MSS30-xxx-x Series

Low Barrier Silicon Schottky Diodes

Features
- $V_F$, $R_D$ and $C_J$ Matching Options
- Chip, Beam Lead and Packaged Devices
- Hi-Rel Screening per MIL-PRF-19500 and MIL-PRF-38534 Available

Description
The MSS30-xxx-x Series of Schottky diodes are fabricated on N-Type epitaxial substrates using proprietary processes that yield the highest FCOs in the industry. Optimum mixer performance is obtained with LO power of -3 dBm to +3 dBm per diode.

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Configuration</th>
<th>$V_F$ Typ. V</th>
<th>$V_{BR}$ Min. V</th>
<th>$C_J$ Typ. / Max. pF</th>
<th>$R_S$ Typ. Ω</th>
<th>$R_D$ Max. Ω</th>
<th>$F_{CO}$ Typ. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS30-046-C15</td>
<td>Single Junction</td>
<td>0.29</td>
<td>2</td>
<td>0.10 / 0.12</td>
<td>10</td>
<td>18</td>
<td>160</td>
<td>C15</td>
</tr>
<tr>
<td>MSS30-050-C15</td>
<td>Single Junction</td>
<td>0.27</td>
<td>2</td>
<td>0.15 / 0.18</td>
<td>6</td>
<td>15</td>
<td>175</td>
<td>C15</td>
</tr>
<tr>
<td>Test Conditions</td>
<td></td>
<td>$I_F = 1 mA$</td>
<td>$I_R = 10 \mu A$</td>
<td>$V_R = 0 V$ $F = 1 MHz$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Configuration</th>
<th>$V_F$ Typ. V</th>
<th>$V_{BR}$ Min. V</th>
<th>$C_J$ Typ. / Max. pF</th>
<th>$R_S$ Typ. Ω</th>
<th>$R_D$ Max. Ω</th>
<th>$F_{CO}$ Typ. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS30-142-B10B</td>
<td>Single Junction</td>
<td>0.29</td>
<td>2</td>
<td>0.07 / 0.10</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS30-148-B10B</td>
<td>Single Junction</td>
<td>0.27</td>
<td>2</td>
<td>0.12 / 0.15</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS30-154-B10B</td>
<td>Single Junction</td>
<td>0.25</td>
<td>2</td>
<td>0.22 / 0.25</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS30-242-B20</td>
<td>Series Tee</td>
<td>0.29</td>
<td>2</td>
<td>0.07 / 0.10</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>B20</td>
</tr>
<tr>
<td>MSS30-248-B20</td>
<td>Series Tee</td>
<td>0.27</td>
<td>2</td>
<td>0.12 / 0.15</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>B20</td>
</tr>
<tr>
<td>MSS30-254-B20</td>
<td>Series Tee</td>
<td>0.25</td>
<td>2</td>
<td>0.22 / 0.25</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>B20</td>
</tr>
<tr>
<td>MSS30-346-B21</td>
<td>Anti Parallel Pair</td>
<td>0.27</td>
<td>-</td>
<td>0.27 / 0.30</td>
<td>11</td>
<td>16</td>
<td>55</td>
<td>B21</td>
</tr>
<tr>
<td>MSS30-442-B41</td>
<td>Ring Quad</td>
<td>0.29</td>
<td>2</td>
<td>0.07 / 0.10</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>B41</td>
</tr>
<tr>
<td>MSS30-448-B41</td>
<td>Ring Quad</td>
<td>0.27</td>
<td>2</td>
<td>0.12 / 0.15</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>B41</td>
</tr>
<tr>
<td>MSS30-454-B40</td>
<td>Ring Quad</td>
<td>0.25</td>
<td>2</td>
<td>0.22 / 0.25</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>B40</td>
</tr>
<tr>
<td>Test Conditions</td>
<td></td>
<td>$I_F = 1 mA$</td>
<td>$I_R = 10 \mu A$</td>
<td>$V_R = 0 V$ $F = 1 MHz$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For further information and support please visit: https://www.macom.com/support
Low Barrier Silicon Schottky Diodes

Packaged

Electrical Specifications: \( T_A = 25^\circ C \)

