

5V Tuning for PLL IC's 1440 to 1500 MHz

### Features

- Linear tuning characteristics
- Low phase noise
- Low pulling
- Low pushing
- Aqueous washable

### Applications

- Wireless communications
- Transceiver



CASE STYLE: CK1113  
PRICE: \$19.95 ea. QTY (5-49)

**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

*The +Suffix has been added in order to identify 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 Br (MHz) | PUSHING (MHz/V) | DC OPERATING POWER |              |
|----------------|-------------|------|--------------------|---|------|------|------|-------------------|------|-----------------------|---------------|---------------------------------|-----------------------------|-----------------|------|--------------------------------|-----------------|--------------------|--------------|
|                | Min.        | Max. |                    | Typ.  |      |      |      | VOLTAGE RANGE (V) |      | SENSI- TIVITY (MHz/V) | PORT CAP (pF) | 3 dB MODULATION BANDWIDTH (MHz) |                             | Typ.            |      |                                |                 | Vcc (volts)        | Current (mA) |
|                |             |      |                    | 1   | 10   | 100  | 1000 | Min.              | Max. | Typ.                  | Typ.          | Typ.                            |                             | Typ.            | Max. |                                |                 | Typ.               | Max.         |
| ROS-1500C-219+ | 1440        | 1500 | +4.5               | -79   | -108 | -130 | -150 | 0.5               | 4.5  | 36-43                 | 9             | 120                             | -90                         | -25             | -15  | 1                              | 1               | 5                  | 32           |

### Pin Connections

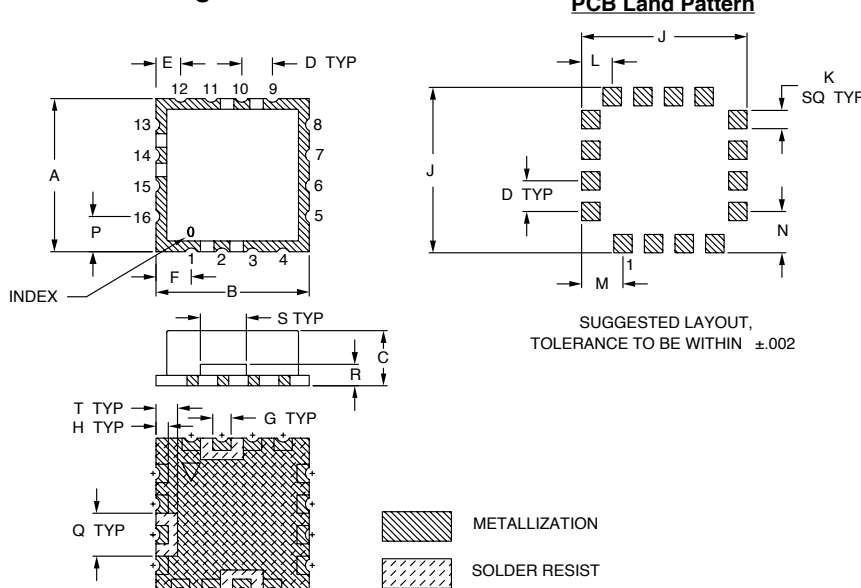
|        |                                |
|--------|--------------------------------|
| RF OUT | 10                             |
| VCC    | 14                             |
| V-TUNE | 2                              |
| GROUND | 1,3,4,5,6,7,8,9,11,12,13,15,16 |

### Maximum Ratings

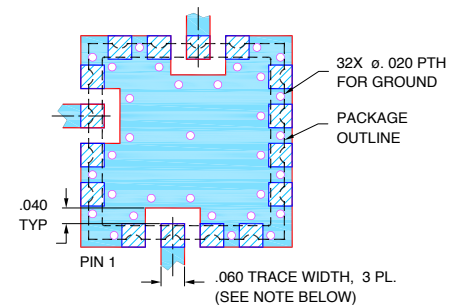
|                                      |                |
|--------------------------------------|----------------|
| Operating Temperature                | -55°C to 85°C  |
| Storage Temperature                  | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc)   | 7V             |
| Absolute Max. Tuning Voltage (Vtune) | 7V             |
| 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 RF4 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 PCB 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   |



ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IF/RF MICROWAVE COMPONENTS

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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-Circuit's 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](http://www.minicircuits.com/MCLStore/terms.jsp).

