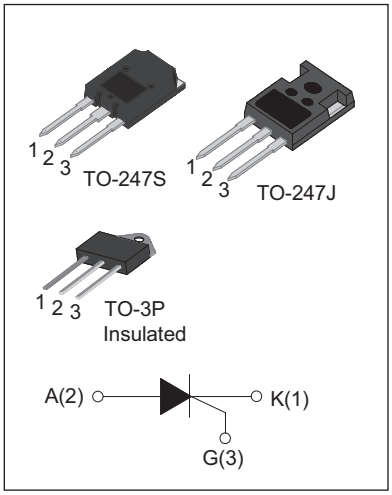
TYN1880 Series 80A SCRs

Rev.6.0

DESCRIPTION:

With high ability to withstand the shock loading of large current, TYN1880 SCRs provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. From all three terminals to external heatsink, TYN1880 provides a rated insulation voltage of 1800 V_{RMS}.



MAIN FEATURES

Symbol	TYN1880	
V_{DRM}/ V_{RRM}	1800V	
$I_{T(RMS)}$	80A	
I_{GT}	10 - 100 mA	

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		V_{DRM}	1800	V
Repetitive peak reverse voltage		V_{RRM}	1800	V
RMS on-state current	TO-3P Ins (T_C=80℃)	$I_{T(RMS)}$	80	A
	TO-247S/TO-247J (T_C=83℃)			
	TG-C (T_C=82℃)			
Non repetitive surge peak on-state current (tp=10ms)		I_{TSM}	800	A
I^2t value for fusing (tp=10ms)		I^2t	1800	A^2s
Critical rate of rise of on-state current (I_G=2×I_{GT})		dI/dt	150	A/μs

Peak gate current	I_{GM}	5	A
Peak gate power	P_{GM}	10	W
Average gate power dissipation (T_j=125℃)	$P_{G(AV)}$	1	W

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

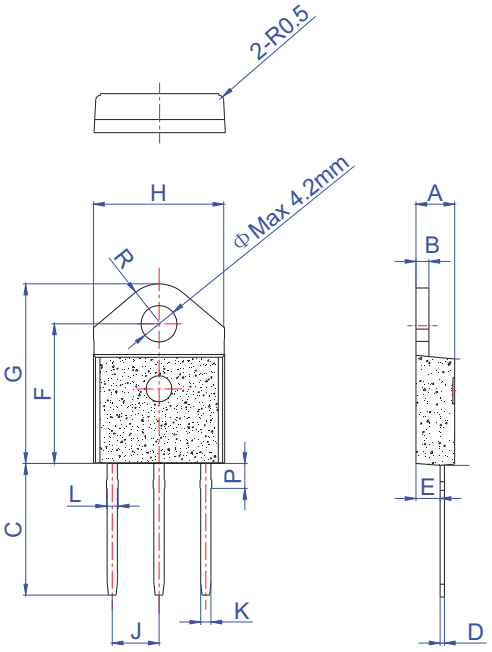
Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	V_D=12V R_L=33Ω	10	50	100	mA
V_{GT}		-	-	1.5	V
V_{GD}	V_D=V_{DRM} T_j=125℃ R_L=3.3KΩ	0.2	-	-	V
I_L	I_G=1.2I_{GT}	-	-	200	mA
I_H	I_T=500mA	-	-	120	mA
dV/dt	V_D=2/3V_{DRM} T_j=125℃ Gate Open	700	-	-	V/μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	I_{TM}=80A tp=380μs	T_C=25℃	1.6	V
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_C=25℃	15	μA
I_{RRM}		T_C=125℃	6	mA

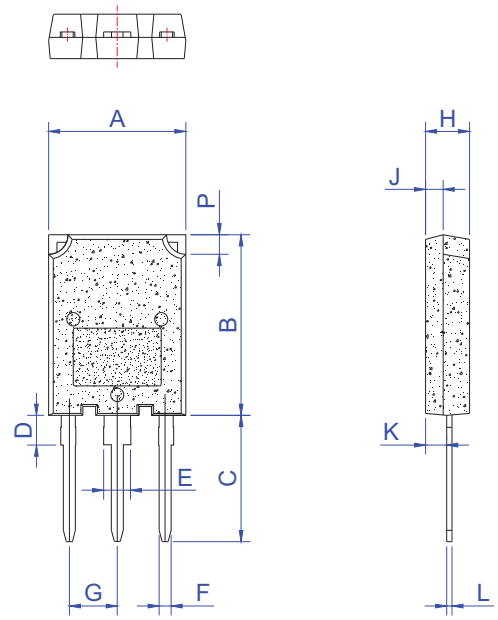
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-3P Ins	0.65	℃/W
		TO-247S/ TO-247J	0.60	
		TG-C	0.62	



