

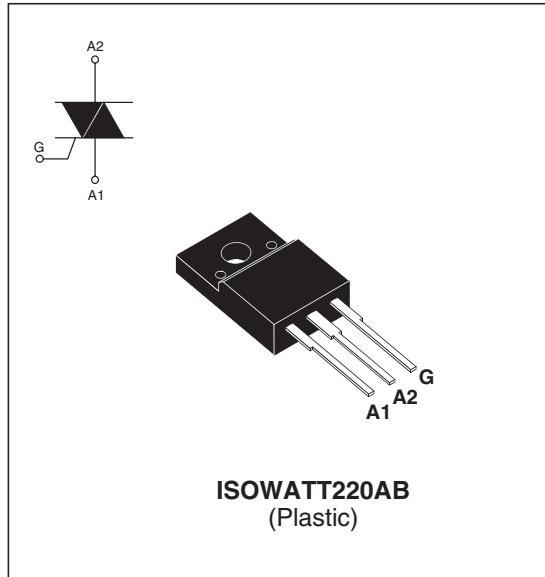
## 8A SNUBBERLESS™ TRIAC

### 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 )                 | $F = 50\text{Hz}$     | $t = 20\text{ms}$         | 100                            | A                      |
|                    |  | $F = 60\text{Hz}$     | $t = 16.7\text{ms}$       | 105                            |                        |
| $I^2t$             | $I^2t$ Value for fusing  |                       | $t_p = 10\text{ ms}$      | 55                             | $\text{A}^2\text{s}$   |
| $dl/dt$            | Critical rate of rise of on-state current<br>$I_G = 2 \times I_{GT}$ , $t_r \leq 100\text{ns}$ | $F = 120\text{ Hz}$   | $T_j = 125^\circ\text{C}$ | 50                             | $\text{A}/\mu\text{s}$ |
| $V_{DSM}/V_{RSM}$  | Non repetitive surge peak off-state voltage  | $t_p = 10\text{ms}$   | $T_j = 25^\circ\text{C}$  | $V_{DRM}/V_{RRM} + 100$        | V                      |
| $I_{GM}$           | Peak gate current  | $t_p = 20\mu\text{s}$ | $T_j = 125^\circ\text{C}$ | 4                              | A                      |
| $P_{G(AV)}$        | Average gate power dissipation   |                       | $T_j = 125^\circ\text{C}$ | 1                              | W                      |
| $T_{stg}$<br>$T_j$ | Storage junction temperature range<br>Operating junction temperature range                     |                       |                           | - 40 to + 150<br>- 40 to + 125 | °C                     |

## T820W / T830W

ELECTRICAL CHARACTERISTICS ( $T_j = 25^\circ\text{C}$ , unless otherwise specified)

| Symbol           | Test Conditions   | Quadrant |      | T820 | T830 | Unit                   |
|------------------|---|----------|------|------|------|------------------------|
| $I_{GT}^{(1)}$   | $V_D=12\text{V}$ $R_L=33\Omega$                                 | I-II-III | MAX. | 20   | 30   | mA                     |
| $V_{GT}$         |   | I-II-III | MAX. |      | 1.3  | V                      |
| $V_{GD}$         | $V_D=V_{DRM}$ $R_L=3.3\text{k}\Omega$ $T_j = 125^\circ\text{C}$ | I-II-III | MIN. |      | 0.2  | V                      |
| $I_H^{(2)}$      | $I_T = 250\text{mA}$  |          | 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 $T_j = 125^\circ\text{C}$        |          | MIN. | 300  | 500  | $\text{V}/\mu\text{s}$ |
| $(dI/dt)c^{(2)}$ | Without snubber $T_j = 125^\circ\text{C}$                       |          | MIN. | 4.5  | 5.5  | $\text{A}/\text{ms}$   |

