

**VCO (Voltage Controlled Oscillator) 0.5 inch  
Hermetic SMT (Surface Mount), Frequency of 40 MHz  
to 100 MHz, Phase Noise -118 dBc/Hz**

FMVC13005 is a High Reliability Low Noise Voltage Controlled Oscillator (VCO) which covers a 40 MHz to 100 MHz frequency band with a voltage tuning range from 0V to 20V. This design features exceptional phase noise performance of -118 dBc/Hz @ 10 kHz offset. Supply Voltage is +15V with a generated output power level of +11.5 dBm and 2nd harmonic output of -14 dBc typical. The assembly is RoHs compliant and available in a hermetically sealed 0.5" surface mount package with exposed leads that meets MIL-STD-883, Method 1014 fine & Gross leak conditions. This rugged package operates over a temperature range of -40°C to +85°C and is designed to also meet a variety of MIL-STD-202 test conditions including Humidity, Shock, and Vibration.

**Electrical Specifications**

| Description                | Min | Typ   | Max   | Units  |
|----------------------------|-----|-------|-------|--------|
| Frequency Range            | 40  |       | 100   | MHz    |
| Tuning Voltage             | 0   |       | 20    | Vdc    |
| Supply Voltage (DC)        | 14  | 15    | 16    | Vdc    |
| Supply Current (DC)        |     | 18    | 20    | mA     |
| Phase Noise @1kHz Offset   |     | -90   | -87   | dBc/Hz |
| Phase Noise @10kHz Offset  |     | -118  | -116  | dBc/Hz |
| Phase Noise @100kHz Offset |     | -138  | -136  | dBc/Hz |
| Output Power               | +10 | +11.5 | +12.5 | dBm    |
| Tuning Sensitivity (Kvco)  | 2   |       | 5     | MHz/V  |
| Pushing                    |     | 0.2   | 0.4   | MHz/V  |
| Pulling (pk-pk)            |     | 100   | 300   | KHz    |
| Tuning Port Capacitance    |     | 180   |       | pF     |
| Load Impedance             |     | 50    |       | Ohms   |
| 2nd Harmonics              |     | -14   | -10   | dBc    |

**Mechanical Specifications**

|                           |                     |
|---------------------------|---------------------|
| <b>Size</b>               |                     |
| Length                    | 0.5 in [12.7 mm]    |
| Width                     | 0.5 in [12.7 mm]    |
| Height                    | 0.215 in [5.46 mm]  |
| Weight                    | 0.028 lbs [12.7 g]  |
| Body Material and Plating | Kovar, Nickel, Gold |
| Design                    | Hermetic            |
| Package Style             | Surface Mount       |

**Environmental Specifications**

|                    |                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------|
| <b>Temperature</b> |                                                                                                        |
| 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                                                                               |
| Hermetic Seal      | Fine Leak MIL-STD-883 Method 1014C/Gross Leak MIL-STD-883, Method 1014A, 1 x 10 <sup>-8</sup> atm cc/s |



**Features:**

- 40 MHz to 100 MHz Bandwidth
- -118 dBc/Hz @ 10kHz offset
- Tuning Voltage 0V to 20V
- Pout = +11.5 dBm
- Harmonics = -14 dBm
- RoHs Compliant Assembly
- Hermetically Sealed Rugged SMT Package
- Designed to meet Fine & Gross leak per MIL-STD-883 Method 1014
- 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)

