

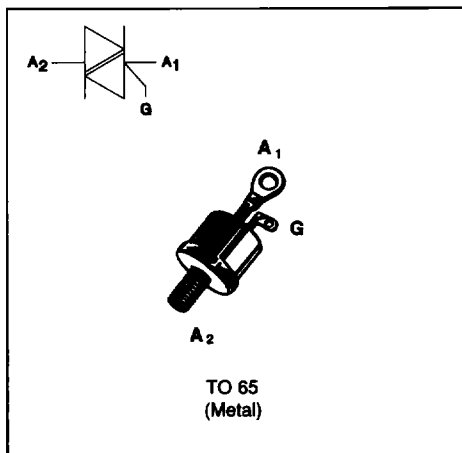
ALTERNISTORS

FEATURES

- HIGH COMMUTATION : $> 213 \text{ A/ms}$ (400Hz)
- HERMETIC PACKAGE : TO 65 Metal
- HIGH VOLTAGE CAPABILITY : $V_{DRM} = 1200 \text{ V}$

DESCRIPTION

The TGDV 606 ---> 612 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_T(\text{RMS})$	RMS on-state current (360° conduction angle)	$T_c = 75^\circ\text{C}$	60	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 2.5 \text{ ms}$	840	A
		$t_p = 8.3 \text{ ms}$	550	
		$t_p = 10 \text{ ms}$	500	
I_{2t}	I_{2t} value	$t_p = 10 \text{ ms}$	1250	A^2s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 1.5 \text{ A}$ $di_G/dt = 1 \text{ A}/\mu\text{s}$	Repetitive $F = 50 \text{ Hz}$	20	$\text{A}/\mu\text{s}$
		Non Repetitive	100	
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ\text{C}$ $^\circ\text{C}$
T_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	$^\circ\text{C}$

Symbol	Parameter	TGDV				Unit
		606	608	610	612	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th} (c-h)	Contact (case-heatsink) for recommended stud torque	0.3	°C/W
R _{th} (j-c) DC	Junction to case for DC	0.7	°C/W
R _{th} (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.55	°C/W

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 40W (tp = 20 μs) I_{GM} = 8A (tp = 20 μs) V_{GM} = 16V (tp = 20 μs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I _{GT}	V _D =12V (DC) R _L =33Ω	T _J =25°C	I-II-III	MAX	200	mA
V _{GT}	V _D =12V (DC) R _L =33Ω	T _J =25°C	I-II-III	MAX	1.5	V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _J =125°C	I-II-III	MIN	0.2	V
t _{gt}	V _D =V _{DRM} I _G = 500mA dI _G /dt = 3A/μs	T _J =25°C	I-II-III	TYP	2.5	μs
I _L	I _G =1.2 I _{GT}	T _J =25°C	I-III	TYP	100	mA
			II		200	
I _H *	I _T = 500mA gate open	T _J =25°C		TYP	50	mA
V _{TM} *	I _{TM} = 85A tp= 380μs	T _J =25°C		MAX	2	V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	T _J =25°C		MAX	0.02	mA
		T _J =100°C		MAX	5	
dV/dt *	Linear slope up to V _D =67%V _{DRM} gate open	T _J =125°C		MIN	500	V/μs
(dI/dt)c *	(dV/dt)c = 200V/μs	T _J =100°C		MIN	50	A/ms
	(dV/dt)c = 10V/μs				213	

* For either polarity of electrode A₂ voltage with reference to electrode A₁.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current ($F=50\text{Hz}$).
(Curves are cut off by $(di/dt)c$ limitation)

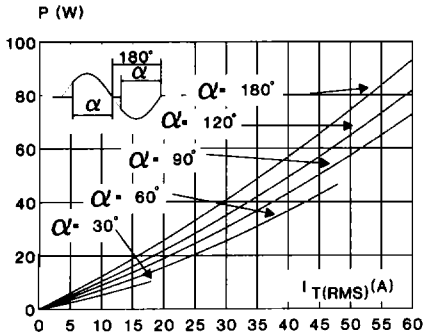


Fig.3 : RMS on-state current versus case temperature.

