X00619

0.8 A sensitive gate SCR

Features

- $I_{T(RMS)}$ = 0.8 A
- V_{DRM} / V_{RRM} = 600 V
- I_{GT} = 30 to 200 µA

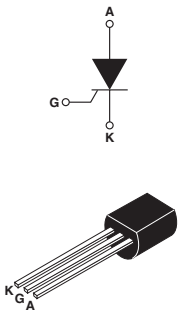
Applications

- Limited gate current topologies
- Ground fault circuit interrupters
- Overvoltage crowbar protection in power supplies
- Protection in electronic ballasts
- Capacitive discharge ignitions
- Ignitors (lighting, oven...)

Description

The X006 SCR can be used as on/off function in applications where topology does not offer high current for gate triggering.

This device is optimized in forward voltage drop and inrush current capabilities for reduced power losses and high reliability in harsh environments.



TO-92
(X00619-MA)

Table 1. Device summary

$I_{T(RMS)}$	0.8 A
V_{DRM} / V_{RRM}	600 V
I_{GT}	30 to 200 µA

1 Characteristics

Table 2. Absolute ratings (limiting values, T_J = 25 °C unless otherwise specified)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	On-state rms current (180 °Conduction angle)		T_L = 85 °C	0.8	A
$IT_{(AV)}$	Average on-state current (180 °Conduction angle)		T_L = 85 °C	0.5	A
I_{TSM}	Non repetitive surge peak on-state current	t_p = 8.3 ms	T_j = 25 °C	10	A
		t_p = 10 ms		9	
I^2t	I^2t Value for fusing	t_p = 10 ms	T_j = 25 °C	0.4	A^2s
di/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , $t_r \leq$ 100 ns	F = 60 Hz	T_j = 125 °C	50	A/µs
I_{GM}	Peak gate current	t_p = 20 µs	T_j = 125 °C	1	A
$P_{G(AV)}$	Average gate power dissipation		T_j = 125 °C	0.1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C

Table 3. Electrical characteristics (T_J = 25 °C unless otherwise specified)

Symbol	Test conditions			Value	Unit
I_{GT}	V_D = 12 V, R_L = 140 Ω		MIN.	30	µA
			MAX.	200	
V_{GT}				0.8	V
V_{GD}	V_D = V_{DRM}, R_L = 3.3 kΩ , R_{GK} = 1 kΩ	T_j = 125 °C	MIN.	0.2	V
V_{RG}	I_{RG} = 10 µA		MIN.	5	V
I_H	I_T = 50 mA, R_{GK} = 1 kΩ		MAX.	5	mA
I_L	I_G = 1 mA, R_{GK} = 1 kΩ		MAX.	6	mA
dV/dt	V_D = 67% V_{DRM}, R_{GK} = 1 kΩ	T_j = 125 °C	MIN.	40	V/µs

Table 4. Static electrical characteristics (per diode)

Symbol	Test conditions			Value	Unit
V_{TM}	I_{TM} = 1 A, t_p = 380 µs	T_j = 25 °C	MAX	1.35	V
V_{TO}	Threshold voltage	T_j = 125 °C		0.85	V
Rd	Dynamic resistance			245	mΩ
I_{DRM} I_{RRM}	V_{DRM} = V_{RRM}, R_{GK} = 1 kΩ	T_j = 25 °C		1	µA
		T_j = 125 °C		100	µA

Table 5. Thermal resistances

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient (DC)	150	°C/W
$R_{th(j-l)}$	Junction to lead (DC)	70	

