

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER MBR10150C

General Description

High voltage dual Schottky rectifier suited for switch mode power supplies and other power converters. This device is intended for use in medium voltage operation, and particularly, in high frequency circuits where low switching losses and low noise are required.

The MBR10150C is available in standard TO-220F-3, TO-220-3 and TO-220-3 (2) packages.

Features

- High Surge Capacity
- 150°C Operating Junction Temperature
- 10A Total (5A Per Diode Leg)
- Guard-ring for Stress Protection
- Pb-free Packages are Available

Main Product Characteristics

| | |
|-------------|-------|
| $I_{F(AV)}$ | 2×5A |
| V_{RRM} | 150V |
| T_J | 150°C |
| $V_F(max)$ | 0.85V |

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94V-0 @ 0.125in.
- Weight (Approximately):
1.9Grams (TO-220-3, TO-220-3 (2) and TO-220F-3)
- Finish: All External Surfaces Corrosion Resistant and Terminal
- Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds

Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation

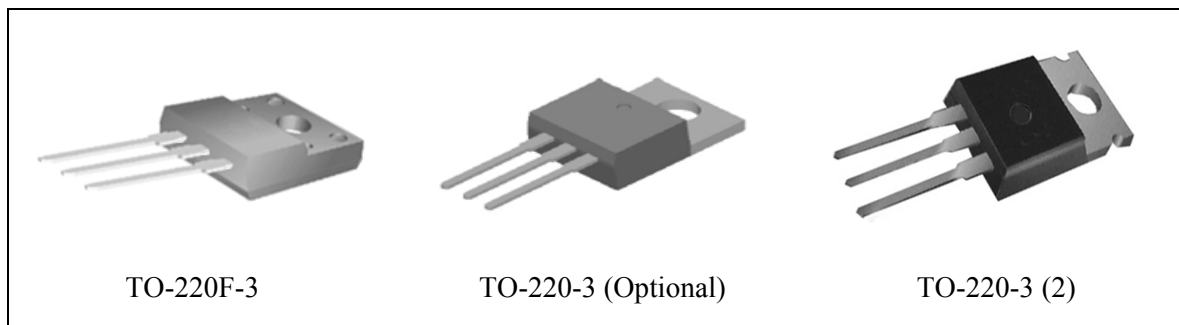


Figure 1. Package Types of MBR10150C

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER MBR10150C

Pin Configuration

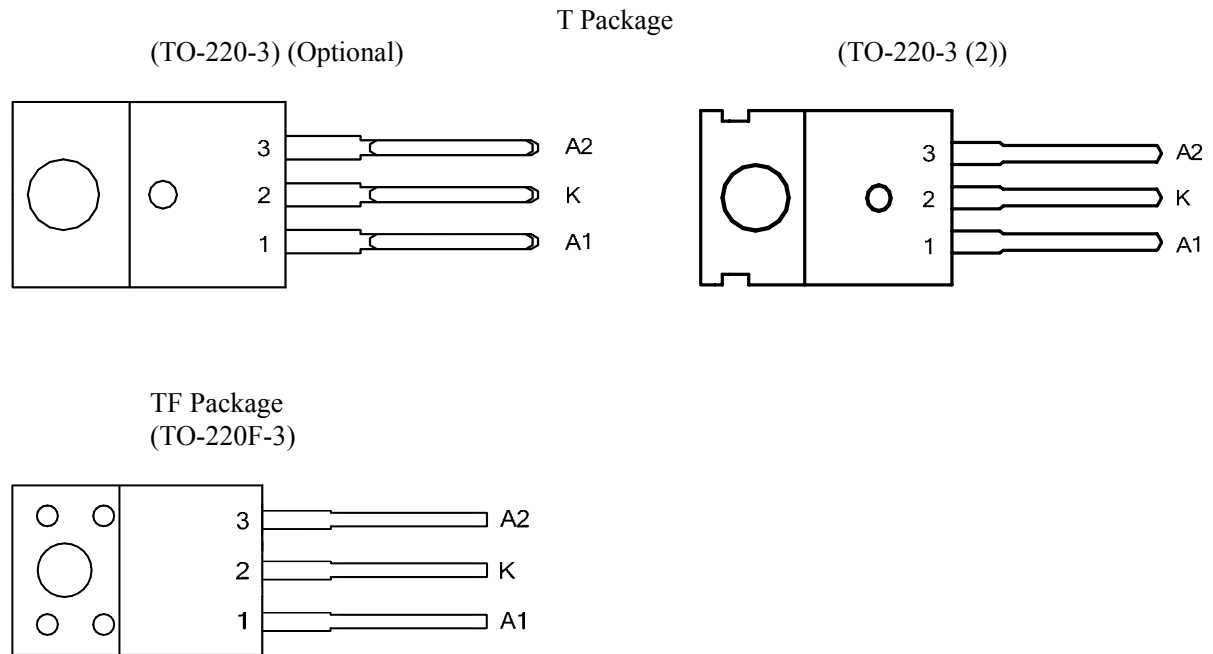


Figure 2. Pin Configuration of MBR10150C (Top View)

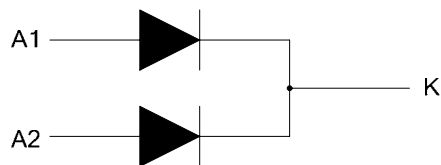
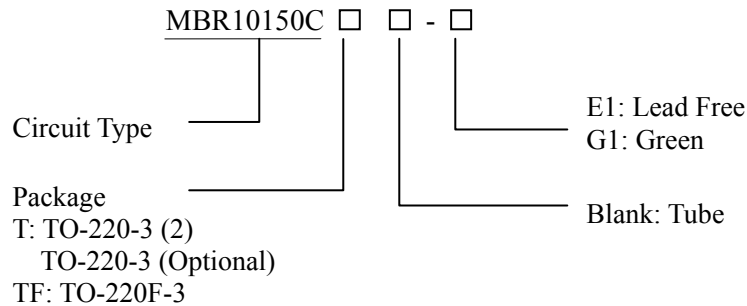


Figure 3. Internal Structure of MBR10150C



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Ordering Information



