
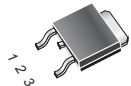


### HAOPIN MICROELECTRONICS CO.,LTD.

#### 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-252</p>	
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 peak on-state current	25	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{thj-mb}$	Thermal resistance junction to mounting base	full cycle	-	-	3.0	K/W
		half cycle	-	-	3.7	K/W
$R_{thj-a}$	Thermal resistance Junction to ambient	Pcb(FR4)mounteb footprint as in Fig.14	-	75	-	K/W

K/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT	
$V_{DRM}$	Repetitive peak off-state Voltages		-	600	V	
$I_{T(RMS)}$	RMS on-state current	Full sine wave; $T_{mb} \leq 107^\circ\text{C}$	-	4	A	
$I_{TSM}$	Non-repetitive peak On-state current	full sine wave; $T_j = 25^\circ\text{C}$ prior to surge	$t=20\text{ms}$	-	25	A
			$t=16.7\text{ms}$	-	27	A
$I^2t$	$I^2t$ for fusing	$T=10\text{ms}$	-	3.1	$\text{A}^2\text{S}$	
$DI_T/dt$	Repetitive rate of rise of on-state current after trigering	$I_{TM}=6\text{A}; I_G=0.2\text{A};$ $D_{IG}/dt=0.2\text{A}/\mu\text{s}$		-		
			T2+G+	-	50	$\text{A}/\mu\text{S}$
			T2+G-	-	50	$\text{A}/\text{S}$
			T2-G-	-	50	$\text{A}/\text{S}$
		T2-G+	-	10	$\text{A}/\text{S}$	
$I_{GM}$	Peak gate current		-	2	A	
$V_{GM}$	Peak gate voltage		-	5	V	
$P_{GM}$	Peak gate power		-	5	W	
$P_{G(AV)}$	Average gate power	Over any 20 ms period	-	0.5	W	
$T_{stg}$	Storage temperature		-40	150	$^\circ\text{C}$	
$T_j$	Operating junction Temperature		-40	125	$^\circ\text{C}$	

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT	
Static characteristics							
$I_{GT}$	Gate trigger current	$V_D=12\text{V}; I_T=0.1\text{A}$		-	2.0	5	mA
			T2+G+	-	2.5	5	mA
			T2-G-	-	2.5	5	mA
			T2-G+	-	5.0	10	mA
$I_L$	Latching current	$V_D=12\text{V}; I_{GT}=0.1\text{A}$		-	1.6	10	mA
			T2+G+	-	4.5	15	mA
			T2-G-	-	1.2	10	mA
			T2-G+	-	2.2	15	mA
$I_H$	Holding current	$V_D=12\text{V}; I_{GT}=0.1\text{A}$	-	1.2	10	mA	
$V_T$	On-state voltage	$I_T=5\text{A}$	-	1.4	1.70	V	
$V_{GT}$	Gate trigger voltage	$V_D=12\text{V}; I_T=0.1\text{A}$	-	0.7	1.5	V	
		$V_D=400\text{V}; I_T=0.1\text{A}; T_j=125^\circ\text{C}$	0.25	0.4	-	V	
$I_D$	Off-state leakage current	$V_D=V_{DRM(max)}; T_j=125^\circ\text{C}$	-	0.1	0.5	mA	

#### Dynamic Characteristics

$D_{VD}/dt$	Critical rate of rise of Off-state voltage	$V_{DM}=67\% V_{DRM(max)}; T_j=125^\circ\text{C}; R_{GK}=1\text{K}\Omega$ Exponential waveform; Gate open circuit	-	5	-	$\text{V}/\mu\text{s}$
$t_{gt}$	Gate controlled turn-on time	$I_{TM}=6\text{A}; V_D=V_{DRM(max)}; I_G=0.1\text{A};$ $DI_G/dt=5\text{A}/\mu\text{s}$	-	2	-	$\mu\text{s}$

### Description

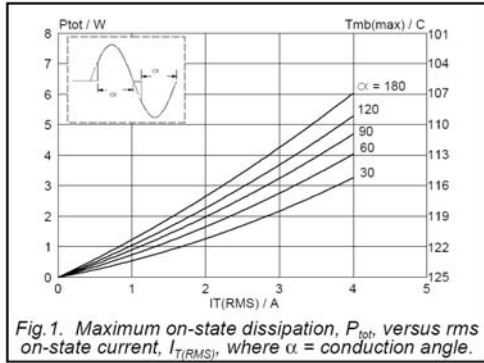


Fig. 1. Maximum on-state dissipation,  $P_{tot}$ , versus rms on-state current,  $I_{T(RMS)}$ , where  $\alpha$  = conduction angle.

