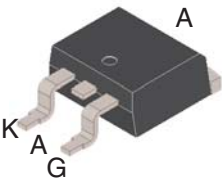
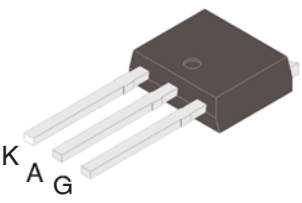
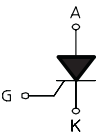



SENSITIVE GATE SCR

<p style="text-align: center;">TO-252AA (DPAK)</p>  <p style="text-align: center;">TO-251AA (IPAK)</p>  <div style="text-align: center; margin-top: 20px;">  </div>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">On-State Current 12 Amp</td> <td style="width: 50%;">Gate Trigger Current < 200 μA</td> </tr> <tr> <td colspan="2" style="text-align: center;">Off-State Voltage 800 V</td> </tr> </table> <p>FEATURES</p> <ul style="list-style-type: none"> Glass/passivated die junctions Medium 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 <div style="text-align: right; margin-top: 10px;">  </div> <p>MECHANICAL DATA</p> <ul style="list-style-type: none"> Case: TO-252AA (DPAK) & TO-251AA (IPAK). 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. <p>TYPICAL APPLICATIONS</p> <p>Thanks to highly sensitive triggering levels, the FS12xxxD 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>	On-State Current 12 Amp	Gate Trigger Current < 200 μ A	Off-State Voltage 800 V	
On-State Current 12 Amp	Gate Trigger Current < 200 μ A				
Off-State Voltage 800 V					

Maximun Ratings and Electrical Characteristics at 25°C

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	On-state Current	180° Conduction Angle	12	A
$I_{T(AV)}$	Average On-state Current	Half Cycle, $\Theta = 180^\circ$, $T_C = 95^\circ\text{C}$	7.6	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 60 Hz	100	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 50 Hz	91	A
I^2t	Fusing Current	$t_p = 10\text{ms}$, Half Cycle	41	A ² s
I_{GM}	Peak Gate Current	20 μ s max.	2	A
P_{GM}	Peak Gate Dissipation	20 μ s max.	5	W
$P_{G(AV)}$	Gate Dissipation	20 ms max.	0.5	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
			N	
V_{DRM}/V_{RRM}	Repetitive Peak Off State Voltage	$R_{GK} = 1\text{ k}\Omega$	800	V

SENSITIVE GATE SCR

Electrical Characteristics at Tamb = 25 °C

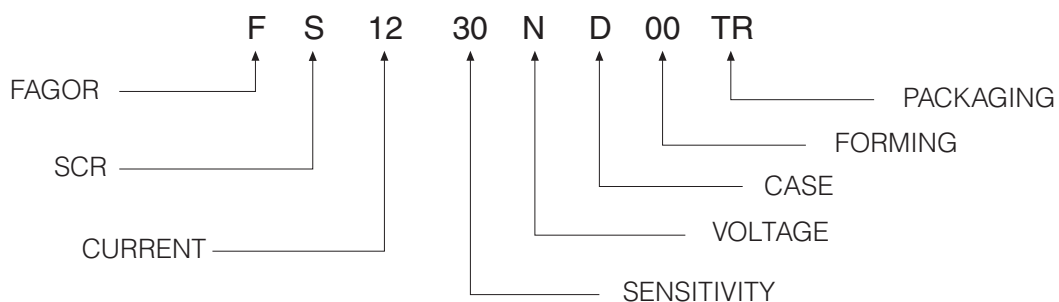
SYMBOL	PARAMETER	CONDITIONS	SENSITIVITY		Unit	
			30			
I _{GT}	Gate Trigger Current	V _D = 12 V _{DC} , R _L = 100Ω	MIN	-	μA	
			MAX	200		
V _{GT}	Gate Trigger Voltage	V _D = 12 V _{DC} , R _L = 100Ω	MAX	1.5	V	
V _{GD}	Gate Non Trigger Voltage	V _D = V _{DRM} , R _L = 3.3 kΩ, R _{GK} = 220 Ω T _j = 125 °C	MIN	0.1	V	
V _{RGM}	Reverse Gate Voltage	I _{RG} = 10 μA,	MIN	8	V	
I _H	Holding Current	I _G = 0.1 A, V _D = 12 V	MAX	6	mA	
I _L	Latching Current	I _G = 0.1 A, V _D = 12 V	MAX	10	mA	
dV / dt	Critical Rate of Voltage Rise	V _D = 0.67 x V _{DRM} , R _{GK} = 1 kΩ, T _j = 125 °C	MIN	5	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 = 20 Amp, t _p = 380 μs	MAX	1.9	V	
I _{DRM} / I _{RRM}	Off-State Leakage Current	V _D = V _{DRM} , R _{GK} = 1 kΩ	T _j = 125 °C	MAX	0.5	mA
		V _R = V _{RRM} ,	T _j = 25 °C	MAX	10	μA

