

Features

- High static and dynamic commutation
- Package is RoHS (2002/95/EC) compliant
- High surge current
- ECOPACK®2 compliant component
- Complies with UL standards (File ref: E81734)

Applications

- General purpose AC switching
- Motor control circuits in power tools
- Home appliances
- Lighting

Description

The T830-8FP Triac can be used for the on/off function in general purpose AC switching where high commutation capability is required.

Provides insulation rated at 1500 V rms.

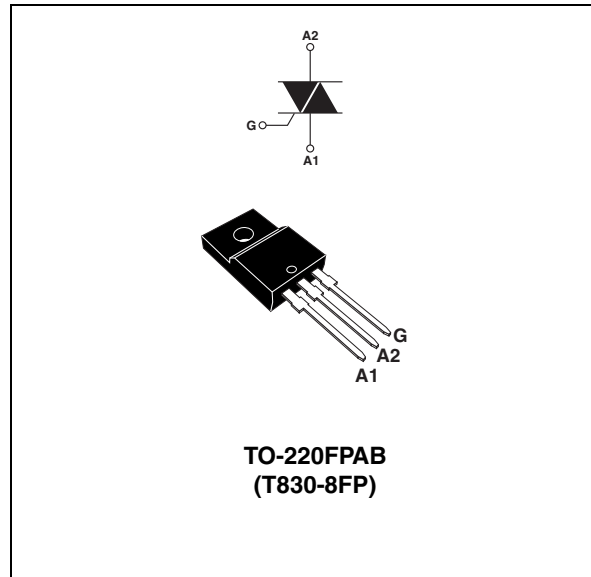


Table 1. Device summary

| Symbol | Value | Unit |
|--------------------|-------|------|
| $I_{T(rms)}$ | 8 | A |
| V_{DRM}, V_{RRM} | 800 | V |
| V_{DSM}, V_{RSM} | 900 | V |
| I_{GT} | 30 | mA |

1 Characteristics

Table 2. Absolute ratings (limiting values)

| Symbol | Parameter | | Value | Unit | |
|--------------------------|--|-------------------------------|-----------------------------------|--------------------------------|------------------|
| $I_{T(rms)}$ | On-state rms current (full sine wave) | | $T_c = 95\text{ }^\circ\text{C}$ | 8 | A |
| I_{TSM} | Non repetitive surge peak on-state current (full cycle, T_j initial = $25\text{ }^\circ\text{C}$) | F = 50 Hz | t = 20 ms | 80 | A |
| | | F = 60 Hz | t = 16.7 ms | 84 | |
| I^2t | I^2t Value for fusing | $t_p = 10\text{ ms}$ | | 42 | A ² s |
| dI/dt | Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$ | F = 120 Hz | $T_j = 125\text{ }^\circ\text{C}$ | 100 | A/ μ s |
| V_{DSM} , V_{RSM} | Non repetitive surge peak on-state voltage | $t_p = 10\text{ ms}$ | $T_j = 25\text{ }^\circ\text{C}$ | 900 | V |
| I_{GM} | Peak gate current | $t_p = 20\text{ }\mu\text{s}$ | $T_j = 125\text{ }^\circ\text{C}$ | 4 | A |
| $P_{G(AV)}$ | Average gate power dissipation | | $T_j = 125\text{ }^\circ\text{C}$ | 1 | W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | | - 40 to + 150 - 40 to + 125 | $^\circ\text{C}$ |
| T_L | Lead temperature for soldering during 10 s (at 4 mm from case) | | | 260 | $^\circ\text{C}$ |
| V_{ins} | Insulation rms voltage, 1 minute | | | 1500 | V |

Table 3. Electrical characteristics ($T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified)

| Symbol | Test conditions | Quadrant | | Value | Unit |
|----------------------|--|-----------------------------------|------|-------|------------|
| $I_{GT}^{(1)}$ | $V_D = 12\text{ V}$, $R_L = 30\text{ }\Omega$ | I - II - III | Max. | 30 | mA |
| V_{GT} | | | | 1.3 | V |
| V_{GD} | $V_D = V_{DRM}$, $R_L = 3.3\text{ k}\Omega$, $T_j = 125\text{ }^\circ\text{C}$ | I - II - III | Min. | 0.2 | V |
| $I_H^{(2)}$ | $I_T = 250\text{ mA}$ | | Max. | 50 | mA |
| I_L | $I_G = 1.2 I_{GT}$ | I - II - III | Max. | 60 | mA |
| dV/dt | $V_D = 67\%V_{DRM}$, gate open | $T_j = 125\text{ }^\circ\text{C}$ | Min. | 2500 | V/ μ s |
| (dI/dt) _c | Without snubber | $T_j = 125\text{ }^\circ\text{C}$ | Min. | 10.0 | A/ms |

