T1635T-6I

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
	

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

Applications:

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

Features

- Blocking voltage to 600 V
- On-state RMS current to 16 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	600	V
$I_{T(RMS)}$	RMS on-state current （full sine wave）	16	A
I_{TSM}	Non-repetitive peak on-state current (full cycle,Tj initial=25℃)	170	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Rth(j-c)	Junction to case(AC)		–	2.1	–	℃/W
Rth(j-a)	Junction to ambient (s=1 cm^2)		–	60	–	℃/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			-	600	V
$I_{T(RMS)}$	on-state rms current	Full sine wave;T_C=86℃		-	16	A
I_{TSM}	Non repetitive surge peak on-state current	full cycle, Tj initial= 25℃ F=50Hz	t=20ms	-	120	A
		F=60Hz	t=16.7ms	-	126	A
I^2t	I^2t value for fusing		tp=10ms	-	105	A^2S
dI/dt	Critical rate of rise of on-state current	I_G=2× I_{GT} tr<=100ns	F=60Hz Tj=125℃	-	50	A/μs
I_{GM}	Peak gate current		tp=20μs Tj=125℃	-	4	A
$P_{G(AV)}$	Average gate power dissipation		Tj=125℃	-	1	V
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}	V_D=12V; RL=30Ω	Tj=25℃	I-II-III	-	-	35	mA
V_{GT}	V_D=V_{DRM}, RL=3.3KΩ		ALL	-	-	1.3	V
I_L	I_G=1.2 I_{GT}	Tj=25℃	I-III	-	-	50	mA
			II	-	-	80	mA
I_H(2)	I_T=500mA			-	-	40	mA
V_{GD}	V_D=V_{DRM} R_L=3.3KΩ	Tj=125℃	ALL	0.2	-	-	V
dV/dt(2)	V_D=67%V_{DRM} gate open	Tj=125℃ Tj=150℃ (3)		2000 1000	-	-	V/μs
(dI/dt)c(2)	Without snubber	Tj=125℃ Tj=150℃ (3)		16 12	-	-	A/ms

Dynamic Characteristics

V_T (1) V_{TO} (1)	I_{TM}=22.6A tp=380μs Threshold voltage	Tj=25℃ Tj=125℃	-	-	1.55 0.85	V
I_{DRM} I_{RRM}	V_{DRM}=V_{RRM} V_D=0.9×V_{RRM}	Tj=25℃ Tj=125℃ Tj=150℃ (2)	-	-	5 1 1.9	μA mA mA

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

Note2: for both polarities of A2 referenced to A1.

Description

Figure 1. Maximum power dissipation versus rms on-state current (full cycle)

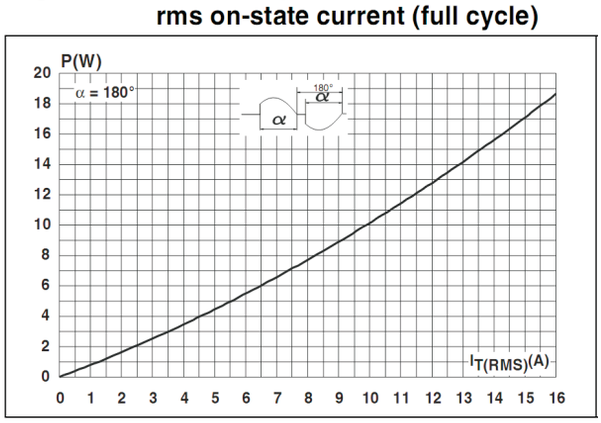


Figure 2. On-state rms current versus case temperature (full cycle)

