

**VCO (Voltage Controlled Oscillator) 0.5 inch  
 Commercial SMT (Surface Mount), Frequency of  
 40 MHz to 80 MHz, Phase Noise -117 dBc/Hz**

FMVC11004 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 40 MHz to 80 MHz frequency band with a voltage tuning range from 0.0V to 20V. This design features exceptional phase noise performance of -117 dBc/Hz @ 10 kHz offset. Supply Voltage is +15V with a generated output power level of +12 dBm and 2nd harmonic output of -14 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**

| Description                | Min | Typ  | Max  | Units  |
|----------------------------|-----|------|------|--------|
| Frequency Range            | 40  |      | 80   | MHz    |
| Tuning Voltage             | 0   |      | 20   | Vdc    |
| Supply Voltage (DC)        | 14  | 15   | 16   | Vdc    |
| Supply Current (DC)        |     | 18   | 20   | mA     |
| Phase Noise @1kHz Offset   |     | -90  | -88  | dBc/Hz |
| Phase Noise @10kHz Offset  |     | -117 | -115 | dBc/Hz |
| Phase Noise @100kHz Offset |     | -137 | -135 | dBc/Hz |
| Output Power               | +10 | +12  | +14  | dBm    |
| Tuning Sensitivity (Kvco)  | 2   |      | 4    | MHz/V  |
| Pushing                    |     | 0.05 | 0.1  | MHz/V  |
| Pulling (pk-pk)            |     | 50   | 100  | KHz    |
| Tuning Port Capacitance    |     | 180  |      | pF     |
| Load Impedance             |     | 50   |      | Ohms   |
| 2nd Harmonics              |     | -14  | -11  | dBc    |

**Mechanical Specifications**

| Size                      |                           |
|---------------------------|---------------------------|
| Length                    | 0.5 in [12.7 mm]          |
| Width                     | 0.5 in [12.7 mm]          |
| Height                    | 0.13 in [3.3 mm]          |
| Body 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 2131               |
| Vibration         | MIL-STD-202, Method 204D               |
| Temperature Cycle | MIL-STD-202, Method 107B               |

**Features:**

- 40 to 80 MHz Bandwidth
- -117 dBc/Hz @ 10kHz offset
- Tuning Voltage 0.0V to 20V
- Pout = +12 dBm
- Harmonics = -14 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

