MSS40-xxx-x Series

Medium Barrier Silicon Schottky Diodes

Rev. V1

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 MSS40-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 0 dBm to +6 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. ( \Omega )</th>
<th>( R_D ) Max. ( \Omega )</th>
<th>( F_{CO} ) Typ. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS40-045-C15</td>
<td>Single Junction</td>
<td>0.42</td>
<td>3</td>
<td>0.09 / 0.12</td>
<td>7</td>
<td>15</td>
<td>253</td>
<td>C15</td>
</tr>
<tr>
<td>MSS40-048-C15</td>
<td>Single Junction</td>
<td>0.40</td>
<td>3</td>
<td>0.12 / 0.15</td>
<td>7</td>
<td>15</td>
<td>190</td>
<td>C15</td>
</tr>
<tr>
<td>Test Conditions</td>
<td></td>
<td>( I_F = 1 ) mA ( I_R = 10 ) ( \mu A )</td>
<td>( V_R = 0 ) V ( F = 1 ) MHz</td>
<td>( I = 5 ) mA</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. ( \Omega )</th>
<th>( R_D ) Max. ( \Omega )</th>
<th>( F_{CO} ) Typ. GHz</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSS40-141-B10B</td>
<td>Single Junction</td>
<td>0.42</td>
<td>3</td>
<td>0.06 / 0.10</td>
<td>10</td>
<td>22</td>
<td>265</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS40-148-B10B</td>
<td>Single Junction</td>
<td>0.40</td>
<td>3</td>
<td>0.12 / 0.15</td>
<td>7</td>
<td>17</td>
<td>190</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS40-155-B10B</td>
<td>Single Junction</td>
<td>0.38</td>
<td>3</td>
<td>0.25 / 0.30</td>
<td>5</td>
<td>13</td>
<td>127</td>
<td>B10B</td>
</tr>
<tr>
<td>MSS40-244-B20</td>
<td>Series Tee</td>
<td>0.44</td>
<td>3</td>
<td>0.08 / 0.12</td>
<td>19</td>
<td>22</td>
<td>105</td>
<td>B20</td>
</tr>
<tr>
<td>MSS40-248-B20</td>
<td>Series Tee</td>
<td>0.44</td>
<td>3</td>
<td>0.12 / 0.15</td>
<td>10</td>
<td>17</td>
<td>133</td>
<td>B20</td>
</tr>
<tr>
<td>MSS40-255-B20</td>
<td>Series Tee</td>
<td>0.38</td>
<td>3</td>
<td>0.25 / 0.30</td>
<td>5</td>
<td>15</td>
<td>127</td>
<td>B20</td>
</tr>
<tr>
<td>MSS40-448-B41</td>
<td>Ring Quad</td>
<td>0.40</td>
<td>3</td>
<td>0.12 / 0.15</td>
<td>7</td>
<td>17</td>
<td>190</td>
<td>B41</td>
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<tr>
<td>MSS40-455-B40</td>
<td>Ring Quad</td>
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<td>3</td>
<td>0.25 / 0.30</td>
<td>5</td>
<td>17</td>
<td>127</td>
<td>B40</td>
</tr>
<tr>
<td>Test Conditions</td>
<td></td>
<td>( I_F = 1 ) mA ( I_R = 10 ) ( \mu A )</td>
<td>( V_R = 0 ) V ( F = 1 ) MHz</td>
<td>( I = 5 ) mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Continued next page)
## 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>$C_J$ 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>MSS40-045-P55</td>
<td>Single Junction</td>
<td>0.42</td>
<td>3</td>
<td>0.21 / 0.27</td>
<td>7</td>
<td>253</td>
<td>P55</td>
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</tr>
<tr>
<td>MSS40-045-P86</td>
<td>Single Junction</td>
<td>0.42</td>
<td>3</td>
<td>0.24 / 0.30</td>
<td>7</td>
<td>253</td>
<td>P86</td>
<td></td>
</tr>
<tr>
<td>MSS40-048-P55</td>
<td>Single Junction</td>
<td>0.40</td>
<td>3</td>
<td>0.24 / 0.30</td>
<td>7</td>
<td>190</td>