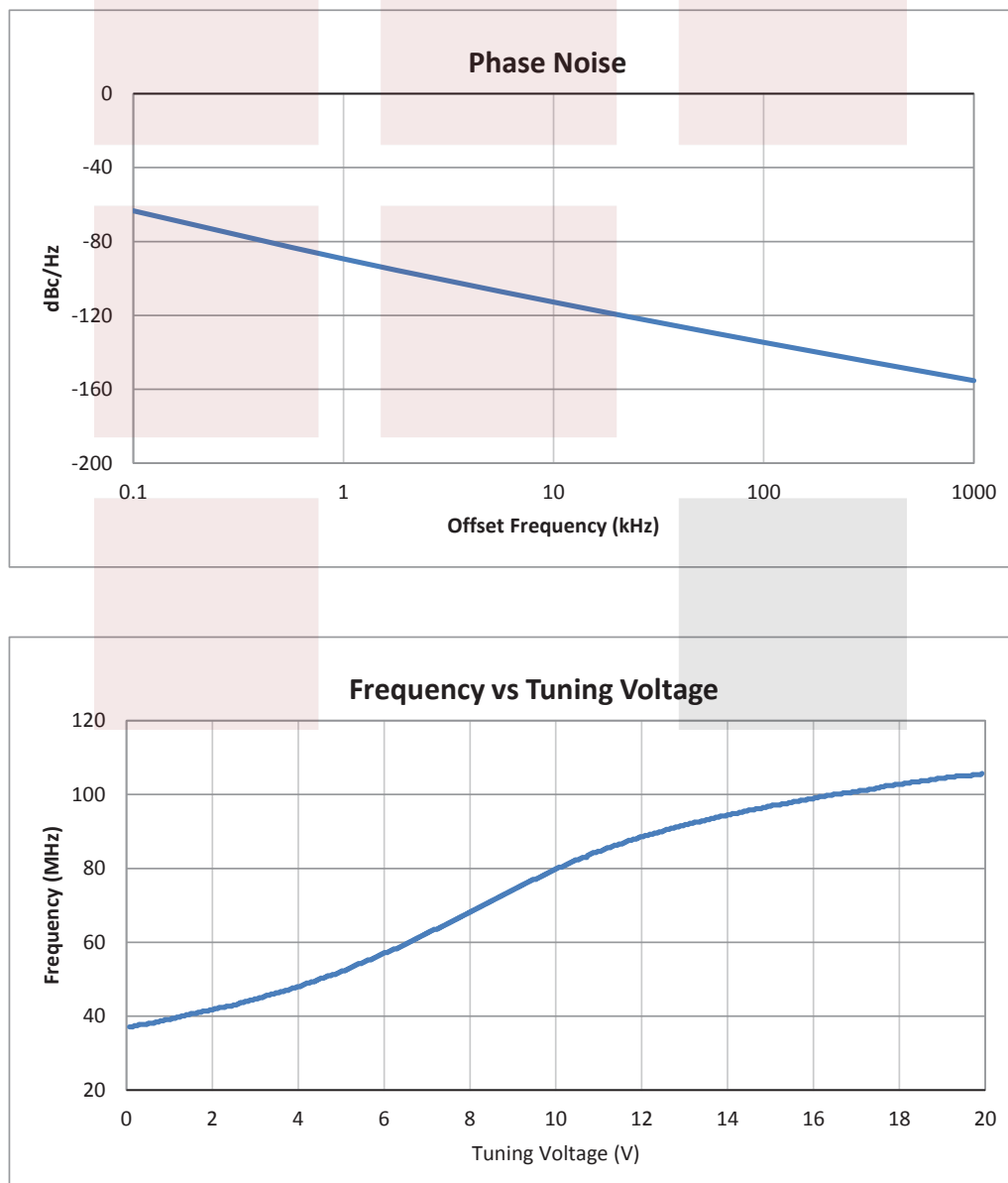
RoHS Compliant  
REACH Compliant

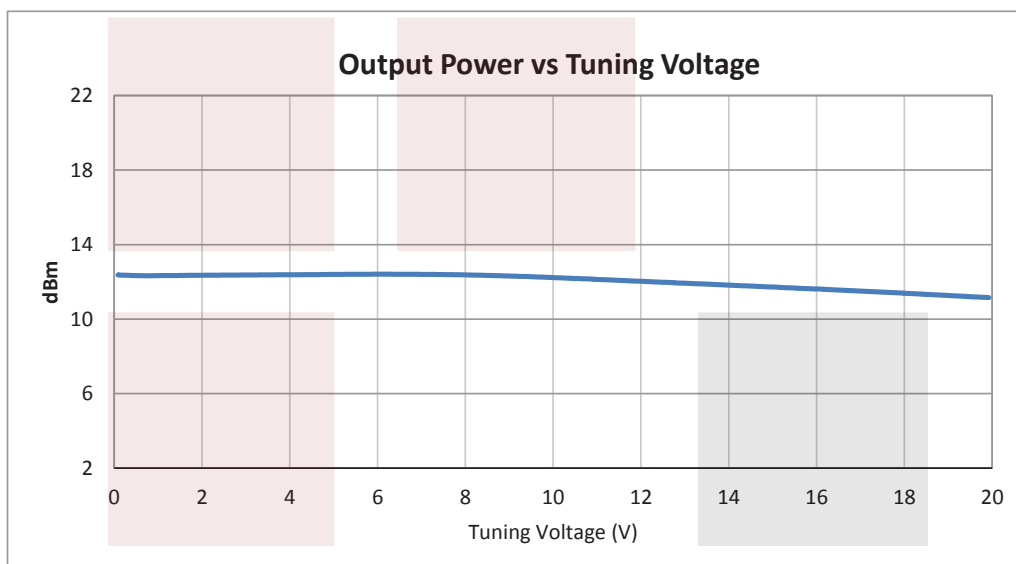
