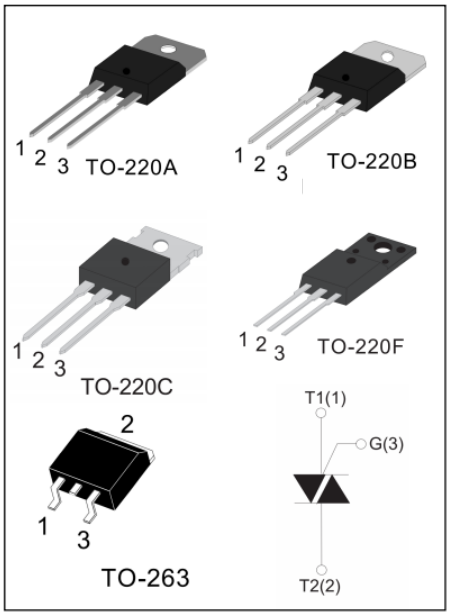
T2025/F2025 Series 20A TRIAC

Rev：1.0

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	20	A
V_{DRM}/V_{RRM}	800	V
I_{GT3}	25	mA



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	Tstg	-40 ~150	℃
Operating junction temperature range	Tj	-40~125	℃
Repetitive peak off-state voltage (T =25℃)	V_{DRM}	800	V
Repetitive peak reverse voltage (T =25℃)	V_{RRM}	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
TO-220A Tc = 70°C TO-220B Tc = 80°C TO-220C Tc = 75°C TO-220F Tc = 75°C TO-263 Tc = 100°C	$I_{T(RMS)}$	20	A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	200	A
I^2t value for fusing (tp=10ms)	I^2t	156	A^2S
Critical rate of rise of on-state current ($I = 2 \times I_{GT}$)	dI/dt	50	A/μS
Peak gate current	I_{GM}	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W

ELECTRICAL CHARACTERISTICS (T=25℃unless otherwise specified)

3 Quadrants

Symbol	Test Condition	Quadrant		Value	Unit
I_{GT}	V =12V R =33Ω	I II III	MAX.	25	mA
V_{GT}		I II III	MAX.	1.3	V
V_{GD}	V_D=V_{DRM} Tj=125℃ R=3.3KΩ	I II III	MIN.	0.2	V
I_L	I_G=1.2I_{GT}	I II III	MAX.	60	mA
I_H	I_T=100mA		MAX.	40	mA
dV/dt	V_D=2/3V_{DRM} Gate Open Tj=125℃		MIN.	400	V/μs
(dV/dt)c	Without snubber Tj =125℃		MIN.	10	V/μs

4 Quadrants

Symbol	Test Condition	Quadrant		Value	Unit
I_{GT}	V =12V R =33Ω	I II III	MAX.	25	mA
		IV		50	
V_{GT}		I II III IV	MAX.	1.3	V
V_{GD}	V_D=V_{DRM} Tj=125℃ R=3.3KΩ	I II III IV	MIN.	0.2	V
I_L	I_G=1.2I_{GT}	I III IV	MAX.	60	mA
		II		100	
I_H	IT=100mA		MAX.	40	mA
dV/dt	V_D=2/3V_{DRM} Gate Open Tj=125℃		MIN.	20	V/μs
(dV/dt)c	(dI/dt)c = 5.3 A/ms Tj = 125°C		MIN.	5	V/μs

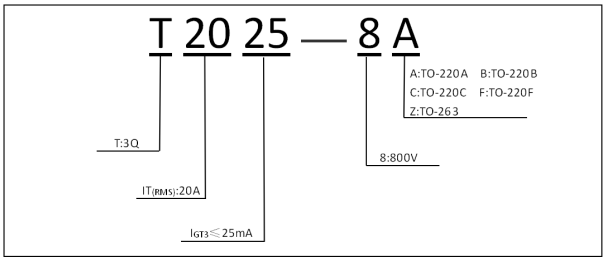
STATIC CHARACTERISTICS

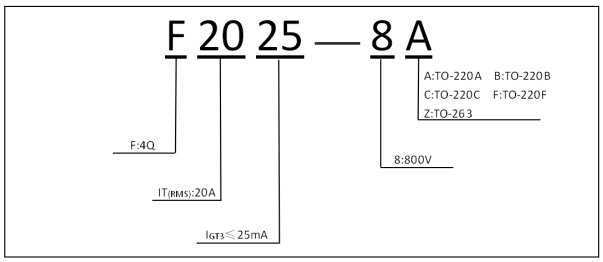
Symbol	Parameter		Value	Unit
V_{TM}	I_{TM} =28A tp=380μs	Tj =25℃	1.55	V
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	Tj =25℃	10	μA
I_{RRM}		Tj =125℃	3	mA

