

**VCO (Voltage Controlled Oscillator) 0.175 inch SMT  
(Surface Mount), Frequency of 250 MHz to 500 MHz,  
Phase Noise -127 dBc/Hz**

FMVC002 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 250 MHz to 500 MHz frequency band with a voltage tuning range from 0V to 20V. This design features exceptional phase noise performance of -107 dBc/Hz @ 10 kHz offset. Supply Voltage is +15V with a generated output power level of +8.0 dBm and 2nd harmonic output of -8 dBc typical. The assembly is RoHS compliant and available in a compact 0.175 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            | 250  |      | 500  | MHz    |
| Tuning Voltage             | 0    |      | 20   | Vdc    |
| Supply Voltage (DC)        | 4.75 | 5    | 5.25 | Vdc    |
| Supply Current (DC)        |      | 18   | 20   | mA     |
| Phase Noise @10kHz Offset  |      | -107 | -105 | dBc/Hz |
| Phase Noise @100kHz Offset |      | -127 | -125 | dBc/Hz |
| Output Power               | +7   | +8   | +10  | dBm    |
| Tuning Sensitivity (Kvco)  | 8    |      | 17   | MHz/V  |
| Pushing                    |      | 1    | 1.4  | MHz/V  |
| Pulling (pk-pk)            |      | 3    | 5    | MHz    |
| Load Impedance             |      | 50   |      | Ohms   |
| 2nd Harmonics              |      | -8   | -6   | dBc    |

**Mechanical Specifications**

|                           |                          |
|---------------------------|--------------------------|
| Size                      |                          |
| Length                    | 0.175 in [4.45 mm]       |
| Width                     | 0.175 in [4.45 mm]       |
| Height                    | 0.075 in [1.91 mm]       |
| Weight                    | 0.018 lbs [8.16 g]       |
| Body Material and Plating | Copper Clad Nickel, Gold |
| Design                    | Commercial               |

**Environmental Specifications**

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



**Features:**

- 250 to 500 MHz Bandwidth
- -107 dBc/Hz @ 10kHz offset
- Tuning Voltage 0V to 20V
- Pout = +8.0 dBm
- Harmonics = -8 dBc
- RoHS Compliant Assembly
- 0.175" 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

Fairview Microwave  
1130 Junction Dr. #100  
Allen, TX 75013  
Tel: 1-800-715-4396 / (972) 649-6678  
Fax: (972) 649-6689  
[www.fairviewmicrowave.com](http://www.fairviewmicrowave.com)  
[sales@fairviewmicrowave.com](mailto:sales@fairviewmicrowave.com)

ESD Sensitivity

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

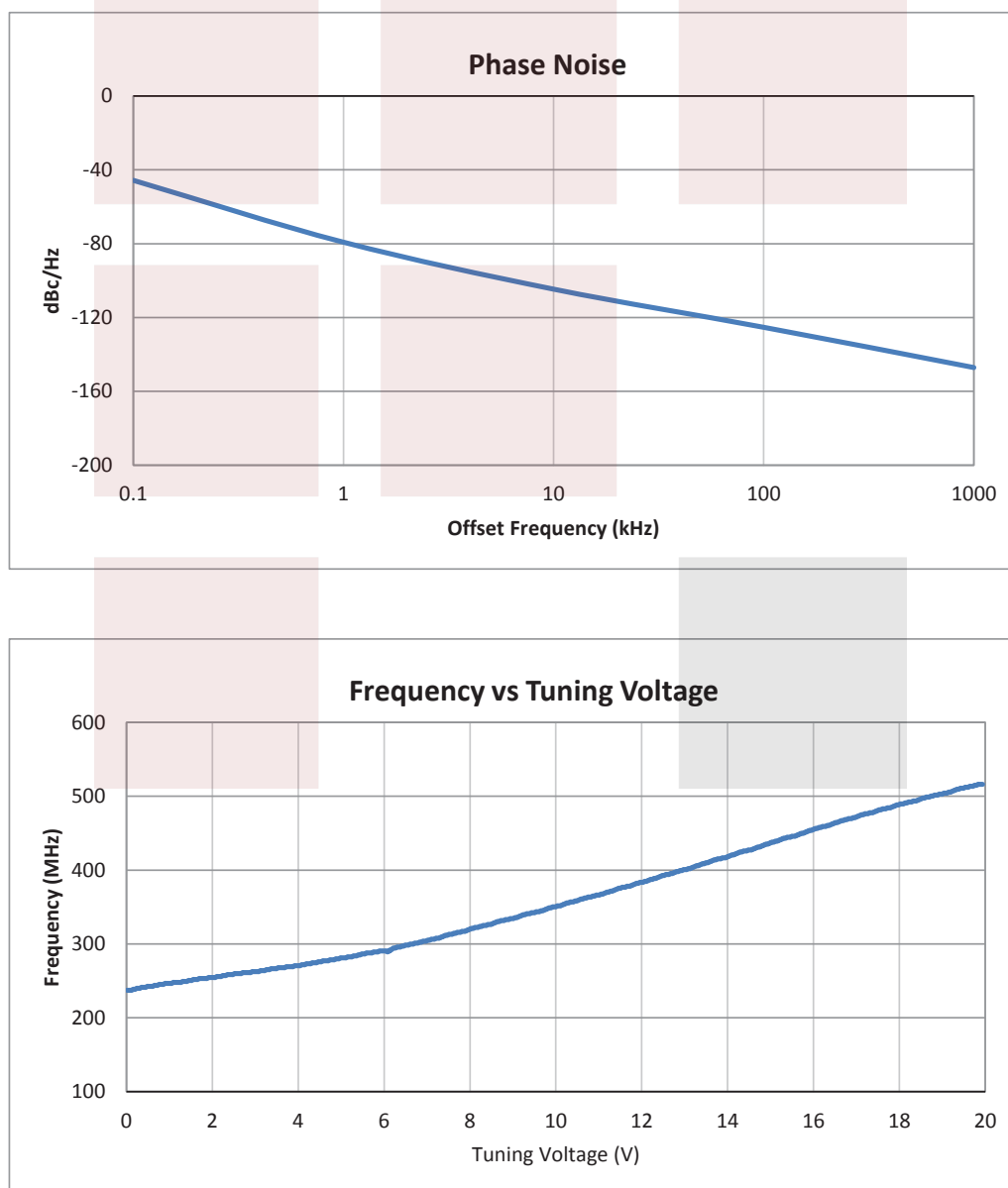


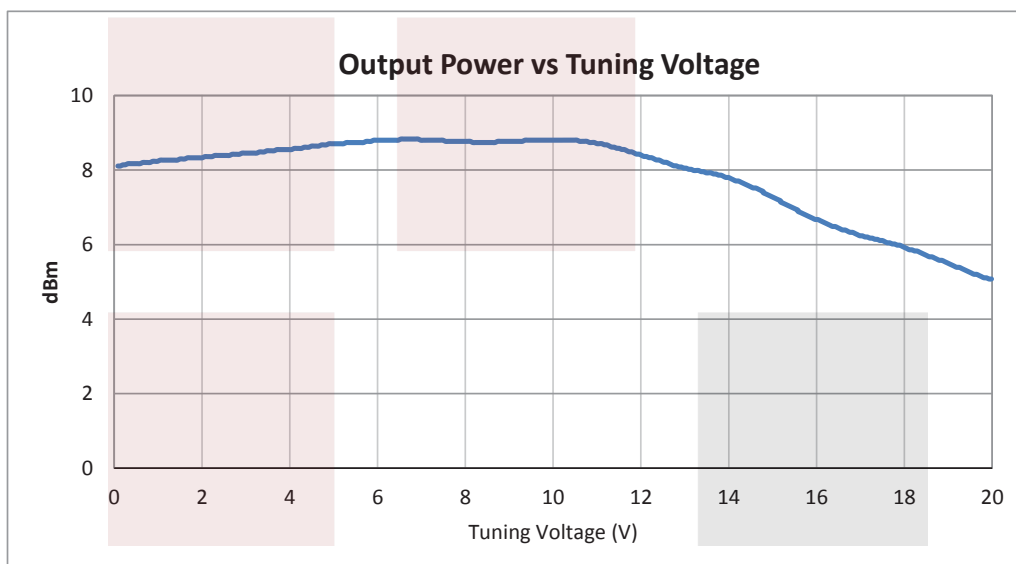
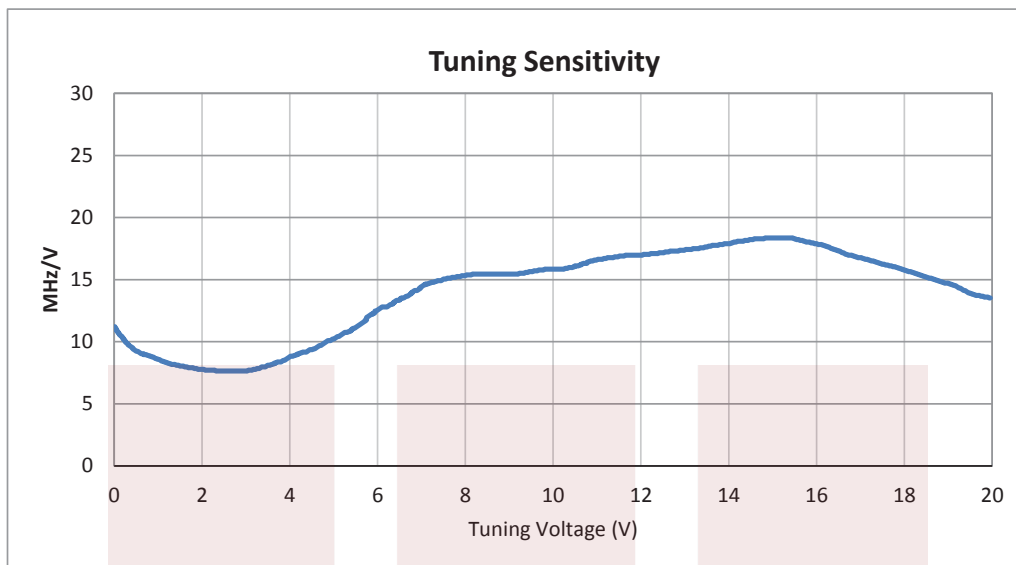
**Compliance Certifications** (see [product page](#) for current document)

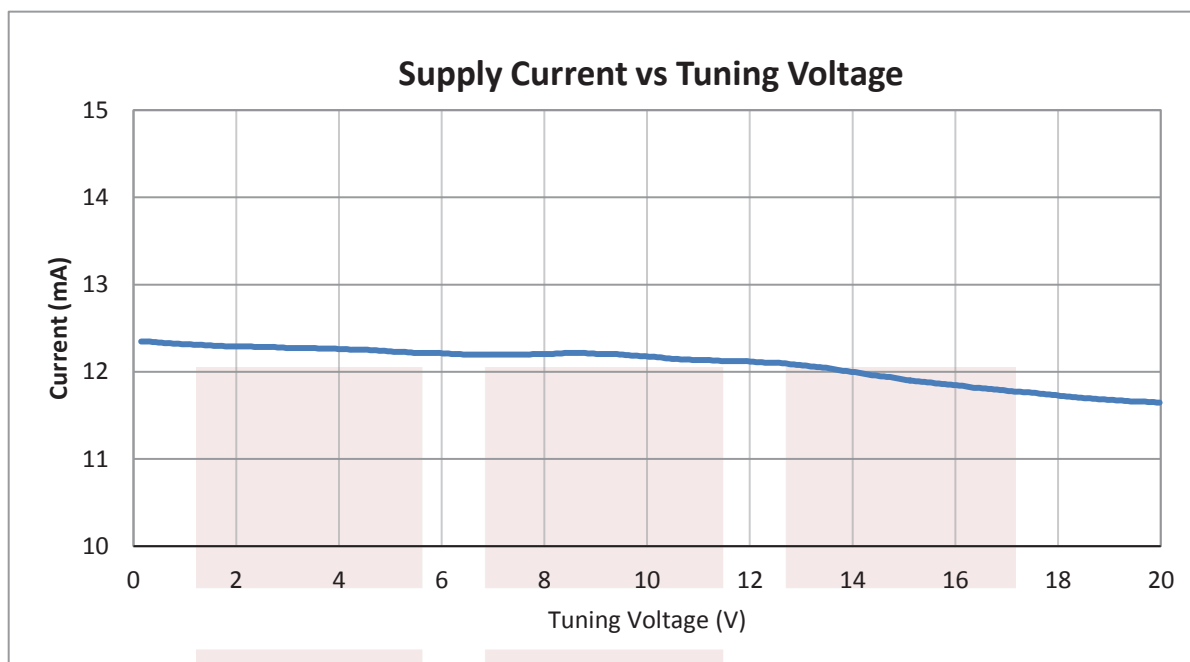
## Plotted and Other Data

Notes:

Typical Performance Data





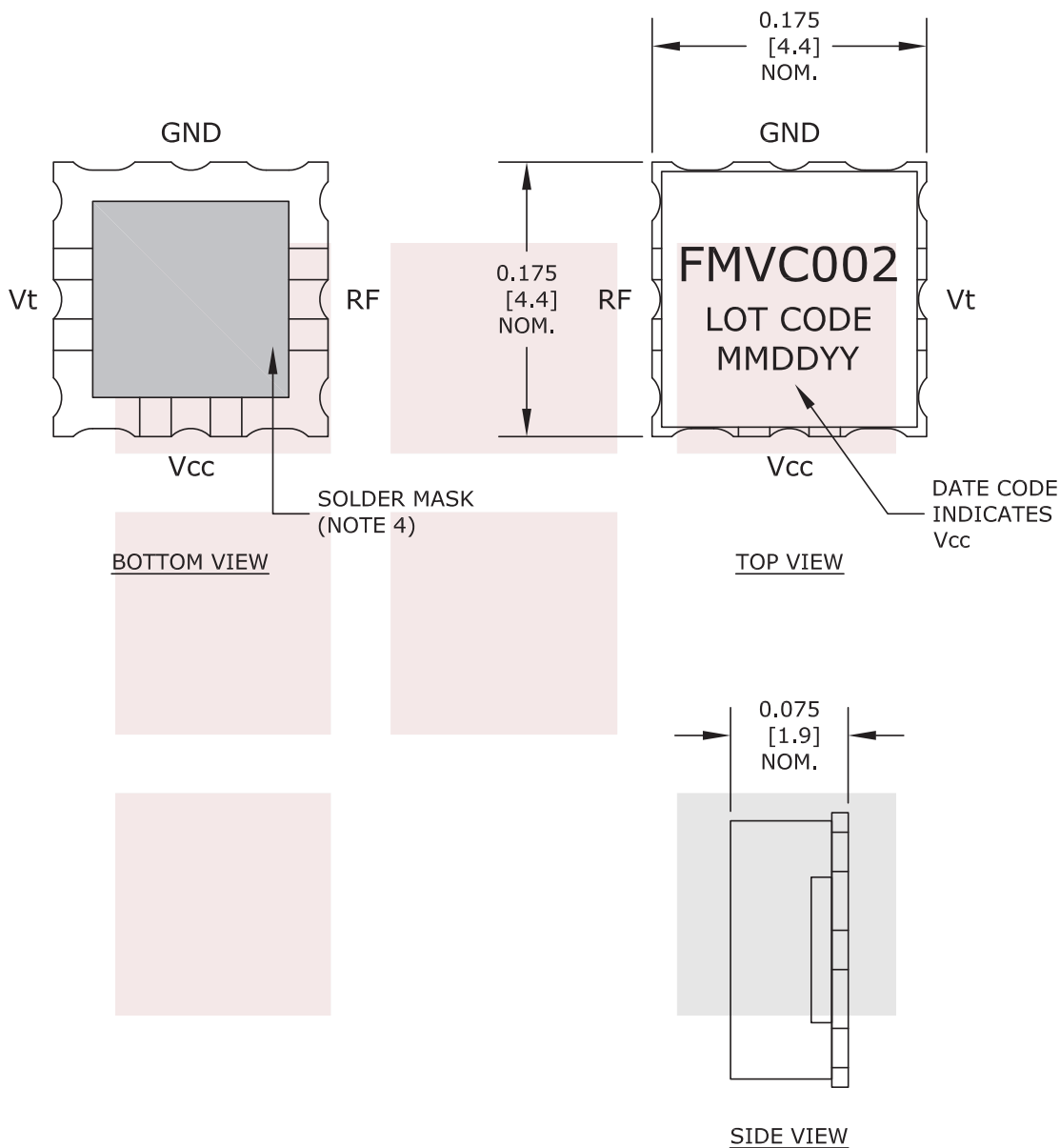


VCO (Voltage Controlled Oscillator) 0.175 inch SMT (Surface Mount), Frequency of 250 MHz to 500 MHz, Phase Noise -127 dBc/Hz from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [VCO \(Voltage Controlled Oscillator\) 0.175 inch SMT \(Surface Mount\), Frequency of 250 MHz to 500 MHz, Phase Noise -127 dBc/Hz FMVC002](https://www.fairviewmicrowave.com/vco-voltage-controlled-oscillator-500-mhz-fmvc002-p.aspx)

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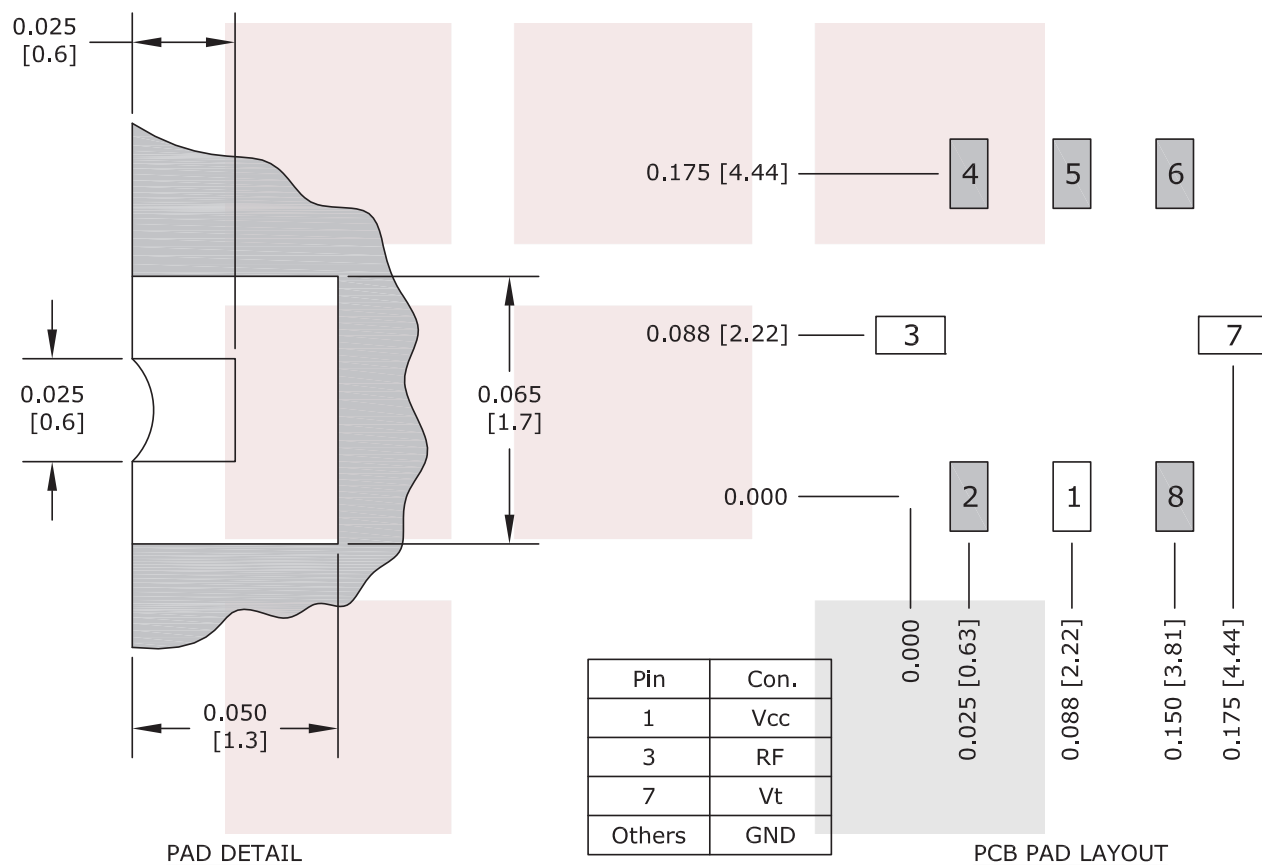
The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Fairview Microwave reserves the right to 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.



**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. SOLDER MASK NOT USED FOR APPLICATIONS GREATER THAN 6GHz.

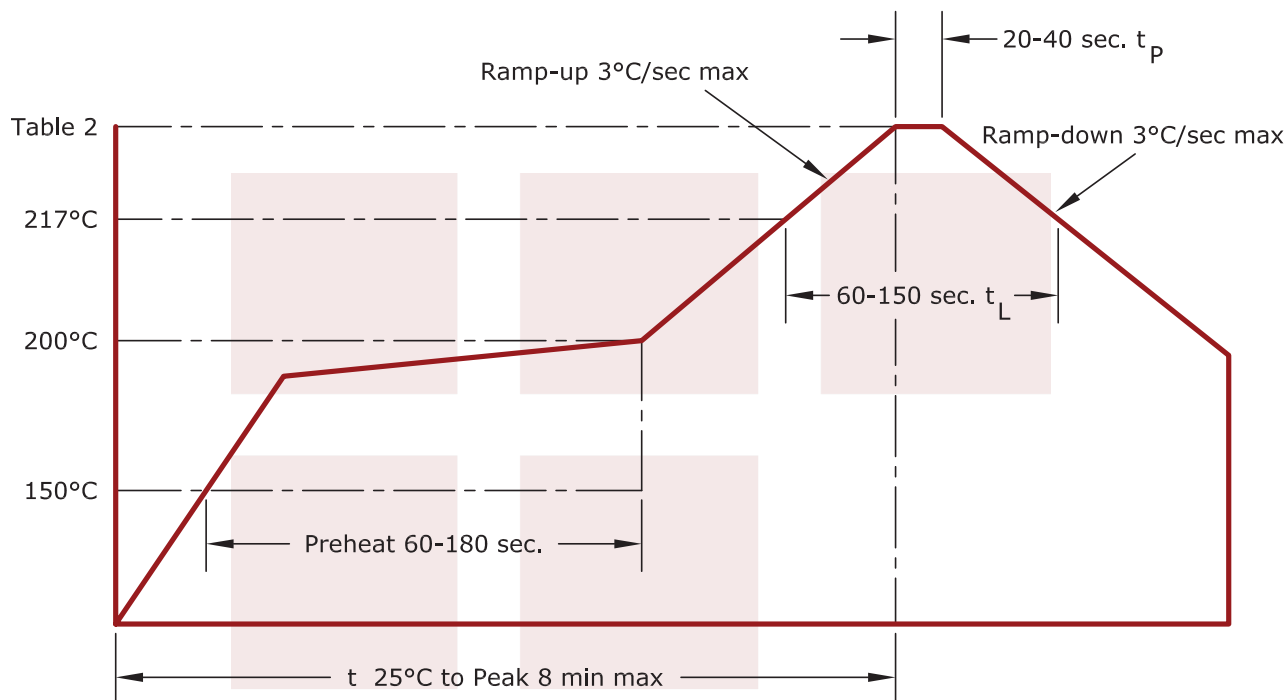
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|---------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|------|
| <b>FAIRVIEW MICROWAVE INC.</b><br>ALLEN, TX 75013 WWW.FAIRVIEWMICROWAVE.COM                                                           |                    | NOTES:<br>1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.<br>2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.<br>3. DIMENSIONS ARE IN INCHES [mm]. |                    |           |      |
| TITLE<br>VCO (Voltage Controlled Oscillator) 0.175 inch SMT (Surface Mount), Frequency of 250 MHz to 500 MHz, Phase Noise -127 dBc/Hz | DWG NO<br>FMVC002  |                                                                                                                                                                                     | CAGE CODE<br>3FKR5 |           |      |
|                                                                                                                                       | CAD FILE<br>020816 | SHEET                                                                                                                                                                               | SCALE<br>N/A       | SIZE<br>A | 2233 |



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|                                                                                                                                             |        |                                                                                                                                                                                     |       |                    |             |
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| CAD FILE                                                                                                                                    | 020816 | SHEET                                                                                                                                                                               | SCALE | N/A                | SIZE A 2233 |



| 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 castellations |

| Table 2<br>Package re-flow temp |         |
|---------------------------------|---------|
| Pkg.                            | tp (°C) |
| FMVC Series                     | 260     |
| FMVC11 Series                   | 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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| CAD FILE                                                                                                                                    | 020816 | SHEET                                                                                                                                                                               | SCALE | N/A                | SIZE A 2233 |