

# Surface Mount Voltage Controlled Oscillator

## EGSM 920 - 960 MHz

### MLO80100-00940

V2.00

### Features

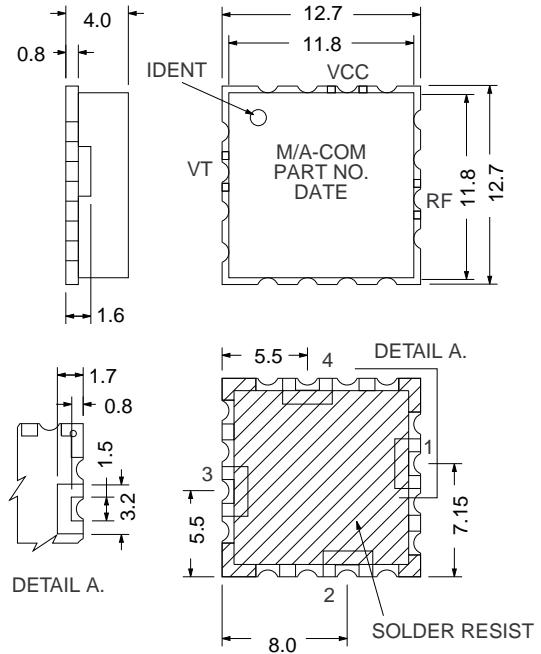
- Miniature Size
- Surface Mount Package
- Electrically Shielded
- Low Phase Noise
- Highly Linear Tuning

### Description

The MLO80100-00940 is a fundamental single ended oscillator designed for use in cost sensitive wireless and telemetry applications. The device has been optimised by careful selection of the bipolar transistor and varactor diode for low phase noise and high linearity tuning characteristics.

The low profile surface mount package used provides for electrical shielding, ease of assembly and repeatable performance. M/A-COM's surface mount manufacturing techniques together with automatic assembly and electrical testing ensure a high degree of electrical and mechanical repeatability at low cost and in high volume. Manufacturing is carried out in an ISO 9000 qualified facility.

### LSM1 Package



### Electrical Specifications<sup>1</sup>, T<sub>A</sub> = +25°C, V<sub>CC</sub> = +5 V (unless otherwise stated)

| Parameter                                      | Test Conditions                    | Units  | Min   | Typ   | Max   |
|--|------------------------------------|--------|-------|-------|-------|
| Frequency Range                                |                                    | MHz    | 920   |       | 960   |
| Tuning Voltage (V <sub>T</sub> ) <sup>2</sup>  |                                    | V      | +0.5  |       | +4.5  |
| RF Output Power <sup>3</sup>                   | 920 - 960 MHz                      | dBm    | -2.0  |       | +2.0  |
| Supply Voltage (V <sub>CC</sub> ) <sup>4</sup> |                                    | V      | +4.75 | +5.00 | +5.25 |
| Supply Current (I <sub>CC</sub> )              |                                    | mA     |       |       | 15    |
| Phase Noise <sup>5</sup>                       | SSB at 100 KHz offset from carrier | dBc/Hz |       | -128  | -125  |
| Tuning Sensitivity                             | 920 - 960 MHz                      | MHz/V  |       | 15    |       |
| Tuning Linearity                               | 920 - 960 MHz                      | Ratio  |       | 1.2   | 1.7   |
| Modulation Bandwidth                           | 3 dB bandwidth                     | MHz    | 2.0   |       |       |
| Harmonic Outputs <sup>6</sup>                  |                                    | dBc    |       |       | -15   |
| Frequency Pushing                              | V <sub>CC</sub> 4.75V to 5.25V     | MHz/V  |       |       | 2.0   |
| Frequency Pulling                              | 1.5:1 VSWR load, all phases        | MHz    |       |       | 2.0   |
| Frequency Drift                                |                                    | MHz/°C |       | 0.06  |       |
| Tune Input Capacitance                         |                                    | pF     |       |       | 50    |

1. All specifications apply with a 50 ohm load impedance.
2. Tuning voltages shown are the minimum and maximum voltages required to tune the frequency range including temperature effects -20°C to +70°C. Devices will oscillate normally with tuning voltages from 0V to +10V.
3. Output power window includes unit to unit variation, temperature effects -20°C to +70°C and frequency flatness (typically ±0.5 dB at any constant temperature).

4. Devices may be operated at lower supply voltage with reduced performance.
5. For typical phase noise at other offsets see phase noise curve.
6. No non-harmonic spurious visible when measured on a test system with a dynamic range of 70 dB.

Specifications Subject to Change Without Notice.

M/A-COM Ltd.

