

SNUBBERLESS TRIAC

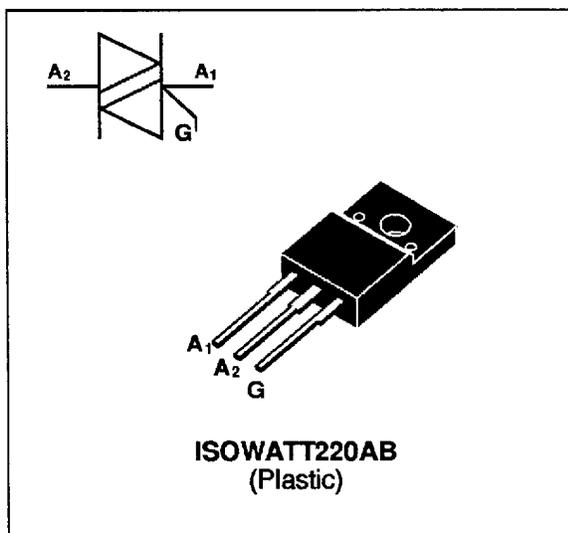
FEATURES

- $I_{TRMS} = 12\text{ A}$
- $V_{DRM} = V_{RRM} = 400\text{V to } 700\text{V}$
- EXCELLENT SWITCHING PERFORMANCES
- INSULATING VOLTAGE = $1500V_{(RMS)}$
- U.L. RECOGNIZED : E81734

DESCRIPTION

The T1220/1230W triacs use high performance glass passivated chip technology, housed in a fully molded plastic ISOWATT220AB package.

The SNUBBERLESS™ concept offers suppression of R-C network, and is suitable for applications such as phase control and static switch on inductive and resistive loads.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	$T_c = 85\text{ °C}$	12	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25 °C)	$t_p = 16.7\text{ ms}$ (1 cycle, 60 Hz)	132	A
		$t_p = 10\text{ ms}$ (1/2 cycle, 50 Hz)	155	
I^2t	I^2t Value (half-cycle, 50 Hz)	$t_p = 10\text{ ms}$	120	A^2s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 500\text{ mA}$ $dI_G/dt = 1\text{ A}/\mu s$.	Repetitive $F = 50\text{ Hz}$	20	$A/\mu s$
		Non Repetitive	100	
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	$^{\circ}C$
T_l	Maximum lead temperature for soldering during 10s at 4.5 mm from case		260	$^{\circ}C$

Symbol	Parameter	T1220 / 1230-xxxW			Unit
		400	600	700	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	400	600	700	V

T1220W / 1230W

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient	50	°C/W
Rth(j-c)	Junction to case for A.C (360° conduction angle)	2.8	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)} = 1 \text{ W}$ $P_{GM} = 10 \text{ W}$ ($t_p = 20 \mu\text{s}$) $I_{GM} = 4 \text{ A}$ ($t_p = 20 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Quadrant		T1220	T1230	Unit
I_{GT}	$V_D = 12 \text{ V (DC)}$ $R_L = 33 \Omega$ $T_j = 25^\circ\text{C}$	I-II-III	MAX	20	30	mA
V_{GT}	$V_D = 12 \text{ V (DC)}$ $R_L = 33 \Omega$ $T_j = 25^\circ\text{C}$	I-II-III	MAX	1.5		V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	I-II-III	MIN	0.2		V
t_{gt}	$V_D = V_{DRM}$ $I_G = 500 \text{ mA}$ $di_G/dt = 3 \text{ A}/\mu\text{s}$ $T_j = 25^\circ\text{C}$	I-II-III	TYP	2		μs
I_H^*	$I_T = 100 \text{ mA}$ Gate open $T_j = 25^\circ\text{C}$		MAX	35	50	
V_{TM}^*	$I_{TM} = 17 \text{ A}$ $t_p = 380 \mu\text{s}$ $T_j = 25^\circ\text{C}$		MAX	1.5		V
I_{DRM} I_{RRM}	VDRM rated VRRM rated $T_j = 25^\circ\text{C}$		MAX	10		μA
			MAX	2		mA
dV/dt^*	Linear slope up to $V_D = 67\% V_{DRM}$ Gate open $T_j = 125^\circ\text{C}$		MIN	200	300	$\text{V}/\mu\text{s}$
$(dV/dt)c^*$	$(di/dt)c = 6.5 \text{ A/ms}$ (see note) $T_j = 125^\circ\text{C}$		MIN	10	20	$\text{V}/\mu\text{s}$

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

Note : In usual applications where $(di/dt)c$ is below 6.5 A/ms, the $(dV/dt)c$ is always lower than 10V/ μs , and, therefore, it is unnecessary to use a snubber R-C network across T1220W / T1230W triacs.

