

## Schottky Barrier Rectifier

### FEATURES

- Low power loss, high efficiency
- 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 definition



### MECHANICAL DATA

**Case:** TO-220AC

Molding compound, UL flammability classification rating 94V-0

Base P/N with suffix "G" on packing code - halogen-free

Base P/N with prefix "H" on packing code - AEC-Q101 qualified

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

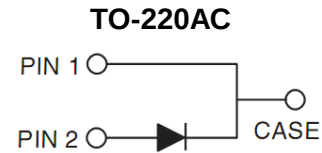
Meet JESD 201 class 1A whisker test,

with prefix "H" on packing code meet JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting torque:** 5 in-lbs maximum

**Weight:** 1.86 g (approximately)



| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)                                              |                    |              |             |              |             |              |              |              |      |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------|--------------|-------------|--------------|--------------|--------------|------|
| PARAMETER                                                                                                                                 | SYMBOL             | MBR<br>1635  | MBR<br>1645 | MBR<br>1650  | MBR<br>1660 | MBR<br>1690  | MBR<br>16100 | MBR<br>16150 | 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> | 16           |             |              |             |              |              |              | A    |
| Peak repetitive forward current<br>(Rated VR, Square Wave, 20KHz)                                                                         | I <sub>FRM</sub>   | 32           |             |              |             |              |              |              | A    |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load                                                       | I <sub>FSM</sub>   | 150          |             |              |             |              |              |              | A    |
| Peak repetitive reverse surge current (Note 1)                                                                                            | I <sub>RRM</sub>   | 1.0          |             | 0.5          |             |              |              | A            |      |
| Maximum instantaneous forward voltage (Note 2)<br>I <sub>F</sub> =16A, T <sub>J</sub> =25°C<br>I <sub>F</sub> =16A, T <sub>J</sub> =125°C | V <sub>F</sub>     | 0.63<br>0.57 |             | 0.75<br>0.65 |             | 0.85<br>0.75 |              | 0.95<br>0.92 | V    |
| Maximum reverse current @ rated VR    T <sub>J</sub> =25 °C<br>T <sub>J</sub> =125 °C                                                     | I <sub>R</sub>     | 0.5<br>15    |             | 0.5<br>10    |             | 0.3<br>7.5   |              | 0.1<br>5     | mA   |
| Voltage rate of change (Rated V <sub>R</sub> )                                                                                            | dV/dt              | 10000        |             |              |             |              |              |              | V/μs |
| Typical thermal resistance                                                                                                                | R <sub>θJC</sub>   | 3            |             |              |             |              |              |              | °C/W |
| Operating junction temperature range                                                                                                      | T <sub>J</sub>     | - 55 to +150 |             |              |             |              |              |              | °C   |
| Storage temperature range                                                                                                                 | T <sub>STG</sub>   | - 55 to +150 |             |              |             |              |              |              | °C   |

Note 1: tp = 2.0 μs, 1.0KHz

Note 2: Pulse test with PW=300μs, 1% duty cycle

| ORDERING INFORMATION |                    |              |                     |          |           |
|----------------------|--------------------|--------------|---------------------|----------|-----------|
| PART NO.             | AEC-Q101 QUALIFIED | PACKING CODE | GREEN COMPOUND CODE | PACKAGE  | PACKING   |
| MBR16xx<br>(Note 1)  | Prefix "H"         | C0           | Suffix "G"          | TO-220AC | 50 / Tube |

Note 1: "xx" defines voltage from 35V (MBR1635) to 150V (MBR16150)

| EXAMPLE       |          |                    |              |                     |                    |
|---------------|----------|--------------------|--------------|---------------------|--------------------|
| PREFERRED P/N | PART NO. | AEC-Q101 QUALIFIED | PACKING CODE | GREEN COMPOUND CODE | DESCRIPTION        |
| MBR1660 C0    | MBR1660  |                    | C0           |                     |                    |
| MBR1660 C0G   | MBR1660  |                    | C0           | G                   | Green compound     |
| MBR1660HC0    | MBR1660  | H                  | C0           |                     | AEC-Q101 qualified |

