



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



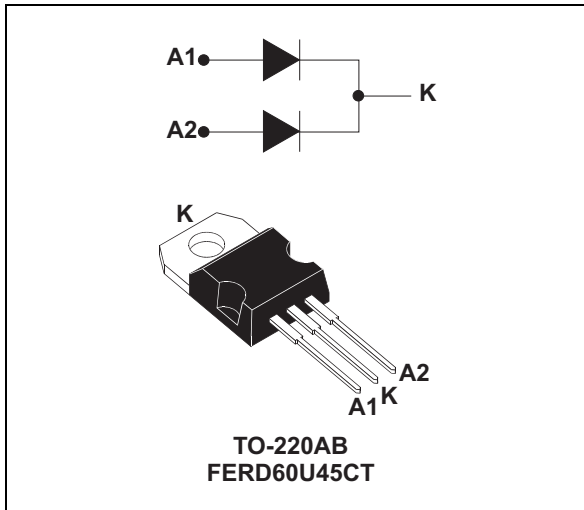
Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





Description

This dual rectifier is based on a proprietary technology that achieves the best in class V_F/I_R for a given silicon surface.

Packaged in TO-220AB, this device is intended to be used in switch mode power supplies, or automotive applications

Table 1. Device summary

| | |
|-------------------|----------|
| $I_{F(AV)}$ | 2 x 30 A |
| V_{RRM} | 45 V |
| $V_F(\text{typ})$ | 0.345 V |

Features

- ST advanced rectifier process
- Stable leakage current over reverse voltage
- Low forward voltage drop
- High frequency operation

1 Characteristics

Table 2. Absolute ratings (limiting values, per diode at 25° C, unless otherwise stated)

| Symbol | Parameter | | Value | Unit | |
|--------------|---|---------------------------|---------------------------------|------|---|
| V_{RRM} | Repetitive peak reverse voltage | | 45 | V | |
| $I_{F(RMS)}$ | Forward rms current | | 60 | A | |
| $I_{F(AV)}$ | Average forward current, $\delta = 0.5$ | $T_c = 145^\circ\text{C}$ | Per diode | 30 | A |
| | | $T_c = 135^\circ\text{C}$ | Per device | 60 | A |
| I_{FSM} | Surge non repetitive forward current | | $t_p = 10\text{ ms sinusoidal}$ | 300 | A |
| T_{stg} | Storage temperature range | | -65 to + 175 | °C | |
| T_j | Maximum operating junction temperature ⁽¹⁾ | | 175 | °C | |

1. $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ condition to avoid thermal runaway for a diode on its own heatsink

Table 3. Thermal resistances

| Symbol | Parameter | | Value | Unit |
|---------------|------------------|-----------|-------|------|
| $R_{th(j-c)}$ | Junction to case | Per diode | 1.4 | °C/W |
| | | Total | 0.9 | |
| $R_{th(c)}$ | Coupling | | 0.4 | °C/W |

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_j(\text{diode 1}) = P(\text{diode1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode2}) \times R_{th(c)}$$

Table 4. Static electrical characteristics (per diode)

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|-------------|-------------------------|---------------------------|---------------------|------|-------|-------|---------------|
| $I_R^{(1)}$ | Reverse leakage current | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 1500 | μA |
| | | $T_j = 125^\circ\text{C}$ | | | 50 | 100 | mA |
| $V_F^{(2)}$ | Forward voltage drop | $T_j = 25^\circ\text{C}$ | $I_F = 15\text{ A}$ | | 0.38 | 0.41 | V |
| | | $T_j = 125^\circ\text{C}$ | | | 0.345 | 0.375 | |
| | | $T_j = 25^\circ\text{C}$ | $I_F = 30\text{ A}$ | | 0.46 | 0.50 | |
| | | $T_j = 125^\circ\text{C}$ | | | 0.47 | 0.51 | |

1. Pulse test: $t_p = 5\text{ ms}$, $\delta < 2\%$
2. Pulse test: $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.32 \times I_{F(AV)} + 0.0063 I_{F(RMS)}^2$$

Figure 1. Average forward power dissipation versus average forward current (per diode)

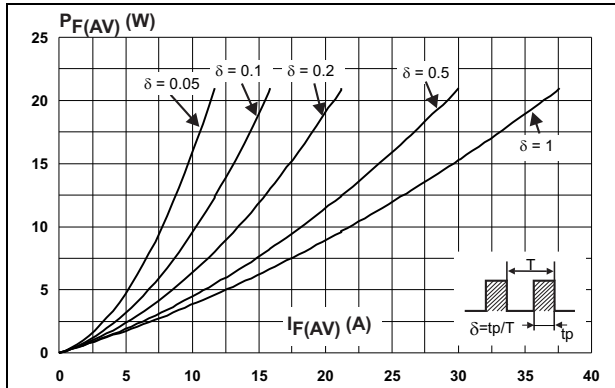


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$, per diode)

