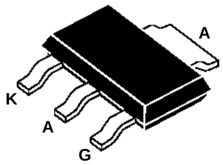
SGS-THOMSON
MICROELECTRONICS

P01xxxN

SENSITIVE GATE SCR

FEATURES

- $I_{T(RMS)} = 0.8A$
- $V_{DRM} = 100V$ to $400V$
- Low $I_{GT} < 200\ \mu A$



SOT223
(Plastic)

DESCRIPTION

The P01xxxN series of SCRs uses a high performance planar PNPN technology. These parts are intended for general purpose high volume applications using surface mount technology.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$ *	RMS on-state current (180° conduction angle)	Ta= 70°C	0.8	A
$I_{T(AV)}$ *	Mean on-state current (180° conduction angle)	Ta= 70°C	0.5	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 8.3 ms	8	A
		tp = 10 ms	7	
I^2t	I^2t Value for fusing	tp = 10 ms	0.24	A^2s
dI/dt	Critical rate of rise of on-state current $I_G = 10$ mA $dI_G/dt = 0.1$ A/µs.		30	A/µs
T_{stg} T_j	Storage and operating junction temperature range		- 40, + 150 - 40, + 125	°C
Tl	Maximum lead temperature for soldering during 10s		260	°C

* : With $5cm^2$ copper (e=35µm) surface under tab.

Symbol	Parameter	Voltage				Unit
		A	B	C	D	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125°C$ $R_{GK} = 1K\Omega$	100	200	300	400	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient *	60	°C/W
Rth(j-t)	Junction to tab for DC	30	°C/W

* : With 5cm^2 copper (e=35µm) surface under tab.

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$= 0.1 W P_{GM} = 2 W (tp = 20 µs) I_{GM} = 1 A (tp = 20 µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Sensitivity			Unit
				02	09	11	
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj= 25°C	MIN	-	-	4	µA
			MAX	200	1	25	
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj= 25°C	MAX	0.8			V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} = 1 KΩ	Tj= 125°C	MIN	0.1			V
V_{RGM}	I_{RG} =10µA	Tj= 25°C	MIN	8			V
tgd	V_D=V_{DRM} I_{TM}= 3 x $I_{T(AV)}$ dI_G/dt = 0.1A/µs I_G = 10mA	Tj= 25°C	TYP	0.5			µs
I_H	I_T= 50mA R_{GK} = 1 KΩ	Tj= 25°C	MAX	5			mA
I_L	I_G=1mA R_{GK} = 1 KΩ	Tj= 25°C	MAX	6			mA
V_{TM}	I_{TM}= 1.6A tp= 380µs	Tj= 25°C	MAX	1.95			V
I_{DRM} I_{RRM}	V_D = V_{DRM} R_{GK} = 1 KΩ V_R = V_{RRM}	Tj= 25°C	MAX	1			µA
		Tj= 125°C	MAX	100			µA
dV/dt	V_D=67%V_{DRM} R_{GK} = 1 KΩ	Tj= 125°C	MIN	25	25	50	V/µs
tq	I_{TM}= 3 x $I_{T(AV)}$ V_R=35V dI/dt=10A/µs tp=100µs dV/dt=10V/µs V_D= 67%V_{DRM} R_{GK} = 1 KΩ	Tj= 125°C	MAX	200			µs

ORDERING INFORMATION

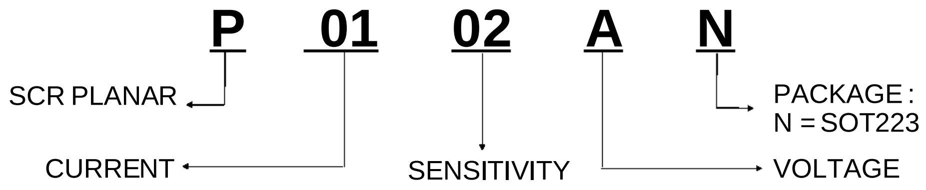


Fig.1 : Maximum average power dissipation versus average on-state current.

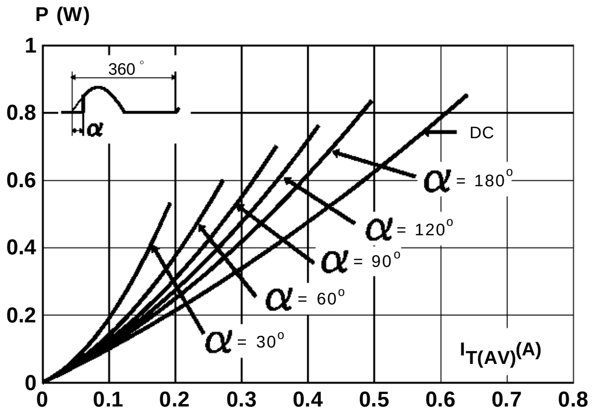


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (Tamb and Ttab).