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ESD Sensitivity

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



**Compliance Certifications** (visit [www.FairviewMicrowave.com](http://www.FairviewMicrowave.com) for current document)

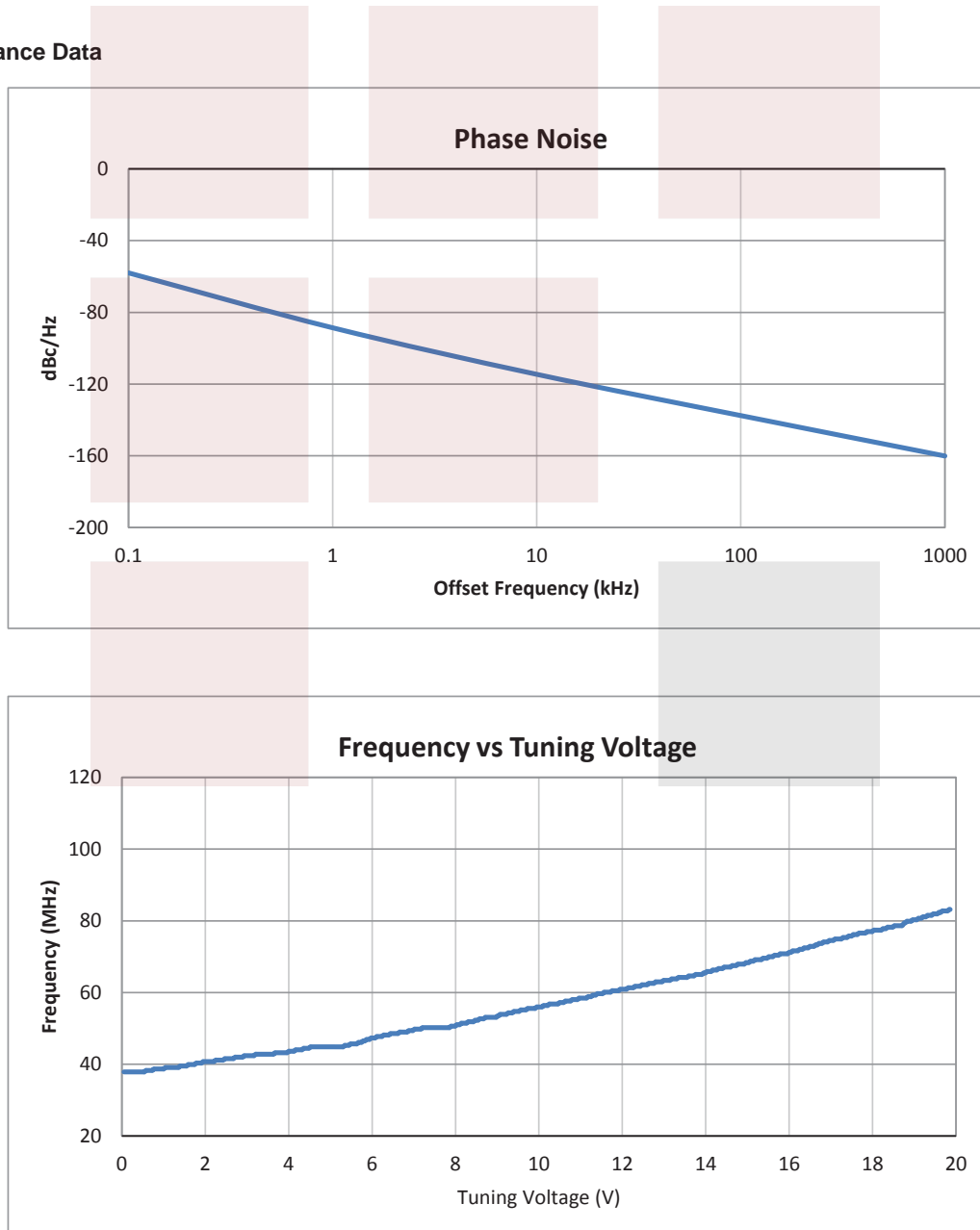
