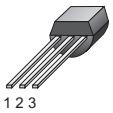
MAC97A6

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-92

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

Applications:

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

Features

- Blocking voltage to 400 V
- On-state RMS current to 0.6 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	400	V
$I_{T(RMS)}$	RMS on-state current （full sine wave）	0.6	A
I_{TSM}	Non-repetitive peak on-state current	8	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Thermal resistance Junction to case		-	-	75	℃/W
$R_{\theta JA}$	Thermal resistance Junction to ambient		-	-	200	℃/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V_{DRM}	Repetitive peak off-state Voltage	Tj=-40 to 110℃	-	400	V
$I_{T(RMS)}$	on-state RMS current	full sine wave 50 to 60Hz;Tc= 50℃	-	0.6	A
I_{TSM}	Non-repetitive surge current one full cycle	sine wave 60 Hz Tc= 110℃	-	8	A
I^2t	I^2t for fusing	t=8.3ms	-	0.26	A^2S
dI_T/dt	Repetitive rate of vise of on-state current after trigering	I_{TM}=1A; I_G=0.2A; dI_G/dt = 0.2A/μs	-		
		T2+G+	-	50	A/μs
		T2+G-	-	50	A/μs
		T2-G-	-	50	A/μs
		T2-G+	-	10	A/μs
I_{GM}	Peak gate current	t ≤2μs ,Tc=80℃	-	1	A
V_{GM}	Peak gate voltage	t ≤2μs ,Tc=80℃	-	5	V
P_{GM}	Peak gate power	t ≤2μs ,Tc=80℃	-	5	W
$P_{G(AV)}$	Average gate power	T_{case}=80℃ t = 2μs max	-	0.1	W
T_{stg}	Storage temperature		-40	150	℃
T_j	Operating junction temperature		-40	110	℃

T_J=25°C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	Gate trigger current	V_D=12V; R_L=100 Ohms				
		T2+G+	-	-	5	mA
		T2+G-	-	-	5	mA
		T2-G-	-	-	5	mA
		T2-G+	-	-	7	mA
V_{GT}	Gate trigger voltage	V_D=12V; R_L=100 Ohms				
		T2+G+	-	.66	2.0	V
		T2+G-	-	.77	2.0	V
		T2-G-	-	.84	2.0	V
		T2-G+	-	.88	2.5	V
I_H	Holding current	V_D=12V;Initiating current =200 mA,gate open	-	1.5	10	mA
V_{TM}	Peak On-state current	I_{TM}=±0.85A peak;pulse width≤2.0ms,duty cycle≤2.0%	-	-	1.9	V
I_{DRM} I_{RRM}	Peak repetitive blocking current	V_D=Rated V_{DRM} V_{RRM};gate open				
		Tj=25℃	-	-	10	μA
		Tj=110℃	-	-	100	

Dynamic Characteristics

dv/dt(c)	Critical rate of rise of commutation voltage	V_D= rated V_{DRM};I_{TM} = 0.84A; commutating dI/dt = 0.3A/ms Tc=50℃	-	5	-	V/μs
dv/dt	Critical rate of rise of off-state voltage	V_D=67% of $V_{DM(max)}$; T_{case}=110℃; exponential waveform;gate open circuit;	-	25	-	V/μs
t_{gt}	Gate controlled turn-on time	I_{TM}=1A;V_D=$V_{DRM(max)}$; I_G=25mA; dI_G/dt=5A/μs	-	2	-	μs

Description

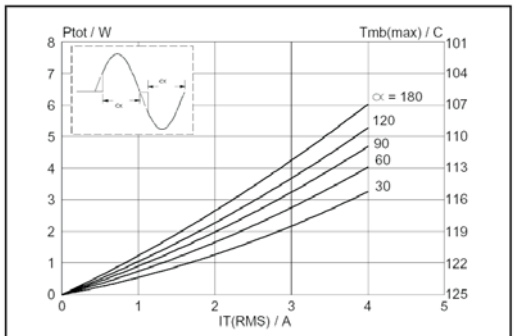


Fig.1. Maximum on-state dissipation, P_{tot}, versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

