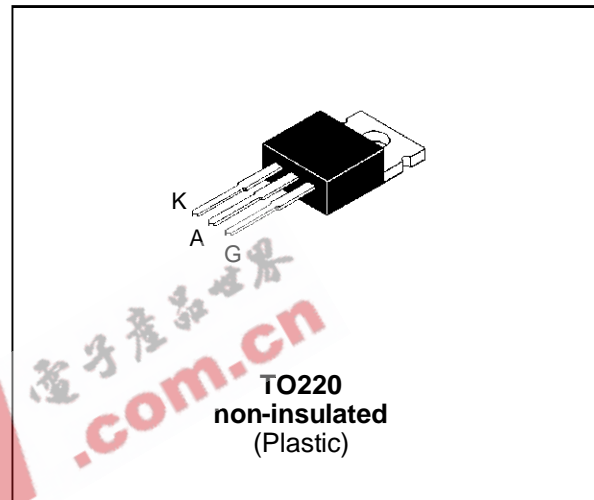


### FEATURES

- $I_{T(RMS)} = 12A$
- $V_{DRM} = 200V$  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.



### 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	
$I^2t$	$I^2t$ 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/ $\mu s$ .		100	A/ $\mu s$
$T_{stg}$ $T_j$	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

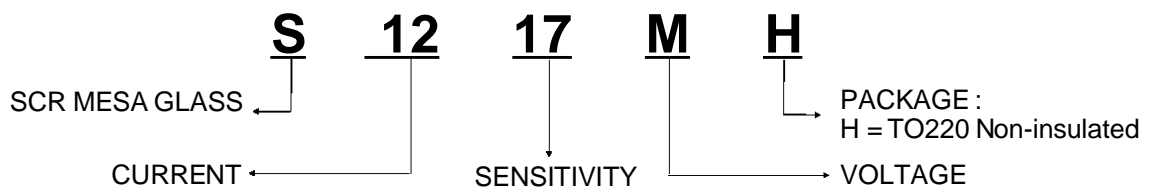
### GATE CHARACTERISTICS (maximum values)

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

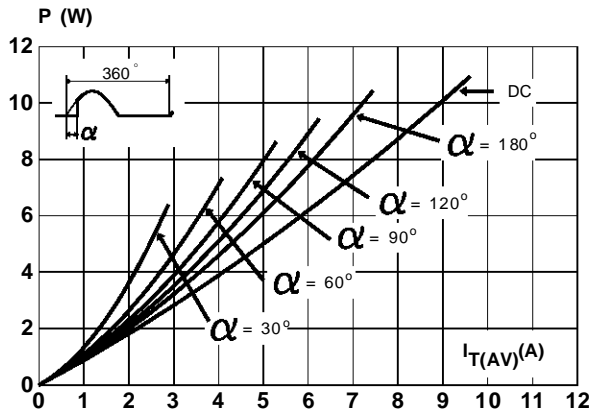
### ELECTRICAL CHARACTERISTICS

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	$V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $dl/dt = 0.5\text{A}/\mu\text{s}$ $I_G = 40\text{mA}$	$T_j = 25^\circ\text{C}$	TYP	2			$\mu\text{s}$
$I_H$	$I_T = 250\text{mA}$ 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			$\mu\text{A}$
		$T_j = 110^\circ\text{C}$	MAX	1.5			mA
dV/dt	$V_D = 67\%V_{DRM}$ Gate open	$T_j = 110^\circ\text{C}$	MIN		200	100	V/ $\mu\text{s}$
		$T_j = 110^\circ\text{C}$	TYP	10			
tq	$I_{TM} = 3 \times I_{T(AV)}$ $V_R = 35\text{V}$ $dl/dt = 10\text{A}/\mu\text{s}$ $t_p = 100\mu\text{s}$ $dV/dt = 5\text{V}/\mu\text{s}$ $V_D = 67\%V_{DRM}$	$T_j = 110^\circ\text{C}$	MAX	100			$\mu\text{s}$

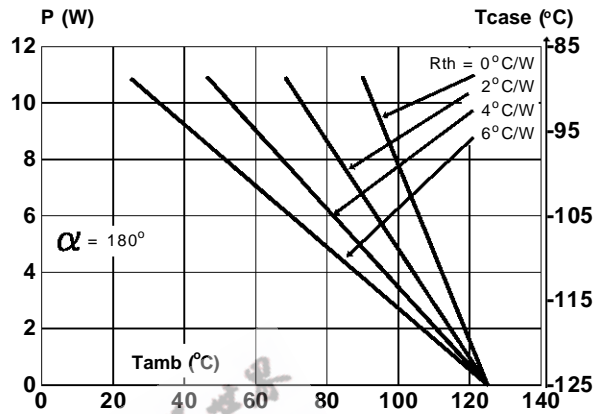
### ORDERING INFORMATION



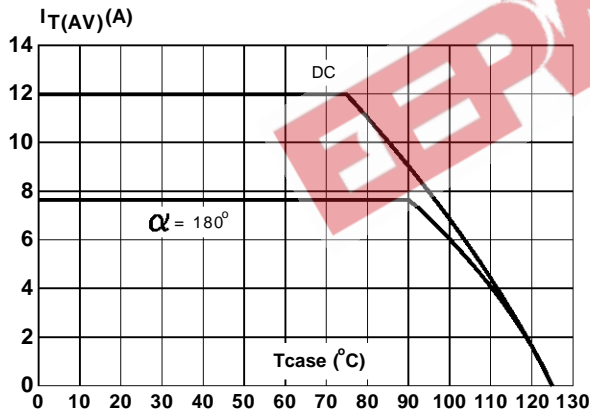
**Fig.1** : Maximum average power dissipation versus average on-state current.



