

# MBR30100xx

Schottky Barrier Rectifier

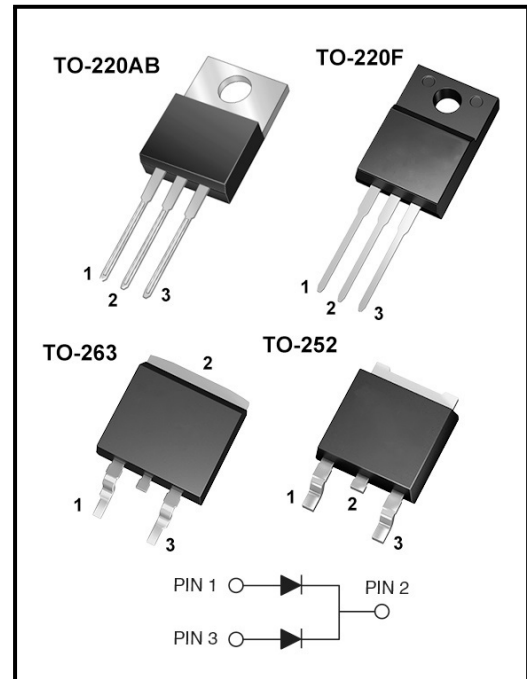
## Features

- Low forward voltage drop
- High current capability
- High forward surge capability
- Low power losses, High efficiency
- Guarding for over voltage protection

## Applications

Low VF Schottky barrier rectifier are designed for high frequency, miniature switched mode power supplies such as adapters ,lighting and on-board DC/DC conerters.

## Package



## Mechanical Data

- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106
- Case: Molded plastic
- Polarity: As marked
- Mounting Position: Any

## Ordering information

| Order code    | Package  | Base qty     | Delivery mode               |
|---------------|----------|--------------|-----------------------------|
| MBR30100CT    | TO-220AB | 50pcs/tube   | 1000pcs/box 5000pcs/carton  |
| MBR30100FCT   | TO-220F  | 50pcs/tube   | 1000pcs/box 5000pcs/carton  |
| MBR30100BCT   | TO-263   | 50pcs/tube   | 1000pcs/box 5000pcs/carton  |
| MBR30100BCT-R | TO-263   | 800pcs/reel  | 800pcs/box 4000pcs/carton   |
| MBR30100DCT   | TO-252   | 2500pcs/reel | 5000pcs/box 25000pcs/carton |



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Maximum Ratings (@ $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| Symbol          | Parameters                                                            | Value                    | Unit               |
|-----------------|-----------------------------------------------------------------------|--------------------------|--------------------|
| $V_{RRM}$       | Maximum Repetitive Peak Reverse Voltage                               | 100                      | V                  |
| $V_{RWM}$       | Working Peak Reverse Voltage                                          | 100                      | V                  |
| $V_{DC}$        | Maximum DC Blocking Voltage                                           | 100                      | V                  |
| $I_O$           | Maximum Average Forward Rectified Current                             | Per Leg                  | 15                 |
|                 |                                                                       | Total                    | 30                 |
| $I_{FSM}$       | Non-repetitive Peak Forward Surge Current 8.3ms Single half-sine-wave | 350                      | A                  |
| $R_{\theta JC}$ | Typical Thermal Resistance <sup>1</sup>                               | TO-220AB, TO-263, TO-252 | 2                  |
|                 |                                                                       | TO-220F                  | 4                  |
| $T_J$           | Operating Junction Temperature Range                                  | 150                      | $^{\circ}\text{C}$ |
| $T_{STG}$       | Storage Temperature Range                                             | -55 to +150              | $^{\circ}\text{C}$ |

Note1: Thermal resistance from Junction to case per leg mounted on the sink.

