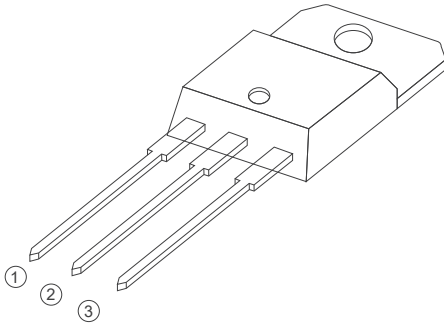
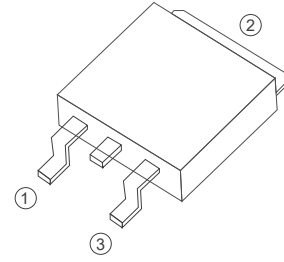


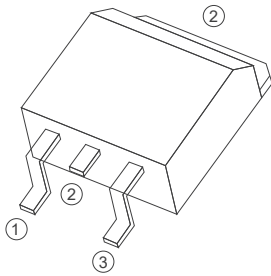
TYNxx12 Series  
12A SCRs  
Standard SCRs



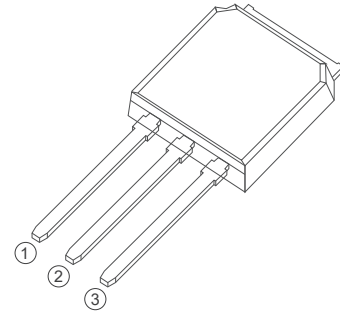
TO-220B Non-Insulated



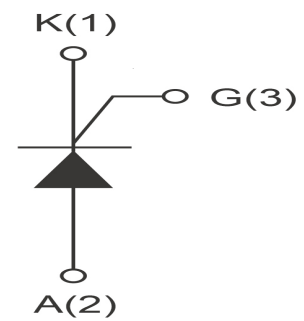
TO-252



TO-263



TO-251



## FEATURES

>  $I_T(RMS)$ :12A > VGT: 1.5V > VDRM VRRM:600Vand1200V

## APPLICATIONS

Washing machine,vacuums, massager,solid state relay, AC Motor speed regulation and so on.

**Absolute Maximum Ratings** (T<sub>J</sub>=25°C unless otherwise specified)

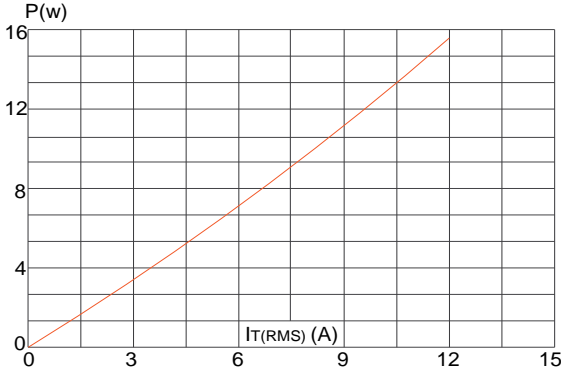
Symbol	Parameter	Conditions	Ratings	Unit
VDRM VRRM	Repetitive Peak Off-State Voltage	TYN612 /TYN812/TYN1212	600/800 1200	V
IT(RMS)	R.M.S On-State Current	T <sub>c</sub> =105°C	12	A
IT(AV)	On-state average current	T <sub>C</sub> =105°C	7.5	A
ITSM	Surge On-State Current	T <sub>p</sub> =10ms/t <sub>p</sub> =8.3ms	120/132	A
I <sup>2</sup> t	I <sup>2</sup> t for fusing	T <sub>p</sub> =10ms	75	A <sup>2</sup> s
PGM	Peak Gate Power Dissipation	T <sub>J</sub> =125°C	2	W
PG(AV)	Average Gate Power Dissipation	T <sub>J</sub> =125°C	0.5	W
T <sub>J</sub>	Operating Junction Temperature		~40~125	°C
TSTG	Storage Temperature		~40~150	°C