1. Minimum I_{GT} is guaranteed at 5% of I_{GT} max.
2. For both polarities of A2 referenced to A1.

Table 4. Static characteristics

| Symbol | Test conditions | | | Value | Unit |
|------------------------|---|-----------------------------------|------|-------|---------------|
| $V_T^{(1)}$ | $I_{TM} = 11\text{ A}$, $t_p = 380\ \mu\text{s}$ | $T_j = 25\text{ }^\circ\text{C}$ | Max. | 1.55 | V |
| $V_{i0}^{(1)}$ | Threshold voltage | $T_j = 125\text{ }^\circ\text{C}$ | Max. | 0.85 | V |
| $R_d^{(1)}$ | Dynamic resistance | $T_j = 125\text{ }^\circ\text{C}$ | Max. | 40 | m Ω |
| I_{DRM} I_{RRM} | $V_{DRM} = V_{RRM}$ | $T_j = 25\text{ }^\circ\text{C}$ | Max. | 5 | μA |
| | | $T_j = 125\text{ }^\circ\text{C}$ | | 1 | mA |

1. For both polarities of A2 referenced to A1.

Table 5. Thermal resistance

| Symbol | Parameter | Value | Unit |
|---------------|-----------------------|-------|--------------------|
| $R_{th(j-c)}$ | Junction to case (AC) | 3.5 | $^\circ\text{C/W}$ |
| $R_{th(j-a)}$ | Junction to ambient | 60 | $^\circ\text{C/W}$ |

Figure 1. Maximum power dissipation versus rms on-state current

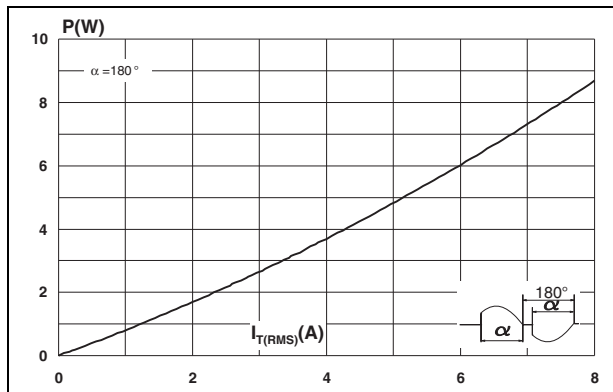


Figure 2. On-state rms current versus case temperature

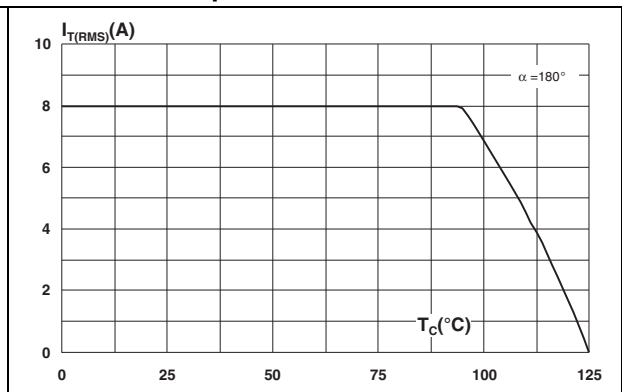


Figure 3. On-state rms current versus ambient temperature (free air convection)

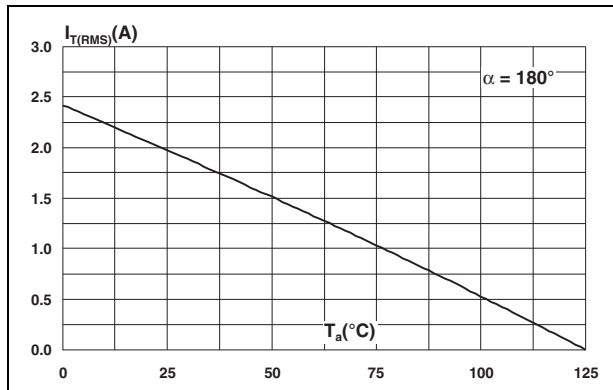


Figure 4. Relative variation of thermal impedance versus pulse duration

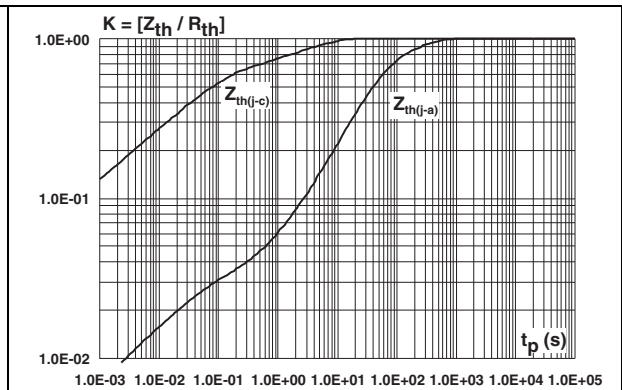


Figure 5. Relative variation of gate trigger current versus junction temperature (typical values)