| Package | Part Number | | Marking ID | | Packing Type |
|--------------|----------------|----------------|----------------|----------------|--------------|
| | Lead Free | Green | Lead Free | Green | |
| TO-220-3 (2) | MBR10150CT-E1 | MBR10150CT-G1 | MBR10150CT-E1 | MBR10150CT-G1 | Tube |
| TO-220F-3 | MBR10150CTF-E1 | MBR10150CTF-G1 | MBR10150CTF-E1 | MBR10150CTF-G1 | Tube |

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant. Products with "G1" suffix are available in green packages.

Absolute Maximum Ratings (Per Diode Leg) (Note 1)

| Parameter | Symbol | Value | Unit |
|---|-------------|------------|------------------|
| Peak Repetitive Reverse Voltage | V_{RRM} | 150 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_R | | |
| Average Rectified Forward Current (Rated V_R , $T_C=142^\circ\text{C}$) | $I_{F(AV)}$ | 5 | A |
| Peak Repetitive Forward Current (Rated V_R , Square Wave, 20kHz) $T_C=142^\circ\text{C}$ | I_{FRM} | 10 | A |
| Non Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Half Wave, Single Phase, 60Hz) | I_{FSM} | 100 | A |
| Operating Junction Temperature Range (Note 2) | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 to 150 | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated V_R) | dv/dt | 10000 | V/ μs |
| ESD (Machine Model=C) | | >400 | V |
| ESD (Human Body Model=3B) | | >8000 | V |

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Note 2: The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/\theta_{JA}$.

