Surface Mount
Voltage Controlled Oscillator
ROS-1950-519+

Linear Tuning  1780 to 1950 MHz

Features
• linear tuning characteristics
• low phase noise
• low pushing
• low pulling
• aqueous washable

Applications
• wireless communications
• high capacity radio link

Electrical Specifications

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>FREQ. (MHz)</th>
<th>POWER OUTPUT (dBm)</th>
<th>PHASE NOISE (dBc/Hz SSB at offset frequencies, kHz)</th>
<th>VOLTAGE RANGE (V)</th>
<th>SENSITIVITY (MHz/V)</th>
<th>PORT CAP (pF)</th>
<th>MODULATION 3 dB BANDWIDTH (MHz)</th>
<th>TUNING</th>
<th>NON HARMONIC SPURIOUS (dBc)</th>
<th>PULLING (pk-pk, 0.12 dB) (MHz/V)</th>
<th>PUSHING (MHz/V)</th>
<th>DC OPERATING POWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROS-1950-519+</td>
<td>1780-1950</td>
<td>+3</td>
<td>-85, -110, -130, -150</td>
<td>0.5, 11</td>
<td>22-25</td>
<td>18, 120</td>
<td>-90, -20, -10</td>
<td>Typ.</td>
<td>-90</td>
<td>0.5, 0.5</td>
<td>5, Max.</td>
<td></td>
</tr>
</tbody>
</table>

Maximum Ratings
- Operating Temperature: -55°C to 85°C
- Storage Temperature: -55°C to 100°C
- Absolute Max. Supply Voltage (Vcc): 7V
- Absolute Max. Tuning Voltage (Vtune): 13V

All specifications 50 ohm system
Permanent damage may occur if any of these limits are exceeded.

Tape & Reel: F37
7" Reels with 10, 20, 50, 100 devices
13" Reels with 200, 500 devices

Environmental Ratings: ENV65

Demo Board MCL P/N: TB-10
Suggested PCB Layout (PL-012)

Outline Dimensions (in.):

- A: .500
- B: .500
- C: .180
- D: .100
- E: .080
- F: .115
- G: .060
- H: .040
- I: .540
- J: .600
- K: .100
- L: .135
- M: .135
- N: .115
- O: .140
- P: .070
- Q: .150
- R: .150
- S: .070
- T: .178

Notes:
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits’ applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits’ standard limited warranty and terms and conditions (collectively, “Standard Terms”); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits’ website at www.minicircuits.com/MCLStore/terms.jsp

www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com
Performance Data & Curves*

