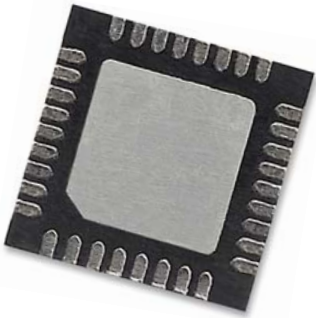




## Delivering high frequency VCOs... with low phase noise for microwave applications

M/A-COM Technology Solutions' high frequency Voltage Controlled Oscillators are InGaP HBT-based MMIC's targeted for frequency generation applications. No external matching components are required. These VCO's are easily integrated into a phase lock loop using the divide-by-two output. The extremely low phase noise makes these parts ideal for many radio applications including high capacity digital radios.

These VCOs have low power consumption for the function with a +5V supply voltage and 175 mA typical current. The tuning voltage varies between 1 and 13V. The 5 mm PQFN package has a lead-free finish that is RoHS compliant and compatible with a 260°C reflow temperature. The package also features low lead inductance and an excellent thermal path.

See tables on reverse side. ►

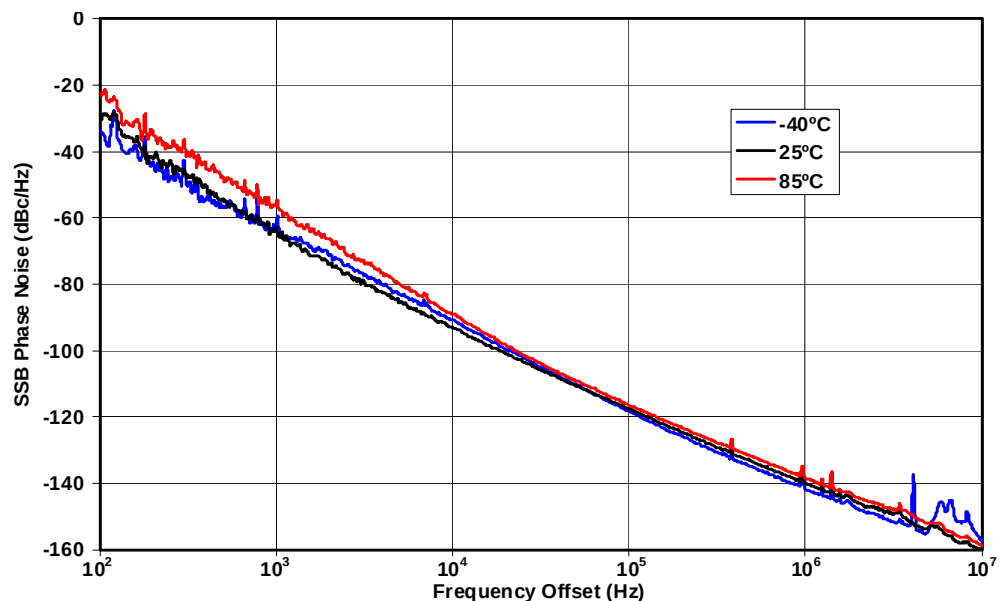
### Features

- Low phase noise
- Divide-by-two output
- Integrated buffer amplifier
- Excellent temperature stability

### Primary Applications

- Point-to-point radio
- Point-to-multipoint radio
- Communications systems
- Low phase noise applications

Phase Noise of MAOC-009262



M/A-COM Technology Solutions Inc.

Lowell, Massachusetts 01851  
• North America 800.366.2266  
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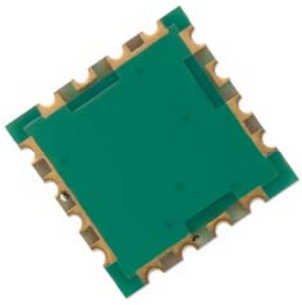
### **Lead-Free 5 mm 32-Lead PQFN Package**



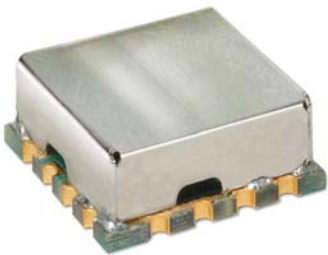
The exposed pad centered on the package bottom must be connected to RF and DC ground

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**Custom Design  
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One Week  
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## Delivering low cost surface mount VCOs... from 45 MHz to 3.6 GHz

M/A-COM Technology Solutions' Voltage Controlled Oscillator modules incorporate a fundamental single ended oscillator design optimized for low phase noise and highly linear tuning characteristics. Our designs incorporate output isolation to provide flat output power and reduce the frequency pulling effects of the load VSWR. The output circuit also includes a low pass filter for harmonic

rejection. Power supply and tuning voltage requirements are in the 3V to 5V range.

