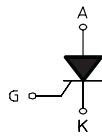
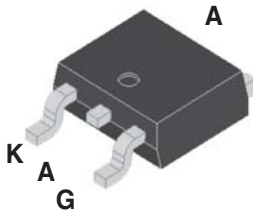


SENSITIVE GATE SCR

TO-252AA (DPAK)



On-State Current 4 Amp	Gate Trigger Current <200 μ A
Off-State Voltage 400 V \div 800 V	

FEATURES

- Glass/passivated die junctions
- Low current SCR
- Low thermal resistance
- High surge current capability
- Low forward voltage drop
- Solder dip 260°C, 10s
- Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC
- Meets MSL level 3, per J-STD-020, LF maximum peak of 260° C


RoHS
COMPLIANT

MECHANICAL DATA

- **Case:** TO-252AA (DPAK).
Epoxy meets UL 94V-0 flammability rating.
- **Polarity:** As marked on the body.
- **Terminals:** 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.

TYPICAL APPLICATIONS

Thanks to highly sensitive triggering levels, the FS04xxxD 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.

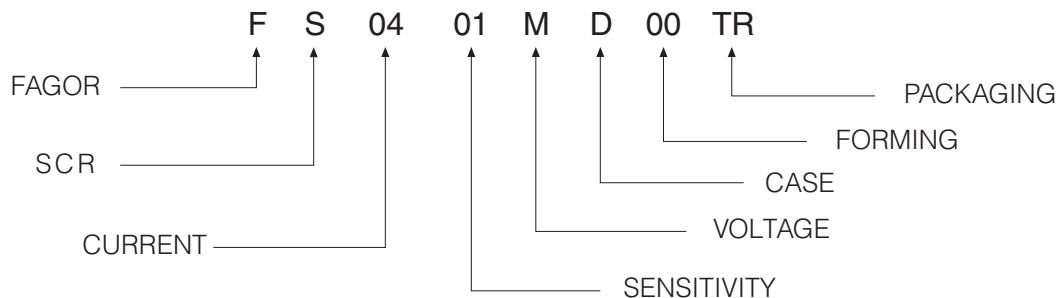
Maximum Ratings and Electrical Characteristics at 25°C

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	On-state Current	180° Conduction Angle, $T_C = 110^\circ\text{C}$	4	A
$I_{T(AV)}$	Average On-state Current	180° Conduction Angle, $T_C = 110^\circ\text{C}$	2.5	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 60 Hz	33	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 50 Hz	30	A
I^2t	Fusing Current	$t_p = 10$ ms, Half Cycle	4.5	A^2s
I_{GM}	Peak Gate Current	20 μ s max.	1.2	A
P_{GM}	Peak Gate Dissipation	20 μ 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
V_{RGM}	Reverse Gate Voltage		5	V

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

SENSITIVE GATE SCR
Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	SENSITIVITY				Unit	
			01	02	03	04		
I _{GT}	Gate Trigger Current	V _D = 12 V _{DC} , R _L = 140Ω. T _j = 25 °C	MIN	1		20	15	μA
			MAX	20	200	200	50	
V _{GT}	Gate Trigger Voltage	V _D = 12 V _{DC} , R _L = 140Ω. T _j = 25 °C	MAX	0.8				V
V _{GD}	Gate Non Trigger Voltage	V _D = V _{DRM} , R _L = 3.3 kΩ, R _{GK} = 220 Ω T _j = 125 °C	MIN	0.1				V
V _{RGM}	Reverse Gate Voltage	I _{RG} = 10μA,	MIN	8				V
I _H	Holding Current	I _T = 50 mA, R _{GK} = 1 kΩ T _j = 25 °C	MAX	5				mA
I _L	Latching Current	I _G = 1 mA, R _{GK} = 1 kΩ	MAX	6				mA
dV/dt	Critical Rate of Voltage Rise	V _D = 0.67 x V _{DRM} , R _{GK} = 1 kΩ, T _j = 125 °C	MIN	10	5	10	10	V/μs
dI/dt	Critical Rate of Current Rise	I _G = 2 x I _{GT} tr ≤ 100 ns, f = 60 Hz, T _j = 125 °C	MIN	50				A/μs
V _{TM}	On-state Voltage	at I _T = 8 Amp, tp = 380 μs, T _j = 25 °C	MAX	1.6				V
V _{t0}	Threshold Voltage	T _j = 125 °C	MAX	0.85				V
r _d	Dynamic resistance	T _j = 125 °C	MAX	90				mΩ
I _{DRM} /I _{RRM}	Off-State Leakage Current	V _D = V _{DRM} , R _{GK} = 1kΩ T _j = 125 °C V _R = V _{RRM} , T _j = 25 °C	MAX	1				mA
			MAX	5				μA
R _{th(j-c)}	Thermal Resistance Junction-Amb for DC	for AC 360° conduction angle		1.6				°C/W
R _{th(j-a)}	Thermal Resistance Junction-Amb for DC	S = 1 cm ²		70				°C/W

