Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBC/Hz and SMA

**Features**

- 18 to 30 MHz Bandwidth
- -120 dBC/Hz typ @ 10kHz offset
- Tuning Voltage 0.5V to 12V
- Pout = +12 dBm typ
- Harmonics = -13 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

**Description**

The PE1V31000 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 18 MHz to 30 MHz frequency band with a voltage tuning range from 0.5V to 12V. This design features exceptional phase noise performance of -120 dBC/Hz typ @ 10 kHz offset. Supply Voltage is +12V with a generated output power level of +12 dBm typ and 2nd harmonic output of -13 dBc typical. The assembly is RoHS compliant and available in a compact sized rugged metal housing with 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>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>18</td>
<td>30</td>
<td></td>
<td>MHz</td>
</tr>
<tr>
<td>Tuning Voltage</td>
<td>0.5</td>
<td>12</td>
<td></td>
<td>Vdc</td>
</tr>
<tr>
<td>Supply Voltage (DC)</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>Vdc</td>
</tr>
<tr>
<td>Supply Current (DC)</td>
<td>16</td>
<td>19</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>Phase Noise @ 1kHz Offset</td>
<td>-95</td>
<td>-92</td>
<td></td>
<td>dBC/Hz</td>
</tr>
<tr>
<td>Phase Noise @ 10kHz Offset</td>
<td>-120</td>
<td>-118</td>
<td></td>
<td>dBC/Hz</td>
</tr>
<tr>
<td>Phase Noise @ 100kHz Offset</td>
<td>-140</td>
<td>-138</td>
<td></td>
<td>dBC/Hz</td>
</tr>
<tr>
<td>Output Power</td>
<td>+10</td>
<td>+12</td>
<td>+13.5</td>
<td>dBm</td>
</tr>
<tr>
<td>Tuning Sensitivity (Kvco)</td>
<td>0.9</td>
<td>1.8</td>
<td></td>
<td>MHz/V</td>
</tr>
<tr>
<td>Pushing</td>
<td>0.03</td>
<td>0.05</td>
<td></td>
<td>MHz/V</td>
</tr>
<tr>
<td>Pulling (pk-pk)</td>
<td>70</td>
<td>100</td>
<td></td>
<td>KHz</td>
</tr>
<tr>
<td>Tuning Port Capacitance</td>
<td>100</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Load Impedance</td>
<td>50</td>
<td></td>
<td></td>
<td>Ohms</td>
</tr>
<tr>
<td>2nd Harmonics</td>
<td>-13</td>
<td>-12</td>
<td></td>
<td>dBC</td>
</tr>
</tbody>
</table>

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBC/Hz and SMA PE1V31000

© 2017 Pasternack Enterprises All Rights Reserved

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
Phone: (888) 727-8376 or (949) 261-1920 • Fax: (949) 261-7451
Sales@Pasternack.com • Techsupport@Pasternack.com

PE1V31000 REV 1.1
Voltage Controlled Oscillators Technical Data Sheet

PE1V31000

Electrical Specification Notes:
Pulling @ 1.5:1 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 0.03 lbs [13.61 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
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
Notes:

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBC/Hz and SMA PE1V31000

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
Phone: (888) 727-8376 or (949) 261-1920 • Fax: (949) 261-7451
Sales@Pasternack.com • Techsupport@Pasternack.com
© 2017 Pasternack Enterprises All Rights Reserved
Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBc/Hz and SMA

Typical Performance Data

Phase Noise

-200 dBc/Hz

Offset Frequency (kHz)

0.1 1 10 100 1000

Frequency vs Tuning Voltage

Frequency (MHz)

10 15 20 25 30 35 40

Tuning Voltage (V)

0 1 2 3 4 5 6 7 8 9 10 11 12

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBc/Hz and SMA PE1V31000
Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBc/Hz and SMA

Voltage Control Oscillators Technical Data Sheet PE1V31000

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBc/Hz and SMA PE1V31000
Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBc/Hz and SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBc/Hz and SMA PE1V31000


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. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.
Voltage Controlled Oscillator (VCO) From 18 MHz to 30 MHz, Phase Noise of -120 dBc/Hz and SMA PE1V31000 CAD Drawing

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 PLCs. MOUNTING SCREWS NOT EXCEED 0.062" INTRUSION INTO CAVITY (HOUSING WALL THICKNESS 0.125").