

## Voltage Controlled Oscillator

ROS-1357+

5V Tuning for PLL IC's 1338 to 1357 MHz

## Features

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

## Applications

- wireless communications
- synthesizer



CASE STYLE: CK605

## +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 <sub>r</sub> (MHz) | PUSHING (MHz/V) | DC OPERATING POWER |      |      |      |      |
|-----------|-------------|------|--------------------|--------------------------------------------------|------|------|------|--------|-------------------|------|-----------------------|---------------|-----------------------------|---------------------------------|------|------------------------------------------|-----------------|--------------------|------|------|------|------|
|           | Min.        | Max. |                    | Typ.                                             | 1    | 10   | 100  | 1000   | VOLTAGE RANGE (V) |      | SENSI- TIVITY (MHz/V) | PORT CAP (pF) |                             | 3 dB MODULATION BANDWIDTH (MHz) | Typ. |                                          |                 | Typ.               | Max. | Typ. | Typ. | Max. |
|           |             |      |                    |                                                  |      |      |      |        | Min.              | Max. |                       |               |                             |                                 |      |                                          |                 |                    |      |      |      |      |
| ROS-1357+ | 1338        | 1357 | 0                  | -86                                              | -110 | -131 | -151 | 0.5    | 5                 | 12   | 40                    | 50            | -90                         | -22                             | -13  | 0.3                                      | 0.4             | 5                  | 37   |      |      |      |

## 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)   | 6.5V           |
| Absolute Max. Tuning Voltage (Vtune) | 7V             |
| All specifications                   | 50 ohm system  |

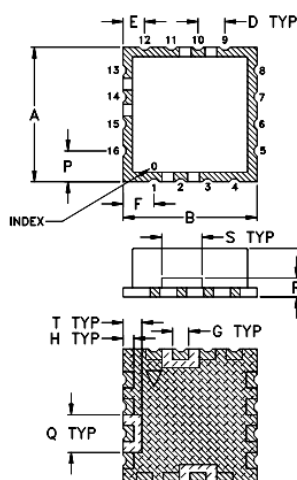
Permanent damage may occur if any of these limits are exceeded.

## Tape &amp; Reel: F37

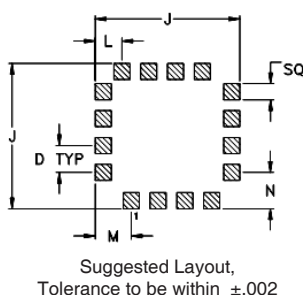
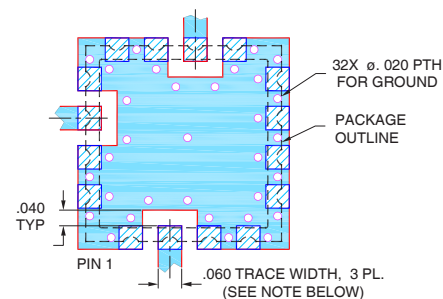
13" Reels with 20, 50, 100, 200, 500 devices

## Environmental Ratings: ENV65

## Outline Drawing



## PCB Land Pattern

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 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  | .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   |