Thermal Resistances

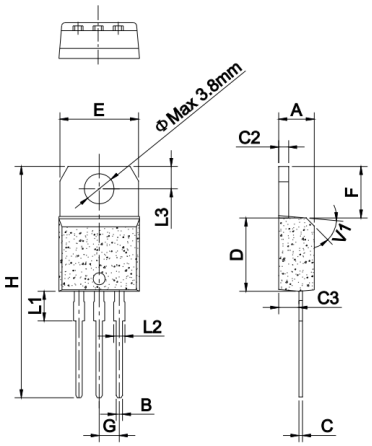
Symbol	Parameter		Value	Unit
Rth(j-a)	junction to ambient	TO-263	45	℃/W
		TO-220F	50	
		TO-263	60	
Rth(j-c)	Junction to case(AC)	TO-263	1.1	
		TO-220M2	1.9	
		TO-220F	2.7	

Ordering Information Scheme



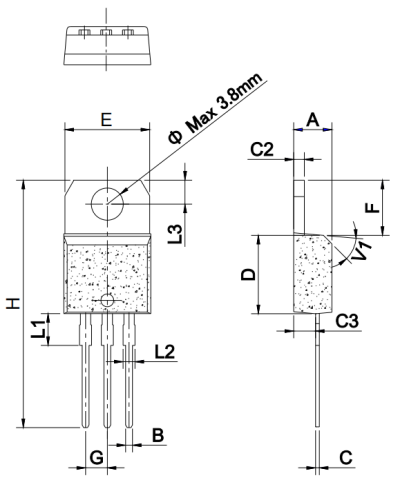


Package Mechanical Data



TO-220A

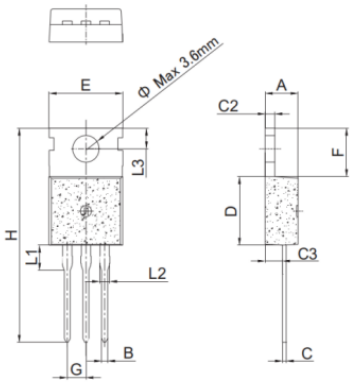
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
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-220B

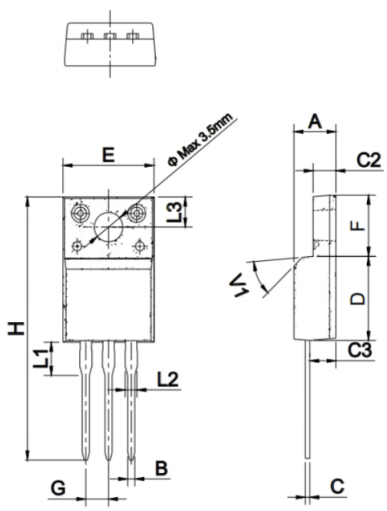
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	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



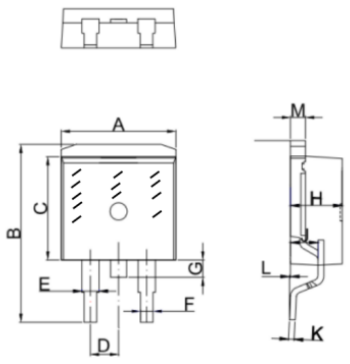
TO-220C

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	1.30		1.48	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	



TO-220F

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	2.50		3.10	0.096		0.108
C3	2.40		2.80	0.102		0.118
D	8.60		8.90	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.70		7.50	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		10.5	0.390		0.402
B	14.70		15.80	0.579		0.622
C	8.8		9.2	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		0.25	0	0.004	0.010
M	1.25		1.35	0.049		0.053

FIG.1:Maximum power dissipation versus RMS on-state current(full cycle)