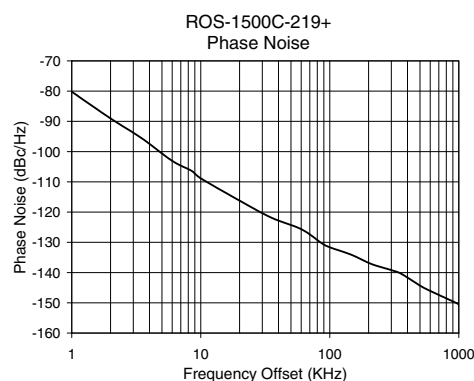
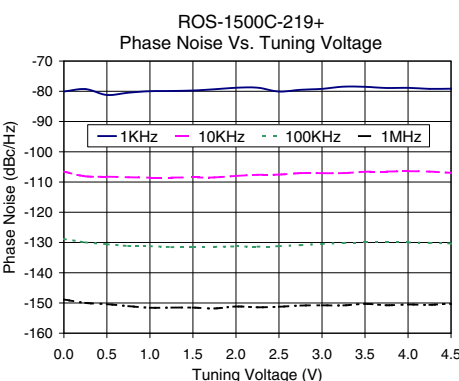
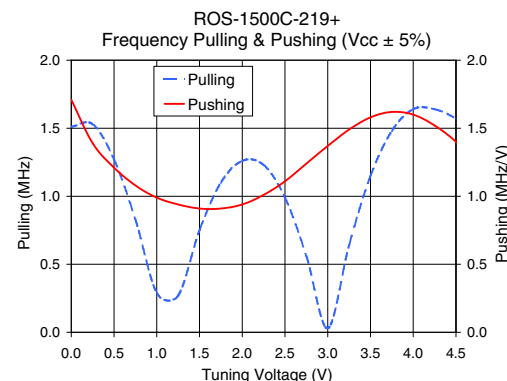
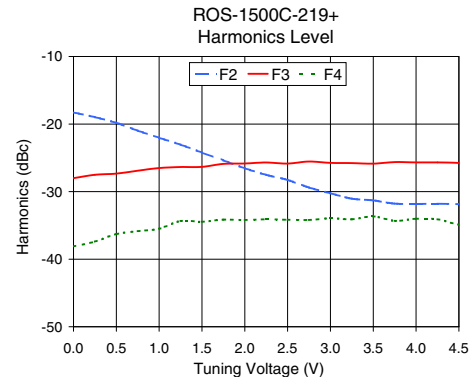
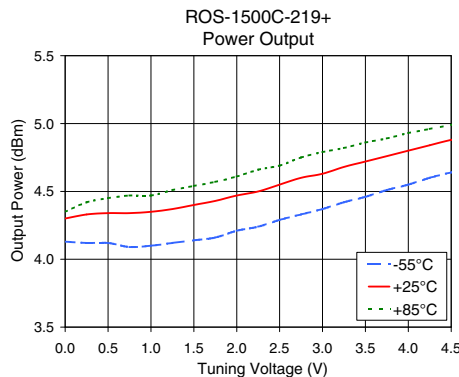
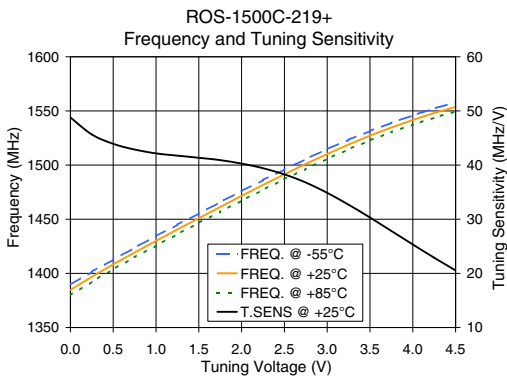
REV. OR  
M126056  
EDR-10111F1  
ROS-1500C-219+  
RAV  
100117  
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# Performance Data & Curves\*

