Z0103MN

Sensitive Gate Triacs

HAOPIN MICROELECTRONICS CO.,LTD.

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
Rth(j-t)	Junction to tab (AC)	-	-	-	25	^{0}C/W
Rth j-a	Junction to ambient	S=5 cm^2	-	-	60	^{0}C/W

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;Ttab=90°C			-	1	A
I_{TSM}	Non repetitive surge peak on-statecurrent	full cycle, Tj initial= 25°C	F=50 Hz tp=20ms		-	8	A
			F=60 Hz tp=16.7ms		-	8.5	A
I^2t	I^2t Value for fusing	T_p=10ms			-	0.35	A^2S
DI/dt	Critical rate of rise of on-state current	IG=2x I_{GT},tr<=100ns	F=120H_z	Tj=125°C	-	20	A/μs
I_{GM}	Peak gate current		tp=20us	Tj=125°C	-	1	A
I_{DRM}	$V_{DRM}=V_{RRM}$			Tj=25°C	-	5	μA
I_{RRM}				Tj=125°C	-	0.5	mA
$P_{G(AV)}$	Average gate power			Tj=125°C	-	0.1	W
T_{stg}	Storage temperature range				-40	150	℃
T_j	Operating junction Temperature range				-40	125	℃

T_J=25°C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Static characteristics							
I_{GT1} V_{GT}		V_D=12V; RL=33Ω	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=3.3KΩ Tj=125°C	ALL	0.2	-	-	V
dV/dt2		V_D=67%V_{DRM} gate open;T_J=110°C		10	-	-	V/μs
(Dv/dt)c(2)		(DI/dt)c=0.44A/ms;T_J=110°C		0.5	-	-	V/μs

Dynamic Characteristics

V_{TM}(2)	I_{TM}=1.4A tp=380μs	T_J=25°C			1.6	V
V_{to} R_d	Threshold voltage Dynamic resistance	T_J=125°C T_J=125°C			0.95 400	V mΩ

Description

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

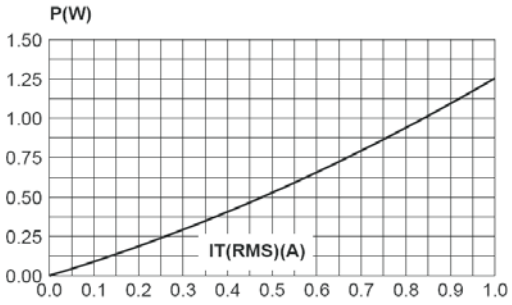


Fig. 2-1: RMS on-state current versus ambient temperature (full cycle).

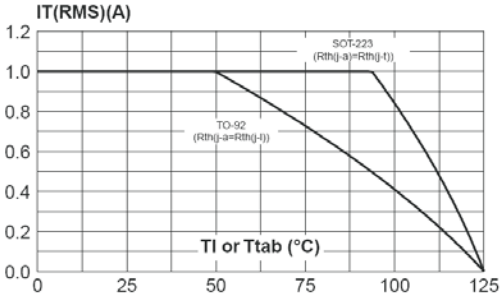


Fig. 2-2: RMS on-state current versus ambient temperature (full cycle).

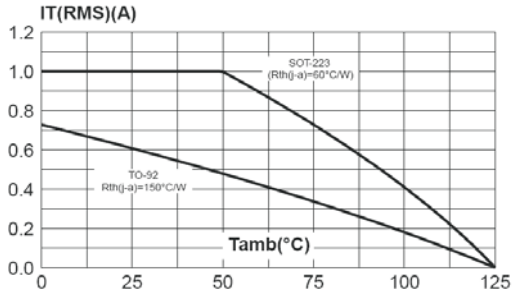


Fig. 3: Relative variation of thermal impedance junction to ambient versus pulse duration.