## STATIC CHARACTERISTICS

| Symbol                 | Test Conditions                              |   | Value | Unit   |                     |
|------------------------|--|---|-------|--------|---------------------|
| $V_{TM}^{(2)}$         | $I_{TM} = 11\text{A}$ $t_p = 380\mu\text{s}$ | $T_j = 25^\circ\text{C}$                              | MAX.  | 1.4    | V                   |
| $V_{TO}^{(2)}$         | Threshold voltage                            | $T_j = 125^\circ\text{C}$                             | MAX.  | 0.85   | V                   |
| $R_d^{(2)}$            | Dynamic resistance                           | $T_j = 125^\circ\text{C}$                             | MAX.  | 40     | $\text{m}\Omega$    |
| $I_{DRM}$<br>$I_{RRM}$ | $V_{DRM} = V_{RRM}$                          | $T_j = 25^\circ\text{C}$<br>$T_j = 125^\circ\text{C}$ | MAX   | 5<br>1 | $\mu\text{A}$<br>mA |

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

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

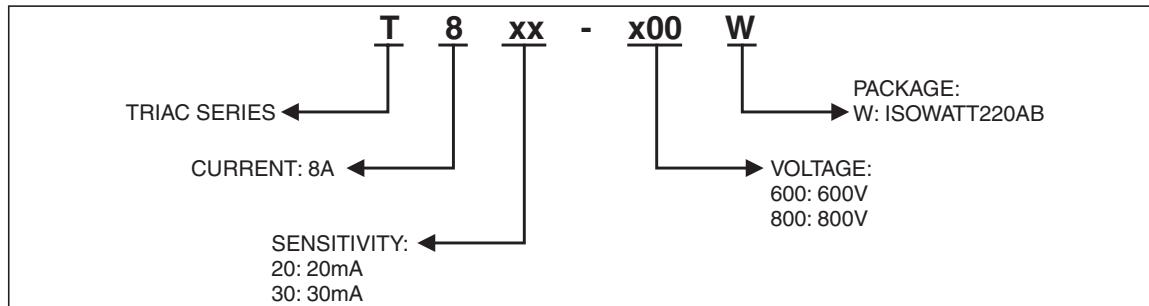
## THERMAL RESISTANCES

| Symbol        | Parameter             | Value | Unit                      |
|---------------|-----------------------|-------|---------------------------|
| $R_{th(j-a)}$ | Junction to ambient   | 60    | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-c)}$ | Junction to case (AC) | 3.1   | $^\circ\text{C}/\text{W}$ |

## 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 |

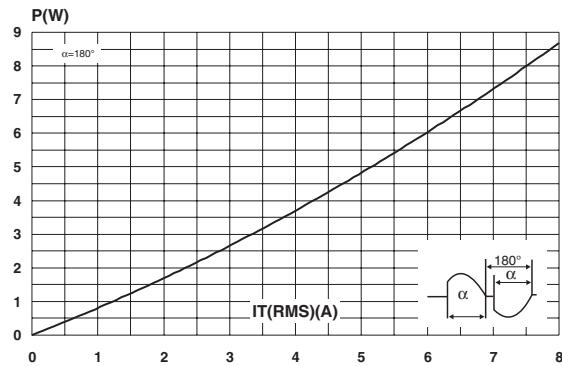
## ORDERING INFORMATION



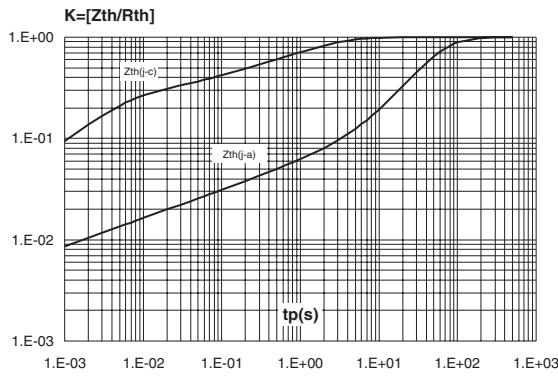
## OTHER INFORMATION

| 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         |

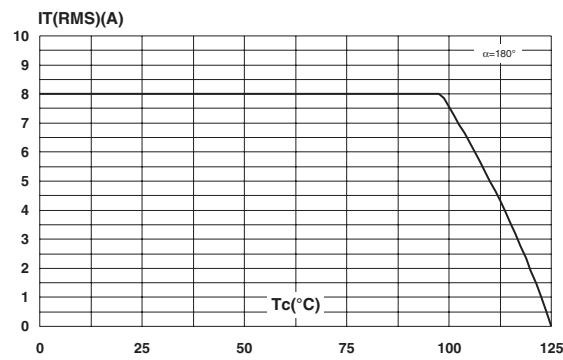
**Fig. 1:** Maximum power dissipation versus RMS on-state current.



