



T820W
T830W

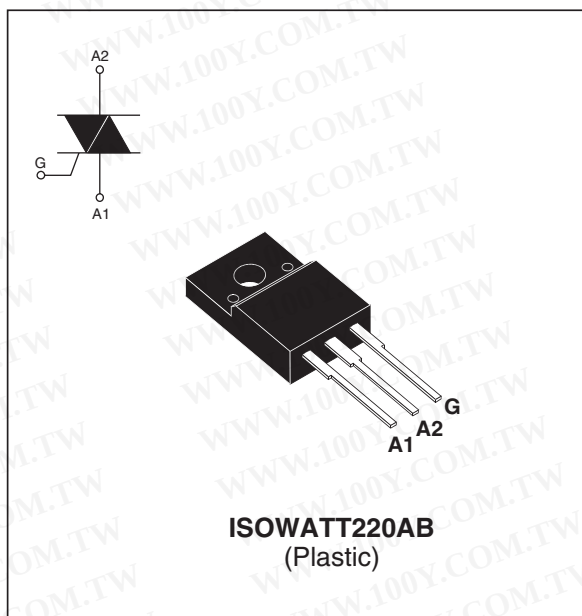
8A SNUBBERLESS™ TRIAC

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	8	A
V_{DRM}/V_{RRM}	600 and 800	V
I_{GT}	20 to 30	mA

DESCRIPTION

Based on ST' Snubberless technology providing high commutation performances, the T820-600W/800W are specially recommended for use on inductive loads, thanks to their high commutation performances, such as washing-machines drum motor controllers. They comply with UL standards (ref. E81734).



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (Full sine wave)		$T_c = 100^\circ\text{C}$	8	A
I_{TSM}	Non repetitive surge peak on-state current (Full cycle, T_j initial = 25°C)	F = 50Hz	t = 20ms	100	A
		F = 60Hz	t = 16.7ms	105	
I^2t	I^2t Value for fusing	tp = 10 ms		55	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, tr ≤ 100ns	F = 120 Hz	$T_j = 125^\circ\text{C}$	50	A/μs
V_{DSM}/V_{RSM}	Non repetitive surge peak off-state voltage	tp = 10ms	$T_j = 25^\circ\text{C}$	$V_{DRM}/V_{RRM} + 100$	V
I_{GM}	Peak gate current	tp = 20μs	$T_j = 125^\circ\text{C}$	4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125^\circ\text{C}$	1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	$^\circ\text{C}$

T820W / T830W

ELECTRICAL CHARACTERISTICS (Tj = 25°C, unless otherwise specified)

Symbol	Test Conditions	Quadrant		T820	T830	Unit
I _{GT} ⁽¹⁾	V _D =12V R _L =33Ω	I-II-III	MAX.	20	30	mA
V _{GT}		I-II-III	MAX.	1.3		V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ Tj = 125°C	I-II-III	MIN.	0.2		V
I _H ⁽²⁾	I _T = 250mA		MAX.	35	50	mA
I _L	I _G = 1.2I _{GT}	I - III	MAX.	50	70	mA
		II	MAX.	60	80	mA
dV/dt ⁽²⁾	V _D =67% V _{DRM} Gate open Tj = 125°C		MIN.	300	500	V/μs
(dI/dt) _c ⁽²⁾	Without snubber Tj = 125°C		MIN.	4.5	5.5	A/ms

STATIC CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
V _{TM} ⁽²⁾	I _{TM} = 11A tp = 380μs	Tj = 25°C	MAX.	1.4	V
V _{TO} ⁽²⁾	Threshold voltage	Tj = 125°C	MAX.	0.85	V
R _d ⁽²⁾	Dynamic resistance	Tj = 125°C	MAX.	40	mΩ
I _{DRM} I _{RRM}	V _{DRM} = V _{RRM}	Tj = 25°C Tj = 125°C	MAX	5 1	μA mA

Note 1: Minimum IGT is guaranteed at 5% of IGT max.

Note 2: For both polarities of A2 referenced to A1.

