

Coaxial

# Voltage Controlled Oscillator

ZX95-2952A+

5V Tuning for PLL IC's 2748 to 2952 MHz

## Features

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

## Applications

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



CASE STYLE: GB956

| Connectors | Model         | Price       | Qty.  |
|------------|---------------|-------------|-------|
| SMA        | ZX95-2952A-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 |     |      |      | TUNING            |                       |               |                                 |             | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc) |      | PULLING pk-pk @12 dBr (MHz) | PUSHING (MHz/V) | DC OPERATING POWER |    |
|-------------|-------------|------|--------------------|--------------------------------------------------|-----|------|------|-------------------|-----------------------|---------------|---------------------------------|-------------|-----------------------------|-----------------|------|-----------------------------|-----------------|--------------------|----|
|             |             |      |                    | Typ.                                             |     |      |      | VOLTAGE RANGE (V) | SENSI- TIVITY (MHz/V) | PORT CAP (pF) | 3 dB MODULATION BANDWIDTH (MHz) | Vcc (volts) |                             |                 |      |                             |                 | Current (mA)       |    |
|             | Min.        | Max. | Typ.               | 1                                                | 10  | 100  | 1000 | Min.              | Max.                  | Typ.          | Typ.                            | Typ.        | Typ.                        | Typ.            | Max. | Typ.                        | Typ.            | Max.               |    |
| ZX95-2952A+ | 2748        | 2952 | +4.3               | -70                                              | -98 | -119 | -139 | 0.5               | 4.5                   | 84-89         | 25                              | 40          | -90                         | -25             | -15  | 1.5                         | 1.2             | 5                  | 40 |

## Maximum Ratings

Operating Temperature -55°C to 85°C

Storage Temperature -55°C to 100°C

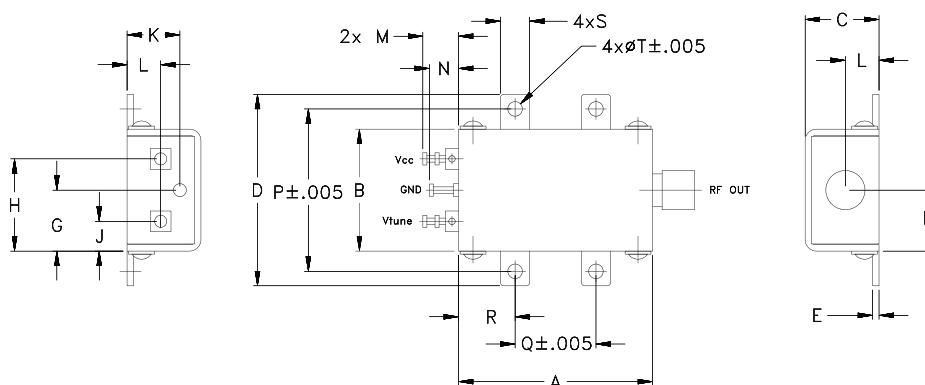
Absolute Max. Supply Voltage (Vcc) 7V

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  |

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ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IF/RF MICROWAVE COMPONENTS

