
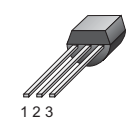


HAOPIN MICROELECTRONICS CO.,LTD.

### 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.

<p>Symbol</p> 		<p>Simplified outline</p>  <p>TO-92</p>	
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 600 V
- ◆ On-state RMS current to 0.6 A

SYMBOL	PARAMETER	Value	Unit
$V_{DRM}$	Repetitive peak off-state voltages	600	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	°C/W
$R_{\theta JA}$	Thermal resistance Junction to ambient		-	-	200	°C/W



# MAC97A8

## Sensitive Gate Triacs

HAOPIN MICROELECTRONICS CO.,LTD.

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT	
$V_{DRM}$	Repetitive peak off-state Voltage	$T_j = -40$ to $110^\circ\text{C}$	-	600	V	
$I_{T(RMS)}$	on-state RMS current	full sine wave 50 to 60Hz; $T_c = 50^\circ\text{C}$	-	0.6	A	
$I_{TSM}$	Non-repetitive surge current one full cycle	sine wave 60 Hz $T_c = 110^\circ\text{C}$	-	8	A	
$I^2t$	$I^2t$ for fusing	$t = 8.3\text{ms}$	-	0.26	$\text{A}^2\text{S}$	
$di_T/dt$	Repetitive rate of rise of on-state current after triggering	$I_{TM} = 1\text{A}; I_G = 0.2\text{A};$ $di_G/dt = 0.2\text{A}/\mu\text{s}$	-	-	-	
			T2+G+	-	50	A/ $\mu\text{s}$
			T2+G-	-	50	A/ $\mu\text{s}$
			T2-G-	-	50	A/ $\mu\text{s}$
			T2-G+	-	10	A/ $\mu\text{s}$
$I_{GM}$	Peak gate current	$t \leq 2\mu\text{s}, T_c = 80^\circ\text{C}$	-	1	A	
$V_{GM}$	Peak gate voltage	$t \leq 2\mu\text{s}, T_c = 80^\circ\text{C}$	-	5	V	
$P_{GM}$	Peak gate power	$t \leq 2\mu\text{s}, T_c = 80^\circ\text{C}$	-	5	W	
$P_{G(AV)}$	Average gate power	$T_{case} = 80^\circ\text{C} \quad t = 2\mu\text{s max}$	-	0.1	W	
$T_{stg}$	Storage temperature		-40	150	$^\circ\text{C}$	
$T_j$	Operating junction temperature		-40	110	$^\circ\text{C}$	

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT	
Static characteristics							
$I_{GT}$	Gate trigger current	$V_D = 12\text{V}; R_L = 100\text{ Ohms}$	T2+G+	-	-	5	mA
			T2+G-	-	-	5	mA
			T2-G-	-	-	5	mA
			T2-G+	-	-	7	mA
$V_{GT}$	Gate trigger voltage	$V_D = 12\text{V}; R_L = 100\text{ Ohms}$	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	$V_D = 12\text{V};$ Initiating current = 200 mA, gate open	-	1.5	10	mA	
$V_{TM}$	Peak On-state current	$I_{TM} = \pm 0.85\text{A peak};$ pulse width $\leq 2.0\text{ms},$ duty cycle $\leq 2.0\%$	-	-	1.9	V	
$I_{DRM}$ $I_{RRM}$	Peak repetitive blocking current	$V_D = \text{Rated } V_{DRM} V_{RRM};$ gate open	$T_j = 25^\circ\text{C}$	-	-	10	$\mu\text{A}$
			$T_j = 110^\circ\text{C}$	-	-	100	$\mu\text{A}$

### Dynamic Characteristics

$dv/dt(c)$	Critical rate of rise of commutation voltage	$V_D = \text{rated } V_{DRM}; I_{TM} = 0.84\text{A};$ commutating $di/dt = 0.3\text{A/ms} \quad T_c = 50^\circ\text{C}$	-	5	-	V/ $\mu\text{s}$
$dv/dt$	Critical rate of rise of off-state voltage	$V_D = 67\%$ of $V_{DM(max)}; T_{case} = 110^\circ\text{C};$ exponential waveform; gate open circuit;	-	25	-	V/ $\mu\text{s}$
$t_{gt}$	Gate controlled turn-on time	$I_{TM} = 1\text{A}; V_D = V_{DRM(max)}; I_G = 25\text{mA};$ $di_G/dt = 5\text{A}/\mu\text{s}$	-	2	-	$\mu\text{s}$

Description

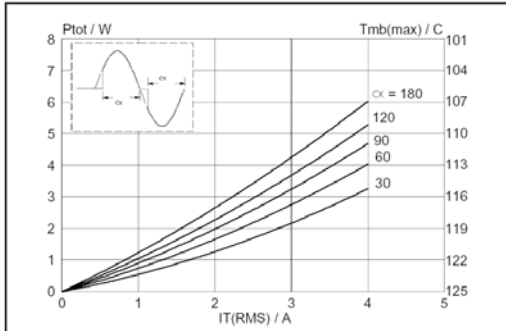


Fig. 1. Maximum on-state dissipation,  $P_{tot}$ , versus rms on-state current,  $I_{T(RMS)}$ , where  $\alpha$  = conduction angle.

