*Coaxial*

# Voltage Controlled Oscillator ZX95-3610+

## 5V Tuning for PLL IC's 3500 to 3610 MHz

### Features

- linear tuning characteristics
- low pushing
- low pulling
- 0.5-5V tuning voltage range
- protected by US patent 6,790,049

### Applications

- r & d
- lab
- instrumentation
- radio location
- wireless microphones

CASE STYLE: GB956

| Connectors | Model |
|---|---|
| **SMA** | ZX95-3610-S+ |

***+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 Typ. | | | | TUNING VOLTAGE RANGE (V) | | SENSI-TIVITY (MHz/V) | PORT CAP (pF) | 3 dB MODULATION BANDWIDTH (MHz) | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc) | | PULLING pk-pk @12 dBr (MHz) | PUSHING (MHz/V) | DC OPERATING POWER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | Vcc (volts) | Current (mA) |
| | Min. | Max. | Typ. | 1 | 10 | 100 | 1000 | Min. | Max. | Typ. | Typ. | Typ. | Typ. | Typ. | Max. | Typ. | Typ. | | Max. |
| ZX95-3610+ | 3500 | 3610 | +3.5 | -73 | -97 | -118 | -138 | 0.5 | 5 | 80 | 12 | 320 | -90 | -19 | -10 | 1.5 | 2.5 | 5 | 37 |

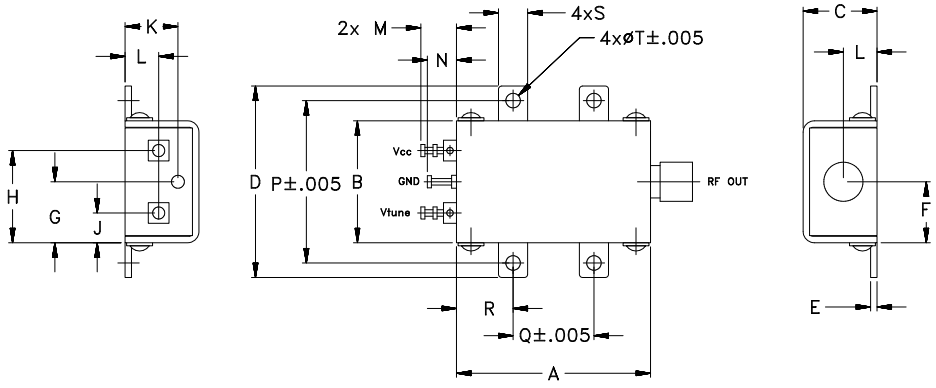
### Maximum Ratings

| | |
|---|---|
| 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.

*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**
**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.
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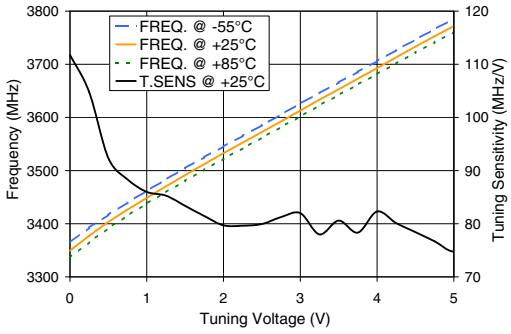
# Performance Data & Curves*