Electrical Characteristics (@ $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| Symbol | Parameters                        | Test Condition      |                             | Typ  | Max  | Unit          |
|--------|-----------------------------------|---------------------|-----------------------------|------|------|---------------|
| $V_F$  | Forward Voltage Drop <sup>2</sup> | at $I_F=5\text{A}$  | $T_A = 25^{\circ}\text{C}$  | 0.71 | —    | V             |
|        |                                   |                     | $T_A = 125^{\circ}\text{C}$ | 0.57 | —    |               |
|        |                                   | at $I_F=10\text{A}$ | $T_A = 25^{\circ}\text{C}$  | 0.77 | 0.85 |               |
|        |                                   |                     | $T_A = 125^{\circ}\text{C}$ | 0.64 | —    |               |
|        |                                   | at $I_F=15\text{A}$ | $T_A = 25^{\circ}\text{C}$  | 0.81 | 0.88 |               |
|        |                                   |                     | $T_A = 125^{\circ}\text{C}$ | 0.68 | —    |               |
| $I_R$  | Maximum Reverse Current           | $V_R=100\text{V}$   | $T_A = 25^{\circ}\text{C}$  | 0.6  | 10   | $\mu\text{A}$ |
|        |                                   |                     | $T_A = 125^{\circ}\text{C}$ | 0.6  | —    | mA            |

Note2: Pulse test: 300  $\mu\text{s}$  pulse width, 1% duty cycle.



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Typical Performance Characteristics( $T_J = 25^\circ\text{C}$ , unless otherwise noted)