Thermal resistance

SYMBOL	PARAMETER	CONDITIONS		Value	Unit
R _{th(j-c)}	Thermal Resistance Junction-Case for DC			2.2	°C/W
R _{th(j-a)}	Thermal Resistance Junction-Amb for DC	S = 0.5cm ²	DPAK	70	°C/W
			IPAK	100	

S = Copper surface under tab

Part Number Information

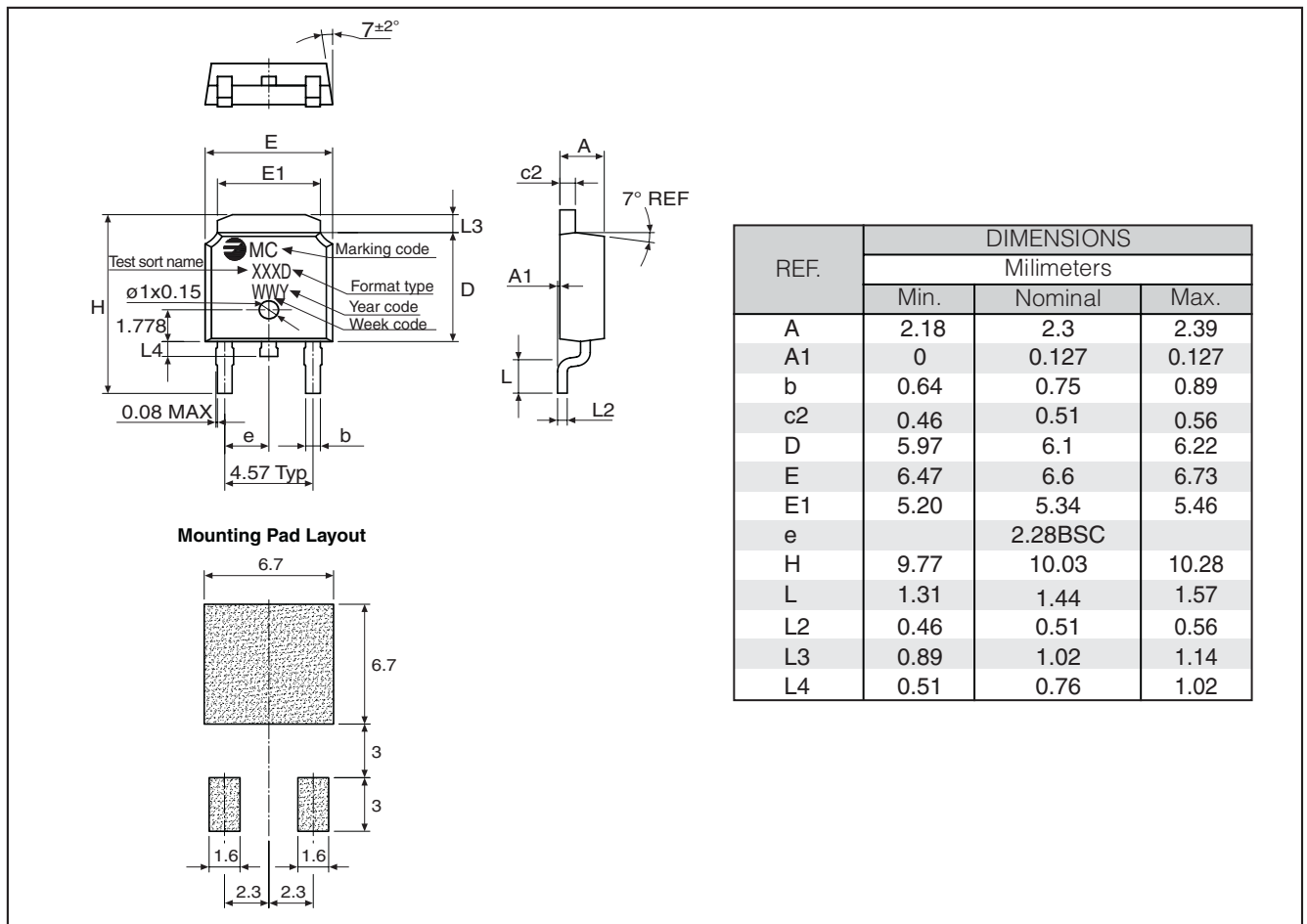


SENSITIVE GATE SCR

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FS1230ND 00TR	TR	13" diameter tape and reel	2,500	0.30

