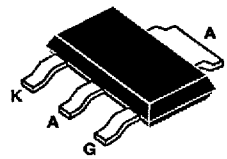
SGS-THOMSON MICROELECTRONICS

P0201xN
P0202xN

SENSITIVE GATE SCR

FEATURES

- $I_{T(RMS)}$ = 0.8A
- V_{DRM} = 500V to 800V
- Low $I_{GT} \leq 20\,\mu A$ max to $< 200\,\mu A$



SOT223
(Plastic)

DESCRIPTION

The P0201xN 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= 80°C	0.8	A
$I_{T(AV)}$ *	Mean on-state current (180° conduction angle)	Ta= 80°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
		E	M	S	N	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C R_{GK} = 1KΩ	500	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient *	60	°C/W
Rth(j-t)	Junction to tab for DC	25	°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
				01	02	
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj= 25°C	MIN	1	-	µA
			MAX	20	200	
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	TYP	24		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	1.75		V
I_{DRM} I_{RRM}	V_D = V_{DRM} R_{GK} = 1 KΩ V_R = V_{RRM}	Tj= 25°C	MAX	10		µA
		Tj= 125°C	MAX	100		µA
dV/dt	V_D=67%V_{DRM} R_{GK} = 1 KΩ	Tj= 125°C	TYP	100		V/µs
tq	I_{TM}= 3 x $I_{T(AV)}$ V_R=35V dI/dt=10A/µs tp=100µs dV/dt=2V/µs V_D= 67%V_{DRM} R_{GK} = 1 KΩ	Tj= 125°C	MAX	200		µs

ORDERING INFORMATION

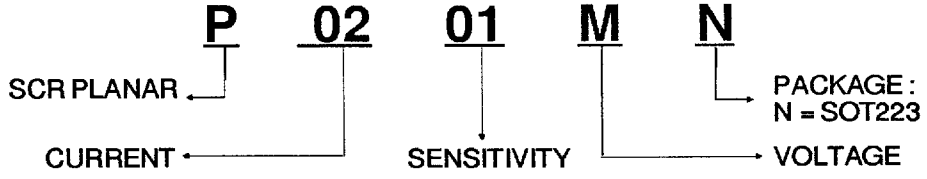


Fig.1 : Maximum average power dissipation versus average on-state current.

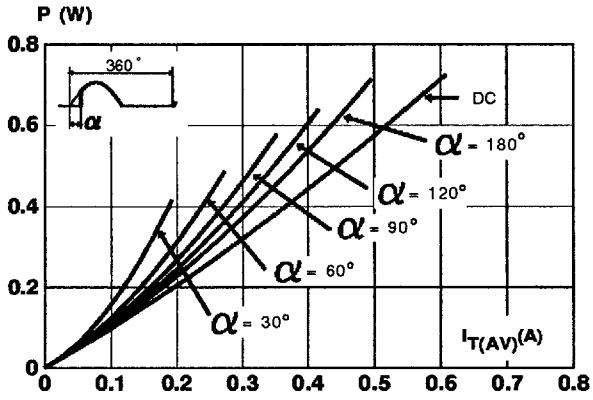


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (Tamb and Ttab).

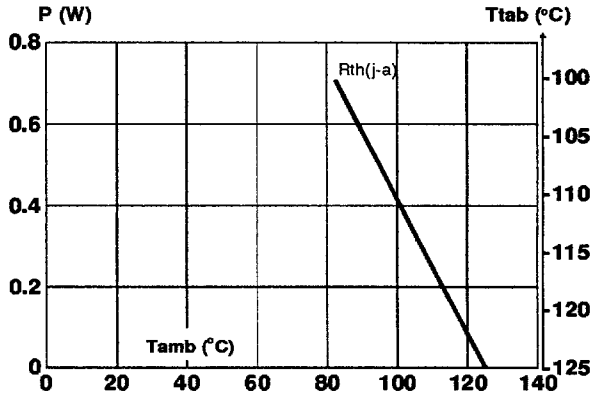


Fig.3 : Average on-state current versus tab temperature.