Figure 1: Max. Forward Current Derating Curve

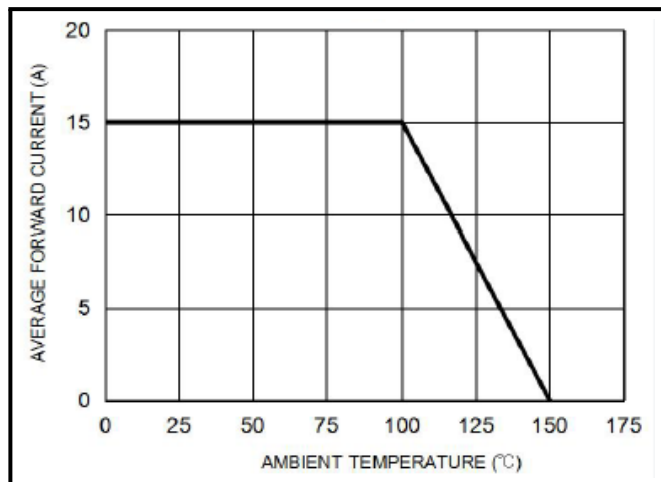


Figure 2: Max. Non-Repetitive Forward Surge Current

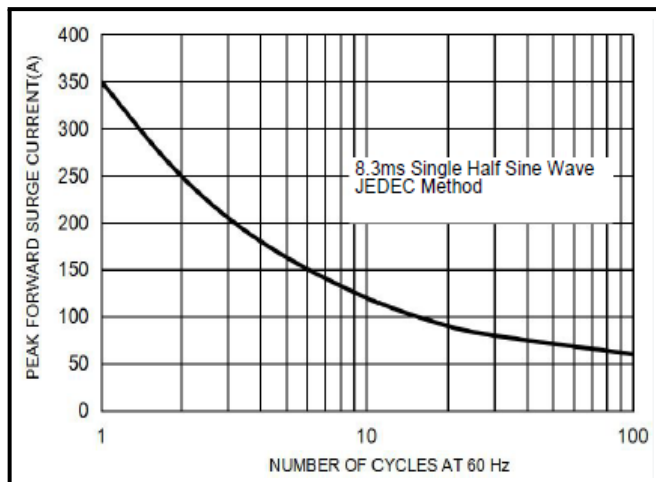


Figure 3: Typical Forward Characteristics

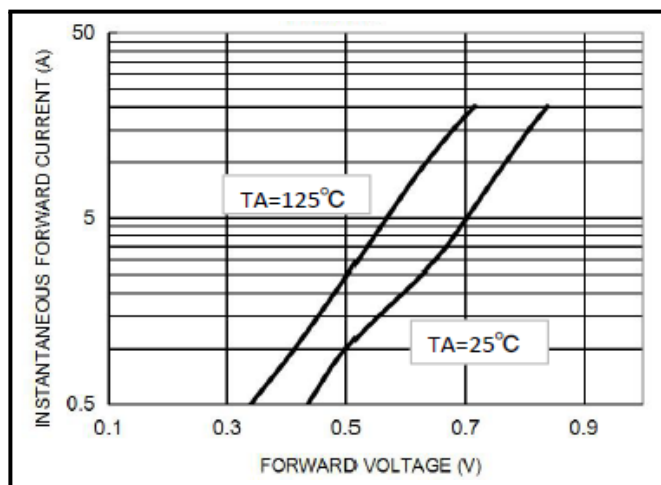
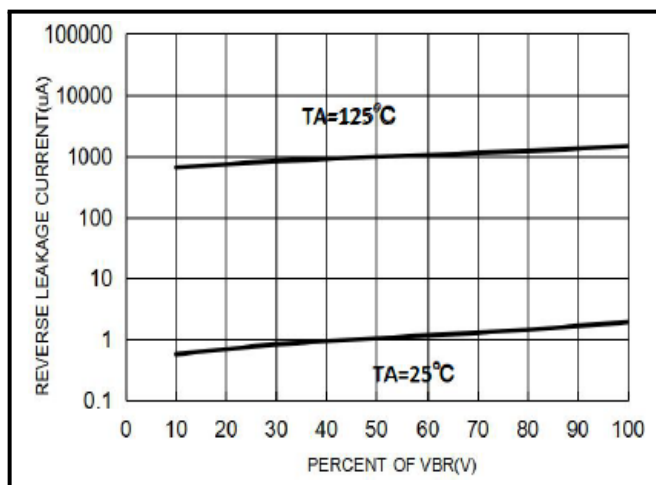


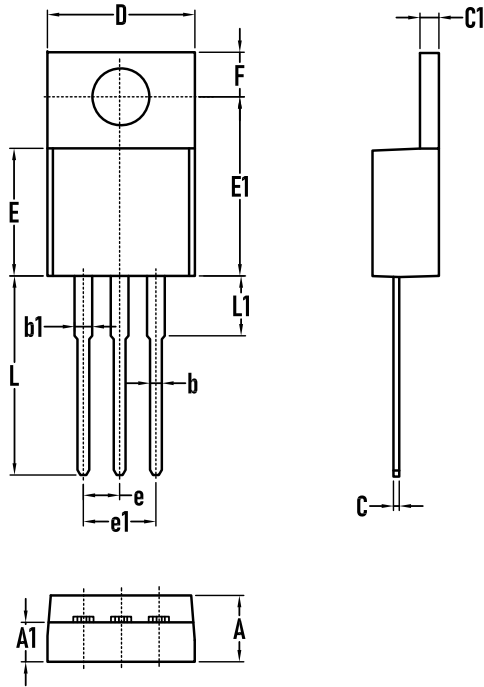
Figure 4: Typical Reverse Characteristics



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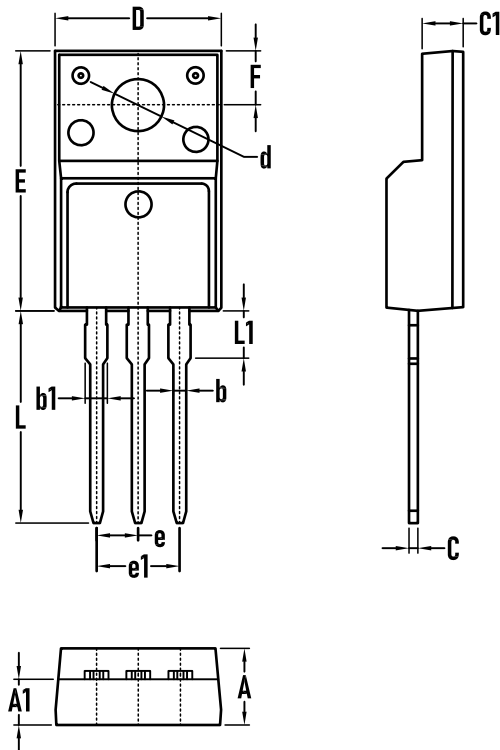
Schottky Barrier Rectifier

