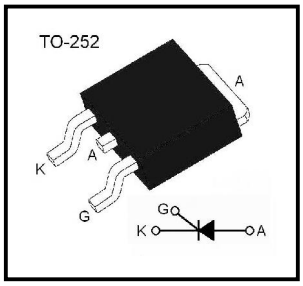
TYN608 TO-252 Plastic-Encapsulate Thyristors



Feature

- Highsurgecapability
- Highon-statecurrent
- Highstabilityandreliability

Description

Glasspassivated thyristors in a plastic envelope, intended for use in applications requiring high bidirectional blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

Absolute Maximum Rating (T_C=25°C unless otherwise specified)

Parameter	Symbol	Conditions		Value	Unit
Repetitive peak off-state voltage Repetitive peak reverse voltage	V_{DRM} V_{RRM}	Repetitive peak off-state voltage		600	V
Average on-state current	$I_{T(AV)}$			3.8	A
RMS on-state current	$I_{T(RMS)}$	full sine wave; Tmb ≤ 103 °C		6	A
Non-repetitive peak on-state current	I_{TSM}	full sine wave; T_j = 25 °C prior to surge	t = 10 ms t = 8.3 ms	70 73	A
I^2t value	I^2t	t = 10 ms		24.5	A^2/s
Peak gate current	I_{FGM}	t = 20μs		4	A
Average gate power	$P_{G(AV)}$	over any 20 ms period		1	W
Operating junction temperature range	T_j			125	°C
Storage Temperature Range	T_{stg}			–40 ~ +150	°C

Thermal resistance

Parameter	Symbol	Conditions	Value	Unit
Junction to ambient	Z_{thj-a}		60	°C/W
Junction to case for DC	Z_{thj-Cc}		4.5	°C/W

Electrical Characteristics (T_j = 25 °C unless otherwise stated)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Gate trigger current	I_{GT}	V_D = 12 V; R_L=33Ω			5	10	mA
Gate trigger voltage	V_{GT}	V_D = 12 V; R_L=33Ω				1.35	V
Gate non trigger voltage	V_{GD}	V_D = V_{DRM}; R_L=33Ω		0.2			V
Holding current	I_H	I_T = 100mA, gate open				30	mA
Latching current	I_L	I_G = 1.2 I_{GT}				50	mA
On-state voltage	V_{TM}	I_T = 12A		-		1.75	V
Off-state leakage current Reverse current	I_{DRM} I_{RRM}	V_D = V_{DRM}	T_j = 25 °C	-		0.01	mA
			T_j = 125 °C	-		2	

Dynamic Characteristics (T_j = 25 °C unless otherwise stated)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Critical rate of rise of off-state voltage	dV_D/dt	Linear slope up to V_{DM}=67%V_{DRM} gate open	T_j=110˚C	200			V/μs
Circuit commutated turn-off time	t_q	V_D = 67% V_{DRM}; I_{TM} = 12A; V_R = 25V; dI_{TM}/dt = 30 A/μs; dV_D/dt = 50 V/μs; R_{GK} = 100 Ω	T_j=110˚C	-	70		μs

Typical Characteristics

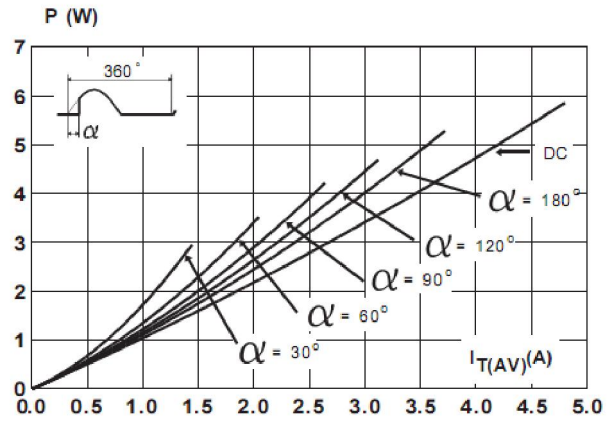


Fig.1. Maximum on-state dissipation, Ptot, vs $I_{T(AV)}$, where a = form factor = $I_{T(RMS)}$/ $I_{T(AV)}$

