

Coaxial

# Voltage Controlled Oscillator

## ZX95-2510+

5V Tuning for PLL IC's 2300 to 2510 MHz

### Features

- low phase noise
- low pulling
- low pushing
- protected by US patent 6,790,049



CASE STYLE: GB956

| Connectors | Model        | Price        | Qty.  |
|------------|--------------|--------------|-------|
| SMA        | ZX95-2510-S+ | \$ 44.95 ea. | (1-9) |

### Applications

- r & d
- lab
- instrumentation
- wireless communications
- WiMAX 2.5 GHz

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

### Electrical Specifications

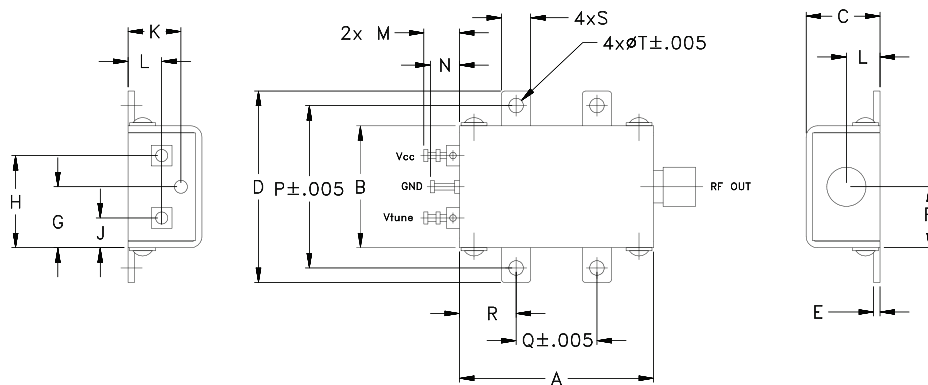
| MODEL NO.  | FREQ. (MHz) |      | POWER OUTPUT (dBm) | PHASE NOISE dBc/Hz SSB at offset frequencies, kHz |     |      |      | TUNING |                   |        |                          |          | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc)                 |      | PULLING pk-pk @ 12 dB (MHz) | PUSHING (MHz/V) | DC OPERATING POWER |      |      |      |             |              |
|------------|-------------|------|--------------------|---|-----|------|------|--------|-------------------|--------|--------------------------|----------|-----------------------------|---------------------------------|------|-----------------------------|-----------------|--------------------|------|------|------|-------------|--------------|
|            | Min.        | Max. |                    | Typ.  | 1   | 10   | 100  | 1000   | VOLTAGE RANGE (V) |        | PORT SENSITIVITY (MHz/V) | CAP (pF) |                             | 3 dB MODULATION BANDWIDTH (MHz) | Typ. |                             |                 | Typ.               | Max. | Typ. | Max. | Vcc (volts) | Current (mA) |
|            |             |      |                    |   |     |      |      |        | Min.              | Max.   |                          |          |                             |                                 |      |                             |                 |                    |      |      |      |             |              |
| ZX95-2510+ | 2300        | 2510 | +4                 | -69   | -96 | -118 | -138 | 0.5    | 5                 | 85-103 | 40                       | 35       | -90                         | -18                             | -10  | 0.8                         | 1               | 5                  | 40   |      |      |             |              |

### 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



### Outline Dimensions (inch/mm)

| A     | B     | C     | D     | E    | F    | G    | H     | J    | K    | L    | M    | N    | P     | Q     | R    | S    | T    | wt.   |
|-------|-------|-------|-------|------|------|------|-------|------|------|------|------|------|-------|-------|------|------|------|-------|
| 1.20  | .75   | .46   | 1.18  | .04  | .38  | .38  | .57   | .18  | .33  | .21  | .22  | .18  | 1.00  | .50   | .35  | .18  | .106 | grams |
| 30.48 | 19.05 | 11.68 | 29.97 | 1.02 | 9.65 | 9.65 | 14.48 | 4.57 | 8.38 | 5.33 | 5.59 | 4.57 | 25.40 | 12.70 | 8.89 | 4.57 | 2.69 | 35.0  |



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-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).