Figure 1. Maximum average power dissipation vs. average on-state current

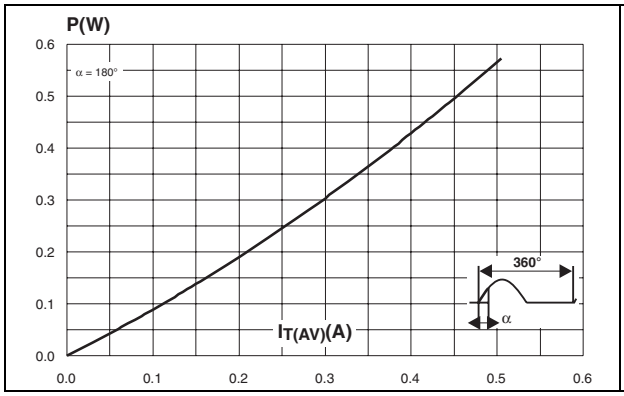


Figure 2. Average and DC on-state current vs. case temperature

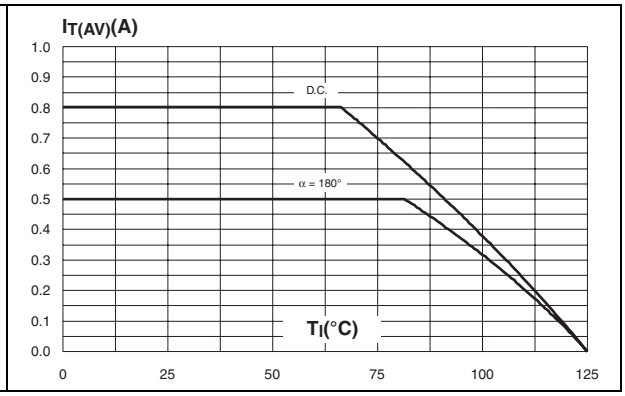


Figure 3. Average and DC on-state current vs. case temperature

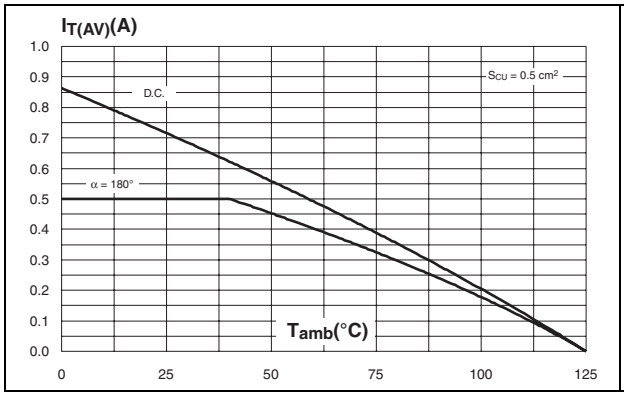


Figure 4. Relative variation of thermal impedance junction to ambient vs. pulse duration

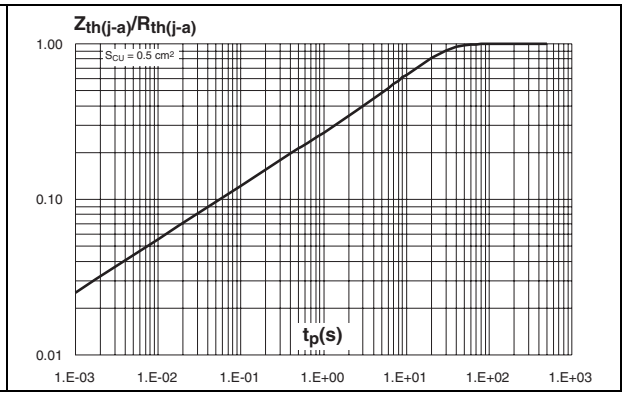


Figure 5. Relative variation of gate trigger, holding and latching current vs. junction temperature

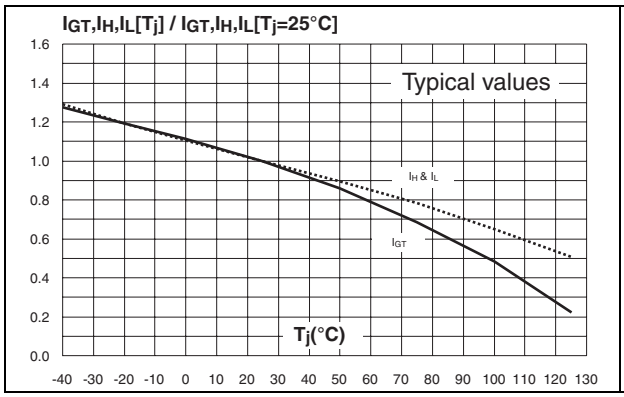


Figure 6. Relative variation of holding current vs. gate-cathode resistance (typical values)

