Surface Mount Voltage Controlled Oscillator
DCS 1800 - 1900 MHz

MLO81100-01850

V3.00

Features

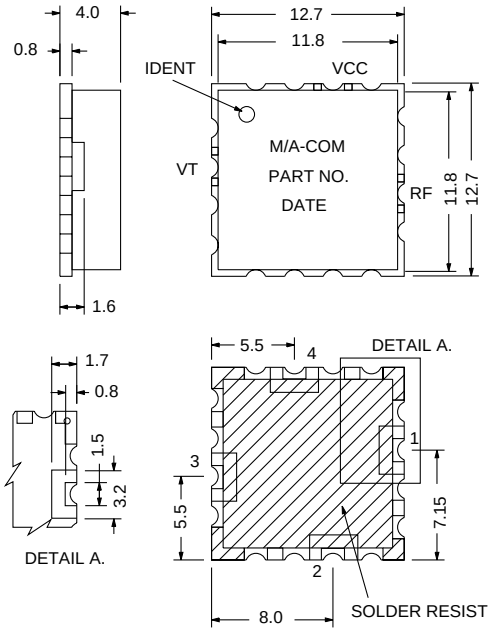
- Miniature Size
- Surface Mount Package
- Electrically Shielded
- Low Phase Noise
- Highly Linear Tuning

Description

The MLO81100-01850 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[1], T_A = +25°C, V_{CC} = +5V (unless otherwise stated)

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Frequency Range		MHz	1800		1900
Tuning Voltage (V_T)[2]		V	+0.5		+4.5
RF Output Power[3]	1800 - 1900 MHz	dBm	-3.0		+3.0
Supply Voltage (V_{CC})[4]		V	+4.75	+5.00	+5.25
Supply Current (I_{CC})		mA		13	15
Phase Noise[5]	SSB at 100 kHz offset from carrier	dBc/Hz		-118	-114
Average Tuning Sensitivity[6]	1800 - 1900 MHz	MHz/V		50	
Tuning Linearity	1800 - 1900 MHz	Ratio		1.5	2.0
Harmonic Outputs[7]		dBc		-22	-15
Frequency Pushing	V_{CC} 4.75V to 5.25V	MHz/V		1.5	2.5
Frequency Pulling	1.5:1 VSWR load, all phases	MHz		4.5	5.5
Frequency Drift	-20°C to +70°C	MHz/°C		-0.15	
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 typical supply voltage with reduced performance.
5. For typical phase noise at other offsets see phase noise curve.
6. Defined as (1900 - 1800) / (V_T 1900 - V_T 1800) MHz/V.
7. Non harmonic spurious less than -70dBc.

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Absolute Maximum Ratings[1]

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

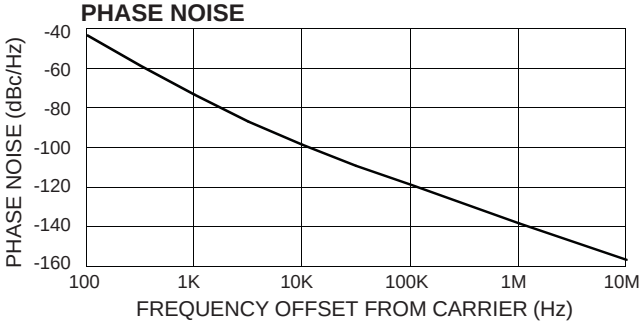
Substrate Material FR4.

Environmental Specifications

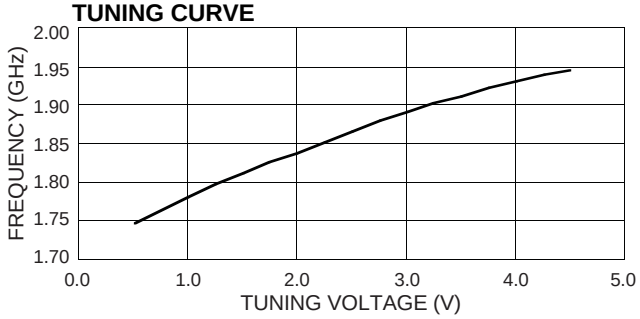
Devices are designed to operate over the temperature range of -20°C to +70°C and after exposure to the shock, vibration, thermal shock and moisture conditions typically encountered in base station and subscriber terminal environments.

Typical Performance @ +25°C and V_{CC} +5V

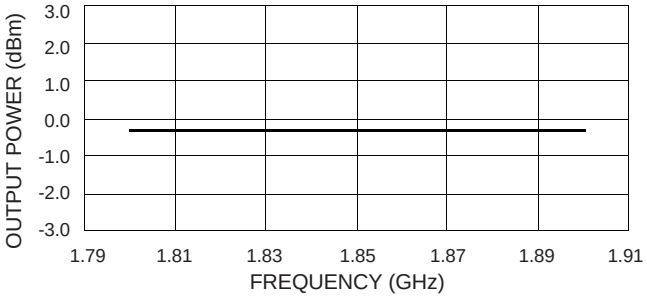
PHASE NOISE



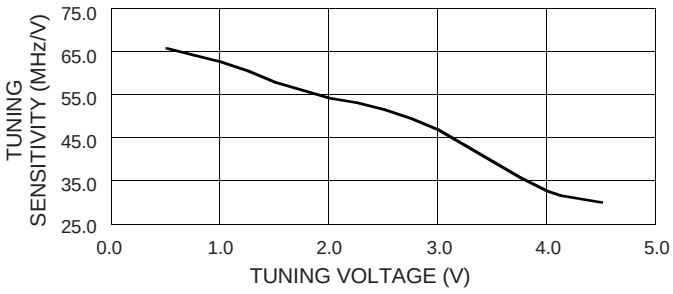
TUNING CURVE



OUTPUT POWER



TUNING SENSITIVITY



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