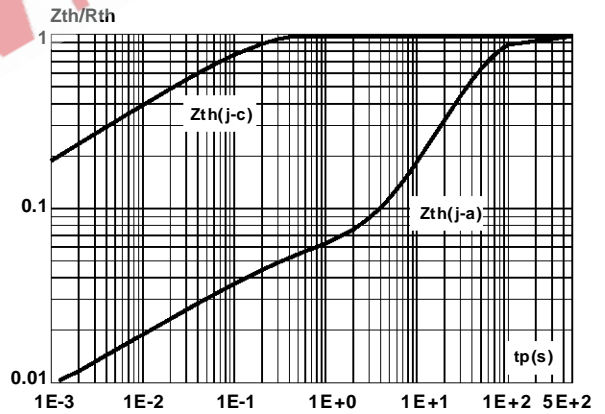
**Fig.2** : Correlation between maximum average power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact.



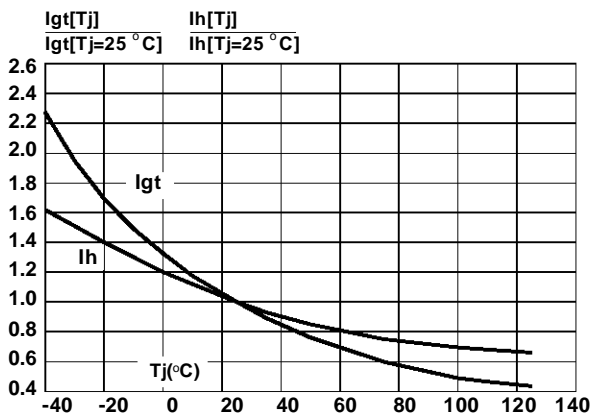
**Fig.3** : Average on-state current versus case temperature.



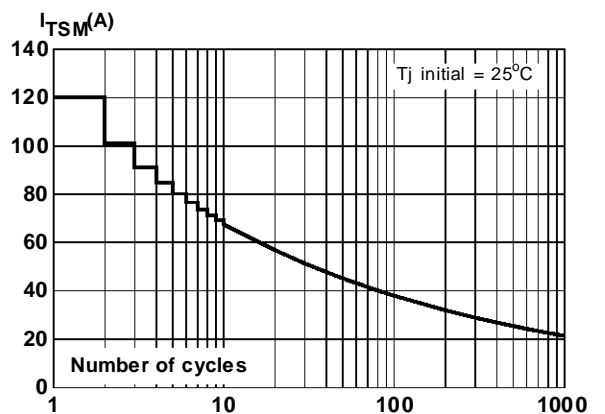
**Fig.4** : Relative variation of thermal impedance versus pulse duration.



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

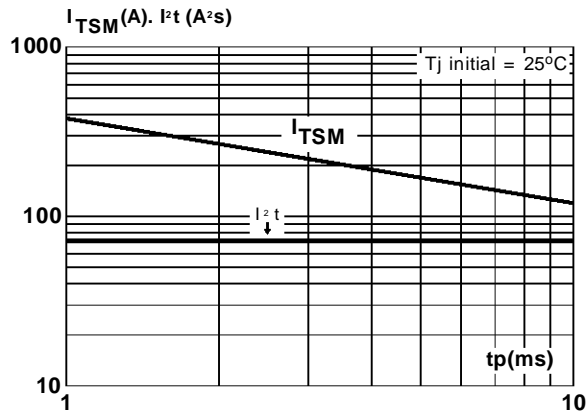


**Fig.6** : Non repetitive surge peak on-state current versus number of cycles.

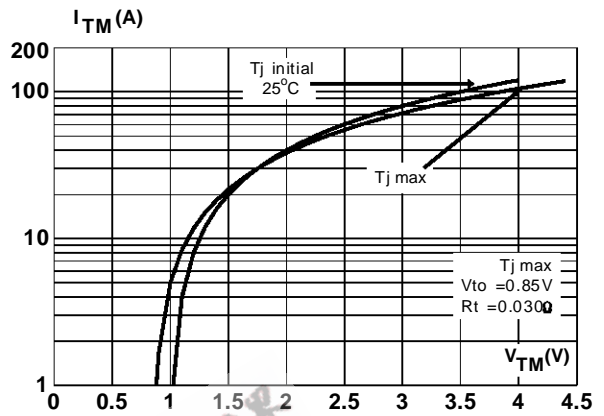


## S12xxxH

**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).



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**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

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