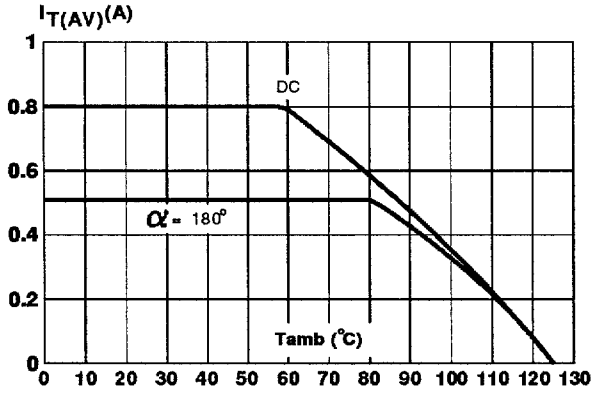


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

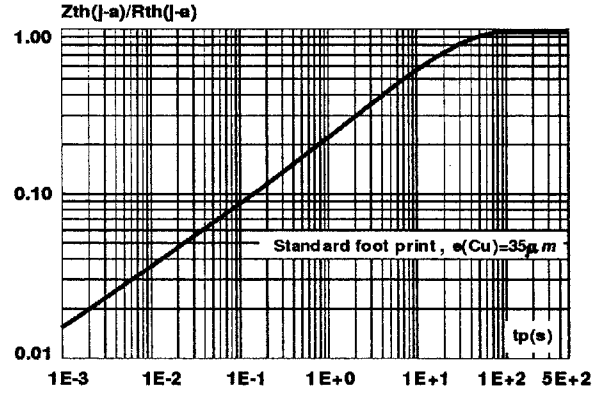


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

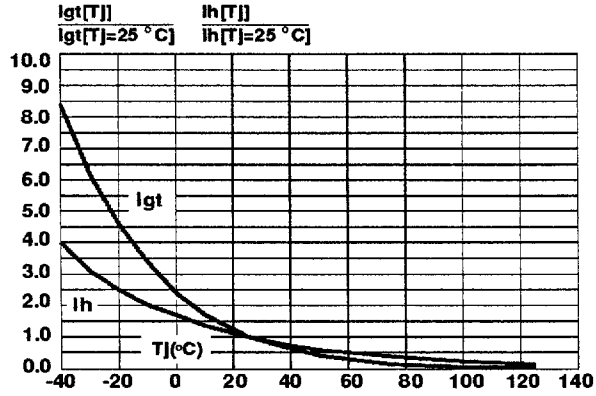


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

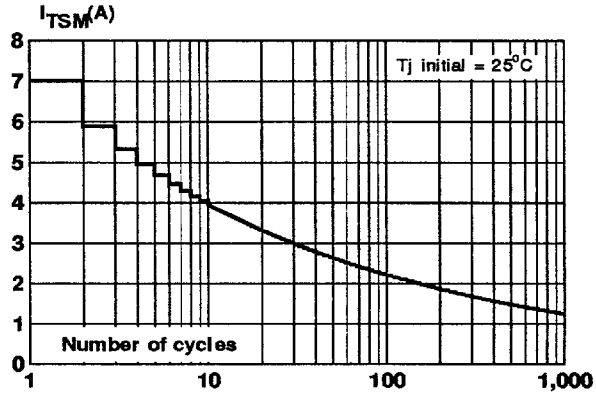


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

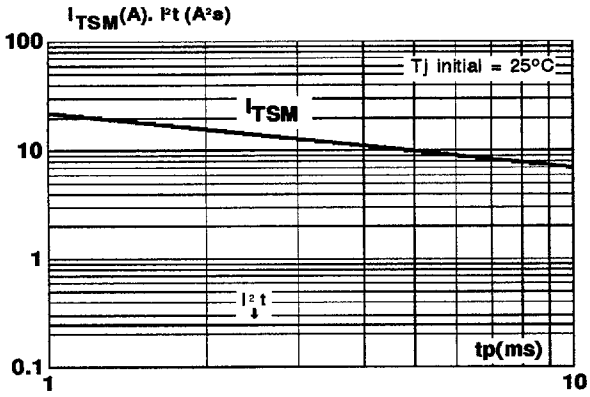


Fig.8 : On-state characteristics (maximum values).