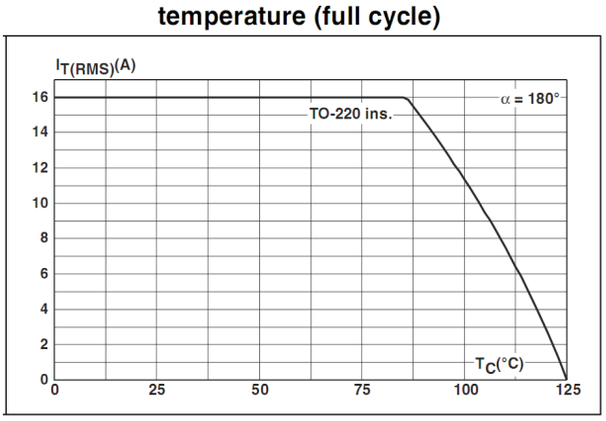


Figure 3. On-state rms current versus ambient temperature

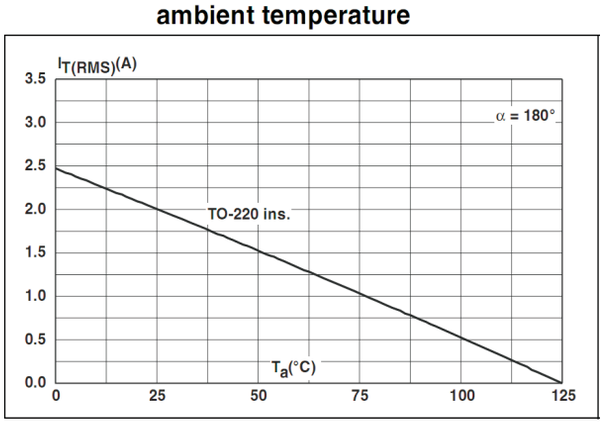


Figure 4. Relative variation of thermal impedance versus pulse duration

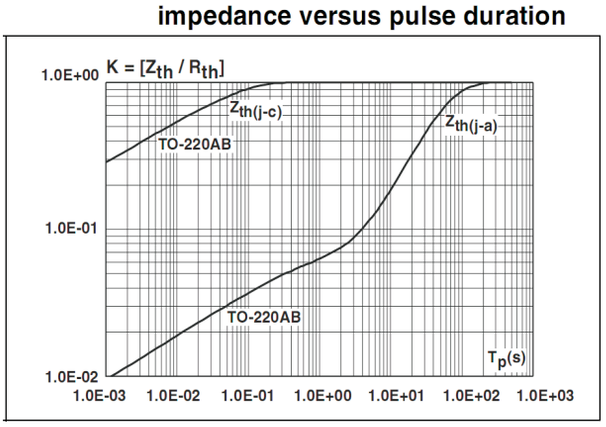


Figure 5. On state characteristics (maximum values)

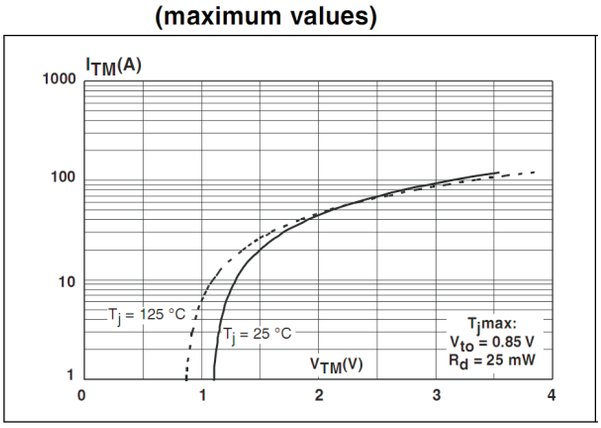
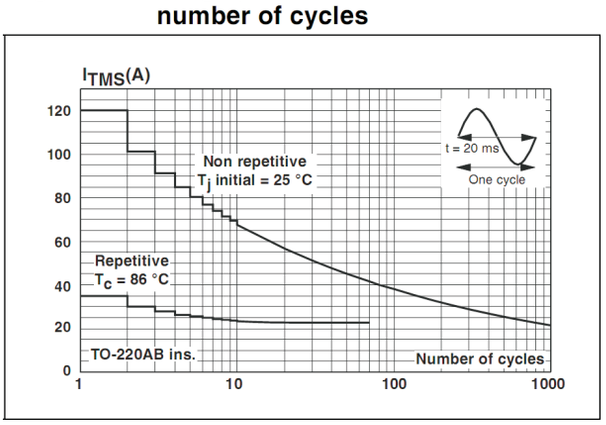


Figure 6. Surge peak on state current versus number of cycles



Description

Figure 7. Non repetitive surge peak on state current for a sinusoidal

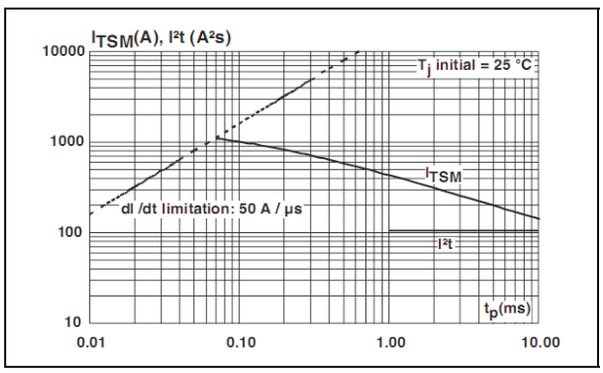


Figure 8. Relative variation of gate trigger current and gate trigger voltage versus junction temperature

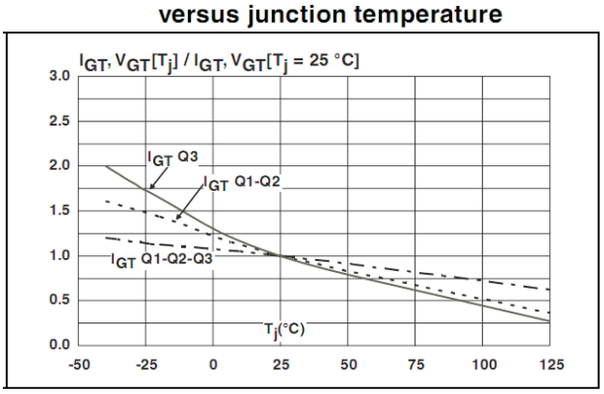


Figure 9. Relative variation of holding current and latching current versus junction temperature

