0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2 GHz to 2.75 GHz With Phase Noise of -85 dBC/Hz

Voltage Control Oscillators Technical Data Sheet

PE1V11022

Features
- 2000 MHz to 2750 MHz Bandwidth
- -85 dBC/Hz @ 10kHz offset
- Tuning Voltage 0.0V to 10V
- Pout = +7.0 dBm
- Harmonics = -12 dBC
- RoHS Compliant Assembly
- 0.5” SMT package
- Industry Standard Mounting Footprint
- 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 PE1V11022 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 2000 MHz to 2750 MHz frequency band with a voltage tuning range from 0.0V to 10V. This design features exceptional phase noise performance of -85 dBC/Hz @ 10 kHz offset. Supply Voltage is +15V with a generated output power level of +7.0 dBm and 2nd harmonic output of -12 dBC typical. The assembly is RoHS compliant and available in a compact 0.5 inch SMT package with an industry standard mounting footprint. The bottom surface is copper clad with 2-5 micro inches of immersion Gold over 150 - 250 micro inches of Electro less Nickel which makes it resistant to oxidation for ease of soldering. 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>2</td>
<td>2.75</td>
<td>GHz</td>
<td></td>
</tr>
<tr>
<td>Tuning Voltage</td>
<td>0</td>
<td>10</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage (DC)</td>
<td></td>
<td>11</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>Supply Current (DC)</td>
<td></td>
<td>21</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Phase Noise @ 10kHz Offset</td>
<td></td>
<td>-85</td>
<td>dBC/Hz</td>
<td></td>
</tr>
<tr>
<td>Output Power</td>
<td>+7</td>
<td></td>
<td>dBm</td>
<td></td>
</tr>
<tr>
<td>2nd Harmonics</td>
<td></td>
<td>-12</td>
<td>dBC</td>
<td></td>
</tr>
</tbody>
</table>

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0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2 GHz to 2.75 GHz With Phase Noise of -85 dBC/Hz

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Mechanical Specifications

Size
Length  0.5 in [12.7 mm]
Width  0.5 in [12.7 mm]
Height 0.13 in [3.3 mm]

Mounting Surface Material and Plating
Copper Clad, Nickel, Gold

Design
Commercial

Package Style
Surface Mount

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

RoHS Compliant
REACH Compliant  12/17/2015

Plotted and Other Data

Notes:

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Voltage Control Oscillators Technical Data Sheet

Typical Performance Data

Phase Noise

0 dBc/Hz

-200

-160

-120

-80

-40

0

0.1 1 10 100 1000 Offset Frequency (kHz)

Frequency vs Tuning Voltage

3.1

2.9

2.7

2.5

2.3

2.1

1.9

1.7

1.5

0 1 2 3 4 5 6 7 8 9 10 Frequency (GHz)

0 1 2 3 4 5 6 7 8 9 10 Tuning Voltage (V)

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0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2 GHz to 2.75 GHz With Phase Noise of -85 dBc/Hz from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99% availability and are part of the broadest selection in the industry.

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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.
0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2 GHz to 2.75 GHz With Phase Noise of -85 dBc/Hz

NOTES:
1. THE CASE IS GROUND.
2. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES [mm].
3. UNLESS OTHERWISE SPECIFIED FINISH IS 150-250 MICRO INCHES ELECTROLESS NICKEL OVER COPPER CLAD PCB, 2.5 MICRO INCHES IMMERSION GOLD, OVER NICKEL.
4. MOD PORT NOT AVAILABLE ON ALL MODELS.
0.5 inch Commercial Surface Mount (SMT) Voltage Controlled Oscillator (VCO) From 2 GHz to 2.75 GHz With Phase Noise of -85 dBc/Hz

PE1V11022 CAD Drawing

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<table>
<thead>
<tr>
<th>Pin</th>
<th>Con.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vcc</td>
</tr>
<tr>
<td>5</td>
<td>RF</td>
</tr>
<tr>
<td>13</td>
<td>Vt</td>
</tr>
<tr>
<td>Others</td>
<td>GND</td>
</tr>
</tbody>
</table>
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Table 1: Hand Soldering

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tip Temp. (max.)</td>
<td>260°</td>
</tr>
<tr>
<td>Iron Power (max.)</td>
<td>20 W</td>
</tr>
<tr>
<td>Time (max.)</td>
<td>3 Sec.</td>
</tr>
</tbody>
</table>

Note: Avoid excess pressure to castellations

Table 2: Package re-flow temp

<table>
<thead>
<tr>
<th>Pkg.</th>
<th>tp (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS</td>
<td>260</td>
</tr>
<tr>
<td>MMS</td>
<td>260</td>
</tr>
<tr>
<td>MS</td>
<td>245</td>
</tr>
<tr>
<td>All Others</td>
<td>245</td>
</tr>
</tbody>
</table>

NOTES:
1. ALL VCO'S HAVE A MS RATING OF 1
2. ALL PRODUCTS CONFORM TO JEDEC J-STD-020C FOR LEAD FREE PROCESSING.