RoHS Compliant  
 REACH Compliant

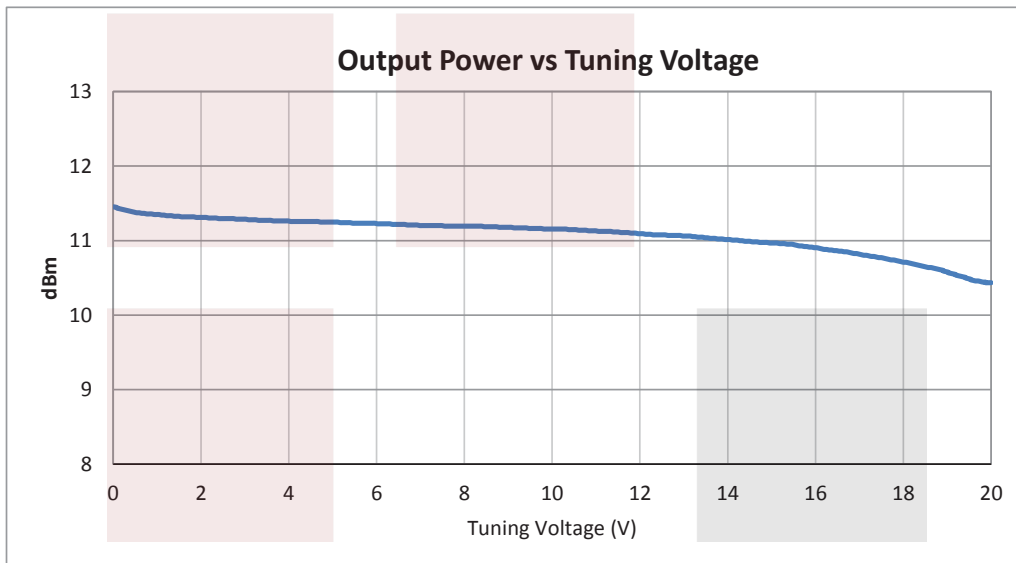
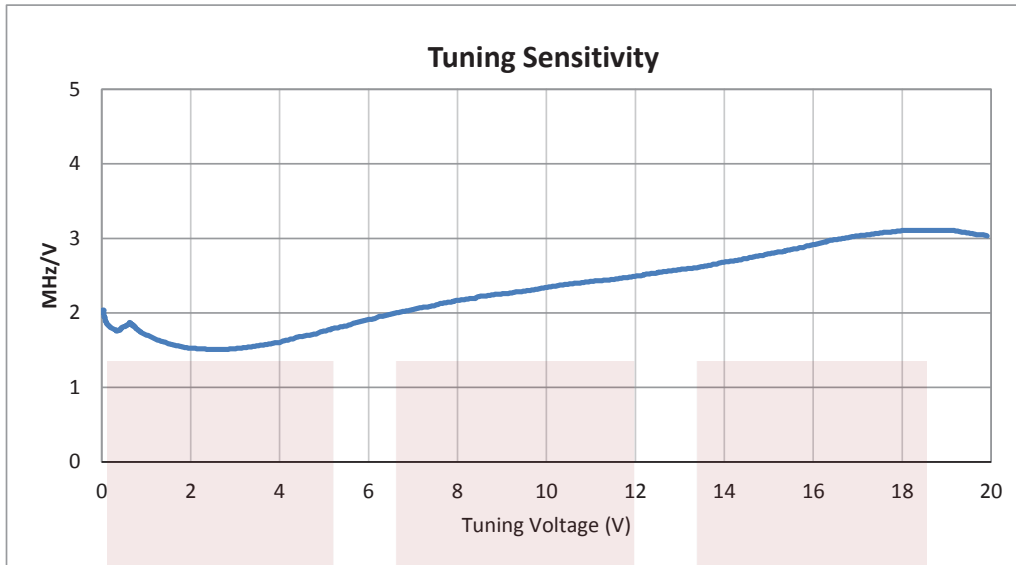
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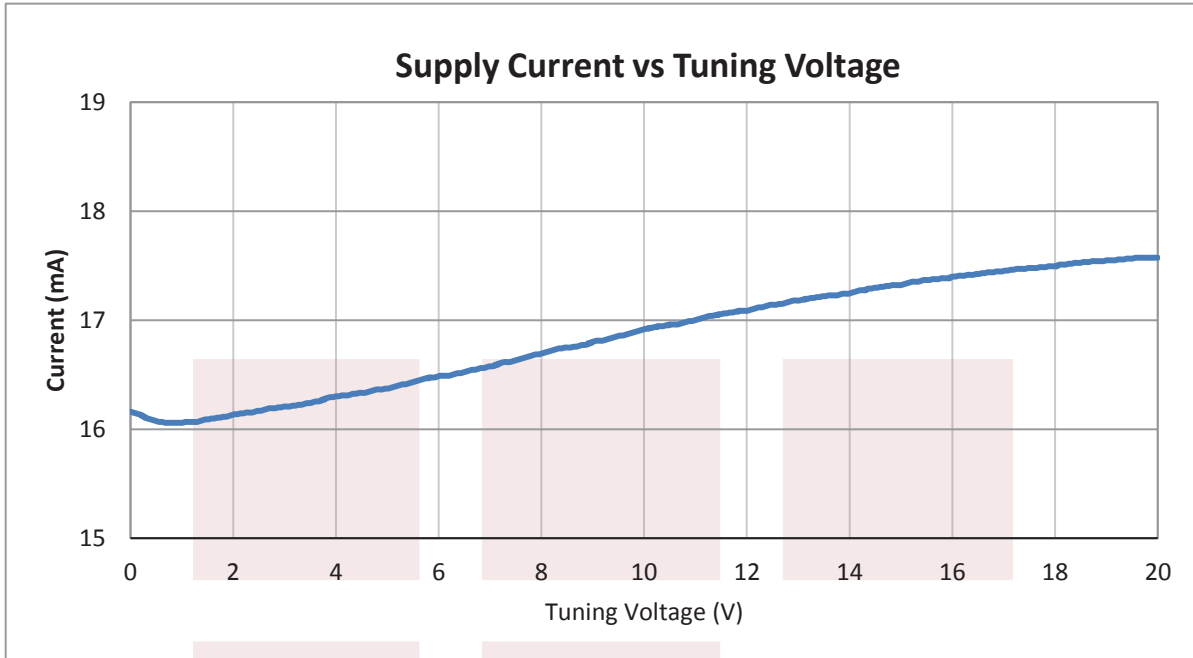
**Plotted and Other Data**

