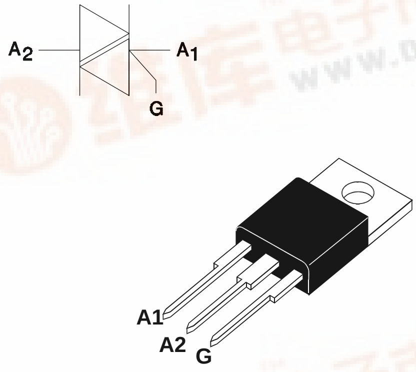
SGS-THOMSON MICROELECTRONICS

TXDV 412 ---> 812

ALTERNISTORS

FEATURES

- VERY HIGH COMMUTATION : > 42.5 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V(RMS) (UL RECOGNIZED : E81734)
- dV/dt : 500 V/µs min



TO220AB
(Plastic)

DESCRIPTION

The TXDV 412 ---> 812 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
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 90 °C	12	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	170	A
		tp = 8.3 ms	125	
		tp = 10 ms	120	
I^2t	I^2t value	tp = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		260	°C

Symbol	Parameter	TXDV			Unit
		412	612	812	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	2.5	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.9	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 10W (tp = 20 µs) I_{GM} = 4A (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	Tj=25°C	I-II-III	MAX	100	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	mA
V_{TM} *	I_{TM}= 17A tp= 380µs	Tj=25°C		MAX	1.95	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	2	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=110°C		MIN	10	A/ms
	(dV/dt)c = 10V/µs				42.5	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

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

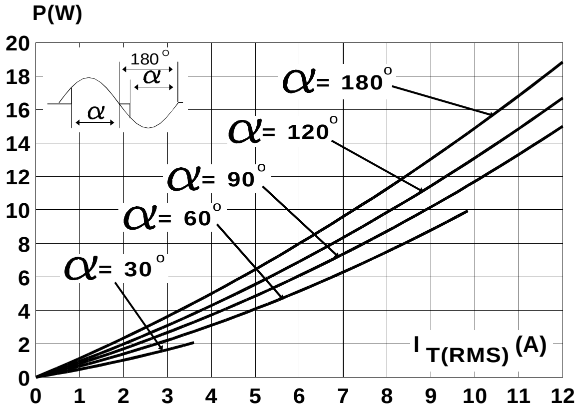


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

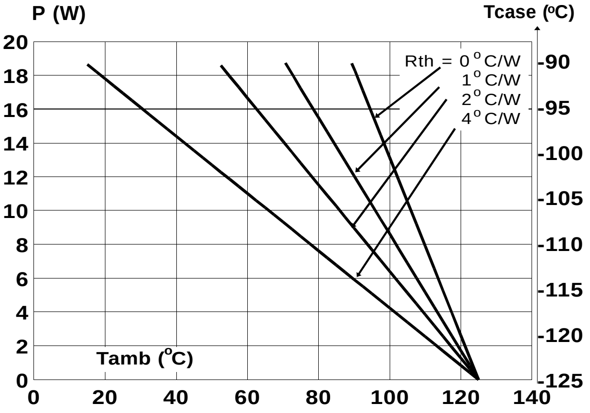


Fig.3 : RMS on-state current versus case temperature.

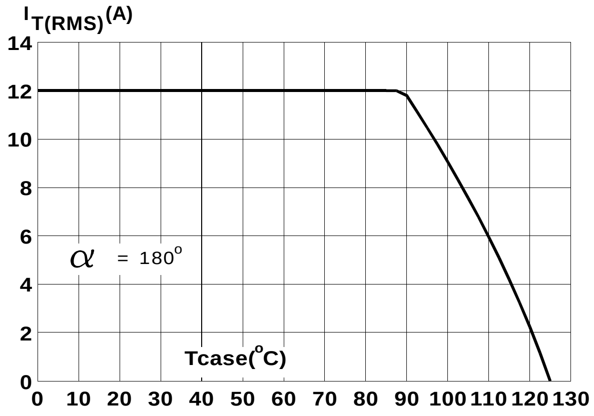


Fig.4 : Relative variation of thermal impedance versus pulse duration.

