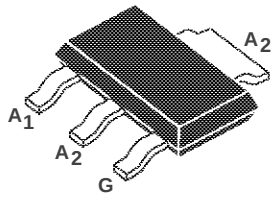
SGS-THOMSON MICROELECTRONICS

Z01xxxN

SENSITIVE GATE TRIACS

FEATURES

- $I_{T(RMS)}$ = 1A
- V_{DRM} = 400V to 800V
- $I_{GT} \leq$ 3mA to $\leq$ 25mA



SOT223
(Plastic)

DESCRIPTION

The Z01xxxN series of triacs uses a high performance TOP GLASS 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 (360° conduction angle)	Ttab= 90 °C	1	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 8.3 ms	8.5	A
		tp = 10 ms	8	
I^2t	I^2t Value for fusing	tp = 10 ms	0.35	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 50 mA di_G/dt = 0.1 A/µs.	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
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

Symbol	Parameter	Voltage				Unit
		D	M	S	N	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient	60	°C/W
Rth(j-t)	Junction to leads for D.C	30	°C/W
Rth(j-t)	Junction to leads for A.C 360° conduction angle (F=50Hz)	25	°C/W

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		Quadrant		Sensitivity				Unit
					03	07	09	10	
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj= 25°C	I-II-III	MAX	3	5	10	25	mA
			IV	MAX	5	7	10	25	
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj= 25°C	I-II-III-IV	MAX	1.5				V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	I-II-III-IV	MIN	0.2				V
tgt	V_D=V_{DRM} I_G = 40mA I_T = 1.4A dI_G/dt = 0.5A/µs	Tj= 25°C	I-II-III-IV	TYP	2				µs
I_H *	I_T= 50 mA Gate open	Tj= 25°C		MAX	7	10	10	25	mA
I_L	I_G= 1.2 I_{GT}	Tj= 25°C	I-III-IV	TYP	7	10	10	25	mA
			II	TYP	14	20	20	50	
V_{TM} *	I_{TM}= 1.4A tp= 380µs	Tj= 25°C		MAX	1.8				V
I_{DRM} I_{RRM}	V_D = V_{DRM} V_R = V_{RRM}	Tj= 25°C		MAX	10				µA
		Tj= 110°C		MAX	200				
dV/dt *	VD=67%V_{DRM} Gate open	Tj= 110°C		MIN	10	20	50	100	V/µs
(dV/dt)c *	(dI/dt)c = 0.44 A/ms	Tj= 110°C		MIN			2	5	V/µs
				TYP	1	1			

* For either polarity of electrode A_2 voltage with reference to electrode A_1

ORDERING INFORMATION

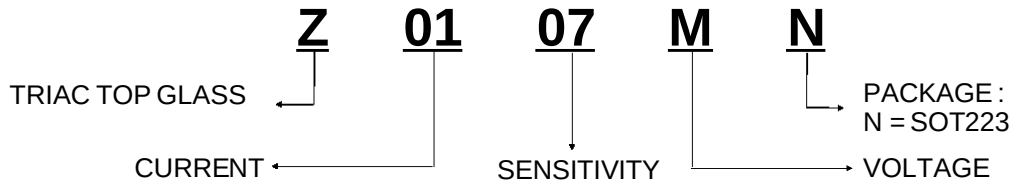


Fig.1 : Maximum power dissipation versus RMS on-state current.

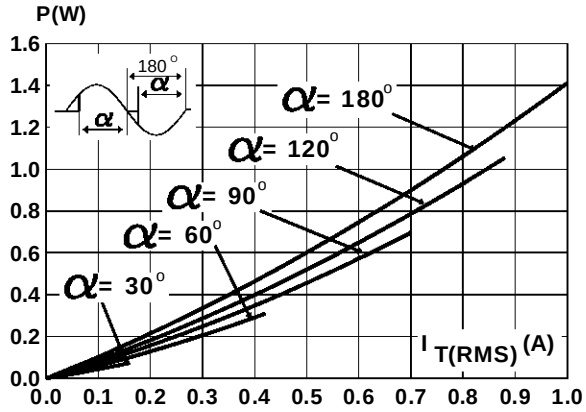


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperature (Tamb and Ttab).