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

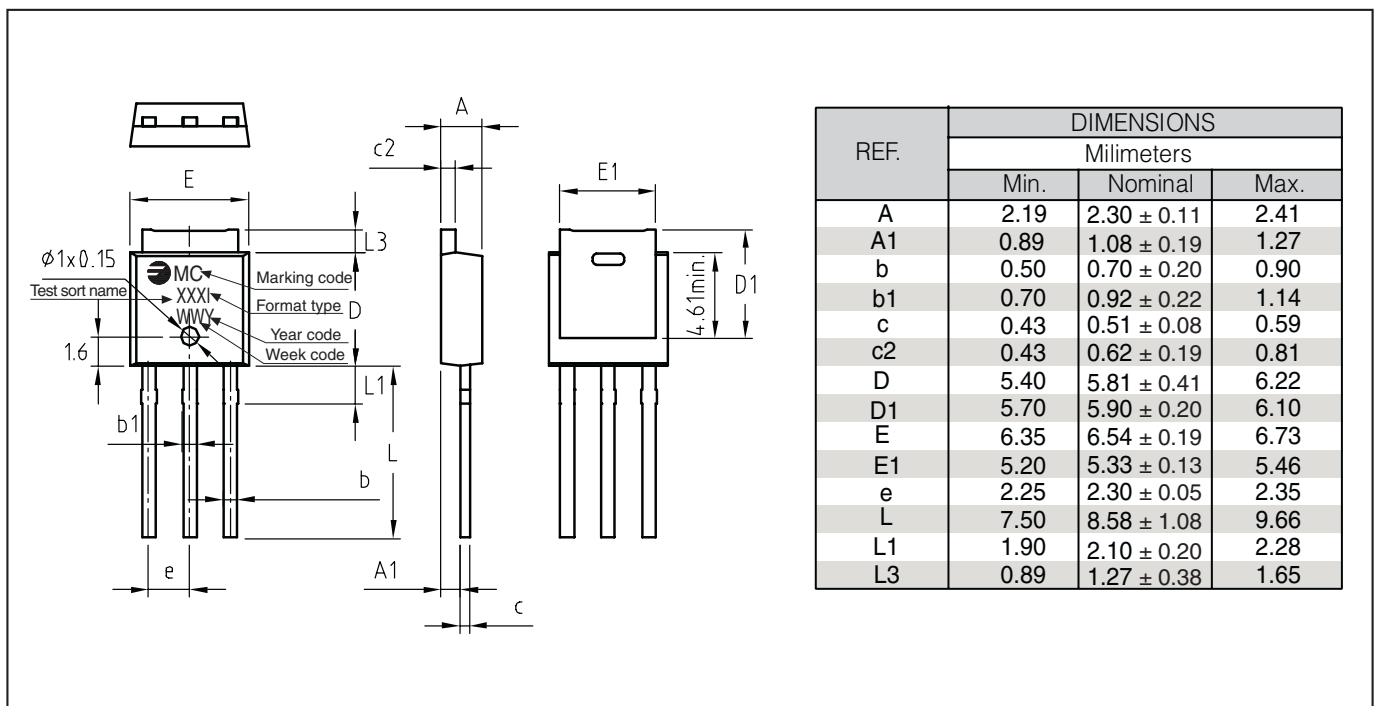


SENSITIVE GATE SCR

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FS1230NI 00TU	TU	TUBE	4,000	0.40

Package Outline Dimensions: (mm) TO-251AA (IPAK)



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

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

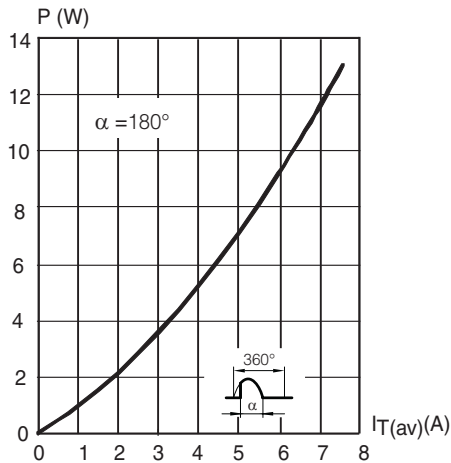


Fig. 2: Maximum permissible non-repetitive peak on-state current versus pulse width for sinusoidal currents.

