

481-191

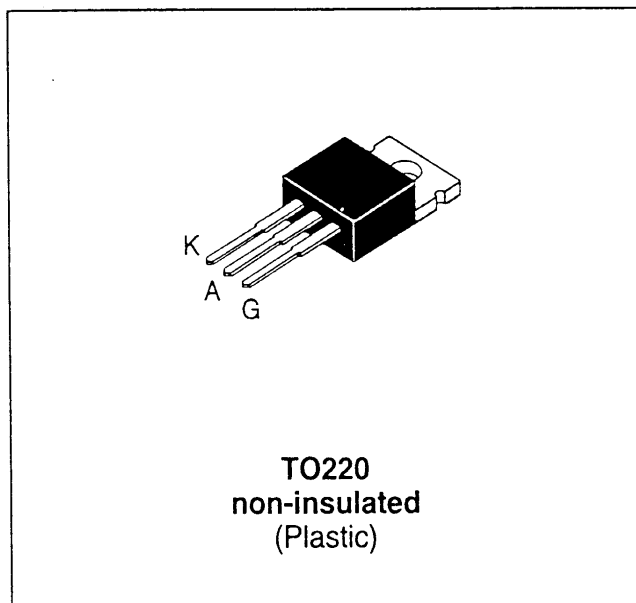
FAST SWITCHING SCR

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.



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

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
tgt	$V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $di/dt = 0.8\text{A}/\mu\text{s}$ $I_G = 90\text{mA}$	$T_j = 25^\circ\text{C}$	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	V/ μs
tq	$I_{TM} = 3 \times I_{T(AV)}$ $V_R = 35\text{V}$ $di/dt = 25\text{A}/\mu\text{s}$ $t_p = 100\mu\text{s}$ $dV/dt = 25\text{V}/\mu\text{s}$ $V_D = 67\%V_{DRM}$	$T_j = 110^\circ\text{C}$	MAX	20	μs

ORDERING INFORMATION

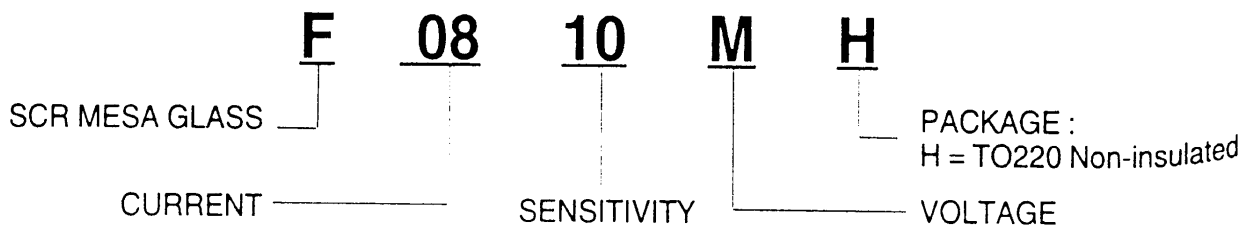


Fig.1 : Maximum average power dissipation versus average on-state current.

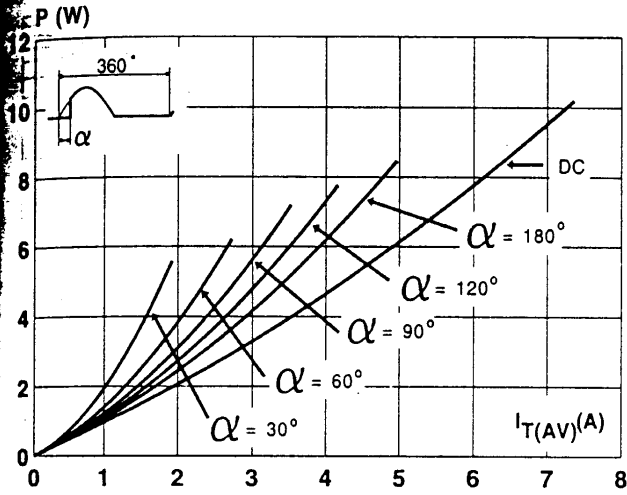


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

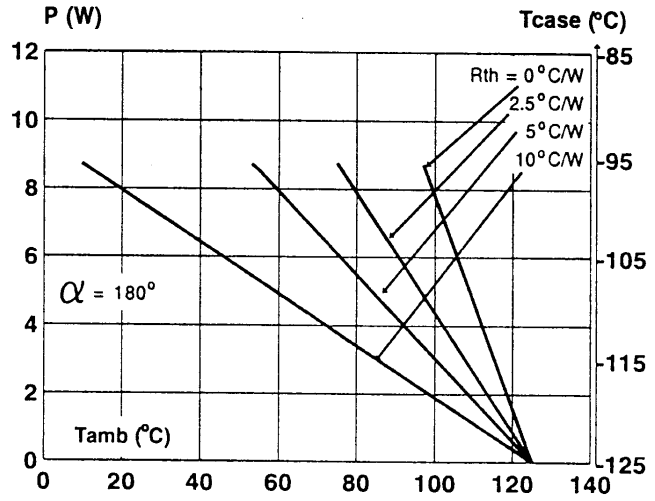


Fig.3 : Average on-state current versus case temperature.