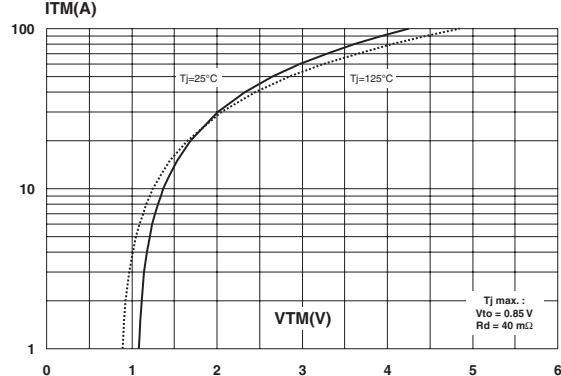
**Fig. 3:** Relative variation of thermal impedance versus pulse duration.



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

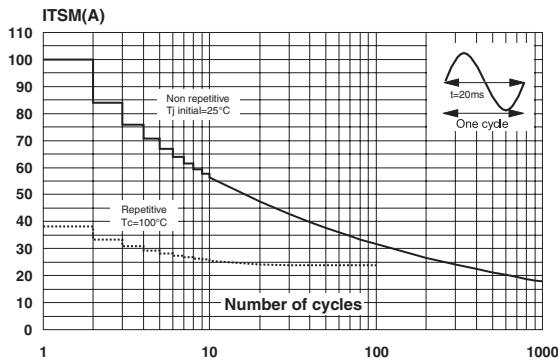


**Fig. 4:** On-state characteristics (maximum values).

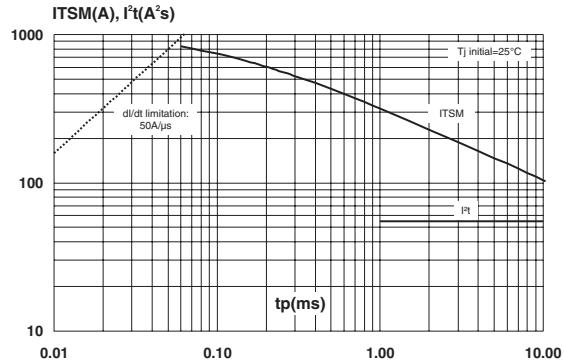


## T820W / T830W

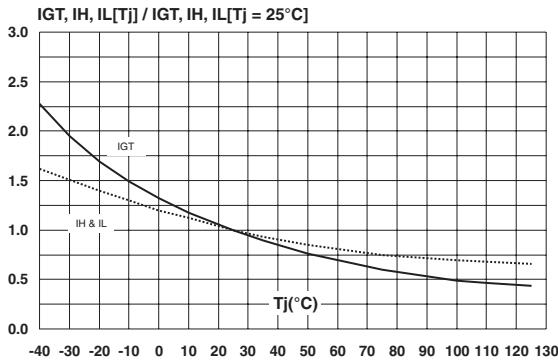
**Fig. 5:** Surge peak on-state current versus number of cycles.



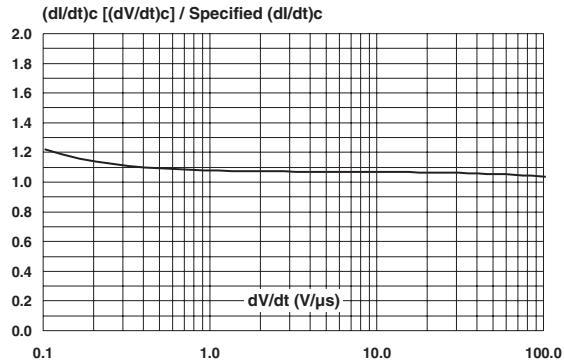
**Fig. 6:** Non repetitive surge peak on-state current for a sinusoidal pulse with width  $tp < 10\text{ms}$ , and corresponding value of  $I^2t$ .