Notes:

**Typical Performance Data**





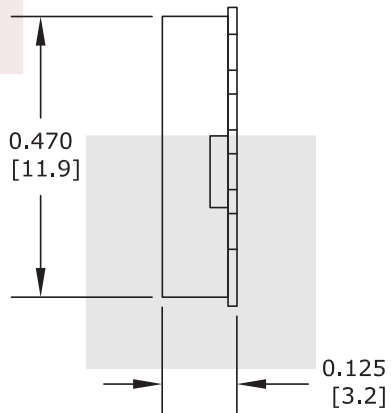
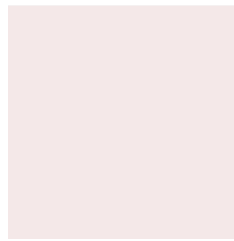
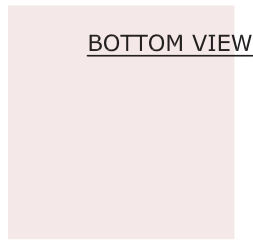
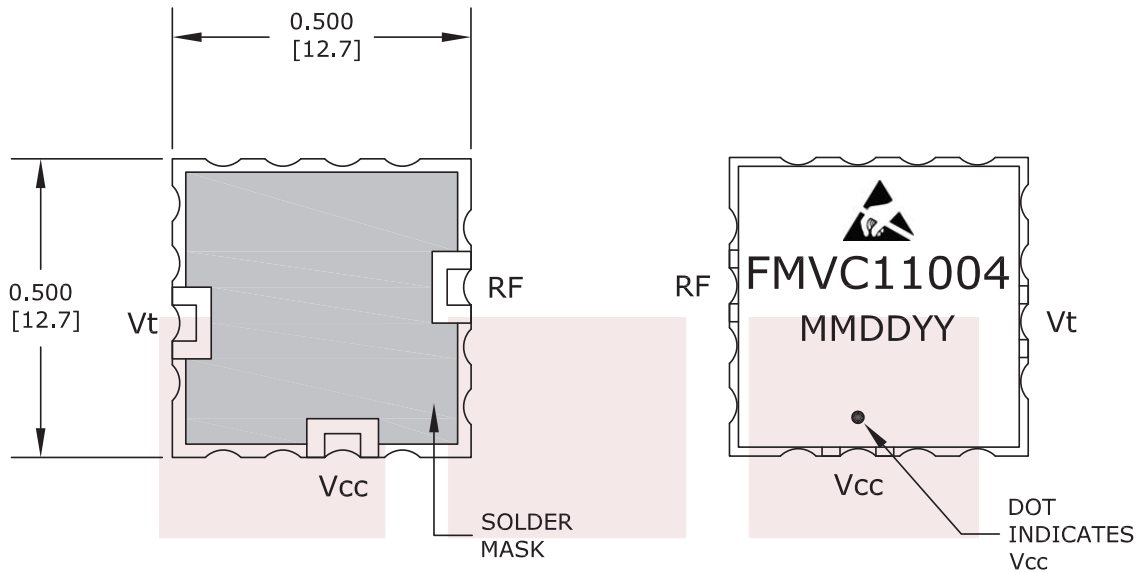


VCO (Voltage Controlled Oscillator) 0.5 inch Commercial SMT (Surface Mount), Frequency of 40 MHz to 80 MHz, Phase Noise -117 dBc/Hz from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [VCO \(Voltage Controlled Oscillator\) 0.5 inch Commercial SMT \(Surface Mount\), Frequency of 40 MHz to 80 MHz, Phase Noise -117 dBc/Hz FMVC11004](#)

URL: <http://www.fairviewmicrowave.com/vco-voltage-controlled-oscillator-smt-surface-mount-80-mhz-fmvc11004-p.aspx>

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.