**Electrical Characteristics** (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Value	Unit
IDRM	Repetitive Peak Off-State Current	T <sub>c</sub> =25°C	≤10	uA
		T <sub>c</sub> =125°C	≤1	mA
IRRM	Repetitive Peak Reverse Current	T <sub>c</sub> =25°C	≤10	uA
		T <sub>c</sub> =125°C	≤1	mA
VTM	Forward "on" voltage	I <sub>T</sub> =23A t <sub>p</sub> =380us	≤1.7	V
VGT	Gate trigger voltage	V <sub>D</sub> =12V ,I <sub>T</sub> =0.1A	≤1.0	V
di/dt	Critical rate of rise of on-state current	T <sub>J</sub> =125°C, I <sub>G</sub> =2xI <sub>GT</sub> , t <sub>r</sub> ≤100ns	≥50	A/us
IGT	Gate trigger current	V <sub>D</sub> =12V I <sub>T</sub> =0.1A	≤20	mA
IL	Latching current	I <sub>G</sub> =1.2I <sub>GT</sub>	≤40	mA
IH	Holding current	I <sub>T</sub> =0.1A	≤30	mA
VGD	Gate non-trigger voltage	V <sub>D</sub> =VDRM T <sub>J</sub> =125°C, R <sub>L</sub> =3.3KΩ, R <sub>GK</sub> =1KΩ	≥0.25	V
dv/dt	Critical-rate of rise of commutation voltage	T <sub>J</sub> =125°C V <sub>D</sub> =2/3VDRM Gate open circuit	≥200	V/us
R <sub>th(j-c)</sub>	Thermal resistance	Junction to case	1	°C/W
R <sub>th(j-a)</sub>	Thermal resistance	Junction to ambient	50	°C/W