# ZX95-3610+

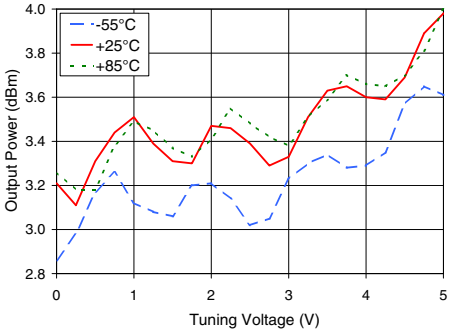
| V TUNE | TUNE SENS (MHz/V) | FREQUENCY (MHz) | | | POWER OUTPUT (dBm) | | | Icc (mA) | HARMONICS (dBc) | | | FREQ. PUSH (MHz/V) | FREQ. PULL (MHz) | PHASE NOISE (dBc/Hz) at offsets | | | | FREQ OFFSET (KHz) | PHASE NOISE at 3550 MHz (dBc/Hz) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -55°C | +25°C | +85°C | -55°C | +25°C | +85°C | | F2 | F3 | F4 | | | 1kHz | 10kHz | 100kHz | 1MHz | | |
| 0.00 | 111.78 | 3364.9 | 3349.4 | 3336.5 | 2.86 | 3.21 | 3.26 | 31.37 | -18.3 | -37.2 | -46.4 | 1.54 | 1.07 | -73.3 | -96.0 | -118.2 | -136.0 | 1.0 | -73.34 |
| 0.50 | 92.34 | 3417.0 | 3403.6 | 3391.6 | 3.17 | 3.31 | 3.18 | 31.46 | -18.5 | -37.5 | -45.0 | 2.04 | 1.59 | -73.0 | -97.5 | -118.5 | -137.9 | 2.0 | -80.65 |
| 0.75 | 88.33 | 3439.9 | 3426.6 | 3415.5 | 3.26 | 3.44 | 3.38 | 31.53 | -19.3 | -37.5 | -44.1 | 2.19 | 1.43 | -73.3 | -96.9 | -118.2 | -138.2 | 3.4 | -85.72 |
| 1.00 | 86.00 | 3462.0 | 3448.7 | 3437.9 | 3.12 | 3.51 | 3.49 | 31.58 | -18.8 | -39.8 | -44.6 | 2.26 | 0.51 | -73.0 | -96.6 | -117.7 | -137.4 | 5.7 | -91.00 |
| 1.25 | 85.29 | 3483.5 | 3470.2 | 3459.5 | 3.08 | 3.39 | 3.45 | 31.62 | -18.8 | -40.7 | -45.1 | 2.34 | 1.08 | -73.5 | -97.1 | -117.3 | -137.7 | 8.1 | -97.18 |
| 1.50 | 83.37 | 3504.7 | 3491.5 | 3480.6 | 3.06 | 3.31 | 3.37 | 31.64 | -18.8 | -39.0 | -47.0 | 2.50 | 1.91 | -72.0 | -97.1 | -119.0 | -137.0 | 10.0 | -97.19 |
| 1.75 | 81.44 | 3525.3 | 3512.4 | 3501.7 | 3.20 | 3.30 | 3.33 | 31.69 | -18.6 | -41.6 | -48.9 | 2.56 | 1.50 | -73.6 | -97.3 | -118.6 | -137.2 | 19.6 | -104.59 |
| 2.00 | 79.70 | 3545.5 | 3532.7 | 3522.3 | 3.21 | 3.47 | 3.41 | 31.78 | -18.7 | -41.6 | -48.3 | 2.44 | 0.76 | -73.9 | -97.5 | -118.6 | -137.9 | 33.3 | -112.12 |
| 2.25 | 79.62 | 3565.3 | 3552.7 | 3542.1 | 3.14 | 3.46 | 3.55 | 31.85 | -18.5 | -41.4 | -50.6 | 2.50 | 1.11 | -73.7 | -97.1 | -119.1 | -138.7 | 57.2 | -114.33 |
| 2.50 | 79.96 | 3585.5 | 3572.6 | 3562.0 | 3.02 | 3.39 | 3.48 | 31.89 | -18.9 | -41.9 | -52.1 | 2.59 | 1.29 | -72.0 | -96.5 | -118.2 | -137.4 | 81.8 | -118.23 |
| 2.75 | 81.25 | 3605.5 | 3592.6 | 3582.0 | 3.05 | 3.29 | 3.42 | 31.94 | -18.0 | -42.9 | -51.7 | 2.55 | 0.93 | -72.5 | -96.9 | -119.3 | -138.5 | 100.0 | -117.46 |
| 3.00 | 81.99 | 3626.2 | 3612.9 | 3601.8 | 3.23 | 3.33 | 3.38 | 31.95 | -17.8 | -43.8 | -46.3 | 2.81 | 0.24 | -71.7 | -96.3 | -118.7 | -138.2 | 139.3 | -123.10 |
| 3.25 | 77.99 | 3645.9 | 3633.4 | 3622.7 | 3.30 | 3.51 | 3.51 | 32.11 | -18.8 | -45.5 | -42.9 | 2.48 | 1.03 | -72.2 | -97.1 | -118.7 | -138.8 | 167.3 | -123.77 |
| 3.50 | 80.59 | 3666.0 | 3652.9 | 3642.2 | 3.34 | 3.63 | 3.59 | 32.18 | -18.6 | -47.9 | -42.8 | 2.48 | 1.70 | -72.1 | -97.9 | -118.7 | -141.0 | 199.2 | -124.47 |
| 3.75 | 78.33 | 3685.8 | 3673.0 | 3661.9 | 3.28 | 3.65 | 3.70 | 32.26 | -18.0 | -47.7 | -41.8 | 2.42 | 1.40 | -71.7 | -96.9 | -119.0 | -138.1 | 284.8 | -127.83 |
| 4.00 | 82.30 | 3706.1 | 3692.6 | 3681.8 | 3.29 | 3.60 | 3.66 | 32.33 | -18.5 | -48.3 | -41.8 | 2.31 | 1.18 | -71.7 | -97.1 | -118.4 | -137.8 | 342.1 | -130.95 |
| 4.25 | 80.11 | 3726.8 | 3713.2 | 3701.3 | 3.35 | 3.59 | 3.65 | 32.34 | -18.3 | -53.1 | -42.1 | 2.49 | 1.80 | -69.9 | -95.9 | -117.4 | -138.2 | 489.1 | -131.16 |
| 4.50 | 78.42 | 3746.4 | 3733.2 | 3722.2 | 3.57 | 3.69 | 3.70 | 32.53 | -17.4 | -51.4 | -42.0 | 1.94 | 1.24 | -71.7 | -96.4 | -119.2 | -138.1 | 582.3 | -133.55 |
| 4.75 | 76.69 | 3766.2 | 3752.8 | 3741.2 | 3.65 | 3.89 | 3.81 | 32.62 | -17.7 | -51.4 | -41.6 | 1.79 | 0.81 | -71.9 | -95.8 | -118.5 | -138.5 | 832.6 | -136.33 |
| 5.00 | 74.77 | 3785.3 | 3772.0 | 3760.7 | 3.61 | 3.98 | 4.00 | 32.76 | -17.1 | -51.6 | -41.8 | 1.32 | 0.40 | -71.5 | -96.5 | -119.2 | -139.7 | 1000.0 | -139.17 |