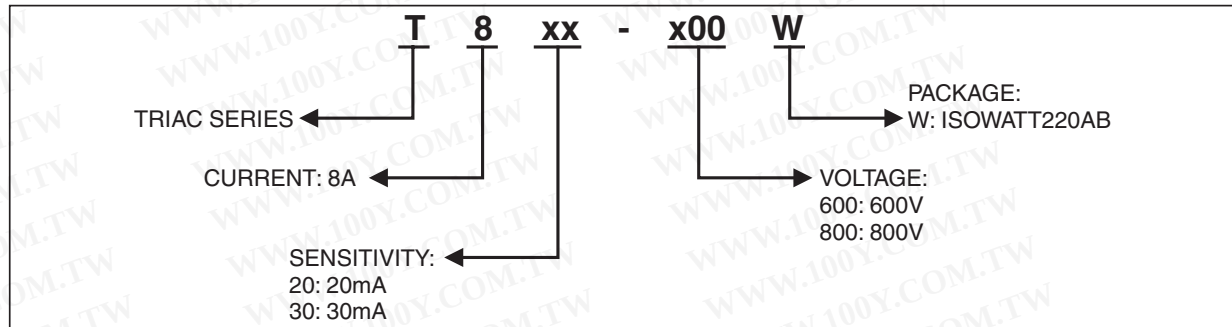
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th(j-a)}	Junction to ambient	60	°C/W
R _{th(j-c)}	Junction to case (AC)	3.1	°C/W

PRODUCT SELECTOR

Part Number	Voltage	Sensitivity	Type	Package
T820-600W	600V	20 mA	Snubberless	ISOWATT220AB
T820-800W	800V	20 mA	Snubberless	ISOWATT220AB
T830-600W	600V	30 mA	Snubberless	ISOWATT220AB
T830-800W	800V	30 mA	Snubberless	ISOWATT220AB

ORDERING INFORMATION



OTHER INFORMATION

Part Number	Marking	Weight	Base quantity	Packing mode
T820-600W	T820600W	2.3 g	50	Tube
T820-800W	T820800W	2.3 g	50	Tube
T830-600W	T830600W	2.3 g	50	Tube
T830-800W	T830800W	2.3 g	50	Tube

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

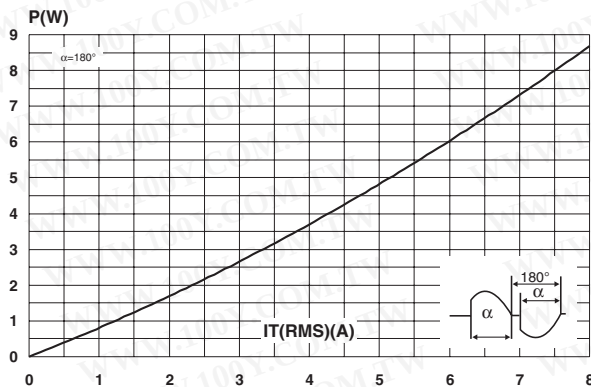


Fig. 3: Relative variation of thermal impedance versus pulse duration.

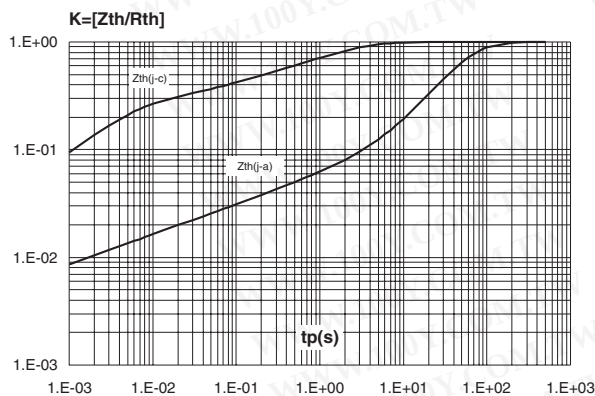


Fig. 2: RMS on-state current versus case temperature.

