

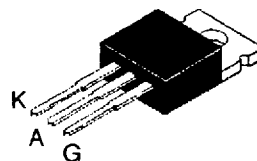
FAST SWITCHING SCR

FEATURES

- $I_{T(RMS)} = 8A$
- $V_{DRM} = 200V$ to $800V$
- $t_q = 20\mu s$ max

DESCRIPTION

The F0810xH series of SCRs uses a high performance MESA GLASS PNP technology. These parts are intended for high frequency switching applications.



TO220
non-insulated
 (Plastic)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_c = 95^\circ C$	8	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)	$T_c = 95^\circ C$	5.1	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = $25^\circ C$)	$t_p = 8.3$ ms	88	A
		$t_p = 10$ ms	80	
I^2t	I^2t Value for fusing	$t_p = 10$ ms	32	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	$^\circ C$
Tl	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

F0810xH

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)

$P_G (AV) = 0.5 \text{ W}$ $P_{GM} = 2 \text{ W}$ ($t_p = 20 \mu\text{s}$) $I_{GM} = 2 \text{ A}$ ($t_p = 20 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Sensitivity	Unit
				10	
I_{GT}	$V_D = 12\text{V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	MIN	10	mA
			MAX	25	
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
t_{gt}	$V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $di_G/dt = 0.8\text{A}/\mu\text{s}$ $I_G = 90\text{mA}$	$T_j = 25^\circ\text{C}$	TYP	2	μs
I_H	$I_T = 250\text{mA}$ Gate open	$T_j = 25^\circ\text{C}$	MAX	75	mA
I_L	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ\text{C}$	MAX	150	mA
V_{TM}	$I_{TM} = 16\text{A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX	2	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	300	$\text{V}/\mu\text{s}$
t_q	$I_{TM} = 3 \times I_{T(AV)}$ $V_R = 35\text{V}$ $di/dt = 25\text{A}/\mu\text{s}$ $t_p = 100\mu\text{s}$ $dV/dt = 25\text{V}/\mu\text{s}$ $V_D = 67\% V_{DRM}$	$T_j = 110^\circ\text{C}$	MAX	20	μs

ORDERING INFORMATION

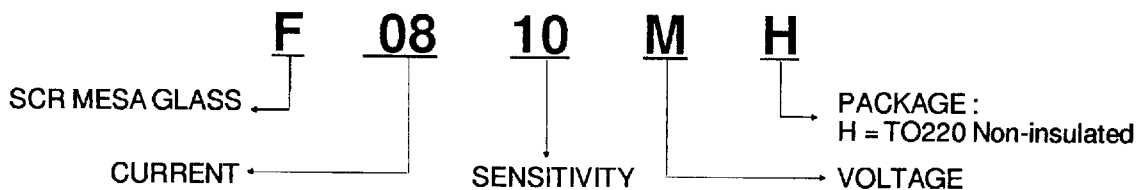


Fig.1 : Maximum average power dissipation versus average on-state current.

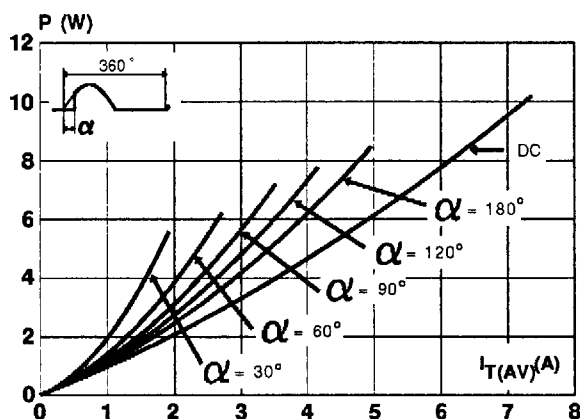


Fig.3 : Average on-state current versus case temperature.