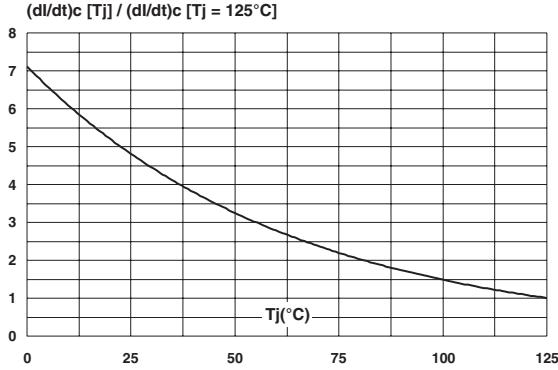
**Fig. 7:** Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

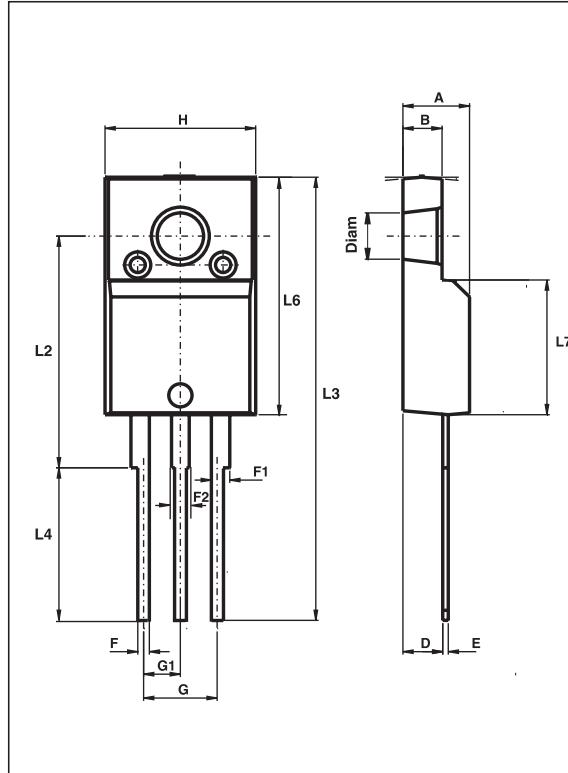


**Fig. 8:** Relative variation of critical rate of decrease of main current versus reapplied  $dV/dt$  (typical values).



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



**PACKAGE MECHANICAL DATA**  
**ISOWATT220AB**


| REF. | DIMENSIONS  |       |            |       |
|------|-------------|-------|------------|-------|
|      | Millimeters |       | Inches     |       |
|      | Min.        | Max.  | Min.       | Max.  |
| A    | 4.40        | 4.60  | 0.173      | 0.181 |
| B    | 2.50        | 2.70  | 0.098      | 0.106 |
| D    | 2.50        | 2.75  | 0.098      | 0.108 |
| E    | 0.40        | 0.70  | 0.016      | 0.028 |
| F    | 0.75        | 1.00  | 0.030      | 0.039 |
| F1   | 1.15        | 1.70  | 0.045      | 0.067 |
| F2   | 1.15        | 1.70  | 0.045      | 0.067 |
| G    | 4.95        | 5.20  | 0.195      | 0.205 |
| G1   | 2.40        | 2.70  | 0.094      | 0.106 |
| H    | 10.00       | 10.40 | 0.394      | 0.409 |
| L2   | 16.00 typ.  |       | 0.630 typ. |       |
| L3   | 28.60       | 30.60 | 1.125      | 1.205 |
| L4   | 9.80        | 10.60 | 0.386      | 0.417 |
| L6   | 15.90       | 16.40 | 0.626      | 0.646 |
| L7   | 9.00        | 9.30  | 0.354      | 0.366 |
| Diam | 3.00        | 3.20  | 0.118      | 0.126 |

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

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