For applications up to 3.6 GHz, VCOs are available in the LSM1 package style, 0.5 inch square. These packages provide electrical shielding and are easy to assemble using standard pick and place equipment.

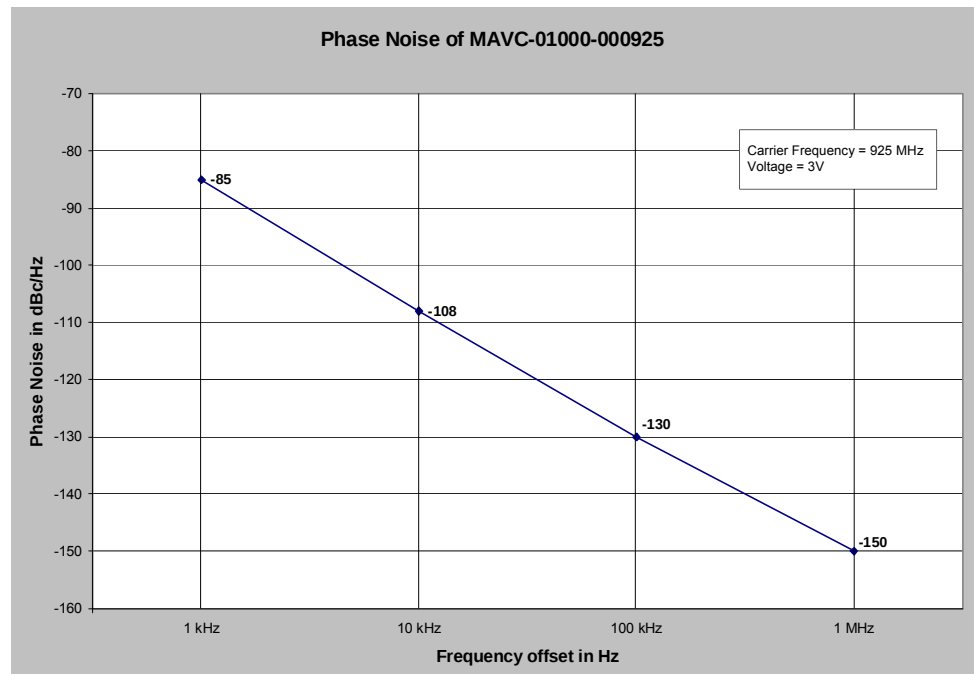
See tables on reverse side. ►

### Features

- High linearity
- Harmonic rejection
- Low phase noise
- Output isolation to reduce frequency pulling

### Primary Applications

- Point-to-point
- Base station
- CATV/broadband
- Private mobile radio (PMR)