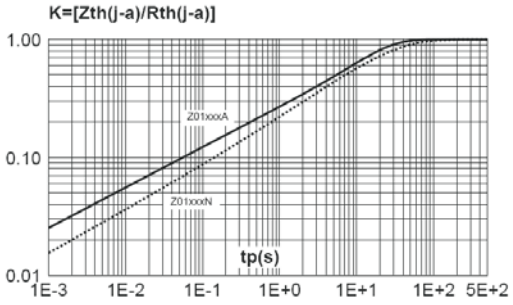


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

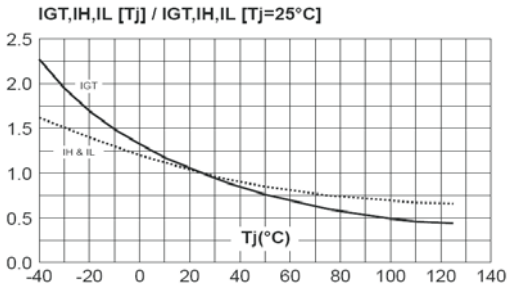
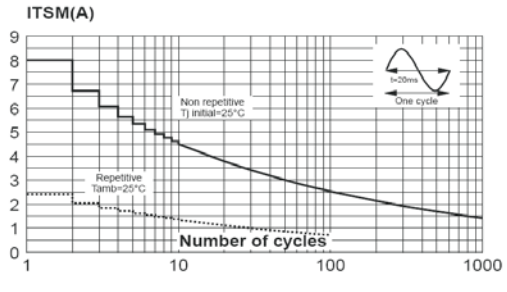


Fig. 5: Surge peak on-state current versus number of cycles.



Description

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

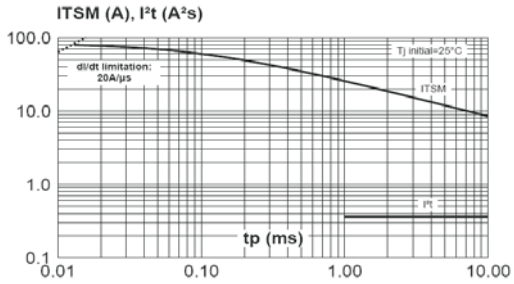


Fig. 7: On-state characteristics (maximum values).

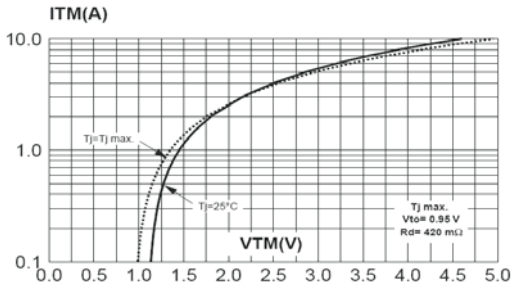


Fig. 8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values).

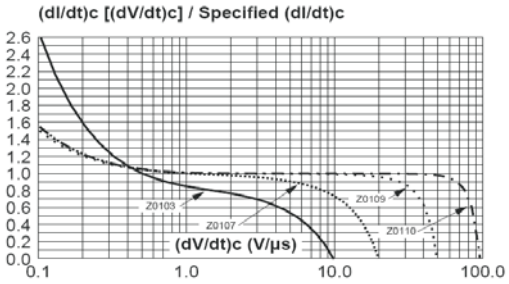


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

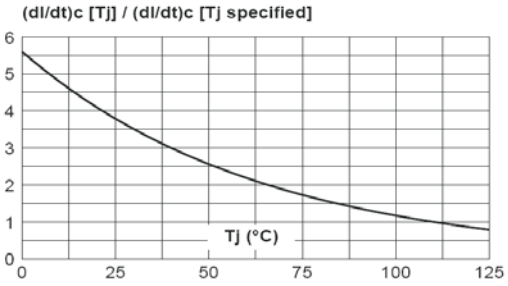
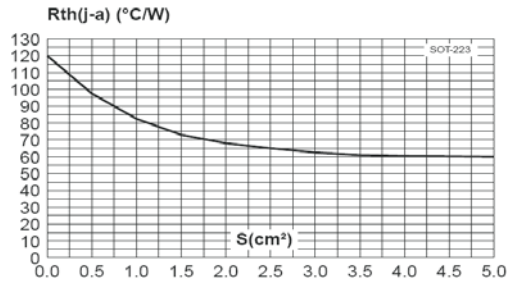


Fig. 10: SOT-223 Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35µm).



MECHANICAL DATA

Dimensions in mm

Net Mass: 0.2g

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