

NON-CATALOG

Surface Mount

Voltage Controlled Oscillator

ROS-209-319+

Ultra Low Noise 203 to 209 MHz

Features

- ultra low phase noise
- linear tuning characteristics
- low pulling
- low pushing
- aqueous washable

Applications

- wireless communications
- test equipment



CASE STYLE: CK1113

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications

| MODEL NO. | FREQ. (MHz) | | POWER OUTPUT (dBm) | PHASE NOISE dBc/Hz SSB at offset frequencies, kHz | | | | TUNING | | | | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc) | | PULLING pk-pk @12 dB (MHz) | PUSHING (MHz/V) | DC OPERATING POWER | | |
|--------------|-------------|------|--------------------|---|------|------|------|--------|-------------------|---------------------|---------------|-----------------------------|---------------------------------|------|----------------------------|-----------------|--------------------|-------------|--------------|
| | Min. | Max. | | Typ. | 1 | 10 | 100 | 1000 | VOLTAGE RANGE (V) | SENSITIVITY (MHz/V) | PORT CAP (pF) | | 3 dB MODULATION BANDWIDTH (MHz) | Typ. | | | Max. | Vcc (volts) | Current (mA) |
| ROS-209-319+ | 203 | 209 | +8.5 | -108 | -133 | -154 | -170 | 1 | 11 | 1.5 | 365 | 8 | -90 | -19 | -12 | 0.02 | 0.07 | 5 | 26 |

Pin Connections

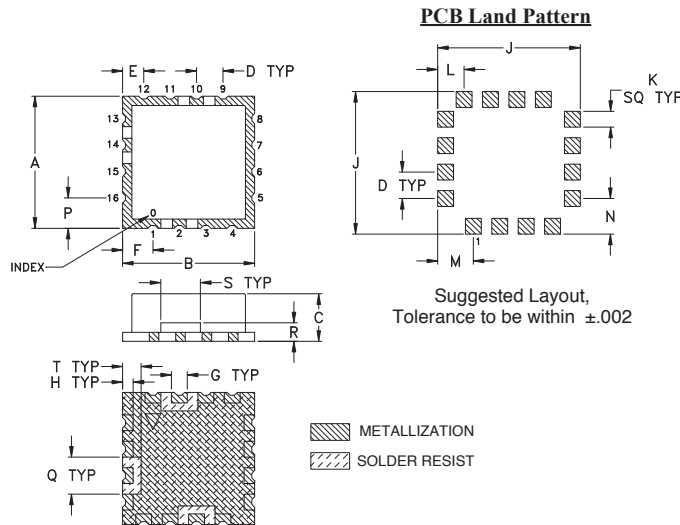
| | |
|--------|--------------------------------|
| RF OUT | 10 |
| VCC | 14 |
| V-TUNE | 2 |
| GROUND | 1,3,4,5,6,7,8,9,11,12,13,15,16 |

Maximum Ratings

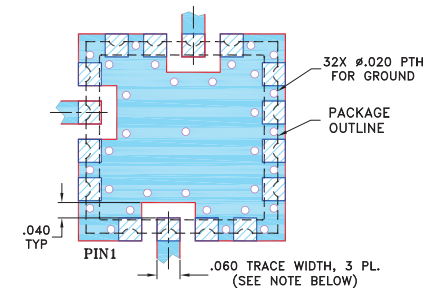
| | |
|--------------------------------------|----------------|
| Operating Temperature | -55°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc) | 6V |
| Absolute Max. Tuning Voltage (Vtune) | 13V |
| All specifications | 50 ohm system |

Permanent damage may occur if any of these limits are exceeded.

Outline Drawing



Demo Board MCL P/N: TB-10 Suggested PCB Layout (PL-012)



NOTES:

1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 2. BOTTOM SIDE OF THE BOTTOM IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | wt. |
|-------|-------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|-------|
| .500 | .500 | .220 | .100 | .080 | .115 | .060 | .040 | .540 | .060 | .100 | .135 | .135 | .115 | .140 | .070 | .150 | .070 | grams |
| 12.70 | 12.70 | 5.59 | 2.54 | 2.03 | 2.92 | 1.52 | 1.02 | 13.72 | 1.52 | 2.54 | 3.43 | 3.43 | 2.92 | 3.56 | 1.78 | 3.81 | 1.78 | 1.2 |



For detailed performance specs & shopping online see web site

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Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp.