Fig.1 : Maximum power dissipation versus RMS on-state current.

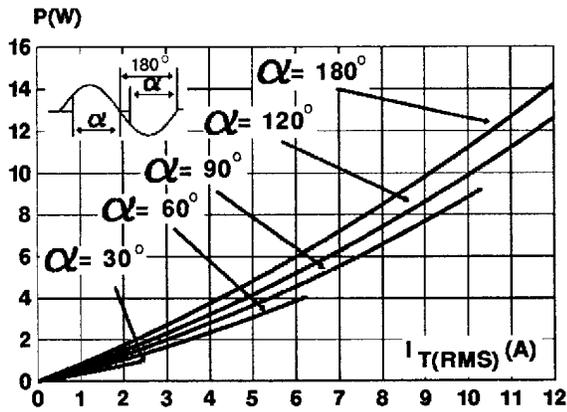


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact.

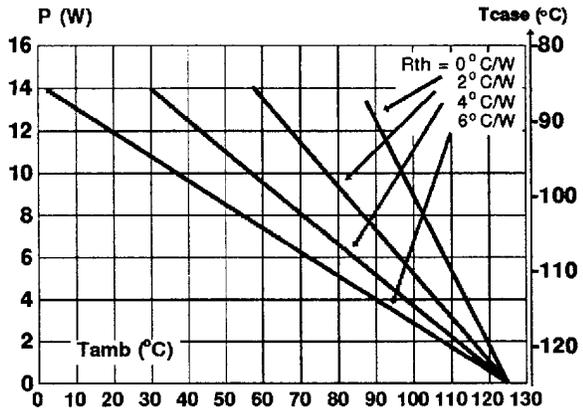


Fig.3 : RMS on-state current versus case temperature.

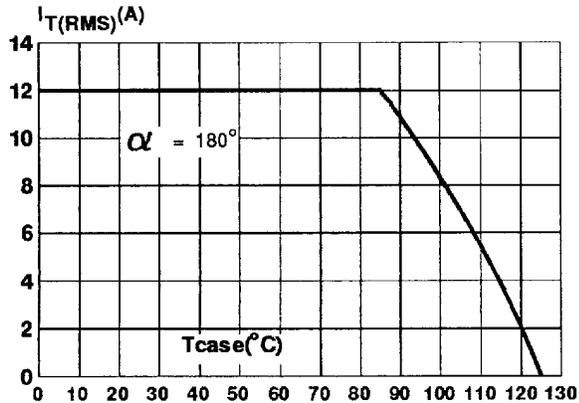


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

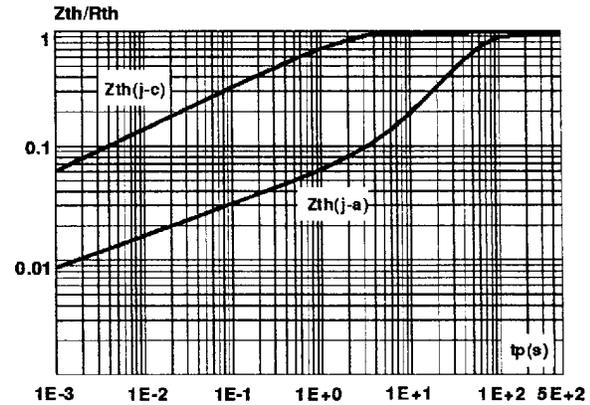


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

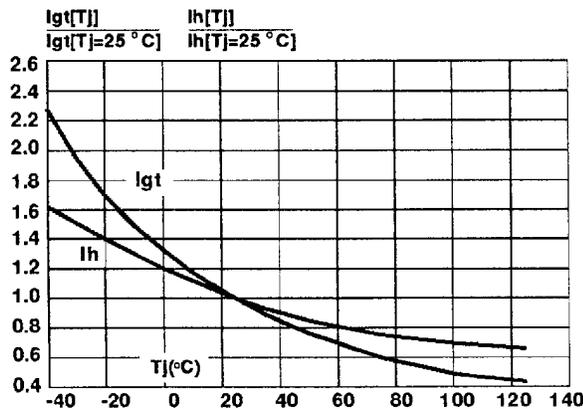
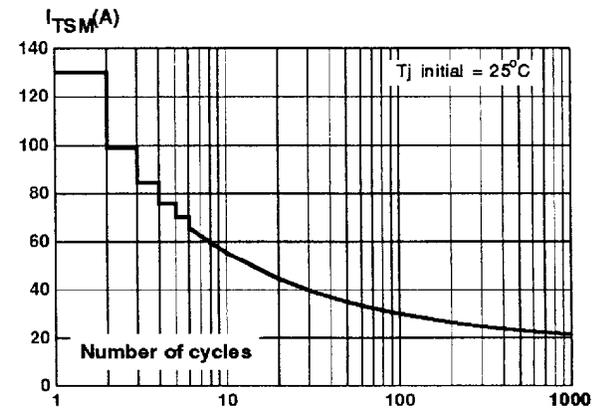


