MSS39-xxx-x Series

P-Type Silicon Schottky Diodes

Rev. V1

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>$Y$ 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>
</tbody>
</table>

Test Conditions
- $I_R = 10 \mu A$
- $I_F = 1 mA$
- $V_R = 0 V$, $F = 1 MHz$
- $R_L = 100 K\Omega$, Video BW = 2 MHz
- DC Bias = 10 mA, $F = 10 GHz$

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>$Y$ 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>18</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>12</td>
<td>B10B</td>
</tr>
</tbody>
</table>

Test Conditions
- $I_R = 10 \mu A$
- $I_F = 1 mA$
- $V_R = 0 V$, $F = 1 MHz$
- $R_L = 100 K\Omega$, Video BW = 2 MHz
- DC Bias = 10 mA, $F = 10 GHz$

(Continued next page)
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>$T_{SS}$ Tp. dBm</th>
<th>$\gamma$ 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>
</tbody>
</table>

Test Conditions: $I_R = 10 \, \mu A$, $I_F = 1 \, mA$, $V_{BR} = 0 \, V$, $F = 1 \, MHz$, DC Bias = 10 mA, $F = 10 \, GHz$, $R_L = 100 \, K\Omega$, Video BW = 2 MHz

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

12.4 [315]
13 [330]

Top Contact
1 [0.026]
0.3 [0.039]

Black Contact

0.01 [0.0004]
0.005 [0.0002]

17 [432]
13 [332]

Example

B10B

Cut lead is anode

12 [0.48]
6 [0.24]

10 [0.4]

Example

P55 (hermetic)

Ceramic Body

55 [1.397]

51 [1.296] Dia.

Heatsink is anode

P86 (hermetic)

Ceramic Body

66 [1.676]

50 [1.27] Dia.

Heatsink is anode

E25 (non-hermetic)

Cut lead is Cathode

18 [0.457]

12 [0.306]

Epoxy

5 [0.127] 2Pins

3 [0.078]

50 [1.27] Max.

14 [0.356]

8 [0.203]

Ceramic

80 [2.032] Min.

H20 (hermetic)

Cut lead is Cathode

102 [2.59] Dia

81 [2.067]

23 [0.584]

17 [0.432]

104 [2.647]

92 [2.337] Square

35 [0.889]

25 [0.635]

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