AC4DSMG

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
	 TO-251

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 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 surge current (One full cycle sine wave,60Hz,Tj=125℃)	40	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{\theta jc}$	Thermal Resistance, Junction to case		-	3.5	-	℃/W
$R_{\theta jA}$	Junction to ambient		-	88	-	℃/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN	Value	UNIT
V_{DRM}	Repetitive peak off-state Voltages		-	600	V
$I_{T(RMS)}$	RMS on-state current	Full cycle sine wave;60Hz T_c=108℃	-	4	A
I_{TSM}	Non repetitive surge peak on-statecurrent	full cycle,60Hz Tj =125℃	-	40	A
I^2t	Circuit fusing consideration	T=8.3ms	-	6.6	A^2S
I_{GM}	Peak gate current	Pulse width≤10μsec,Tc=108℃	-	0.2	A
V_{GM}	Peak gate current	Pulse width≤10μsec,Tc=108℃	-	5	V
P_{GM}	Peak gate power	Pulse width≤10μsec,Tc=108℃	-	0.5	W
$P_{G(AV)}$	Average gate power	t=8.3msec,,Tc=108℃	-	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_{GT}	Gate trigger current (continuous dc)	V_D=12V; RL=100Ω	MT2(+),G(+) MT2(+),G(-) MT2(-),G(-)	2.9 2.9 2.9	4.0 5.0 7.0	10 10 10	mA
V_{GT}	Gate trigger voltage (continuous dc)	V_D=12V; RL=100Ω	MT2(+),G(+) MT2(+),G(-) MT2(-),G(-)	0.5 0.5 0.5	0.7 0.65 0.7	1.3 1.3 1.3	V
I_L	Latching current	V_D=12V,I_G=10mA	MT2(+),G(+) MT2(+),G(-) MT2(-),G(-)	- - -	6.0 10 6.0	30 30 30	mA
I_H	Hlolding current	V_D=12v,Gate open,Initiating currentI_T=±200mA		2.0	5.5	15	mA
V_{GD}	Gate non-Trigger Voltage	V_D=12V R_L=100Ω Tj=125℃		0.2	0.4	-	V
di/dt(c)	Rate of change of commutating current	V_D=400V I_{TM}=3.5A;dv/dt=10v/μs,T_J=125℃ f=500Hz CL=5μF,LL=20mH		3.0	4.0	-	A/ms
dv/dt	Critical rate of rise of off-state voltage	V_D=0.67×Rated V_{DRM},exponential Waveform,gate openT_J=125℃		50	175	-	V/μs

Dynamic Characteristics

T_L	Maximum Lead Temperature for soldering puroses		-	-	260	℃
V_{to} R_d	Peak repetitive Blocking current (V_D=Rated V_{DRM},V_{RRM};Gate Open)	T_J=25℃ T_J=125℃	-	-	0.01 2.0	mA

