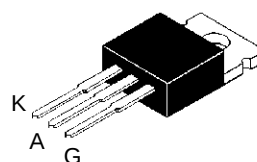


FEATURES

- $I_{T(RMS)} = 12A$
- $V_{DRM} = 200V$ to $800V$
- High surge current capability

DESCRIPTION

The S12xxxH series of SCRs uses a high performance MESA GLASS PNP technology. These parts are intended for general purpose applications.



TO220
non-insulated
 (Plastic)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_c = 90^\circ C$	12	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)	$T_c = 90^\circ C$	7.6	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = $25^\circ C$)	$t_p = 8.3$ ms	132	A
		$t_p = 10$ ms	120	
I^2_t	I^2_t Value for fusing	$t_p = 10$ ms	72	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 100$ mA $di_G/dt = 1$ A/ μs .		100	A/ μs
T_{stg} T_j	Storage and operating junction temperature range		- 40, + 150 - 40, + 125	$^\circ C$
TI	Maximum lead temperature for soldering during 10s at 4.5mm from case		260	$^\circ C$

Symbol	Parameter	Voltage				Unit
		B	D	M	N	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ C$	200	400	600	800	V

S12xxxH

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient	60	°C/W
Rth(j-c)	Junction to case for DC	3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)} = 1\text{ W}$ $P_{GM} = 10\text{ W}$ ($t_p = 20\text{ }\mu\text{s}$) $I_{GM} = 4\text{ A}$ ($t_p = 20\text{ }\mu\text{s}$)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Sensitivity			Unit
				06	10	17	
I_{GT}	$V_D = 12\text{ V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	MIN	0.5	10	4	mA
			MAX	5	25	15	
V_{GT}	$V_D = 12\text{ V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	MAX	1.5			V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$	$T_j = 125^\circ\text{C}$	MIN	0.2			V
tgt	$V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $dI_G/dt = 0.5\text{ A}/\mu\text{s}$ $I_G = 40\text{ mA}$	$T_j = 25^\circ\text{C}$	TYP	2			μs
I_H	$I_T = 250\text{ mA}$ Gate open	$T_j = 25^\circ\text{C}$	MAX	15	50	30	mA
I_L	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ\text{C}$	MAX	30	100	60	mA
V_{TM}	$I_{TM} = 24\text{ A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX	1.6			V
I_{DRM} I_{RRM}	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$	MAX	5			μA
		$T_j = 110^\circ\text{C}$	MAX	1.5			mA
dV/dt	$V_D = 67\% V_{DRM}$ Gate open	$T_j = 110^\circ\text{C}$	MIN		200	100	V/ μs
		$T_j = 110^\circ\text{C}$	TYP	10			
tq	$I_{TM} = 3 \times I_{T(AV)}$ $V_R = 35\text{ V}$ $dI/dt = 10\text{ A}/\mu\text{s}$ $t_p = 100\mu\text{s}$ $dV/dt = 5\text{ V}/\mu\text{s}$ $V_D = 67\% V_{DRM}$	$T_j = 110^\circ\text{C}$	MAX	100			μs

ORDERING INFORMATION

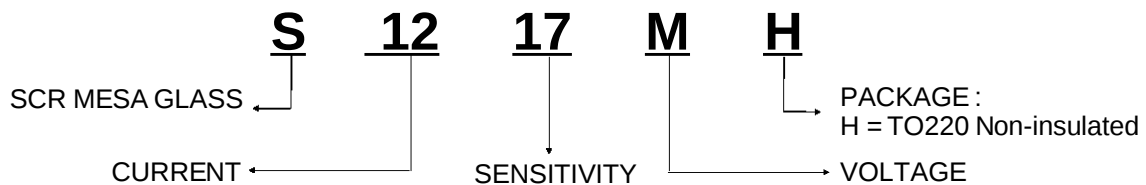


Fig.1 : Maximum average power dissipation versus average on-state current.

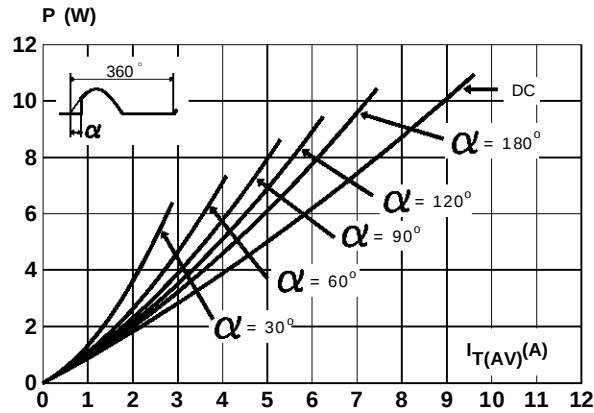


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

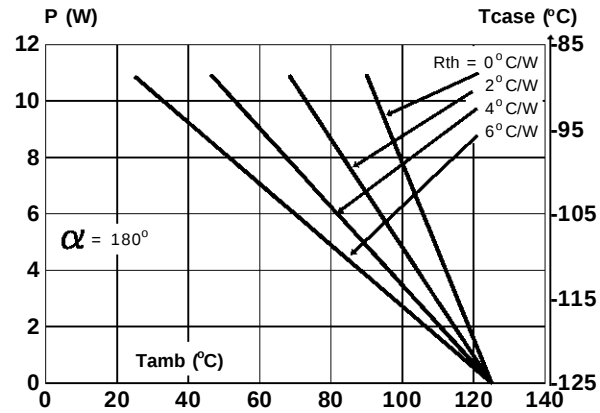


Fig.3 : Average on-state current versus case temperature.