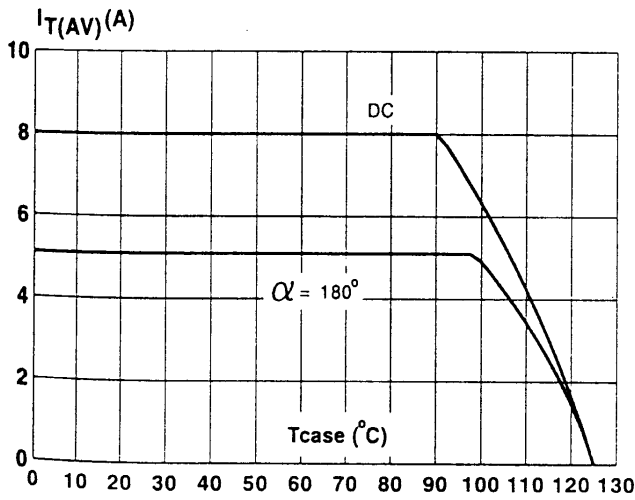


Fig.4 : Relative variation of thermal impedance versus pulse duration.

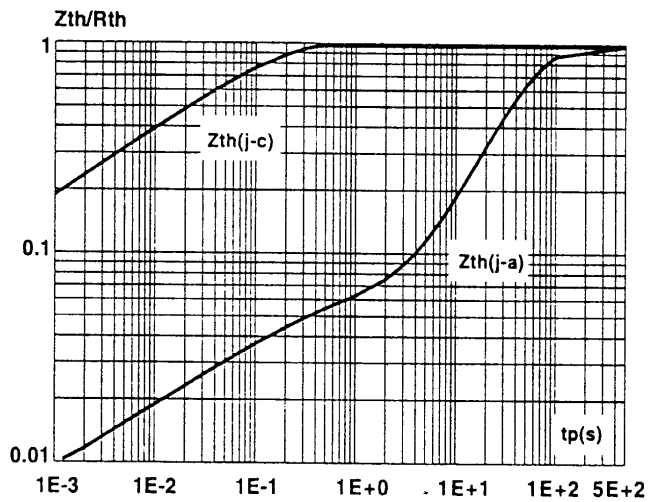


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

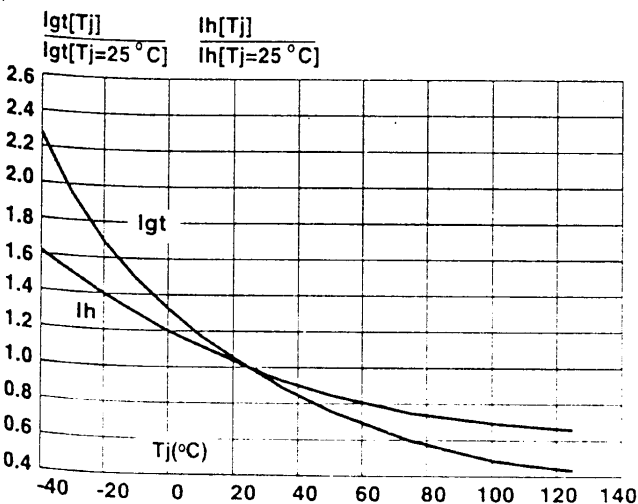


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

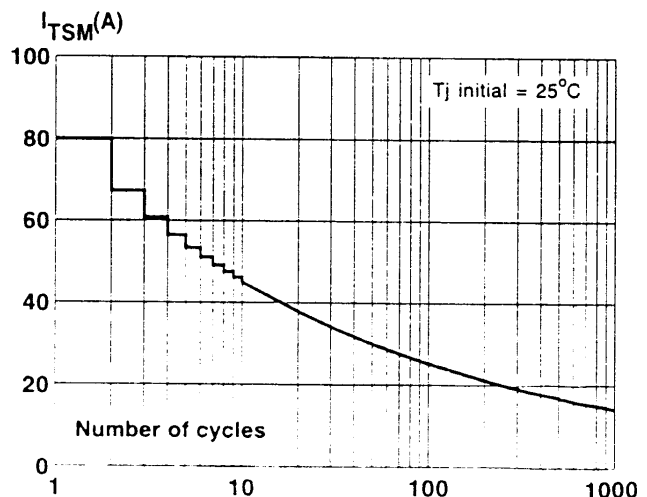


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

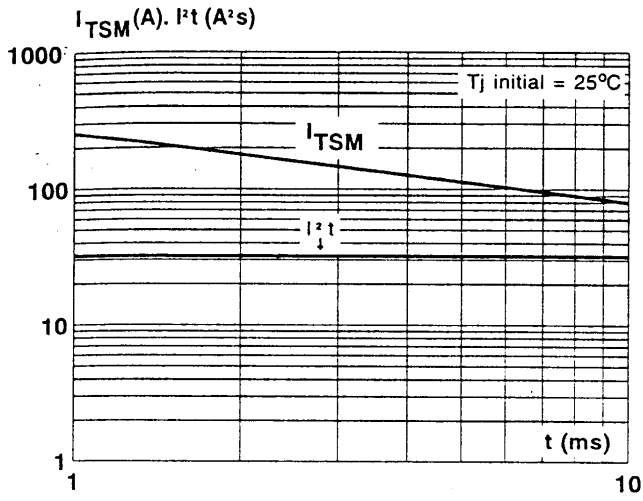
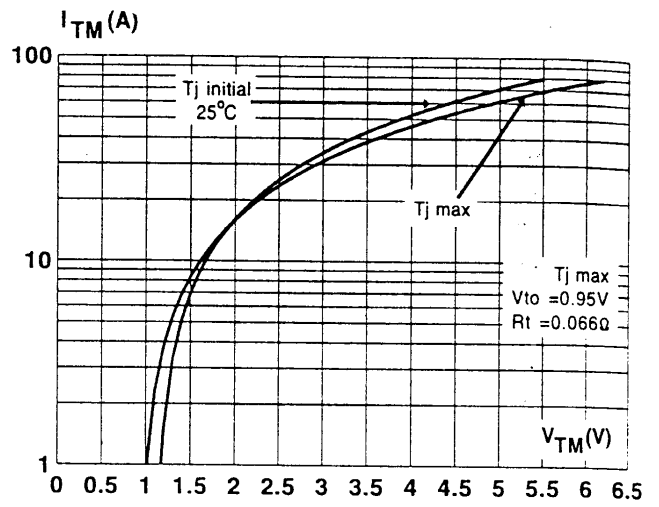
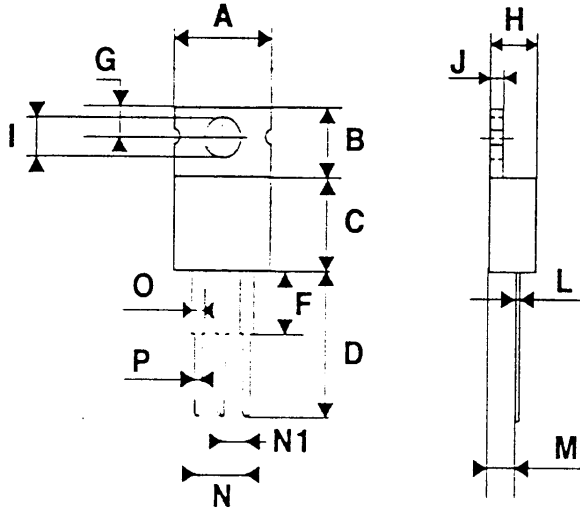


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO220 Non-insulated (Plastic)



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

SCRs



SENSITIVE AND FAST SCR

Type	I _{T(AV)} (A)	V _{RRM} = V _{DRM} (V)	I _{TSM} (A)	I _{RRM} @ V _{RRM} I _{DRM} @ V _{DRM} T _j max (mA)	T _j = 25°C				dv/dt @ 67% V _{DRM} T _j max min (V/μs)	di/dt T _j =25°C max (A/μs)	t _q max (ns)	Package
					I _{GT} min (mA)	I _{GT} max (mA)	I _H max typ* (mA)	V _{TM} @ I _{TM} max (V) (A)				