<table>
<thead>
<tr>
<th>Model</th>
<th>Configuration</th>
<th>( V_F ) Typ. V</th>
<th>( V_{BR} ) Min. V</th>
<th>( C_T ) Typ. / Max. pF</th>
<th>( R_S ) Typ. ( \Omega )</th>
<th>( R_D ) Max. ( \Omega )</th>
<th>( F_{CO} ) Typ. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS30-046-P55</td>
<td>Single Junction</td>
<td>0.29</td>
<td>2</td>
<td>0.23 / 0.30</td>
<td>10</td>
<td>18</td>
<td>160</td>
<td>P55</td>
</tr>
<tr>
<td>MSS30-046-P86</td>
<td>Single Junction</td>
<td>0.29</td>
<td>2</td>
<td>0.27 / 0.33</td>
<td>10</td>
<td>18</td>
<td>160</td>
<td>P86</td>
</tr>
<tr>
<td>MSS30-050-P55</td>
<td>Single Junction</td>
<td>0.27</td>
<td>2</td>
<td>0.28 / 0.35</td>
<td>6</td>
<td>15</td>
<td>175</td>
<td>P55</td>
</tr>
<tr>
<td>MSS30-050-P86</td>
<td>Single Junction</td>
<td>0.27</td>
<td>2</td>
<td>0.32 / 0.38</td>
<td>6</td>
<td>15</td>
<td>175</td>
<td>P86</td>
</tr>
<tr>
<td>MSS30-142-E25</td>
<td>Single Junction</td>
<td>0.29</td>
<td>2</td>
<td>0.20 / 0.26</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>E25</td>
</tr>
<tr>
<td>MSS30-142-H20</td>
<td>Single Junction</td>
<td>0.29</td>
<td>2</td>
<td>0.25 / 0.31</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>H20</td>
</tr>
<tr>
<td>MSS30-148-E25</td>
<td>Single Junction</td>
<td>0.27</td>
<td>2</td>
<td>0.30 / 0.36</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>E25</td>
</tr>
<tr>
<td>MSS30-148-H20</td>
<td>Single Junction</td>
<td>0.27</td>
<td>2</td>
<td>0.30 / 0.36</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>H20</td>
</tr>
<tr>
<td>MSS30-154-E25</td>
<td>Single Junction</td>
<td>0.25</td>
<td>2</td>
<td>0.35 / 0.41</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>E25</td>
</tr>
<tr>
<td>MSS30-154-H20</td>
<td>Single Junction</td>
<td>0.25</td>
<td>2</td>
<td>0.40 / 0.46</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>H20</td>
</tr>
<tr>
<td>MSS30-242-E35</td>
<td>Series Tee</td>
<td>0.29</td>
<td>2</td>
<td>0.15 / 0.21</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>E35</td>
</tr>
<tr>
<td>MSS30-242-H30</td>
<td>Series Tee</td>
<td>0.29</td>
<td>2</td>
<td>0.25 / 0.31</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>H30</td>
</tr>
<tr>
<td>MSS30-248-E35</td>
<td>Series Tee</td>
<td>0.27</td>
<td>2</td>
<td>0.25 / 0.31</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>E35</td>
</tr>
<tr>
<td>MSS30-248-H30</td>
<td>Series Tee</td>
<td>0.27</td>
<td>2</td>
<td>0.30 / 0.36</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>H30</td>
</tr>
<tr>
<td>MSS30-254-E35</td>
<td>Series Tee</td>
<td>0.25</td>
<td>2</td>
<td>0.35 / 0.41</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>E35</td>
</tr>
<tr>
<td>MSS30-254-H30</td>
<td>Series Tee</td>
<td>0.25</td>
<td>2</td>
<td>0.40 / 0.46</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>H30</td>
</tr>
<tr>
<td>MSS30-346-E25</td>
<td>Anti-Parallel Pair</td>
<td>0.27</td>
<td>-</td>
<td>0.35 / 0.40</td>
<td>11</td>
<td>16</td>
<td>55</td>
<td>E25</td>
</tr>
<tr>
<td>MSS30-346-H20</td>
<td>Anti-Parallel Pair</td>
<td>0.27</td>
<td>-</td>
<td>0.45 / 0.50</td>
<td>11</td>
<td>16</td>
<td>55</td>
<td>H20</td>
</tr>
<tr>
<td>MSS30-442-E45</td>
<td>Ring Quad</td>
<td>0.29</td>
<td>2</td>
<td>0.15 / 0.21</td>
<td>13</td>
<td>22</td>
<td>175</td>
<td>E45</td>
</tr>
<tr>
<td>MSS30-448-E45</td>
<td>Ring Quad</td>
<td>0.27</td>
<td>2</td>
<td>0.20 / 0.26</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>E45</td>
</tr>
<tr>
<td>MSS30-454-E45</td>
<td>Ring Quad</td>
<td>0.25</td>
<td>2</td>
<td>0.25 / 0.31</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>E45</td>
</tr>
<tr>
<td>MSS30-454-H40</td>
<td>Ring Quad</td>
<td>0.25</td>
<td>2</td>
<td>0.25 / 0.31</td>
<td>3</td>
<td>12</td>
<td>240</td>
<td>H40</td>
</tr>
</tbody>
</table>

Test Conditions

<table>
<thead>
<tr>
<th>( I_F = 1 \text{ mA} )</th>
<th>( I_R = 10 \mu \text{A} )</th>
<th>( V_R = 0 \text{ V} )</th>
<th>( F = 1 \text{ MHz} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( I = 5 \text{ mA} )</td>
<td></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>Rated ( V_{BR} )</td>
</tr>
<tr>
<td>Forward Current</td>
<td>50 mA</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>100 mW, per junction @ ( T_A = 25^\circ C ), derate 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>
<tr>
<td>Beam Lead Pull Strength</td>
<td>4 G minimum</td>
</tr>
</tbody>
</table>

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MSS30-xxx-x Series

Low Barrier Silicon Schottky Diodes

Typical Performance Curves: $T_A = 25^\circ\text{C}$
MSS30-xxx-x Series

Low Barrier Silicon Schottky Diodes

Outline Drawings

C15

B10B

B20

B21

B40

B41

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Low Barrier Silicon Schottky Diodes

E25 (non-hermetic)

E35 (non-hermetic)

E45 (non-hermetic)

H20 (hermetic)

H30 (hermetic)

H40 (hermetic)

P55 (hermetic)

P86 (hermetic)

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