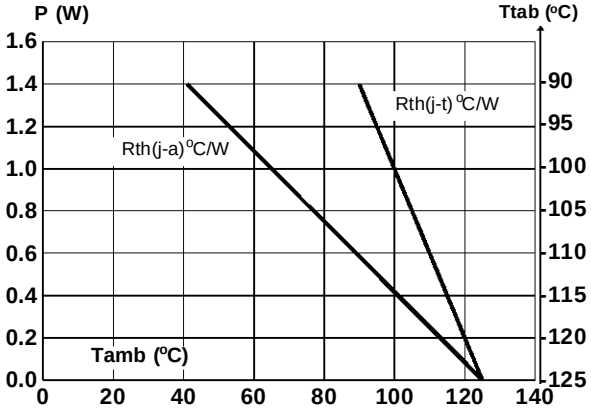


Fig.3 : RMS on-state current versus tab temperature.

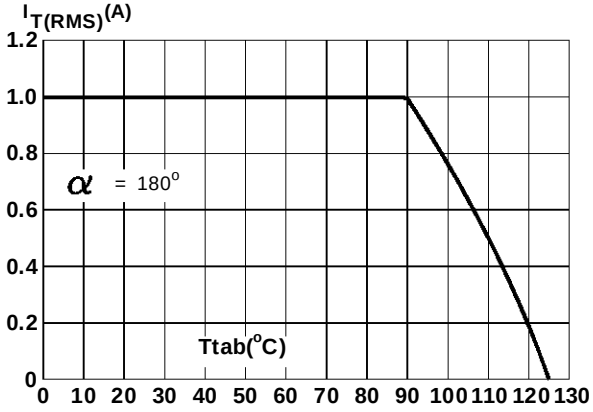


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

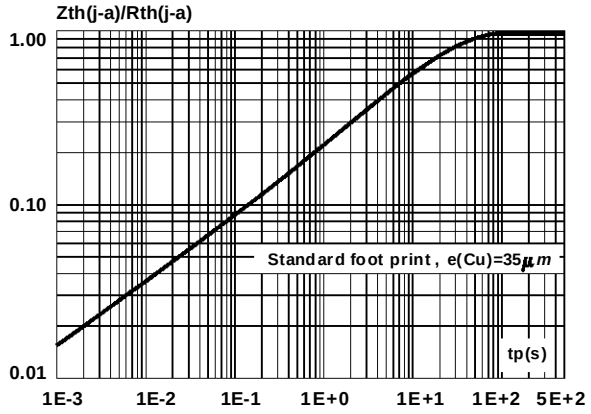


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

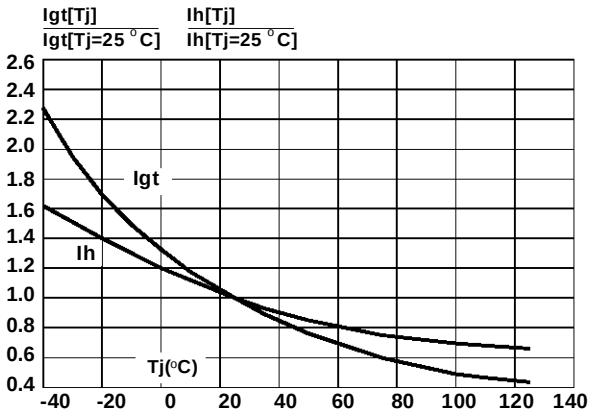


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

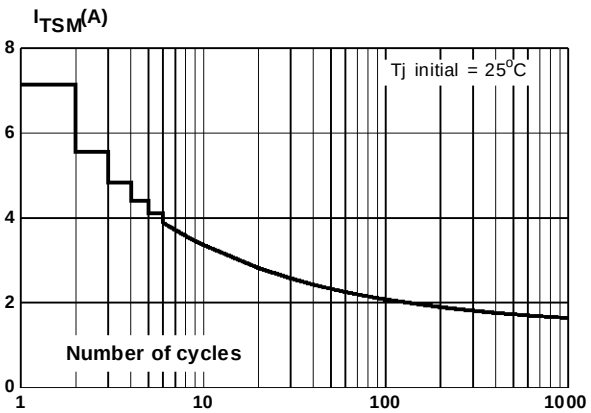


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

