

Coaxial

## Voltage Controlled Oscillator

ZX95-1023-S+

5V Tuning for PLL ICs 945 to 1023 MHz

## Features

- linear tuning characteristics
- low phase noise
- low pushing
- protected by US patent 6,790,049

## Applications

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



CASE STYLE: GB956

| Connectors | Model        |
|------------|--------------|
| SMA        | ZX95-1023-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<br><br>Typ. |      |      |      | TUNING            |                       |               |                                 |      | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc) |      | PULLING pk-pk @12 dB <sub>r</sub> (MHz) | PUSHING (MHz/V) | DC OPERATING POWER<br><br>V <sub>cc</sub> 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. |
| ZX95-1023-S+ | 945         | 1023 | +6.6               | -81                                                          | -109 | -130 | -150 | 0.5               | 5                     | 32            | 43                              | 40   | -90                         | -26             | -19  | 1.4                                     | 0.4             | 5                                                              | 35   |

## Maximum Ratings

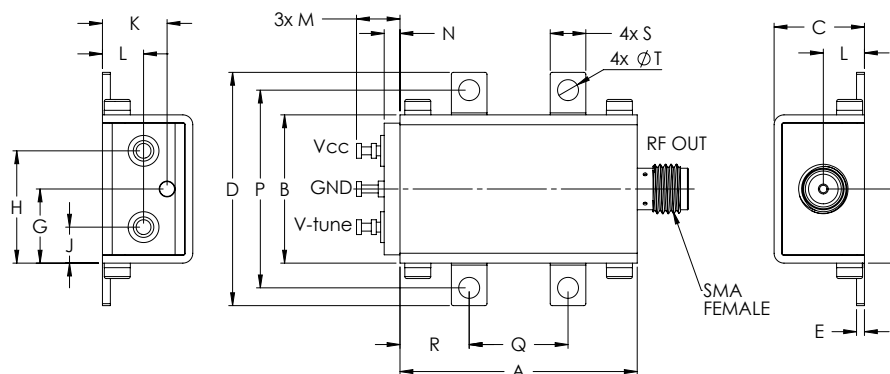
|                                      |                |
|--------------------------------------|----------------|
| Operating Temperature                | -55°C to 85°C  |
| Storage Temperature                  | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc)   | 6V             |
| Absolute 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  | .08  | 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 | 2.03 | 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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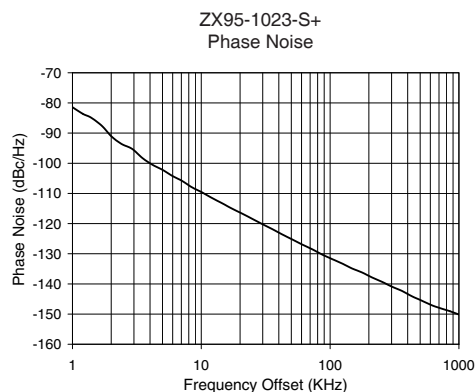
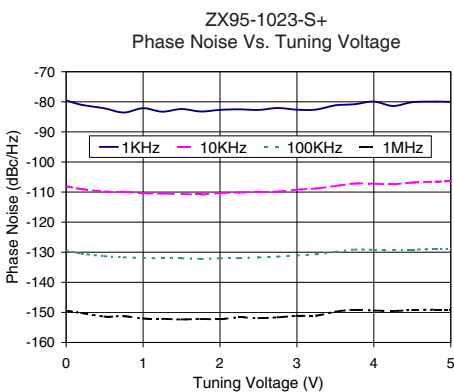
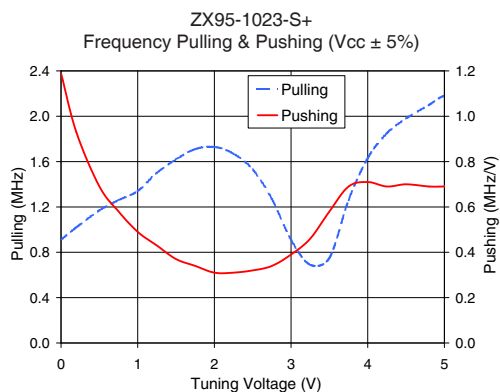
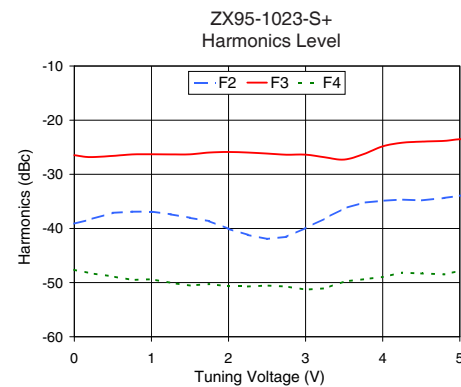
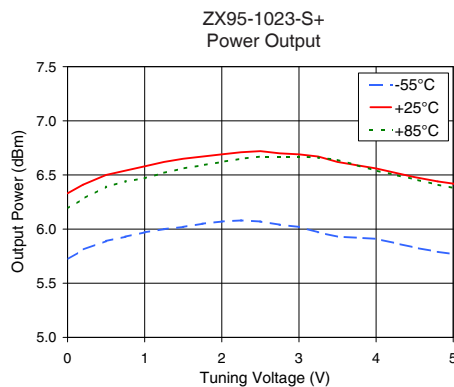
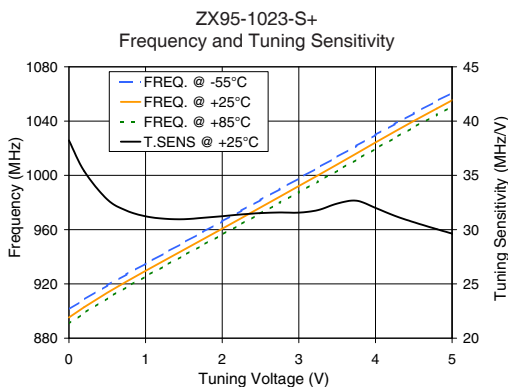
REV. B  
M171494  
EDR-9227F2  
ZX95-1023+  
RAV  
181227  
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## Performance Data &amp; Curves\*

