

Coaxial

# Voltage Controlled Oscillator

ZX95-470+

5V Tuning for PLL IC's 435 to 470 MHz

## Features

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

## Applications

- R & D
- lab
- instrumentation
- PLL circuitry
- wireless microphones



CASE STYLE: GB956

| Connectors | Model       | Price       | Qty.  |
|------------|-------------|-------------|-------|
| SMA        | ZX95-470-S+ | \$44.95 ea. | (1-9) |

### +RoHS Compliant

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

## Electrical Specifications

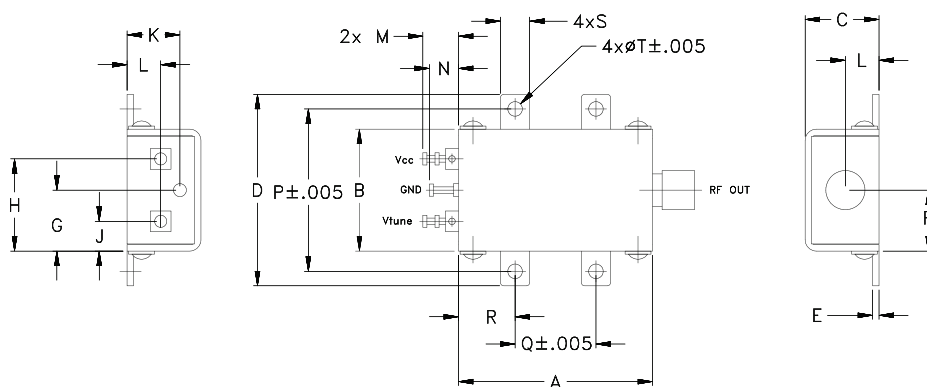
| MODEL NO. | FREQ. (MHz) |      | POWER OUTPUT (dBm) | PHASE NOISE dBc/Hz SSB at offset frequencies,KHz<br><br>Typ. |      |      |      | TUNING            |                       |               |                                 |      | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc) |      | PULLING 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.                        | Typ.            | Max.                                               |    |
| ZX95-470+ | 435         | 470  | -0.3               | -89                                                          | -114 | -135 | -155 | 0.5               | 5                     | 11-13         | 50                              | 80   | -90                         | -21             | -13  | 0.4                         | 0.2             | 5                                                  | 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



## 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  |

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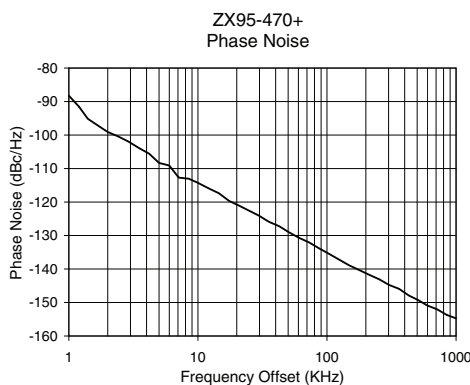
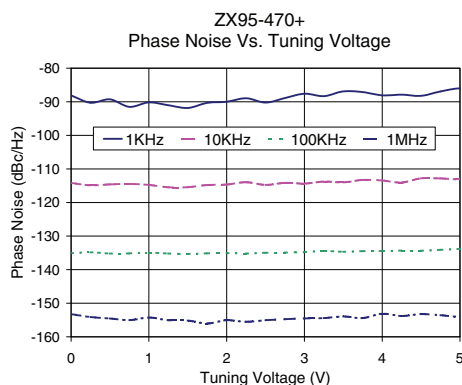
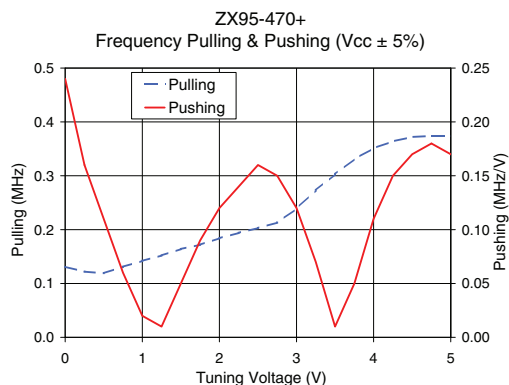
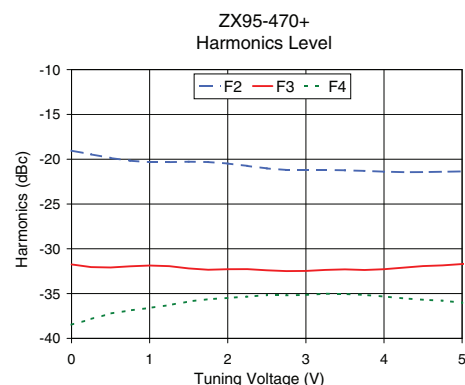
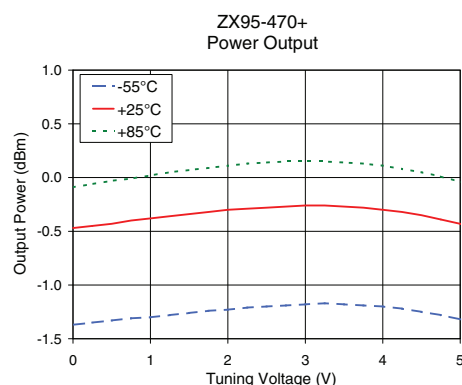
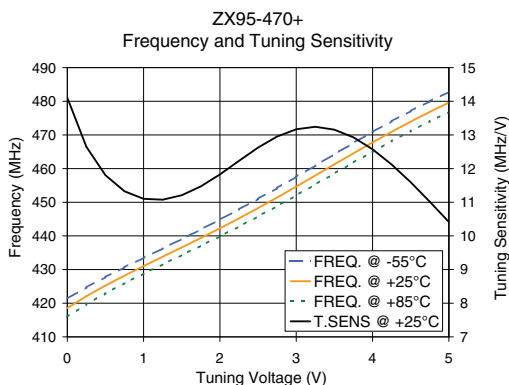
REV. OR  
M108877  
EDR-7747/2  
ZX95-470+  
RAV  
120830  
Page 1 of 2

