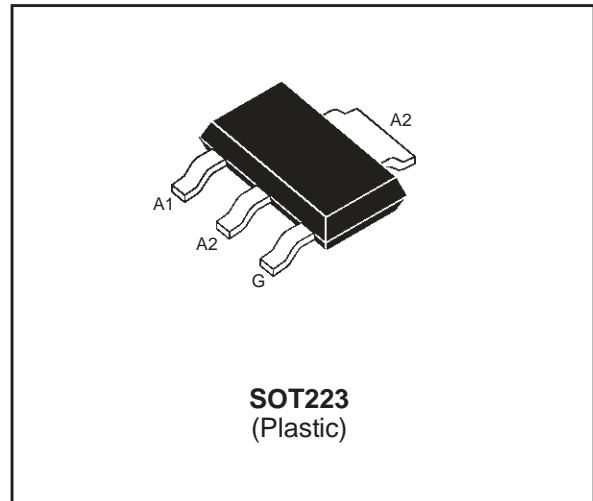


SENSITIVE GATE TRIACS
FEATURES

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

DESCRIPTION

The Z01xxxN series of triacs uses a high performance TOP GLASS PNP 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)	$T_{tab} = 90\text{ }^{\circ}\text{C}$	1	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = $25\text{ }^{\circ}\text{C}$)	$t_p = 8.3\text{ ms}$	8.5	A
		$t_p = 10\text{ ms}$	8	
I^2t	I^2t Value for fusing	$t_p = 10\text{ ms}$	0.35	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 50\text{ mA}$ $di_G/dt = 0.1\text{ A}/\mu\text{s}$.	Repetitive $F = 50\text{ Hz}$	10	$A/\mu\text{s}$
		Non Repetitive	50	
T_{stg} T_j	Storage and operating junction temperature range		- 40, + 150 - 40, + 125	$^{\circ}\text{C}$
T_l	Maximum lead temperature for soldering during 10s		260	$^{\circ}\text{C}$

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

Z01xxxN

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)

$P_{G(AV)} = 0.1 \text{ W}$ $P_{GM} = 2 \text{ W}$ ($t_p = 20 \mu\text{s}$) $I_{GM} = 1 \text{ A}$ ($t_p = 20 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Sensitivity				Unit
					03	07	09	10	
I_{GT}	$V_D = 12\text{V (DC)}$ $R_L = 140\Omega$	$T_j = 25^\circ\text{C}$	I-II-III	MAX	3	5	10	25	mA
			IV	MAX	5	7	10	25	
V_{GT}	$V_D = 12\text{V (DC)}$ $R_L = 140\Omega$	$T_j = 25^\circ\text{C}$	I-II-III-IV	MAX	1.5				V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$	$T_j = 125^\circ\text{C}$	I-II-III-IV	MIN	0.2				V
tgt	$V_D = V_{DRM}$ $I_G = 40\text{mA}$ $I_T = 1.4\text{A}$ $dI_G/dt = 0.5\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	I-II-III-IV	TYP	2				μs
I_H^*	$I_T = 50 \text{ mA}$ Gate open	$T_j = 25^\circ\text{C}$		MAX	7	10	10	25	mA
I_L	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ\text{C}$	I-III-IV	TYP	7	10	10	25	mA
			II	TYP	14	20	20	50	
V_{TM}^*	$I_{TM} = 1.4\text{A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$		MAX	1.8				V
I_{DRM} I_{RRM}	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$		MAX	10				μA
		$T_j = 110^\circ\text{C}$		MAX	200				
dV/dt *	$V_D = 67\%V_{DRM}$ Gate open	$T_j = 110^\circ\text{C}$		MIN	10	20	50	100	V/ μs
(dI/dt)c *	(dI/dt)c = 0.44 A/ms	$T_j = 110^\circ\text{C}$		MIN			2	5	V/ μs
				TYP	1	1			