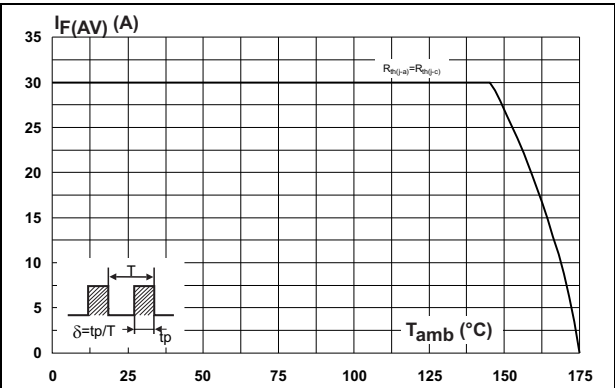


Figure 3. Relative variation of thermal impedance junction to case versus pulse duration

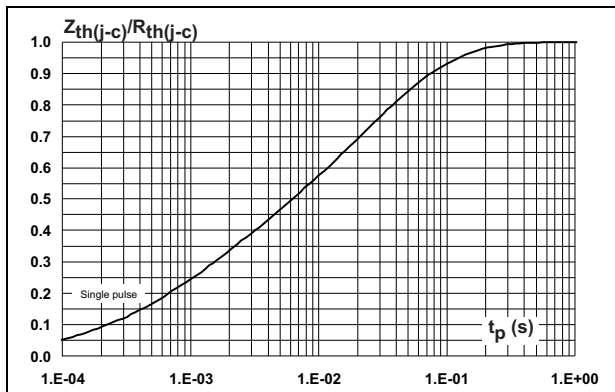


Figure 4. Reverse leakage current versus reverse voltage applied (typical values, per diode)

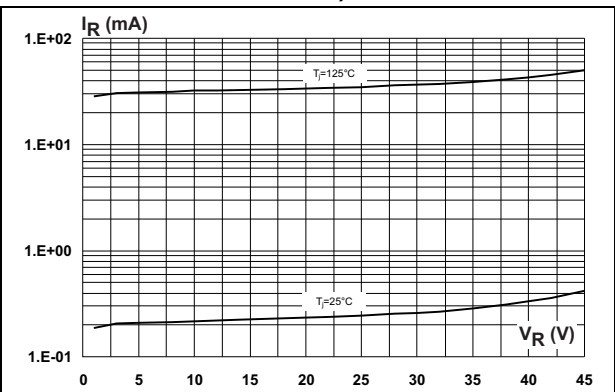


Figure 5. Junction capacitance versus reverse voltage applied (typical values, per diode)

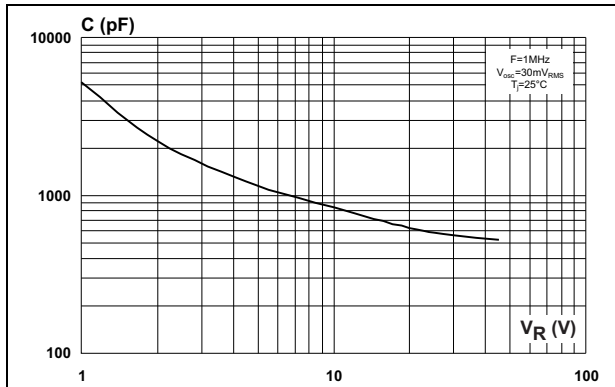
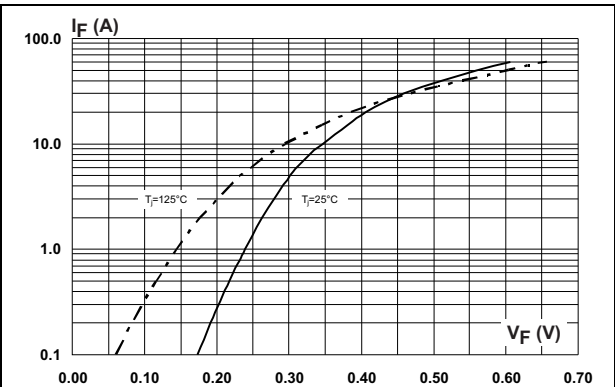


Figure 6. Forward voltage drop versus forward current (typical values, per diode)



2 Package Information

- Epoxy meets UL94,V0
- Cooling method: by conduction (C)
- Recommended torque value: 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.

