

## 10A, 35V - 150V Surface Mount Schottky Barrier Rectifiers

### FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- Guardring for overvoltage protection
- High surge current capability
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21



**TO-263AB (D<sup>2</sup>PAK)**



### MECHANICAL DATA

**Case:** TO-263AB (D<sup>2</sup>PAK)

Molding compound, UL flammability classification rating 94V-0

Moisture sensitivity level: level 1, per J-STD-020

Part no. with suffix "H" means AEC-Q101 qualified

Packing code with suffix "G" means green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 2 whisker test

**Polarity:** As marked

**Weight:** 1.37 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)                                                                                                                                         |                    |              |              |              |              |              |               |               |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|------|
| PARAMETER                                                                                                                                                                                                                            | SYMBOL             | MBRS<br>1035 | MBRS<br>1045 | MBRS<br>1050 | MBRS<br>1060 | MBRS<br>1090 | MBRS<br>10100 | MBRS<br>10150 | UNIT |
| Maximum repetitive peak reverse voltage                                                                                                                                                                                              | V <sub>RRM</sub>   | 35           | 45           | 50           | 60           | 90           | 100           | 150           | V    |
| Maximum RMS voltage                                                                                                                                                                                                                  | V <sub>RMS</sub>   | 24           | 31           | 35           | 42           | 63           | 70            | 105           | V    |
| Maximum DC blocking voltage                                                                                                                                                                                                          | V <sub>DC</sub>    | 35           | 45           | 50           | 60           | 90           | 100           | 150           | V    |
| Maximum average forward rectified current                                                                                                                                                                                            | I <sub>F(AV)</sub> | 10           |              |              |              |              |               |               | A    |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load                                                                                                                                                  | I <sub>FSM</sub>   | 120          |              |              |              |              |               |               | A    |
| Peak repetitive reverse surge Current (Note 1)                                                                                                                                                                                       | I <sub>RRM</sub>   | 1            |              | 0.5          |              |              |               |               | A    |
| Maximum instantaneous forward voltage (Note 2)<br>I <sub>F</sub> =10A, T <sub>J</sub> =25°C<br>I <sub>F</sub> =10A, T <sub>J</sub> =125°C<br>I <sub>F</sub> =20A, T <sub>J</sub> =25°C<br>I <sub>F</sub> =20A, T <sub>J</sub> =125°C | V <sub>F</sub>     | -            |              | 0.80         |              | 0.85         |               | 1.05          | V    |
|                                                                                                                                                                                                                                      |                    | 0.57         |              | 0.70         |              | 0.71         |               | -             |      |
|                                                                                                                                                                                                                                      |                    | 0.84         |              | 0.95         |              | -            |               | -             |      |
|                                                                                                                                                                                                                                      |                    | 0.72         |              | 0.85         |              | -            |               | -             |      |
| Maximum reverse current @ rated V <sub>R</sub><br>T <sub>J</sub> =25°C<br>T <sub>J</sub> =100°C<br>T <sub>J</sub> =125°C                                                                                                             | I <sub>R</sub>     | 0.1          |              |              |              |              |               |               | mA   |
|                                                                                                                                                                                                                                      |                    | 15           |              | 10           |              | -            |               |               |      |
|                                                                                                                                                                                                                                      |                    | -            |              |              |              | 5            |               |               |      |
| Voltage rate of change (Rated V <sub>R</sub> )                                                                                                                                                                                       | dV/dt              | 10000        |              |              |              |              |               |               | V/μs |
| Typical thermal resistance                                                                                                                                                                                                           | R <sub>θJC</sub>   | 2            |              |              |              |              |               |               | °C/W |
|                                                                                                                                                                                                                                      | R <sub>θJA</sub>   | 60           |              |              |              |              |               |               |      |
| Operating junction temperature range                                                                                                                                                                                                 | T <sub>J</sub>     | - 55 to +175 |              |              |              |              |               |               | °C   |
| Storage temperature range                                                                                                                                                                                                            | T <sub>STG</sub>   | - 55 to +175 |              |              |              |              |               |               | °C   |

Note 1: 2.0us Pulse Width, f=1.0KHz

Note 2: Pulse Test : 300us Pulse Width, 1% Duty Cycle

| ORDERING INFORMATION |                 |              |                         |                    |                        |
|----------------------|-----------------|--------------|-------------------------|--------------------|------------------------|
| PART NO.             | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX (*) | PACKAGE            | PACKING                |
| MBRS10xx<br>(Note 1) | H               | RN           | G                       | D <sup>2</sup> PAK | 800 / 13" Paper reel   |
|                      |                 | MN           |                         |                    | 800 / 13" Plastic reel |