**HIGH VOLTAGE POWER SCHOTTKY RECTIFIER****MBR10150C****Recommended Operating Conditions**

| Parameter | Symbol | Condition | Value | | Unit | |
|----------------------------|---------------|---------------------|---------------------------|---------------------------|------|----|
| Maximum Thermal Resistance | θ_{JC} | Junction to Case | TO-220-3/ TO-220-3 (2) | 3.0 | °C/W | |
| | | | TO-220F-3 | 4.5 | | |
| | θ_{JA} | Junction Ambient | to | TO-220-3/ TO-220-3 (2) | | 60 |
| | | | | TO-220F-3 | | 60 |

Electrical Characteristics

| Parameter | Symbol | Conditions | Value | Unit |
|---|--------|--|-------|------|
| Maximum Instantaneous Forward Voltage Drop (Note 3) | V_F | $I_F=5A, T_C=25^\circ C$ | 0.92 | V |
| | | $I_F=5A, T_C=125^\circ C$ | 0.82 | |
| Maximum Instantaneous Reverse Current (Note 3) | I_R | Rated DC Voltage, $T_C=25^\circ C$ | 0.1 | mA |
| | | Rated DC Voltage, $T_C=125^\circ C$ | 15.0 | |

Note 3: Pulse Test: Pulse Width=300 μ s, Duty Cycle \leq 2.0%.

Typical Performance Characteristics

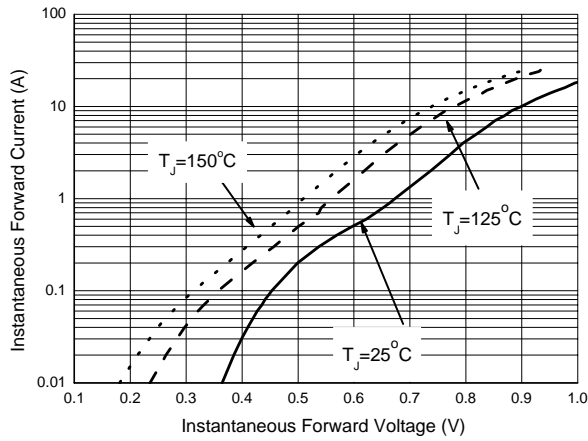


Figure 4. Typical Forward Voltage Per Diode

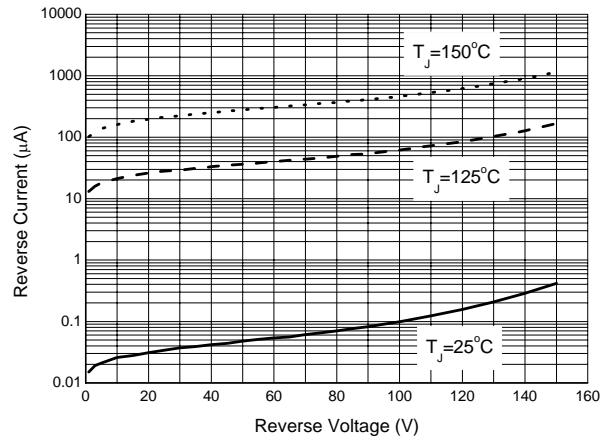


Figure 5. Typical Reverse Current Per Diode

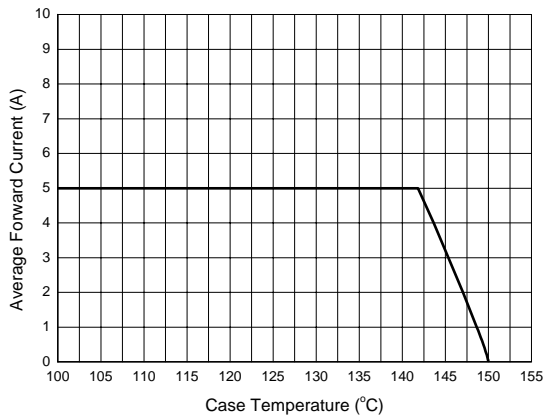


Figure 6. Average Forward Current vs. Case Temperature (Square, Per Diode)