## RATINGS AND CHARACTERISTICS CURVES

(TA=25°C unless otherwise noted)

FIG. 1- FORWARD CURRENT DERATING CURVE

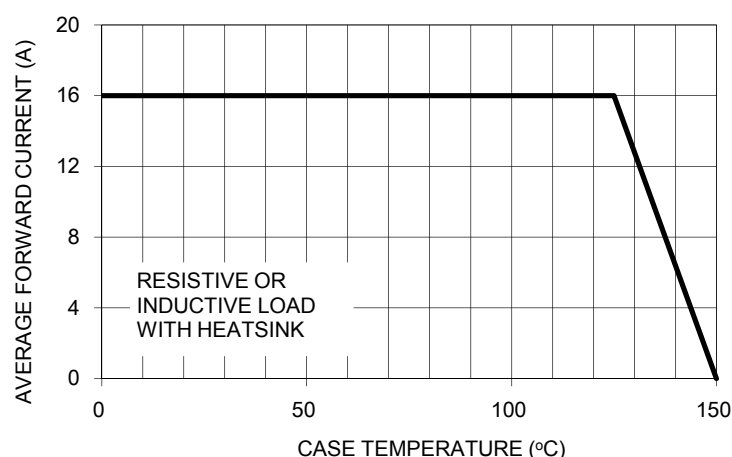


FIG. 2- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

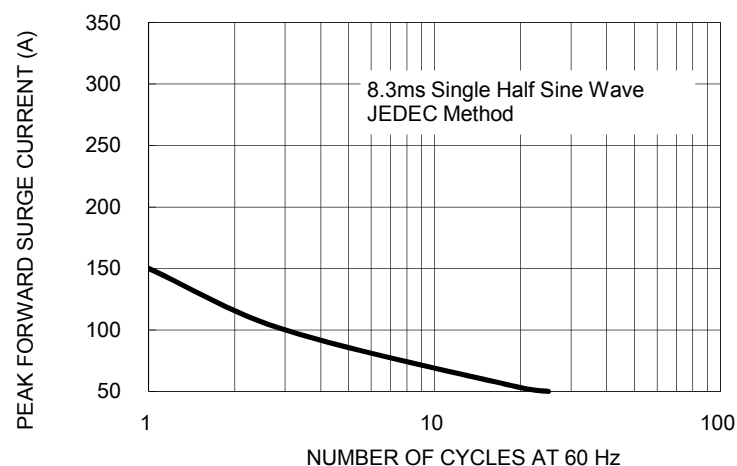


FIG. 3- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

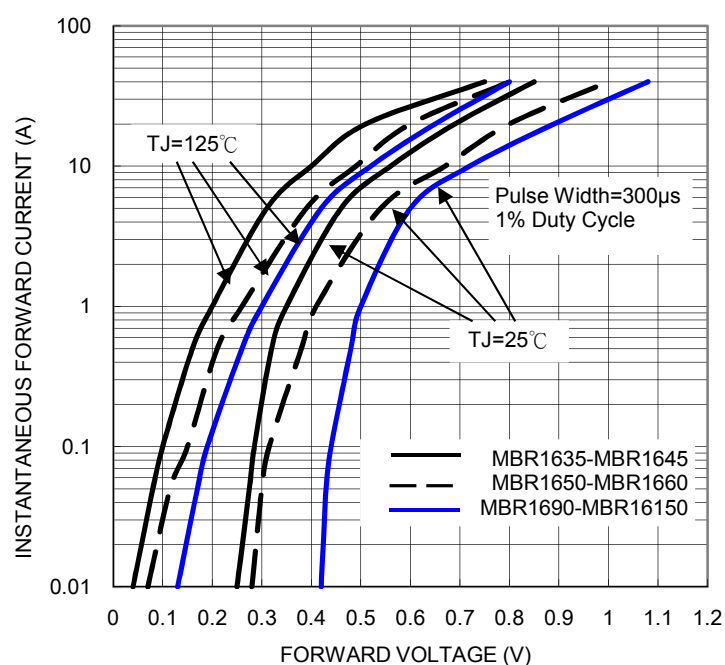


FIG. 4- TYPICAL REVERSE CHARACTERISTICS

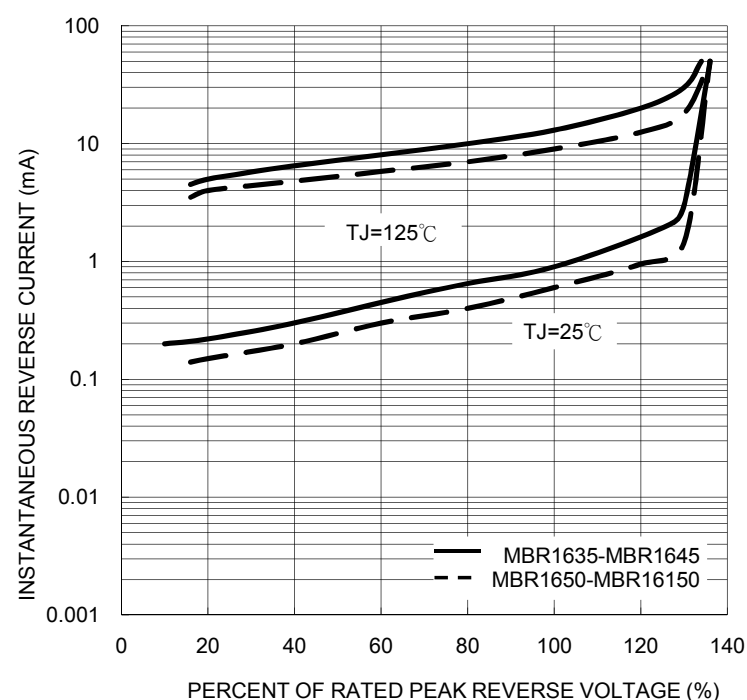


FIG. 5- TYPICAL JUNCTION CAPACITANCE

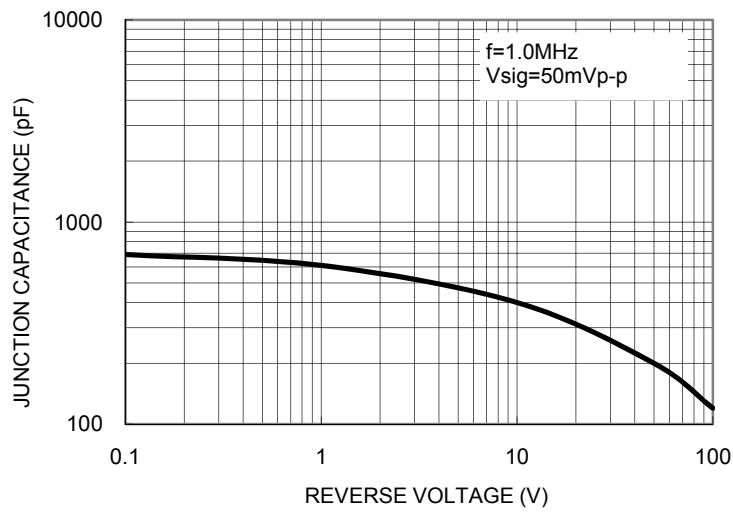