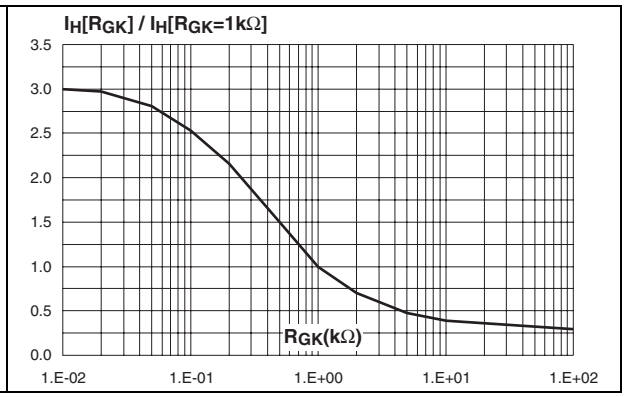


Figure 7. Relative variationhn of dV/dt immunity vs. gate-cathode resistance (typical values)

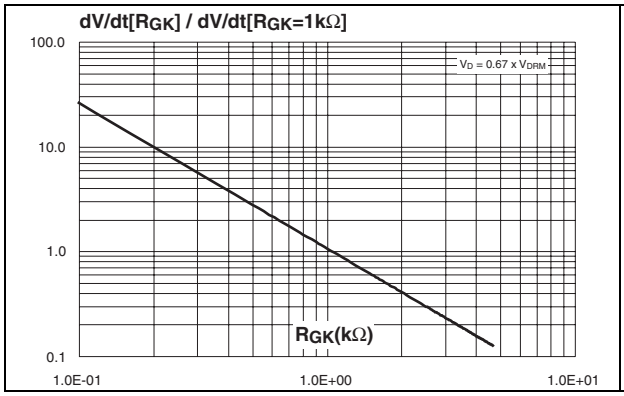


Figure 8. Relative variation of dV/dt immunity vs. gate-cathode capacitance (typical values)

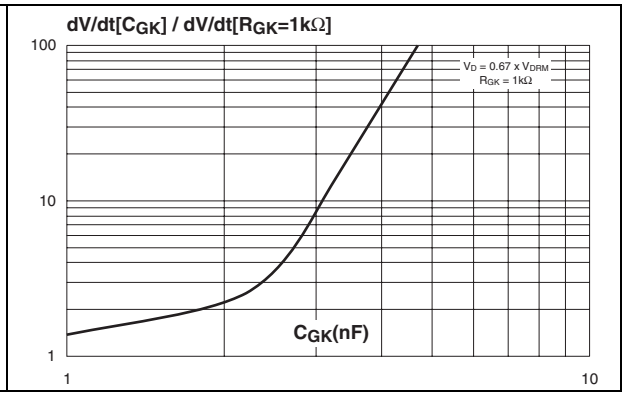


Figure 9. Surge peak on-state current vs. number of cycles

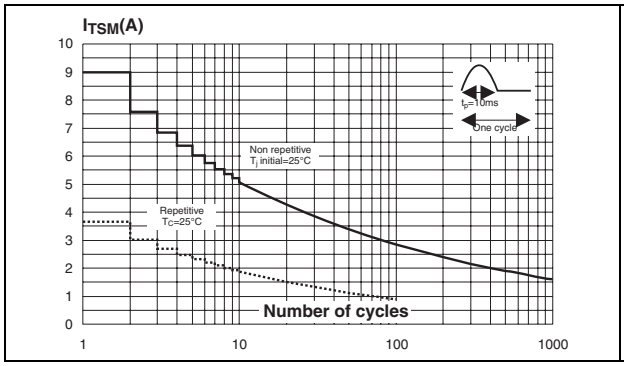


Figure 10. Non repetitive surge peak on state current for a sinusoidal pulse and corresponding value of I^2T