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



T1220W / 1230W

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

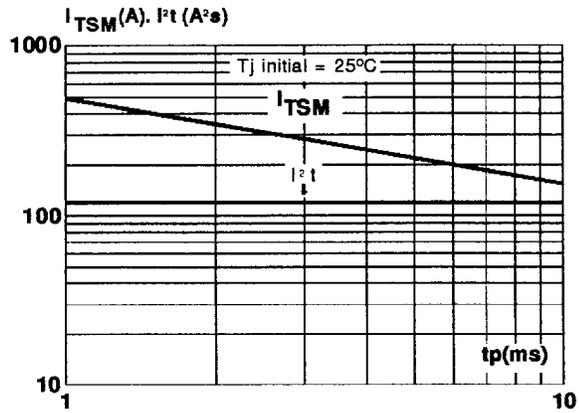
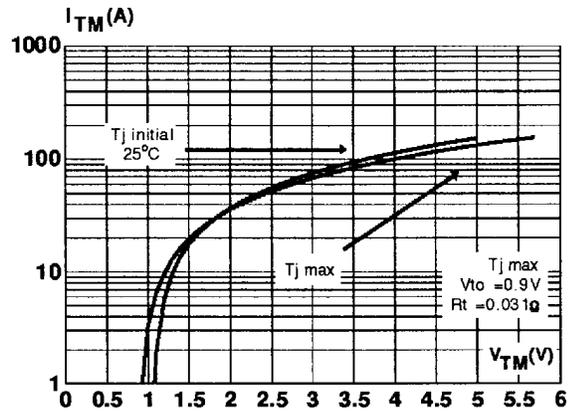
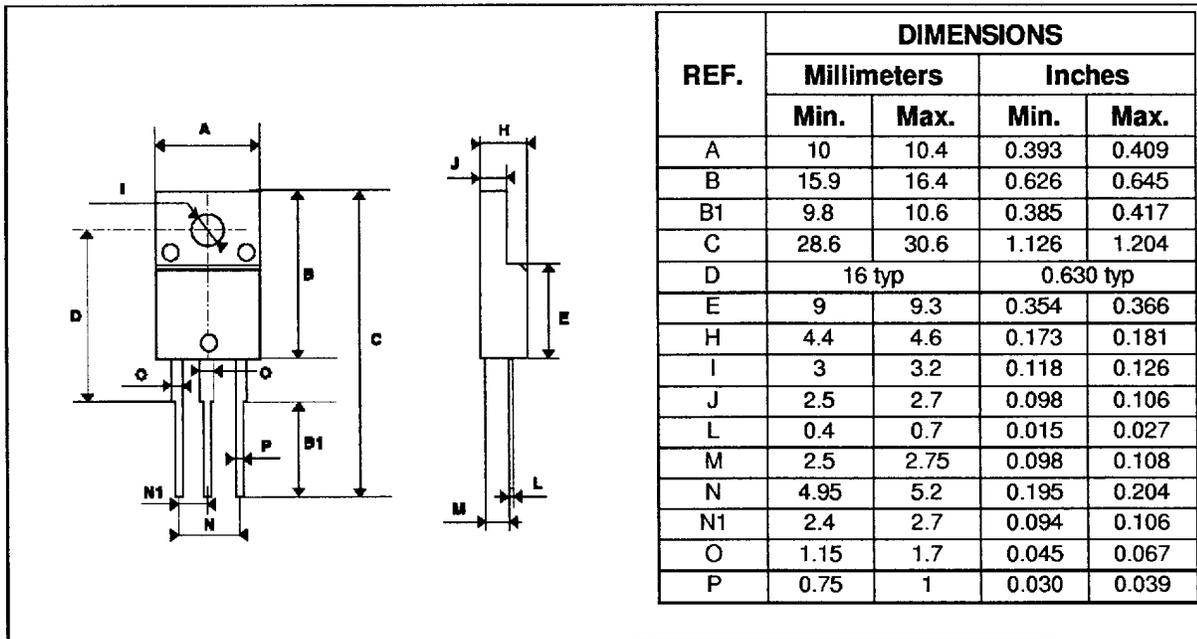


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA
ISOWATT220AB


Cooling method : C

Marking : Type number

Weight : 2.1g

Recommended torque value : 0.55 m.N.

Maximum torque value : 0.70 m.N.

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