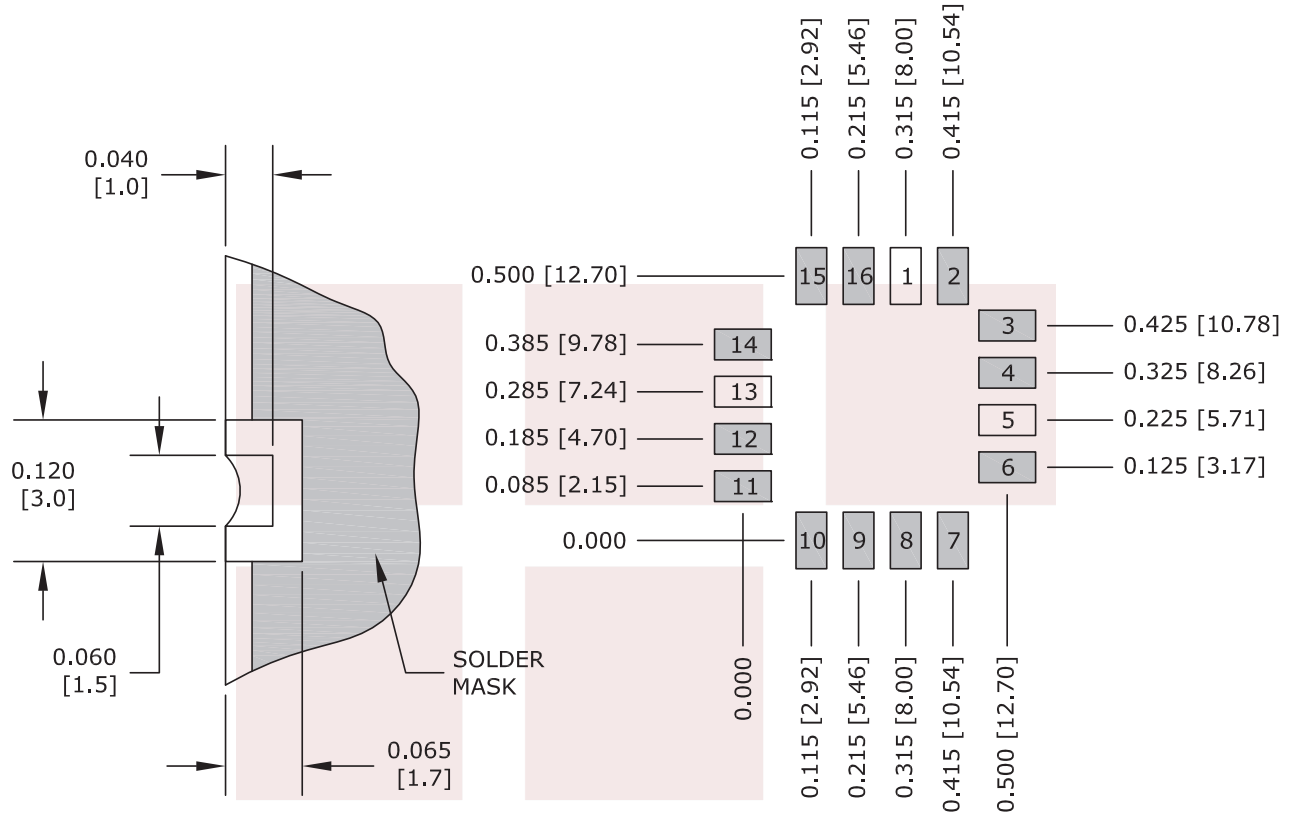


SIDE VIEW

**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.

|  |  |   |       |                           |                |
|--|--|---|-------|---------------------------|----------------|
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| ALLEN, TX 75013 WWW.FAIRVIEWMICROWAVE.COM  |  | DWG NO<br><b>FMVC11004</b>  |       | CAGE CODE<br><b>3FKR5</b> |                |
| TITLE<br>VCO (Voltage Controlled Oscillator) 0.5 inch<br>Commercial SMT (Surface Mount), Frequency of 40<br>MHz to 80 MHz, Phase Noise -117 dBc/Hz |  | CAD FILE<br>101515  | SHEET | SCALE<br>N/A              | SIZE<br>A 2233 |