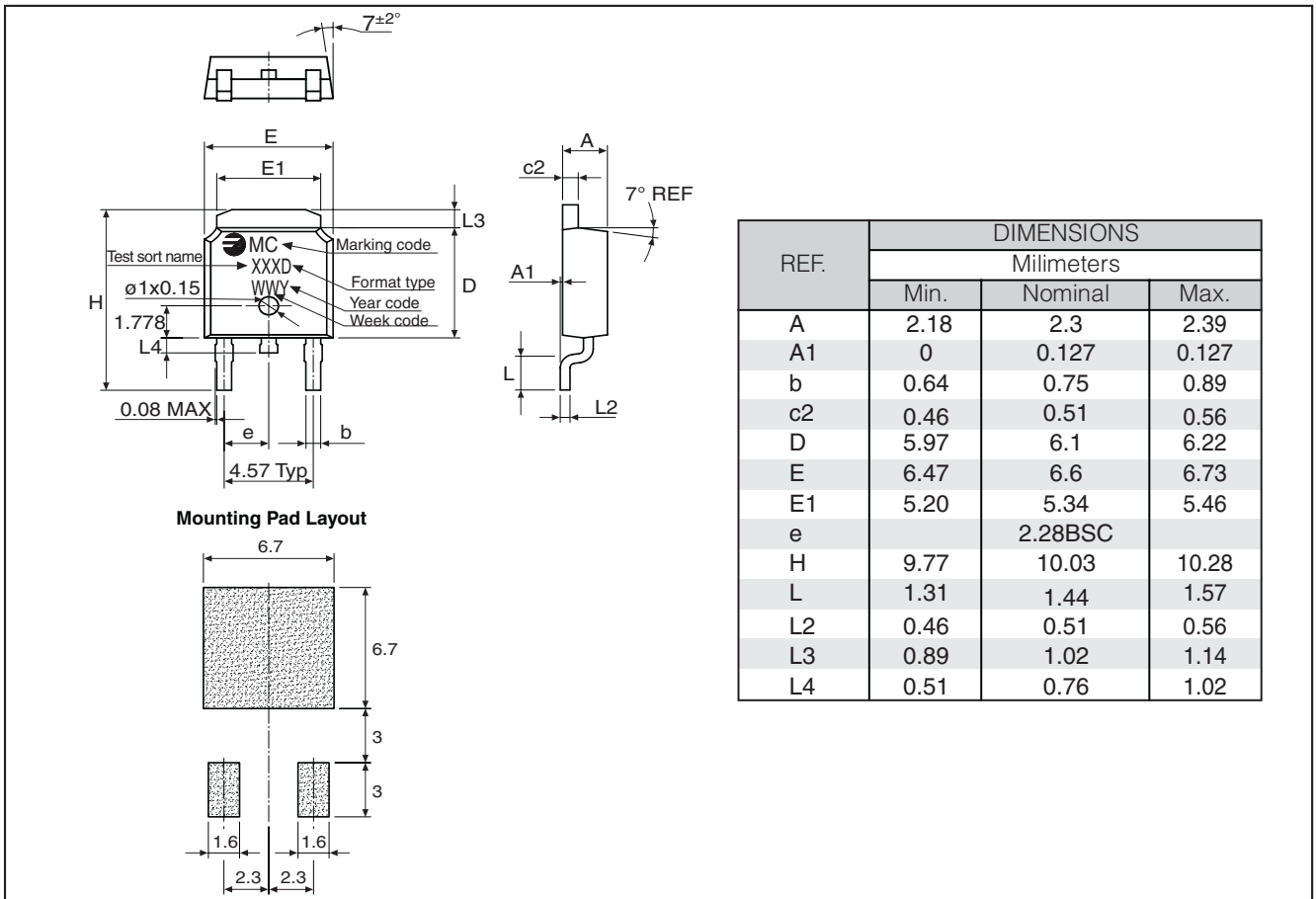
Part Number Information


SENSITIVE GATE SCR

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FS0401MD 00TR	TR	13" diameter tape and reel	2,500	0.30