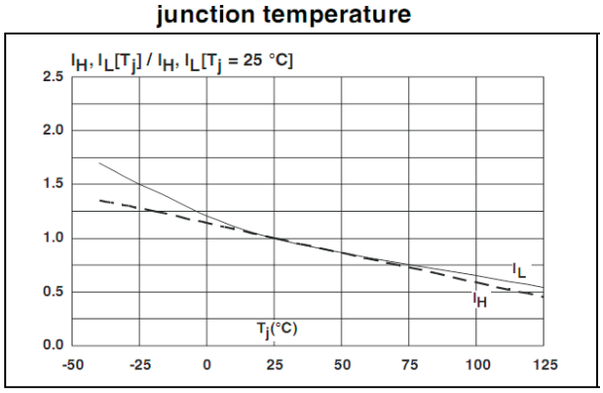


Figure 10. Relative variation of critical rate of decrease of main current versus junction temperature

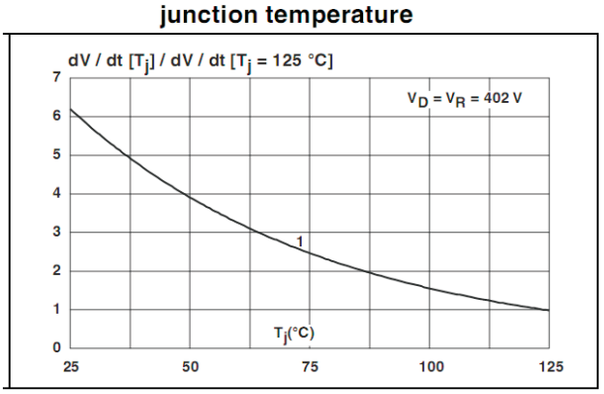


Figure 11. Relative variation of critical rate of decrease of main current versus junction temperature

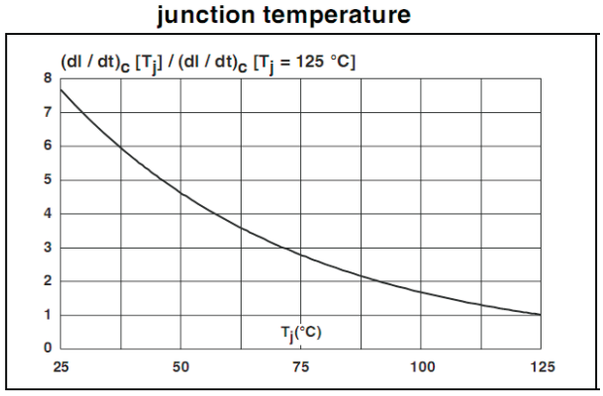
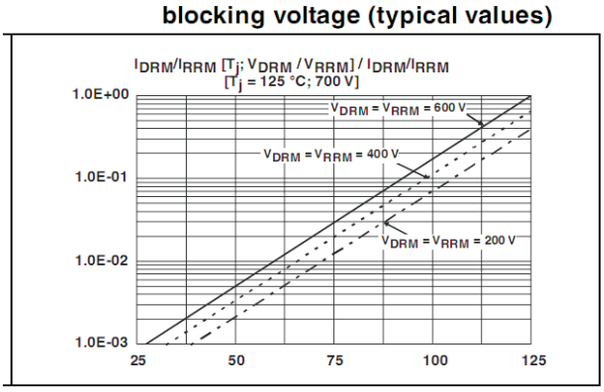
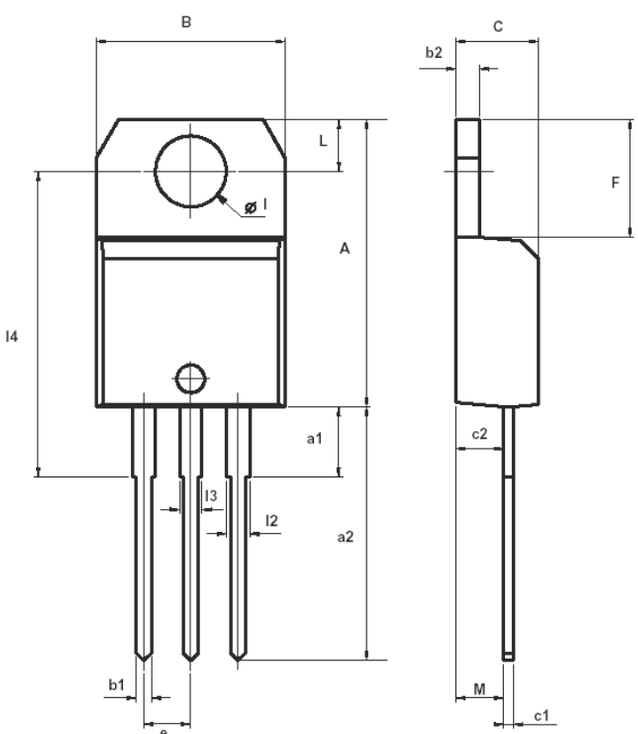


Figure 12. Leakage current versus junction temperature for different values of blocking voltage (typical values)



MECHANICAL DATA

Dimensions in mm
Net Mass: 2 g
TO-220



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	