

## Voltage Controlled Oscillator

ROS-615+

5V Tuning for PLL IC's 580 to 615 MHz

## Features

- linear tuning characteristics
- low phase noise
- low pushing
- low pulling
- 0.5-5V tuning voltage range
- aqueous washable

## Applications

- PLL circuitry
- frequency synthesizers
- wireless microphones



CASE STYLE: CK605

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<br><br>Typ. |      |      |      | TUNING            |                       |               |                                 |      | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc) |      | PULLING pk-pk @12 dBr (MHz) | PUSHING (MHz/V) | DC OPERATING POWER<br><br>Vcc Current (volts) (mA) |      |
|-----------|-------------|------|--------------------|--------------------------------------------------------------|------|------|------|-------------------|-----------------------|---------------|---------------------------------|------|-----------------------------|-----------------|------|-----------------------------|-----------------|----------------------------------------------------|------|
|           |             |      |                    |                                                              |      |      |      | VOLTAGE RANGE (V) | SENSI- TIVITY (MHz/V) | PORT CAP (pF) | 3 dB MODULATION BANDWIDTH (MHz) |      |                             |                 |      |                             |                 |                                                    |      |
|           | Min.        | Max. |                    | Typ.                                                         | 1    | 10   | 100  | 1000              | Min.                  | Max.          | Typ.                            | Typ. |                             | Typ.            | Typ. |                             | Typ.            | Max.                                               | Typ. |
| ROS-615+  | 580         | 615  | -1                 | -87                                                          | -111 | -132 | -153 | 0.5               | 5                     | 12-13         | 47                              | 52   | -90                         | -21             | -13  | 0.3                         | 0.2             | 5                                                  | 17   |

## Pin Connections

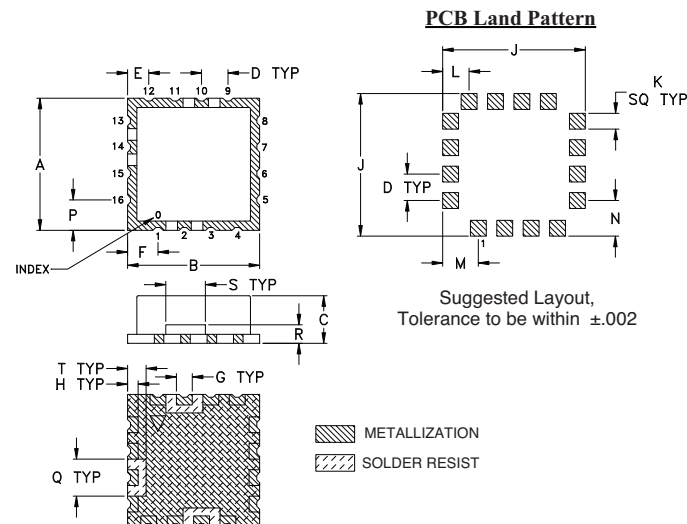
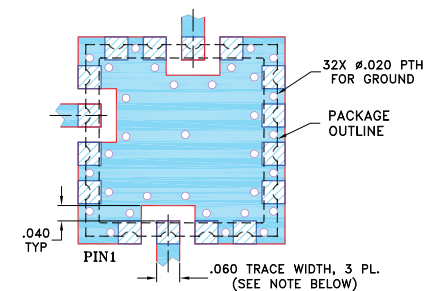
|        |                                |
|--------|--------------------------------|
| RF OUT | 10                             |
| VCC    | 14                             |
| V-TUNE | 2                              |
| GROUND | 1,3,4,5,6,7,8,9,11,12,13,15,16 |

## 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 FR4 WITH DIELECTRIC THICKNESS .030"  $\pm$  .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  | .180 | .100 | .080 | .115 | .060 | .040 | .540  | .060 | .100 | .135 | .135 | .115 | .140 | .070 | .150 | .070 | grams |
| 12.70 | 12.70 | 4.57 | 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 | 1.0   |