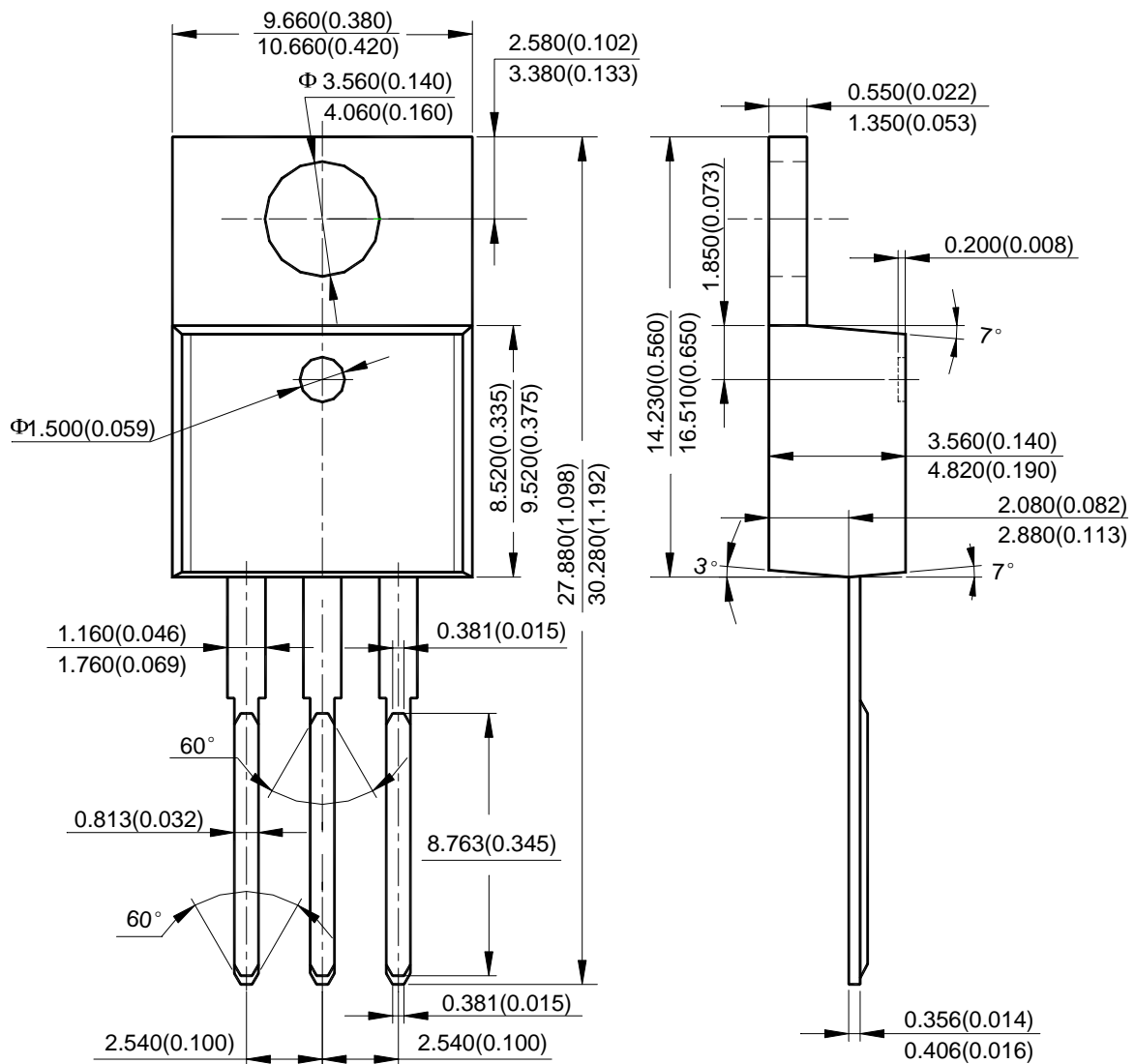
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MBR10150C

Mechanical Dimensions

TO-220-3
(Optional)

Unit: mm(inch)