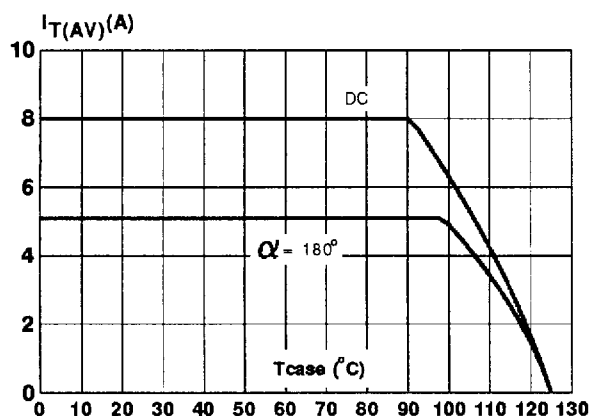


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

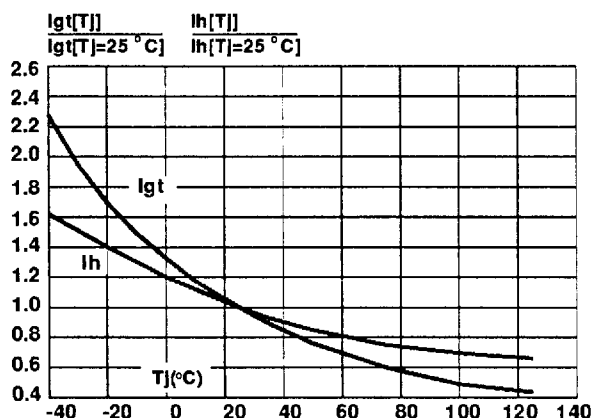


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

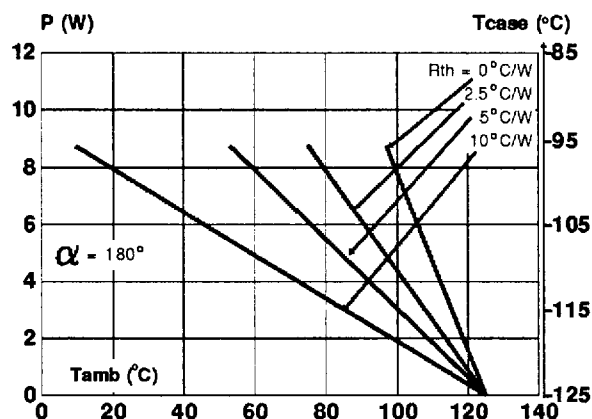


Fig.4 : Relative variation of thermal impedance versus pulse duration.