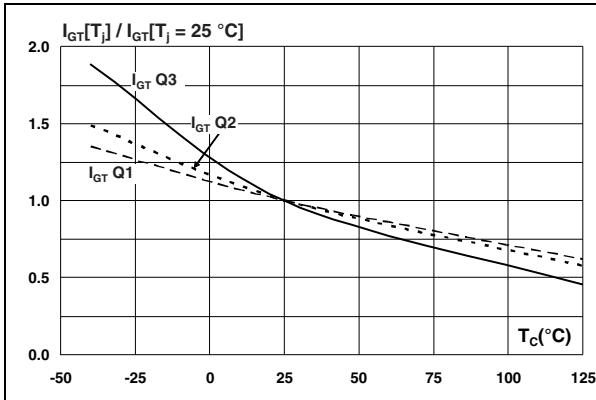


Figure 6. Relative variation of gate trigger voltage versus junction temperature (typical values)

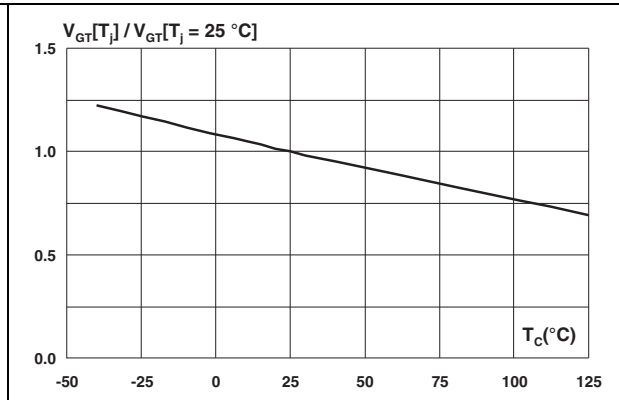


Figure 7. Relative variation of holding and latching current versus junction temperature (typical values)

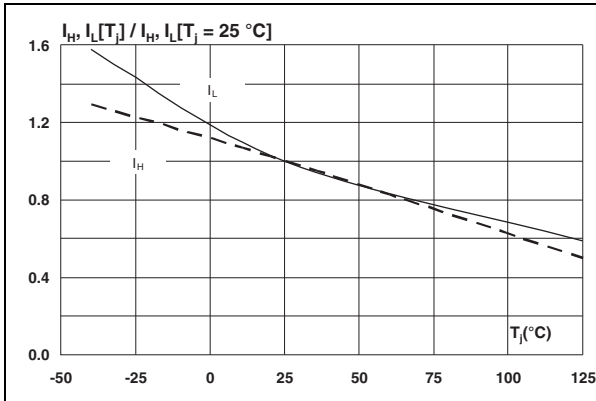


Figure 8. Surge peak on-state current versus number of cycles

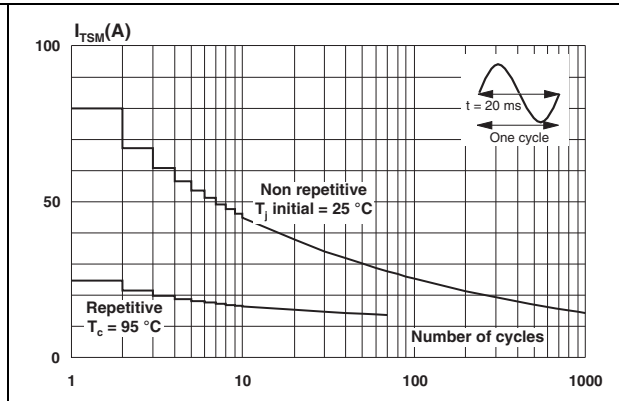


Figure 9. Non repetitive surge peak on-state current and corresponding value of I^2t

