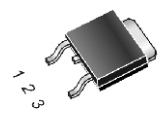
HP8Q80DS

Three quadrant triacs

HAOPIN MICROELECTRONICS CO.,LTD.

Description

Passivated high commutation triacs in a plastic envelope intended for use in circuits where high static and dynamic dV/dt and high dI/dt can occur. These devices will commutate the full rated ms current at the maximum rated junction temperature without the aid of a snubber.

Symbol	Simplified outline
	 TO-252

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 800 V
- On-state RMS current to 8 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	800	V
$I_{T\ (RMS)}$	RMS on-state current （full sine wave）	8	A
I_{TSM}	Non-repetitive peak on-state current (full cycle,Tj initial=25℃)	84	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Rth(j-c)	Junction to case(AC)		-	1.6	-	℃/W
Rth(j-a)	Junction to ambient		-	70	-	℃/W

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

SYMBOL	PARAMETER	CONDITIONS			MIN	Value	UNIT
V_{DRM}/V_{RRM}	Repetitive peak off-state Voltages				-	800	V
$I_{T(RMS)}$	RMS on-state current	Full sine wave;T_C=110℃			-	8	A
I_{TSM}	Non repetitive surge peak on-state current	full cycle, Tj initial= 25 ℃	F=50Hz	t=20ms	-	80	A
			F=60Hz	t=16.7ms	-	84	A
I^2t	I^2t value for fusing	tp=10ms			-	36	A^2S
dI/dt	Critical rate of rise of on-state current	I_G=2x I_{GT},tr<=100ns	F=120Hz	Tj=125℃	-	50	A/ μs
I_{GM}	Peak gate current		tp=20us	Tj=125℃	-	4	A
I_{DRM}	V_{DRM}=V_{RRM}			Tj=25℃	-	5	μA
I_{RRM}				Tj=125℃	-	1	mA
$P_{G(AV)}$	Average gate power dissipation			Tj=125℃	-	1	W
T_{stg}	Storage junction temperature range				-40	150	℃
T_j	Operating junction temperature range				-40	125	℃

T_J=25℃ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Static characteristics							
I_{GT}(1)		V_D=12V; RL=30Ω	I-II-III	-	-	10	mA
V_{GT}			I-II-III			1.3	V
I_L		I_G=1.2 I_{GT}	I-III	-	-	25	mA
			II	-	-	30	mA
I_H(2)		I_T=100mA		-	-	15	mA
V_{GD}		V_D=V_{DRM} R_L=3.3KΩ Tj=125℃	I-II-III	0.2	-	-	V
dV/dt(2)		V_D=67%V_{DRM} gate open;Tj=125℃		40	-	-	V/ μs
(dI/dt)c(2)		(dv/dt)c=0.1V/ μS Tj=125℃		5.4	-	-	V/ μs
		(dv/dt)c=10V/ μS Tj=125℃		2.8			

Dynamic Characteristics

V_{TM}(2)	I_{TM}=11A tp=380 μs	Tj=25℃	-	-	1.55	V
V_{to}(2)	Threshold voltage	Tj=125℃	-	-	0.85	V
R_d(2)	Dynamic resistance	Tj=125℃			50	mΩ

Note1:minimum I_{GT} is guaranted at 5% of I_{GT} max.

Note2: for both polarities of A2 referenced to A1.

Description

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).

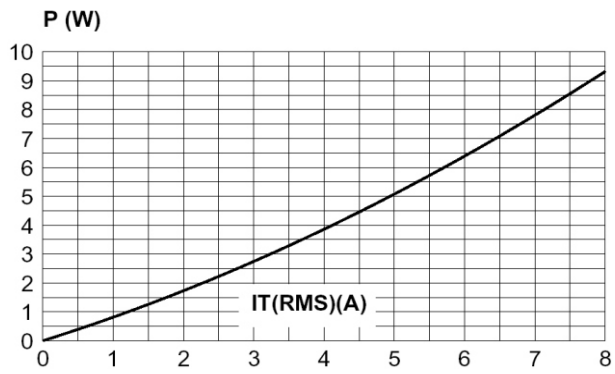


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

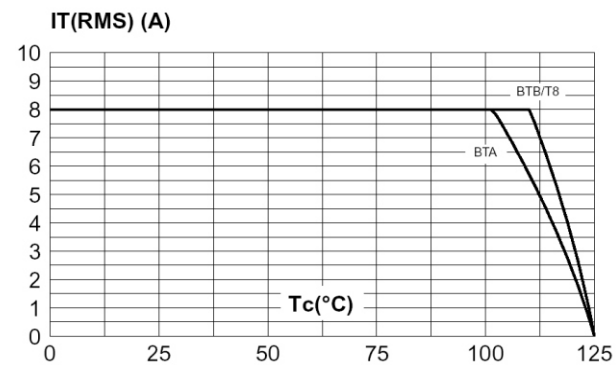


Fig. 2-2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35µm),full cycle.