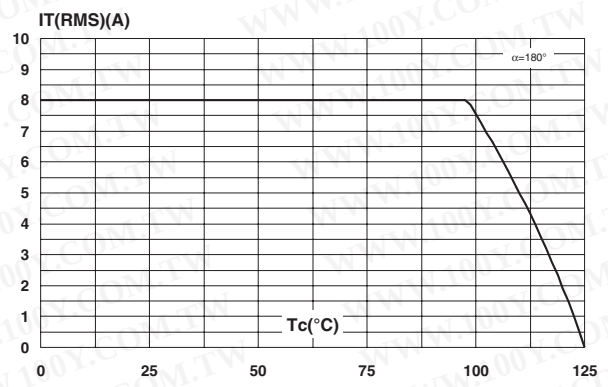
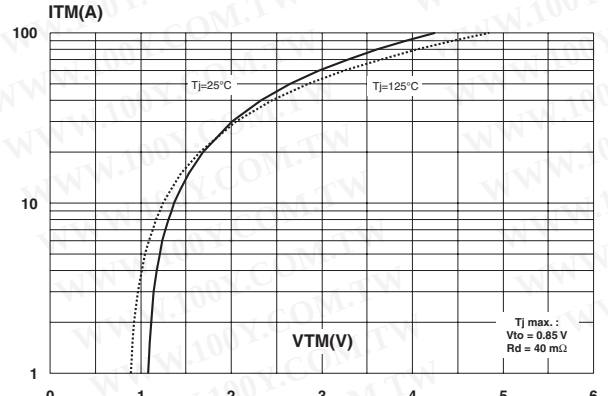


Fig. 4: On-state characteristics (maximum values).



T820W / T830W

Fig. 5: Surge peak on-state current versus number of cycles.

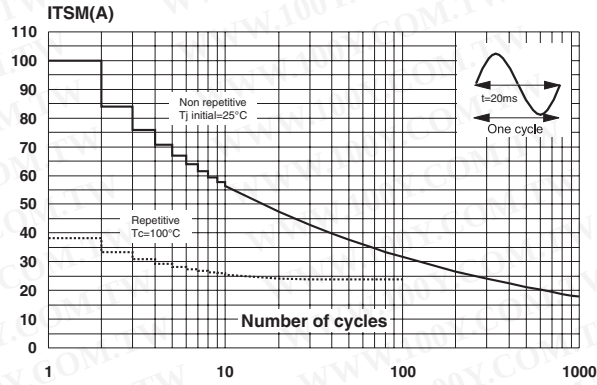


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

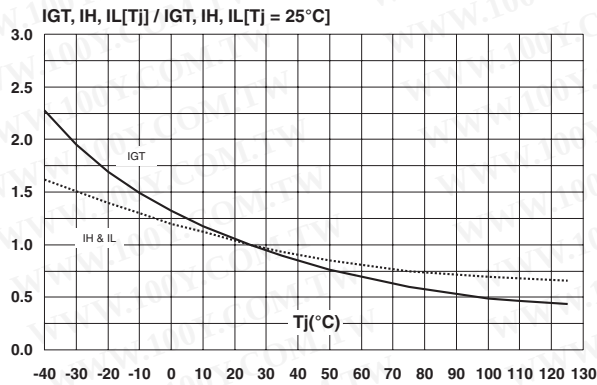


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

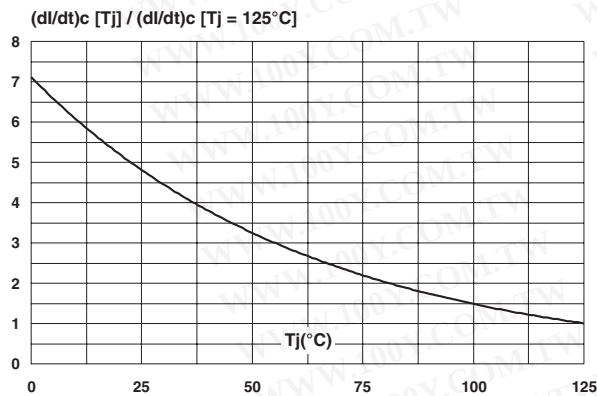


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width $tp < 10ms$, and corresponding value of I^2t .