Description

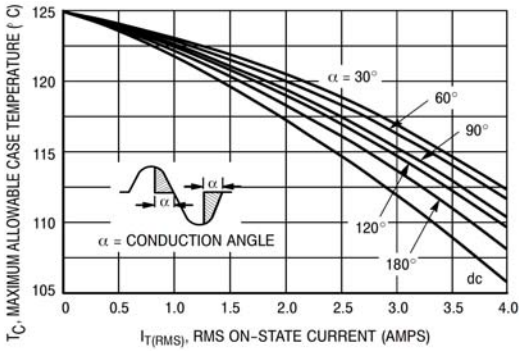

Figure 1. RMS Current Derating

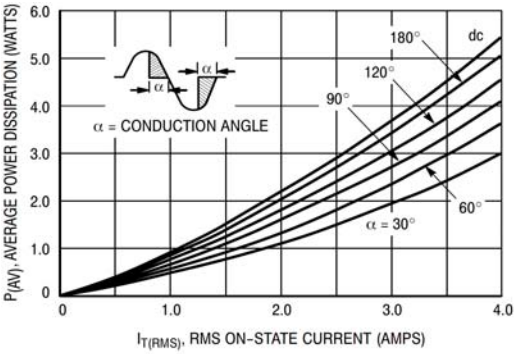

Figure 2. On-State Power Dissipation

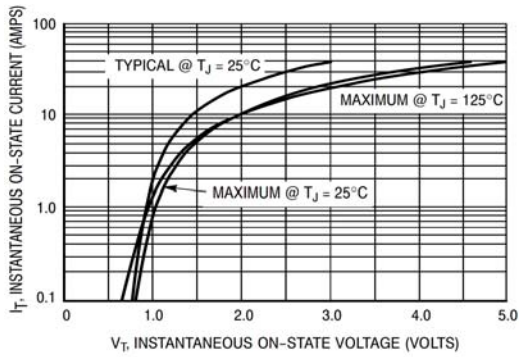

Figure 3. On-State Characteristics

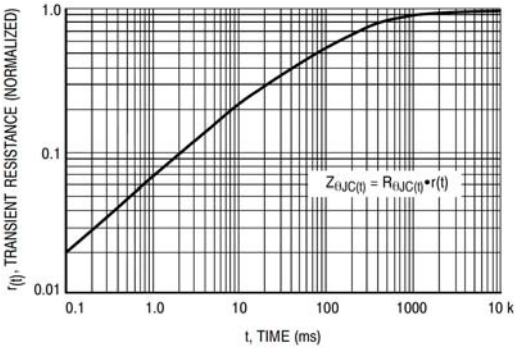

Figure 4. Transient Thermal Response

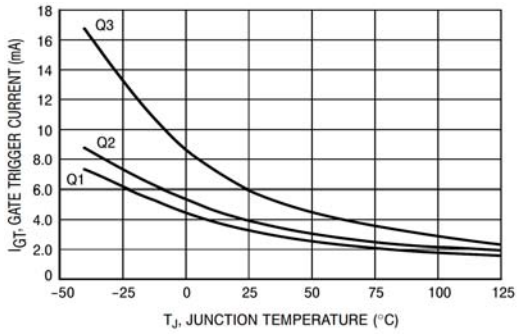

Figure 5. Typical Gate Trigger Current versus Junction Temperature

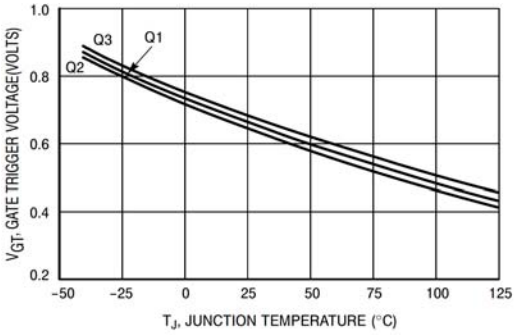

Figure 6. Typical Gate Trigger Voltage versus Junction Temperature

Description

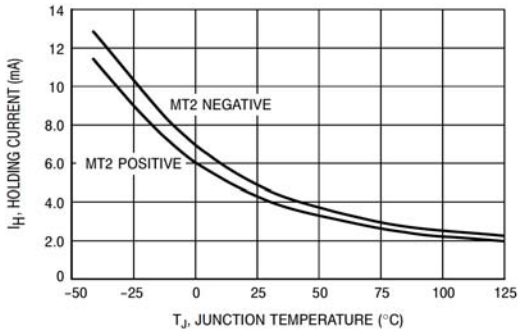

Figure 7. Typical Holding Current versus Junction Temperature

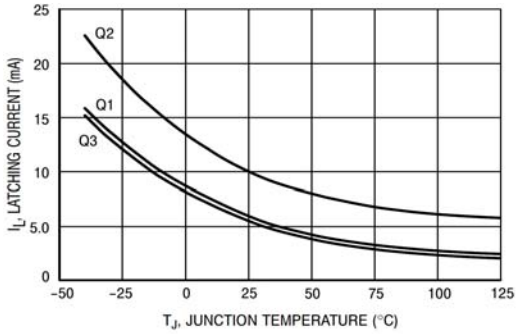

Figure 8. Typical Latching Current versus Junction Temperature

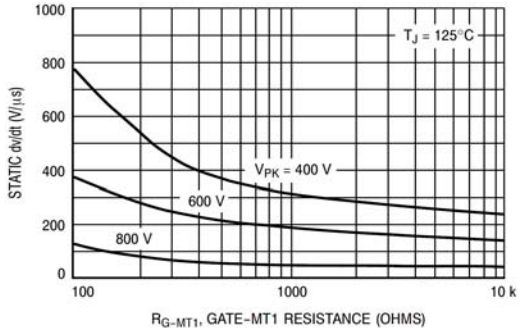

Figure 9. Exponential Static dv/dt versus Gate−MT1 Resistance, MT2(+)

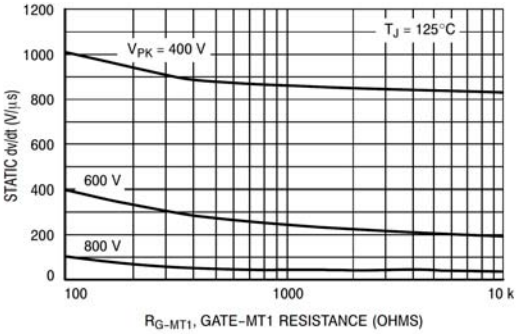

Figure 10. Exponential Static dv/dt versus Gate−MT1 Resistance, MT2(−)