*at 25°C unless mentioned otherwise

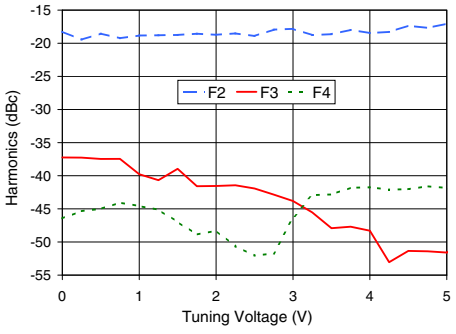
ZX95-3610+
Frequency and Tuning Sensitivity



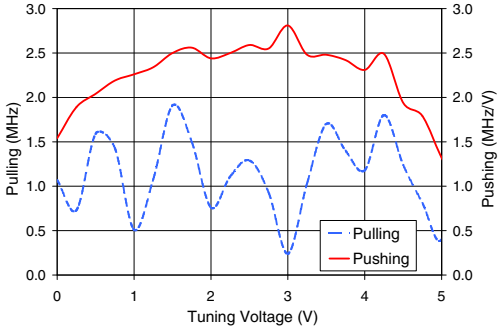

ZX95-3610+
Power Output



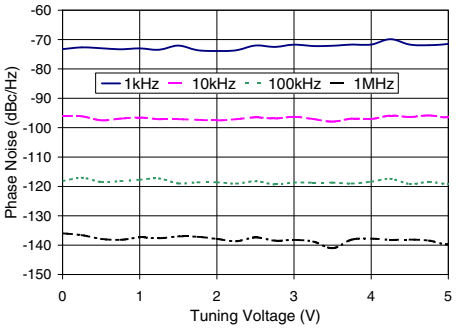

ZX95-3610+
Harmonics Level



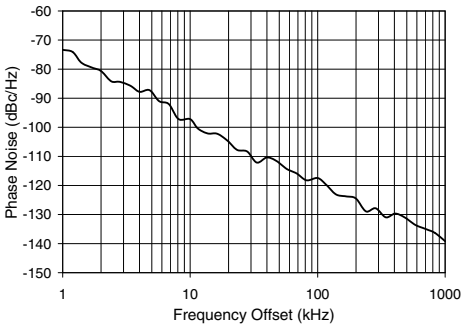

ZX95-3610+
Frequency Pulling & Pushing (Vcc ± 5%)




ZX95-3610+
Phase Noise Vs. Tuning Voltage




ZX95-3610+
Phase Noise

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