Figure 7. TO-220AB dimension definitions

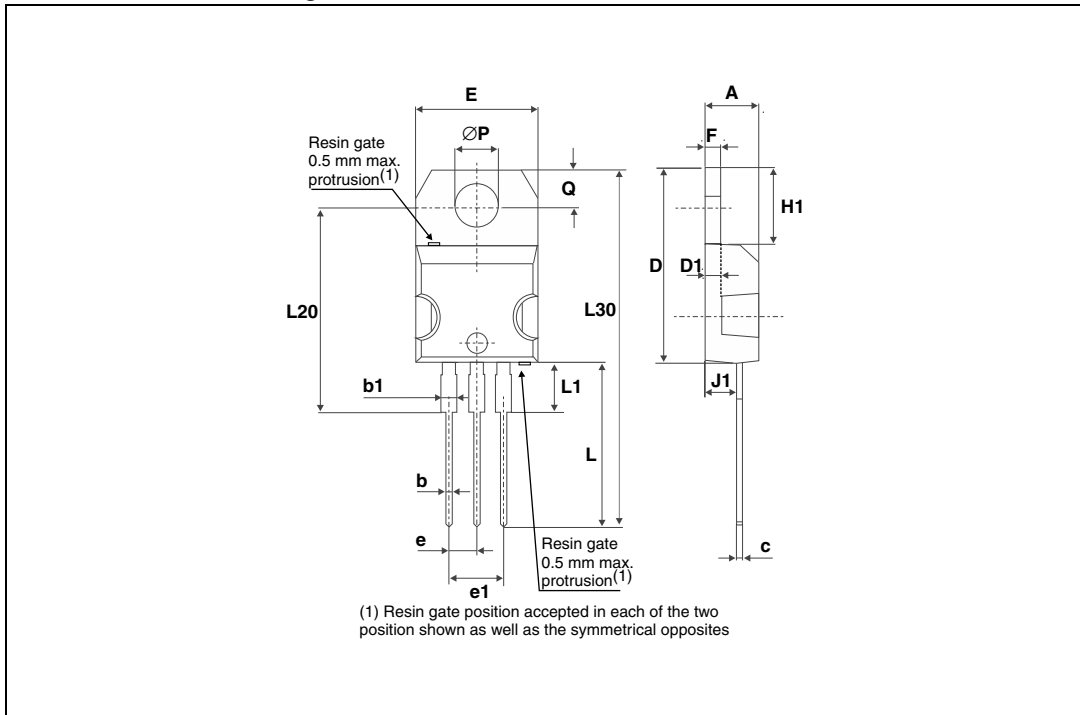


Table 5. TO-220AB dimension values

| Ref. | Dimensions | | | |
|------|-------------|-------|-----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 4.60 | 0.17 | 0.18 |
| b | 0.61 | 0.88 | 0.024 | 0.035 |
| b1 | 1.14 | 1.70 | 0.045 | 0.067 |
| c | 0.48 | 0.70 | 0.019 | 0.027 |
| D | 15.25 | 15.75 | 0.60 | 0.62 |
| D1 | 1.27 typ. | | 0.05 typ. | |
| E | 10 | 10.40 | 0.39 | 0.41 |
| e | 2.40 | 2.70 | 0.094 | 0.106 |
| e1 | 4.95 | 5.15 | 0.19 | 0.20 |
| F | 1.23 | 1.32 | 0.048 | 0.052 |
| H1 | 6.20 | 6.60 | 0.24 | 0.26 |
| J1 | 2.40 | 2.72 | 0.094 | 0.107 |
| L | 13 | 14 | 0.51 | 0.55 |
| L1 | 3.50 | 3.93 | 0.137 | 0.154 |
| L20 | 16.40 typ. | | 0.64 typ. | |
| L30 | 28.90 typ. | | 1.13 typ. | |
| ØP | 3.75 | 3.85 | 0.147 | 0.151 |
| Q | 2.65 | 2.95 | 0.104 | 0.116 |

3 Ordering Information

Table 6. Ordering information

| Order code | Marking | Package | Weight | Base qty | Delivery mode |
|-------------|-------------|----------|--------|----------|---------------|
| FERD60U45CT | FERD60U45CT | TO-220AB | 2.2 g | 50 | Tube |

4 Revision history

Table 7. Document revision history

| Date | Revision | Description of Changes |
|-------------|----------|------------------------|
| 13-Nov-2013 | 1 | Previous version |

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.

ST PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

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.

© 2013 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

