

## Voltage Controlled Oscillator

ROS-1500C-219+

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

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 dBr (MHz) | PUSHING (MHz/V) | DC OPERATING POWER |      |
|----------------|-------------|------|--------------------|--------------------------------------------------|------|------|------|-------------------|-----------------------|---------------|---------------------------------|-------------|-----------------------------|-----------------|------|-----------------------------|-----------------|--------------------|------|
|                |             |      |                    |                                                  |      |      |      | VOLTAGE RANGE (V) | SENSI- TIVITY (MHz/V) | PORT CAP (pF) | 3 dB MODULATION BANDWIDTH (MHz) | Vcc (volts) |                             |                 |      |                             |                 | Current (mA)       |      |
|                | Typ.        | 1    |                    | 10                                               | 100  | 1000 | Min. | Max.              | Typ.                  | Typ.          | Typ.                            | Typ.        |                             | Typ.            | Max. |                             |                 | Typ.               | Typ. |
| 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

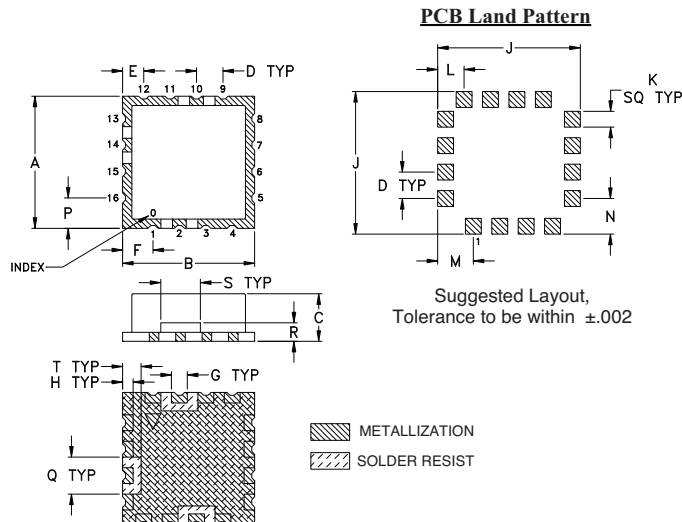
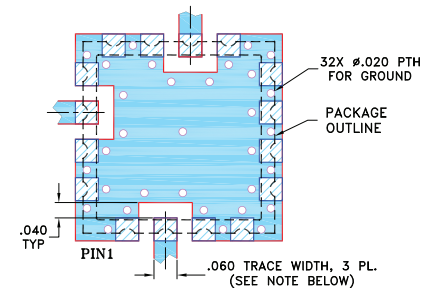
|        |                                |
|--------|--------------------------------|
| RF OUT | 10                             |
| VCC    | 14                             |
| V-TUNE | 2                              |
| GROUND | 1,3,4,5,6,7,8,9,11,12,13,15,16 |

## 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:

- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .030"  $\pm$  .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- 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   |

# Performance Data & Curves\*

# ROS-1500C-219+

| V<br>TUNE | TUNE<br>SENS<br>(MHz/V) | FREQUENCY<br>(MHz) |        |        | POWER OUTPUT<br>(dBm) |       |       | Icc<br>(mA) | HARMONICS (dBc) |       |       | FREQ.<br>PUSH<br>(MHz/V) | FREQ.<br>PULL<br>(MHz) | PHASE NOISE (dBc/Hz)<br>at offsets |        |        |        | FREQ.<br>OFFSET<br>(KHz) | PHASE<br>NOISE at<br>1470 MHz<br>(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