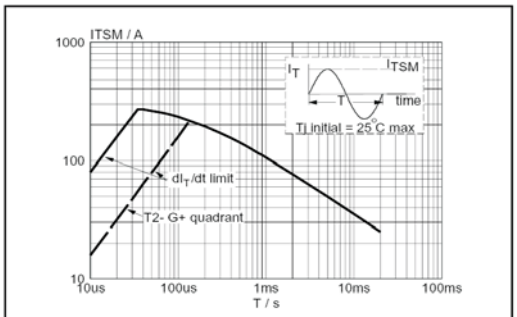


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus pulse width t_p, for sinusoidal currents, $t_p \leq 20ms$.

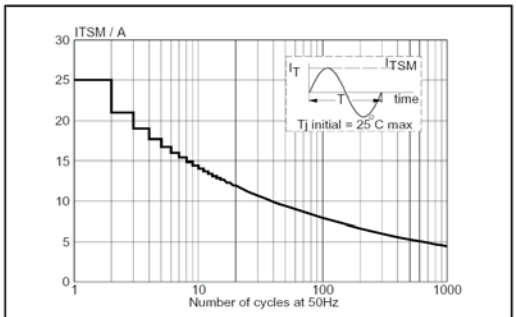


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus number of cycles, for sinusoidal currents, f = 50 Hz.

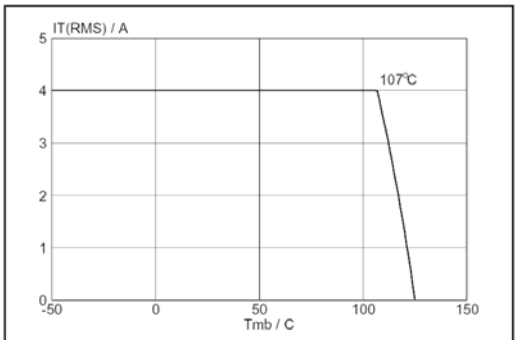


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb}.

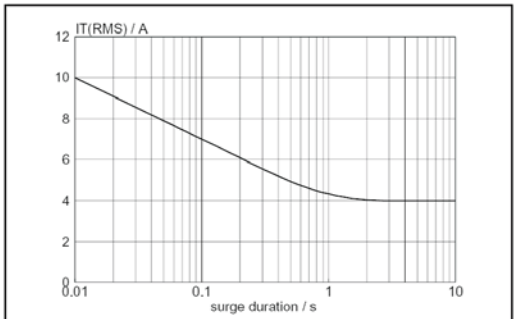


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50 Hz; $T_{mb} \leq 107°C$.

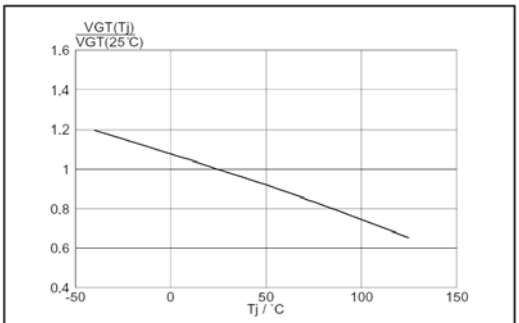


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/ V_{GT}(25°C)$, versus junction temperature T_j.

Description

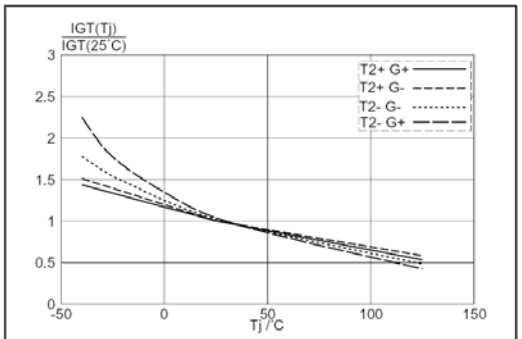


Fig.7. Normalised gate trigger current $I_{GT}(T_j)/ I_{GT}(25°C)$, versus junction temperature T_j.