## Packaging Tape - TO-220AB



| Symbol | Millimeters |       |       |
|--------|-------------|-------|-------|
|        | MIN.        | TYP.  | MAX.  |
| A      | 4.30        | 4.50  | 4.70  |
| A1     | 2.52        | 2.67  | 2.82  |
| b      | 0.71        | 0.81  | 0.91  |
| b1     | 1.17        | 1.27  | 1.37  |
| C      | 0.30        | 0.40  | 0.50  |
| C1     | 1.17        | 1.27  | 1.37  |
| D      | 9.90        | 10.00 | 10.20 |
| E      | 8.50        | 8.70  | 8.90  |
| E1     | 12.00       | 12.25 | 12.50 |
| e      | 2.44        | 2.54  | 2.64  |
| e1     | 4.88        | 5.08  | 5.26  |
| F      | 2.60        | 2.75  | 2.80  |
| L      | 13.00       | 13.50 | 14.00 |
| L1     | 3.80        | 4.00  | 4.20  |

## Packaging Tape - TO-220F



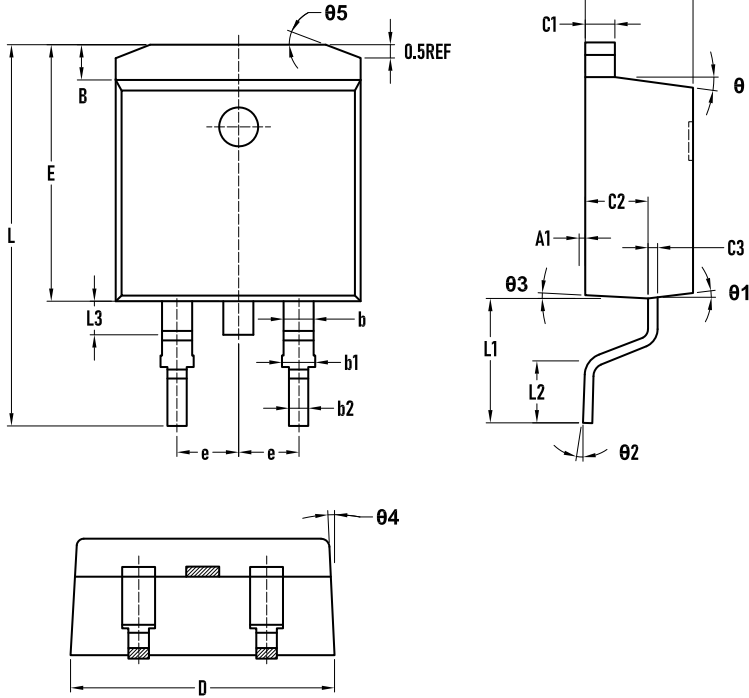
| Symbol | Millimeters |       |       |
|--------|-------------|-------|-------|
|        | MIN.        | TYP.  | MAX.  |
| A      | 4.30        | 4.60  | 4.80  |
| A1     | 2.70        | 2.80  | 2.90  |
| b      | 0.70        | 0.80  | 0.90  |
| b1     | 1.20        | 1.30  | 1.40  |
| C      | 0.40        | 0.50  | 0.60  |
| C1     | 2.40        | 2.60  | 2.80  |
| D      | 9.90        | 10.00 | 10.20 |
| E      | 15.20       | 15.60 | 16.00 |
| e      | 2.44        | 2.54  | 2.64  |
| e1     | 4.88        | 5.08  | 5.26  |
| F      | 3.00        | 3.30  | 3.60  |
| L      | 12.70       | 13.20 | 13.70 |
| L1     | 2.70        | 2.90  | 3.10  |
| d      | 3.10        | 3.20  | 3.30  |