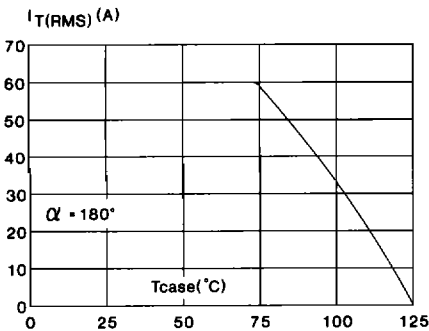


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

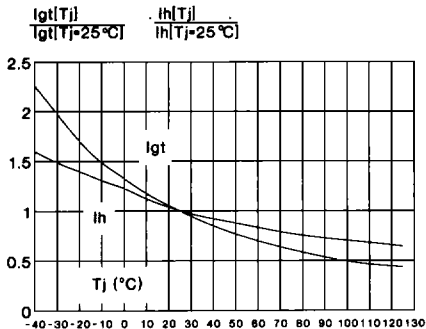


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

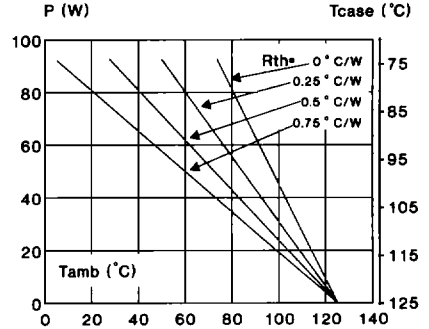


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

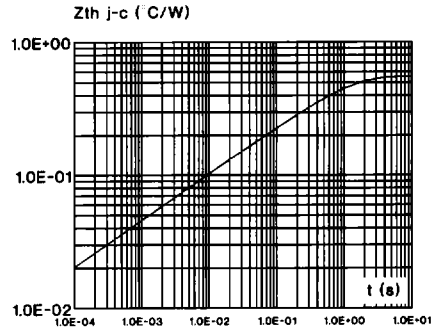


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

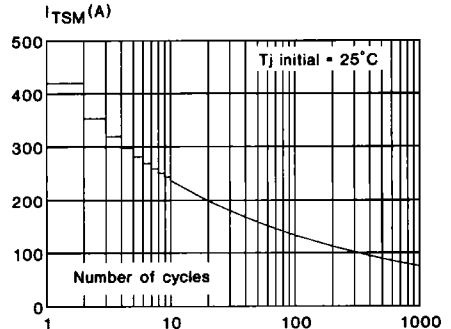


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

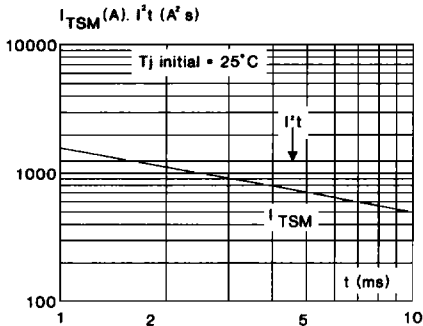


Fig.8 : On-state characteristics (maximum values).

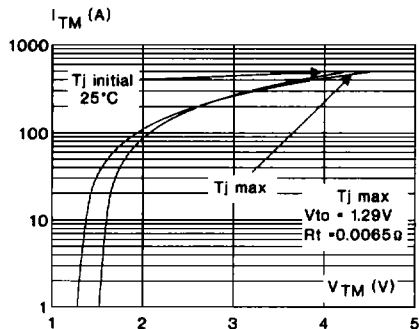
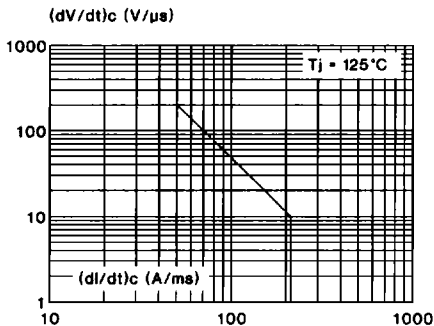
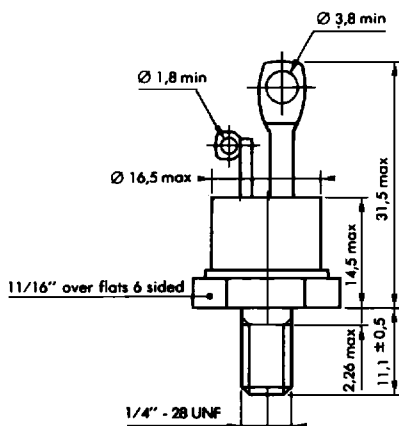


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA (in millimeters)

TO 65 Metal



Cooling method : by conduction (method C)

Marking : type number

Weight : 19 g