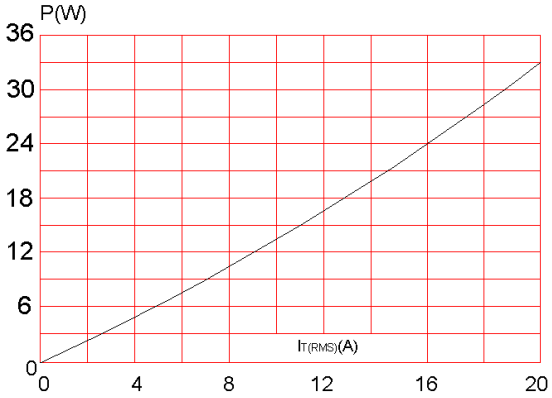


FIG.2:RMS on-state current versus mounting base temperature(full cycle)

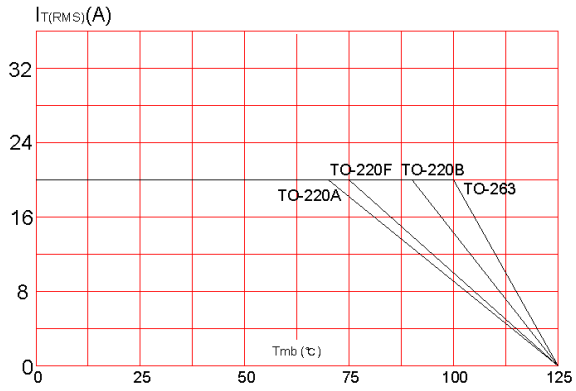


FIG.3:On-state characteristics (maximum values).

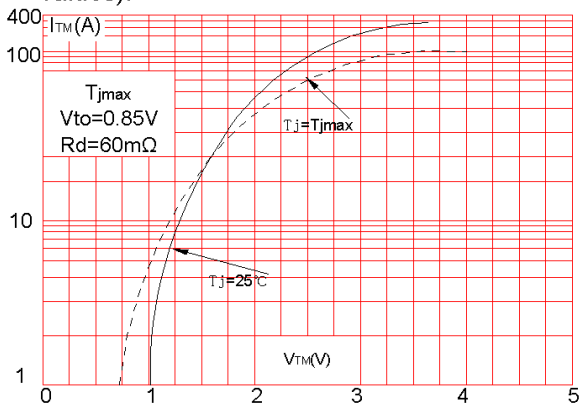


FIG.4:Surge peak on-state current versus number of cycles.

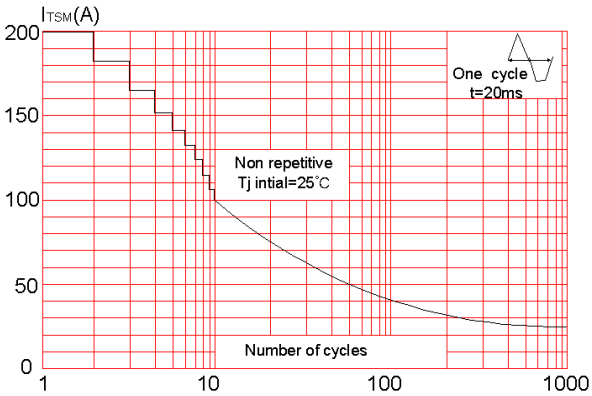


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms,and corresponding value of I²t.

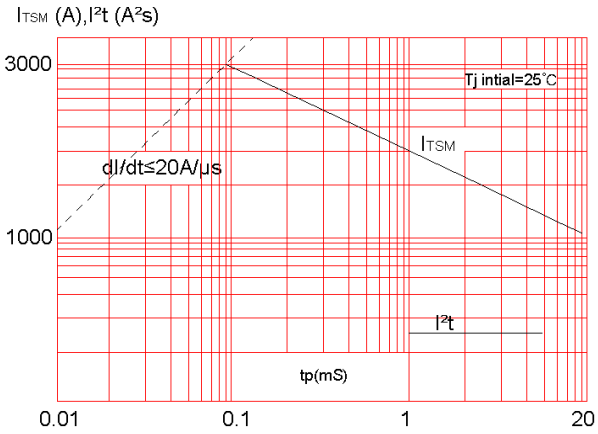


FIG.6:Relative variations of gate trigger current,holding current and latching current versus junction temperature(typical values)