## Notes

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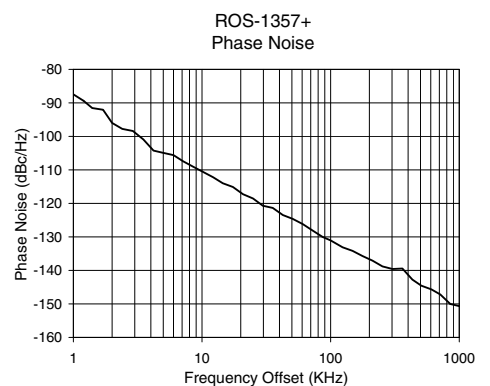
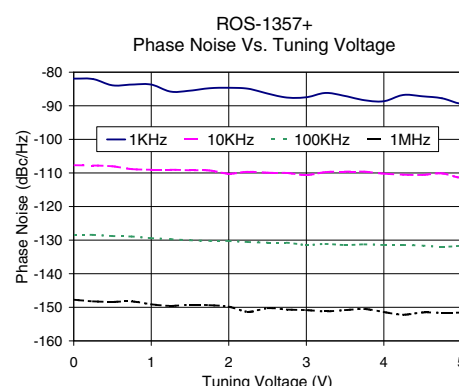
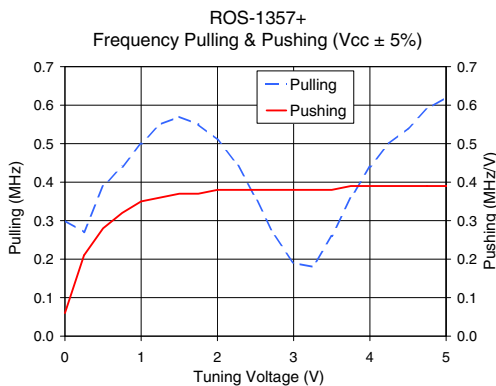
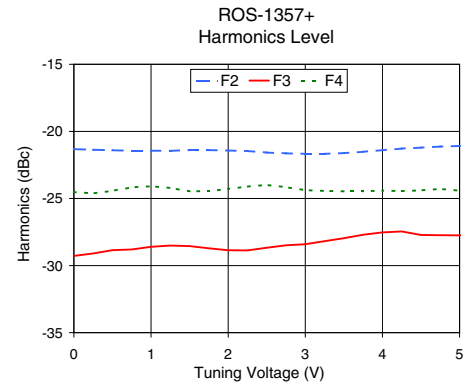
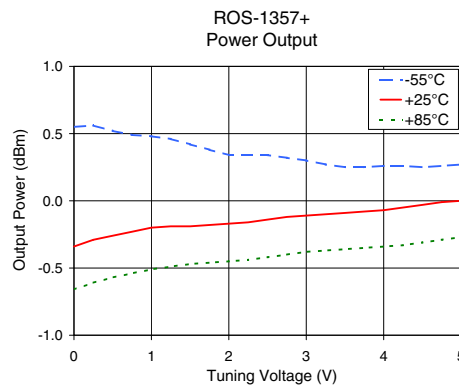
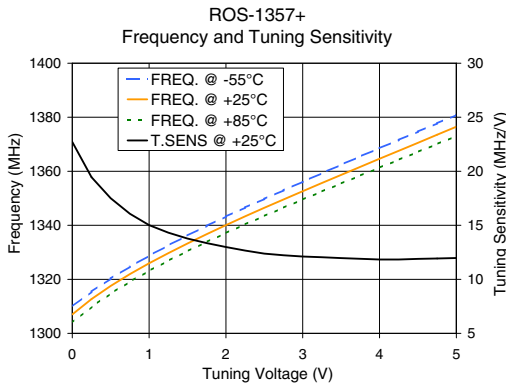
[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

