

Coaxial

# Voltage Controlled Oscillator

## ZX95-386+

Linear Tuning 295 to 386 MHz

### Features

- high power output, +9.5 dBm typ.
- low phase noise
- low pulling
- low pushing
- protected by US patent 6,790,049



CASE STYLE: GB956

| Connectors | Model       |
|------------|-------------|
| SMA        | ZX95-386-S+ |

### Applications

- R&D
- lab
- instrumentation
- wireless communication
- military & avionics

**+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) |      | SENSITIVITY (MHz/V) | PORT CAP (pF) |                             | 3 dB MODULATION BANDWIDTH (MHz) | Typ. |                            |                 | Typ.               | Max. | Typ. | Max. | Vcc (volts) | Current (mA) |
|           |             |      |                    |   |      |      |      |        | Min.              | Max. |                     |               |                             |                                 |      |                            |                 |                    |      |      |      |             |              |
| ZX95-386+ | 295         | 386  | +9.5               | -90   | -117 | -138 | -158 | 4      | 16                | 10   | 170                 | 18            | -90                         | -23                             | -12  | 0.2                        | 0.4             | 12                 | 31   |      |      |             |              |

### Maximum Ratings

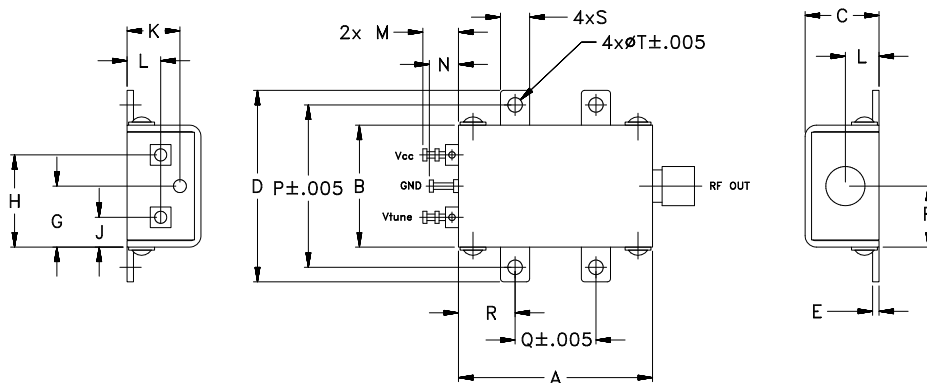
|                                      |                |
|--------------------------------------|----------------|
| Operating Temperature                | -55°C to 85°C  |
| Storage Temperature                  | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc)   | 13V            |
| Absolute Max. Tuning Voltage (Vtune) | 18V            |
| All specifications                   | 50 ohm system  |

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



NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminals. See Application Note [AN-40-10](#).

### 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  |

#### Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document 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)