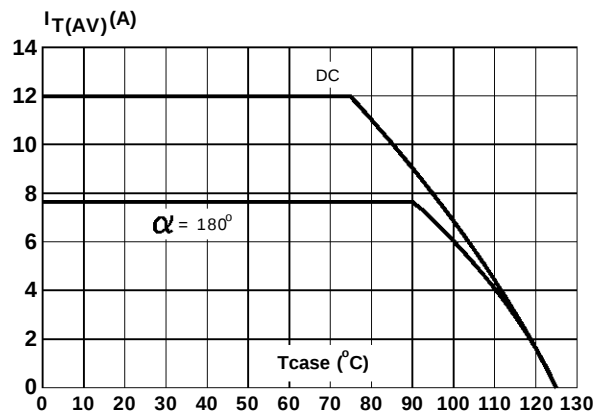


Fig.4 : Relative variation of thermal impedance versus pulse duration.

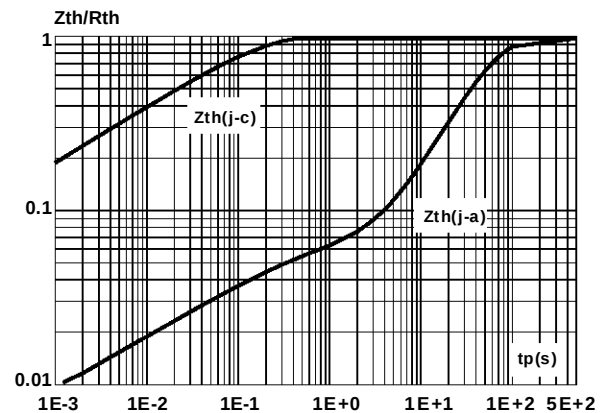


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

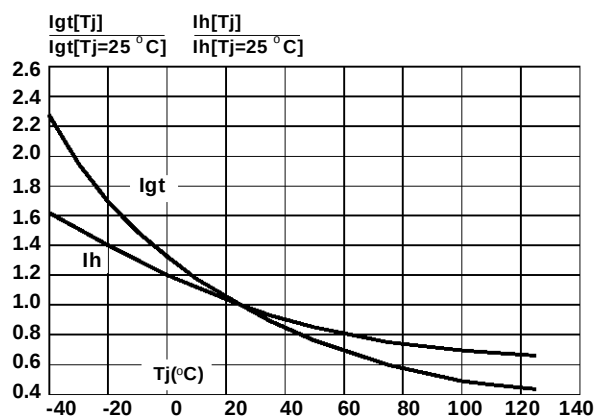
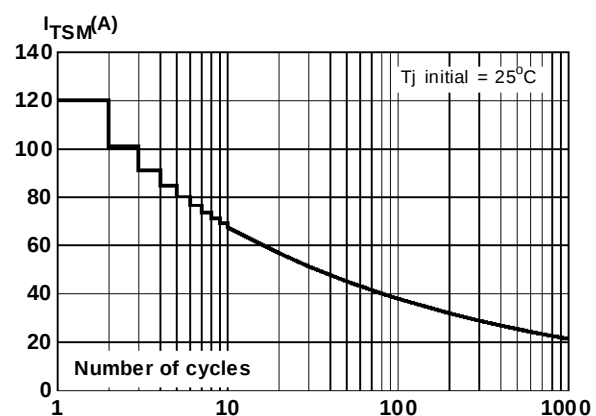


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



S12xxxH

Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t_p \leq 10\text{ms}$, and corresponding value of I^2t .

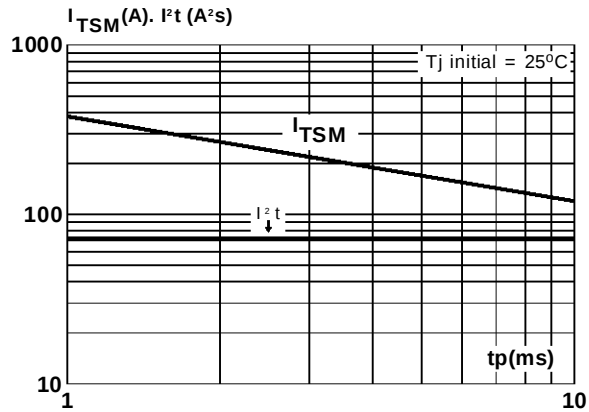
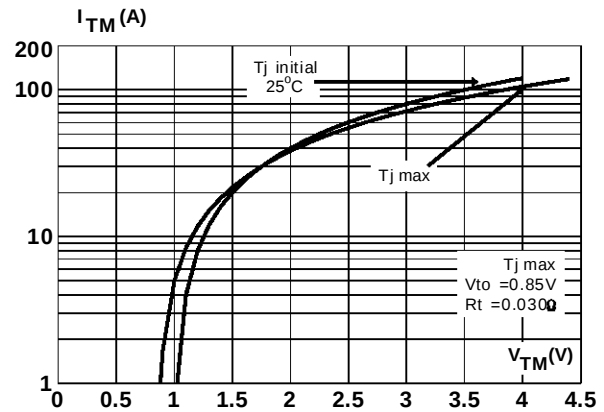


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA
 TO220 Non-insulated (Plastic)

REF.	DIMENSIONS					
	Millimeters			Inches		
	Typ.	Min.	Max.	Typ.	Min.	Max.
A			10.3			0.406
B		6.3	6.5	0.248	0.256	
C			9.1			0.358
D		12.7			0.500	
F			4.2			0.165
G			3.0			0.118
H		4.5	4.7		0.177	0.185
I		3.53	3.66		0.139	0.144
J		1.2	1.3		0.047	0.051
L			0.9			0.035
M	2.7			0.106		
N			5.3			0.209
N1	2.54			0.100		
O		1.2	1.4		0.047	0.055
P			1.15			0.045

Marking : type number
 Weight : 1.8 g

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands
 Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.