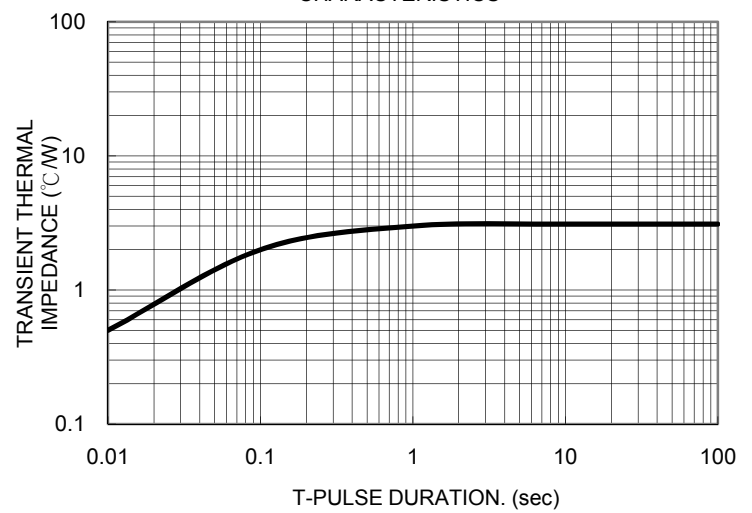
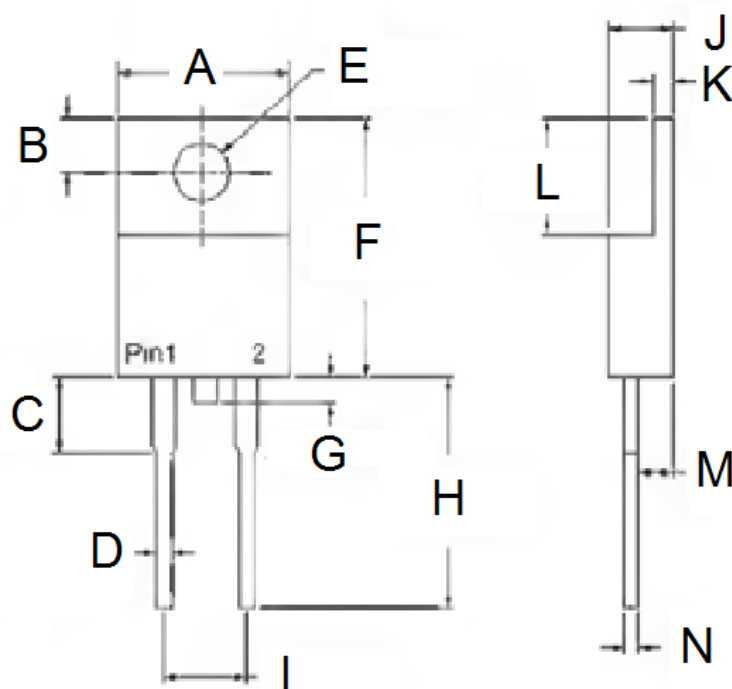


FIG. 6- TYPICAL TRANSIENT THERMAL CHARACTERISTICS



## PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | -         | 10.50 | -           | 0.413 |
| B    | 2.62      | 3.44  | 0.103       | 0.135 |
| C    | 2.80      | 4.20  | 0.110       | 0.165 |
| D    | 0.68      | 0.94  | 0.027       | 0.037 |
| E    | 3.54      | 4.00  | 0.139       | 0.157 |
| F    | 14.60     | 16.00 | 0.575       | 0.630 |
| G    | 0.00      | 1.60  | 0.000       | 0.063 |
| H    | 13.19     | 14.79 | 0.519       | 0.582 |
| I    | 4.95      | 5.20  | 0.195       | 0.205 |
| J    | 4.42      | 4.76  | 0.174       | 0.187 |
| K    | 1.14      | 1.40  | 0.045       | 0.055 |
| L    | 5.84      | 6.86  | 0.230       | 0.270 |
| M    | 2.20      | 2.80  | 0.087       | 0.110 |
| N    | 0.35      | 0.64  | 0.014       | 0.025 |

## MARKING DIAGRAM



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

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