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

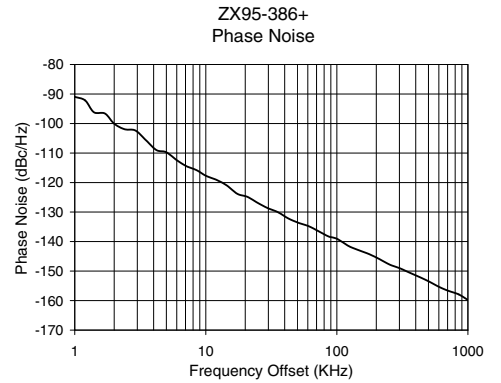
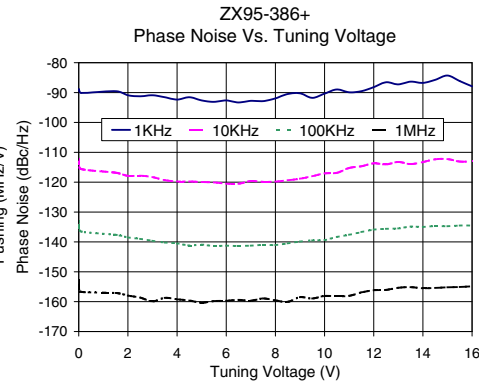
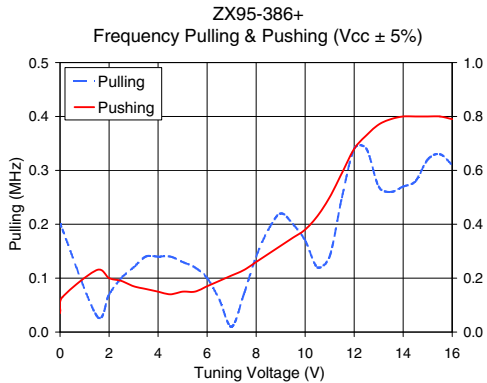
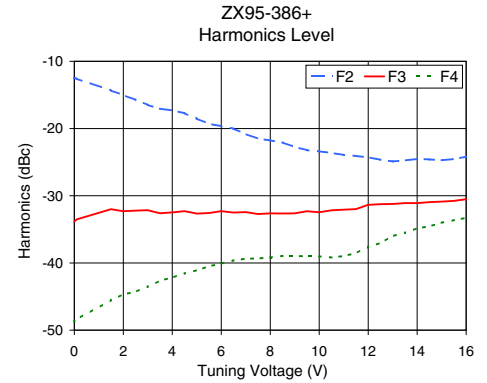
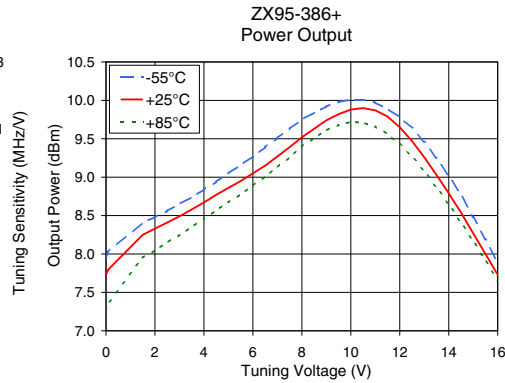
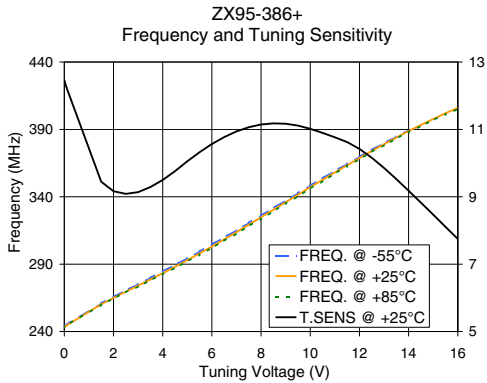
REV. A  
M152326  
EDR-8039F2  
ZX95-386+  
RAV  
150923  
Page 1 of 2