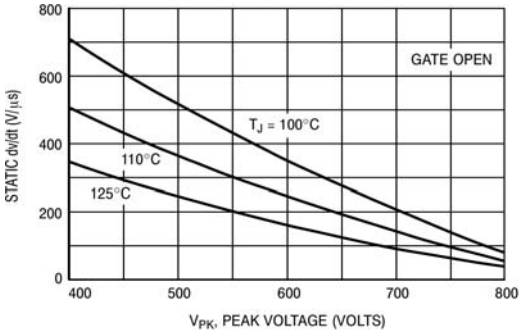

Figure 11. Exponential Static dv/dt versus Peak Voltage, MT2(+)

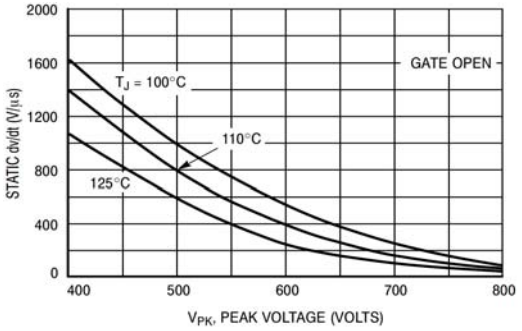

Figure 12. Exponential Static dv/dt versus Peak Voltage, MT2(−)

Description

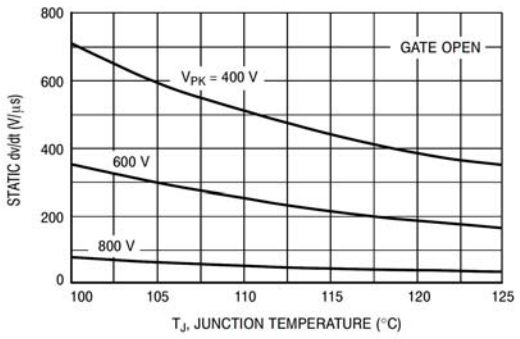

Figure 13. Typical Exponential Static dv/dt versus Junction Temperature, MT2(+)

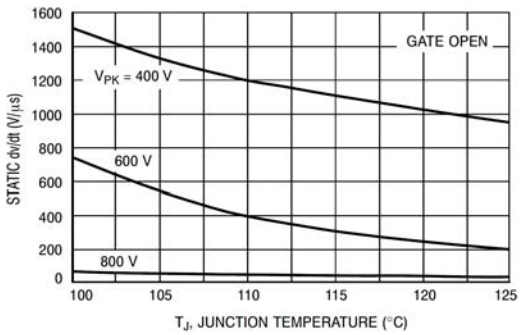

Figure 14. Typical Exponential Static dv/dt versus Junction Temperature, MT2(−)

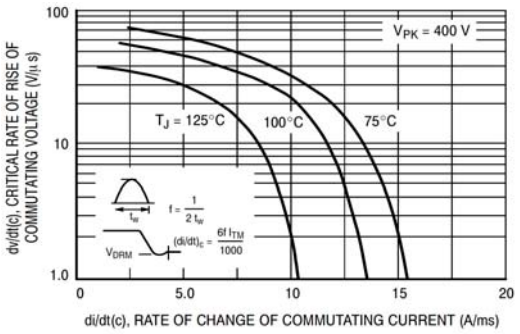

Figure 15. Critical Rate of Rise of Commutating Voltage

MECHANICAL DATA

Dimensions in mm

Net Mass:0.48 g

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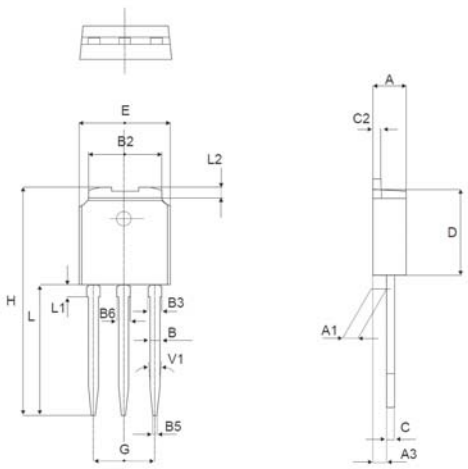

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A3	0.7		1.3	0.027		0.051
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
B3			0.85			0.033
B5		0.3			0.035	
B6			0.95			0.037
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	15.9		16.3	0.626		0.641
L	9		9.4	0.354		0.370
L1	0.8		1.2	0.031		0.047
L2		0.8	1		0.031	0.039
V1		10°			10°	