PAD DETAIL

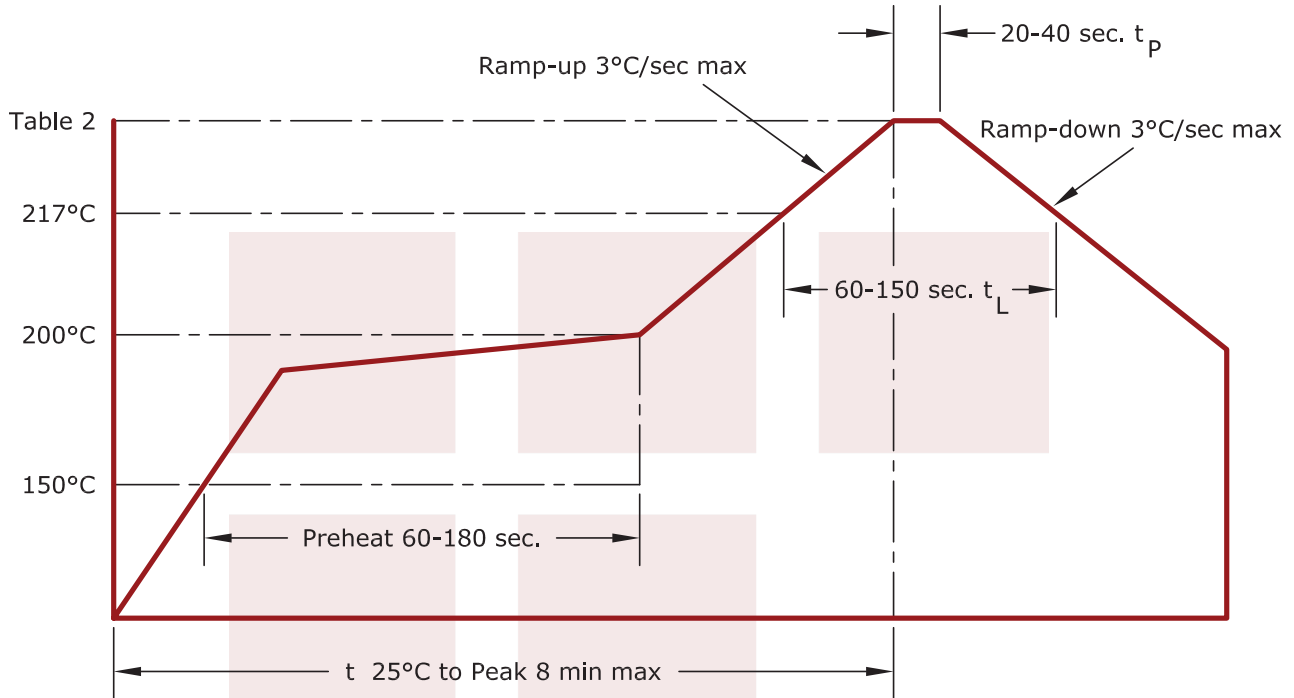
| Pin    | Con. |
|--------|------|
| 1      | Vcc  |
| 5      | RF   |
| 13     | Vt   |
| Others | GND  |

PCB PAD LAYOUT

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| Table 1<br>Hand Soldering |                                       |
|---------------------------|---------------------------------------|
| Item                      | Condition                             |
| Tip Temp. (max.)          | 260°                                  |
| Iron Power (max.)         | 20 W                                  |
| Time (max.)               | 3 Sec.                                |
| Note.                     | Avoid excess pressure to castelations |

| Table 2<br>Package re-flow temp |         |
|---------------------------------|---------|
| Pkg.                            | tp (°C) |
| VS                              | 260     |
| MMS                             | 260     |
| MS                              | 245     |
| All Others                      | 245     |

**NOTES:**

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

|  |        |   |       |                    |             |
|--|--------|---|-------|--------------------|-------------|
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