MSS39-xxx-x Series

P-Type Silicon Schottky Diodes

Features
- Very Low 1/f Noise
- Detector Applications up to 40 GHz
- Chip Beam Lead and Packaged Devices

Description
The MSS39-xxx-x Series of Schottky diodes is fabricated on P-Type epitaxial substrates for superior 1/f noise performance in microwave biased-detector applications up to 40 GHz.

Chip
Electrical Specifications: $T_A = 25^\circ C$

<table>
<thead>
<tr>
<th>Model</th>
<th>$V_{BR}$ Min. V</th>
<th>$V_F$ Typ. V</th>
<th>$C_J$ Max. pF</th>
<th>$T_{SS}$ Ttp. dBm</th>
<th>$\gamma$ Typ. mV / mW</th>
<th>Frequency Max. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS39-045-C15</td>
<td>5</td>
<td>0.40</td>
<td>0.10</td>
<td>-58</td>
<td>5,000</td>
<td>18</td>
<td>C15</td>
</tr>
<tr>
<td>MSS39-048-C15</td>
<td>5</td>
<td>0.39</td>
<td>0.15</td>
<td>-58</td>
<td>5,000</td>
<td>12</td>
<td>C15</td>
</tr>
<tr>
<td>Test Conditions</td>
<td>$I_R = 10 \mu A$</td>
<td>$I_F = 1 mA$</td>
<td>$V_R = 0 V$, $F = 1 MHz$</td>
<td>DC Bias = 10 mA, $F = 10 GHz$</td>
<td>$R_L = 100 K\Omega$, Video BW = 2 MHz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Beam Lead
Electrical Specifications: $T_A = 25^\circ C$

<table>
<thead>
<tr>
<th>Model</th>
<th>$V_{BR}$ Min. V</th>
<th>$V_F$ Typ. V</th>
<th>$C_J$ Max. pF</th>
<th>$T_{SS}$ Ttp. dBm</th>
<th>$\gamma$ Typ. mV / mW</th>
<th>Frequency Max. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS39-144-B10B</td>
<td>3.5</td>
<td>0.38</td>
<td>0.08</td>
<td>-58</td>
<td>5,000</td>
<td>40</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS39-146-B10B</td>
<td>3.5</td>
<td>0.38</td>
<td>0.10</td>
<td>-58</td>
<td>5,000</td>
<td>26</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS39-148-B10B</td>
<td>3.5</td>
<td>0.39</td>
<td>0.12</td>
<td>-58</td>
<td>5,000</td>
<td>12</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS39-152-B10B</td>
<td>3.5</td>
<td>0.38</td>
<td>0.18</td>
<td>-58</td>
<td>5,000</td>
<td>18</td>
<td>B10B</td>
</tr>
<tr>
<td>Test Conditions</td>
<td>$I_R = 10 \mu A$</td>
<td>$I_F = 1 mA$</td>
<td>$V_R = 0 V$, $F = 1 MHz$</td>
<td>DC Bias = 10 mA, $F = 10 GHz$</td>
<td>$R_L = 100 K\Omega$, Video BW = 2 MHz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Continued next page)
MSS39-xxx-x Series

P-Type Silicon Schottky Diodes

Packaged Electrical Specifications: $T_A = 25^\circ C$

<table>
<thead>
<tr>
<th>Model</th>
<th>$V_{BR}$ Min. V</th>
<th>$V_F$ Typ. V</th>
<th>$C_J$ Max. pF</th>
<th>$T_{SS}$ Ttp. dBm</th>
<th>$Y$ Typ. mV / mW</th>
<th>Frequency Max. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS39-045-P55</td>
<td>5.0</td>
<td>0.40</td>
<td>0.25</td>
<td>-58</td>
<td>5000</td>
<td>18</td>
<td>P55</td>
</tr>
<tr>
<td>MSS39-045-P86</td>
<td>5.0</td>
<td>0.40</td>
<td>0.27</td>
<td>-58</td>
<td>5000</td>
<td>18</td>
<td>P86</td>
</tr>
<tr>
<td>MSS39-048-P55</td>
<td>5.0</td>
<td>0.39</td>
<td>0.30</td>
<td>-58</td>
<td>5000</td>
<td>12</td>
<td>P55</td>
</tr>
<tr>
<td>MSS39-048-P86</td>
<td>5.0</td>
<td>0.39</td>
<td>0.32</td>
<td>-58</td>
<td>5000</td>
<td>12</td>
<td>P86</td>
</tr>
<tr>
<td>MSS39-148-E25</td>
<td>3.5</td>
<td>0.39</td>
<td>0.22</td>
<td>-58</td>
<td>5000</td>
<td>18</td>
<td>E25</td>
</tr>
<tr>
<td>MSS39-148-H20</td>
<td>3.5</td>
<td>0.39</td>
<td>0.30</td>
<td>-58</td>
<td>5000</td>
<td>12</td>
<td>H20</td>
</tr>
<tr>
<td>MSS39-152-E25</td>
<td>3.5</td>
<td>0.38</td>
<td>0.28</td>
<td>-58</td>
<td>5000</td>
<td>12</td>
<td>E25</td>
</tr>
<tr>
<td>MSS39-152-H20</td>
<td>3.5</td>
<td>0.38</td>
<td>0.36</td>
<td>-58</td>
<td>5000</td>
<td>18</td>
<td>H20</td>
</tr>
<tr>
<td>Test Conditions</td>
<td>$I_R = 10$ µA</td>
<td>$I_F = 1$ mA</td>
<td>$V_R = 0$ V, $F = 1$ MHz</td>
<td>DC Bias = 10 mA, $F = 10$ GHz</td>
<td>$R_L = 100$ Ω, Video BW = 2 MHz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse Voltage</td>
<td>1 V</td>
</tr>
<tr>
<td>Forward Current</td>
<td>50 mA</td>
</tr>
<tr>
<td>CW Power Dissipation</td>
<td>100 mW, derated linearly to 0 @ $T_A = +150^\circ C$</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-65°C to +150°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
<tr>
<td>Soldering Temperature (packaged)</td>
<td>+230°C for 5 seconds</td>
</tr>
</tbody>
</table>
MSS39-xxx-x Series

P-Type Silicon Schottky Diodes

Typical Performance Curves: $T_A = 25^\circ$C
MSS39-xxx-x Series

P-Type Silicon Schottky Diodes

Outline Drawings

C15

Top contact is cathode

17 [4.35]
19 [4.83]
12 [3.00]
5 [1.27]
Epoxy

B10B

10 [2.55]
6 [1.52]
3 [0.76]

P55 (hermetic)

55 [1.397]
51 [1.266]
Dia.

P86 (hermetic)

Ceramic Body

Heatsink is anode

E25 (non-hermetic)

55 [1.397] SQ.
45 [1.143]

H20 (hermetic)

102 [2.59]
52 [1.337]
Square

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