# Performance Data & Curves\*

# ROS-1357+

| 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>1348 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      | 22.71                   | 1309.9             | 1307.0 | 1304.0 | 0.55                  | -0.34 | -0.66 | 29.98       | -21.3           | -29.3 | -24.5 | 0.06                     | 0.30                   | -81.9                              | -107.7 | -128.4 | -147.7 | 1.0                     | -87.47                                    |
| 0.50      | 17.50                   | 1320.3             | 1317.6 | 1314.7 | 0.52                  | -0.26 | -0.57 | 30.05       | -21.4           | -28.9 | -24.4 | 0.28                     | 0.39                   | -83.9                              | -108.0 | -128.8 | -148.4 | 2.0                     | -96.00                                    |
| 0.75      | 16.07                   | 1324.7             | 1321.9 | 1319.1 | 0.49                  | -0.23 | -0.54 | 30.08       | -21.4           | -28.8 | -24.2 | 0.32                     | 0.44                   | -83.7                              | -108.9 | -128.9 | -148.3 | 3.5                     | -100.91                                   |
| 1.00      | 15.01                   | 1328.7             | 1325.9 | 1323.1 | 0.48                  | -0.20 | -0.51 | 30.10       | -21.4           | -28.6 | -24.1 | 0.35                     | 0.50                   | -83.7                              | -109.0 | -129.4 | -149.1 | 6.0                     | -105.59                                   |
| 1.25      | 14.32                   | 1332.5             | 1329.7 | 1326.9 | 0.46                  | -0.19 | -0.49 | 30.13       | -21.5           | -28.5 | -24.2 | 0.36                     | 0.55                   | -85.8                              | -109.0 | -129.7 | -149.6 | 8.5                     | -109.03                                   |
| 1.50      | 13.77                   | 1336.2             | 1333.3 | 1330.4 | 0.42                  | -0.19 | -0.47 | 30.15       | -21.4           | -28.6 | -24.5 | 0.37                     | 0.57                   | -85.5                              | -109.2 | -130.0 | -149.3 | 10.0                    | -110.45                                   |
| 1.75      | 13.35                   | 1339.8             | 1336.7 | 1333.8 | 0.38                  | -0.18 | -0.46 | 30.17       | -21.4           | -28.7 | -24.5 | 0.37                     | 0.55                   | -84.8                              | -109.3 | -130.2 | -149.4 | 20.8                    | -117.26                                   |
| 2.00      | 12.99                   | 1343.2             | 1340.1 | 1337.1 | 0.34                  | -0.17 | -0.45 | 30.20       | -21.4           | -28.9 | -24.3 | 0.38                     | 0.51                   | -84.7                              | -110.2 | -130.3 | -149.8 | 35.5                    | -121.35                                   |
| 2.25      | 12.67                   | 1346.6             | 1343.3 | 1340.3 | 0.34                  | -0.16 | -0.44 | 30.22       | -21.5           | -28.9 | -24.1 | 0.38                     | 0.45                   | -84.9                              | -109.6 | -130.6 | -151.4 | 60.7                    | -126.18                                   |
| 2.50      | 12.38                   | 1349.8             | 1346.5 | 1343.4 | 0.34                  | -0.14 | -0.42 | 30.24       | -21.6           | -28.7 | -24.0 | 0.38                     | 0.36                   | -86.4                              | -109.9 | -130.8 | -150.3 | 86.7                    | -130.02                                   |
| 2.75      | 12.23                   | 1353.0             | 1349.6 | 1346.5 | 0.32                  | -0.12 | -0.40 | 30.25       | -21.6           | -28.5 | -24.2 | 0.38                     | 0.26                   | -87.6                              | -110.0 | -130.8 | -150.7 | 100.0                   | -131.04                                   |
| 3.00      | 12.11                   | 1356.1             | 1352.6 | 1349.5 | 0.30                  | -0.11 | -0.38 | 30.27       | -21.7           | -28.4 | -24.4 | 0.38                     | 0.19                   | -87.5                              | -110.6 | -131.5 | -150.8 | 148.1                   | -134.17                                   |
| 3.25      | 12.04                   | 1359.3             | 1355.7 | 1352.5 | 0.27                  | -0.10 | -0.37 | 30.29       | -21.7           | -28.2 | -24.4 | 0.38                     | 0.18                   | -86.2                              | -109.8 | -131.1 | -151.2 | 177.0                   | -135.71                                   |
| 3.50      | 11.97                   | 1362.4             | 1358.7 | 1355.5 | 0.25                  | -0.09 | -0.36 | 30.31       | -21.6           | -28.0 | -24.5 | 0.38                     | 0.26                   | -87.1                              | -109.6 | -131.5 | -150.8 | 211.6                   | -137.08                                   |
| 3.75      | 11.90                   | 1365.5             | 1361.7 | 1358.4 | 0.25                  | -0.08 | -0.35 | 30.33       | -21.5           | -27.7 | -24.5 | 0.39                     | 0.36                   | -88.4                              | -109.6 | -131.3 | -150.5 | 302.4                   | -139.59                                   |
| 4.00      | 11.84                   | 1368.5             | 1364.6 | 1361.3 | 0.26                  | -0.07 | -0.34 | 30.34       | -21.4           | -27.5 | -24.4 | 0.39                     | 0.44                   | -88.6                              | -110.2 | -131.4 | -151.4 | 361.5                   | -139.43                                   |
| 4.25      | 11.84                   | 1371.6             | 1367.6 | 1364.2 | 0.26                  | -0.05 | -0.33 | 30.35       | -21.3           | -27.5 | -24.5 | 0.39                     | 0.50                   | -86.8                              | -110.5 | -131.4 | -152.2 | 507.5                   | -144.57                                   |
| 4.50      | 11.90                   | 1374.7             | 1370.5 | 1367.2 | 0.25                  | -0.03 | -0.31 | 30.37       | -21.2           | -27.7 | -24.4 | 0.39                     | 0.54                   | -87.2                              | -110.6 | -131.6 | -151.6 | 606.7                   | -145.67                                   |
| 4.75      | 11.93                   | 1377.7             | 1373.5 | 1370.1 | 0.26                  | -0.01 | -0.29 | 30.38       | -21.1           | -27.7 | -24.3 | 0.39                     | 0.59                   | -87.8                              | -110.1 | -132.0 | -151.6 | 851.6                   | -150.03                                   |
| 5.00      | 11.97                   | 1380.8             | 1376.5 | 1373.0 | 0.27                  | 0.00  | -0.27 | 30.40       | -21.1           | -27.8 | -24.4 | 0.39                     | 0.62                   | -89.4                              | -111.4 | -131.7 | -151.6 | 1000.0                  | -150.65                                   |

\*at 25°C unless mentioned otherwise



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