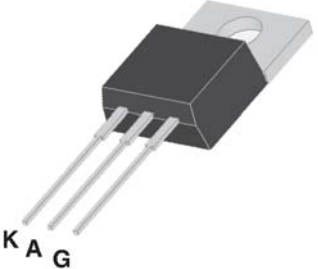
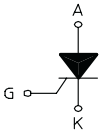




## SENSITIVE GATE SCR

<p><b>TO-220-AB</b></p>  <p style="text-align: center;">K A G</p> 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>On-State Current</b> 8 Amp</td> <td style="width: 50%;"><b>Gate Trigger Current</b> &lt; 200 <math>\mu</math>A</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Off-State Voltage</b> 400 V ÷ 800 V</td> </tr> </table> <p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>• Glass/passivated die junctions</li> <li>• Low current SCR</li> <li>• Low thermal resistance</li> <li>• High surge current capability</li> <li>• Low forward voltage drop</li> <li>• Solder dip 260°C, 10s</li> <li>• Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC</li> <li>• Meets MSL level 3, per J-STD-020, LF maximum peak of 260°C</li> </ul> <div style="text-align: right;">   <p><b>RoHS</b> COMPLIANT</p> </div> <p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li>• <b>Case:</b> TO-220-AB. Epoxy meets UL 94V-0 flammability rating.</li> <li>• <b>Polarity:</b> As marked on the body.</li> <li>• <b>Terminals:</b> Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.</li> </ul> <p><b>TYPICAL APPLICATIONS</b></p> <p>Thanks to highly sensitive triggering levels, the FS02xxxN SCR series is suitable for all applications where available gate current is limited, such as ground fault circuit interruptors, pilot circuits in solid state relays, stand-by mode power supplies, smoke and alarm detectors.</p>	<b>On-State Current</b> 8 Amp	<b>Gate Trigger Current</b> < 200 $\mu$ A	<b>Off-State Voltage</b> 400 V ÷ 800 V	
<b>On-State Current</b> 8 Amp	<b>Gate Trigger Current</b> < 200 $\mu$ A				
<b>Off-State Voltage</b> 400 V ÷ 800 V					

### Maximun Ratings and Electrical Characteristics at 25°C

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	On-state Current	180° Conduction Angle, $T_C = 110^\circ C$	8	A
$I_{T(AV)}$	Average On-state Current	180° Conduction Angle, $T_C = 110^\circ C$	5	A
$I_{TSM}$	Non-repetitive On-State Current	Half Cycle, 60 Hz	73	A
$I_{TSM}$	Non-repetitive On-State Current	Half Cycle, 50 Hz	70	A
$I^2t$	Fusing Current	$t_p = 10$ ms, Half Cycle	24.5	$A^2s$
$I_{GM}$	Peak Gate Current	20 $\mu$ s max.	4	A
$P_{GM}$	Peak Gate Dissipation	20 $\mu$ s max.	3	W
$P_{G(AV)}$	Gate Dissipation	20ms max.	0.2	W
$T_j$	Operating Temperature		(-40 to +125)	°C
$T_{stg}$	Storage Temperature		(-40 to +150)	°C
$T_{sld}$	Soldering Temperature	10s max.	260	°C

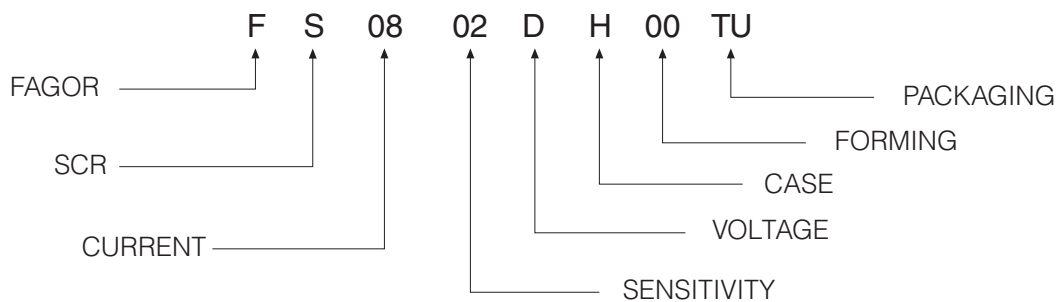
SYMBOL	PARAMETER	CONDITIONS	VOLTAGE			Unit
			D	M	N	
$V_{DRM}/V_{RRM}$	Repetitive Peak Off State Voltage	$R_{GK} = 1$ k $\Omega$	400	600	800	V