ROS-1950-519+

+\text{at } 25^\circ\text{C unless mentioned otherwise}

<table>
<thead>
<tr>
<th>V TUNE</th>
<th>TUNE SENS (MHz/V)</th>
<th>FREQUENCY (MHz)</th>
<th>POWER OUTPUT (dBm)</th>
<th>Icc (mA)</th>
<th>HARMONICS (dBc)</th>
<th>FREQ. PUSH (MHzV)</th>
<th>FREQ. PULL (MHz)</th>
<th>PHASE NOISE (dBc/Hz) at offsets</th>
<th>PHASE OFFSET (KHz)</th>
<th>FREQUENCY (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>26.16</td>
<td>1733.4 1728.0</td>
<td>1723.6</td>
<td>2.91</td>
<td>3.47 - 3.49</td>
<td>26.77</td>
<td>-49.3 - 19.5</td>
<td>-33.8</td>
<td>0.25</td>
<td>0.53 - 85.0 - 109.4 - 129.4 - 149.5</td>
</tr>
<tr>
<td>0.50</td>
<td>23.26</td>
<td>1746.3 1741.1</td>
<td>1736.8</td>
<td>2.84</td>
<td>3.45 - 3.50</td>
<td>26.88</td>
<td>-51.2 - 19.8</td>
<td>-34.0</td>
<td>0.33</td>
<td>0.56 - 85.7 - 110.1 - 129.8 - 150.0</td>
</tr>
<tr>
<td>1.00</td>
<td>22.12</td>
<td>1758.0 1752.7</td>
<td>1748.3</td>
<td>2.79</td>
<td>3.40 - 4.77</td>
<td>26.99</td>
<td>-52.1 - 20.6</td>
<td>-33.1</td>
<td>0.36</td>
<td>0.52 - 86.1 - 110.0 - 130.1 - 150.1</td>
</tr>
<tr>
<td>1.50</td>
<td>21.71</td>
<td>1769.2 1763.8</td>
<td>1759.2</td>
<td>2.77</td>
<td>3.38 - 3.45</td>
<td>27.09</td>
<td>-53.7 - 21.0</td>
<td>-33.3</td>
<td>0.37</td>
<td>0.58 - 86.7 - 110.4 - 130.4 - 150.3</td>
</tr>
<tr>
<td>2.00</td>
<td>21.72</td>
<td>1780.2 1774.7</td>
<td>1768.9</td>
<td>2.76</td>
<td>3.38 - 3.45</td>
<td>27.18</td>
<td>-52.9 - 21.1</td>
<td>-33.1</td>
<td>0.38</td>
<td>0.51 - 85.6 - 110.2 - 130.5 - 150.8</td>
</tr>
<tr>
<td>2.50</td>
<td>21.86</td>
<td>1791.3 1785.5</td>
<td>1780.5</td>
<td>2.77</td>
<td>3.37 - 3.44</td>
<td>27.29</td>
<td>-52.5 - 21.6</td>
<td>-32.8</td>
<td>0.38</td>
<td>0.34 - 87.5 - 110.2 - 130.9 - 150.7</td>
</tr>
<tr>
<td>3.00</td>
<td>22.10</td>
<td>1802.4 1796.4</td>
<td>1791.2</td>
<td>2.80</td>
<td>3.40 - 3.45</td>
<td>27.39</td>
<td>-50.1 - 22.2</td>
<td>-33.0</td>
<td>0.38</td>
<td>0.25 - 86.5 - 111.4 - 131.1 - 151.0</td>
</tr>
<tr>
<td>3.50</td>
<td>22.37</td>
<td>1813.7 1807.5</td>
<td>1802.1</td>
<td>2.81</td>
<td>3.41 - 3.48</td>
<td>27.50</td>
<td>-53.2 - 22.5</td>
<td>-32.8</td>
<td>0.38</td>
<td>0.28 - 86.9 - 111.3 - 131.2 - 150.9</td>
</tr>
<tr>
<td>4.00</td>
<td>22.59</td>
<td>1825.0 1818.7</td>
<td>1813.1</td>
<td>2.85</td>
<td>3.43 - 3.49</td>
<td>27.61</td>
<td>-53.7 - 23.0</td>
<td>-32.4</td>
<td>0.37</td>
<td>0.37 - 86.2 - 110.7 - 131.1 - 150.9</td>
</tr>
<tr>
<td>4.50</td>
<td>22.78</td>
<td>1836.5 1830.0</td>
<td>1824.2</td>
<td>2.87</td>
<td>3.47 - 3.52</td>
<td>27.73</td>
<td>-50.4 - 23.1</td>
<td>-32.7</td>
<td>0.35</td>
<td>0.40 - 85.5 - 110.0 - 131.2 - 150.8</td>
</tr>
<tr>
<td>5.00</td>
<td>22.96</td>
<td>1848.0 1841.4</td>
<td>1835.5</td>
<td>2.87</td>
<td>3.49 - 3.55</td>
<td>27.86</td>
<td>-52.0 - 23.5</td>
<td>-32.2</td>
<td>0.34</td>
<td>0.41 - 84.6 - 110.7 - 131.0 - 151.0</td>
</tr>
<tr>
<td>5.50</td>
<td>23.12</td>
<td>1859.7 1852.8</td>
<td>1846.8</td>
<td>2.90</td>
<td>3.50 - 3.55</td>
<td>27.99</td>
<td>-50.8 - 24.0</td>
<td>-32.5</td>
<td>0.32</td>
<td>0.32 - 84.2 - 110.3 - 130.9 - 150.7</td>
</tr>
<tr>
<td>6.00</td>
<td>23.21</td>
<td>1871.3 1864.4</td>
<td>1858.2</td>
<td>2.92</td>
<td>3.52 - 3.57</td>
<td>28.12</td>
<td>-51.4 - 24.4</td>
<td>-31.9</td>
<td>0.31</td>
<td>0.29 - 84.0 - 110.8 - 130.9 - 150.8</td>
</tr>
<tr>
<td>6.50</td>
<td>23.34</td>
<td>1883.0 1876.0</td>
<td>1869.7</td>
<td>2.97</td>
<td>3.54 - 3.59</td>
<td>28.27</td>
<td>-52.0 - 24.5</td>
<td>-31.9</td>
<td>0.30</td>
<td>0.23 - 83.7 - 109.9 - 130.6 - 150.8</td>
</tr>
<tr>
<td>7.00</td>
<td>23.44</td>
<td>1894.9 1887.7</td>
<td>1881.2</td>
<td>3.02</td>
<td>3.60 - 3.63</td>
<td>28.41</td>
<td>-52.8 - 25.0</td>
<td>-32.0</td>
<td>0.29</td>
<td>0.25 - 81.8 - 109.6 - 130.7 - 150.6</td>
</tr>
<tr>
<td>7.50</td>
<td>23.45</td>
<td>1906.7 1899.4</td>
<td>1892.8</td>
<td>3.08</td>
<td>3.65 - 3.68</td>
<td>28.56</td>
<td>-50.3 - 25.4</td>
<td>-31.2</td>
<td>0.30</td>
<td>0.27 - 83.5 - 110.0 - 130.4 - 150.4</td>
</tr>
<tr>
<td>8.00</td>
<td>23.60</td>
<td>1918.6 1911.1</td>
<td>1904.5</td>
<td>3.12</td>
<td>3.70 - 3.73</td>
<td>28.71</td>
<td>-49.1 - 25.8</td>
<td>-32.2</td>
<td>0.31</td>
<td>0.28 - 84.9 - 109.5 - 130.1 - 150.2</td>
</tr>
<tr>
<td>9.00</td>
<td>23.67</td>
<td>1942.4 1934.8</td>
<td>1927.8</td>
<td>3.17</td>
<td>3.77 - 3.82</td>
<td>29.03</td>
<td>-49.1 - 26.4</td>
<td>-32.0</td>
<td>0.38</td>
<td>0.14 - 83.9 - 108.6 - 129.5 - 149.8</td>
</tr>
<tr>
<td>10.00</td>
<td>23.57</td>
<td>1966.4 1958.5</td>
<td>1951.2</td>
<td>3.22</td>
<td>3.83 - 3.89</td>
<td>29.38</td>
<td>-47.3 - 27.0</td>
<td>-31.7</td>
<td>0.49</td>
<td>0.14 - 82.1 - 108.0 - 129.0 - 149.0</td>
</tr>
<tr>
<td>11.00</td>
<td>23.61</td>
<td>1990.5 1982.1</td>
<td>1974.5</td>
<td>3.34</td>
<td>3.93 - 3.98</td>
<td>29.76</td>
<td>-47.5 - 27.9</td>
<td>-31.8</td>
<td>0.53</td>
<td>0.16 - 82.0 - 106.6 - 127.6 - 147.8</td>
</tr>
</tbody>
</table>

Notes:
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, “Standard Terms”). Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

* at 25°C unless mentioned otherwise.