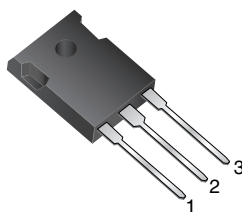




Dual Common-Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



TO-247AD (TO-3P)



FEATURES

- 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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS

| | |
|--------------------|----------------|
| $I_{F(AV)}$ | 40 A |
| V_{RRM} | 35 V to 60 V |
| I_{FSM} | 400 A |
| V_F | 0.55 V, 0.60 V |
| $T_J \text{ max.}$ | 175 °C |

MECHANICAL DATA

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

Epoxy meets UL 94V-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

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

| MAXIMUM RATINGS (T _A = 25 °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 A, L = 10 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 μs waveform) | E _{RSM} | 30 | | 25 | | mJ |
| Electrostatic discharge capacitor voltage human body model: C = 100 pF, R = 1.5 kΩ | V _C | 25 | | | | kV |
| Voltage rate of change at (rated V _R) | dV/dt | 10 000 | | | | V/μs |
| 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, $f = 1.0$ kHz

| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) | | | | | | | | |
|-----------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------|--------|--------------------------|-----------|--------------------------|-----------|---------------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | MBR40H35PT MBR40H45PT | | MBR40H50PT MBR40H60PT | | UNIT |
| | | | | TYP. | MAX. | TYP. | MAX. | |
| Maximum instantaneous forward voltage per diode ⁽¹⁾ | $I_F = 20\text{ A}$ | $T_J = 25\text{ }^{\circ}\text{C}$ | V_F | - | 0.63 | - | 0.69 | V |
| | $I_F = 20\text{ A}$ | $T_J = 125\text{ }^{\circ}\text{C}$ | | 0.49 | 0.55 | 0.56 | 0.60 | |
| | $I_F = 40\text{ A}$ | $T_J = 25\text{ }^{\circ}\text{C}$ | | - | 0.73 | - | 0.83 | |
| | $I_F = 40\text{ A}$ | $T_J = 125\text{ }^{\circ}\text{C}$ | | 0.62 | 0.66 | 0.68 | 0.72 | |
| Maximum reverse current at rated V_R per diode ⁽²⁾ | | $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$ | 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 $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) | | | | | | |
|--------------------------------------------------------------------------------------|-----------------|------------|------------|------------|------------|----------------------|
| PARAMETER | SYMBOL | MBR40H35PT | MBR40H45PT | MBR40H50PT | MBR40H60PT | UNIT |
| Thermal resistance, junction to case per diode | $R_{\theta JC}$ | 1.2 | | | | $^{\circ}\text{C/W}$ |

| 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)