Note 1: "xx" defines voltage from 35V (MBRS1035) to 150V (MBRS10150)

\*: Optional available

| EXAMPLE       |          |                 |              |                     |                                      |
|---------------|----------|-----------------|--------------|---------------------|--------------------------------------|
| PREFERRED P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION                          |
| MBRS1060HRNG  | MBRS1060 | H               | RN           | G                   | AEC-Q101 qualified<br>Green compound |

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub>=25°C unless otherwise noted)

FIG.1 FORWARD CURRENT DERATING CURVE



FIG. 2 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT PER LEG



FIG. 3 TYPICAL FORWARD CHARACTERISTICS PER LEG

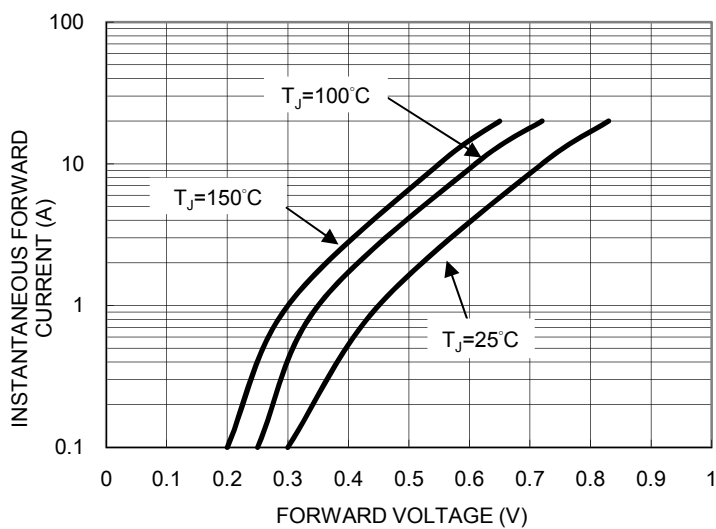


FIG. 4 TYPICAL REVERSE CHARACTERISTICS PER LEG

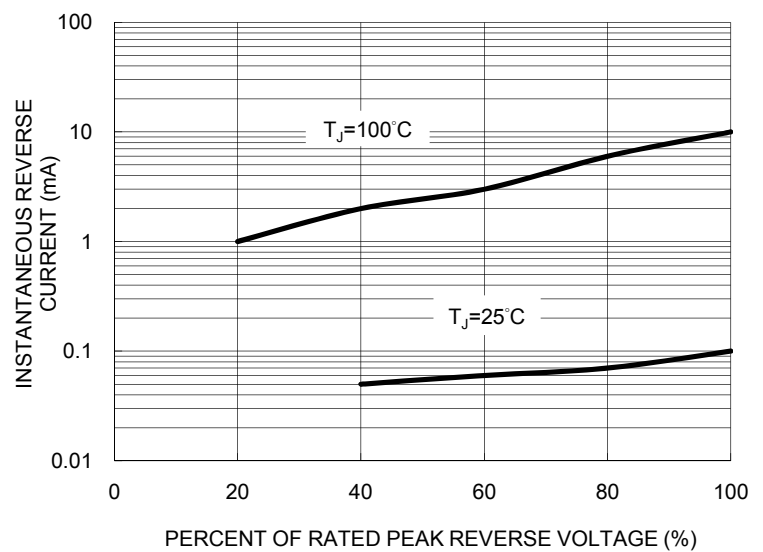


FIG. 5 TYPICAL JUNCTION CAPACITANCE

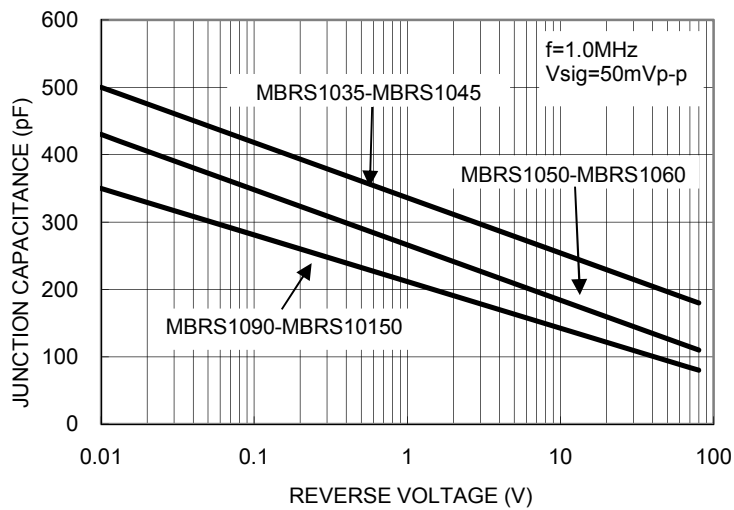
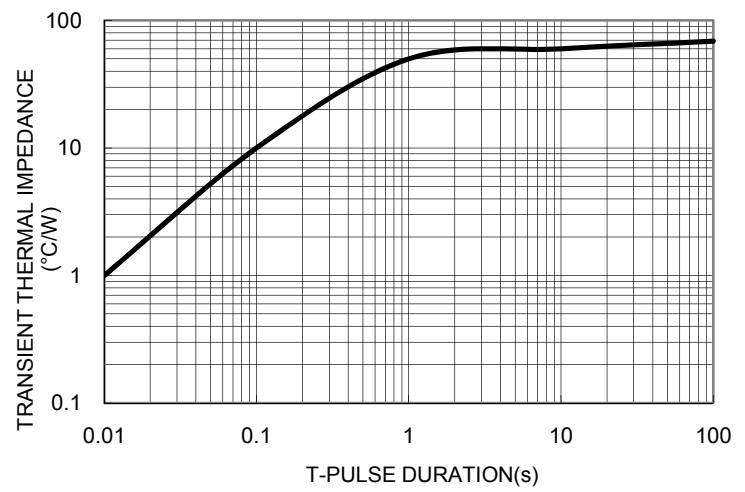
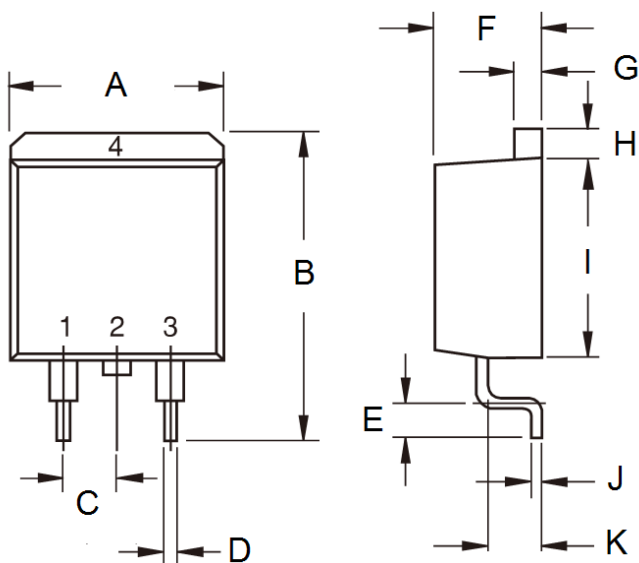


FIG. 6 TYPICAL TRANSIENT THERMAL IMPEDANCE PER LEG