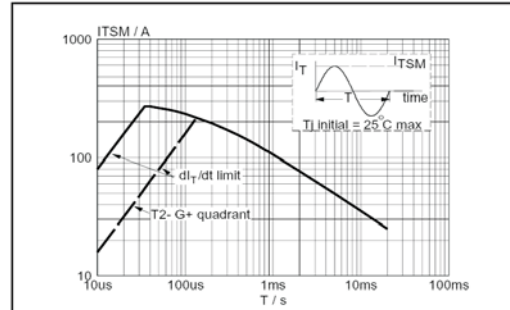


Fig. 2. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus pulse width  $t_p$ , for sinusoidal currents,  $t_p \leq 20$ ms.

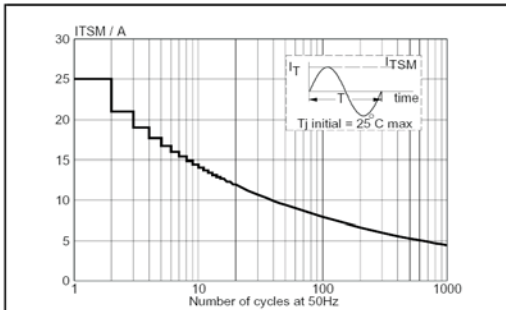


Fig. 3. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus number of cycles, for sinusoidal currents,  $f = 50$  Hz.

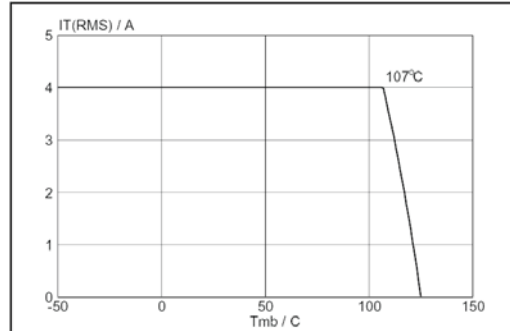


Fig. 4. Maximum permissible rms current  $I_{T(RMS)}$ , versus mounting base temperature  $T_{mb}$ .

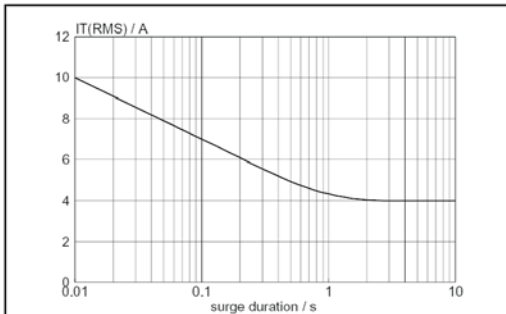


Fig. 5. Maximum permissible repetitive rms on-state current  $I_{T(RMS)}$ , versus surge duration, for sinusoidal currents,  $f = 50$  Hz;  $T_{mb} \leq 107^\circ\text{C}$ .