REV. A
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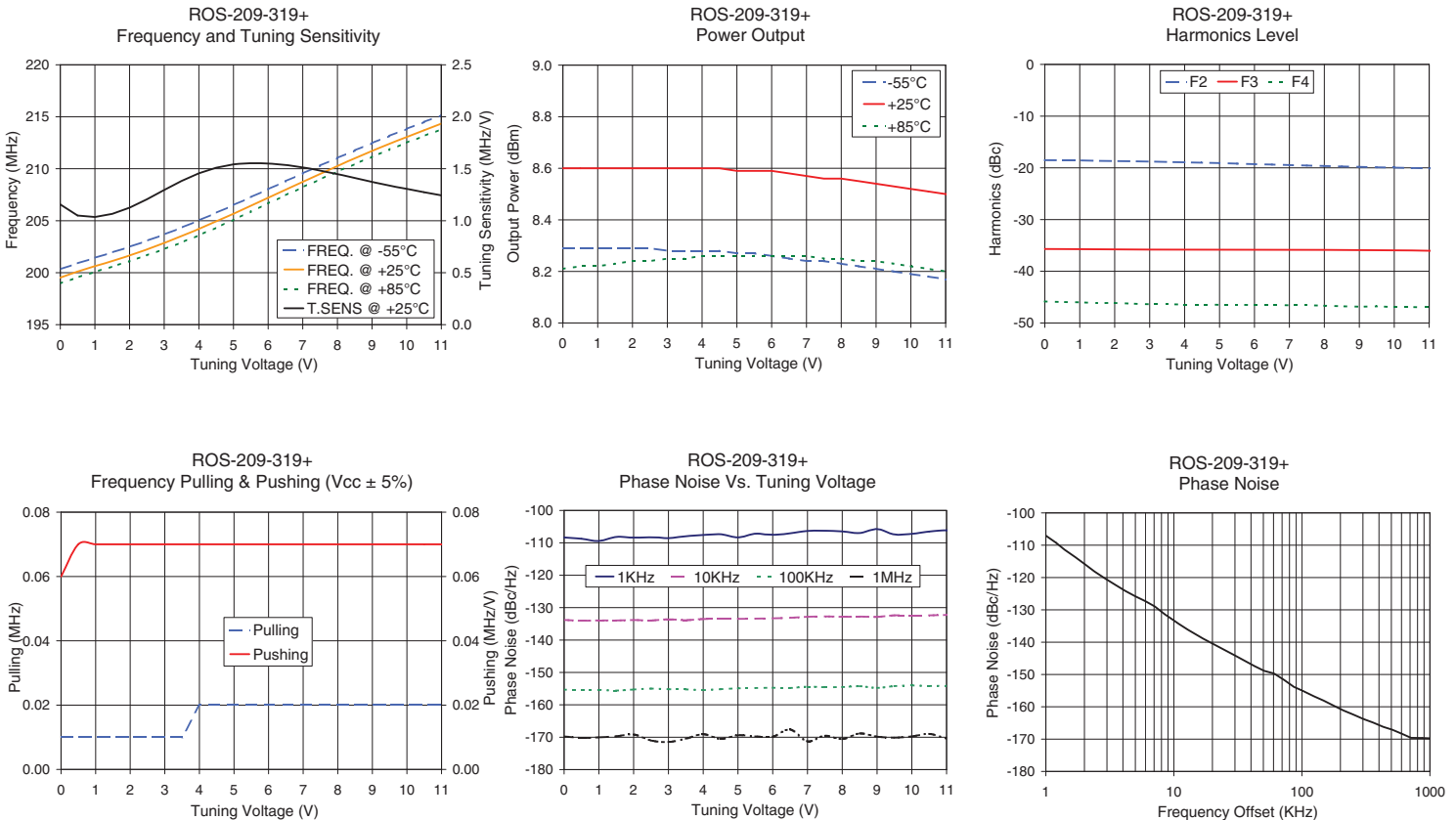
NON-CATALOG