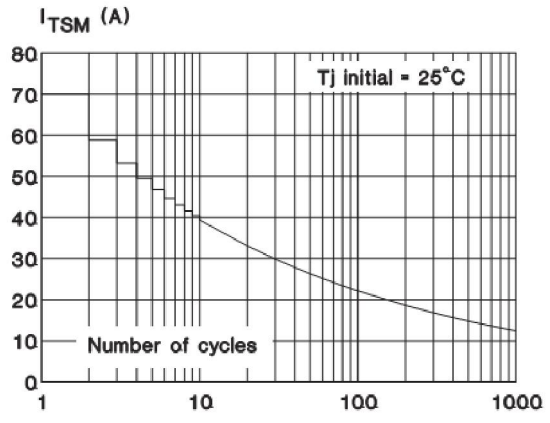


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM}, vs number of cycles, for sinusoidal currents, f = 50 Hz.

Typical Characteristics

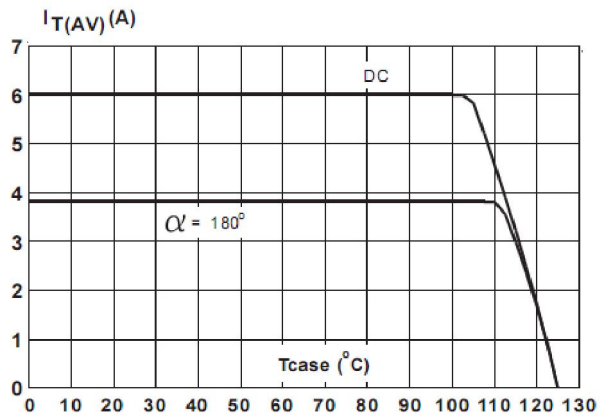


Fig.3. Average on-state current versus casetemperature.

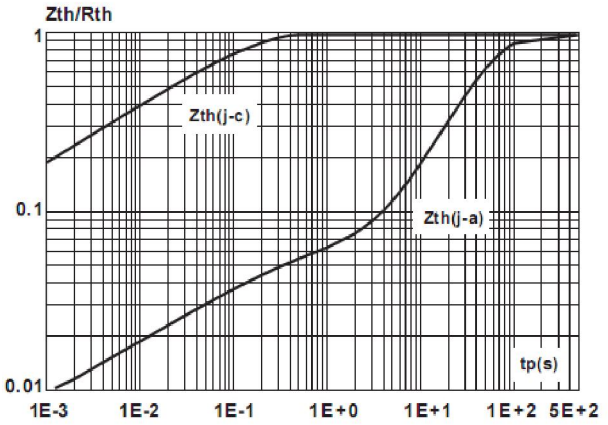


Fig.4. Relative variation of thermal impedance Versus pulse duration.

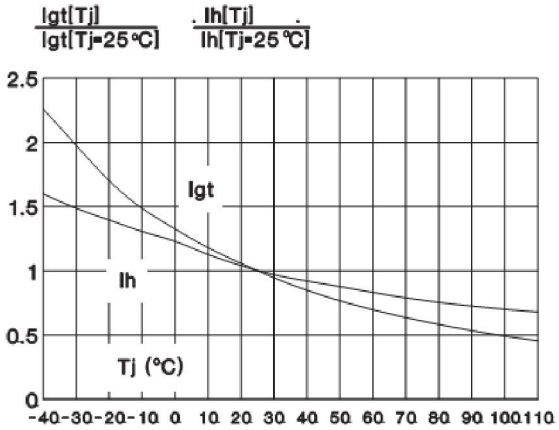


Fig.5. Relative variation o fgate trigger current versus junction temperature.

