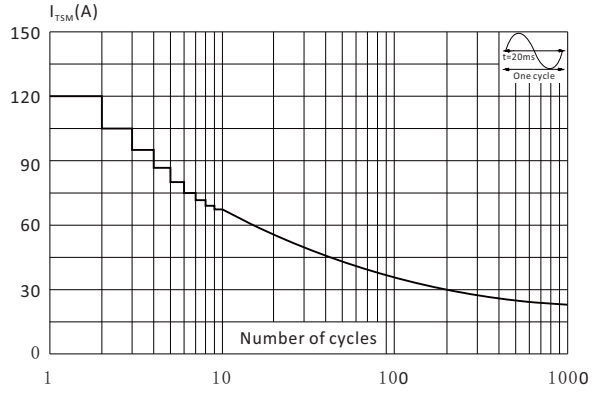


FIG.4 On-state Characteristics (Maximum Values)

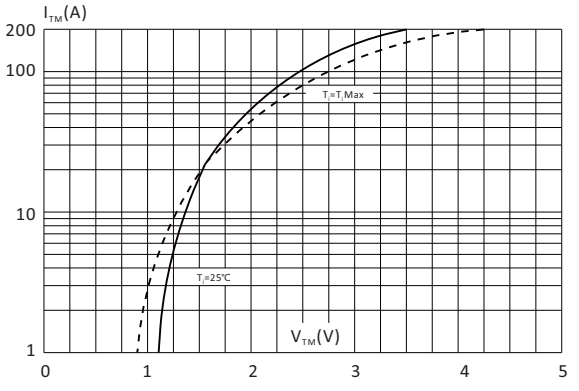


FIG.5 Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I t (dI/dt < 50A/μs)

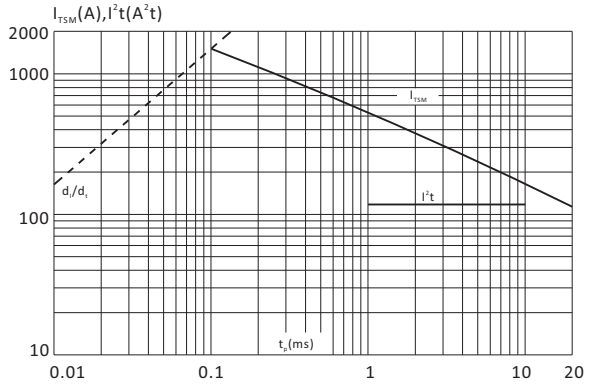
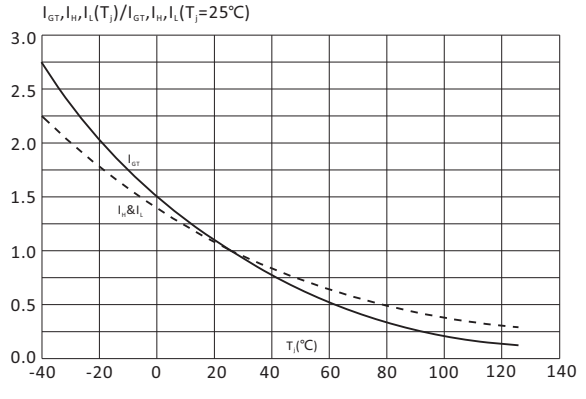


FIG.6 Relative variations of gate trigger current,holding current and latching current versus junction temperature



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