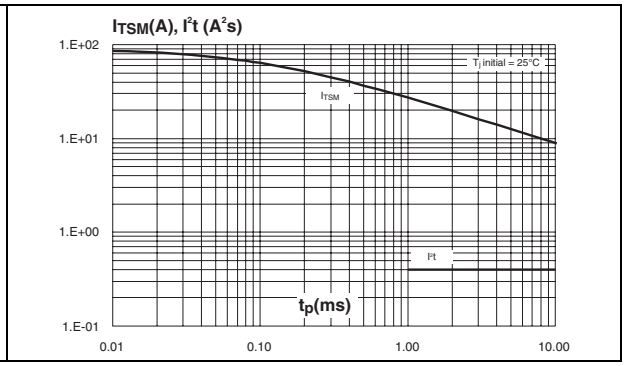
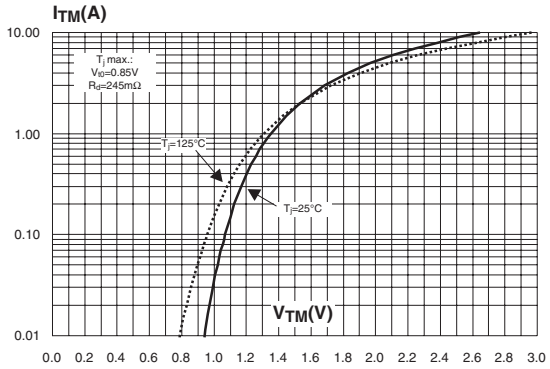
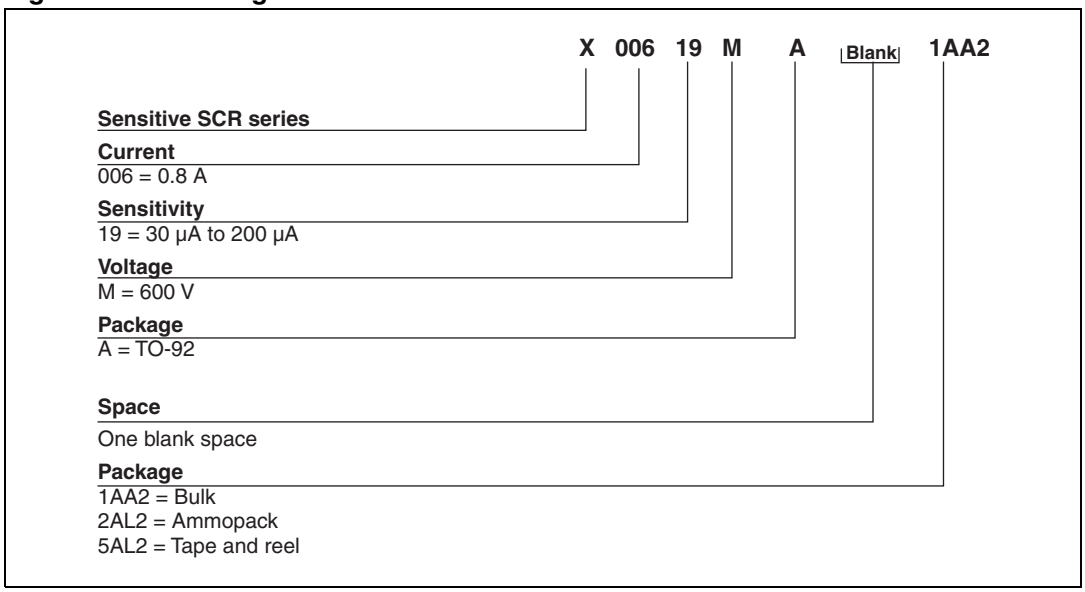


Figure 11. On-state characteristics (maximum values)



2 Ordering information scheme

Figure 12. Ordering information scheme



3 Package information

- Epoxy meets UL94, V0

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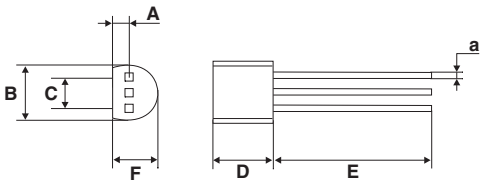
Table 6. TO-92 (plastic) dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	1.35	-	-	0.053	-
B	-	-	4.70	-	-	0.185
C	-	2.54	-	-	0.100	-
D	4.40	-	-	0.173	-	-
E	12.70	-	-	0.500	-	-
F	-	-	3.70	-	-	0.146
a	-	-	0.50	-	-	0.019

4 Ordering information

Table 7. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
X00619MA 1AA2	X0619 MA	TO-92	0.2 g	2500	Bulk
X00619MA 2AL2				2000	Ammopack
X00619MA 5AL2				2000	Tape and reel

5 Revision history

Table 8. Document revision history

Date	Revision	Changes
26-May-2009	1	First issue

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