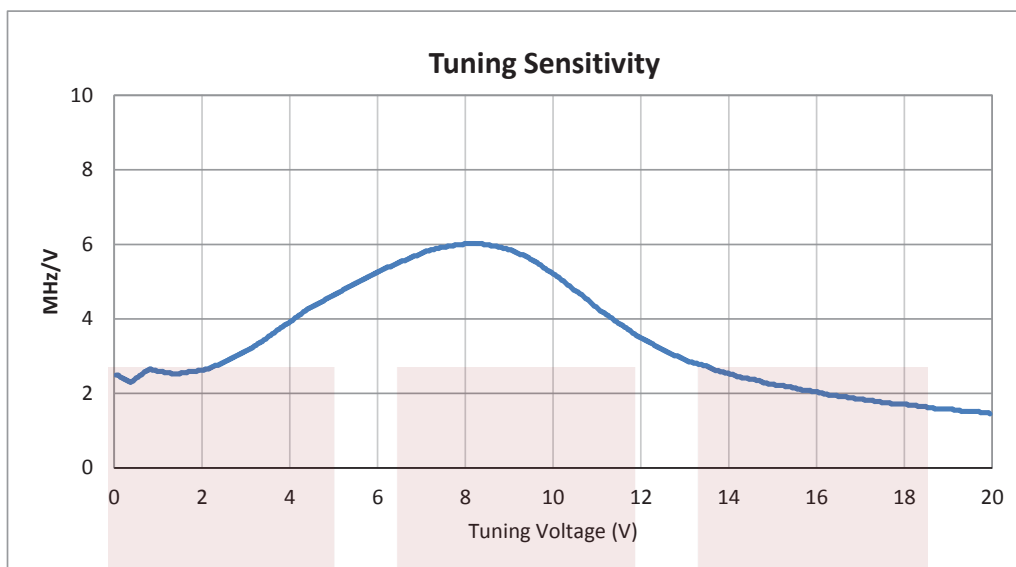
Yes  
12/17/2015

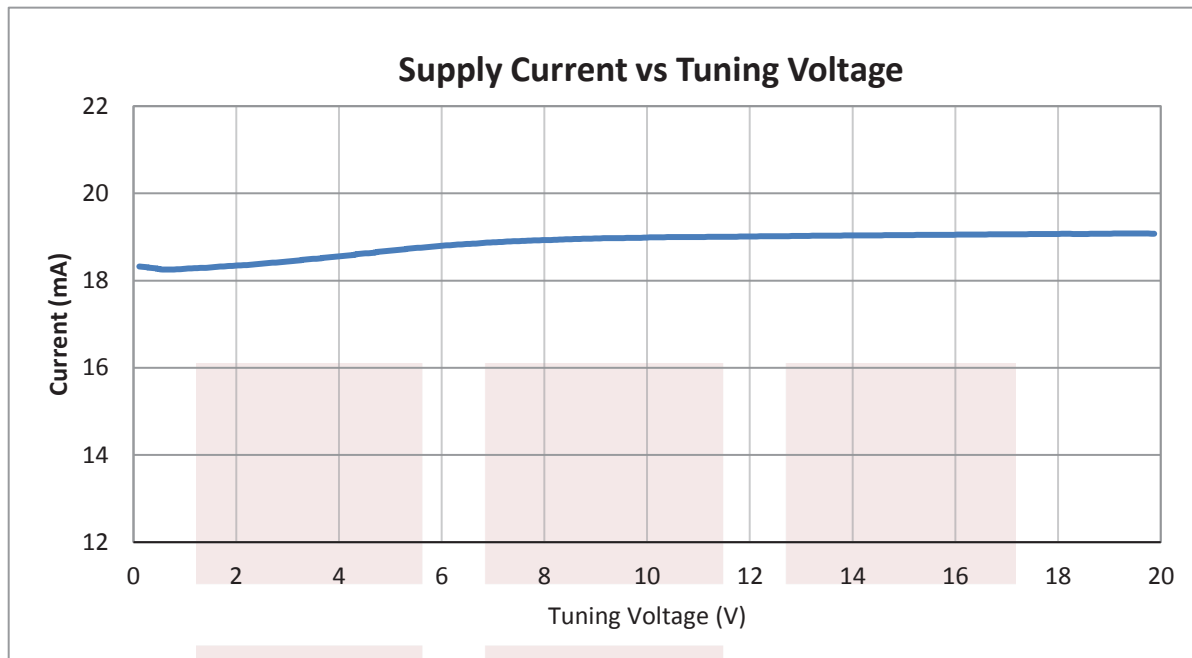
### Plotted and Other Data

Notes:

Typical Performance Data





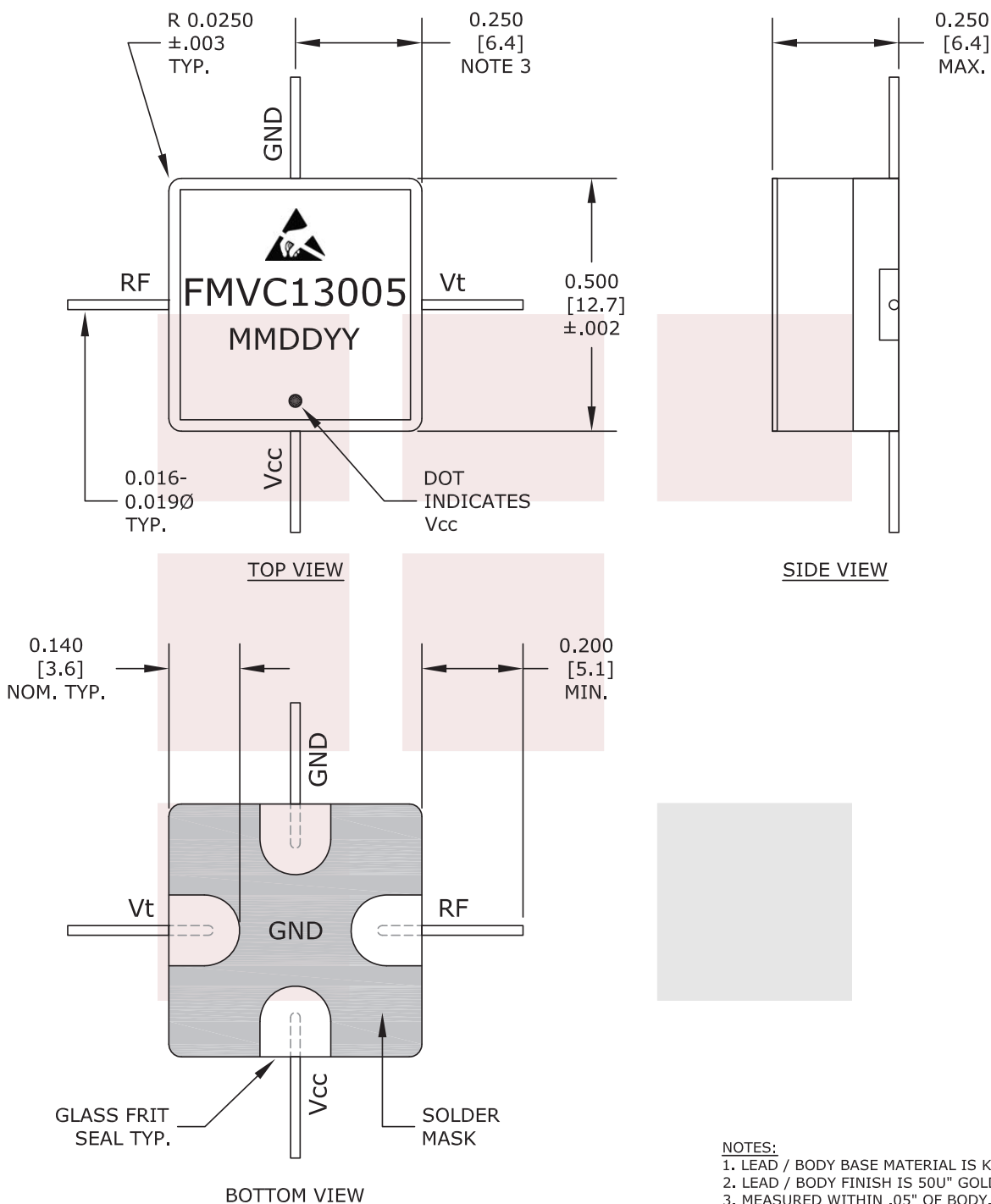


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For additional information on this product, please click the following link: [VCO \(Voltage Controlled Oscillator\) 0.5 inch Hermetic SMT \(Surface Mount\), Frequency of 40 MHz to 100 MHz, Phase Noise -118 dBc/Hz FMVC13005](http://www.fairviewmicrowave.com/vco-voltage-controlled-oscillator-smt-surface-mount-100-mhz-fmvc13005-p.aspx)