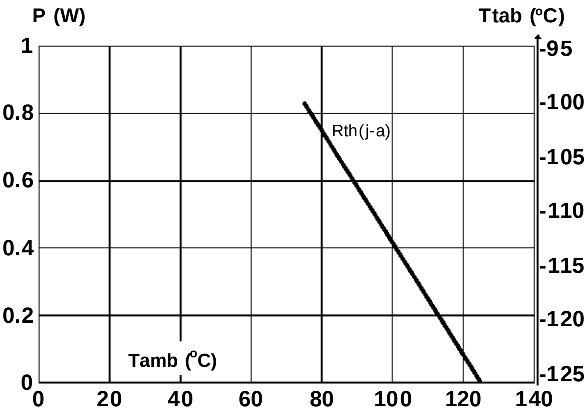


Fig.3 : Average on-state current versus tab temperature.

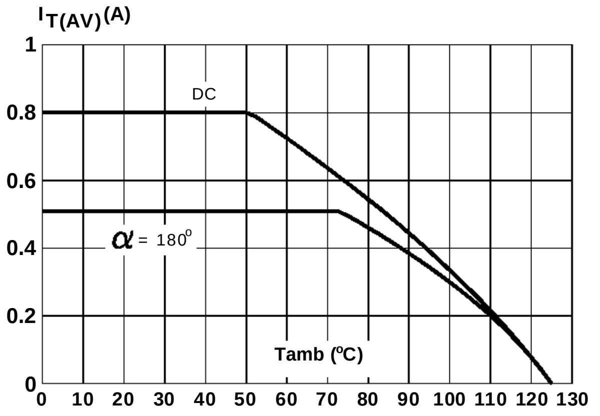


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

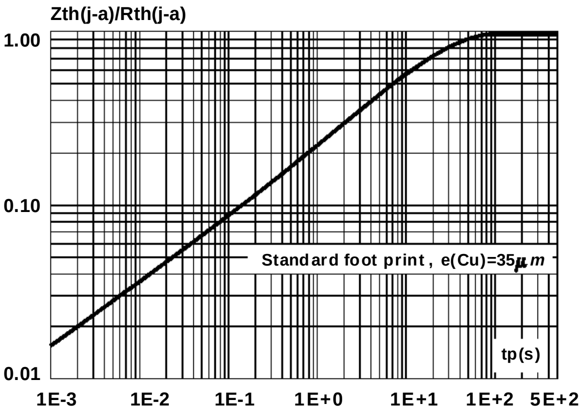


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

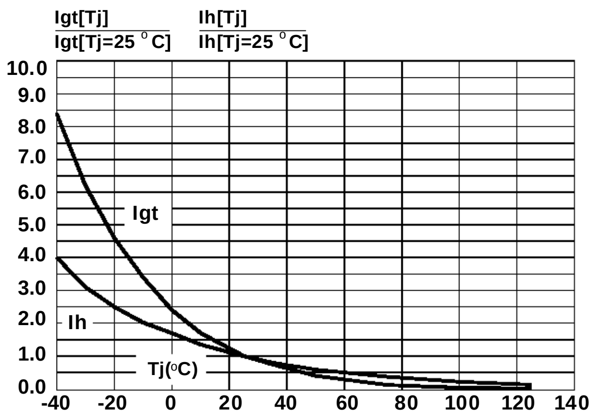


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

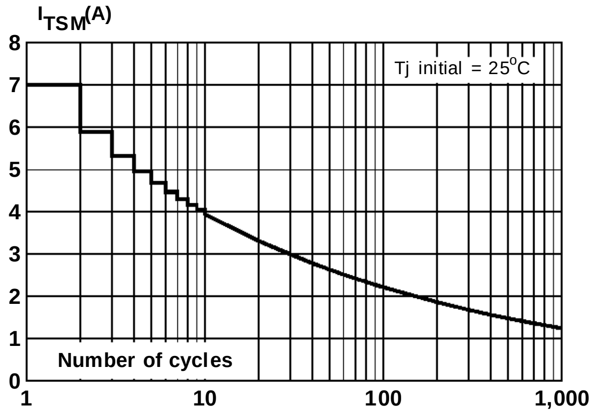


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

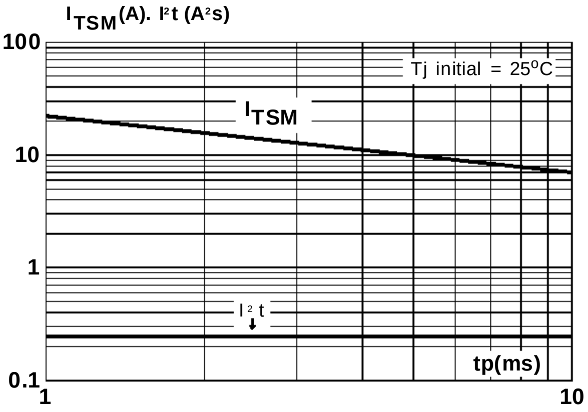


Fig.8 : On-state characteristics (maximum values).