Performance Data & Curves*

ROS-209-319+

| V TUNE | TUNE SENS (MHz/V) | FREQUENCY (MHz) | | | POWER OUTPUT (dBm) | | | Icc (mA) | HARMONICS (dBc) | | | FREQ. PUSH (MHz/V) | FREQ. PULL (MHz) | PHASE NOISE (dBc/Hz) at offsets | | | | FREQ OFFSET (KHz) | PHASE NOISE at 206 MHz (dBc/Hz) |
|--------|-------------------|-----------------|-------|-------|--------------------|-------|-------|----------|-----------------|-------|-------|--------------------|------------------|---------------------------------|--------|--------|--------|-------------------|---------------------------------|
| | | -55°C | +25°C | +85°C | -55°C | +25°C | +85°C | | F2 | F3 | F4 | | | 1kHz | 10kHz | 100kHz | 1MHz | | |
| 0.00 | 1.16 | 200.3 | 199.5 | 199.0 | 8.29 | 8.60 | 8.21 | 18.93 | -18.5 | -35.7 | -45.8 | 0.06 | 0.01 | -108.3 | -133.8 | -155.3 | -169.8 | 1.0 | -107.04 |
| 0.50 | 1.05 | 200.9 | 200.1 | 199.5 | 8.29 | 8.60 | 8.22 | 18.91 | -18.6 | -35.7 | -45.9 | 0.07 | 0.01 | -108.7 | -134.0 | -155.4 | -170.2 | 2.0 | -115.78 |
| 1.00 | 1.04 | 201.4 | 200.6 | 200.1 | 8.29 | 8.60 | 8.22 | 18.89 | -18.6 | -35.7 | -46.0 | 0.07 | 0.01 | -109.4 | -133.9 | -155.4 | -170.1 | 3.5 | -122.29 |
| 1.50 | 1.07 | 201.9 | 201.2 | 200.6 | 8.29 | 8.60 | 8.23 | 18.87 | -18.6 | -35.7 | -46.1 | 0.07 | 0.01 | -108.2 | -134.0 | -155.6 | -169.7 | 6.0 | -127.33 |
| 2.00 | 1.13 | 202.5 | 201.7 | 201.1 | 8.29 | 8.60 | 8.24 | 18.85 | -18.7 | -35.7 | -46.1 | 0.07 | 0.01 | -108.4 | -133.8 | -155.3 | -169.2 | 8.5 | -131.39 |
| 2.50 | 1.21 | 203.1 | 202.2 | 201.7 | 8.29 | 8.60 | 8.24 | 18.82 | -18.7 | -35.8 | -46.3 | 0.07 | 0.01 | -108.3 | -134.0 | -155.0 | -171.0 | 10.0 | -133.28 |
| 3.00 | 1.30 | 203.7 | 202.9 | 202.3 | 8.28 | 8.60 | 8.25 | 18.79 | -18.8 | -35.8 | -46.4 | 0.07 | 0.01 | -108.6 | -133.6 | -155.2 | -171.5 | 20.8 | -140.78 |
| 3.50 | 1.38 | 204.3 | 203.5 | 202.9 | 8.28 | 8.60 | 8.25 | 18.76 | -18.9 | -35.8 | -46.4 | 0.07 | 0.01 | -107.9 | -133.9 | -155.3 | -170.5 | 35.5 | -145.70 |
| 4.00 | 1.46 | 205.0 | 204.2 | 203.6 | 8.28 | 8.60 | 8.26 | 18.73 | -18.9 | -35.8 | -46.4 | 0.07 | 0.02 | -107.6 | -133.5 | -155.5 | -169.1 | 60.7 | -149.73 |
| 4.50 | 1.51 | 205.7 | 204.9 | 204.3 | 8.28 | 8.60 | 8.26 | 18.71 | -19.0 | -35.8 | -46.4 | 0.07 | 0.02 | -107.4 | -133.5 | -155.2 | -170.5 | 86.7 | -153.86 |
| 5.00 | 1.54 | 206.5 | 205.7 | 205.1 | 8.27 | 8.59 | 8.26 | 18.68 | -19.1 | -35.8 | -46.5 | 0.07 | 0.02 | -108.3 | -133.5 | -154.9 | -169.4 | 100.0 | -154.95 |
| 5.50 | 1.56 | 207.3 | 206.4 | 205.9 | 8.27 | 8.59 | 8.26 | 18.65 | -19.2 | -35.9 | -46.5 | 0.07 | 0.02 | -107.2 | -133.4 | -154.8 | -169.8 | 148.1 | -158.11 |
| 6.00 | 1.55 | 208.0 | 207.2 | 206.7 | 8.26 | 8.59 | 8.26 | 18.63 | -19.3 | -35.9 | -46.5 | 0.07 | 0.02 | -107.5 | -133.3 | -154.7 | -169.9 | 177.0 | -159.64 |
| 6.50 | 1.54 | 208.8 | 208.0 | 207.4 | 8.25 | 8.58 | 8.26 | 18.62 | -19.4 | -35.9 | -46.5 | 0.07 | 0.02 | -107.1 | -133.2 | -154.8 | -167.6 | 211.6 | -161.15 |
| 7.00 | 1.51 | 209.5 | 208.8 | 208.2 | 8.24 | 8.57 | 8.26 | 18.60 | -19.5 | -35.9 | -46.6 | 0.07 | 0.02 | -106.3 | -132.8 | -154.4 | -171.3 | 302.4 | -163.77 |
| 7.50 | 1.48 | 210.3 | 209.5 | 209.0 | 8.24 | 8.56 | 8.25 | 18.60 | -19.6 | -35.9 | -46.6 | 0.07 | 0.02 | -106.3 | -132.7 | -154.6 | -169.5 | 361.5 | -164.91 |
| 8.00 | 1.45 | 211.0 | 210.3 | 209.7 | 8.23 | 8.56 | 8.25 | 18.59 | -19.6 | -35.9 | -46.7 | 0.07 | 0.02 | -106.5 | -132.8 | -154.5 | -170.6 | 507.5 | -167.07 |
| 9.00 | 1.38 | 212.5 | 211.7 | 211.2 | 8.21 | 8.54 | 8.24 | 18.58 | -19.8 | -35.9 | -46.8 | 0.07 | 0.02 | -105.8 | -132.9 | -154.8 | -169.8 | 606.7 | -168.38 |
| 10.00 | 1.31 | 213.8 | 213.0 | 212.5 | 8.19 | 8.52 | 8.22 | 18.58 | -20.0 | -35.9 | -46.9 | 0.07 | 0.02 | -107.2 | -132.4 | -154.0 | -169.8 | 870.0 | -169.66 |
| 11.00 | 1.24 | 215.1 | 214.3 | 213.8 | 8.17 | 8.50 | 8.20 | 18.58 | -20.1 | -36.0 | -47.0 | 0.07 | 0.02 | -106.1 | -132.3 | -154.1 | -170.3 | 1000.0 | -169.75 |

*at 25°C unless mentioned otherwise



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