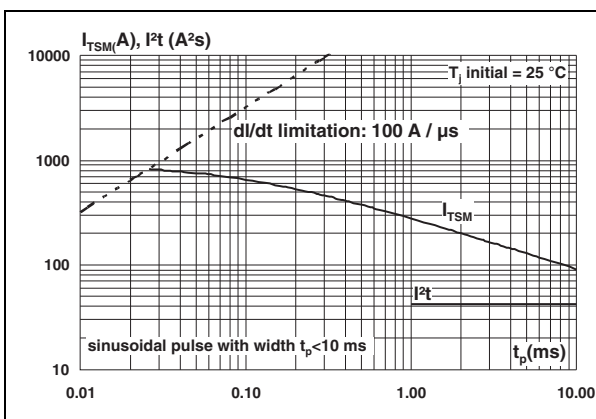


Figure 10. On-state characteristics (maximum values)

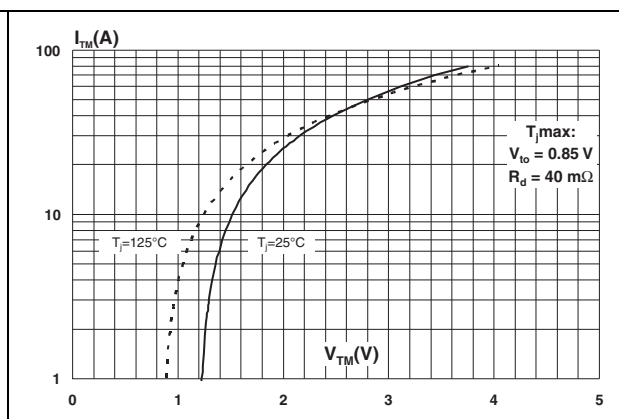


Figure 11. Relative variation of critical rate of decrease of main current versus junction temperature

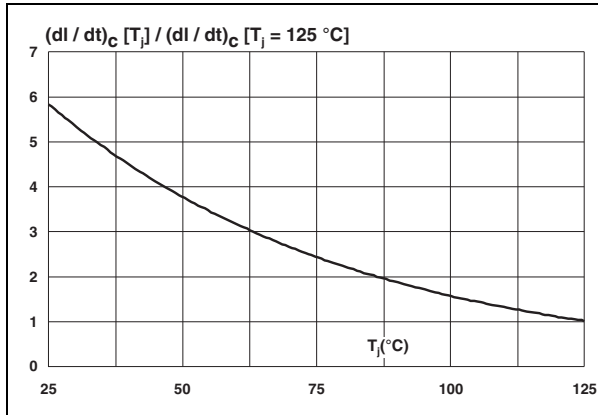


Figure 12. Relative variation of static dV/dt immunity versus junction temperature (typical values)

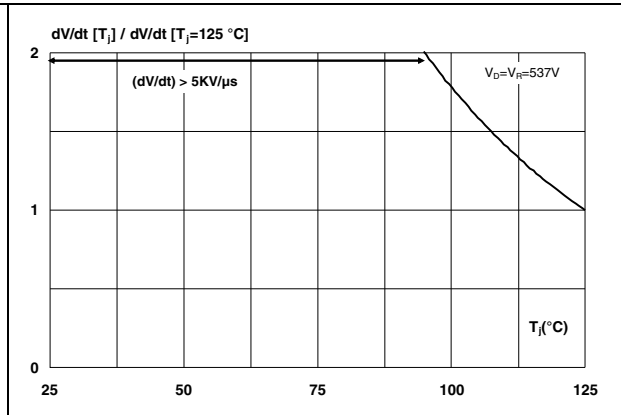


Figure 13. Relative variation of critical rate of decrease of main current versus reapplied dV/dt (typical values)