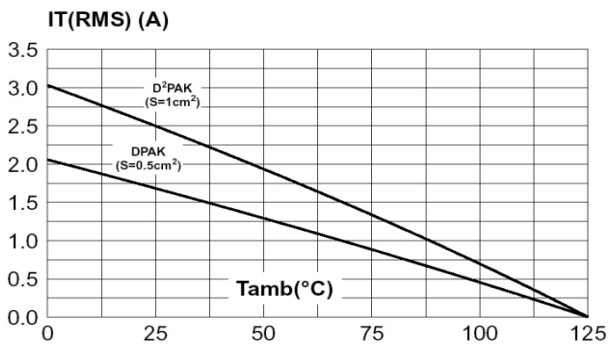


Fig. 3: Relative variation of thermal impedance versus pulse duration.

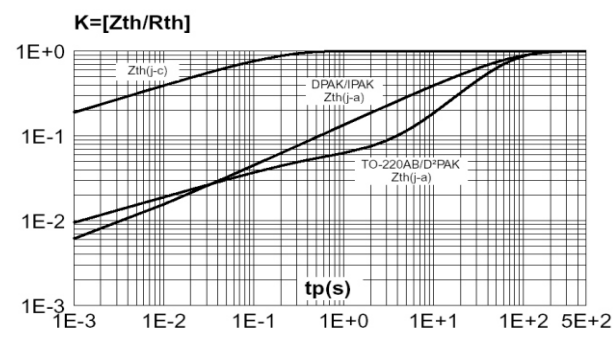


Fig. 4: On-state characteristics (maximum values).

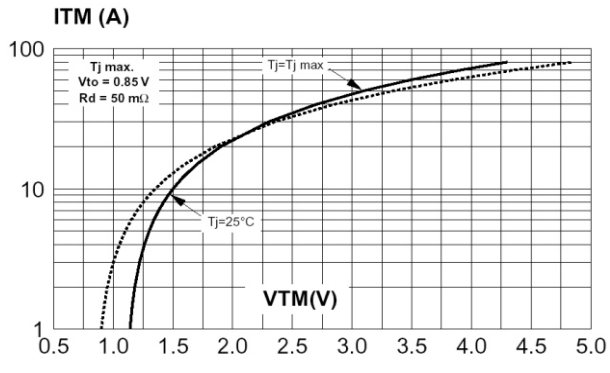
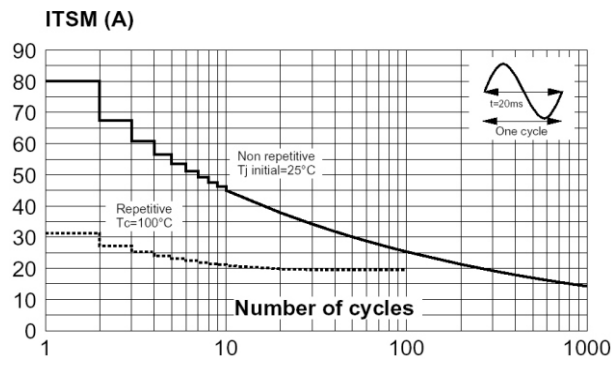


Fig. 5: Surge peak on-state current versus number of cycles.



Description

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

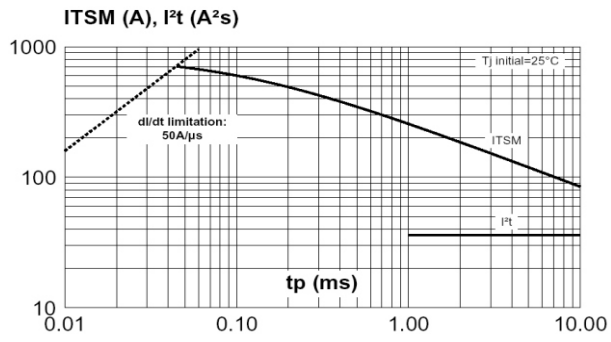


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

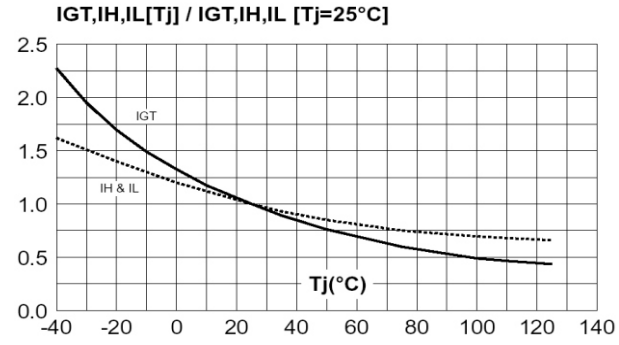


Fig. 8-1: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values). Snubberless & Logic Level Types

