



# TXDV 408 ---> 808

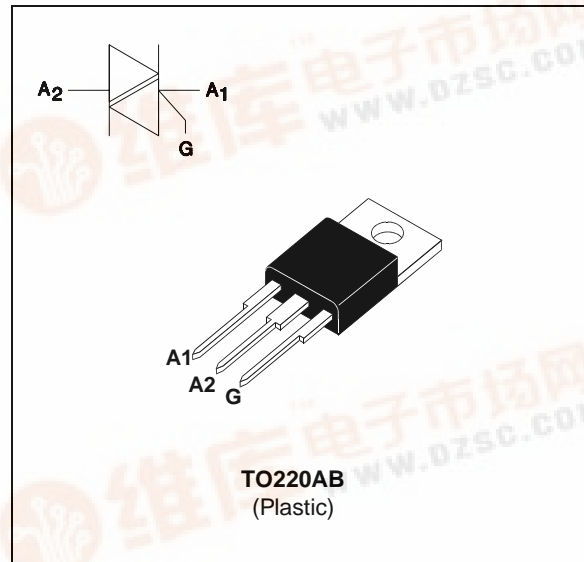
## ALTERNISTORS

### FEATURES

- VERY HIGH COMMUTATION : > 28 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V<sub>(RMS)</sub> (UL RECOGNIZED : E81734)
- dV/dt : 500 V/μs min

### DESCRIPTION

The TXDV 408 ---> 808 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 <sub>T(RMS)</sub>	RMS on-state current (360° conduction angle)	T <sub>c</sub> = 90 °C 8	A	
I <sub>TSM</sub>	Non repetitive surge peak on-state current (T <sub>j</sub> initial = 25°C )	tp = 2.5 ms	115	
		tp = 8.3 ms	85	
		tp = 10 ms	80	
I <sup>2</sup> t	I <sup>2</sup> t value	tp = 10 ms	32	A <sup>2</sup> s
di/dt	Critical rate of rise of on-state current Gate supply : I <sub>G</sub> = 500mA di <sub>G</sub> /dt = 1A/μs	Repetitive F = 50 Hz	20	A/μs
		Non Repetitive	100	
T <sub>stg</sub> T <sub>j</sub>	Storage and operating junction temperature range	- 40 to + 150 - 40 to + 125	°C °C	
TI	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	260	°C	

Symbol	Parameter	TXDV			Unit
		408	608	808	
V <sub>DRM</sub> V <sub>RRM</sub>	Repetitive peak off-state voltage T <sub>j</sub> = 125 °C	400	600	800	V



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### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	4	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle ( F= 50 Hz)	3	°C/W

### GATE CHARACTERISTICS (maximum values)

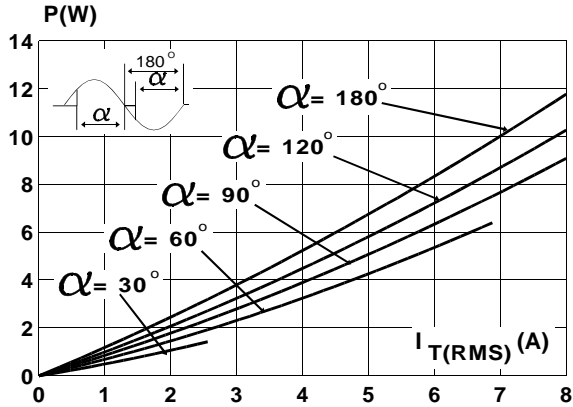
$P_G (AV) = 1W$     $P_{GM} = 10W$  (tp = 20  $\mu s$ )    $I_{GM} = 4A$  (tp = 20  $\mu s$ )    $V_{GM} = 16V$  (tp = 20  $\mu s$ ).

### ELECTRICAL CHARACTERISTICS

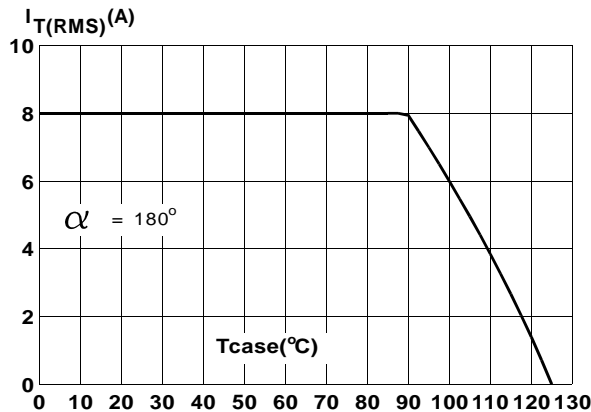
Symbol	Test Conditions	Quadrant		Value	Unit	
$I_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	I-II-III	MAX	100	mA
$V_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	I-II-III	MAX	1.5	V
$V_{GD}$	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_j=110^\circ C$	I-II-III	MIN	0.2	V
tgt	$V_D=V_{DRM}$ $I_G = 500mA$ $di_G/dt = 3A/\mu s$	$T_j=25^\circ C$	I-II-III	TYP	2.5	$\mu s$
$I_L$	$I_G=1.2 I_{GT}$	$T_j=25^\circ C$	I-III	TYP	100	mA
			II		200	
$I_H$ *	$I_T= 500mA$ gate open	$T_j=25^\circ C$		MAX	100	mA
$V_{TM}$ *	$I_{TM}= 11A$ tp= 380 $\mu s$	$T_j=25^\circ C$		MAX	1.8	V
$I_{DRM}$ $I_{RRM}$	$V_{DRM}$ Rated $V_{RRM}$ Rated	$T_j=25^\circ C$		MAX	0.01	mA
		$T_j=110^\circ C$		MAX	2	
dV/dt *	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_j=110^\circ C$		MIN	500	V/ $\mu s$
(dI/dt)c *	(dV/dt)c = 200V/ $\mu s$	$T_j=110^\circ C$		MIN	7	A/ms
	(dV/dt)c = 10V/ $\mu s$				28	

