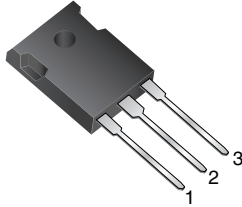
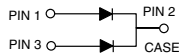


Dual Common Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



TO-3P (TO-247AD)



FEATURES

- Power pack
- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder dip 260 °C, 40 s
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

MECHANICAL DATA

Case: TO-3P (TO-247AD)

Epoxy meets UL 94 V-0 flammability rating

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

| PRIMARY CHARACTERISTICS | |
|-------------------------|------------------------|
| $I_{F(AV)}$ | 40 A |
| V_{RRM} | 35 V, 45 V, 50 V, 60 V |
| I_{FSM} | 400 A |
| V_F | 0.55 V, 0.60 V |
| T_J max. | 175 °C |
| Package | TO-3P (TO-247AD) |
| Circuit configuration | Common cathode |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | | | |
|--|-------------|-------------|------------|------------|------------|------------|
| PARAMETER | SYMBOL | MBR40H35PT | MBR40H45PT | MBR40H50PT | MBR40H60PT | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 35 | 45 | 50 | 60 | V |
| Maximum working peak reverse voltage | V_{RWM} | 35 | 45 | 50 | 60 | V |
| Maximum DC blocking voltage | V_{DC} | 35 | 45 | 50 | 60 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 40 | | | | A |
| Non-repetitive avalanche energy per diode at 25 °C, $I_{AS} = 4\text{ A}$, $L = 10\text{ mH}$ | E_{AS} | 80 | | | | mJ |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 400 | | | | A |
| Peak repetitive reverse surge current per diode ⁽¹⁾ | I_{RRM} | 2.0 | | 1.0 | | A |
| Peak non-repetitive reverse energy (8/20 μ s waveform) | E_{RSM} | 30 | | 25 | | mJ |
| Electrostatic discharge capacitor voltage human body model: $C = 100\text{ pF}$, $R = 1.5\text{ k}\Omega$ | V_C | 25 | | | | kV |
| Voltage rate of change at (rated V_R) | dV/dt | 10 000 | | | | V/ μ s |
| Operating junction temperature range | T_J | -65 to +175 | | | | °C |
| Storage temperature range | T_{STG} | -65 to +175 | | | | °C |

Note

⁽¹⁾ 2.0 μ s pulse width, $f = 1.0\text{ kHz}$



| ELECTRICAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted) | | | | | | | | |
|--|-----------------------|---|----------------|--------------------------|-----------|--------------------------|-----------|----------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | MBR40H35PT MBR40H45PT | | MBR40H50PT MBR40H60PT | | UNIT |
| | | | | TYP. | MAX. | TYP. | MAX. | |
| Maximum instantaneous forward voltage per diode ⁽¹⁾ | I _F = 20 A | T _J = 25 °C | V _F | - | 0.63 | - | 0.69 | V |
| | I _F = 20 A | T _J = 125 °C | | 0.49 | 0.55 | 0.56 | 0.60 | |
| | I _F = 40 A | T _J = 25 °C | | - | 0.73 | - | 0.83 | |
| | I _F = 40 A | T _J = 125 °C | | 0.62 | 0.66 | 0.68 | 0.72 | |
| Maximum reverse current at rated V _R per diode ⁽²⁾ | | T _J = 25 °C T _J = 125 °C | I _R | - 9.0 | 150 25 | - 6.0 | 150 25 | μA mA |

Notes

⁽¹⁾ Pulse test: 300 μs pulse width, 1 % duty cycle

⁽²⁾ Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS | | | | | | |
|--|------------------|------------|------------|------------|------------|------|
| PARAMETER | SYMBOL | MBR40H35PT | MBR40H45PT | MBR40H50PT | MBR40H60PT | UNIT |
| Thermal resistance, junction to case per diode | R _{θJC} | | | 1.2 | | °C/W |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-247AD | MBR40H45PT-E3/45 | 6.13 | 45 | 30/tube | Tube |



RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

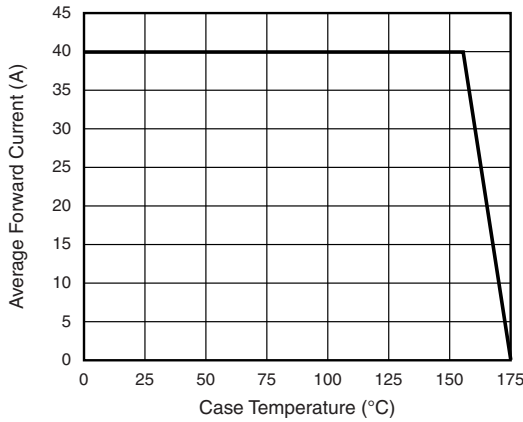


Fig. 1 - Forward Current Derating Curve

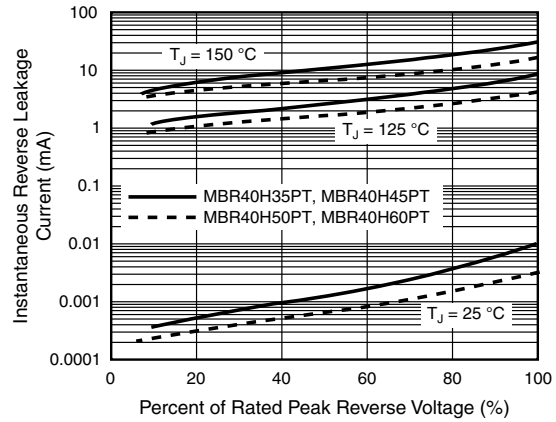


Fig. 4 - Typical Reverse Characteristics Per Diode

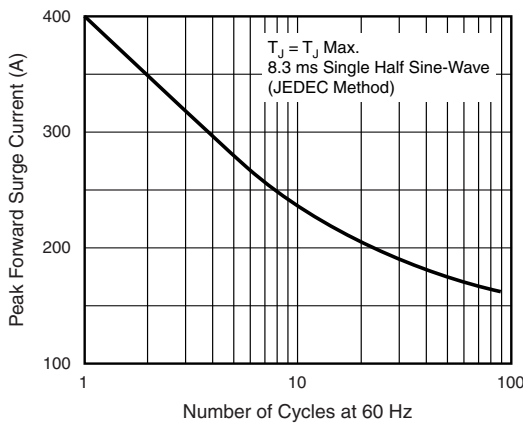


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

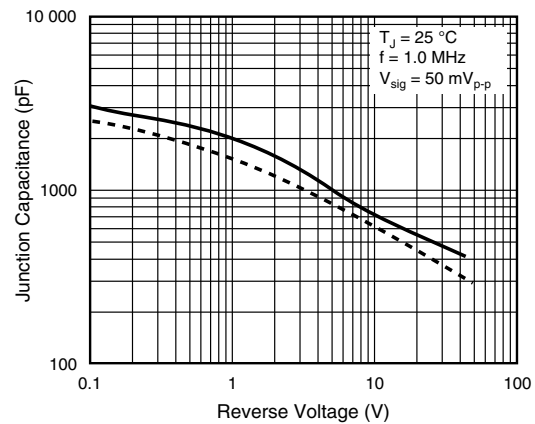


Fig. 5 - Typical Junction Capacitance Per Diode

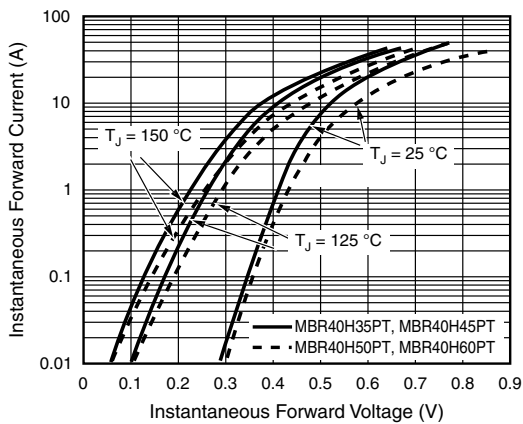


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

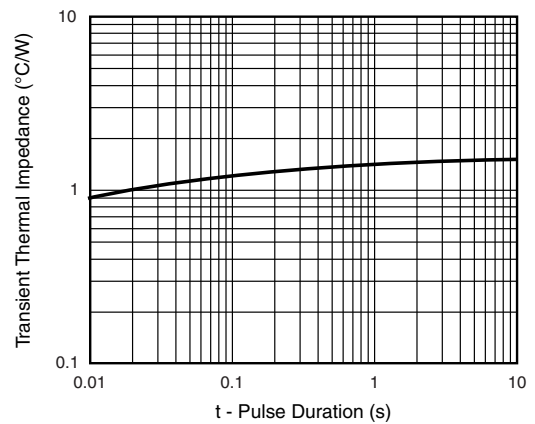
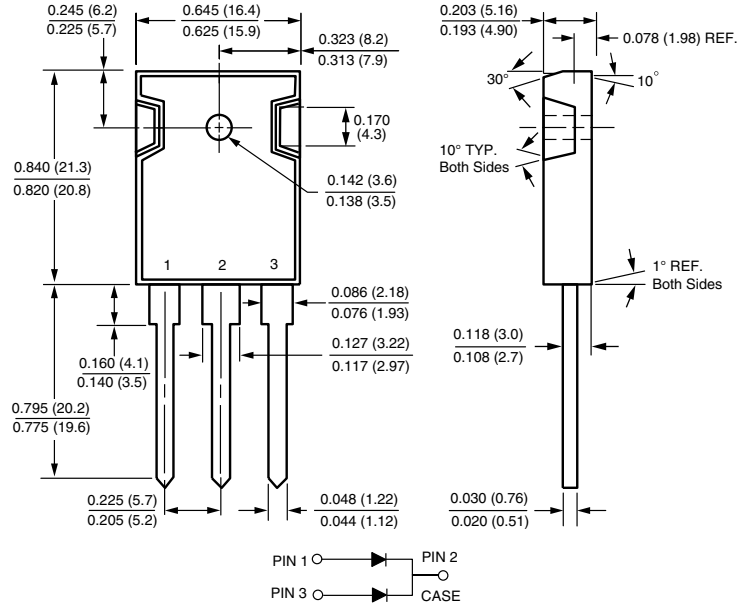


Fig. 6 - Typical Transient Thermal Impedance Per Diode



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-3P (TO-247AD)





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.