## SENSITIVE GATE SCR

### Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	SENSITIVITY		Unit
				02	
$I_{GT}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 140\Omega, T_j = 25\text{ °C}$	MAX	200	$\mu A$
$V_{GT}$	Gate Trigger Voltage	$V_D = 12 V_{DC}, R_L = 140\Omega, T_j = 25\text{ °C}$	MAX	0.8	V
$V_{GD}$	Gate Non Trigger Voltage	$V_D = V_{DRM}, R_L = 3.3k\Omega, R_{GK} = 220\Omega, T_j = 125\text{ °C}$	MIN	0.1	V
$V_{RGM}$	Reverse Gate Voltage	$I_{RG} = 10\mu A,$	MIN	8	V
$I_H$	Holding Current	$I_T = 500\text{ mA},$	MAX	5	mA
$I_L$	Latching Current	$I_G = 1.2 I_{GT}$	MAX	6	mA
$dV / dt$	Critical Rate of Voltage Rise	$V_D = 0.67 \times V_{DRM}, R_{GK} = 1\text{ k}\Omega, T_j = 125\text{ °C}$	MIN	5	V/ $\mu s$
$dl / dt$	Critical Rate of Current Rise	$I_G = 2 \times I_{GT}, tr \leq 100\text{ ns}, f = 60\text{ Hz}, T_j = 125\text{ °C}$	MIN	50	A/ $\mu s$
$V_{TM}$	On-state Voltage	at $I_T = 16\text{ Amp}, tp = 380\text{ }\mu s, T_j = 25\text{ °C}$	MAX	1.6	V
$V_{t(o)}$	Threshold Voltage	$T_j = 125\text{ °C}$	MAX	0.85	V
$r_d$	Dynamic resistance	$T_j = 125\text{ °C}$	MAX	46	$m\Omega$
$I_{DRM} / I_{RRM}$		$V_D = V_{DRM}, R_{GK} = 1k\Omega, T_j = 125\text{ °C}$ $V_R = V_{RRM}, T_j = 25\text{ °C}$	MAX	1	mA
			MAX	5	$\mu A$
$R_{th(j-c)}$	Thermal Resistance Junction-Case for DC			1.3	$^{\circ}C/W$
$R_{th(j-a)}$	Thermal Resistance Junction-Amb for DC			60	$^{\circ}C/W$

### Part Number Information

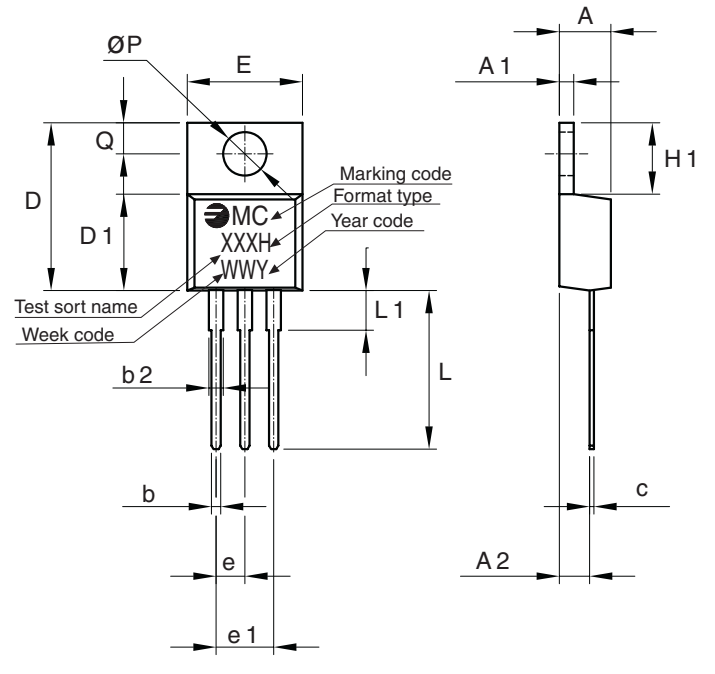


**SENSITIVE GATE SCR**

**Ordering information**

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FS0802DH 00TU	TU	TUBE	1000	2.30

**Package Outline Dimensions: (mm) TO-220AB**



Technical drawing showing top and side views of the TO-220AB package. The top view includes dimensions:  $\varnothing P$ , E, Q, D, D1, L1, L, b2, b, e, e1. The side view includes dimensions: A, A1, H1, A2, c. Marking code details: MC, XXXH, WWY, with sub-labels for Marking code, Format type, and Year code. Test sort name and Week code are also indicated.