# Performance Data & Curves\*

# ZX95-386+

| 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 341 MHz (dBc/Hz) |
|--------|-------------------|-----------------|-------|-------|--------------------|-------|-------|----------|-----------------|-------|-------|--------------------|------------------|---------------------------------|--------|--------|--------|-------------------|---------------------------------|
|        |                   | -55°C           | +25°C | +85°C | -55°C              | +25°C | +85°C |          | F2              | F3    | F4    |                    |                  | 1kHz                            | 10kHz  | 100kHz | 1MHz   |                   |                                 |
| 0.00   | 12.45             | 243.9           | 243.3 | 243.4 | 7.96               | 7.73  | 7.29  | 25.25    | -12.5           | -33.8 | -48.7 | 0.07               | 0.20             | -89.3                           | -112.5 | -132.9 | -152.6 | 1.0               | -90.96                          |
| 0.10   | 12.22             | 245.1           | 244.6 | 244.6 | 8.03               | 7.80  | 7.37  | 25.30    | -12.6           | -33.5 | -48.4 | 0.13               | 0.19             | -90.1                           | -115.6 | -136.5 | -156.7 | 2.0               | -100.07                         |
| 1.50   | 9.45              | 260.9           | 260.2 | 259.9 | 8.41               | 8.25  | 7.95  | 25.62    | -14.4           | -32.0 | -45.5 | 0.23               | 0.03             | -89.5                           | -116.8 | -137.6 | -157.1 | 3.5               | -105.69                         |
| 2.00   | 9.17              | 265.8           | 265.0 | 264.5 | 8.48               | 8.33  | 8.05  | 25.67    | -15.0           | -32.3 | -44.7 | 0.20               | 0.07             | -90.9                           | -117.9 | -138.5 | -158.0 | 6.0               | -112.42                         |
| 3.00   | 9.14              | 275.1           | 274.1 | 273.5 | 8.65               | 8.49  | 8.25  | 25.76    | -16.5           | -32.2 | -43.5 | 0.17               | 0.12             | -90.9                           | -118.3 | -139.6 | -159.9 | 8.5               | -115.81                         |
| 4.00   | 9.50              | 284.5           | 283.3 | 282.5 | 8.84               | 8.67  | 8.46  | 25.84    | -17.3           | -32.5 | -42.2 | 0.15               | 0.14             | -92.3                           | -119.8 | -140.5 | -159.2 | 10.0              | -117.68                         |
| 5.00   | 10.05             | 294.3           | 292.9 | 292.0 | 9.05               | 8.86  | 8.67  | 25.92    | -18.5           | -32.7 | -41.1 | 0.15               | 0.13             | -92.6                           | -119.9 | -140.9 | -160.3 | 20.8              | -124.85                         |
| 6.00   | 10.56             | 304.5           | 303.1 | 302.1 | 9.27               | 9.05  | 8.89  | 26.00    | -19.7           | -32.3 | -40.1 | 0.17               | 0.10             | -92.6                           | -120.5 | -141.2 | -159.7 | 35.5              | -130.05                         |
| 7.00   | 10.94             | 315.1           | 313.8 | 312.7 | 9.51               | 9.27  | 9.13  | 26.07    | -20.8           | -32.4 | -39.4 | 0.21               | 0.01             | -92.8                           | -119.6 | -141.3 | -159.7 | 60.7              | -134.75                         |
| 8.00   | 11.15             | 326.0           | 324.8 | 323.7 | 9.75               | 9.52  | 9.40  | 26.14    | -21.8           | -32.6 | -39.2 | 0.26               | 0.14             | -91.9                           | -119.8 | -141.1 | -159.6 | 86.7              | -138.30                         |
| 9.00   | 11.17             | 337.1           | 336.0 | 334.8 | 9.92               | 9.74  | 9.61  | 26.20    | -22.8           | -32.6 | -39.0 | 0.32               | 0.22             | -90.2                           | -118.8 | -139.9 | -158.5 | 100.0             | -139.03                         |
| 9.50   | 11.11             | 342.7           | 341.5 | 340.5 | 9.98               | 9.82  | 9.68  | 26.21    | -23.2           | -32.3 | -39.0 | 0.35               | 0.20             | -91.8                           | -118.0 | -139.5 | -159.0 | 148.1             | -142.98                         |
| 10.00  | 11.02             | 348.2           | 347.1 | 346.1 | 10.01              | 9.88  | 9.72  | 26.22    | -23.4           | -32.5 | -39.0 | 0.38               | 0.17             | -90.4                           | -117.1 | -139.4 | -158.1 | 177.0             | -144.28                         |
| 11.00  | 10.77             | 359.1           | 358.0 | 357.2 | 9.97               | 9.87  | 9.66  | 26.22    | -23.9           | -32.1 | -39.0 | 0.50               | 0.14             | -89.9                           | -115.3 | -137.6 | -158.1 | 211.6             | -145.95                         |
| 12.00  | 10.42             | 369.6           | 368.7 | 368.0 | 9.78               | 9.65  | 9.43  | 26.22    | -24.3           | -31.4 | -37.6 | 0.68               | 0.34             | -88.2                           | -113.7 | -135.9 | -156.2 | 302.4             | -149.04                         |
| 13.00  | 9.85              | 379.8           | 379.0 | 378.3 | 9.46               | 9.26  | 9.08  | 26.26    | -24.9           | -31.2 | -36.0 | 0.77               | 0.27             | -87.3                           | -113.2 | -135.5 | -155.3 | 361.5             | -150.60                         |
| 14.00  | 9.18              | 389.4           | 388.7 | 388.0 | 9.02               | 8.79  | 8.65  | 26.31    | -24.5           | -31.1 | -34.8 | 0.80               | 0.27             | -86.8                           | -113.3 | -135.0 | -155.5 | 507.5             | -153.59                         |
| 15.00  | 8.47              | 398.4           | 397.7 | 396.9 | 8.48               | 8.27  | 8.17  | 26.36    | -24.7           | -30.9 | -34.0 | 0.80               | 0.32             | -84.3                           | -112.3 | -134.8 | -155.2 | 606.7             | -155.41                         |
| 15.50  | 8.11              | 402.7           | 402.0 | 401.1 | 8.19               | 8.00  | 7.91  | 26.39    | -24.5           | -30.8 | -33.6 | 0.80               | 0.33             | -86.2                           | -113.1 | -134.5 | -155.1 | 851.6             | -157.91                         |
| 16.00  | 7.75              | 406.8           | 406.0 | 405.1 | 7.89               | 7.73  | 7.66  | 26.42    | -24.2           | -30.5 | -33.3 | 0.79               | 0.31             | -87.9                           | -113.0 | -134.5 | -154.9 | 1000.0            | -159.82                         |

\*at 25°C unless mentioned otherwise



**Notes**

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document 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)