Package Outline Dimensions: (mm) TO-252AA (DPAK)



SENSITIVE GATE SCR

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

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

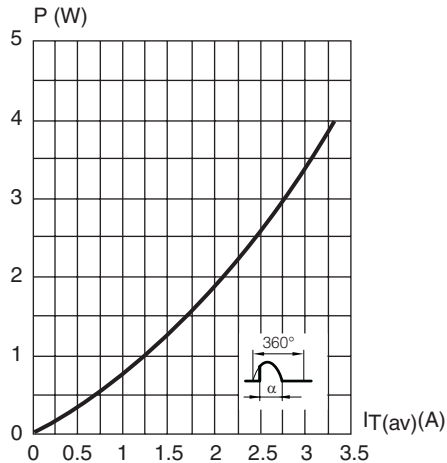


Fig. 2: Average and D.C. on-state current versus case temperature.

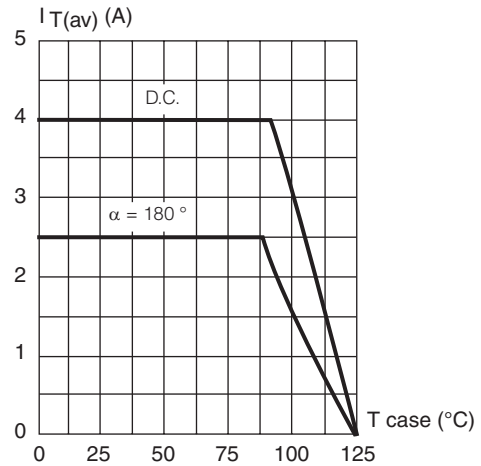


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

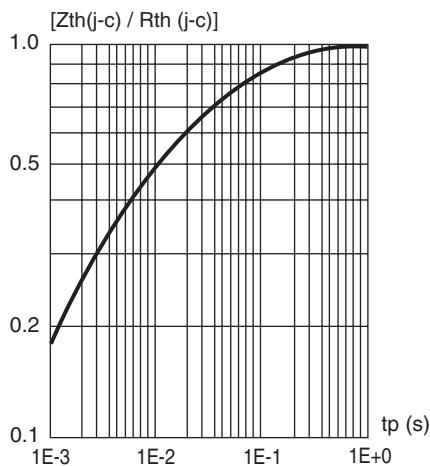


Fig. 4: Relative variation of gate trigger current, holding and latching current versus junction temperature.

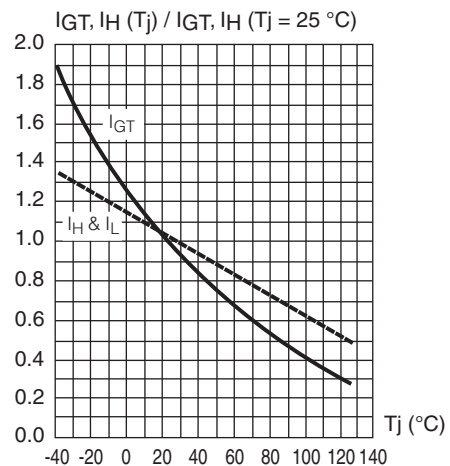


Fig. 5: Relative variation of holding current versus gate-cathode resistance (typical values).