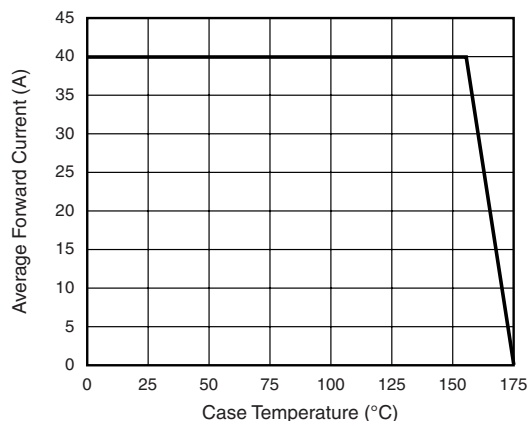


Figure 1. Forward Current Derating Curve

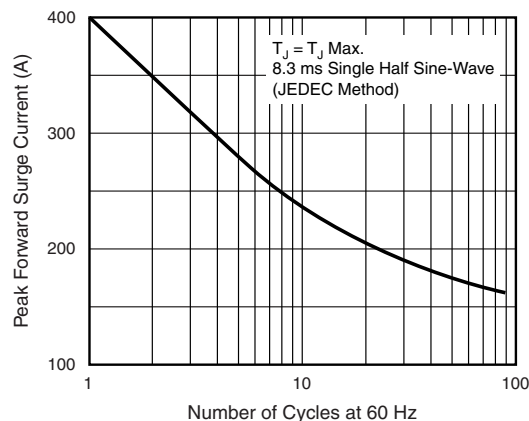


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode



New Product

MBR40H35PT thru MBR40H60PT

Vishay General Semiconductor

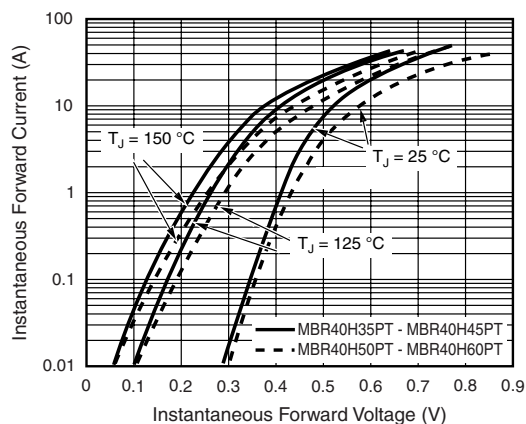


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

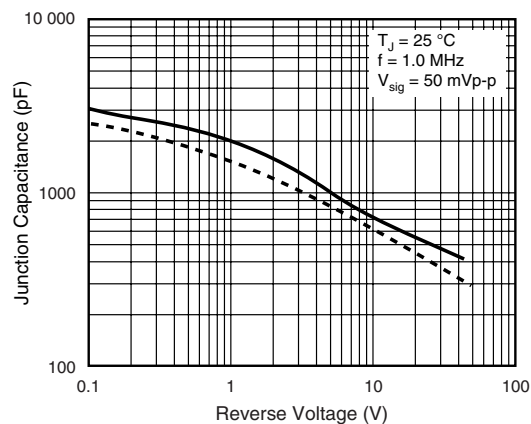


Figure 5. Typical Junction Capacitance Per Diode

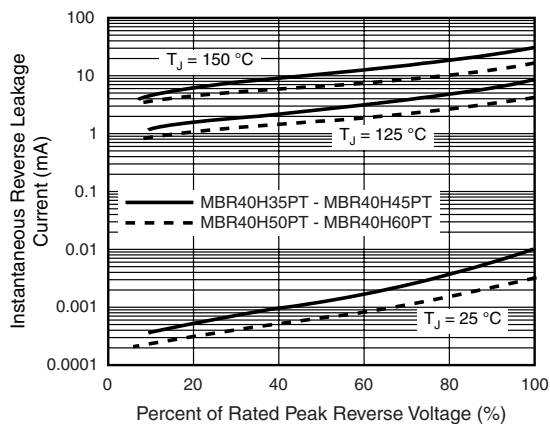


Figure 4. Typical Reverse Characteristics Per Diode

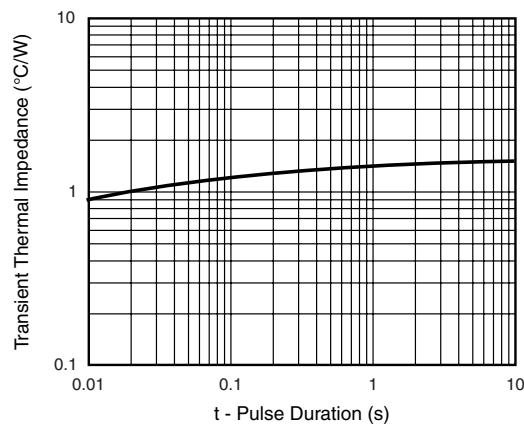
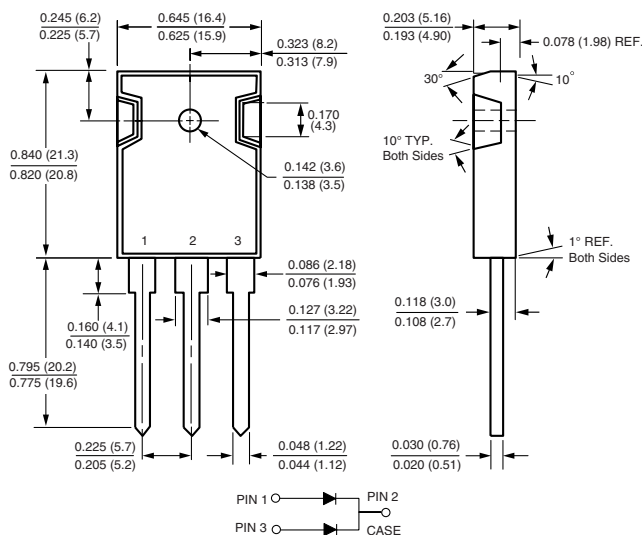


Figure 6. Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-247AD (TO-3P)





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