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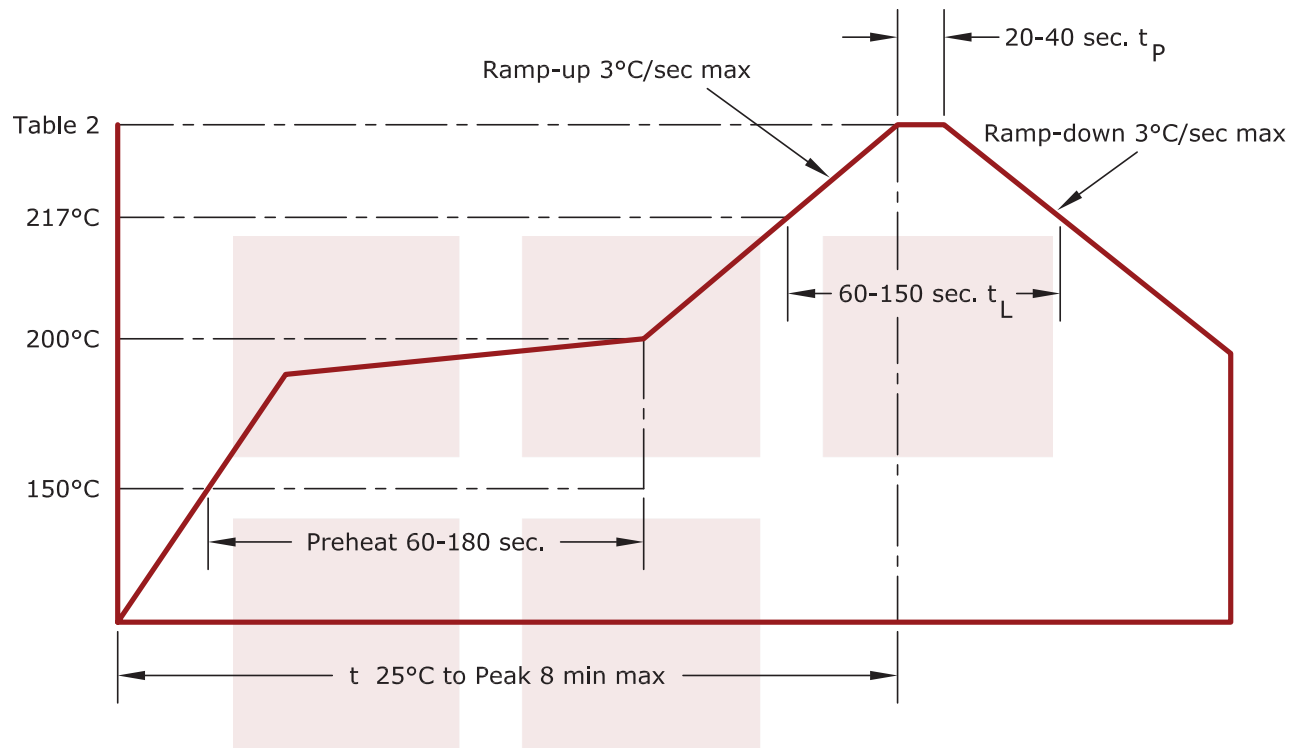
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**NOTES:**

1. LEAD / BODY BASE MATERIAL IS KOVAR.
2. LEAD / BODY FINISH IS 50U" GOLD / NI.
3. MEASURED WITHIN .05" OF BODY.

|                                                                                                                                             |        |       |  |       |                                                                                                                                                                                     |      |                           |      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|--|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------|------|--|
| <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) 0.5 inch Hermetic SMT (Surface Mount), Frequency of 40 MHz to 100 MHz, Phase Noise -118 dBc/Hz |        |       |  |       | DWG NO<br><b>FMVC13005</b>                                                                                                                                                          |      | CAGE CODE<br><b>3FKR5</b> |      |  |
| 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 castelations |

| Table 2<br>Package re-flow temp |            |
|---------------------------------|------------|
| Pkg.                            | $t_p$ (°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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