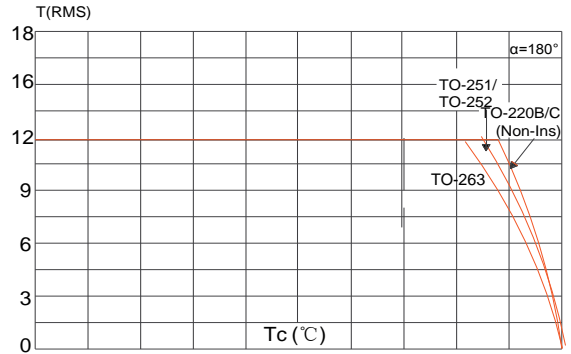
**FIG1**

Maximum power dissipation versus RMS on-state current



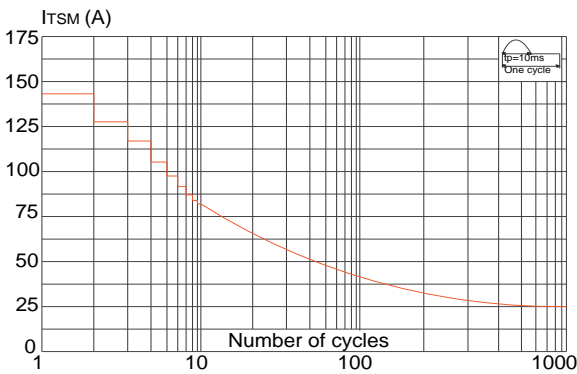
**FIG2**

RMS on-state current versus case temperature



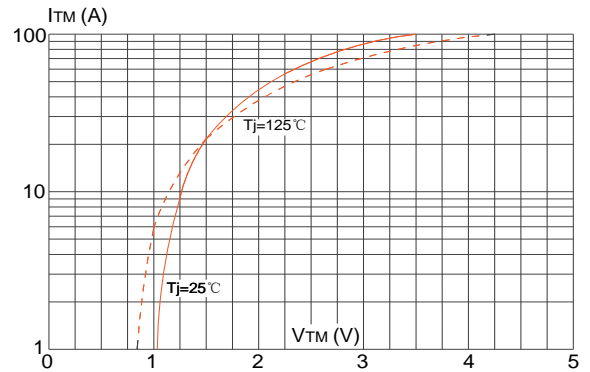
**FIG3**

Surge peak on-state current versus number of cycles



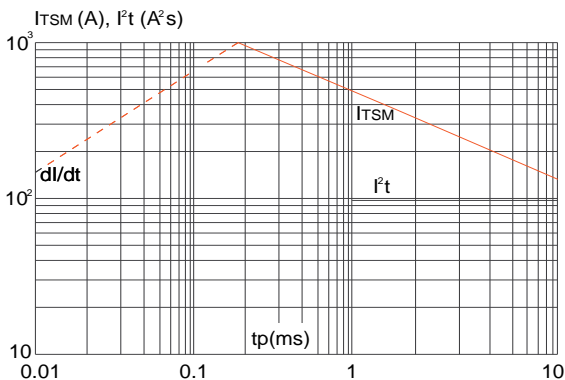
**FIG4**

On-state characteristics (maximum values)



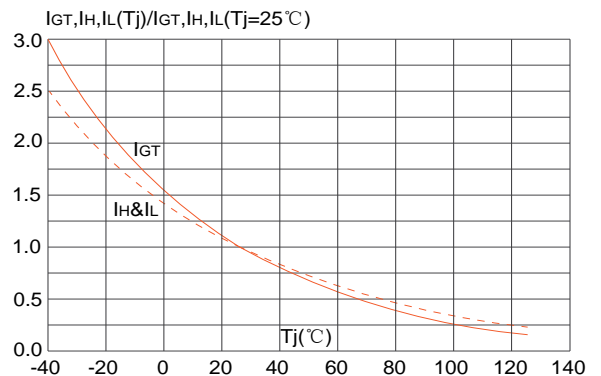
**FIG5**

Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20ms$ , and corresponding value of  $I^2t$  ( $di/dt < 100A/\mu s$ )

