



S12xxxH

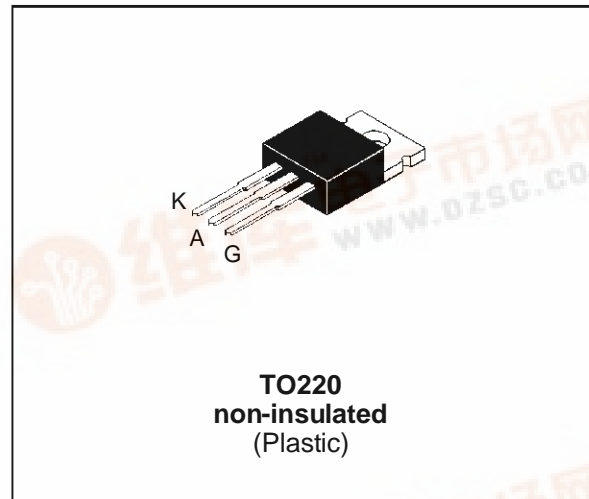
SCR

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 PNPN 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/ 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



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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	$V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $di_G/dt = 0.5\text{A}/\mu\text{s}$ $I_G = 40\text{mA}$	$T_j = 25^\circ\text{C}$	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

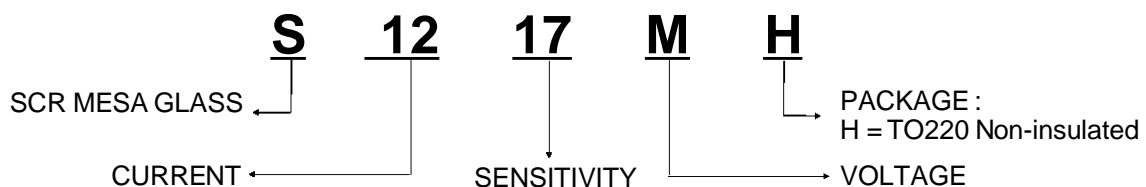


Fig.1 : Maximum average power dissipation versus average on-state current.

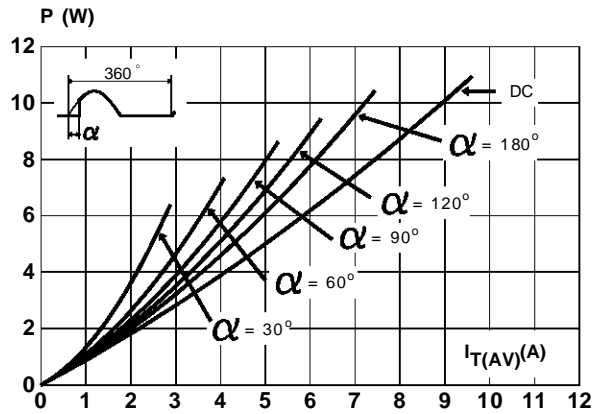


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

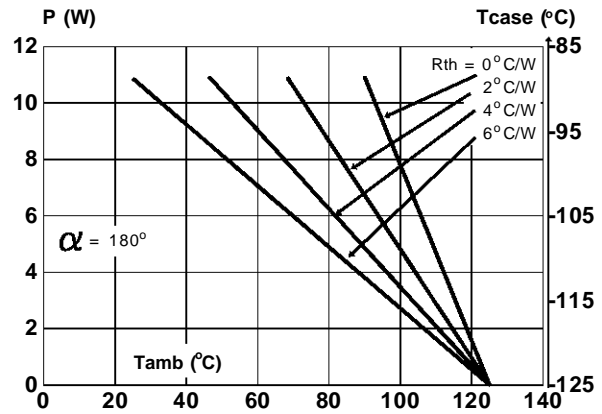


Fig.3 : Average on-state current versus case temperature.

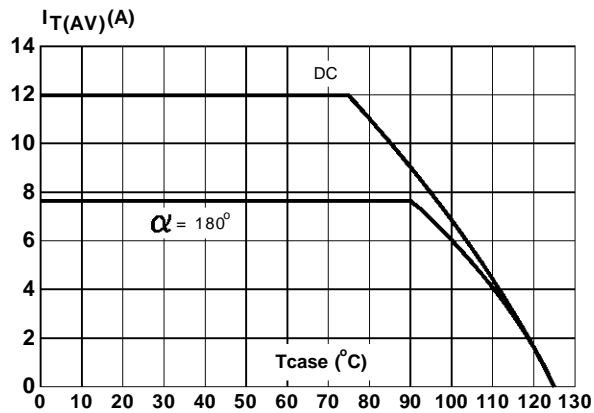


Fig.4 : Relative variation of thermal impedance versus pulse duration.