# Performance Data & Curves\*

# ZX95-470+

| 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>446 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      | 14.11                   | 421.4              | 418.6 | 415.9 | -1.37                 | -0.47 | -0.09 | 10.62       | -19.0           | -31.8 | -38.5 | 0.24                     | 0.13                   | -88.1                              | -114.2 | -135.1 | -153.2 | 1.0                     | -88.26                                   |
| 0.50      | 11.80                   | 427.8              | 425.2 | 422.9 | -1.33                 | -0.43 | -0.03 | 10.66       | -19.9           | -32.1 | -37.2 | 0.11                     | 0.12                   | -89.3                              | -114.6 | -135.2 | -154.6 | 2.0                     | -99.09                                   |
| 0.75      | 11.32                   | 430.7              | 428.2 | 425.9 | -1.31                 | -0.40 | -0.01 | 10.68       | -20.2           | -32.0 | -36.9 | 0.06                     | 0.13                   | -91.5                              | -114.5 | -135.2 | -155.0 | 3.5                     | -103.89                                  |
| 1.00      | 11.10                   | 433.5              | 431.0 | 428.8 | -1.30                 | -0.38 | 0.02  | 10.69       | -20.3           | -31.9 | -36.6 | 0.02                     | 0.14                   | -90.2                              | -114.8 | -134.9 | -154.3 | 6.0                     | -109.10                                  |
| 1.25      | 11.08                   | 436.3              | 433.8 | 431.6 | -1.28                 | -0.36 | 0.05  | 10.71       | -20.3           | -31.9 | -36.3 | 0.01                     | 0.15                   | -91.0                              | -115.5 | -135.2 | -155.1 | 8.5                     | -113.05                                  |
| 1.50      | 11.21                   | 439.1              | 436.6 | 434.3 | -1.26                 | -0.34 | 0.07  | 10.72       | -20.3           | -32.2 | -35.9 | 0.05                     | 0.16                   | -91.9                              | -115.4 | -135.3 | -155.1 | 10.0                    | -114.28                                  |
| 1.75      | 11.47                   | 441.9              | 439.4 | 437.1 | -1.24                 | -0.32 | 0.09  | 10.74       | -20.3           | -32.3 | -35.6 | 0.09                     | 0.17                   | -90.3                              | -114.8 | -135.2 | -156.0 | 20.8                    | -121.07                                  |
| 2.00      | 11.83                   | 444.8              | 442.2 | 439.9 | -1.23                 | -0.30 | 0.11  | 10.76       | -20.5           | -32.3 | -35.5 | 0.12                     | 0.18                   | -90.0                              | -114.7 | -135.1 | -155.1 | 35.5                    | -125.92                                  |
| 2.25      | 12.23                   | 447.9              | 445.2 | 442.8 | -1.21                 | -0.29 | 0.13  | 10.78       | -20.8           | -32.3 | -35.3 | 0.14                     | 0.19                   | -89.0                              | -113.9 | -135.2 | -155.5 | 60.7                    | -130.68                                  |
| 2.50      | 12.62                   | 451.0              | 448.3 | 445.8 | -1.20                 | -0.28 | 0.14  | 10.80       | -21.0           | -32.4 | -35.2 | 0.16                     | 0.20                   | -90.2                              | -114.8 | -135.0 | -155.1 | 86.7                    | -133.81                                  |