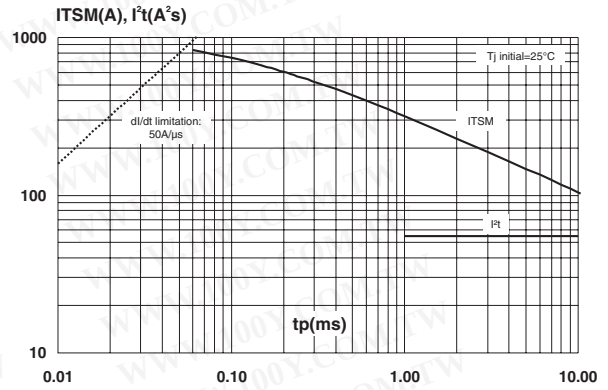
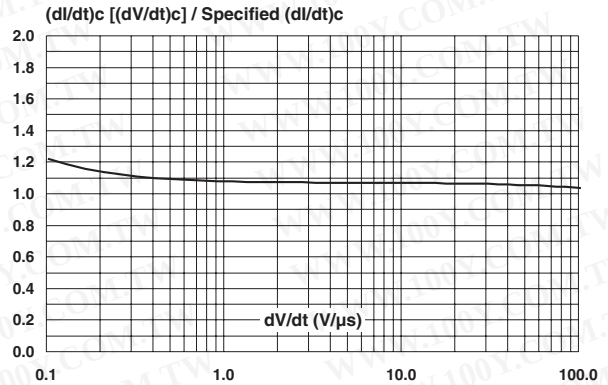
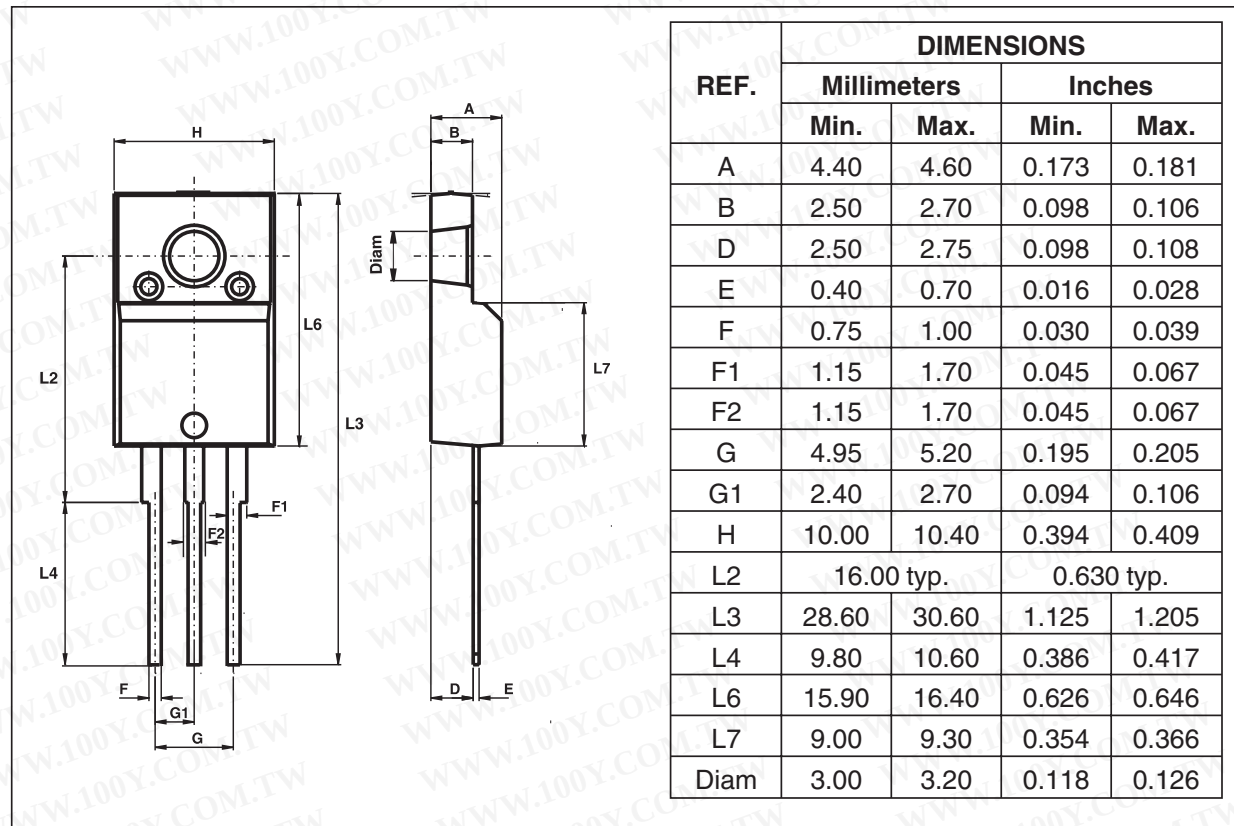


Fig. 8: Relative variation of critical rate of decrease of main current versus reapplied dV/dt (typical values).



PACKAGE MECHANICAL DATA
 ISOWATT220AB



- Cooling method : C
- Recommended torque value : 0.55 m.N.
- Maximum torque value : 0.70 m.N.

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