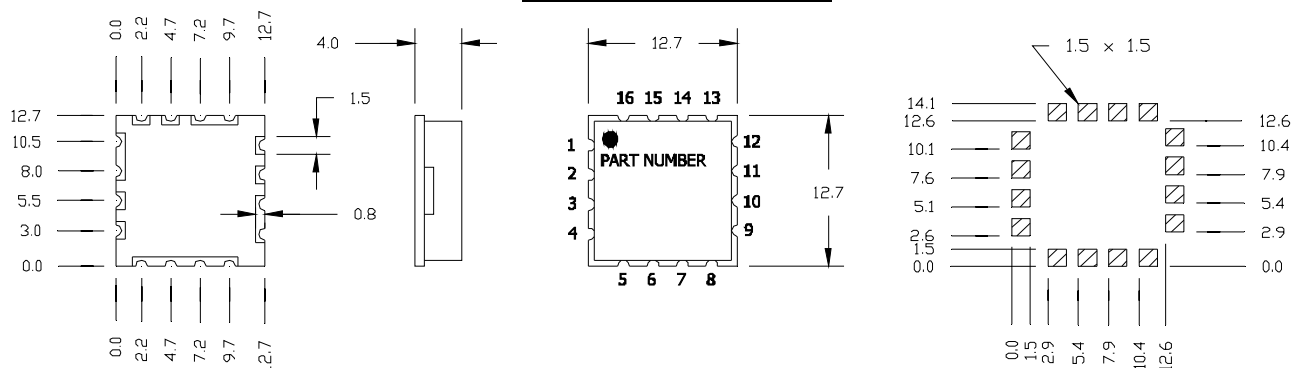


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| Part Number        | Frequency (MHz) |      | Power Output (dBm) |      | Tune Voltage (V) |      | Phase Noise (dBc/Hz) SSB @ Offset Freq |         | Tuning Sensitivity (MHz/V) | 2nd Harmonics (dBc) | Pushing (MHz/V) | Power Supply          |                       |
|--------------------|-----------------|------|--------------------|------|------------------|------|----------------------------------------|---------|----------------------------|---------------------|-----------------|-----------------------|-----------------------|
|                    | Min.            | Max. | Typ.               | Max. | Min.             | Max. | 10 kHz                                 | 100 kHz | Typ.                       | Max.                | Max.            | Voltage (V) Nom. Typ. | Current (mA) Icc Max. |
| MAVC-010000-000045 | 42.5            | 47.5 | 3                  | 6    | 0.5              | 4.5  | -117                                   | -136    | 2.8                        | -10                 | 0.5             | 5                     | 25                    |
| MAVC-010000-000080 | 77.5            | 82.5 | 3                  | 6    | 0.5              | 4.5  | -114                                   | -134    | 2.5                        | -10                 | 0.25            | 5                     | 25                    |
| MAVC-010000-000925 | 920             | 960  | 0                  | 3    | 0.5              | 4.5  | -108                                   | -130    | 10                         | -16                 | 0.1             | 5                     | 20                    |
| MAVC-010000-001515 | 1450            | 1580 | 1.5                | 3.0  | 0.5              | 11   | -105                                   | -125    | 17                         | -10                 | 0.1             | 5                     | 30                    |
| MAVC-010000-001865 | 1780            | 1950 | 1                  | 3    | 0.5              | 11   | -100                                   | -120    | 20                         | -10                 | 3.5             | 5                     | 30                    |
| MAVC-010000-002140 | 2110            | 2170 | 3                  | 4    | 1                | 4    | -95                                    | -117    | 30                         | -10                 | 4               | 5                     | 20                    |
| MAVC-010000-002196 | 2146            | 2246 | 6                  | 9    | 0                | 5    | -95                                    | -115    | 30                         | -10                 | 3               | 5                     | 30                    |
| MAVC-010000-002300 | 2200            | 2400 | 5                  | 7.5  | 0                | 20   | -98                                    | -120    | 15                         | -10                 | 15              | 8                     | 50                    |
| MAVC-010000-002593 | 2496            | 2690 | 3                  | 5    | 1                | 18   | -98                                    | -118    | 16                         | -12                 | 8               | 8                     | 50                    |
| MAVC-010000-003500 | 3400            | 3600 | 5                  | 7    | 1                | 18   | -94                                    | -115    | 16                         | -10                 | 15              | 8                     | 47                    |

To request custom designs, please submit the form on [www.macomtech.com/CustomVCOs.html](http://www.macomtech.com/CustomVCOs.html)

## LSM1 Package Style



## Pin Configuration

| Pin No.                        | Function          |
|--------------------------------|-------------------|
| 10                             | RF Output         |
| 14                             | V <sub>CC</sub>   |
| 2                              | V <sub>tune</sub> |
| 1,3,4,5,6,7,8,9,11,12,13,15,16 | GND               |

1. Plating: Au, 0.05µm — 0.15µm over Ni barrier of 2.5µm — 5.0µm.
2. Internal Solder: Sn95.5/Ag4.0/ Cu0.5, lead free.
3. Substrate: FR4
4. Cover: mild steel
5. Tolerance: ±0.2mm unless otherwise noted.

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