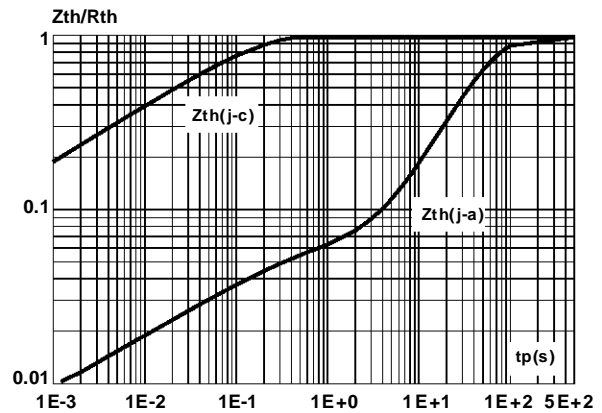


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

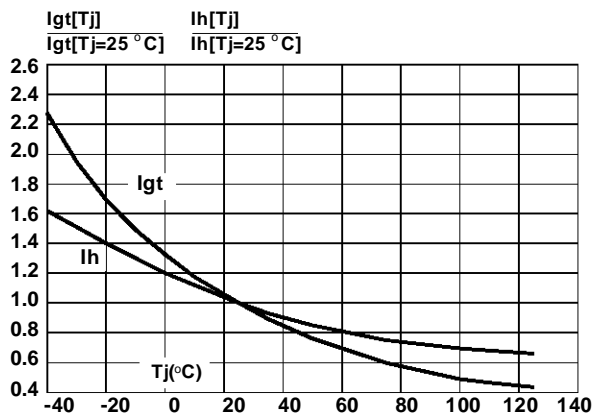
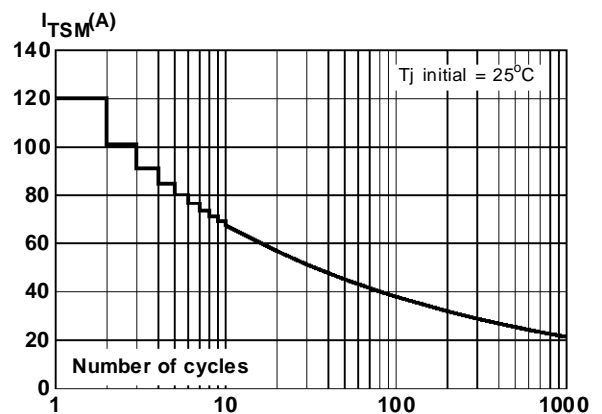


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



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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 .

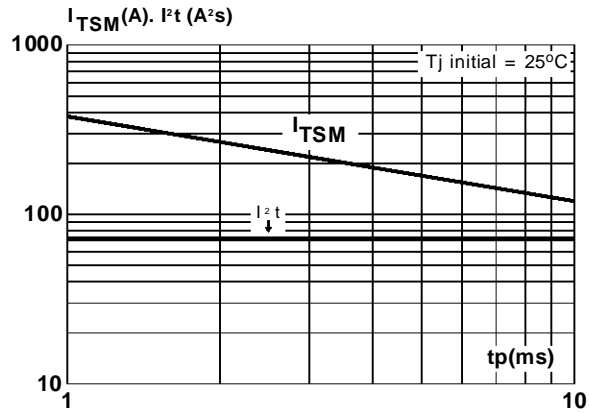
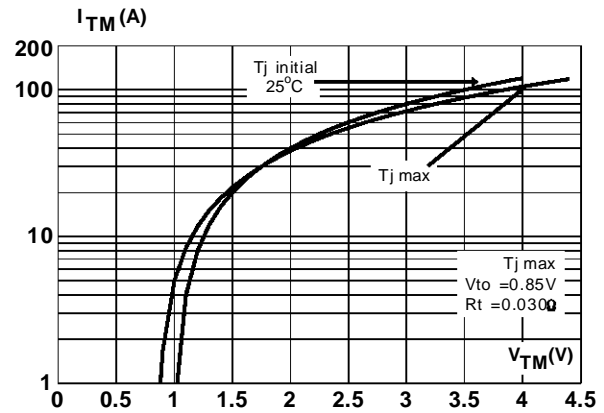


Fig.8 : On-state characteristics (maximum values).



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

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