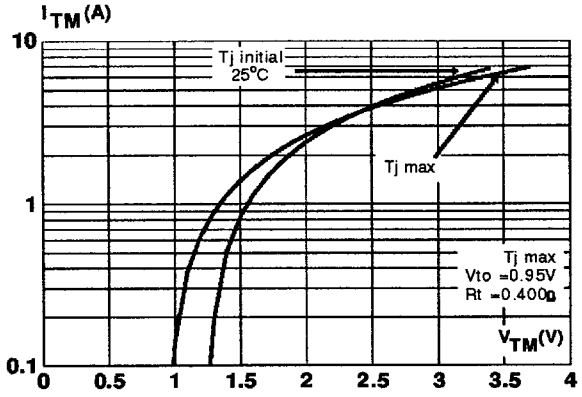
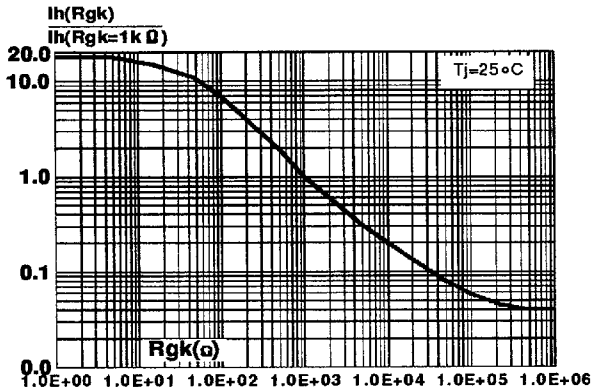
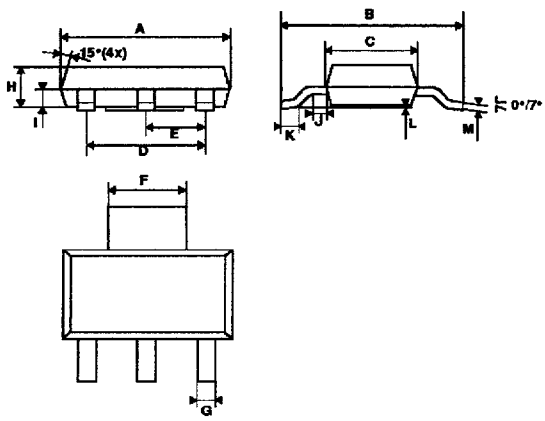


Fig.9 : Relative variation of holding current versus gate-cathode resistance (typical values).



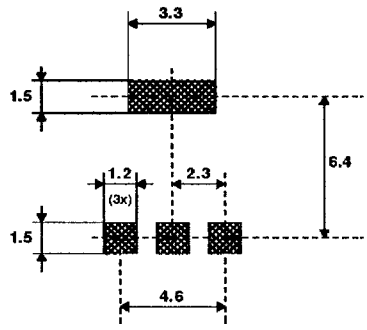
PACKAGE MECHANICAL DATA
SOT223 (Plastic)



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 : 0.11 g

FOOT PRINT



Recommended soldering pattern SOT223

MARKING

Type	Marking
P0201EN	P1E
P0201MN	P1M
P0201SN	P1S
P0201NN	P1N
P0202EN	P2E
P0202MN	P2M
P0202SN	P2S
P0202NN	P2N