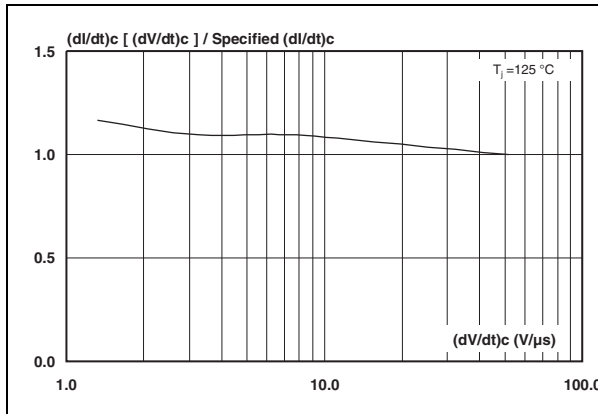
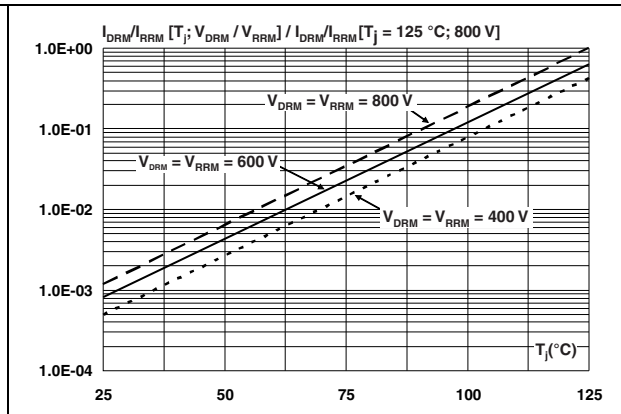
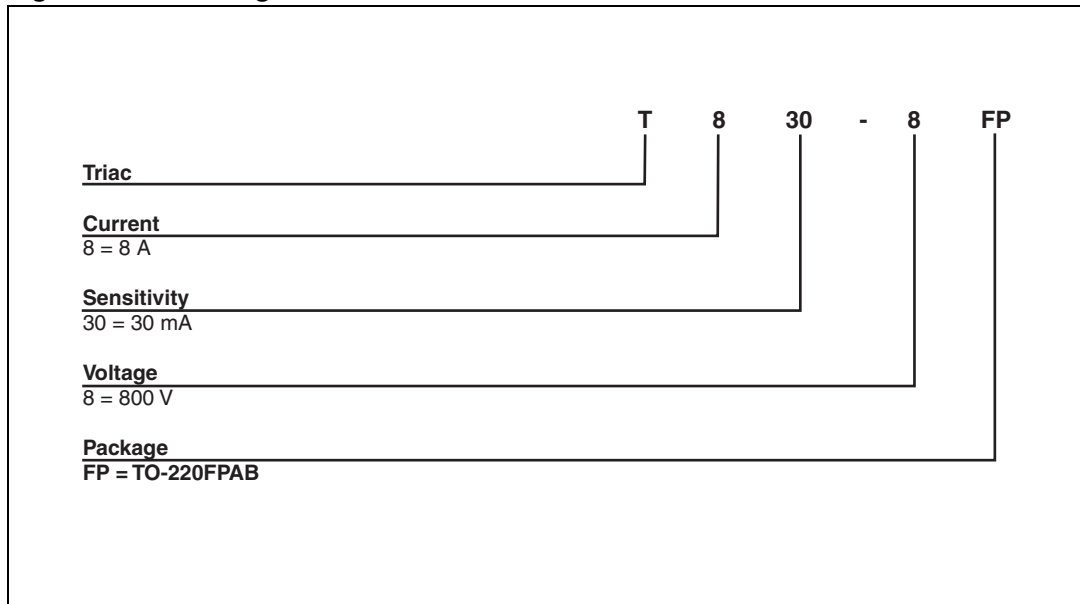


Figure 14. Relative variation of leakage current versus junction temperature



2 Ordering information scheme

Figure 15. Ordering information scheme



3 Package information

- Epoxy meets UL94, V0
- Recommended torque: 0.4 to 0.6 N·m

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 6. TO-220FPAB Dimensions

| Ref. | Dimensions | | | |
|------|-------------|------|-----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.4 | 4.6 | 0.173 | 0.181 |
| B | 2.5 | 2.7 | 0.098 | 0.106 |
| D | 2.5 | 2.75 | 0.098 | 0.108 |
| E | 0.45 | 0.70 | 0.018 | 0.027 |
| F | 0.75 | 1 | 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 | 2.4 | 2.7 | 0.094 | 0.106 |
| H | 10 | 10.4 | 0.393 | 0.409 |
| L2 | 16 Typ. | | 0.63 Typ. | |
| L3 | 28.6 | 30.6 | 1.126 | 1.205 |
| L4 | 9.8 | 10.6 | 0.386 | 0.417 |
| L5 | 2.9 | 3.6 | 0.114 | 0.142 |
| L6 | 15.9 | 16.4 | 0.626 | 0.646 |
| L7 | 9.00 | 9.30 | 0.354 | 0.366 |
| Dia. | 3.00 | 3.20 | 0.118 | 0.126 |

4 Ordering information

Table 7. Ordering information

| Order code | Marking | Package | Weight | Base qty | Delivery mode |
|------------|----------|------------|--------|----------|---------------|
| T830-8FP | T830-8FP | TO-220FPAB | 2.0 g | 50 | Tube |

5 Revision history

Table 8. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 24-Sep-2012 | 1 | Initial release. |

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY TWO AUTHORIZED ST REPRESENTATIVES, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2012 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[T830-8FP](#)