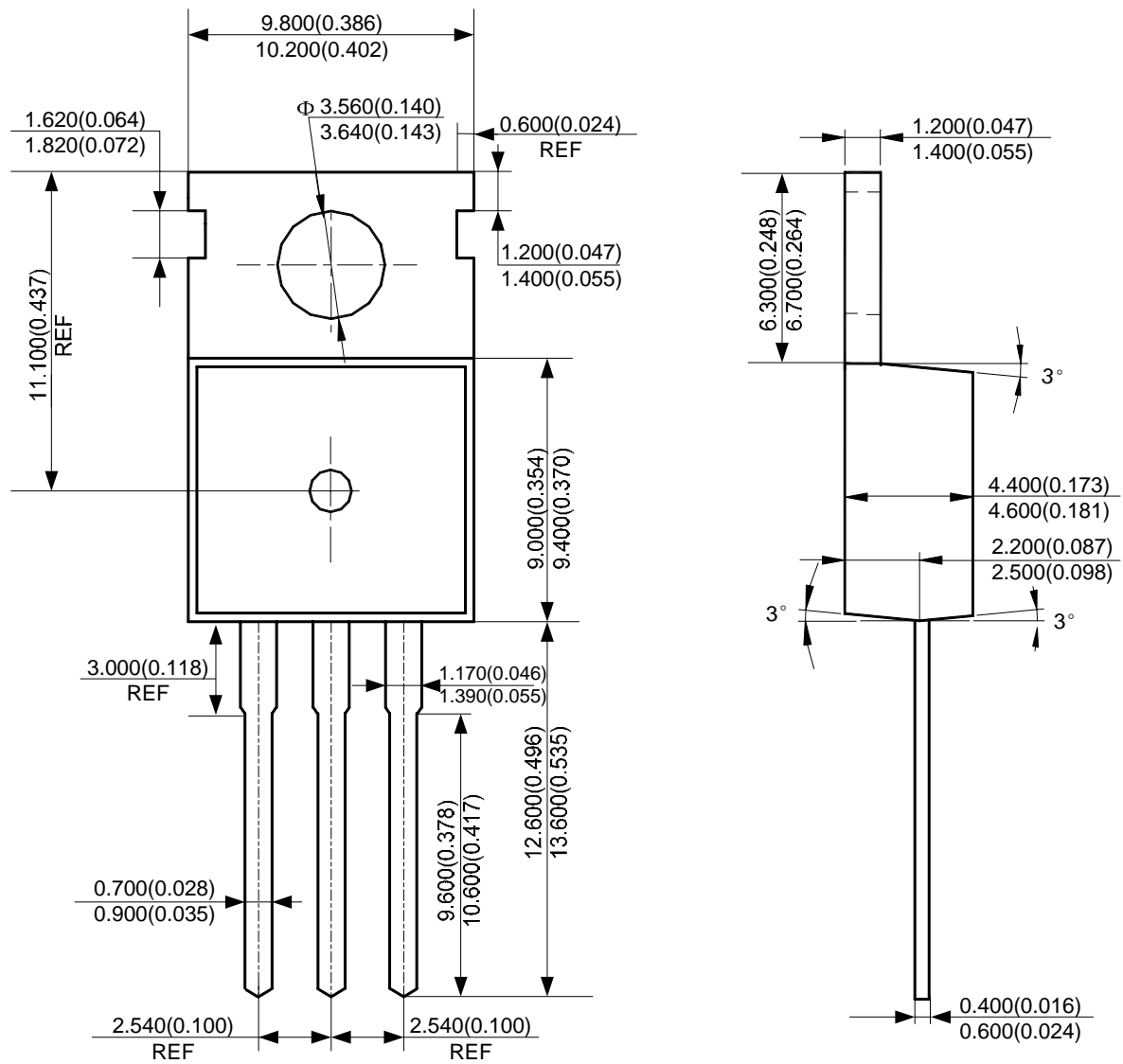
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MBR10150C

Mechanical Dimensions (Continued)

TO-220-3 (2)

Unit: mm(inch)



