

SNUBBERLESS TRIAC

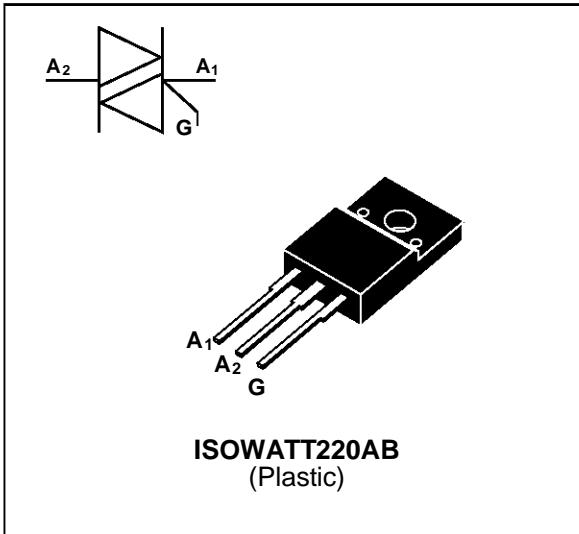
FEATURES

- $I_{TRMS} = 12 \text{ A}$
- $V_{DRM} = V_{RRM} = 400\text{V to } 700\text{V}$
- EXCELLENT SWITCHING PERFORMANCES
- INSULATING VOLTAGE = $1500\text{V}_{(\text{RMS})}$
- 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
$I_{T(\text{RMS})}$	RMS on-state current (360° conduction angle)	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
		$t_p = 10 \text{ ms}$ (1/2 cycle, 50 Hz)	155
I^2t	I^2t Value (half-cycle, 50 Hz)	120	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : $I_G = 500 \text{ mA}$ $dI_G/dt = 1 \text{ A}/\mu\text{s}$.	Repetitive $F = 50 \text{ Hz}$	$\text{A}/\mu\text{s}$
		Non Repetitive	100
T_{stg} T_j	Storage temperature range Operating junction temperature range	- 40 to + 150 - 40 to + 125	$^\circ\text{C}$
T_I	Maximum lead temperature for soldering during 10s at 4.5 mm from case	260	$^\circ\text{C}$

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

T1220W / 1230W

THERMAL RESISTANCES

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

GATE CHARACTERISTICS (maximum values)

P_{G (AV)}= 1 W P_{GM} = 10 W (tp = 20 µs) I_{GM} = 4 A (tp = 20 µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Quadrant		T1220	T1230	Unit	
I _{GT}	V _D =12V (DC) R _L =33Ω	T _j = 25°C	I-II-III	MAX	20	30	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		µs
I _H *	I _T = 100mA Gate open	T _j = 25°C		MAX	35	50	
V _{TM} *	I _{TM} = 17A tp= 380µs	T _j = 25°C		MAX	1.5		V
I _{DRM} I _{RRM}	V _{DRM} rated V _{RRM} rated	T _j = 25°C		MAX	10		µA
		T _j = 125°C		MAX	2		mA
dV/dt *	Linear slope up to V _D =67%V _{DRM} Gate open	T _j = 125°C		MIN	200	300	V/µs
(dV/dt)c *	(dI/dt)c=6.5 A/ms (see note)	T _j = 125°C		MIN	10	20	V/µs

* 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 accross T1220W / T1230W triacs.

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

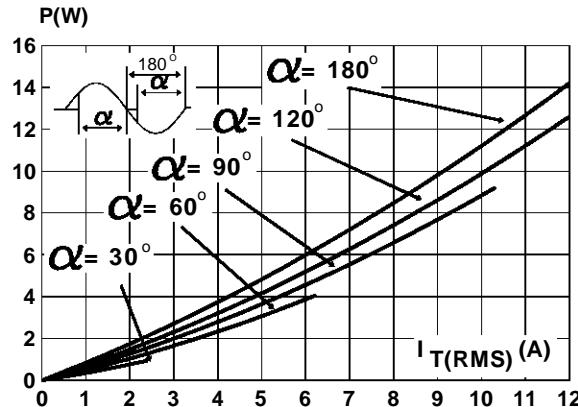


Fig.3 : RMS on-state current versus case temperature.

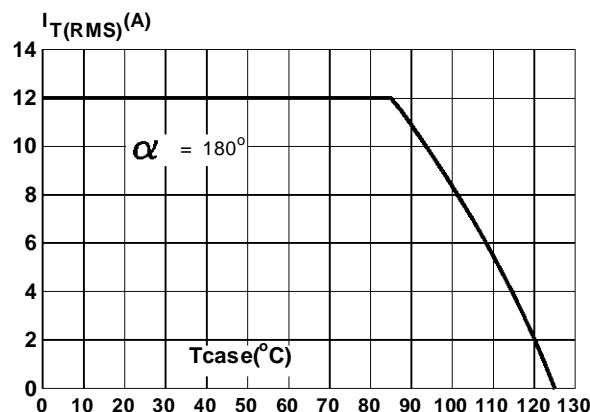


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

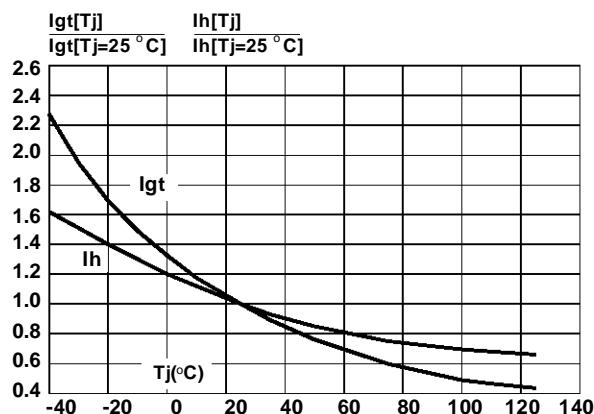


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact.

