Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

**FEATURES**

- Very low profile - typical height of 0.95 mm
- Ideal for automated placement
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: P/NHM3
  - Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

**TYPICAL APPLICATIONS**

For use in high frequency inverters, freewheeling, DC/DC converters, and polarity protection in commercial and automotive applications.

**MECHANICAL DATA**

**Case:** SMPA (DO-221BC)

- Molding compound meets UL 94 V-0 flammability rating
- Base P/N-M3 - halogen-free, RoHS-compliant
- Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD22-B102

**Polarity:** color band denotes cathode end

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**PRIMARY CHARACTERISTICS**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>V8PAM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF(AV)</td>
<td>8.0 A</td>
<td></td>
</tr>
<tr>
<td>VRMM</td>
<td>100 V</td>
<td></td>
</tr>
<tr>
<td>IF(SM)</td>
<td>100 A</td>
<td></td>
</tr>
<tr>
<td>VF at IF = 8.0 A (TA = 125 °C)</td>
<td>0.62 V</td>
<td></td>
</tr>
<tr>
<td>TJ max.</td>
<td>175 °C</td>
<td></td>
</tr>
<tr>
<td>Package</td>
<td>SMPA (DO-221BC)</td>
<td></td>
</tr>
<tr>
<td>Circuit configuration</td>
<td>Single</td>
<td></td>
</tr>
</tbody>
</table>

**MAXIMUM RATINGS** *(TA = 25 °C unless otherwise noted)*

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>V8PAM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device marking code</td>
<td>8M10</td>
<td></td>
</tr>
<tr>
<td>Maximum repetitive peak reverse voltage</td>
<td>VRMM</td>
<td>100 V</td>
</tr>
<tr>
<td>Maximum DC forward current</td>
<td>IF(AV)</td>
<td>8.0 A</td>
</tr>
<tr>
<td>Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load</td>
<td>IF(SM)</td>
<td>100 A</td>
</tr>
<tr>
<td>Operating junction and storage temperature range</td>
<td>TJ, TS</td>
<td>-40 to +175 °C</td>
</tr>
</tbody>
</table>

**Notes**

1. Units mounted on 3 cm x 3 cm aluminum PCB
2. Free air, mounted on recommended copper pad area
ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>SYMBOL</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous forward voltage</td>
<td>IF = 4.0 A</td>
<td>Vf (1)</td>
<td>0.58</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>IF = 8.0 A</td>
<td></td>
<td>0.70</td>
<td>0.78</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IF = 4.0 A</td>
<td></td>
<td>0.50</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IF = 8.0 A</td>
<td></td>
<td>0.62</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Reverse current</td>
<td>VR = 70 V</td>
<td>IR (2)</td>
<td>0.01</td>
<td>-</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>VR = 100 V</td>
<td></td>
<td>2</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TA = 125 °C</td>
<td></td>
<td>-</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Typical junction capacitance</td>
<td>4.0 V, 1 MHz</td>
<td>Cj</td>
<td>810</td>
<td>-</td>
<td>pF</td>
</tr>
</tbody>
</table>

Notes
(1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (TA = 25 °C unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>V8PAM10</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical thermal resistance</td>
<td>RthJA (1)(2)</td>
<td>100</td>
<td>°C/W</td>
</tr>
<tr>
<td></td>
<td>RthJM (3)</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Notes
(1) The heat generated must be less than the thermal conductivity from junction-to-ambient: dPd/dTj < 1/RthJA
(2) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance RthJA - junction to ambient
(3) Units mounted on 3 cm x 3 cm aluminum PCB; thermal resistance RthJM - junction to mount

ORDERING INFORMATION (Example)

<table>
<thead>
<tr>
<th>PREFERRED P/N</th>
<th>UNIT WEIGHT (g)</th>
<th>PREFERRED PACKAGE CODE</th>
<th>BASE QUANTITY</th>
<th>DELIVERY MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>V8PAM10-M3/I</td>
<td>0.032</td>
<td>I</td>
<td>14 000</td>
<td>13” diameter plastic tape and reel</td>
</tr>
<tr>
<td>V8PAM10HM3/I (1)</td>
<td>0.032</td>
<td>I</td>
<td>14 000</td>
<td>13” diameter plastic tape and reel</td>
</tr>
</tbody>
</table>

Note
(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (TA = 25 °C unless otherwise specified)

Fig. 1 - Maximum Forward Current Derating Curve

Fig. 2 - Forward Power Loss Characteristics
Fig. 3 - Typical Instantaneous Forward Characteristics

Fig. 4 - Typical Reverse Leakage Characteristics

Fig. 5 - Typical Junction Capacitance

Fig. 6 - Typical Transient Thermal Impedance

Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPA (DO-221BC)

Cathode Band

0.106 (2.70)
0.098 (2.50)
0.171 (4.35)
0.163 (4.15)
0.211 (5.35)
0.199 (5.05)

0.039 (1.00)
0.035 (0.90)

0.012 (0.30)
0.006 (0.15)

0.057 (1.45)
0.049 (1.25)

0.087 (2.20)
0.063 (1.60)

0.059 (1.50)
0.030 (0.75)
Typ.: 0.019 (0.48)

0.122 (3.10)
0.098 (2.50)
0.059 (1.50)
0.030 (0.75)

0.059 (1.50) MIN. 0.122 (3.10)

MAX. 0.037 (0.92)

0.087 (2.20) MIN.
0.060 (1.52) MIN.

MIN. 0.122 (3.10)

0.217 (5.52)
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