

Description

Passivated, sensitive gate triacs in a plastic envelope, intended for use in general purpose bidirectional switching and phase control applications, where high sensitivity is required in all four quadrants.

Symbol 		Simplified outline  SOT-223	
Pin	Description		
1	Main terminal 1 (T1)		
2	Main terminal 2 (T2)		
3	gate (G)		
TAB	Main terminal 2 (T2)		

Applications:

- ◆ Motor control
- ◆ Industrial and domestic lighting
- ◆ Heating
- ◆ Static switching

Features

- ◆ Blocking voltage to 600 V
- ◆ On-state RMS current to 1 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages Z0103MN Z0103NN	600 800	V
$I_T (RMS)$	RMS on-state current	1	A
I_{TSM}	Non-repetitive peak on-state current	8	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	Value	UNIT
$R_{th(j-t)}$	Junction to tab (AC)	-	-	-	25	°C/W
$R_{th j-a}$	Junction to ambient	$S=5\text{ cm}^2$	-	-	60	°C/W



Z0103MN

Sensitive Gate Triacs

HAOPIN MICROELECTRONICS CO.,LTD.

Limiting values in accordance with the Maximum system(IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN	Value	UNIT
V_{DSM}/V_{RSM}		Z0103MN Z0103NN	-	600 800	V
$I_{T(RMS)}$	RMS on-state current	Full sine wave; $T_{tab}=90^{\circ}C$	-	1	A
I_{TSM}	Non repetitive surge peak on-state current	full cycle, T_j initial= $25^{\circ}C$	F=50 Hz $t_p=20ms$	8	A
			F=60 Hz $t_p=16.7ms$	8.5	A
I^2t	I^2t Value for fusing	$T_p=10ms$	-	0.35	A ² S
DI/dt	Critical rate of rise of on-state current	$I_G=2x I_{GT}, t_r \leq 100ns$ $F=120Hz$ $T_j=125^{\circ}C$	-	20	A/ μs
I_{GM}	Peak gate current	$t_p=20\mu s$ $T_j=125^{\circ}C$	-	1	A
I_{DRM}	$V_{DRM}=V_{RRM}$	$T_j=25^{\circ}C$	-	5	μA
I_{RRM}		$T_j=125^{\circ}C$	-	0.5	mA
$P_{G(AV)}$	Average gate power	$T_j=125^{\circ}C$	-	0.1	W
T_{stg}	Storage temperature range		-40	150	$^{\circ}C$
T_j	Operating junction Temperature range		-40	125	$^{\circ}C$

$T_j=25^{\circ}C$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT1} V_{GT}		$V_D=12V$; $R_L=33\Omega$ I-II-III IV ALL	-	-	3 5 1.3	mA mA V
I_L		$I_G=1.2 I_{GT}$ I-III-IV II	- -	- -	7 15	mA mA
I_{H2}		$I_T=50mA$	-	-	7	mA
V_{GD}		$V_D=V_{DRM}$ $R_L=3.3K\Omega$ $T_j=125^{\circ}C$ ALL	0.2	-	-	V
$dV/dt2$		$V_D=67\%V_{DRM}$ gate open; $T_j=110^{\circ}C$	10	-	-	V/ μs
$(Dv/dt)c(2)$		$(DI/dt)c=0.44A/ms$; $T_j=110^{\circ}C$	0.5	-	-	V/ μs

Dynamic Characteristics

$V_{TM}(2)$	$I_{TM}=1.4A$ $t_p=380\mu s$	$T_j=25^{\circ}C$			1.6	V
V_{to} R_d	Threshold voltage Dynamic resistance	$T_j=125^{\circ}C$ $T_j=125^{\circ}C$			0.95 400	V m Ω

Description

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).

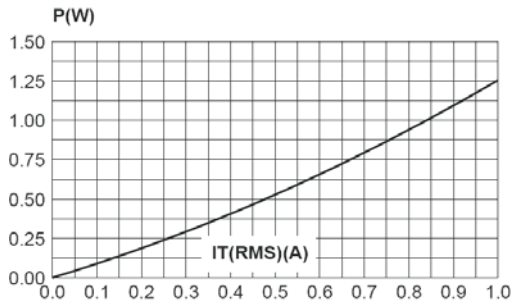


Fig. 2-1: RMS on-state current versus ambient temperature (full cycle).

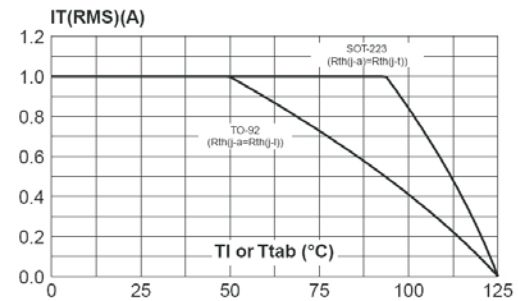


Fig. 2-2: RMS on-state current versus ambient temperature (full cycle).