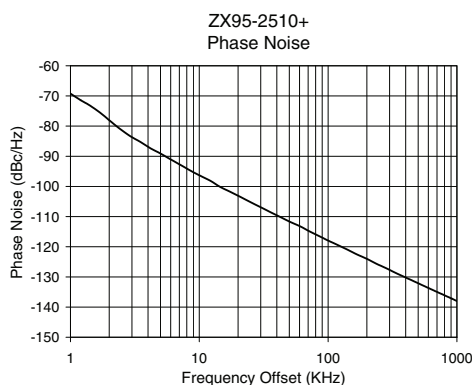
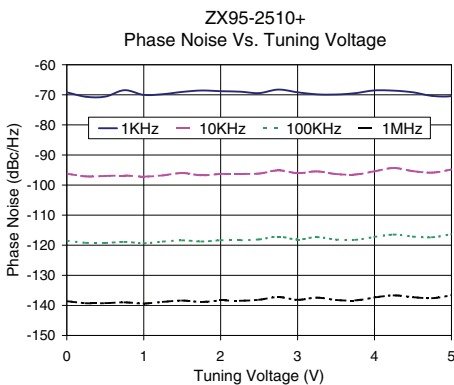
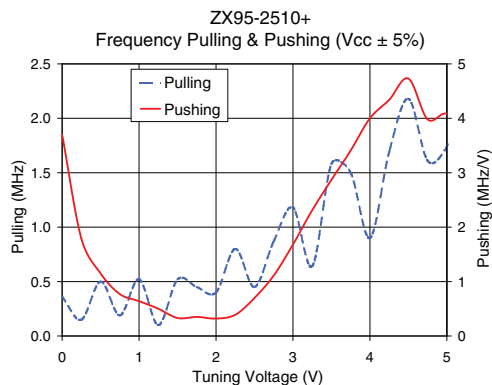
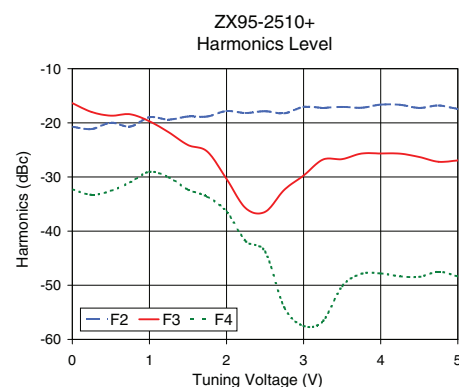
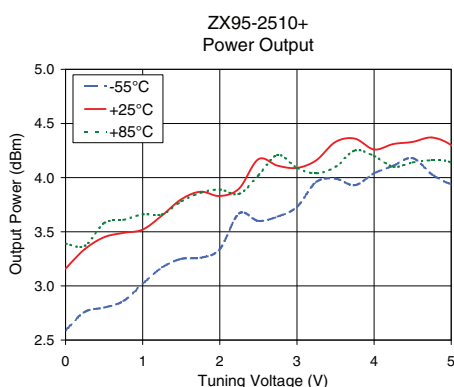
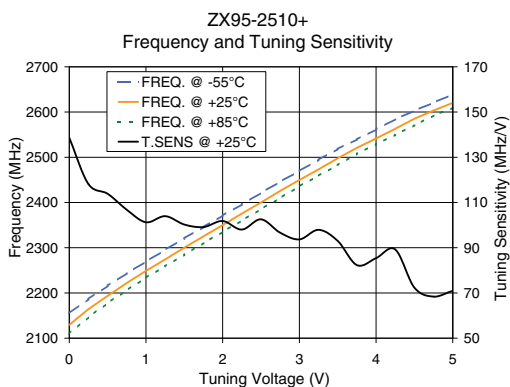
REV. OR  
M122533  
EDR-9463F2  
ZX95-2510+  
RAV  
120904  
Page 1 of 2