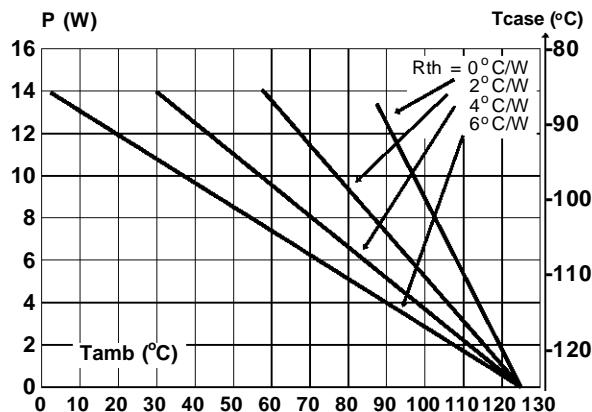


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

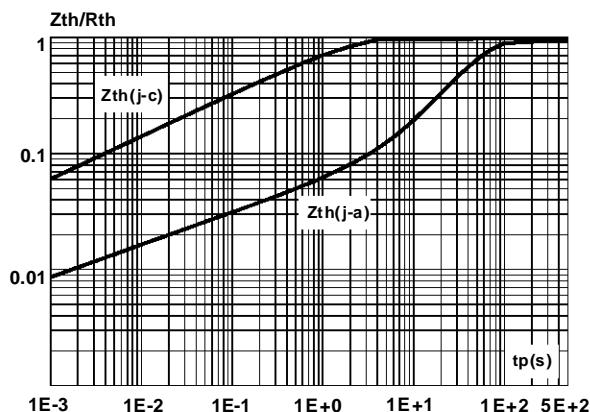
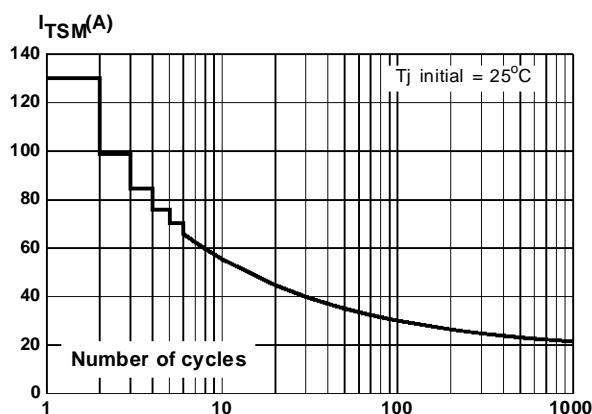


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



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 .

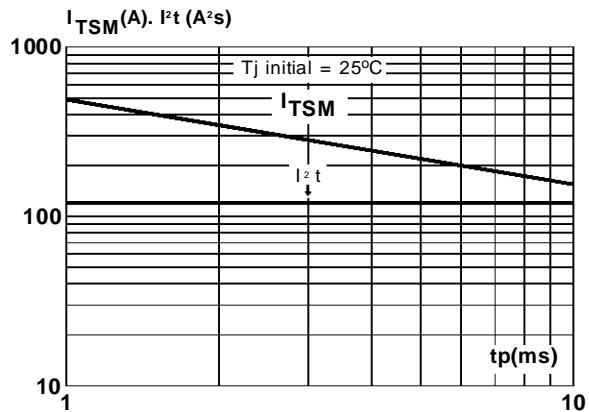
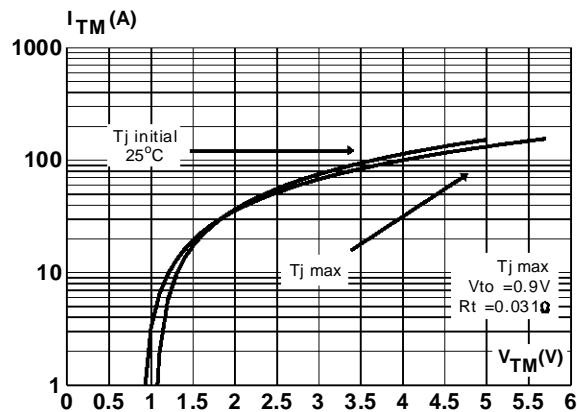


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA
ISOWATT220AB

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10	10.4	0.393	0.409
B	15.9	16.4	0.626	0.645
B1	9.8	10.6	0.385	0.417
C	28.6	30.6	1.126	1.204
D	16 typ		0.630 typ	
E	9	9.3	0.354	0.366
H	4.4	4.6	0.173	0.181
I	3	3.2	0.118	0.126
J	2.5	2.7	0.098	0.106
L	0.4	0.7	0.015	0.027
M	2.5	2.75	0.098	0.108
N	4.95	5.2	0.195	0.204
N1	2.4	2.7	0.094	0.106
O	1.15	1.7	0.045	0.067
P	0.75	1	0.030	0.039

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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