SGS-THOMSON MICROELECTRONICS

T820W
T830W

SNUBBERLESS TRIAC

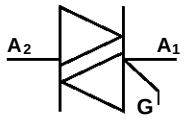
FEATURES

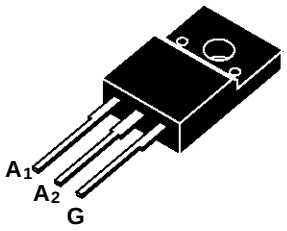
- I_{TRMS} = 8 A
- $V_{DRM} = V_{RRM}$ = 400V to 700V
- EXCELLENT SWITCHING PERFORMANCES
- INSULATING VOLTAGE = 1500$V_{(RMS)}$
- U.L. RECOGNIZED : E81734

DESCRIPTION

The T820/830W 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
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc= 95°C	8	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 16.7 ms (1 cycle, 60 Hz)	88	A
		tp = 10 ms (1/2 cycle, 50 Hz)	100	
I^2t	I^2t Value (half-cycle, 50 Hz)	tp = 10 ms	50	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500 mA dI_G/dt = 1 A/µs.	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	°C
Tl	Maximum lead temperature for soldering during 10s at 4.5 mm from case		260	°C

Symbol	Parameter	T820 / 830-xxxW			Unit
		400	600	700	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C	400	600	700	V

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)	3.1	°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		T820	T830	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj= 25°C	I-II-III	MAX	20	30	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= 125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt= 3Aµs	Tj= 25°C	I-II-III	TYP	2		µs
I_H *	I_T= 100mA Gate open	Tj= 25°C		MAX	35	50	
V_{TM} *	I_{TM}= 11A tp= 380µs	Tj= 25°C		MAX	1.5		V
I_{DRM} I_{RRM}	VDRM rated V_{RRM} rated	Tj= 25°C		MAX	10		µA
		Tj= 125°C		MAX	2		mA
dV/dt *	Linear slope up to V_D=67%V_{DRM} Gate open	Tj= 125°C		MIN	200	300	V/µs
(dV/dt)c *	(dI/dt)c = 4.5 A/ms (see note)	Tj= 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 4.5 A/ms, the (dV/dt)c is always lower than 10V/µs, and, therefore, it is **unnecessary** to use a snuber R-C network accross T820W / T830W triacs.

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

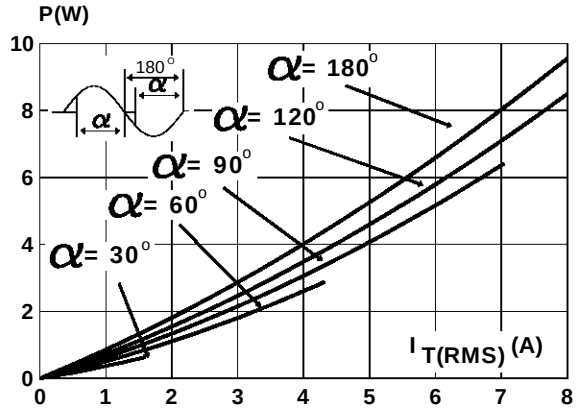


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact.

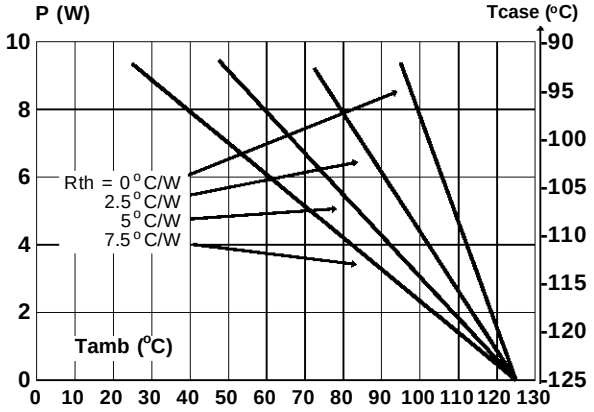


Fig.3 : RMS on-state current versus case temperature.