3.5 Arms/T_{case} = 85°C T_j = 125°C I²t = 2 A²s

▲ TR03- 400T	2	400	20	0.2	-	1.5	5*	2.2	10	20	100	15	TO220AB
--------------	---	-----	----	-----	---	-----	----	-----	----	----	-----	----	---------

8 Arms/T_C = 95°C T_j = 125°C I²t = 32 A²s

* F0810 • H	5.1	200 → 800 (2)	80	1.5	10	25	75	2	16	300	100	20	TO220AB
-------------	-----	------------------	----	-----	----	----	----	---	----	-----	-----	----	---------

481191

SCRs FOR OVERVOLTAGE PROTECTION IN PLASTIC PACKAGE

Type	I _{T(AV)} (A)	V _{RRM} = V _{DRM} (V)	I _{TSM} (A)	I _{RRM} @ V _{RRM} I _{DRM} @ V _{DRM} T _j max (mA)	T _j = 25°C				dv/dt @ 67% V _{DRM} T _j max min (V/μs)	di/dt max (A/μs)	Package
					V _{GT} max (V)	I _{GT} max (mA)	I _H max (mA)	V _{TM} @ I _{TM} max (V) (A)			

12 Arms/T_{case} = 110°C T_j = 125°C I²t = 450 A²s

TYP 212 → 2012	8	25 → 200	300	2	1.5	30	50	1.5	50	200	100	TO220AB
----------------	---	----------	-----	---	-----	----	----	-----	----	-----	-----	---------

▲ New product.
(2) B = 200V D = 400V M = 600V N = 800V ex: F0810MH