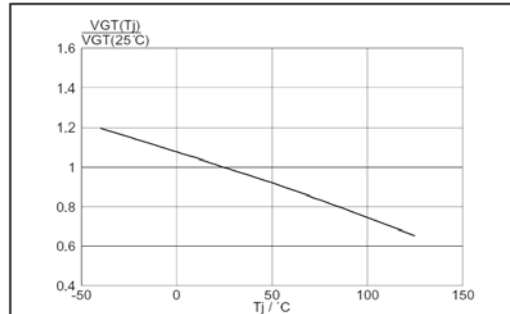
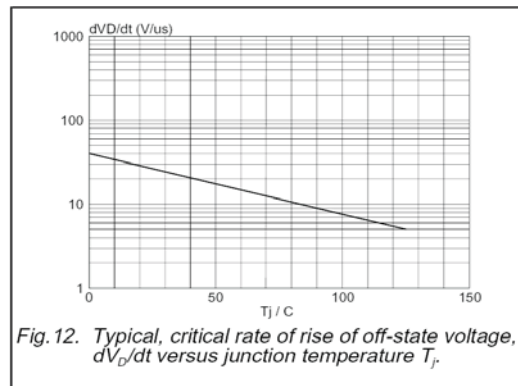
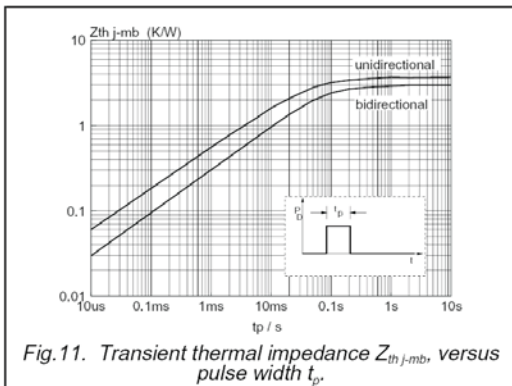
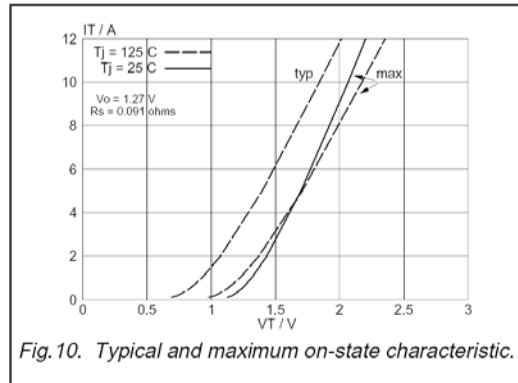
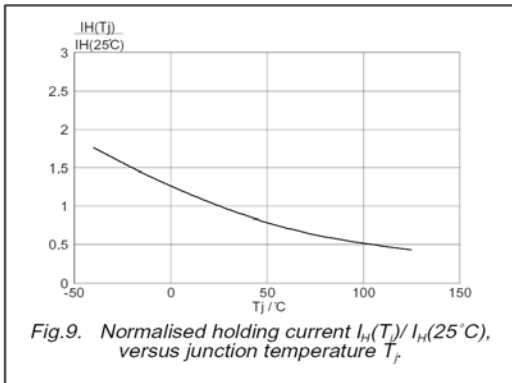
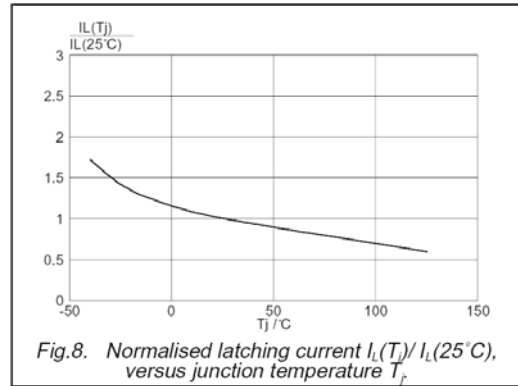
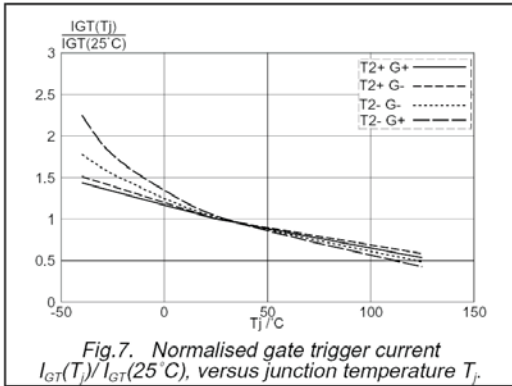


Fig. 6. Normalised gate trigger voltage  $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$ , versus junction temperature  $T_j$ .

### Description

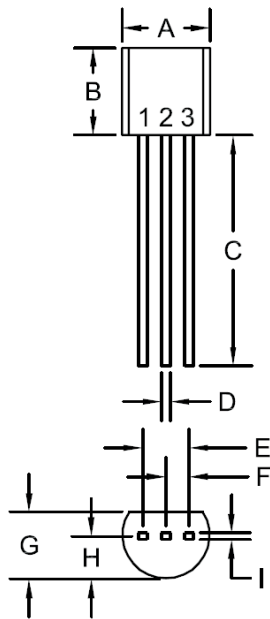


MECHANICAL DATA

Dimensions in mm

Net Mass: 0.2 g

TO-92



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.175	0.205	4.45	5.21
B	0.170	0.210	4.32	5.33
C	0.500	-	12.70	-
D	0.016	0.022	0.41	0.56
E	0.100		2.54	
F	0.050		1.27	
G	0.125	0.165	3.18	4.19
H	0.080	0.105	2.03	2.67
I	0.015		0.38	

TO-92 (REV: R1)

R1