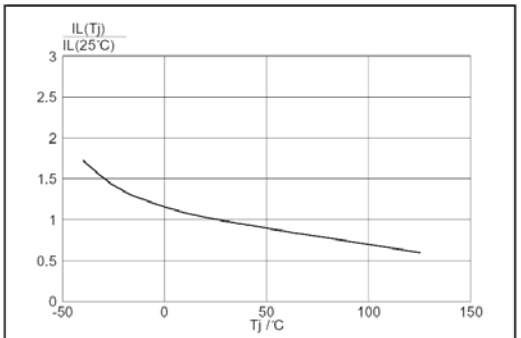


Fig.8. Normalised latching current $I_L(T_j)/ I_L(25°C)$, versus junction temperature T_j.

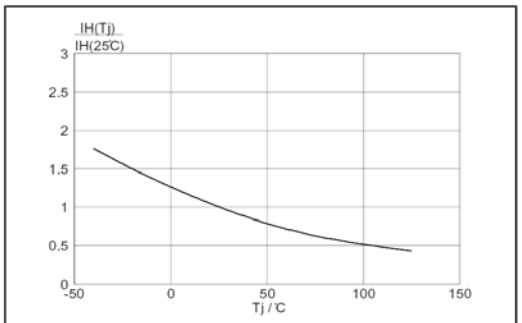


Fig.9. Normalised holding current $I_H(T_j)/ I_H(25°C)$, versus junction temperature T_j.

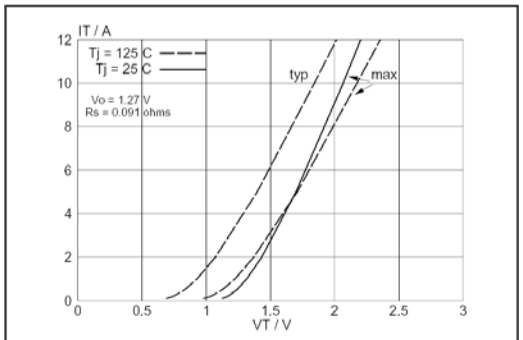


Fig.10. Typical and maximum on-state characteristic.

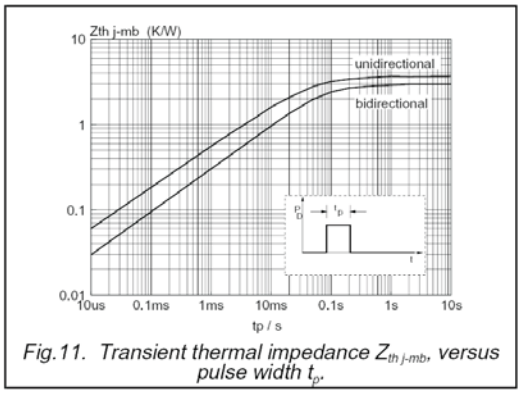


Fig.11. Transient thermal impedance $Z_{th\ j\text{-}mb}$, versus pulse width t_p.

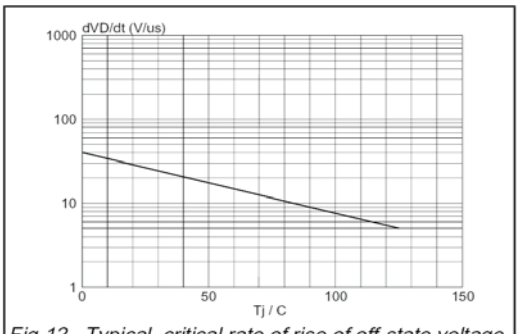


Fig.12. Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_j.

MECHANICAL DATA

Dimensions in mm

Net Mass: 0.2 g

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