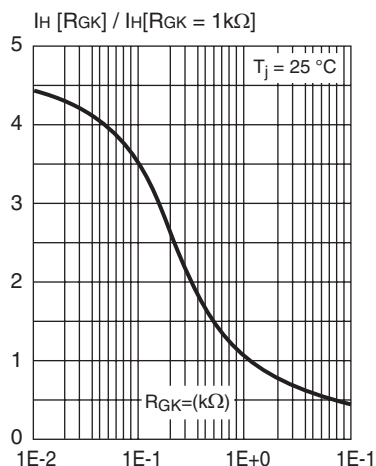
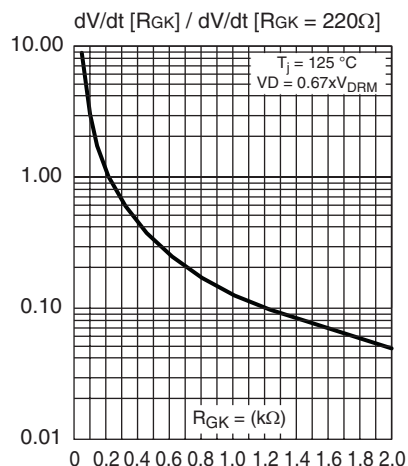


Fig. 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values).



SENSITIVE GATE SCR

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

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

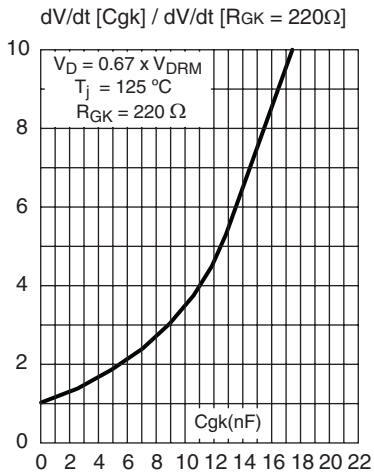


Fig. 8: Non repetitive surge peak on-state current versus number of cycles.

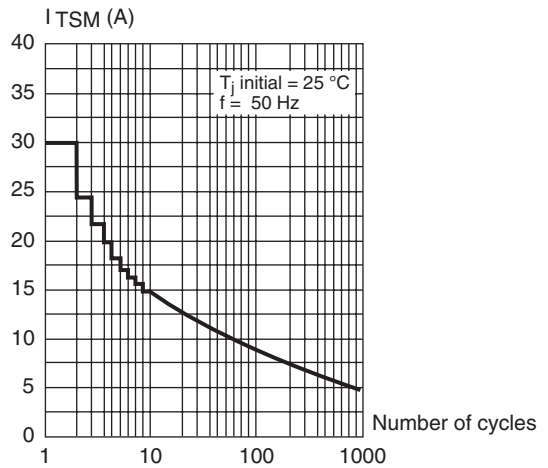


Fig. 9: Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t_p < 10\text{ ms}$, and corresponding value of I^2t .

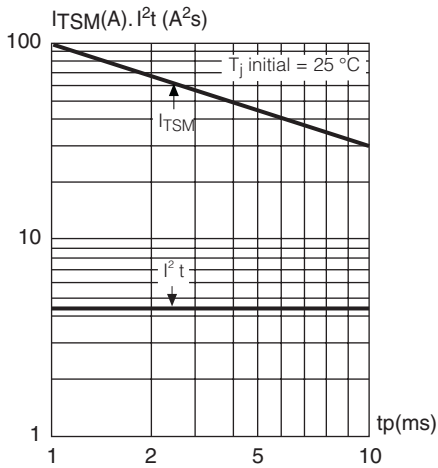
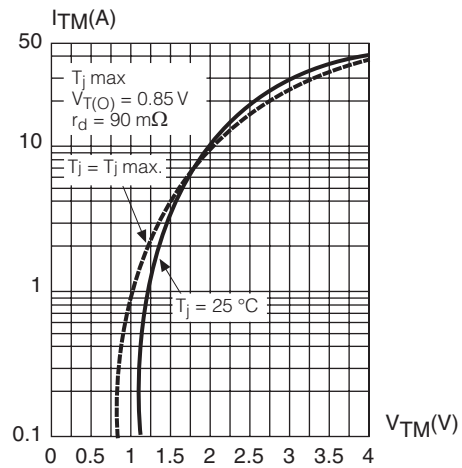


Fig. 10: On-state characteristics (maximum values).



SENSITIVE GATE SCR

Revision History

Date	Revision	Description of Changes
14-Sep-2009	0	Original Data Sheet
20-Jan-2017	1	200V and 700V eliminated

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