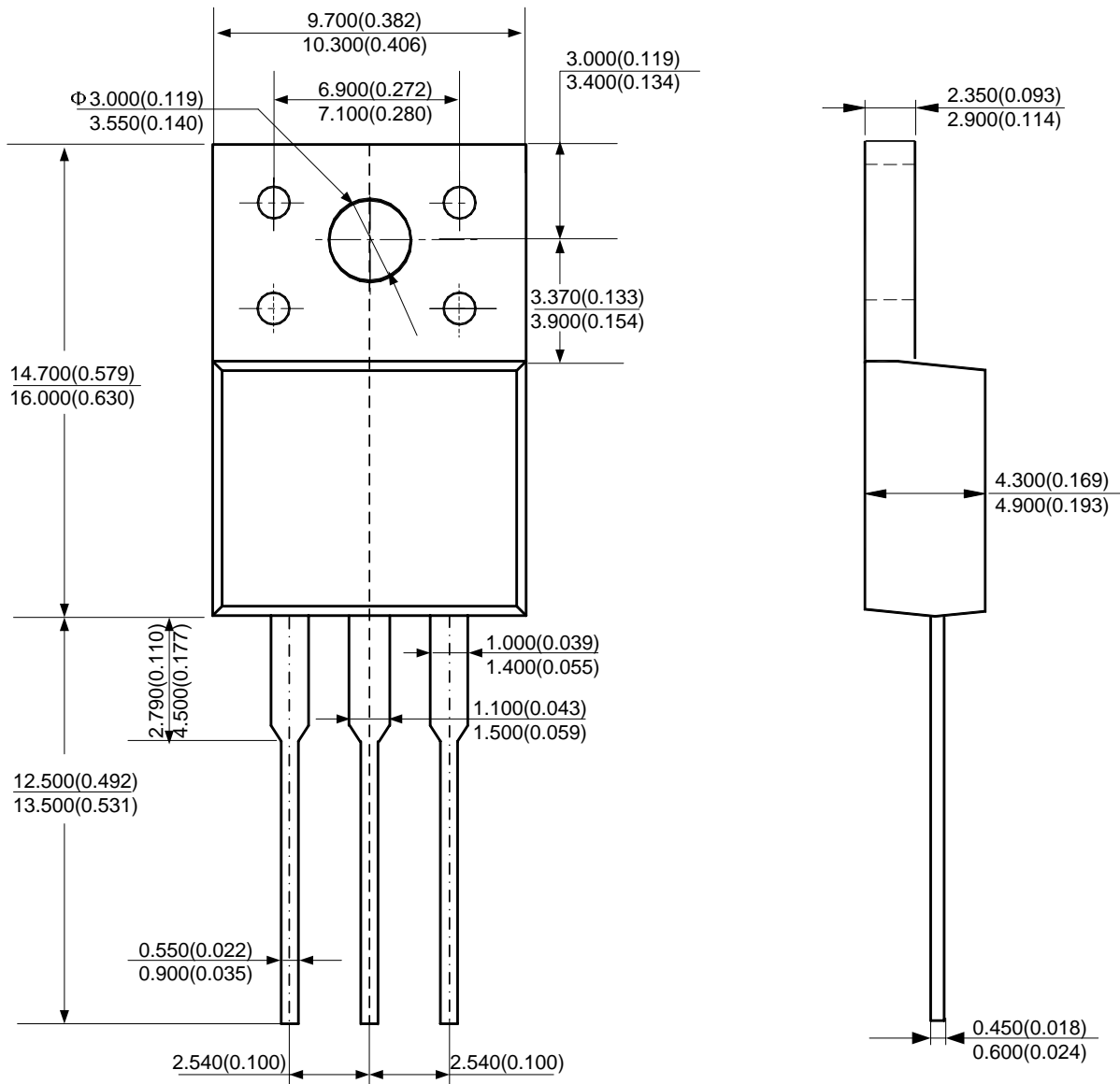
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MBR10150C

Mechanical Dimensions (Continued)

TO-220F-3

Unit: mm(inch)





BCD Semiconductor Manufacturing Limited

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