North America: Tel. (800) 366-2266 ■ Asia/Pacific: Tel. +81 (03) 3226-1671 ■ Europe: Tel. +44 (1344) 869 595  
 Fax (800) 618-8883 Fax +81 (03) 3226-1451 Fax +44 (1344) 300 020

**Absolute Maximum Ratings<sup>1</sup>**

| Parameter                                | Absolute Maximum   |
|--|--------------------|
| Tuning Voltage ( $V_T$ )                 | 0 to +15V          |
| Supply Voltage <sup>2</sup> ( $V_{CC}$ ) | +6V                |
| Storage Temperature                      | -45°C to +100°C    |
| Solder Assembly Temperature              | +230°C for 10 secs |

1. Exceeding these limits may cause permanent damage.
2. A series resistor will allow operation at any greater supply voltage. Used in conjunction with a bypass capacitor this will yield improved power supply decoupling and noise suppression.

**Functional Configuration**

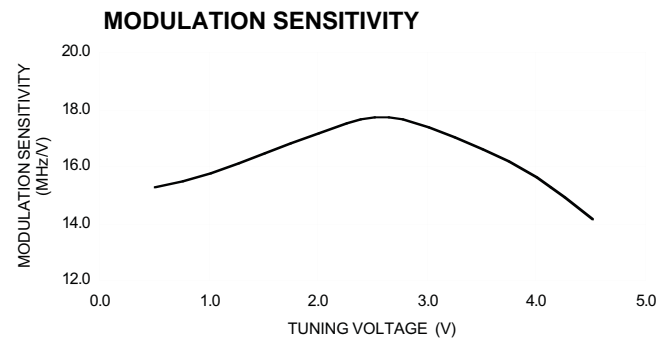
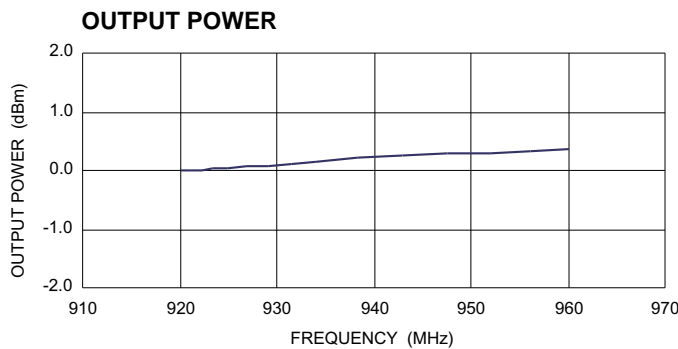
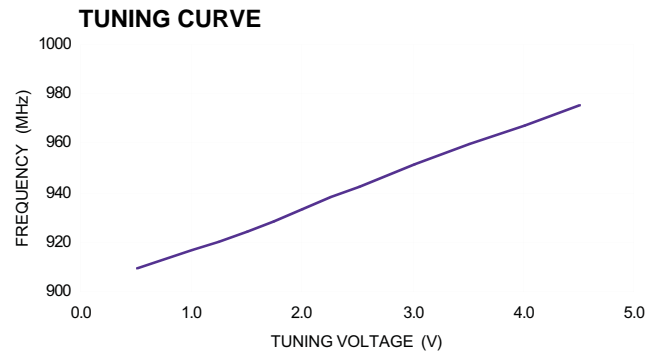
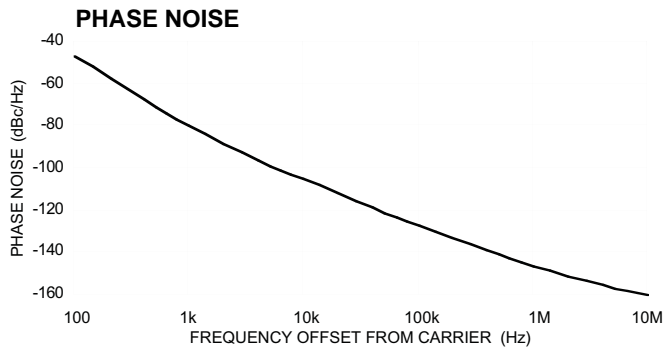
| Pad        | Configuration |
|------------|---------------|
| 1          | RF Output     |
| 2          | $V_{CC}$      |
| 3          | $V_T$         |
| 4          | N/C or Ground |
| Case / Lid | Ground        |

Substrate Material FR4.

**Environmental Specification**

Devices are designed to operate over the temperature range of -20°C to +70°C and after exposure to the shock, vibration, thermal shock and moisture conditions typically encountered in base station and subscriber terminal environments.

**Typical Performance @ +25°C**



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