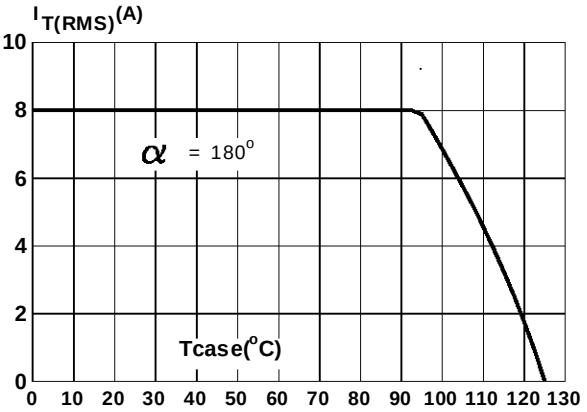


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

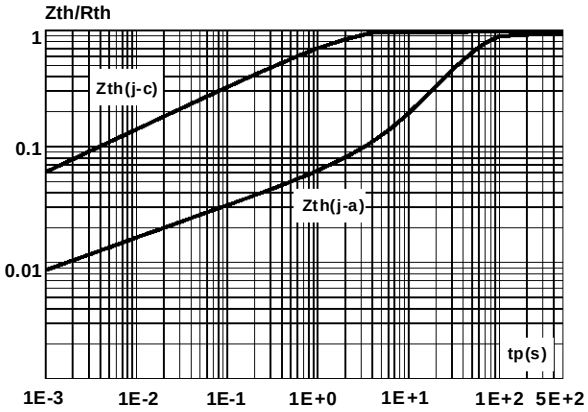


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

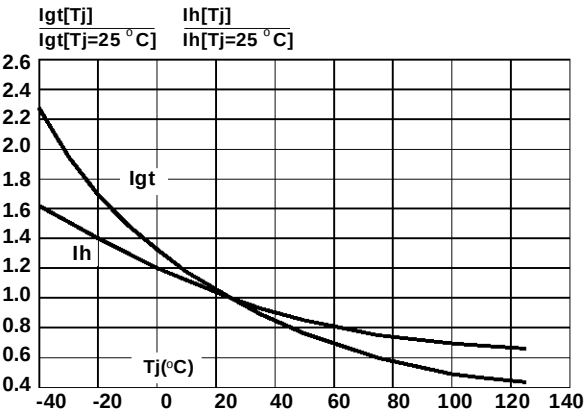


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

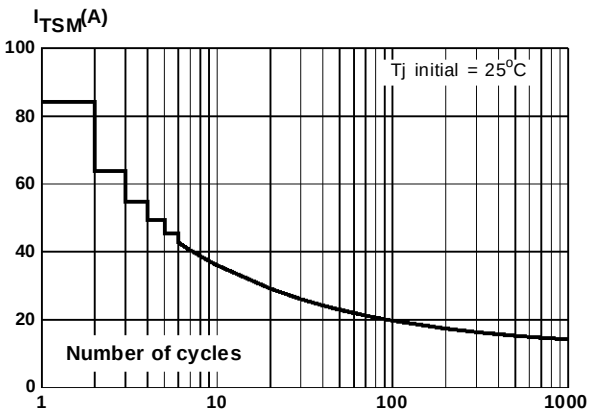


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

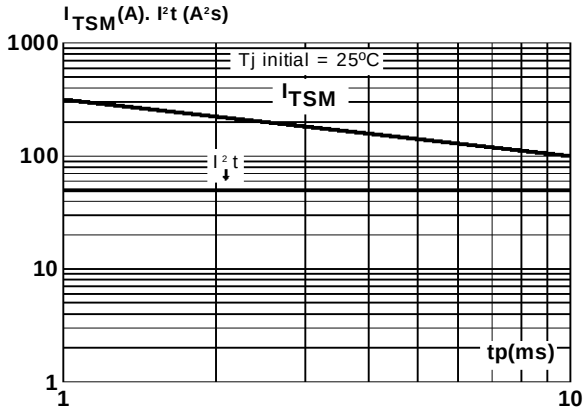
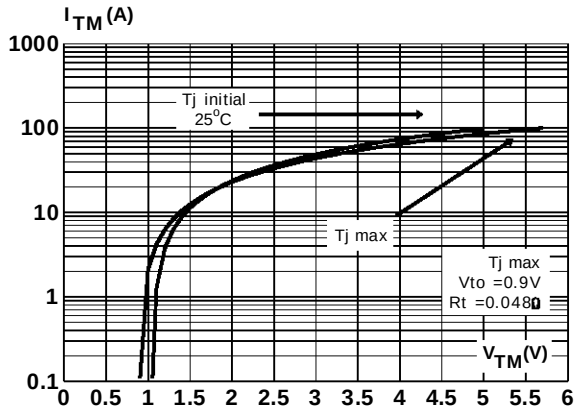
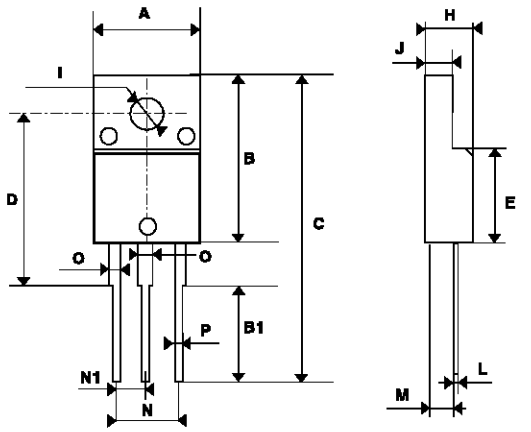


Fig.8 : On-state characteristics (maximum values).



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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