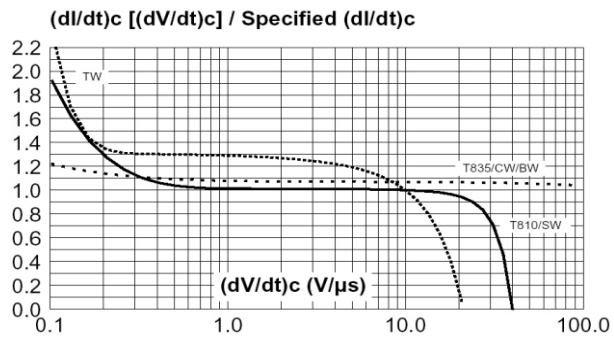


Fig. 8-2: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values). Standard Types

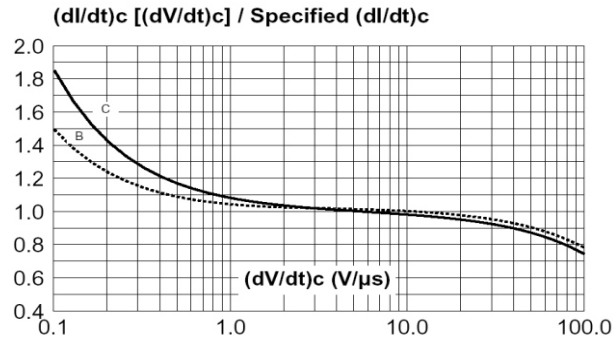


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

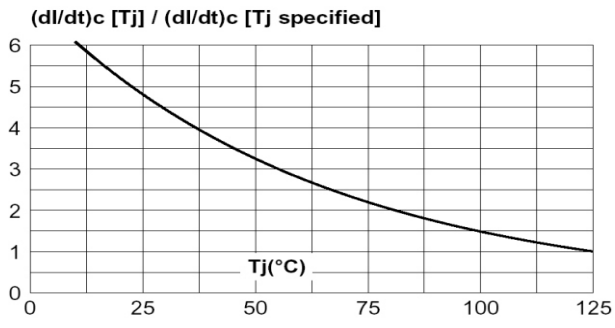
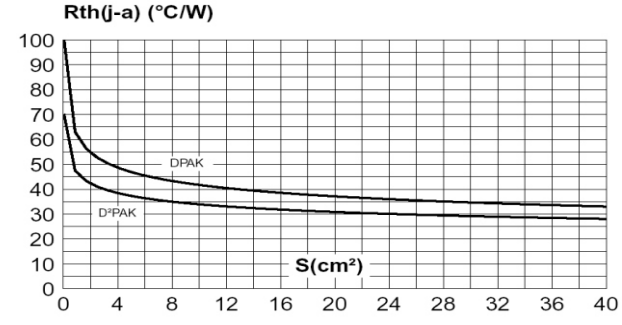
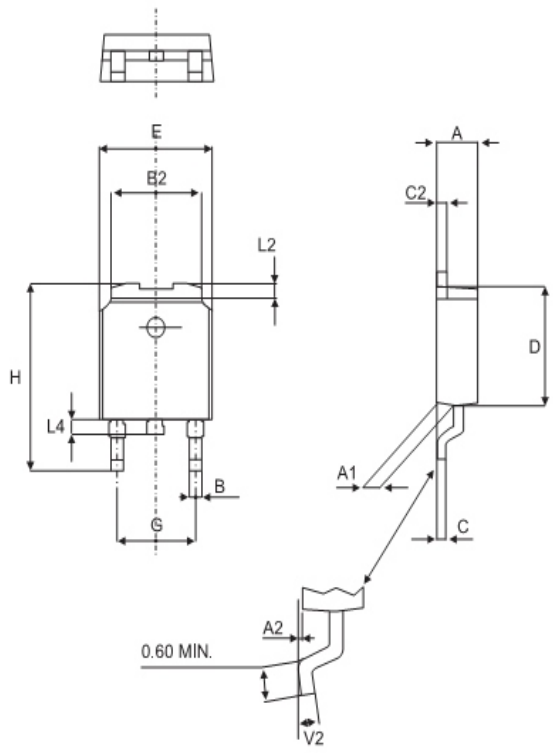


Fig. 10: DPAK and D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 µm).



MECHANICAL DATA

Dimensions in mm
Net Mass: 0.3 g
TO-252



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
R	0.2 typ.		0.007 typ.	
V2	0°	8°	0°	8°