# Performance Data & Curves\*

# ZX95-2510+

| 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 2405 MHz (dBc/Hz) |
|--------|-------------------|-----------------|--------|--------|--------------------|-------|-------|----------|-----------------|-------|-------|--------------------|------------------|---------------------------------|-------|--------|--------|-------------------|----------------------------------|
|        |                   | -55°C           | +25°C  | +85°C  | -55°C              | +25°C | +85°C |          | F2              | F3    | F4    |                    |                  | 1kHz                            | 10kHz | 100kHz | 1MHz   |                   |                                  |
| 0.00   | 138.62            | 2155.0          | 2129.5 | 2110.1 | 2.59               | 3.16  | 3.39  | 32.59    | -20.7           | -16.4 | -32.3 | 3.70               | 0.36             | -69.2                           | -96.2 | -118.5 | -138.6 | 1.0               | -69.22                           |
| 0.50   | 113.85            | 2216.0          | 2193.7 | 2177.7 | 2.80               | 3.45  | 3.58  | 32.72    | -20.0           | -18.7 | -32.6 | 1.15               | 0.50             | -70.6                           | -97.0 | -119.2 | -139.3 | 2.0               | -78.04                           |
| 0.75   | 106.77            | 2243.7          | 2222.2 | 2205.9 | 2.86               | 3.49  | 3.61  | 32.69    | -20.7           | -18.4 | -31.0 | 0.77               | 0.19             | -68.5                           | -96.8 | -118.9 | -139.0 | 3.5               | -85.27                           |
| 1.00   | 101.26            | 2269.4          | 2248.9 | 2233.7 | 3.02               | 3.52  | 3.66  | 32.74    | -19.0           | -19.7 | -29.1 | 0.64               | 0.52             | -70.0                           | -97.2 | -119.4 | -139.4 | 6.0               | -91.04                           |
| 1.25   | 103.96            | 2295.5          | 2274.2 | 2259.2 | 3.17               | 3.65  | 3.66  | 32.69    | -19.4           | -21.7 | -30.1 | 0.50               | 0.10             | -69.8                           | -96.8 | -118.8 | -138.8 | 8.5               | -94.71                           |
| 1.50   | 100.26            | 2320.9          | 2300.2 | 2284.5 | 3.25               | 3.80  | 3.78  | 32.61    | -18.8           | -24.1 | -32.3 | 0.33               | 0.52             | -69.0                           | -96.0 | -118.4 | -138.4 | 10.0              | -96.30                           |
| 1.75   | 99.13             | 2345.6          | 2325.3 | 2310.5 | 3.26               | 3.87  | 3.86  | 32.62    | -18.8           | -25.3 | -33.6 | 0.35               | 0.45             | -68.6                           | -96.7 | -118.8 | -138.9 | 20.8              | -103.44                          |
| 2.00   | 101.80            | 2371.1          | 2350.1 | 2335.1 | 3.34               | 3.83  | 3.89  | 32.54    | -17.8           | -30.4 | -36.4 | 0.32               | 0.40             | -68.8                           | -96.3 | -118.3 | -138.4 | 35.5              | -108.50                          |
| 2.25   | 98.02             | 2395.8          | 2375.5 | 2360.3 | 3.67               | 3.90  | 3.85  | 32.47    | -18.2           | -35.8 | -41.9 | 0.39               | 0.80             | -69.0                           | -96.3 | -118.4 | -138.5 | 60.7              | -113.24                          |
| 2.50   | 102.57            | 2421.3          | 2400.0 | 2385.4 | 3.60               | 4.17  | 4.02  | 32.38    | -17.9           | -36.4 | -43.8 | 0.70               | 0.45             | -69.4                           | -96.2 | -118.1 | -138.1 | 85.2              | -116.48                          |
| 2.75   | 96.65             | 2446.1          | 2425.6 | 2410.0 | 3.64               | 4.11  | 4.21  | 32.29    | -18.2           | -32.4 | -54.1 | 1.11               | 0.87             | -68.2                           | -95.1 | -117.1 | -137.2 | 100.0             | -117.94                          |
| 3.00   | 93.70             | 2469.8          | 2449.8 | 2436.0 | 3.73               | 4.09  | 4.09  | 32.27    | -17.1           | -29.7 | -57.5 | 1.68               | 1.18             | -69.2                           | -96.1 | -118.1 | -138.2 | 142.9             | -121.06                          |
| 3.25   | 97.94             | 2494.4          | 2473.2 | 2459.1 | 3.96               | 4.16  | 4.04  | 32.14    | -17.2           | -26.8 | -56.6 | 2.31               | 0.64             | -69.8                           | -95.5 | -117.3 | -137.4 | 167.8             | -122.56                          |
| 3.50   | 93.02             | 2518.3          | 2497.7 | 2482.7 | 3.99               | 4.33  | 4.10  | 31.98    | -17.1           | -26.7 | -50.2 | 2.87               | 1.58             | -69.9                           | -96.3 | -118.1 | -138.2 | 200.6             | -124.04                          |
| 3.75   | 82.31             | 2539.4          | 2521.0 | 2507.8 | 3.93               | 4.36  | 4.25  | 32.01    | -17.2           | -25.7 | -47.9 | 3.41               | 1.50             | -69.5                           | -96.5 | -118.2 | -138.4 | 281.6             | -127.09                          |
| 4.00   | 85.38             | 2561.3          | 2541.6 | 2528.9 | 4.04               | 4.26  | 4.20  | 31.92    | -16.6           | -25.7 | -47.8 | 4.00               | 0.90             | -68.5                           | -95.4 | -117.3 | -137.4 | 330.7             | -128.56                          |
| 4.25   | 89.27             | 2584.2          | 2562.9 | 2549.6 | 4.11               | 4.31  | 4.10  | 31.78    | -16.7           | -25.7 | -48.4 | 4.34               | 1.69             | -68.6                           | -94.3 | -116.5 | -137.6 | 464.2             | -131.46                          |
| 4.50   | 72.37             | 2602.8          | 2585.2 | 2570.7 | 4.18               | 4.33  | 4.14  | 31.66    | -17.3           | -26.3 | -48.5 | 4.73               | 2.18             | -69.2                           | -95.4 | -117.1 | -137.3 | 554.9             | -132.99                          |
| 4.75   | 68.40             | 2620.7          | 2603.3 | 2592.2 | 4.03               | 4.37  | 4.16  | 31.65    | -16.8           | -27.2 | -47.5 | 3.98               | 1.61             | -70.4                           | -95.9 | -117.4 | -137.6 | 914.6             | -137.22                          |
| 5.00   | 70.90             | 2638.9          | 2620.4 | 2609.2 | 3.94               | 4.30  | 4.14  | 31.55    | -17.4           | -26.9 | -48.3 | 4.08               | 1.74             | -70.4                           | -94.8 | -116.4 | -136.6 | 1000.0            | -138.00                          |

\*at 25°C unless mentioned otherwise



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