\* For either polarity of electrode A<sub>2</sub> voltage with reference to electrode A<sub>1</sub>.

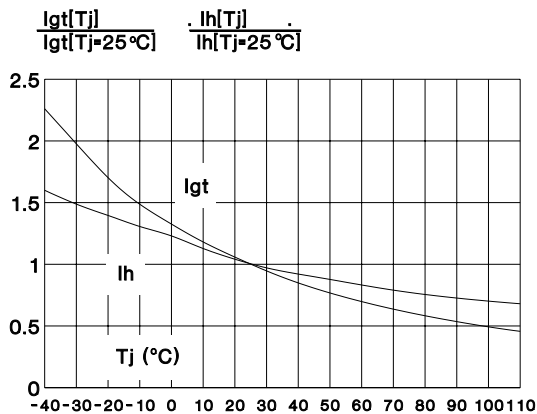
**Fig.1 :** Maximum RMS power dissipation versus RMS on-state current ( $F=50\text{Hz}$ ).  
(Curves are cut off by  $(di/dt)_c$  limitation)



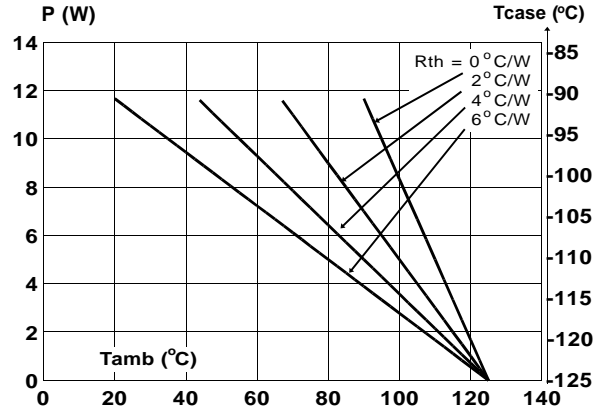
**Fig.3 :** RMS on-state current versus case temperature.



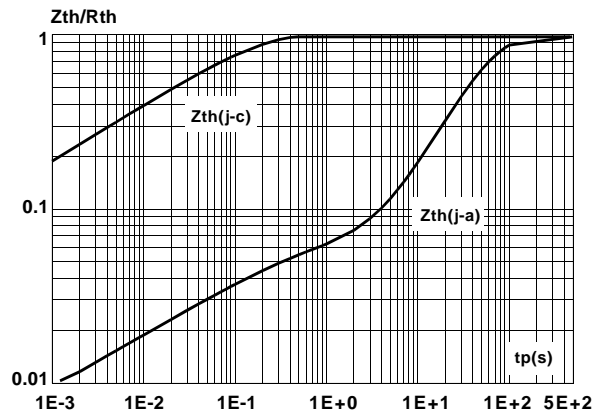
**Fig.5 :** Relative variation of gate trigger current and holding current versus junction temperature.



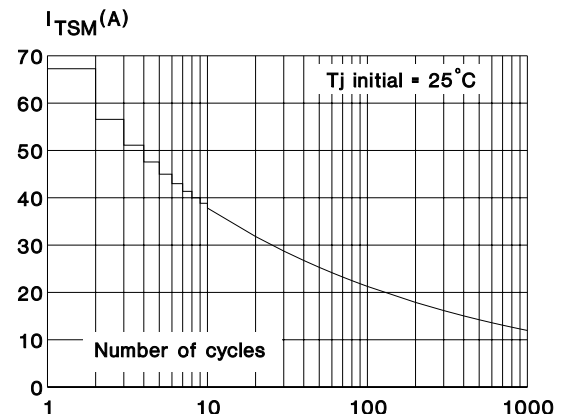
**Fig.2 :** Correlation between maximum RMS power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.



