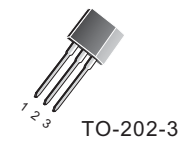# Z0409MF

Sensitive Gate Triacs

HOPIN 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
T2 ◁ T1 G	TO-202-3

Pin	Description
1	Main terminal 1 (T1)
2	Main terminal 2 (T2)
3	gate (G)
TAB	Main terminal

Applications:

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

Features

- ◆ Blocking voltage to 600 V
- ◆ On-state RMS current to 4 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	600	V
$I_{T(RMS)}$	RMS on-state current	4	A
I_{TSM}	Non-repetitive peak on-state current	21	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	Value	UNIT
Rth(j-l)	Junction to lead (AC)	-	-	-	15	^{0}C/W
Rth j-a	Junction to ambient	-	-	-	100	^{0}C/W

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

SYMBOL	PARAMETER	CONDITIONS			MIN	Value	UNIT
V_{DSM}/V_{RSM}					-	600	V
$I_{T(RMS)}$	RMS on-state current	Full sine wave;T_j=30°C			-	4	A
I_{TSM}	Non repetitive surge peak on-statecurrent	full cycle, Tj initial= 25°C	F=50H$_z$	t=20ms	-	20	A
			F=60H$_z$	t=16.7ms	-	21	A
I^2t	I^2t Value for fusing	T_p=10ms			-	2.2	A^{2}S
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	-	1.2	A
I_{DRM}	V_{DRM}=V_{RRM}			Tj=25°C	-	5	μA
I_{RRM}	V_{DRM}=V_{RRM}			Tj=125°C	-	0.5	mA
$P_{G(AV)}$	Average gate power			Tj=125°C	-	0.2	W
T_{stg}	Storage temperature range				-40	150	°C
T_j	Operating junction Temperature range				-40	125	°C

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	ALL ALL	-	-	10 1.3	mA V
I_L		I_G=1.2 I_{GT}	I-III-IV II	- -	- -	15 25	mA mA
I_{H2}		I_T=50mA		-	-	10	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		100	-	-	V/us
(Dv/dt)c(2)		(DI/dt)c=1.8A/ms;T_J=110°C		2	-	-	V/us

Dynamic Characteristics

| SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{TM}(2)$	I_{TM}=5.5A tp=380us	T_J=25°C	-	-	2.0	V
V_{to} R_d	Threshold voltage Dynamic resistance	T_J=125°C T_J=125°C	-	-	0.95 180	V mΩ

Description

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).
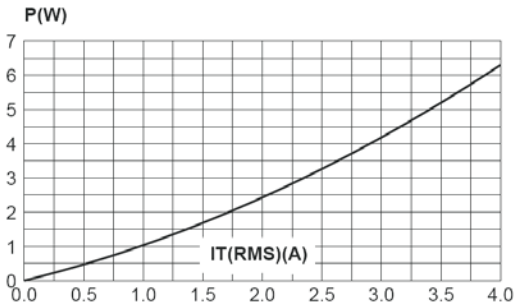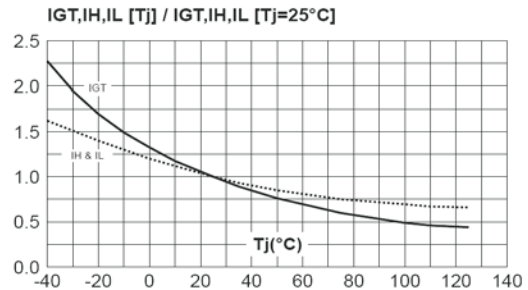
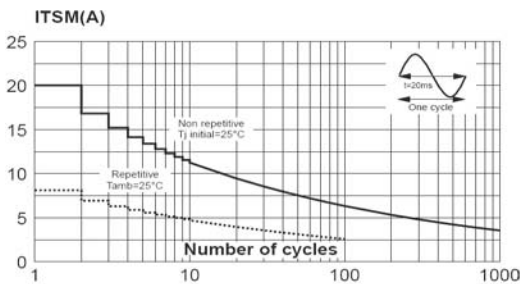**Fig. 2:** RMS on-state current versus ambient temperature (full cycle).
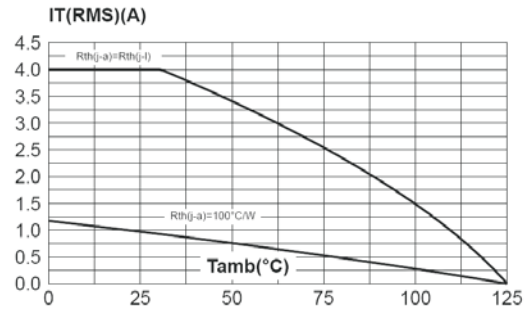
**Fig. 3:** Relative variation of thermal impedance junction to ambient versus pulse duration.
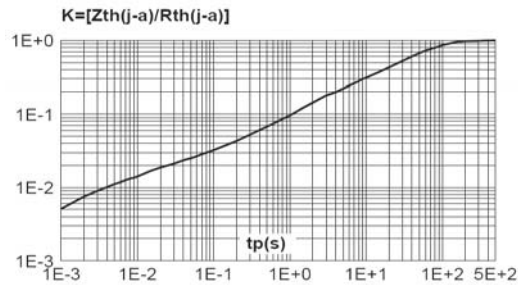
Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

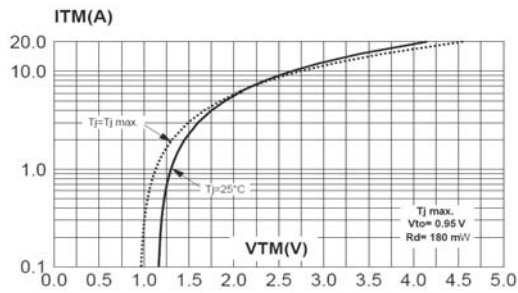**Fig. 5:** Surge peak on-state current versus number of cycles.

Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms, and corresponding value of I²t.

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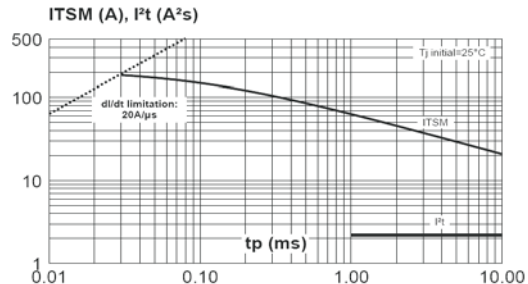
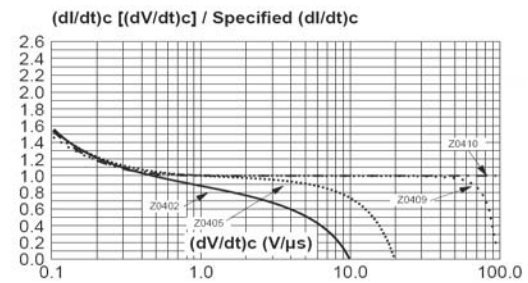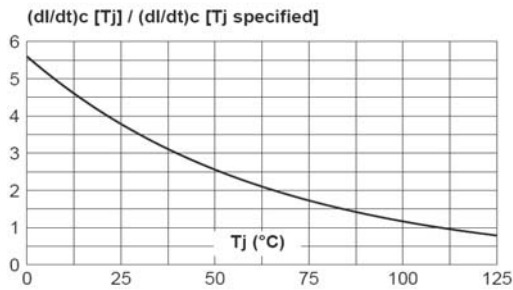## Description

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.

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MECHANICAL DATA

Dimensions in mm
Net Mass: 0.8g
TO-202-3