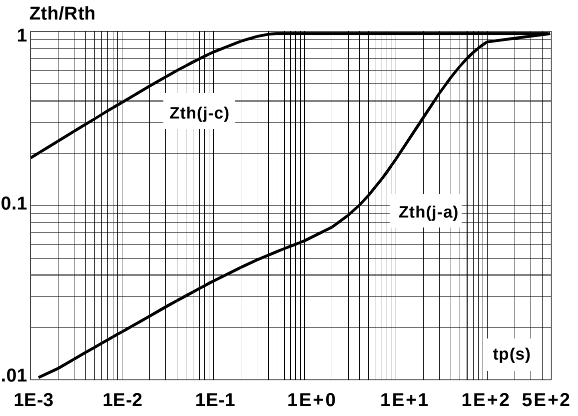


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

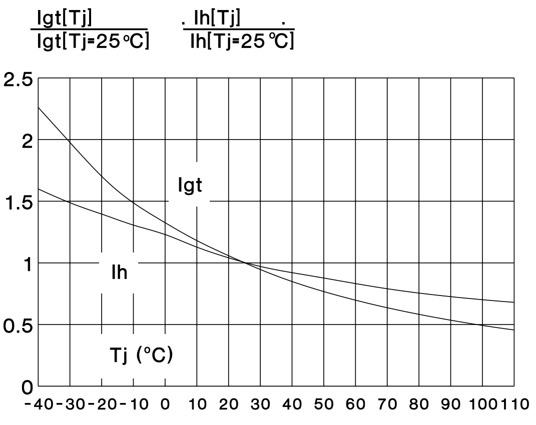


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

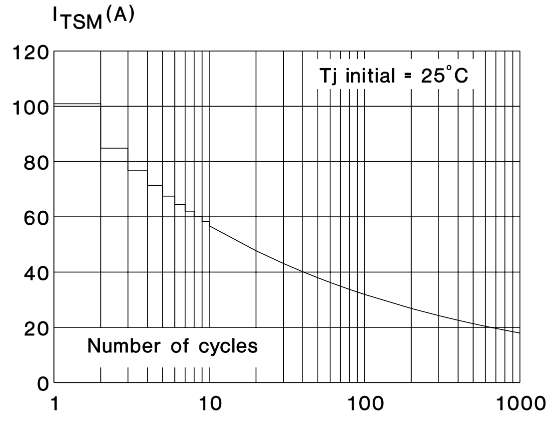


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

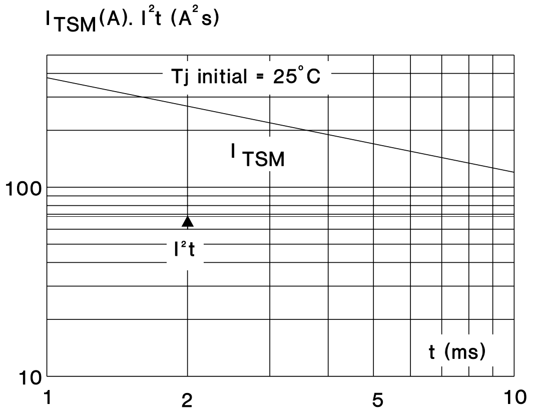


Fig.8 : On-state characteristics (maximum values).

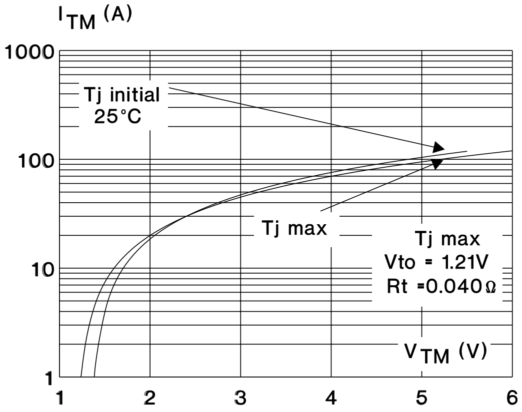
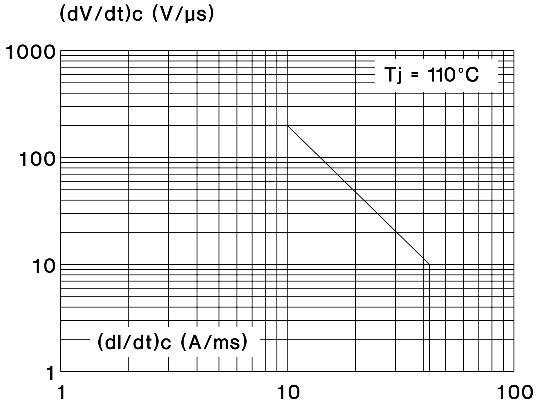
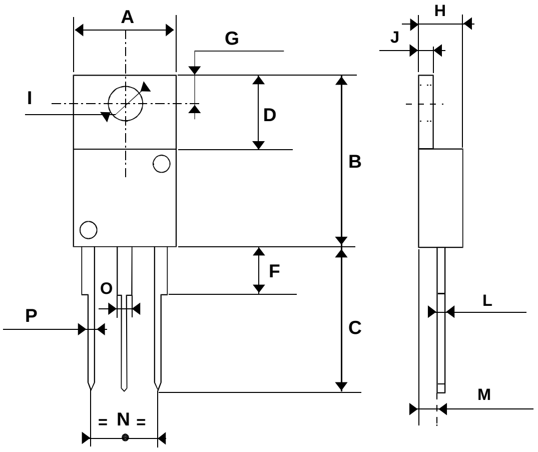


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA

TO220AB Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.20	10.50	0.401	0.413
B	14.23	15.87	0.560	0.625
C	12.70	14.70	0.500	0.579
D	5.85	6.85	0.230	0.270
F		4.50		0.178
G	2.54	3.00	0.100	0.119
H	4.48	4.82	0.176	0.190
I	3.55	4.00	0.140	0.158
J	1.15	1.39	0.045	0.055
L	0.35	0.65	0.013	0.026
M	2.10	2.70	0.082	0.107
N	4.58	5.58	0.18	0.22
O	0.80	1.20	0.031	0.048
P	0.64	0.96	0.025	0.038

Cooling method : C
Marking : type number
Weight : 2.3 g
Recommended torque value : 0.8 m.N.
Maximum torque value : 1 m.N.

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