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

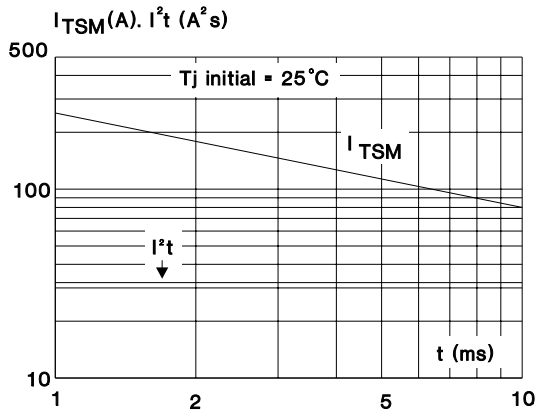


**Fig.6 :** Non Repetitive surge peak on-state current versus number of cycles.

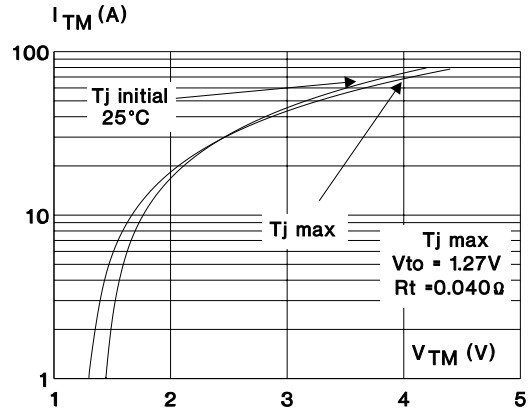


**TXDV 408 ---> 808**

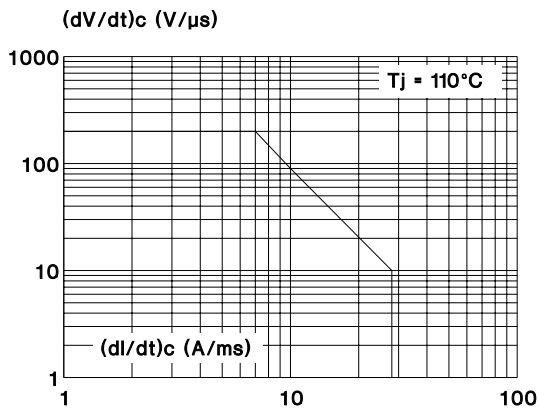
**Fig.7 :** Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10\text{ms}$ , and corresponding value of  $I^2t$ .



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

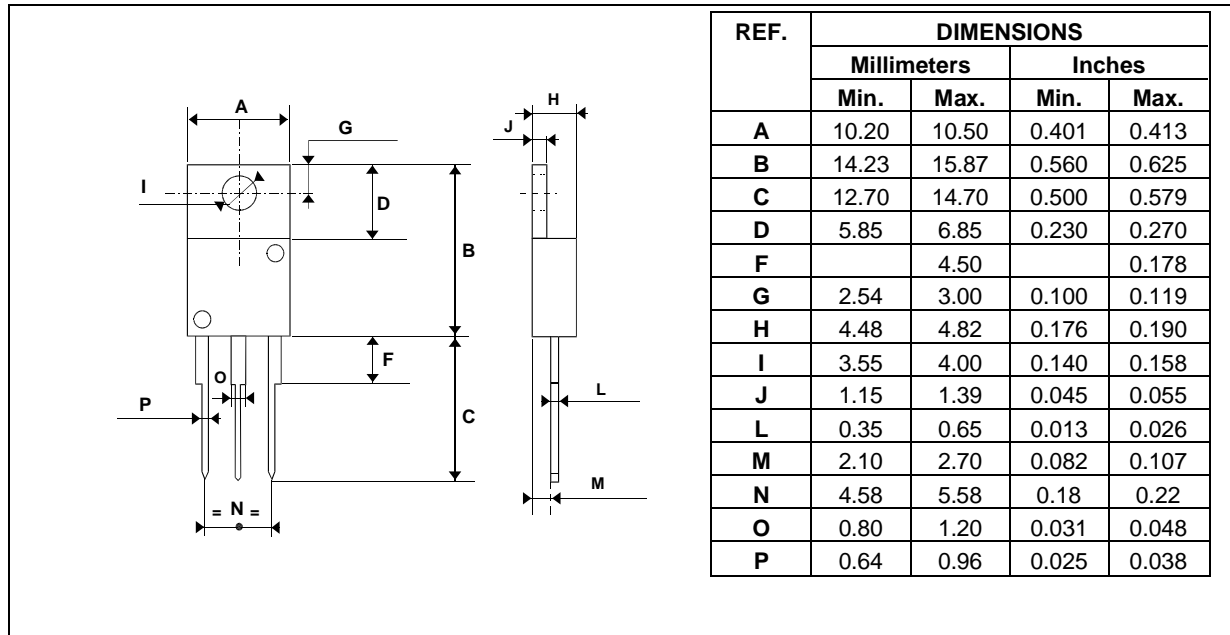


**Fig.9 :** Safe operating area.



**PACKAGE MECHANICAL DATA**

TO220AB Plastic



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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