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Packaging Tape - TO-263



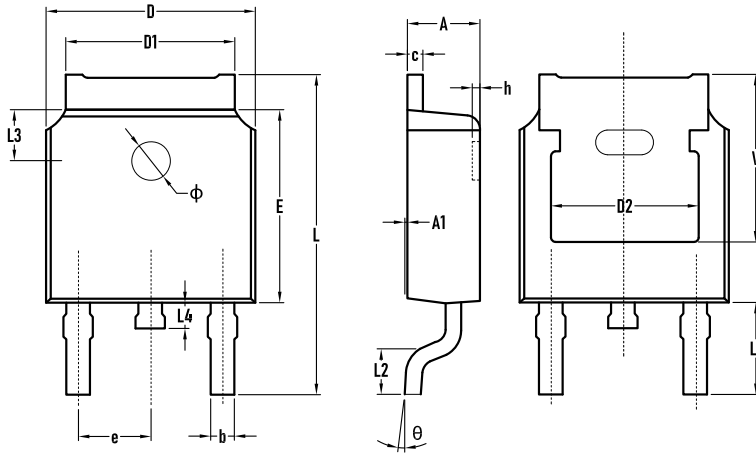
| Symbol | Millimeters |       |       |
|--------|-------------|-------|-------|
|        | MIN.        | TYP.  | MAX.  |
| A1     | 0           | —     | 0.25  |
| B      | 1.32        | 1.37  | 1.42  |
| b      | —           | 1.27  | —     |
| b1     | 1.30        | 1.40  | 1.45  |
| b2     | —           | 0.81  | —     |
| C      | 4.52        | 4.57  | 4.62  |
| C1     | —           | 1.27  | —     |
| C2     | 2.64        | 2.69  | 2.74  |
| C3     | —           | 0.38  | —     |
| D      | 10.11       | 10.16 | 10.21 |
| E      | 10.02       | 10.07 | 10.12 |
| e      | —           | 2.54  | —0    |
| L      | 14.65       | 14.95 | 15.25 |
| L1     | 4.60        | 4.90  | 5.20  |
| L2     | 2.25        | 2.45  | 2.65  |
| L3     | 1.10        | 1.30  | 1.50  |
| Θ      | 6°          | 7°    | 8°    |
| Θ1     | 6°          | 7°    | 8°    |
| Θ2     | 0°          | —     | 8°    |
| Θ3     | 2°          | 3°    | 4°    |
| Θ4     | 2°          | 3°    | 4°    |
| Θ5     | —           | —     | 20°   |



# MBR30100xx

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Packaging Tape - TO-252



| Symbol | Millimeters |        | Inches     |       |
|--------|-------------|--------|------------|-------|
|        | MIN.        | MAX.   | MIN.       | MAX.  |
| A      | 2.200       | 2.400  | 0.087      | 0.094 |
| A1     | 0.000       | 0.127  | 0.000      | 0.005 |
| b      | 0.660       | 0.860  | 0.026      | 0.034 |
| c      | 0.460       | 0.580  | 0.018      | 0.023 |
| D      | 6.500       | 6.700  | 0.256      | 0.264 |
| D1     | 5.100       | 5.460  | 0.201      | 0.215 |
| D2     | 4.830 TYP.  |        | 0.190 TYP. |       |
| E      | 6.000       | 6.200  | 0.236      | 0.244 |
| e      | 2.186       | 2.386  | 0.086      | 0.094 |
| L      | 9.800       | 10.400 | 0.386      | 0.409 |
| L1     | 2.900 TYP.  |        | 0.114 TYP. |       |
| L2     | 1.400       | 1.700  | 0.055      | 0.067 |
| L3     | 1.600 TYP.  |        | 0.063 TYP. |       |
| L4     | 0.600       | 1.000  | 0.024      | 0.039 |
| φ      | 1.100       | 1.300  | 0.043      | 0.051 |
| θ      | 0°          | 8°     | 0°         | 8°    |
| h      | 0.000       | 0.300  | 0.000      | 0.012 |
| V      | 5.350 TYP.  |        | 0.211 TYP. |       |