| 2.75      | 12.95                   | 454.2              | 451.4 | 448.9 | -1.19                 | -0.27 | 0.15  | 10.81       | -21.2           | -32.5 | -35.2 | 0.15                     | 0.21                   | -88.9                              | -114.1 | -134.9 | -154.8 | 100.0                   | -135.12                                  |
| 3.00      | 13.17                   | 457.6              | 454.7 | 452.1 | -1.18                 | -0.26 | 0.15  | 10.83       | -21.2           | -32.5 | -35.2 | 0.12                     | 0.24                   | -87.6                              | -114.4 | -134.8 | -154.5 | 148.1                   | -138.88                                  |
| 3.25      | 13.24                   | 460.9              | 457.9 | 455.3 | -1.17                 | -0.26 | 0.15  | 10.85       | -21.2           | -32.4 | -35.0 | 0.07                     | 0.27                   | -88.3                              | -113.8 | -134.8 | -154.4 | 177.0                   | -140.27                                  |
| 3.50      | 13.16                   | 464.3              | 461.3 | 458.6 | -1.18                 | -0.27 | 0.14  | 10.86       | -21.2           | -32.3 | -35.0 | 0.01                     | 0.30                   | -86.9                              | -114.0 | -134.7 | -153.9 | 211.6                   | -141.69                                  |
| 3.75      | 12.93                   | 467.6              | 464.5 | 461.8 | -1.19                 | -0.28 | 0.13  | 10.87       | -21.3           | -32.4 | -35.2 | 0.05                     | 0.33                   | -87.1                              | -113.3 | -134.5 | -154.4 | 302.4                   | -144.75                                  |
| 4.00      | 12.57                   | 470.9              | 467.8 | 465.0 | -1.20                 | -0.30 | 0.11  | 10.88       | -21.4           | -32.3 | -35.3 | 0.11                     | 0.35                   | -88.1                              | -113.4 | -134.5 | -153.1 | 361.5                   | -145.92                                  |
| 4.25      | 12.12                   | 474.1              | 470.9 | 468.1 | -1.22                 | -0.32 | 0.08  | 10.88       | -21.5           | -32.1 | -35.5 | 0.15                     | 0.36                   | -87.9                              | -114.1 | -134.3 | -153.8 | 507.5                   | -149.26                                  |
| 4.50      | 11.59                   | 477.1              | 473.9 | 471.2 | -1.25                 | -0.35 | 0.05  | 10.88       | -21.4           | -31.9 | -35.7 | 0.17                     | 0.37                   | -88.2                              | -112.8 | -134.4 | -153.2 | 600.0                   | -150.91                                  |
| 4.75      | 11.02                   | 480.0              | 476.8 | 474.1 | -1.28                 | -0.39 | 0.01  | 10.88       | -21.4           | -31.9 | -35.8 | 0.18                     | 0.37                   | -86.9                              | -112.8 | -134.1 | -153.6 | 851.6                   | -153.75                                  |
| 5.00      | 10.41                   | 482.8              | 479.6 | 476.8 | -1.32                 | -0.43 | -0.04 | 10.87       | -21.4           | -31.7 | -36.0 | 0.17                     | 0.37                   | -86.0                              | -113.1 | -133.8 | -154.0 | 1000.0                  | -154.72                                  |

\*at 25°C unless mentioned otherwise



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