# Performance Data & Curves\*

# ROS-615+

| 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>596 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      | 14.24                   | 567.1              | 563.6 | 562.1 | -1.95                 | -1.50 | -1.32 | 12.05       | -19.3           | -31.5 | -39.8 | 0.00                     | 0.16                   | -88.0                              | -112.2 | -132.8 | -152.5 | 1.0                     | -87.58                                   |
| 0.50      | 12.43                   | 573.8              | 570.5 | 569.0 | -1.84                 | -1.37 | -1.19 | 12.10       | -19.6           | -31.3 | -39.8 | 0.08                     | 0.14                   | -88.5                              | -112.6 | -133.0 | -152.7 | 2.0                     | -95.21                                   |
| 0.75      | 12.11                   | 576.9              | 573.6 | 572.1 | -1.79                 | -1.31 | -1.13 | 12.12       | -19.7           | -31.1 | -40.0 | 0.10                     | 0.13                   | -89.6                              | -112.5 | -133.1 | -153.0 | 3.5                     | -101.52                                  |
| 1.00      | 11.96                   | 580.0              | 576.6 | 575.2 | -1.72                 | -1.25 | -1.08 | 12.14       | -19.8           | -31.0 | -39.8 | 0.12                     | 0.12                   | -91.1                              | -112.5 | -133.1 | -152.9 | 6.0                     | -107.08                                  |
| 1.25      | 11.93                   | 583.0              | 579.6 | 578.1 | -1.66                 | -1.19 | -1.02 | 12.16       | -19.9           | -30.7 | -39.9 | 0.12                     | 0.11                   | -89.7                              | -112.3 | -133.1 | -153.4 | 8.5                     | -110.59                                  |
| 1.50      | 11.99                   | 586.1              | 582.6 | 581.1 | -1.60                 | -1.13 | -0.97 | 12.18       | -19.9           | -30.6 | -39.7 | 0.12                     | 0.10                   | -89.2                              | -112.4 | -133.0 | -153.8 | 10.0                    | -112.02                                  |
| 1.75      | 12.13                   | 589.1              | 585.6 | 584.1 | -1.53                 | -1.08 | -0.92 | 12.20       | -20.0           | -30.2 | -40.0 | 0.11                     | 0.11                   | -88.0                              | -112.2 | -133.0 | -153.2 | 20.8                    | -118.98                                  |
| 2.00      | 12.31                   | 592.2              | 588.6 | 587.1 | -1.47                 | -1.03 | -0.88 | 12.21       | -20.1           | -30.0 | -40.4 | 0.09                     | 0.12                   | -89.1                              | -112.5 | -132.9 | -153.2 | 35.5                    | -123.78                                  |
| 2.25      | 12.50                   | 595.3              | 591.7 | 590.2 | -1.40                 | -0.98 | -0.84 | 12.22       | -20.1           | -29.8 | -40.6 | 0.07                     | 0.12                   | -88.1                              | -112.1 | -133.0 | -153.2 | 60.7                    | -128.40                                  |
| 2.50      | 12.72                   | 598.5              | 594.8 | 593.3 | -1.34                 | -0.94 | -0.80 | 12.24       | -20.2           | -29.5 | -40.8 | 0.04                     | 0.13                   | -87.5                              | -112.1 | -133.0 | -152.9 | 85.2                    | -131.49                                  |
| 2.75      | 12.90                   | 601.7              | 598.0 | 596.4 | -1.29                 | -0.91 | -0.77 | 12.25       | -20.3           | -29.3 | -40.9 | 0.01                     | 0.15                   | -87.9                              | -111.6 | -132.9 | -153.3 | 100.0                   | -132.88                                  |
| 3.00      | 13.04                   | 605.0              | 601.2 | 599.7 | -1.25                 | -0.87 | -0.74 | 12.26       | -20.3           | -29.0 | -41.0 | 0.03                     | 0.18                   | -87.8                              | -111.6 | -132.8 | -153.2 | 142.9                   | -136.01                                  |
| 3.25      | 13.14                   | 608.3              | 604.5 | 602.9 | -1.21                 | -0.84 | -0.71 | 12.26       | -20.4           | -28.8 | -40.4 | 0.07                     | 0.21                   | -87.9                              | -111.4 | -132.7 | -152.7 | 167.8                   | -137.39                                  |
| 3.50      | 13.19                   | 611.6              | 607.8 | 606.2 | -1.17                 | -0.81 | -0.69 | 12.27       | -20.5           | -28.8 | -40.1 | 0.12                     | 0.24                   | -86.4                              | -111.4 | -132.6 | -152.8 | 200.6                   | -139.01                                  |
| 3.75      | 13.19                   | 615.0              | 611.1 | 609.5 | -1.13                 | -0.79 | -0.68 | 12.27       | -20.6           | -28.6 | -39.9 | 0.17                     | 0.26                   | -87.0                              | -111.3 | -132.4 | -152.4 | 281.6                   | -141.97                                  |
| 4.00      | 13.16                   | 618.3              | 614.4 | 612.8 | -1.10                 | -0.77 | -0.67 | 12.28       | -20.8           | -28.6 | -39.5 | 0.23                     | 0.28                   | -85.8                              | -110.8 | -132.3 | -152.6 | 330.7                   | -143.34                                  |
| 4.25      | 13.07                   | 621.5              | 617.6 | 616.1 | -1.08                 | -0.77 | -0.66 | 12.28       | -20.8           | -28.3 | -39.2 | 0.28                     | 0.30                   | -84.7                              | -110.8 | -132.2 | -152.5 | 464.2                   | -146.21                                  |
| 4.50      | 12.95                   | 624.8              | 620.9 | 619.3 | -1.06                 | -0.77 | -0.67 | 12.28       | -20.8           | -28.2 | -38.8 | 0.32                     | 0.30                   | -86.0                              | -110.6 | -131.8 | -152.1 | 554.9                   | -147.97                                  |
| 4.75      | 12.77                   | 628.0              | 624.1 | 622.5 | -1.06                 | -0.78 | -0.67 | 12.29       | -20.9           | -27.9 | -37.9 | 0.36                     | 0.30                   | -85.6                              | -110.2 | -131.7 | -152.1 | 914.6                   | -151.99                                  |
| 5.00      | 12.57                   | 631.2              | 627.3 | 625.7 | -1.06                 | -0.80 | -0.68 | 12.29       | -21.0           | -27.8 | -37.6 | 0.38                     | 0.30                   | -84.2                              | -110.0 | -131.5 | -151.5 | 1000.0                  | -152.78                                  |

\*at 25°C unless mentioned otherwise