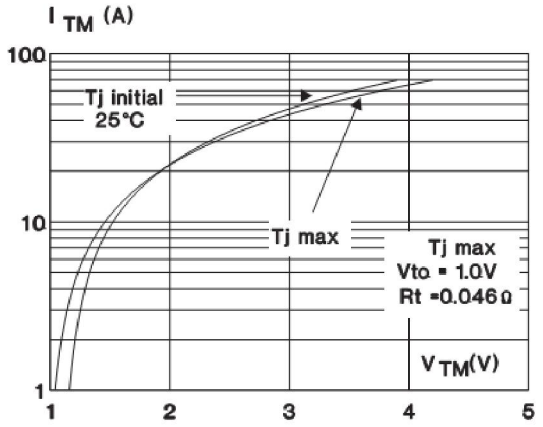


Fig.6. On-state characteristics (maximumvalues).

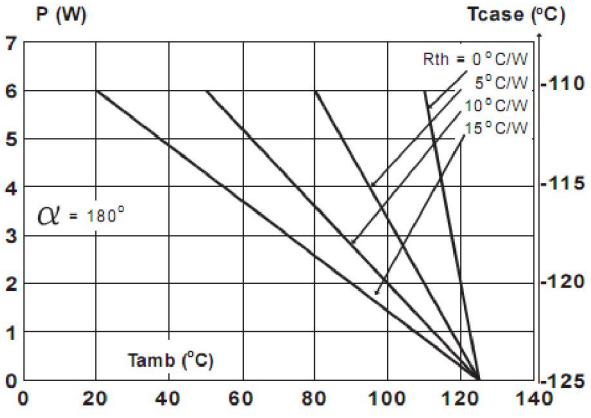


Fig.7. Correlation between maximum average power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink+contact.

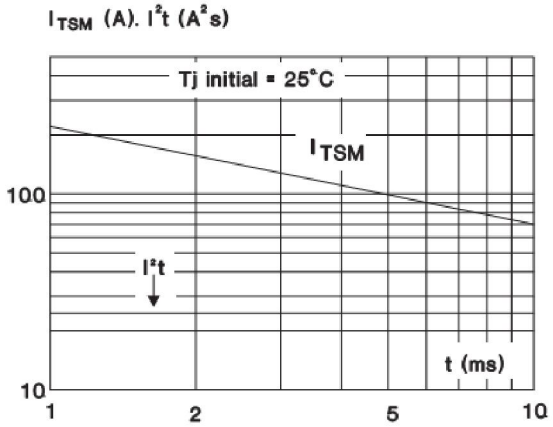
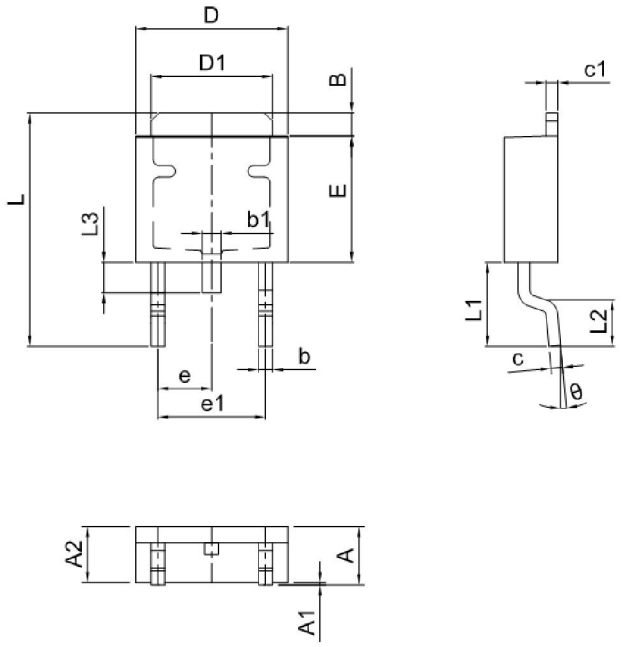


Fig.8. Non repetitive surge peak on-state current for a sinusoidal pulse with width: T ≤10ms, and cor responding value of I^2t.

Package Dimensions



DIMI	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	9.60	10.20	0.378	0.402
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059