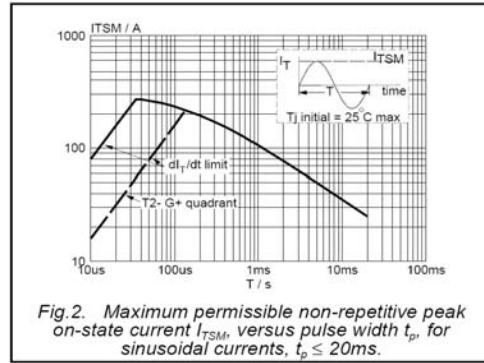


Fig. 2. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus pulse width  $t_p$ , for sinusoidal currents,  $t_p \leq 20ms$ .

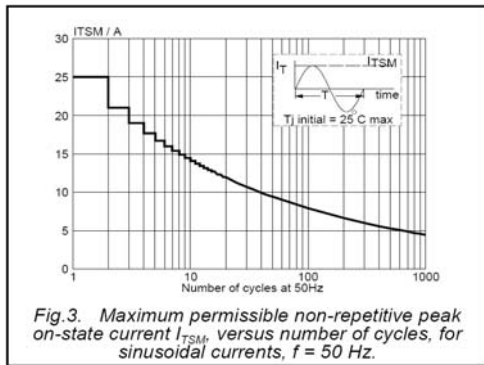


Fig. 3. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus number of cycles, for sinusoidal currents,  $f = 50$  Hz.

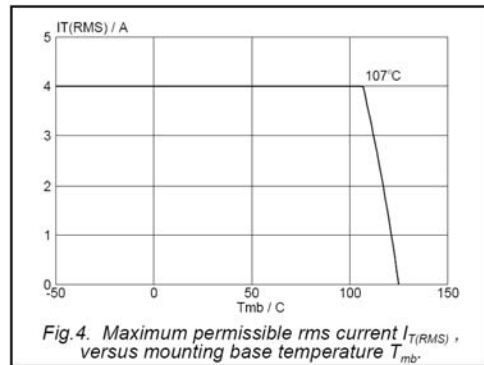


Fig. 4. Maximum permissible rms current  $I_{T(RMS)}$ , versus mounting base temperature  $T_{mb}$ .

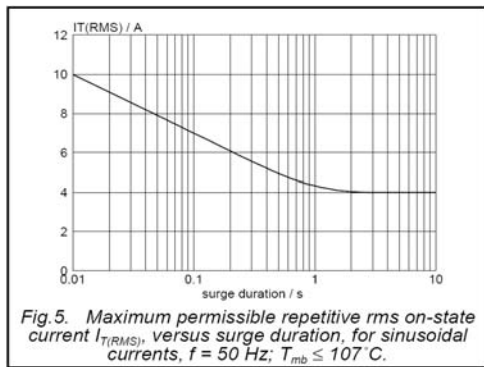


Fig. 5. Maximum permissible repetitive rms on-state current  $I_{T(RMS)}$ , versus surge duration, for sinusoidal currents,  $f = 50$  Hz;  $T_{mb} \leq 107$  C.