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	



TO-247S

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.1		16.1	0.594		0.634
B	19.8		20.8	0.78		0.819
C	13.8		14.8	0.543		0.583
D	3.00		4.00	0.118		0.157
E	2.75		3.35	0.108		0.132
F	1.30		1.50	0.051		0.059
G	5.10		5.80	0.201		0.228
H	4.50		5.50	0.177		0.217
J	1.45		2.15	0.057		0.085
K	1.90		2.80	0.075		0.110
L	0.55		0.80	0.022		0.031
P	2.00		2.40	0.079		0.094

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

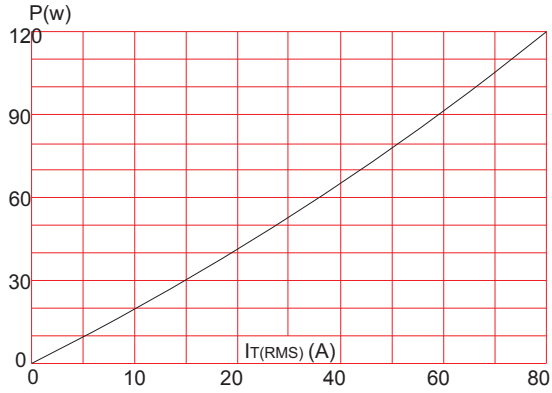


FIG.2: RMS on-state current versus case temperature

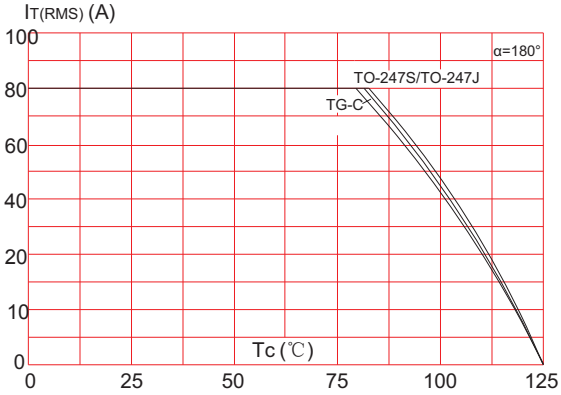


FIG.3: Surge peak on-state current versus number of cycles

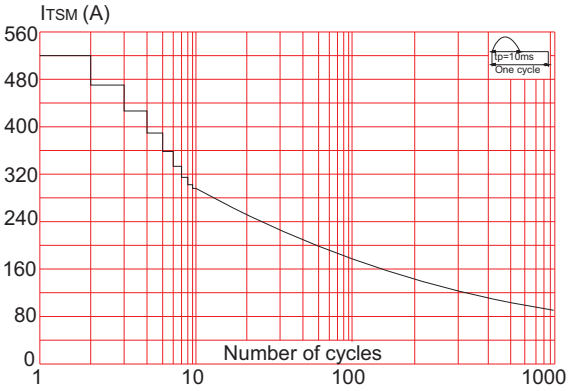


FIG.4: On-state characteristics (maximum values)

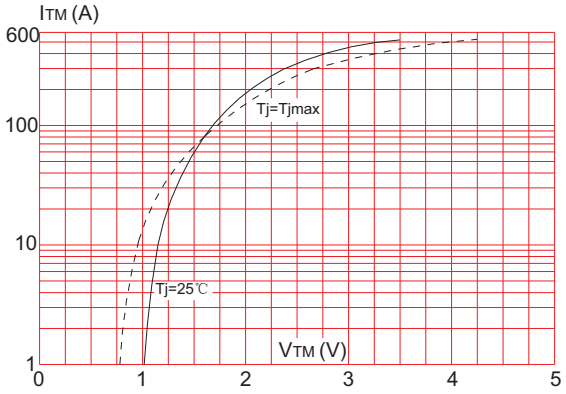


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponging value of I^2t (dI/dt < 150A/μs)

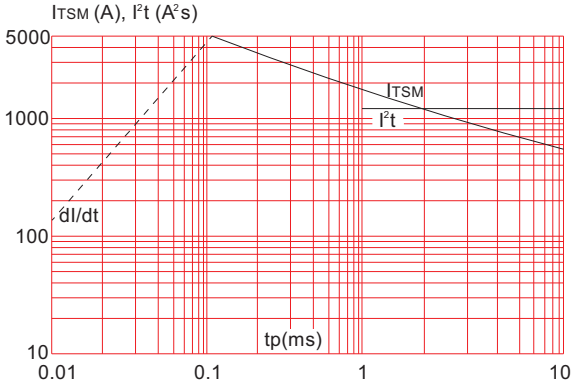


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature