Fairview Microwave
RF COMPONENTS ON DEMAND. Done!

# FMVC015
# DATA SHEET

## VCO (Voltage Controlled Oscillator) 0.175 inch Commercial Frequency of 6.1 GHz to 7 GHz, Phase Noise -76 dBc/Hz


FMVC015 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 6.1 GHz to 7.0 GHz frequency band with a voltage tuning range from 0V to 10V. This design features exceptional phase noise performance of -76 dBc/Hz @ 10 kHz offset. Supply Voltage is +5V with a generated output power level of +8.0 dBm and 2nd harmonic output of -10 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.

### Features:

- 6.1 GHz to 7.0 GHz Bandwidth
- -76 dBc/Hz @ 10kHz offset
- Tuning Voltage 0V to 10V
- Pout = +5.5 dBm
- Harmonics = -30 dBc
- Modulation Port
- 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

## Electrical Specifications

| Description | Min | Typ | Max | Units |
|---|---|---|---|---|
| Frequency Range | 6.1 | | 7 | GHz |
| Tuning Voltage | 0 | | 10 | Vdc |
| Supply Voltage (DC) | 4.5 | 5 | 5.5 | Vdc |
| Supply Current (DC) | | 23 | 26 | mA |
| Phase Noise @1kHz Offset | | -48 | -45 | dBc/Hz |
| Phase Noise @10kHz Offset | | -76 | -71 | dBc/Hz |
| Phase Noise @100kHz Offset | | -99 | -95 | dBc/Hz |
| Output Power | +4 | +5.5 | +7 | dBm |
| Tuning Sensitivity (Kvco) | 55 | | 240 | MHz/V |
| Pushing | | 5 | 12 | MHz/V |
| Pulling (pk-pk) | | 15 | 25 | MHz |
| Tuning Port Capacitance | | 8 | | pF |
| Load Impedance | | 50 | | Ohms |
| 2nd Harmonics | | -30 | -25 | 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 | 0.0168 lbs [7.62 g] |
| Body Material and Plating | Copper Clad, Nickel, Gold |
| Design | Commercial |

## 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 |

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

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

**Compliance Certifications** (visit www.FairviewMicrowave.com for current document)

| | |
|---|---|
| RoHS Compliant | Yes |
| REACH Compliant | 12/17/2015 |

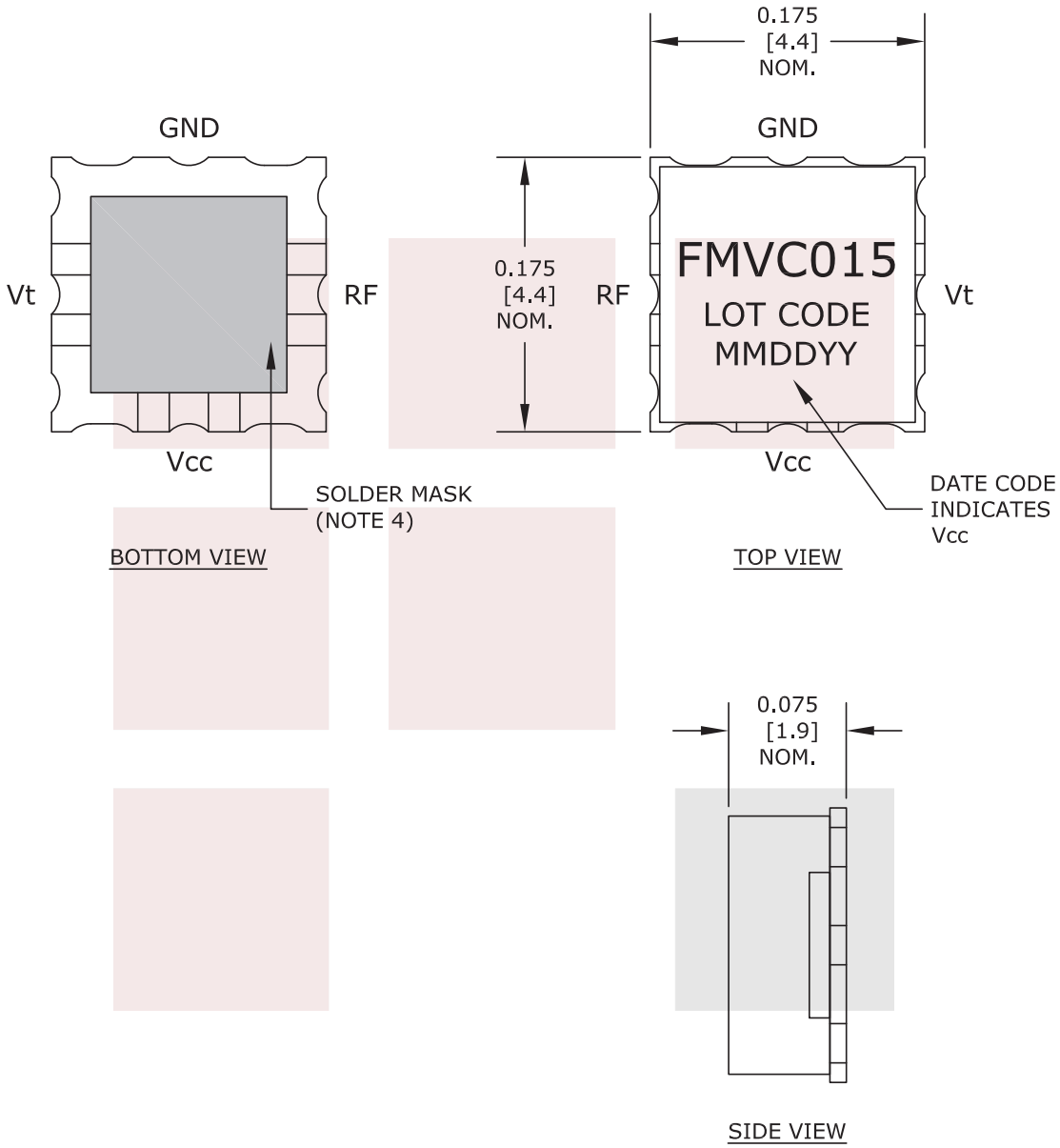
**Plotted and Other Data**

Notes:

VCO (Voltage Controlled Oscillator) 0.175 inch Commercial Frequency of 6.1 GHz to 7 GHz, Phase Noise -76 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.

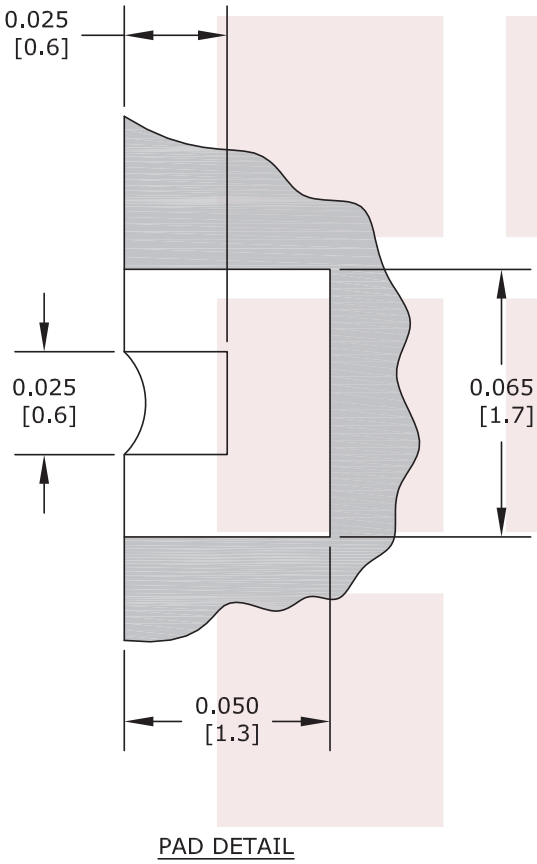
For additional information on this product, please click the following link: VCO (Voltage Controlled Oscillator) 0.175 inch Commercial Frequency of 6.1 GHz to 7 GHz, Phase Noise -76 dBc/Hz FMVC015

URL: http://www.fairviewmicrowave.com/vco-voltage-controlled-oscillator-7-ghz-fmvc015-p.aspx

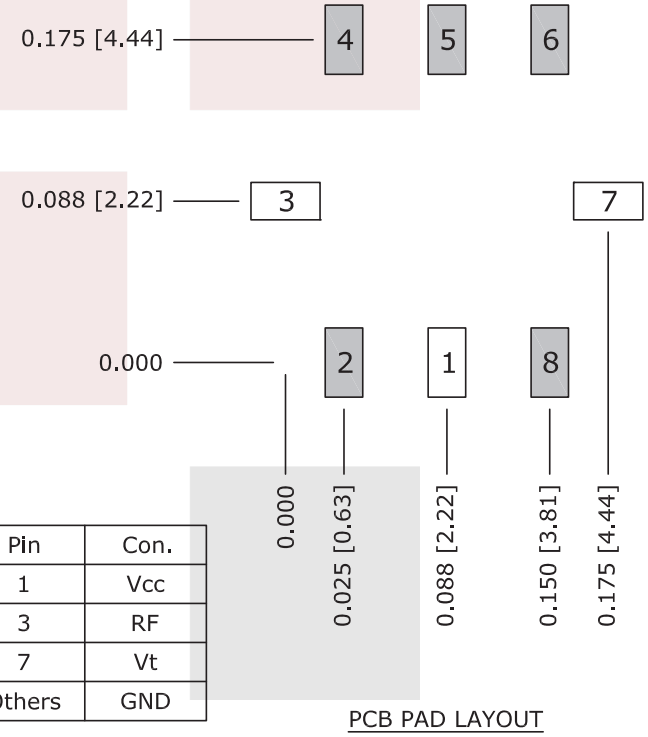



NOTES:
1. THE CASE IS GROUND.
2. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES [mm].
3. UNLESS OTHERWISE SPECIFIED FINISH IS 150-250 MICRO INCHES ELECTROLESS NICKEL OVER COPPER CLAD PCB, 2-5 MICRO INCHES IMMERSION GOLD, OVER NICKEL.
4. SOLDER MASK NOT USED FOR APPLICATIONS GREATER THAN 6GHz.

| | |
|---|---|
| FAIRVIEW MICROWAVE INC.<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 Commercial Frequency of 6.1 GHz to 7 GHz, Phase Noise -76 dBc/Hz | DWG NO FMVC015 — CAGE CODE 3FKR5<br>CAD FILE 020816 — SHEET — SCALE N/A — SIZE A — 2233 |




PAD DETAIL




| Pin | Con. |
|---|---|
| 1 | Vcc |
| 3 | RF |
| 7 | Vt |
| Others | GND |

PCB PAD LAYOUT

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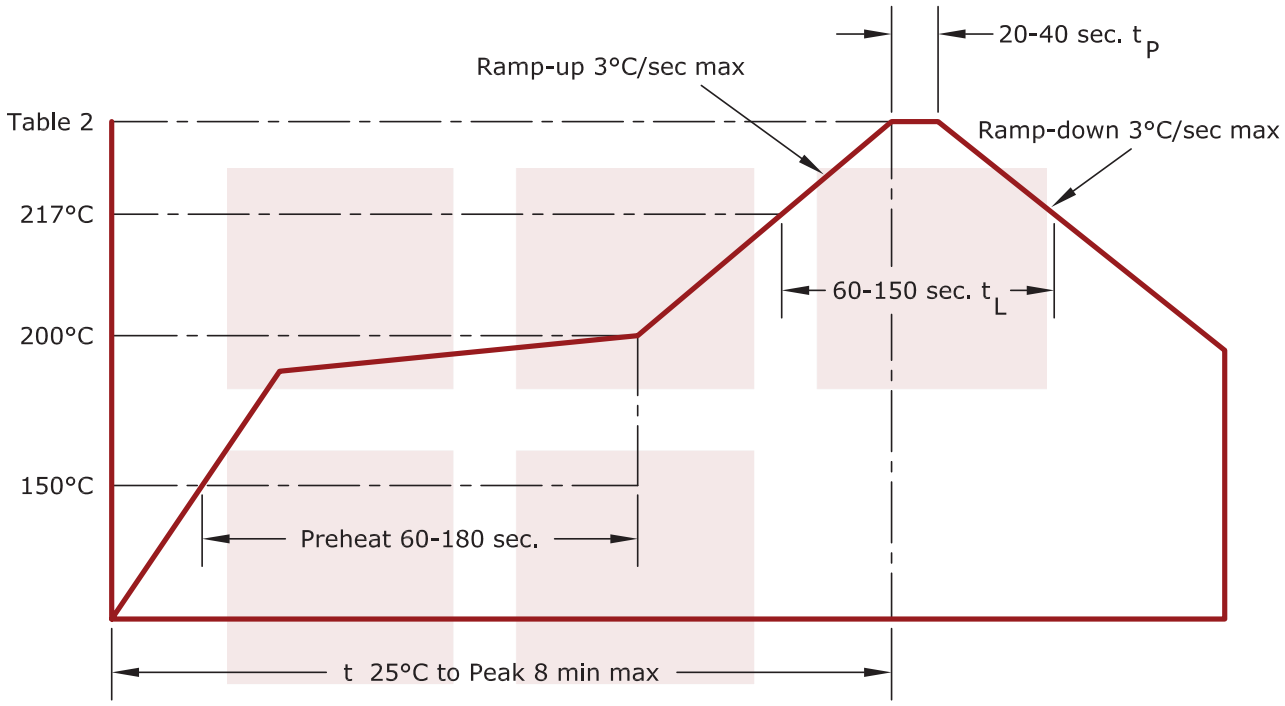


| Table 1<br>Hand Soldering | |
|---|---|
| Item | Condition |
| Tip Temp. (max.) | 260° |
| Iron Power (max.) | 20 W |
| Time (max.) | 3 Sec. |
| Note. | Avoid excess pressure to castelations |

| Table 2<br>Package re-flow temp | |
|---|---|
| Pkg. | tp (°C) |
| 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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