**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).

For detailed performance specs & shopping online see web site

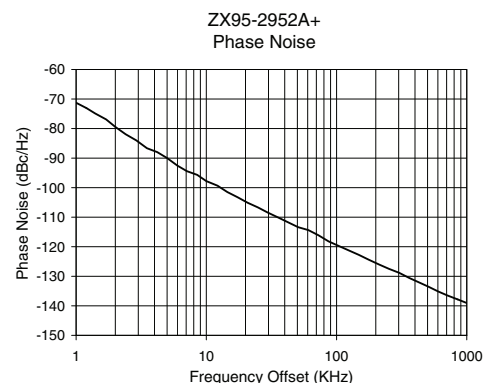
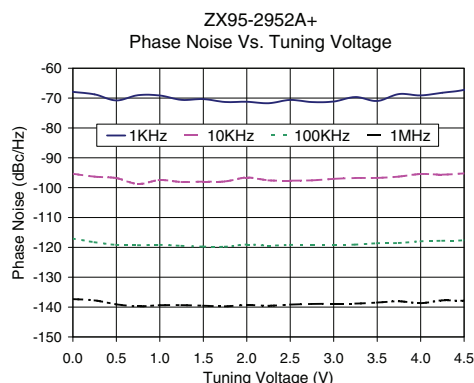
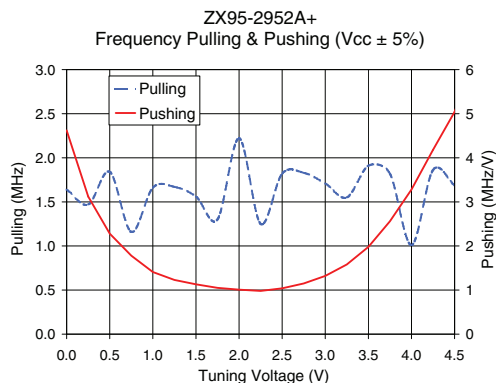
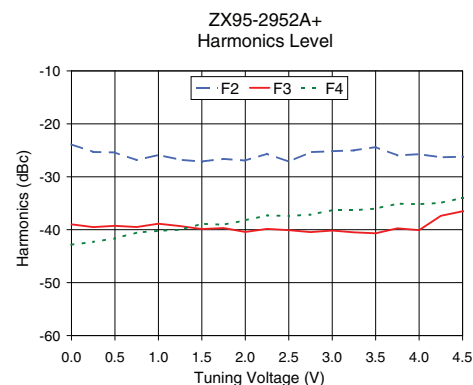
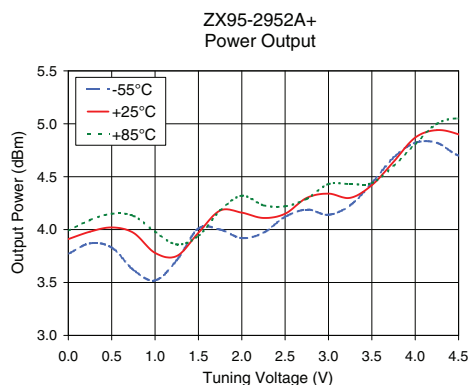
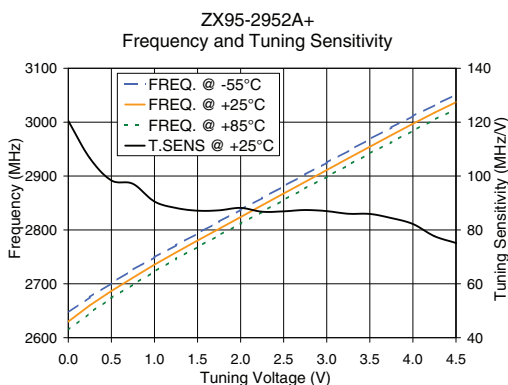
REV. OR  
M119372  
EDR-9075F2  
ZX95-2952A+  
RAV  
120905  
Page 1 of 2

