FMVC31013 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 3.0 to 3.5 GHz frequency band with a voltage tuning range from 0.5V to 10V. This design features exceptional phase noise performance of -81 dBc/Hz @ 10 kHz offset. Supply Voltage is +11V with a generated output power level of +10 dBm and 2nd harmonic output of -16 dBc typical. The assembly is RoHS compliant and available in a compact sized rugged metal housing which supports a field replaceable SMA female connector, RFI Voltage and ground pins. The VCO operates over a temperature range of -40°C to +85°C and is designed to meet a variety of MIL-STD-202 test conditions including Humidity, Shock, and Vibration.

### Electrical Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>3</td>
<td>3.5</td>
<td>GHz</td>
<td></td>
</tr>
<tr>
<td>Tuning Voltage</td>
<td>0.5</td>
<td>10</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage (DC)</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>Vdc</td>
</tr>
<tr>
<td>Supply Current (DC)</td>
<td>20</td>
<td>22</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Phase Noise @10kHz Offset</td>
<td>-81</td>
<td>-80</td>
<td>dBC/Hz</td>
<td></td>
</tr>
<tr>
<td>Phase Noise @100kHz Offset</td>
<td>-103</td>
<td>-102</td>
<td>dBC/Hz</td>
<td></td>
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<tr>
<td>Output Power</td>
<td>+8</td>
<td>+10</td>
<td>+11.5</td>
<td>dBm</td>
</tr>
<tr>
<td>Tuning Sensitivity (Kvco)</td>
<td>40</td>
<td>135</td>
<td>MHz/V</td>
<td></td>
</tr>
<tr>
<td>Pushing</td>
<td>2.5</td>
<td>5</td>
<td>MHz/V</td>
<td></td>
</tr>
<tr>
<td>Pulling (pk-pk)</td>
<td>12</td>
<td>20</td>
<td>MHz</td>
<td></td>
</tr>
<tr>
<td>Load Impedance</td>
<td>18</td>
<td></td>
<td>pF</td>
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<tr>
<td>Tuning Port Capacitance</td>
<td>50</td>
<td></td>
<td>Ohms</td>
<td></td>
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<tr>
<td>2nd Harmonics</td>
<td>-16</td>
<td>-13</td>
<td>dBC</td>
<td></td>
</tr>
</tbody>
</table>

Electrical Specification Notes: Pulling @ 1.5 VSWR

### Mechanical Specifications

#### Size
- Length: 0.95 in [24.13 mm]
- Width: 0.95 in [24.13 mm]
- Height: 0.285 in [7.24 mm]
- Weight: 0.0365 lbs [16.56 g]
- Body Material and Plating: Aluminum
- Design: Commercial
- Output Connector: SMA Female

### Environmental Specifications

#### Temperature
- Operating Range: -40 to +85 deg C
- Storage Range: -55 to +125 deg C
- Humidity: MIL-STD-202, Method 103, 90% RH, +65 C
- Shock: MIL-STD-202, Method 213I
- Vibration: MIL-STD-202, Method 204D
- Temperature Cycle: MIL-STD-202, Method 107B

### Features:
- 3.0 to 3.5 GHz Bandwidth
- -81 dBc/Hz typ @ 10kHz offset
- Tuning Voltage 0.5V to 10V
- Pout = +10 dBm typ
- Harmonics = -16 dBc typ
- RoHS Compliant Assembly
- Compact Size Rugged Metal Coaxial package
- Field Replaceable SMA Female Connector
- Designed to meet MIL-STD-202 Environmental Conditions

### Applications:
- Phase Locked Loop
- Function Generators
- Frequency Synthesizers
- Receivers
- Electronic Jamming Equipment
- Local Oscillator
- Wireless Communications
- SATCOM
- Optical Communications
- Military Electronic Systems
ESD Sensitivity

- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in ESD Workstation.

Compliance Certifications (see product page for current document)

Plotted and Other Data

Typical Performance Data

- **Phase Noise**
  - dBc/Hz vs kHz
  - Graph showing phase noise levels from 0 kHz to 1000 kHz.

- **Frequency vs Tuning Voltage**
  - GHz vs V
  - Graph showing frequency changes with tuning voltage from 0 V to 10 V.
VCO (Voltage Controlled Oscillator) Frequency of 3 GHz to 3.5 GHz, Phase Noise -81 dBc/Hz and SMA

VCO (Voltage Controlled Oscillator) Frequency of 3 GHz to 3.5 GHz, Phase Noise -81 dBc/Hz and SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: VCO (Voltage Controlled Oscillator) Frequency of 3 GHz to 3.5 GHz, Phase Noise -81 dBc/Hz and SMA FMVC31013


The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Fairview Microwave reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Fairview Microwave does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Fairview Microwave does not assume any liability arising out of the use of any part or documentation.
VCO (Voltage Controlled Oscillator) Frequency of 3 GHz to 3.5 GHz, Phase Noise -81 dBc/Hz and SMA

**NOTES:**
1. THE CASE IS GROUND.
2. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES (mm).
3. ENCLOSURE FINISH IS ALODINE 1200 OR EQUIVALENT.
4. UNC 2-56 TYP 2 PLS. MOUNTING SCREWS NOT EXCEED 0.062" INTRUSION INTO CAVITY (HOUSING WALL THICKNESS 0.125").

**FAIRVIEW MICROWAVE INC.**
ALLEN, TX 75013 WWW.FAIRVIEWMICROWAVE.COM

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<tr>
<th>DWG NO</th>
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