REF.	DIMENSIONS	
	Milimeters	
	Min.	Max.
A	4.47	4.67
A1	1.17	1.37
A2	2.52	2.82
b	0.71	0.91
b2	1.17	1.37
c	0.31	0.53
D	14.65	15.35
D1	8.50	8.90
E	10.01	10.36
e	2.51	2.57
e1	4.98	5.18
H1	6.15	6.45
L	13.40	13.96
L1	3.56	3.96
P	3.735	3.935
Q	2.59	2.89

**Mounting Torque**

**0.8 N.m**

**SENSITIVE GATE SCR**

**Ratings and Characteristics (Ta 25 °C unless otherwise noted)**

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

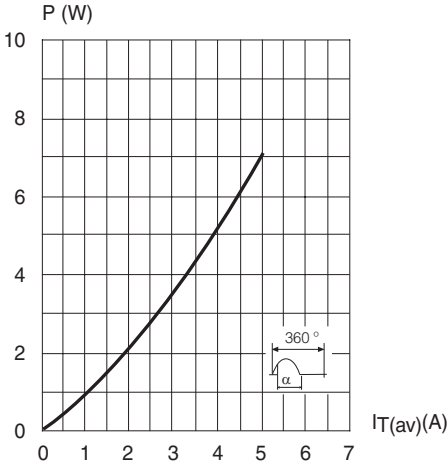


Fig. 2: Average and D.C. on-state current versus case temperature.

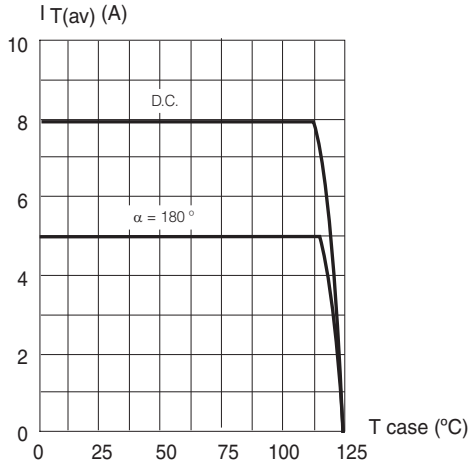


Fig. 3: Average and DC on-state current versus ambient temperature.

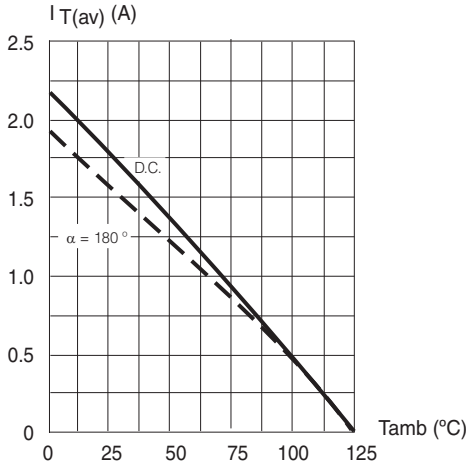


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

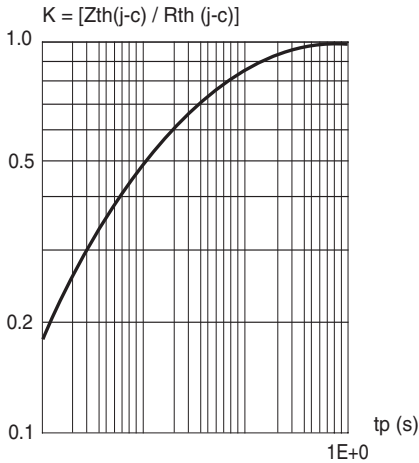


Fig. 5: Relative variation of gate trigger current, holding and latching current versus junction temperature.

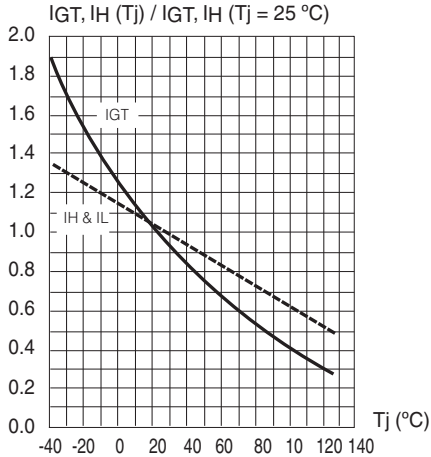
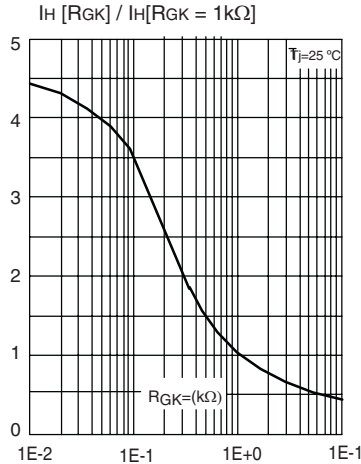


Fig. 6: Relative variation of holding current versus gate-cathode resistance (typical values).



