

## SNUBBERLESS TRIAC

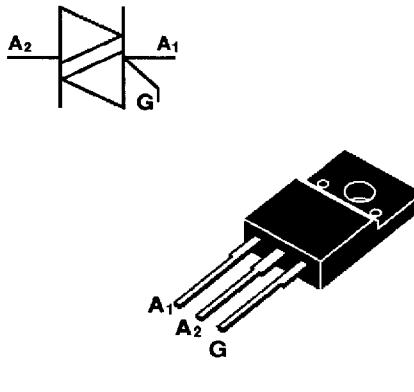
### FEATURES

- $I_{TRMS} = 6A$
- $V_{DRM} = V_{RRM} = 400V$  to  $700V$
- EXCELLENT SWITCHING PERFORMANCES
- INSULATING VOLTAGE =  $1500V_{(RMS)}$
- U.L. RECOGNIZED : E81734

### DESCRIPTION

The T620/630W 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.



**ISOWATT220AB**  
(Plastic)

### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
$I_{TRMS}$	RMS on-state current (360° conduction angle)	100°C	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C )	$tp = 16.7 \text{ ms}$ (1 cycle, 60 Hz)	66 A
		$tp = 10 \text{ ms}$ (1/2 cycle, 50 Hz)	75
$I^2t$	$I^2t$ Value (half-cycle, 50 Hz)	10 ms	$\text{A}^2\text{s}$
$dI/dt$	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	°C
$T_I$	Maximum lead temperature for soldering during 10s at 4.5 mm from case	260	°C

Symbol	Parameter	T620 / 630-xxxW			Unit
		400	600	700	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$	400	600	700	V

# T620W / 630W

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th(j-a)</sub>	Junction to ambient	50	°C/W
R <sub>th(j-c)</sub>	Junction to case for A.C (360° conduction angle)	3.4	°C/W

## GATE CHARACTERISTICS (maximum values)

P<sub>G (AV)</sub> = 1 W P<sub>GM</sub> = 10 W (tp = 20 μs) I<sub>GM</sub> = 4 A (tp = 20 μs)

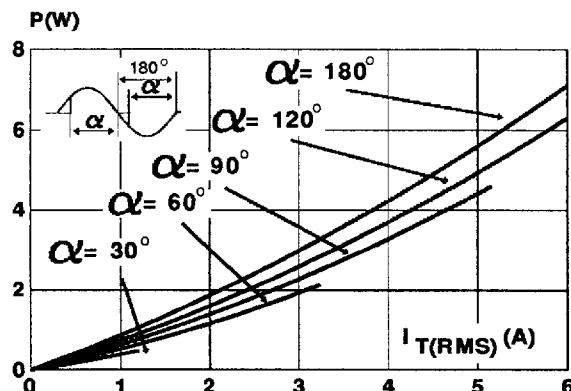
## ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Quadrant		T620	T630	Unit	
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> = 25°C	I-II-III	MAX	20	30	mA
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> = 25°C	I-II-III	MAX	1.5		V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	T <sub>j</sub> = 125°C	I-II-III	MIN	0.2		V
t <sub>gt</sub>	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 500mA dI <sub>G</sub> /dt= 3A/μs	T <sub>j</sub> = 25°C	I-II-III	TYP	2		μs
I <sub>H</sub> *	I <sub>T</sub> = 100mA Gate open	T <sub>j</sub> = 25°C		MAX	35	50	
V <sub>TM</sub> *	I <sub>TM</sub> = 8.5A tp= 380μs	T <sub>j</sub> = 25°C		MAX	1.5		V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> rated V <sub>RRM</sub> rated	T <sub>j</sub> = 25°C		MAX	10		μA
		T <sub>j</sub> = 125°C		MAX	2		mA
dV/dt *	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> Gate open	T <sub>j</sub> = 125°C		MIN	200	300	V/μs
(dV/dt)c *	(dI/dt)c = 3.3 A/ms (see note)	T <sub>j</sub> = 125°C		MIN	10	20	V/μs

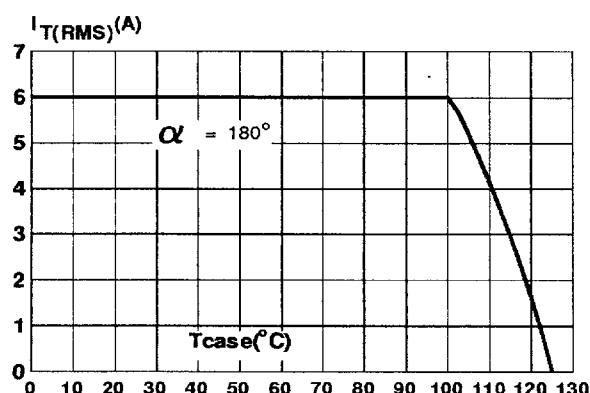
\* For either polarity of electrode A2 voltage with reference to electrode A1.

Note : In usual applications where (dI/dt)c is below 3.3 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 T620W / T630W triacs.