* For either polarity of electrode A₂ voltage with reference to electrode A₁

ORDERING INFORMATION

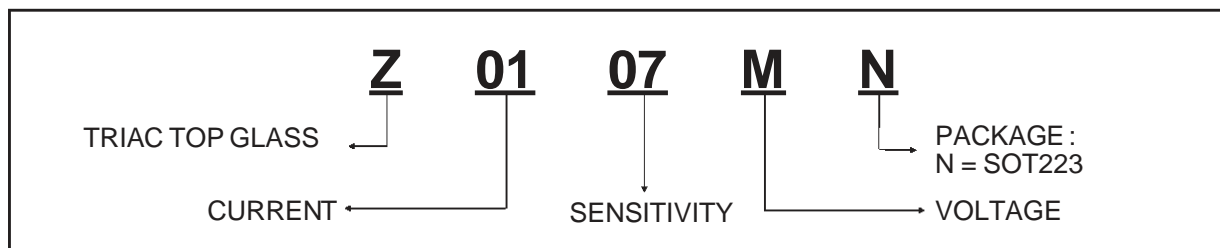


Fig.1 : Maximum power dissipation versus RMS on-state current.

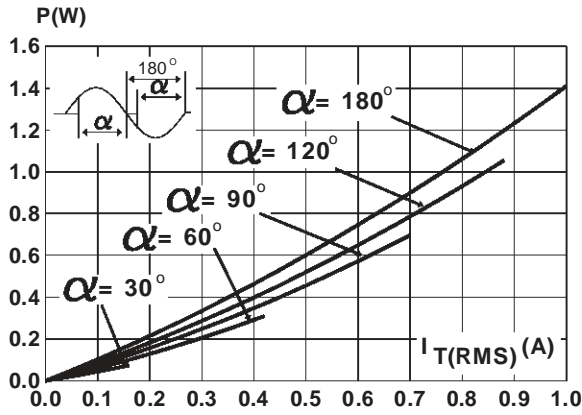


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperature (T_{amb} and T_{tab}).

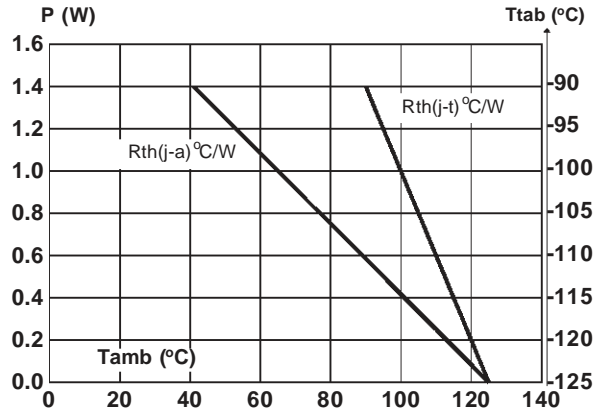


Fig.3 : RMS on-state current versus tab temperature.