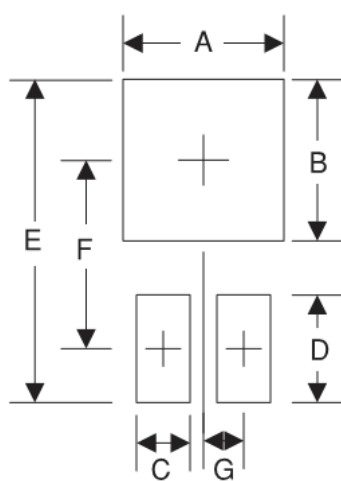


# PACKAGE OUTLINE DIMENSIONS TO-263AB (D<sup>2</sup>PAK)



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | -         | 10.5  | -           | 0.413 |
| B    | 14.60     | 15.88 | 0.575       | 0.625 |
| C    | 2.41      | 2.67  | 0.095       | 0.105 |
| D    | 0.68      | 0.94  | 0.027       | 0.037 |
| E    | 2.29      | 2.79  | 0.090       | 0.110 |
| F    | 4.44      | 4.70  | 0.175       | 0.185 |
| G    | 1.14      | 1.40  | 0.045       | 0.055 |
| H    | 1.14      | 1.40  | 0.045       | 0.055 |
| I    | 8.25      | 9.25  | 0.325       | 0.364 |
| J    | 0.36      | 0.53  | 0.014       | 0.021 |
| K    | 2.03      | 2.79  | 0.080       | 0.110 |

# SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 10.8      | 0.425       |
| B      | 8.3       | 0.327       |
| C      | 1.1       | 0.043       |
| D      | 3.5       | 0.138       |
| E      | 16.9      | 0.665       |
| F      | 9.5       | 0.374       |
| G      | 2.5       | 0.098       |

# MARKING DIAGRAM



P/N = Specific Device Code  
G = Green Compound  
YWW = Date Code  
F = Factory Code

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