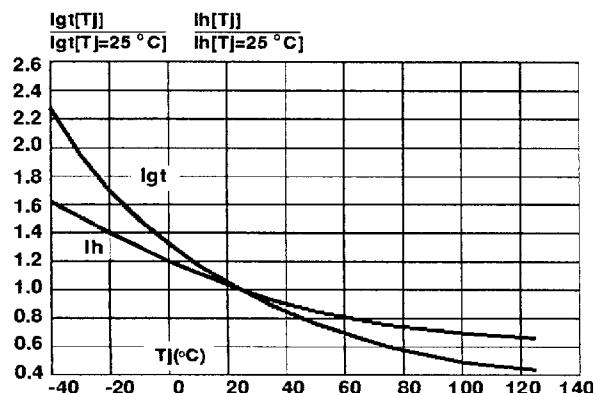
**Fig.1 :** Maximum power dissipation versus RMS on-state current.



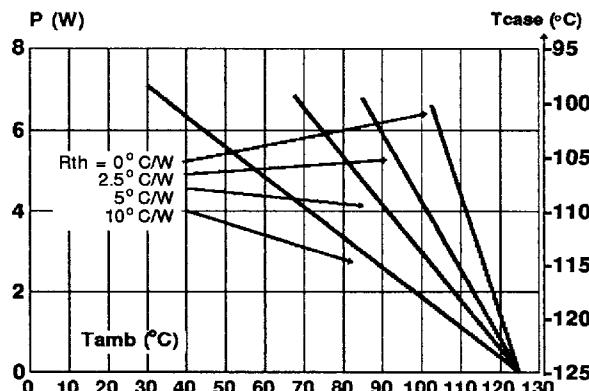
**Fig.3 :** RMS on-state current versus case temperature.



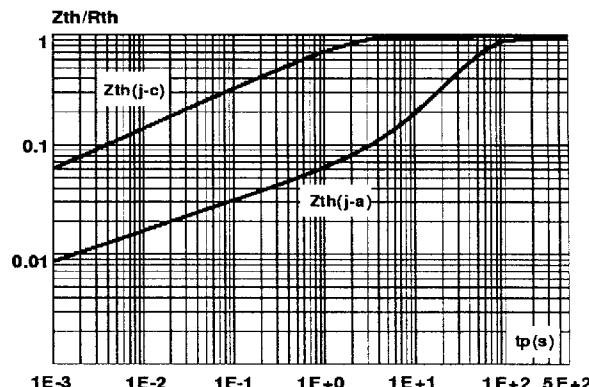
**Fig.5 :** Relative variation of gate trigger current and holding current versus junction temperature.



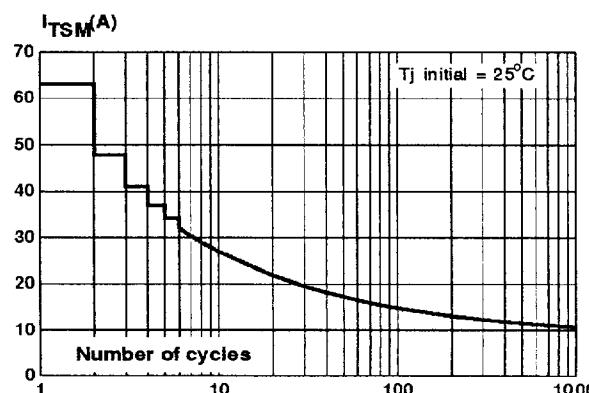
**Fig.2 :** Correlation between maximum power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact.



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

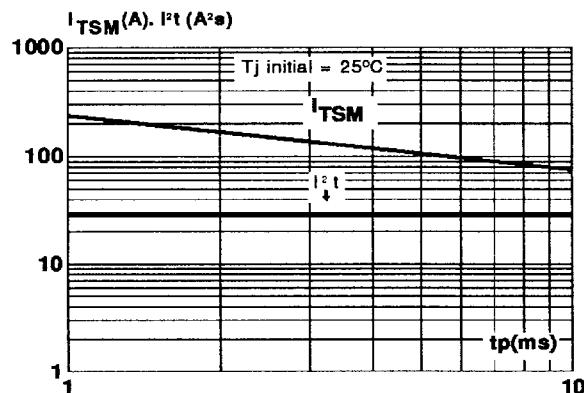


**Fig.6 :** Non repetitive surge peak on-state current versus number of cycles.

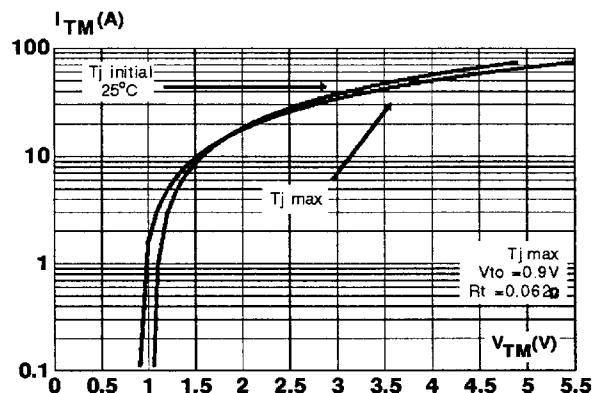


## T620W / 630W

**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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