

Surface Mount Voltage Controlled Oscillator

IF 410 - 430 MHz

MLO80100-00420

V2.00

Features

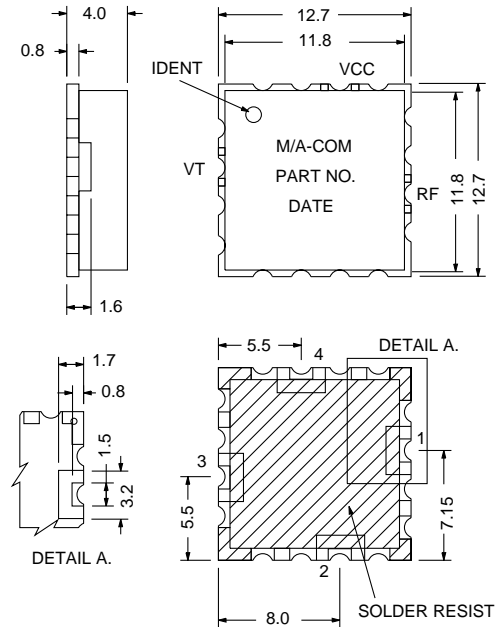
- Miniature Size
- Surface Mount Package
- Electrically Shielded
- Low Phase Noise
- Highly Linear Tuning

Description

The MLO80100-00420 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 highly linear 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 automated 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 Specifications¹, $T_A = +25^\circ\text{C}$, $V_{CC} = +5\text{V}$ (unless otherwise stated)

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Frequency Range		MHz	410		430
Tuning Voltage (V_T) ²		V	+0.5		+4.5
RF Output Power ³	410 - 430 MHz	dBm	-3.0		+3.0
Supply Voltage (V_{CC}) ⁴		V	+4.75	+5.00	+5.25
Supply Current (I_{CC})		mA		12	15
Phase Noise ⁵	SSB at 100 KHz offset from carrier	dBc/Hz		-132	-128
Average Tuning Sensitivity ⁶	410 - 430 MHz	MHz/V		9	
Tuning Linearity	410 - 430 MHz	Ratio		1.1	1.4
Harmonic Outputs ⁷		dBc		-15	-10
Frequency Pushing	VCC 4.75V to 5.25V	MHz/V		0.2	1.0
Frequency Pulling	1.5:1 VSWR load, all phases	MHz		0.4	1.0
Frequency Drift	-20°C to +70°C	MHz/°C		-0.02	
Tune Input Capacitance		pF			100

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 typical supply voltage with reduced performance.
5. For typical phase noise at other offsets see phase noise curve.
6. Defined as $(430 - 410) / (V_{T430} - V_{T410})$ MHz/V.
7. Non-harmonic spurious less than -70dBc.

Specifications Subject to Change Without Notice.

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Absolute Maximum Ratings¹

Parameter	Absolute Maximum
Tuning Voltage (V_T)	0 to +15V
Supply Voltage ² (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.
3. Static sensitive, observe appropriate precautions.

Functional Configuration

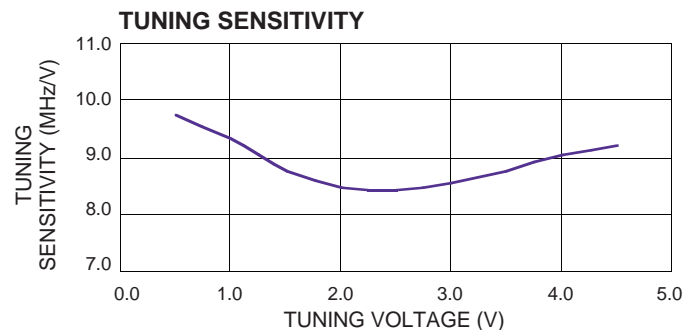
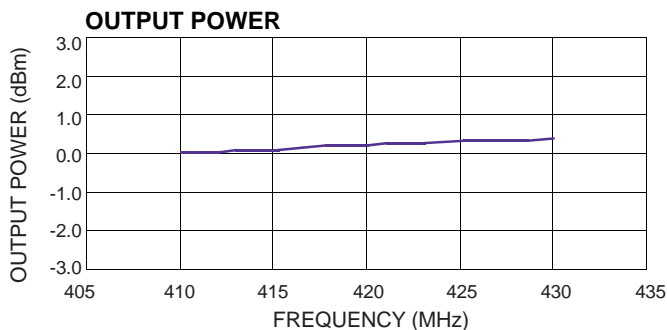
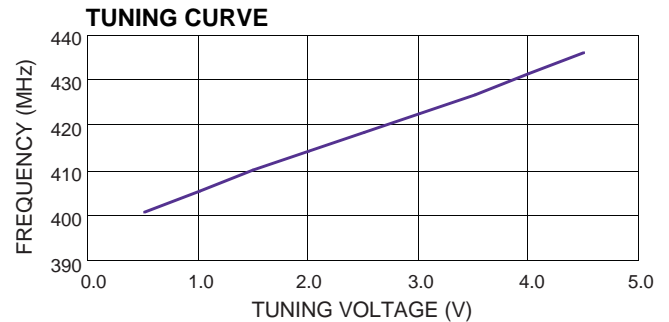
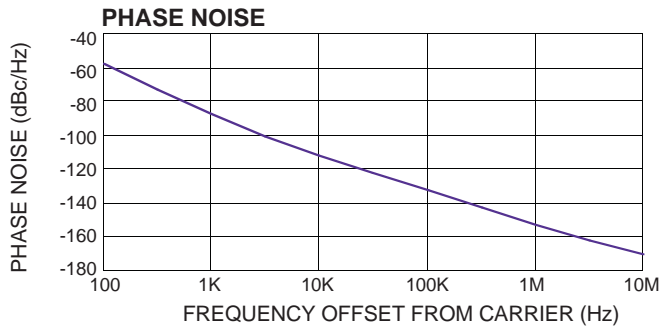
Pad	Configuration
1	RF Output
2	V_{CC}
3	V_T
4	N/C or Ground
Case / Lid	Ground

Substrate Material FR4.

Environmental Specifications

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 and V_{CC} +5V



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