# ROS-1500C-219+

| 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 1470 MHz (dBc/Hz) |
|--------|-------------------|-----------------|--------|--------|--------------------|-------|-------|----------|-----------------|-------|-------|--------------------|------------------|---------------------------------|--------|--------|--------|-------------------|----------------------------------|
|        |                   | -55°C           | +25°C  | +85°C  | -55°C              | +25°C | +85°C |          | F2              | F3    | F4    |                    |                  | 1kHz                            | 10kHz  | 100kHz | 1MHz   |                   |                                  |
| 0.00   | 48.79             | 1389.5          | 1384.7 | 1379.8 | 4.13               | 4.30  | 4.35  | 25.85    | -18.3           | -28.0 | -38.1 | 1.71               | 1.51             | -80.1                           | -106.6 | -128.8 | -148.9 | 1.0               | -80.19                           |
| 0.25   | 45.65             | 1401.5          | 1396.9 | 1392.3 | 4.12               | 4.33  | 4.42  | 25.89    | -19.0           | -27.5 | -37.4 | 1.39               | 1.53             | -79.3                           | -108.1 | -129.9 | -150.0 | 2.0               | -89.03                           |
| 0.50   | 43.93             | 1412.8          | 1408.3 | 1403.9 | 4.12               | 4.34  | 4.45  | 25.91    | -19.8           | -27.3 | -36.3 | 1.21               | 1.27             | -81.2                           | -108.2 | -130.6 | -150.4 | 3.5               | -95.65                           |
| 0.75   | 42.87             | 1423.7          | 1419.3 | 1414.9 | 4.09               | 4.34  | 4.47  | 25.93    | -21.0           | -26.9 | -35.9 | 1.08               | 0.83             | -80.5                           | -108.4 | -131.2 | -151.0 | 6.0               | -103.05                          |
| 1.00   | 42.16             | 1434.4          | 1430.0 | 1425.6 | 4.10               | 4.35  | 4.47  | 25.95    | -22.0           | -26.5 | -35.5 | 0.99               | 0.29             | -80.0                           | -108.5 | -131.2 | -151.6 | 8.5               | -106.37                          |
| 1.25   | 41.73             | 1444.9          | 1440.6 | 1436.2 | 4.12               | 4.37  | 4.51  | 25.97    | -23.1           | -26.4 | -34.4 | 0.94               | 0.27             | -79.9                           | -108.5 | -131.5 | -151.5 | 10.0              | -108.84                          |
| 1.50   | 41.35             | 1455.4          | 1451.0 | 1446.6 | 4.14               | 4.40  | 4.54  | 25.99    | -24.2           | -26.3 | -34.5 | 0.91               | 0.75             | -79.7                           | -108.5 | -131.5 | -151.5 | 20.8              | -116.62                          |
| 1.75   | 40.91             | 1465.7          | 1461.3 | 1456.9 | 4.16               | 4.43  | 4.57  | 26.00    | -25.4           | -25.9 | -34.2 | 0.91               | 1.10             | -79.3                           | -108.5 | -131.4 | -151.8 | 35.4              | -121.89                          |
| 2.00   | 40.27             | 1476.0          | 1471.6 | 1467.1 | 4.21               | 4.47  | 4.61  | 26.01    | -26.6           | -25.8 | -34.2 | 0.94               | 1.26             | -78.8                           | -108.0 | -131.3 | -151.2 | 60.5              | -125.71                          |
| 2.25   | 39.42             | 1486.1          | 1481.6 | 1477.1 | 4.24               | 4.50  | 4.66  | 26.01    | -27.5           | -25.7 | -34.1 | 1.01               | 1.23             | -78.8                           | -107.6 | -131.4 | -151.4 | 86.5              | -130.27                          |
| 2.50   | 38.28             | 1496.0          | 1491.5 | 1487.0 | 4.29               | 4.55  | 4.69  | 26.01    | -28.3           | -25.9 | -34.2 | 1.11               | 0.99             | -80.1                           | -107.6 | -131.2 | -151.3 | 100.0             | -131.64                          |
| 2.75   | 36.78             | 1505.5          | 1501.1 | 1496.6 | 4.33               | 4.60  | 4.75  | 26.00    | -29.4           | -25.6 | -34.2 | 1.24               | 0.56             | -79.5                           | -107.0 | -130.9 | -150.9 | 147.7             | -134.15                          |
| 3.00   | 34.87             | 1514.7          | 1510.3 | 1505.8 | 4.37               | 4.63  | 4.79  | 26.00    | -30.2           | -25.7 | -34.0 | 1.37               | 0.03             | -79.2                           | -107.1 | -130.5 | -150.8 | 211.0             | -137.20                          |
| 3.25   | 32.69             | 1523.4          | 1519.0 | 1514.5 | 4.42               | 4.68  | 4.82  | 26.00    | -31.0           | -25.8 | -34.1 | 1.49               | 0.64             | -78.5                           | -107.0 | -130.2 | -150.8 | 301.5             | -139.21                          |
| 3.50   | 30.31             | 1531.5          | 1527.1 | 1522.8 | 4.46               | 4.72  | 4.86  | 26.00    | -31.3           | -25.9 | -33.7 | 1.58               | 1.15             | -78.5                           | -106.6 | -130.0 | -150.3 | 360.3             | -140.47                          |
| 3.75   | 27.82             | 1539.0          | 1534.7 | 1530.4 | 4.51               | 4.76  | 4.89  | 26.00    | -31.8           | -25.6 | -34.3 | 1.62               | 1.48             | -78.9                           | -106.5 | -130.0 | -150.8 | 505.7             | -144.43                          |
| 4.00   | 25.34             | 1545.9          | 1541.7 | 1537.4 | 4.55               | 4.80  | 4.93  | 26.00    | -31.8           | -25.7 | -34.0 | 1.60               | 1.64             | -78.9                           | -106.4 | -130.0 | -150.5 | 604.5             | -146.13                          |
| 4.25   | 22.90             | 1552.2          | 1548.0 | 1543.8 | 4.60               | 4.84  | 4.96  | 25.99    | -31.8           | -25.7 | -34.1 | 1.52               | 1.64             | -79.2                           | -106.6 | -130.1 | -150.6 | 996.1             | -150.42                          |
| 4.50   | 20.55             | 1557.9          | 1553.7 | 1549.6 | 4.64               | 4.88  | 4.99  | 25.99    | -31.9           | -25.8 | -34.9 | 1.40               | 1.57             | -79.1                           | -107.0 | -130.3 | -150.3 | 1000.0            | -150.72                          |

\*at 25°C unless mentioned otherwise



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