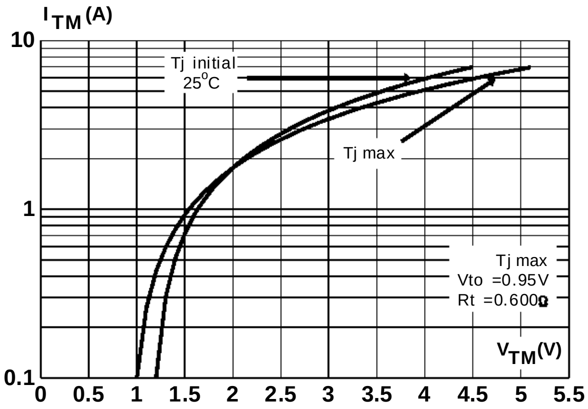
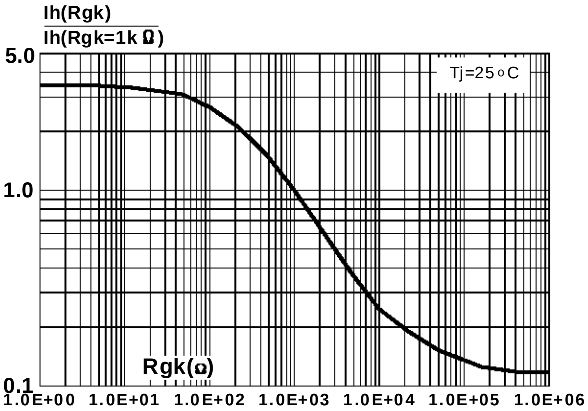
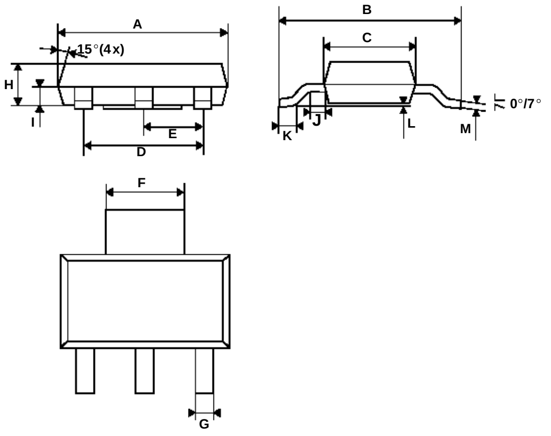


Fig.9 : Relative variation of holding current versus gate-cathode resistance (typical values).



PACKAGE MECHANICAL DATA

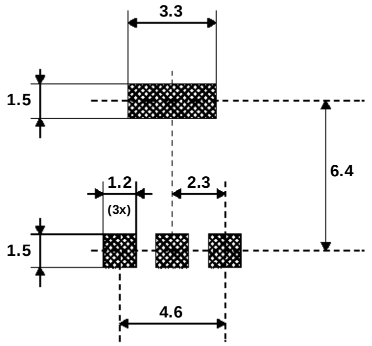
SOT223 (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.30	6.50	6.70	0.248	0.256	0.264
B	6.70	7.00	7.30	0.264	0.275	0.287
C	3.30	3.50	3.70	0.130	0.139	0.146
D		4.60			0.181	
E		2.30			0.090	
F	2.90	3.00	3.10	0.114	0.118	0.122
G	0.60	0.70	0.80	0.023	0.027	0.031
H	1.50	1.60	1.70	0.059	0.063	0.067
I	0.43	0.45	0.47	0.017	0.018	0.019
J	0.50	0.60	0.70	0.019	0.023	0.027
K	0.63	0.65	0.67	0.024	0.025	0.026
L		0.05			0.002	
M			0.32			0.012

Weight : 0.11g

FOOT PRINT



Recommended soldering pattern SOT223

MARKING

Type	Marking
P0102AN	P2A
P0102BN	P2B
P0102CN	P2C
P0102DN	P2D
P0111AN	P1A
P0111BN	P1B
P0111CN	P1C
P0111DN	P1D
P0109AN	P9A
P0109BN	P9B
P0109CN	P9C
P0109DN	P9D

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