# Performance Data & Curves\*

## ZX95-2952A+

| 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>2850 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      | 120.48                  | 2646.8             | 2629.9 | 2614.1 | 3.77                  | 3.91  | 3.99  | 28.83       | -23.9           | -39.0 | -42.8 | 4.62                     | 1.64                   | -67.9                              | -95.3 | -117.1 | -137.3 | 1.0                     | -71.26                                    |
| 0.25      | 106.64                  | 2675.3             | 2660.0 | 2645.9 | 3.87                  | 3.98  | 4.09  | 28.88       | -25.3           | -39.5 | -42.3 | 3.12                     | 1.47                   | -68.8                              | -96.3 | -118.3 | -137.8 | 2.0                     | -79.43                                    |
| 0.50      | 98.39                   | 2701.0             | 2686.7 | 2673.5 | 3.83                  | 4.02  | 4.15  | 28.90       | -25.4           | -39.3 | -41.6 | 2.28                     | 1.84                   | -70.8                              | -96.8 | -119.2 | -139.1 | 3.5                     | -86.65                                    |
| 0.75      | 97.12                   | 2726.1             | 2711.3 | 2698.7 | 3.62                  | 3.97  | 4.13  | 28.89       | -26.9           | -39.5 | -40.5 | 1.78                     | 1.16                   | -69.0                              | -98.8 | -119.3 | -139.8 | 6.0                     | -92.56                                    |
| 1.00      | 90.53                   | 2749.3             | 2735.6 | 2722.8 | 3.52                  | 3.78  | 3.98  | 28.87       | -25.9           | -38.9 | -40.2 | 1.41                     | 1.66                   | -69.1                              | -97.4 | -119.2 | -139.4 | 8.5                     | -95.67                                    |
| 1.25      | 88.15                   | 2771.6             | 2758.2 | 2746.2 | 3.71                  | 3.75  | 3.86  | 28.92       | -26.8           | -39.3 | -40.0 | 1.23                     | 1.67                   | -70.6                              | -98.1 | -119.5 | -139.4 | 10.0                    | -97.78                                    |
| 1.50      | 87.14                   | 2793.4             | 2780.2 | 2768.4 | 4.01                  | 3.97  | 3.94  | 28.94       | -27.1           | -39.9 | -38.9 | 1.13                     | 1.56                   | -70.3                              | -98.0 | -119.7 | -139.5 | 20.8                    | -105.14                                   |
| 1.75      | 87.27                   | 2815.3             | 2802.0 | 2790.1 | 4.00                  | 4.18  | 4.18  | 28.96       | -26.6           | -39.7 | -39.1 | 1.05                     | 1.30                   | -71.3                              | -97.9 | -119.8 | -139.7 | 35.5                    | -110.07                                   |
| 2.00      | 88.19                   | 2837.6             | 2823.8 | 2811.6 | 3.92                  | 4.16  | 4.32  | 28.95       | -27.0           | -40.4 | -38.2 | 1.01                     | 2.22                   | -71.2                              | -96.6 | -119.1 | -139.3 | 60.7                    | -114.36                                   |
| 2.25      | 86.76                   | 2859.3             | 2845.9 | 2833.8 | 3.97                  | 4.11  | 4.23  | 29.00       | -25.6           | -39.8 | -37.3 | 0.98                     | 1.25                   | -71.7                              | -97.6 | -119.4 | -139.6 | 86.7                    | -118.18                                   |
| 2.50      | 86.90                   | 2881.1             | 2867.6 | 2855.5 | 4.12                  | 4.15  | 4.22  | 29.04       | -27.2           | -40.1 | -37.4 | 1.04                     | 1.82                   | -70.6                              | -97.7 | -119.2 | -139.2 | 100.0                   | -119.42                                   |
| 2.75      | 87.38                   | 2902.9             | 2889.3 | 2877.1 | 4.19                  | 4.30  | 4.29  | 29.09       | -25.3           | -40.5 | -37.2 | 1.15                     | 1.83                   | -71.3                              | -97.6 | -119.1 | -139.0 | 148.1                   | -122.75                                   |
| 3.00      | 86.98                   | 2924.9             | 2911.2 | 2898.7 | 4.14                  | 4.34  | 4.43  | 29.14       | -25.2           | -40.2 | -36.3 | 1.32                     | 1.71                   | -71.2                              | -97.1 | -119.1 | -138.9 | 177.0                   | -124.41                                   |
| 3.25      | 86.00                   | 2946.7             | 2932.9 | 2920.5 | 4.23                  | 4.30  | 4.43  | 29.21       | -25.0           | -40.5 | -36.3 | 1.58                     | 1.55                   | -69.7                              | -96.8 | -119.1 | -138.8 | 302.4                   | -128.83                                   |
| 3.50      | 85.95                   | 2968.5             | 2954.4 | 2941.9 | 4.44                  | 4.42  | 4.44  | 29.28       | -24.4           | -40.7 | -36.0 | 1.98                     | 1.91                   | -71.0                              | -96.8 | -118.6 | -138.5 | 361.5                   | -130.56                                   |
| 3.75      | 84.40                   | 2990.0             | 2975.9 | 2963.2 | 4.68                  | 4.64  | 4.60  | 29.32       | -26.0           | -39.7 | -35.1 | 2.56                     | 1.82                   | -68.7                              | -96.3 | -118.5 | -138.1 | 507.5                   | -133.52                                   |
| 4.00      | 82.22                   | 3011.3             | 2997.0 | 2984.1 | 4.82                  | 4.87  | 4.81  | 29.36       | -25.7           | -40.1 | -35.2 | 3.28                     | 1.01                   | -69.1                              | -95.4 | -118.0 | -138.7 | 606.7                   | -135.20                                   |
| 4.25      | 77.67                   | 3031.4             | 3017.5 | 3004.5 | 4.82                  | 4.94  | 5.00  | 29.40       | -26.3           | -37.4 | -34.9 | 4.18                     | 1.86                   | -68.2                              | -95.6 | -117.8 | -137.8 | 851.6                   | -137.85                                   |
| 4.50      | 75.13                   | 3051.2             | 3037.0 | 3024.1 | 4.70                  | 4.90  | 5.05  | 29.45       | -26.2           | -36.5 | -34.0 | 5.04                     | 1.69                   | -67.2                              | -95.2 | -117.6 | -137.9 | 1000.0                  | -139.06                                   |

\*at 25°C unless mentioned otherwise



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