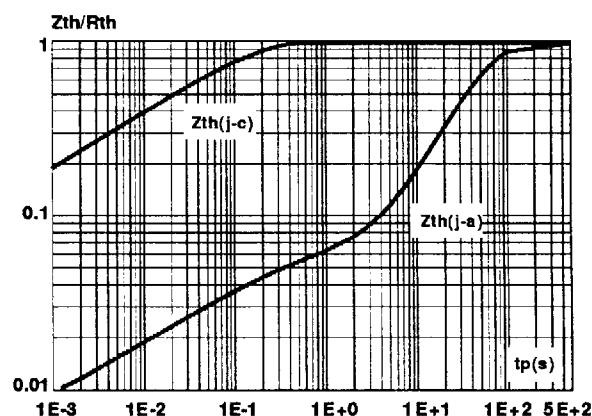


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

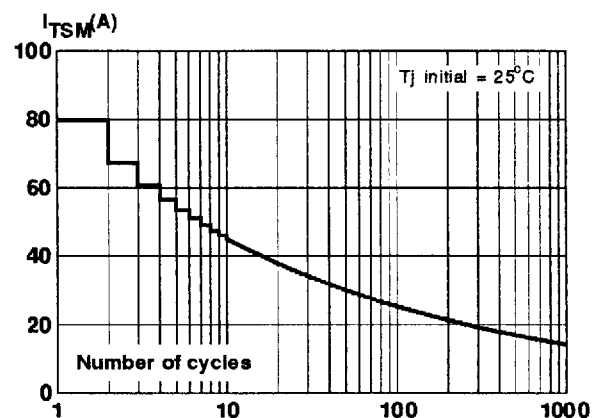


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

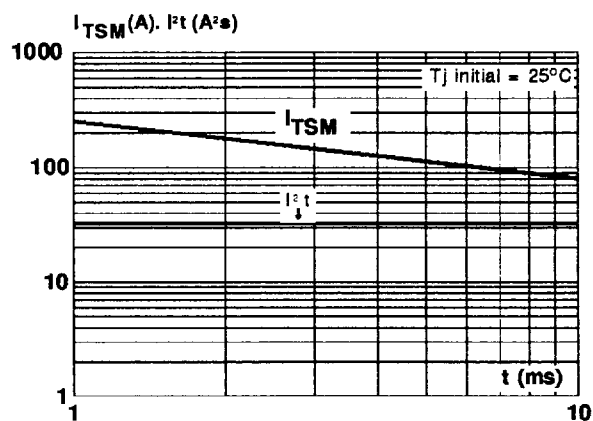
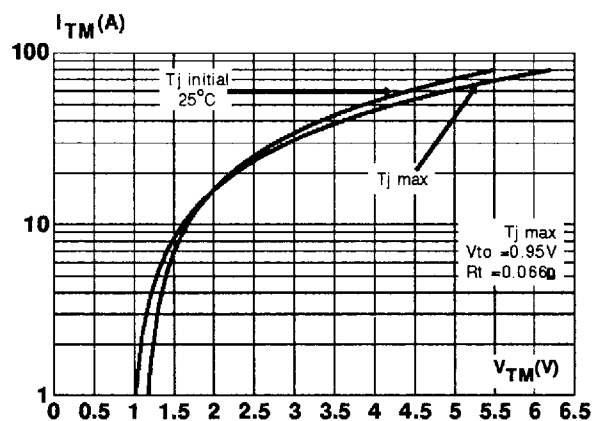
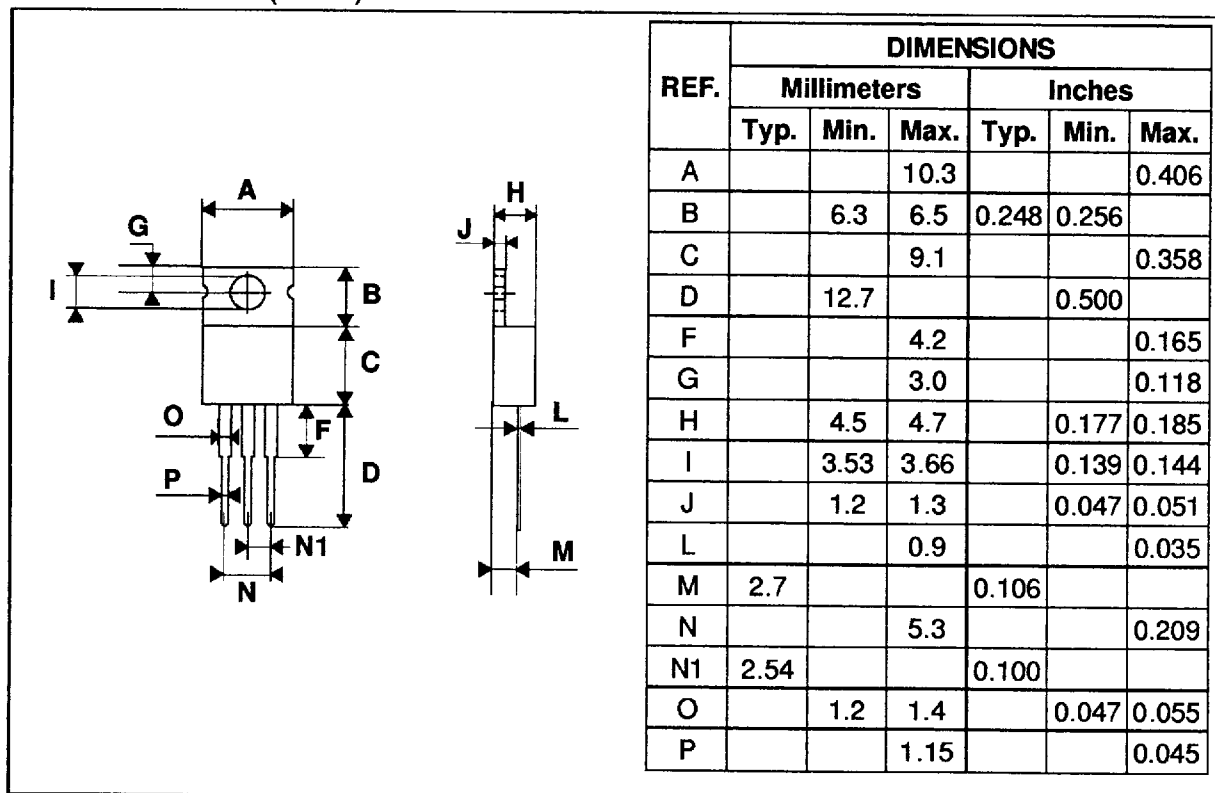


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA
TO220 Non-insulated (Plastic)


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.