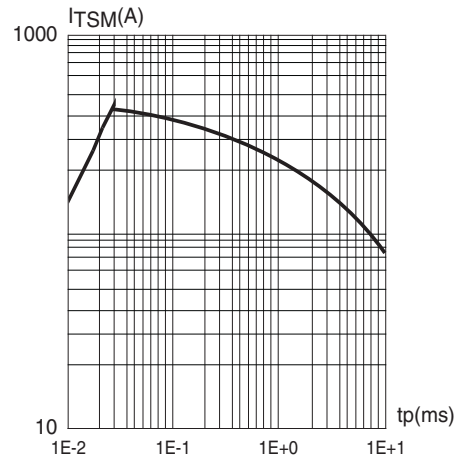


Fig. 3: Maximum permissible rms current versus mounting base temperature.

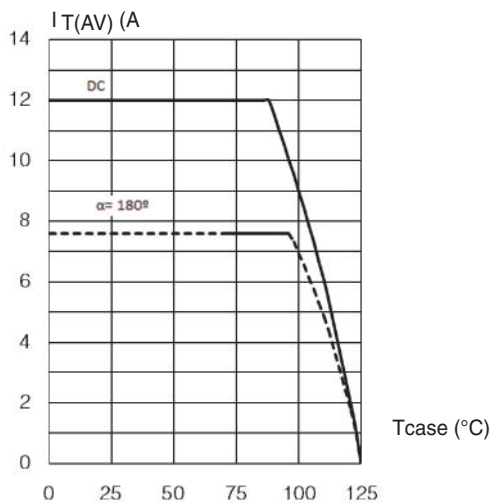


Fig. 4: Maximum permissible non-repetitive peak on-state current versus number of cycles for sinusoidal currents.

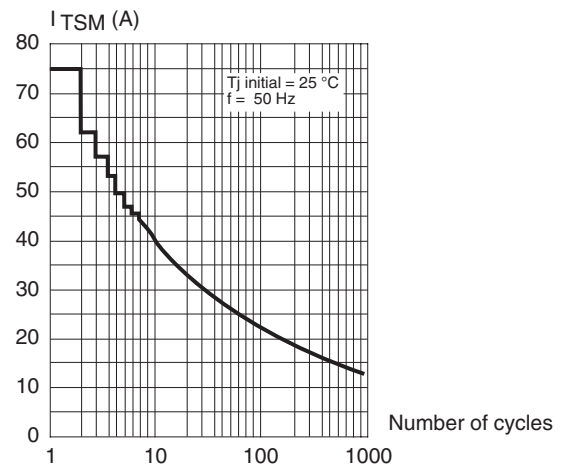


Fig. 5: Maximum permissible repetitive rms on-state current versus surge duration for sinusoidal currents, f = 50 Hz.

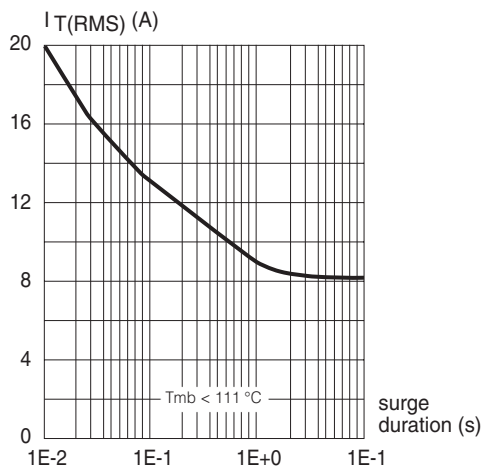
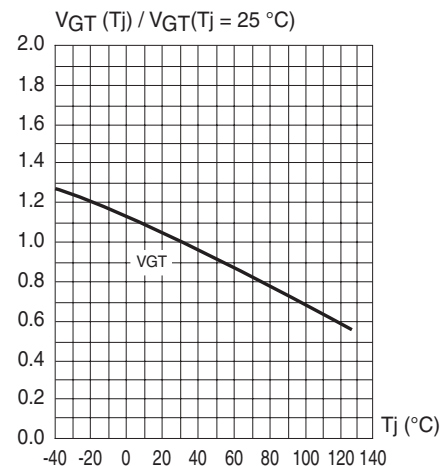


Fig. 6: Normalised gate trigger voltage versus junction temperature.