<td>P55</td>
<td></td>
</tr>
<tr>
<td>MSS40-048-P86</td>
<td>Single Junction</td>
<td>0.40</td>
<td>3</td>
<td>0.27 / 0.33</td>
<td>7</td>
<td>190</td>
<td>P86</td>
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<tr>
<td>MSS40-141-E25</td>
<td>Single Junction</td>
<td>0.42</td>
<td>3</td>
<td>0.16 / 0.22</td>
<td>10</td>
<td>265</td>
<td>E25</td>
<td></td>
</tr>
<tr>
<td>MSS40-141-H20</td>
<td>Single Junction</td>
<td>0.42</td>
<td>3</td>
<td>0.24 / 0.30</td>
<td>10</td>
<td>265</td>
<td>H20</td>
<td></td>
</tr>
<tr>
<td>MSS40-148-E25</td>
<td>Single Junction</td>
<td>0.40</td>
<td>3</td>
<td>0.22 / 0.28</td>
<td>7</td>
<td>190</td>
<td>E25</td>
<td></td>
</tr>
<tr>
<td>MSS40-148-H20</td>
<td>Single Junction</td>
<td>0.40</td>
<td>3</td>
<td>0.30 / 0.36</td>
<td>7</td>
<td>190</td>
<td>H20</td>
<td></td>
</tr>
<tr>
<td>MSS40-155-E25</td>
<td>Single Junction</td>
<td>0.38</td>
<td>3</td>
<td>0.35 / 0.41</td>
<td>5</td>
<td>127</td>
<td>E25</td>
<td></td>
</tr>
<tr>
<td>MSS40-155-H20</td>
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<td>0.38</td>
<td>3</td>
<td>0.43 / 0.50</td>
<td>5</td>
<td>127</td>
<td>H20</td>
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<tr>
<td>MSS40-244-E35</td>
<td>Series Tee</td>
<td>0.44</td>
<td>3</td>
<td>0.18 / 0.24</td>
<td>19</td>
<td>105</td>
<td>E35</td>
<td></td>
</tr>
<tr>
<td>MSS40-248-E35</td>
<td>Series Tee</td>
<td>0.44</td>
<td>3</td>
<td>0.22 / 0.28</td>
<td>10</td>
<td>133</td>
<td>E35</td>
<td></td>
</tr>
<tr>
<td>MSS40-255-E35</td>
<td>Series Tee</td>
<td>0.38</td>
<td>3</td>
<td>0.35 / 0.41</td>
<td>5</td>
<td>127</td>
<td>E35</td>
<td></td>
</tr>
<tr>
<td>MSS40-448-E45</td>
<td>Ring Quad</td>
<td>0.40</td>
<td>3</td>
<td>0.24 / 0.30</td>
<td>7</td>
<td>190</td>
<td>E45</td>
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<tr>
<td>MSS40-455-E45</td>
<td>Ring Quad</td>
<td>0.38</td>
<td>3</td>
<td>0.32 / 0.38</td>
<td>5</td>
<td>127</td>
<td>E45</td>
<td></td>
</tr>
<tr>
<td>MSS40-455-H40</td>
<td>Ring Quad</td>
<td>0.38</td>
<td>3</td>
<td>0.42 / 0.48</td>
<td>5</td>
<td>127</td>
<td>H40</td>
<td></td>
</tr>
</tbody>
</table>

### Test Conditions

- $I_F = 1\ mA$
- $I_{R} = 10\ \mu A$
- $V_R = 0\ V$
- $F = 1\ MHz$
- $I = 5\ mA$

### 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 @ $T_A = 25^\circ C$,</td>
</tr>
<tr>
<td></td>
<td>derate linearly to 0 @ $T_A = +150^\circ C$</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-65$^\circ C$ to +150$^\circ C$</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65$^\circ C$ to +150$^\circ C$</td>
</tr>
<tr>
<td>Soldering Temperature (packaged)</td>
<td>+230$^\circ C$ for 5 seconds</td>
</tr>
<tr>
<td>Beam Lead Pull Strength</td>
<td>4 G minimum</td>
</tr>
</tbody>
</table>

For further information and support please visit:
[https://www.macom.com/support](https://www.macom.com/support)
MSS40-xxx-x Series

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Typical Performance Curves: $T_A = 25^\circ$C

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MSS40-xxx-x Series

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