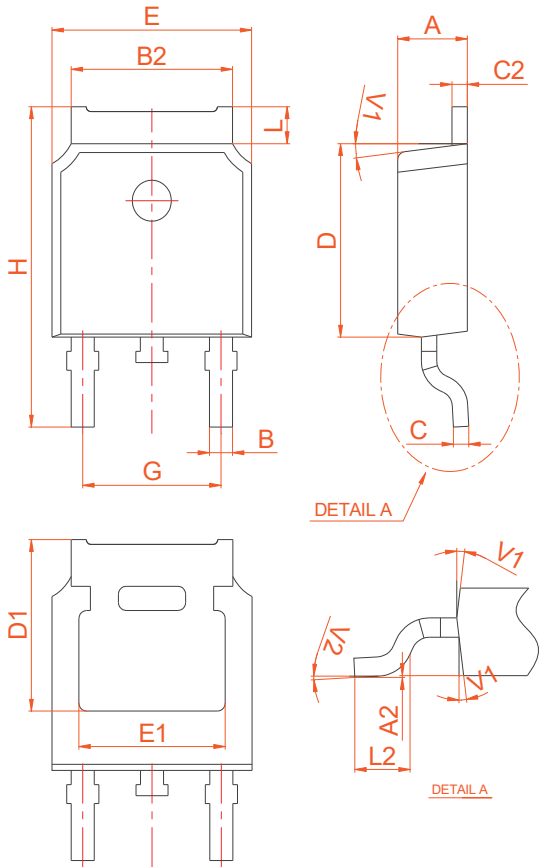


**FIG6**

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



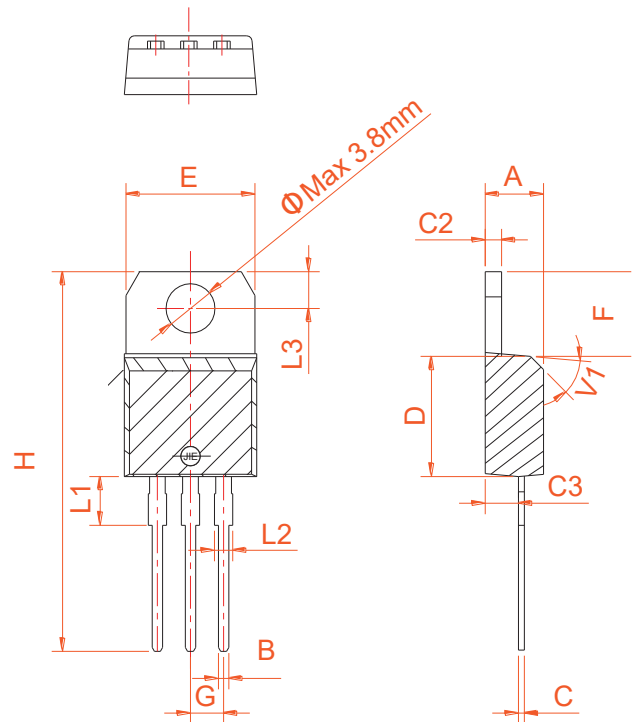
**PACKAGE MECHANICAL DATA**



**TO-252**

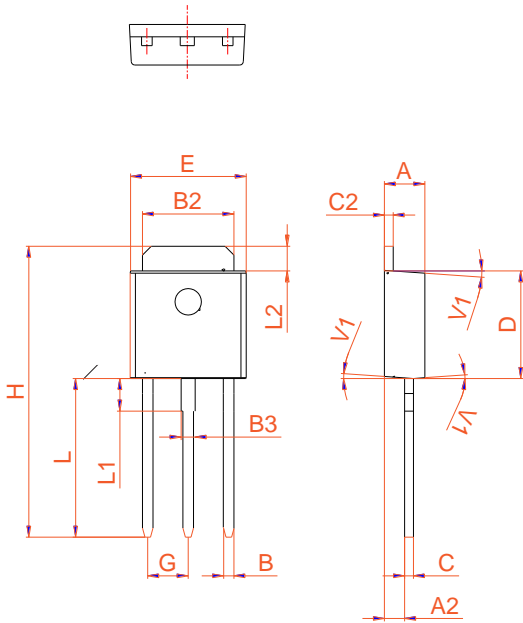
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.55	0.018		0.022
C2	2.70		2.90	0.106		0.114
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
L3		0.8			0.031	
L4		0.8			0.031	
V1		4°			4°	
V2	0°		8°	0°		8°

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-220B Non-Ins**

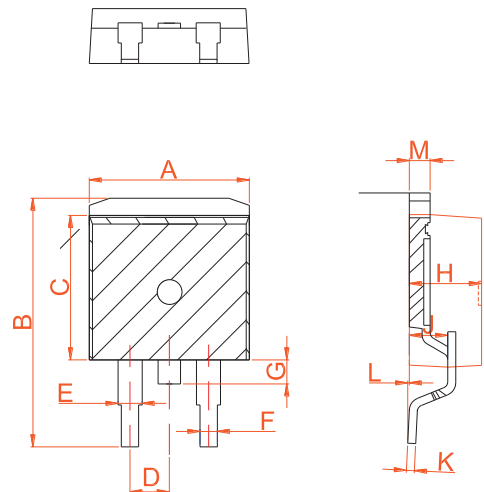
**PACKAGE MECHANICAL DATA**



**TO-251**

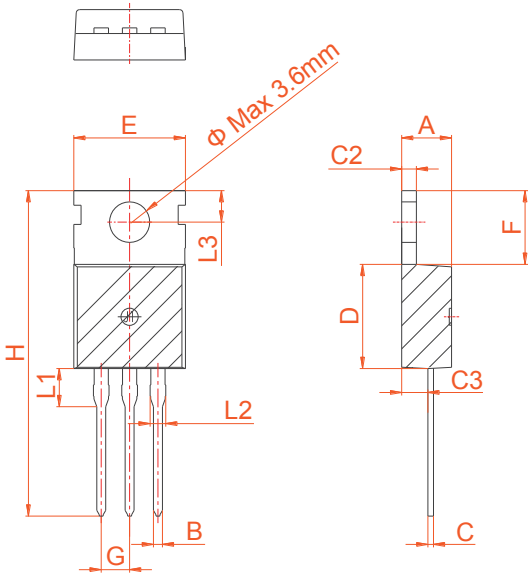
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	

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-263**

**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	1.23		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	

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