SENSITIVE GATE SCR

Fig. 7: Normalised gate trigger current versus junction temperature.

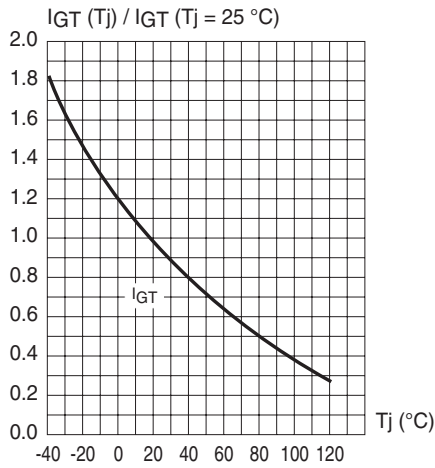


Fig. 8: Normalised latching current versus junction temperature.

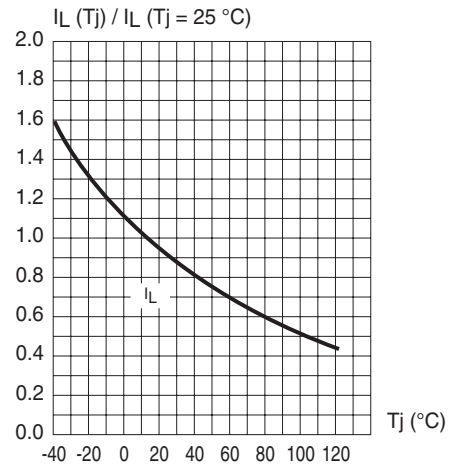


Fig. 9: Normalised holding current versus junction temperature.

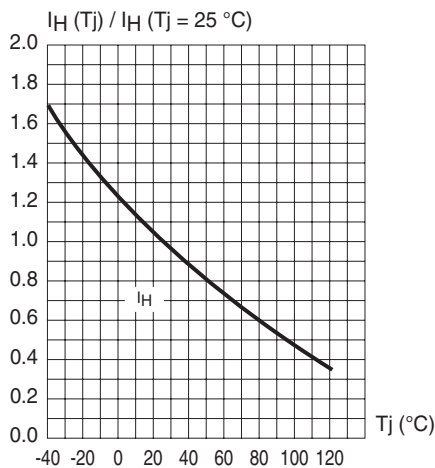


Fig. 10: Maximum on-state characteristic.

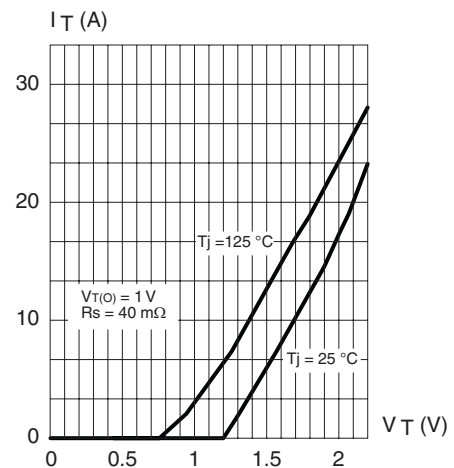
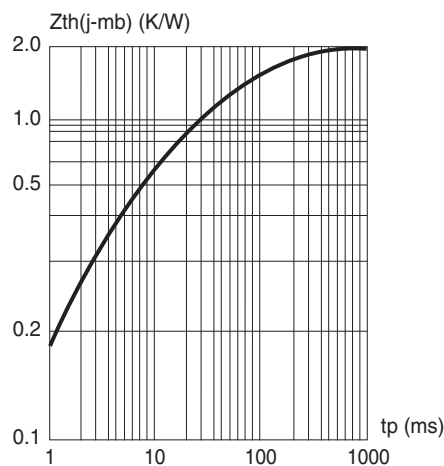


Fig. 11: Transient thermal impedance versus pulse width.



SENSITIVE GATE SCR**Revision History**

Date	Revision	Description of Changes
May-2013	0	Original Data Sheet
Mar-2015	1	Unify FS1230ND and FS1230NI in a single Data Sheet

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