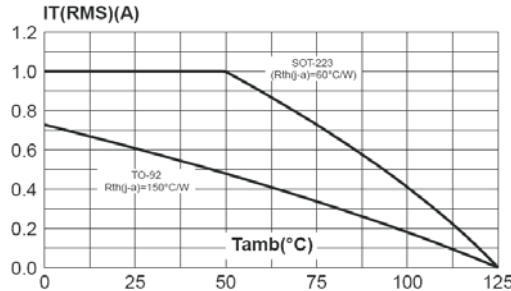


Fig. 3: Relative variation of thermal impedance junction to ambient versus pulse duration.

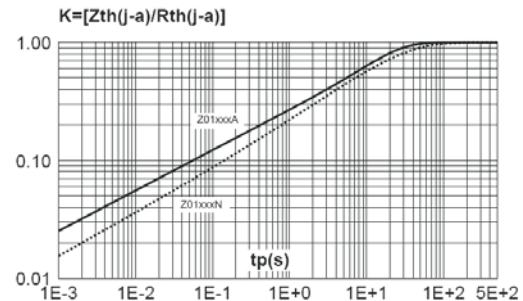


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

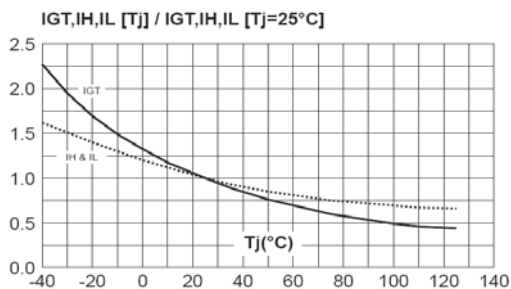
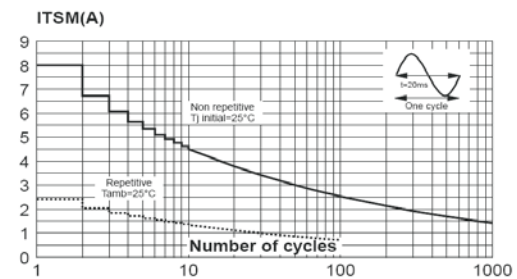


Fig. 5: Surge peak on-state current versus number of cycles.



Description

Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

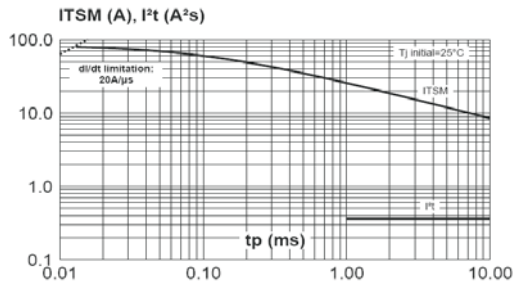


Fig. 7: On-state characteristics (maximum values).

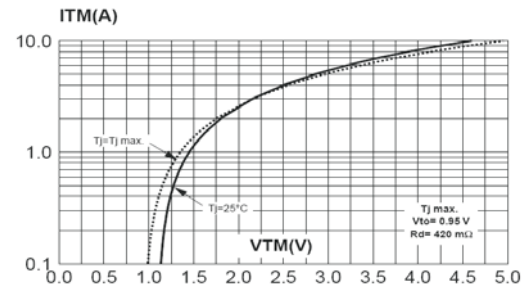


Fig. 8: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values).

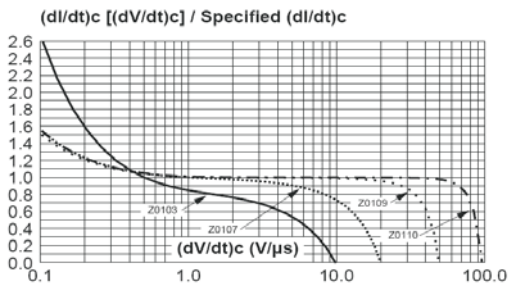


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

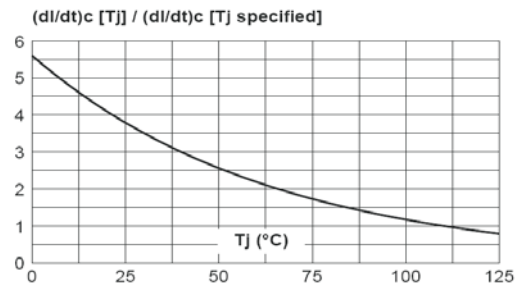
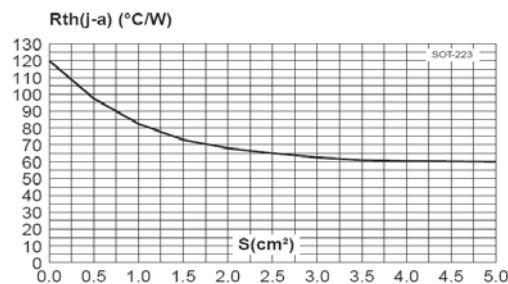


Fig. 10: SOT-223 Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: $35\mu\text{m}$).





Z0103MN

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MECHANICAL DATA

Dimensions in mm

Net Mass: 0.2g

TO-92