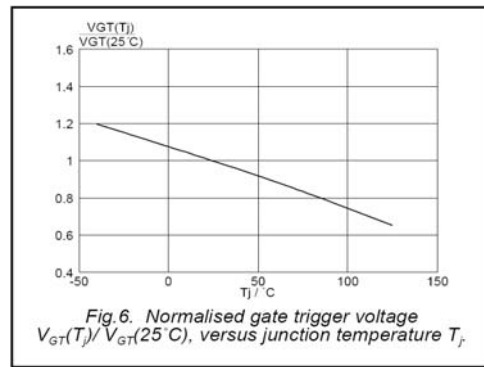
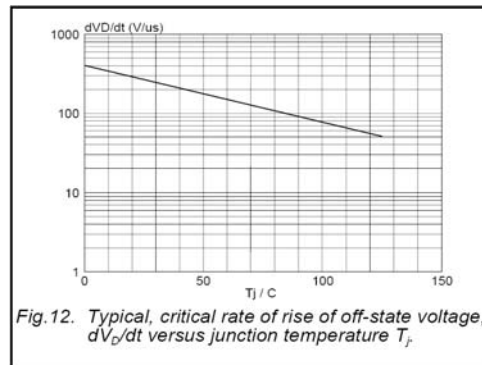
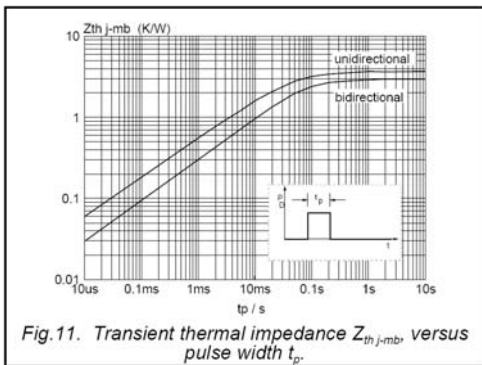
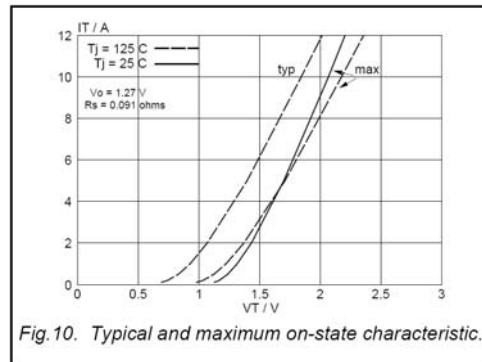
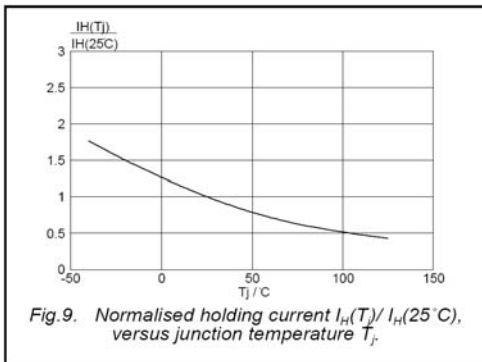
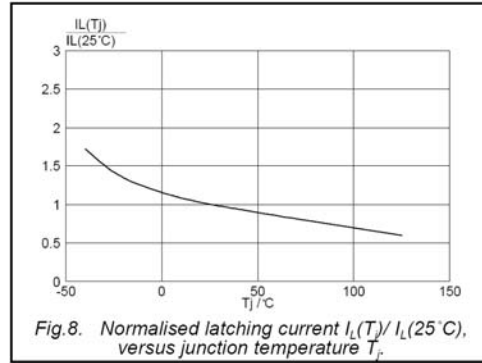
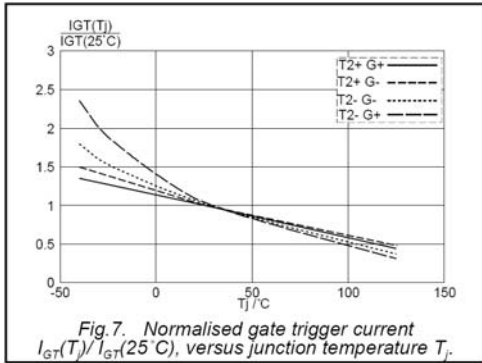


Fig. 6. Normalised gate trigger voltage  $V_{GT}(T_J)/V_{GT}(25^\circ C)$ , versus junction temperature  $T_J$ .

Description



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## MECHANICAL DATA

Dimensions in mm  
Net Mass: 0.45 g