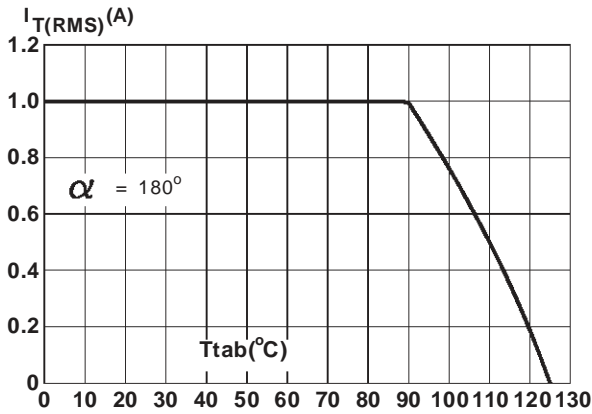


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

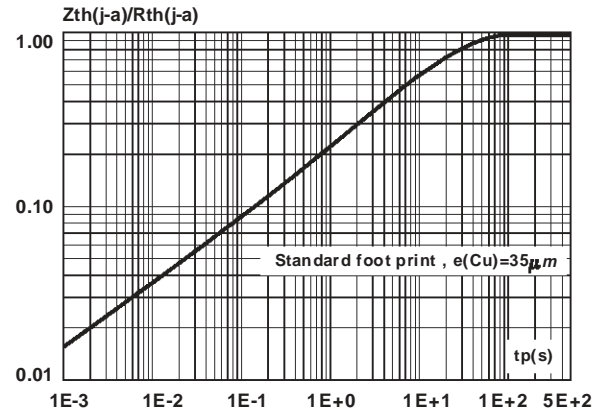


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

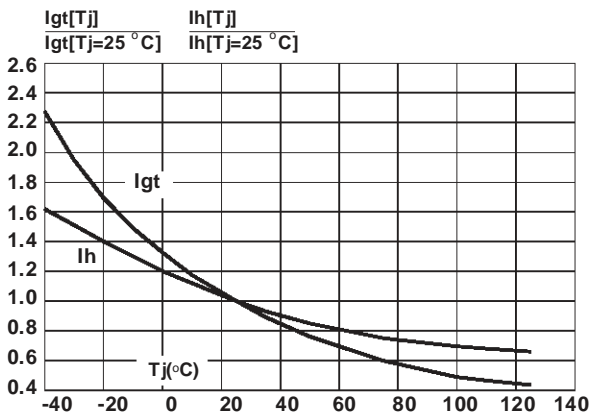
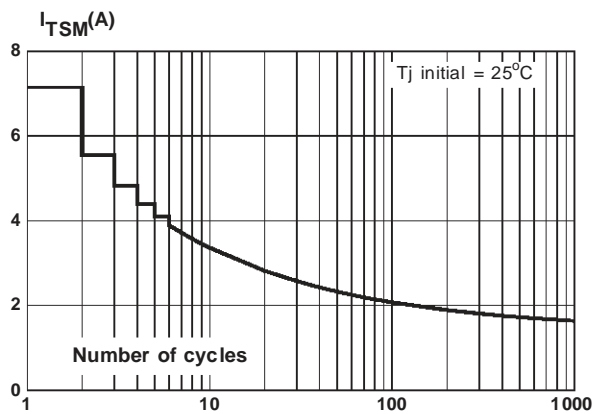


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



Z01xxxN

Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t_p \leq 10\text{ms}$, and corresponding value of I^2t .