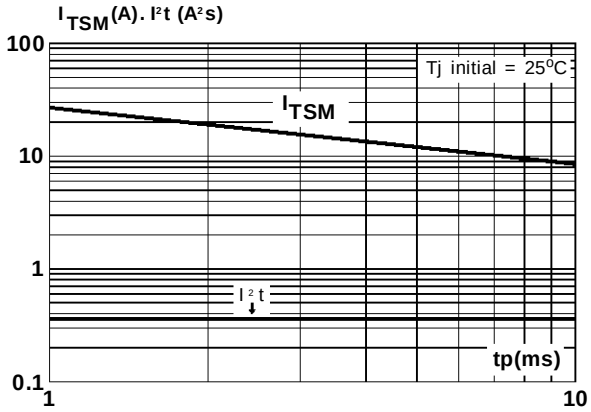
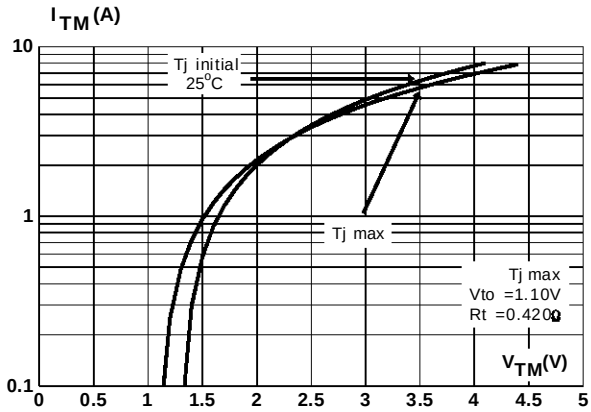
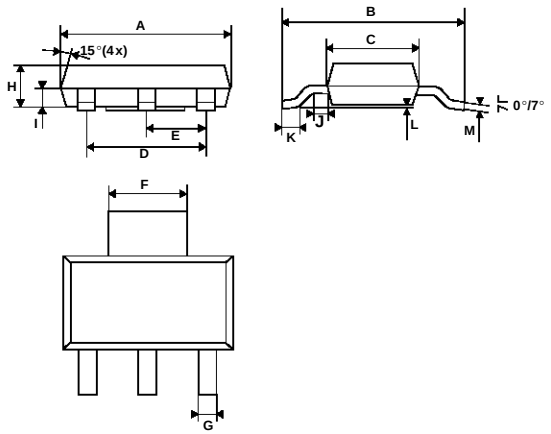


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

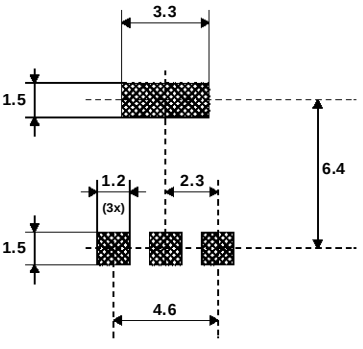
SOT223 (Plastic)



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
Z0103DN	Z3D
Z0103MN	Z3M
Z0103SN	Z3S
Z0103NN	Z3N
Z0107DN	Z7D
Z0107MN	Z7M
Z0107SN	Z7S
Z0107NN	Z7N
Z0109DN	Z9D
Z0109MN	Z9M
Z0109SN	Z9S
Z0109NN	Z9N
Z0110DN	Z0D
Z0110MN	Z0M
Z0110SN	Z0S
Z0110NN	Z0N