**SENSITIVE GATE SCR**

Fig.7: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values).

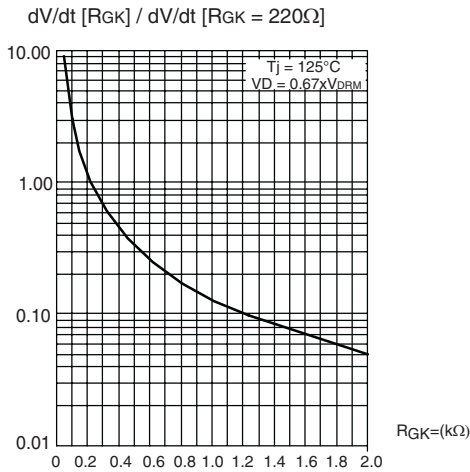


Fig. 8: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values).

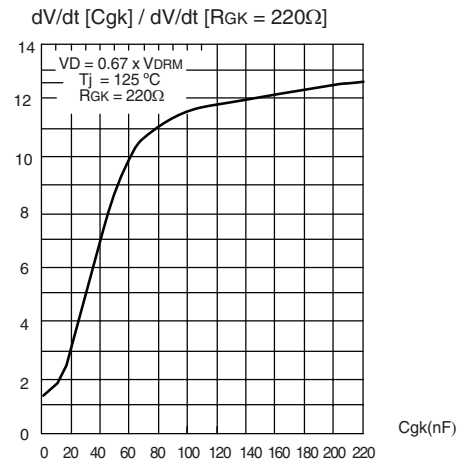


Fig. 9: Non repetitive surge peak on-state current versus number of cycles.

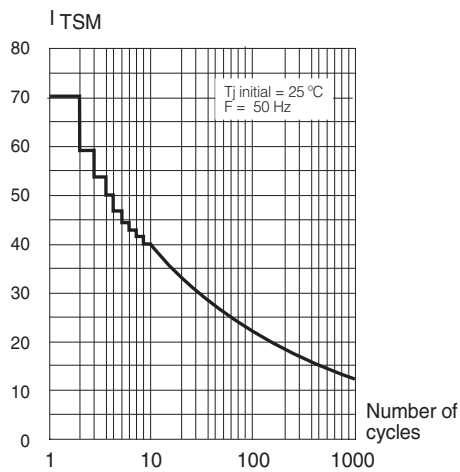


Fig. 10: Non repetitive surge peak on-state current for a sinusoidal pulse with width:  $t_p < 10 \text{ ms}$ , and corresponding value of  $I^2t$ .

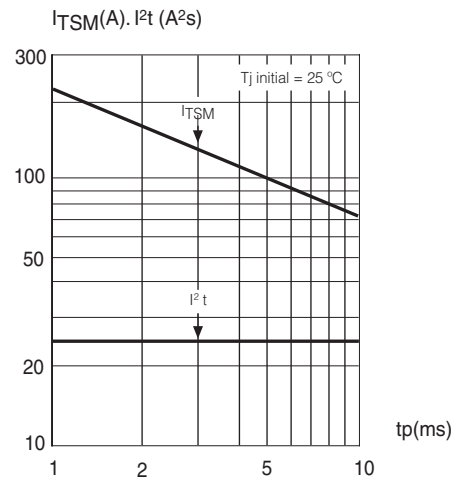
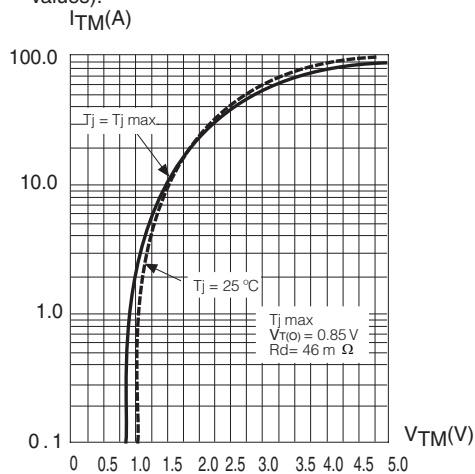


Fig. 11: On-state characteristics (maximum values).



**SENSITIVE GATE SCR**

**Revision History**

Date	Revision	Description of Changes
14-May-2013	0	Original Data Sheet
2-Apr-2014	1	200V and 700V eliminated & Fig. 3 Included

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