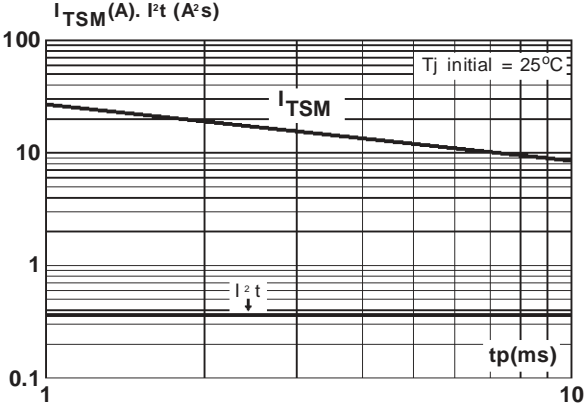
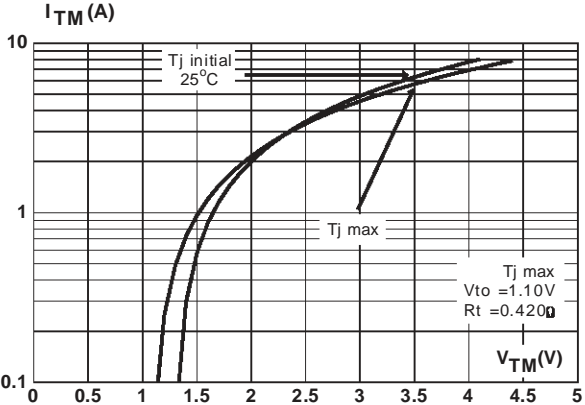
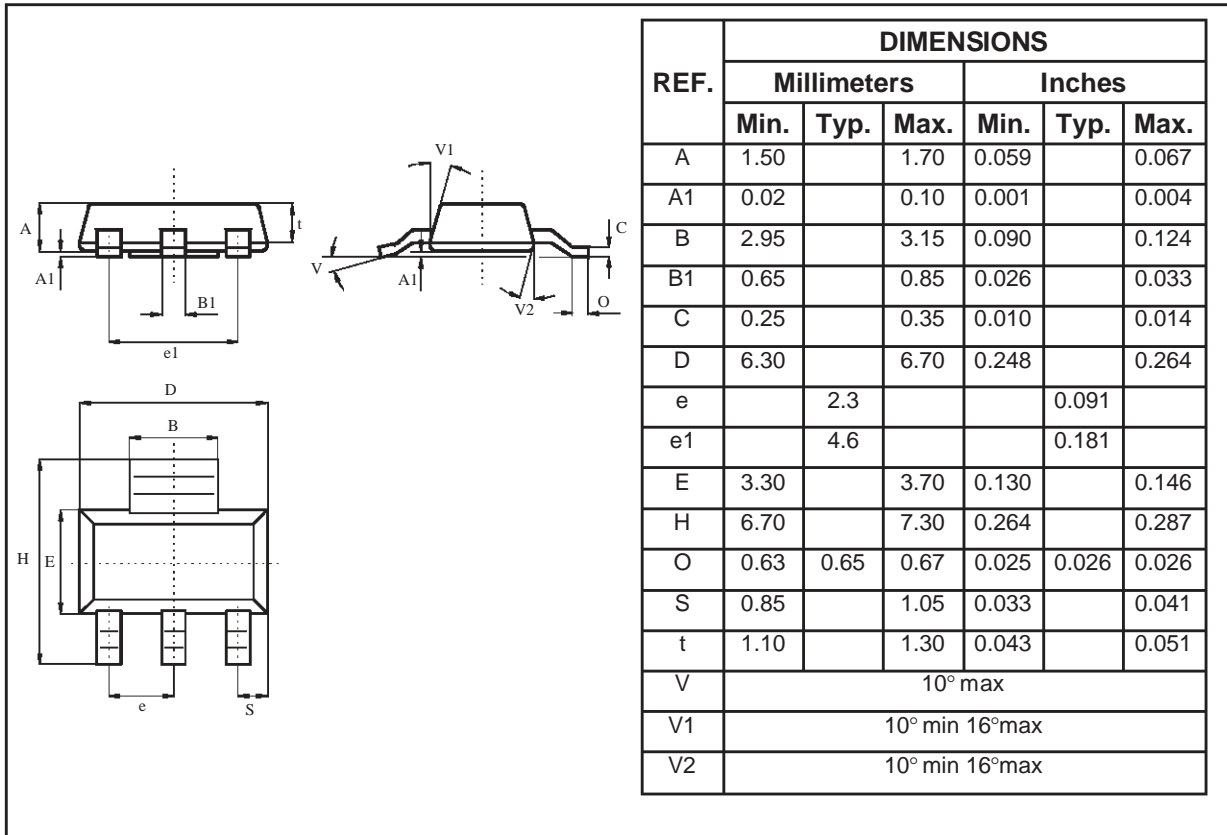


Fig.8 : On-state characteristics (maximum values).

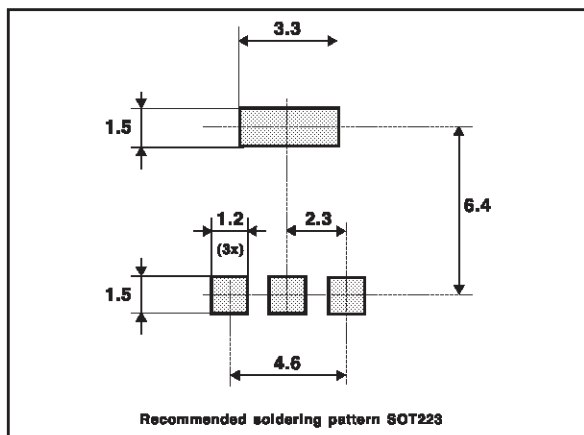


PACKAGE MECHANICAL DATA
SOT223 (Plastic)



Weight : 0.11 g

FOOT PRINT



Z01xxxN

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

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

© 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.