## ZX95-1023-S+

| 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>984 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      | 38.22                   | 901.2              | 895.3  | 890.7  | 5.72                  | 6.33  | 6.19  | 26.13       | -39.1           | -26.5 | -47.6 | 1.19                     | 0.91                   | -79.5                              | -108.0 | -129.5 | -149.5 | 1.0                     | -81.42                                   |
| 0.50      | 32.78                   | 918.9              | 913.5  | 909.4  | 5.89                  | 6.50  | 6.39  | 26.52       | -37.1           | -26.6 | -48.9 | 0.69                     | 1.17                   | -82.2                              | -109.8 | -131.3 | -151.4 | 2.0                     | -91.02                                   |
| 0.75      | 31.75                   | 927.0              | 921.7  | 917.6  | 5.93                  | 6.54  | 6.44  | 26.69       | -36.9           | -26.3 | -49.5 | 0.58                     | 1.26                   | -83.6                              | -109.9 | -131.7 | -151.3 | 3.5                     | -98.31                                   |
| 1.00      | 31.23                   | 934.9              | 929.6  | 925.5  | 5.97                  | 6.58  | 6.47  | 26.85       | -36.9           | -26.3 | -49.4 | 0.49                     | 1.34                   | -82.1                              | -110.4 | -131.9 | -152.0 | 6.0                     | -104.26                                  |
| 1.25      | 31.00                   | 942.8              | 937.4  | 933.3  | 6.00                  | 6.62  | 6.52  | 27.01       | -37.4           | -26.3 | -50.0 | 0.43                     | 1.50                   | -83.3                              | -110.5 | -132.1 | -152.1 | 8.5                     | -108.01                                  |
| 1.50      | 30.96                   | 950.5              | 945.2  | 941.0  | 6.02                  | 6.65  | 6.56  | 27.15       | -38.0           | -26.3 | -50.6 | 0.37                     | 1.62                   | -82.4                              | -110.7 | -132.0 | -152.4 | 10.0                    | -109.51                                  |
| 1.75      | 31.09                   | 958.3              | 952.9  | 948.7  | 6.05                  | 6.67  | 6.59  | 27.28       | -38.7           | -26.0 | -50.3 | 0.34                     | 1.71                   | -83.2                              | -110.8 | -132.2 | -152.2 | 20.8                    | -116.72                                  |
| 2.00      | 31.23                   | 966.1              | 960.7  | 956.4  | 6.07                  | 6.69  | 6.62  | 27.40       | -40.1           | -25.9 | -50.7 | 0.31                     | 1.73                   | -82.7                              | -110.3 | -132.0 | -152.3 | 35.5                    | -121.82                                  |
| 2.25      | 31.40                   | 974.0              | 968.5  | 964.2  | 6.08                  | 6.71  | 6.65  | 27.50       | -41.2           | -26.0 | -50.7 | 0.31                     | 1.67                   | -82.5                              | -110.2 | -132.0 | -151.7 | 60.7                    | -126.94                                  |
| 2.50      | 31.52                   | 981.9              | 976.4  | 972.0  | 6.07                  | 6.72  | 6.67  | 27.58       | -41.9           | -26.2 | -50.5 | 0.32                     | 1.53                   | -82.7                              | -109.9 | -131.7 | -151.9 | 86.7                    | -130.26                                  |
| 2.75      | 31.58                   | 989.8              | 984.3  | 979.8  | 6.04                  | 6.70  | 6.67  | 27.65       | -41.6           | -26.4 | -50.7 | 0.34                     | 1.27                   | -82.1                              | -109.9 | -131.5 | -151.6 | 100.0                   | -131.47                                  |
| 3.00      | 31.56                   | 997.8              | 992.1  | 987.6  | 6.02                  | 6.69  | 6.67  | 27.71       | -39.9           | -26.4 | -51.3 | 0.39                     | 0.91                   | -82.6                              | -109.2 | -131.1 | -151.2 | 148.1                   | -134.89                                  |
| 3.25      | 31.80                   | 1005.7             | 1000.0 | 995.5  | 5.97                  | 6.67  | 6.66  | 27.74       | -38.2           | -26.9 | -51.1 | 0.46                     | 0.69                   | -82.6                              | -108.8 | -130.7 | -151.1 | 177.0                   | -136.21                                  |
| 3.50      | 32.40                   | 1013.6             | 1008.0 | 1003.4 | 5.93                  | 6.62  | 6.64  | 27.76       | -36.3           | -27.3 | -49.8 | 0.58                     | 0.75                   | -81.2                              | -108.0 | -129.9 | -149.8 | 211.6                   | -137.87                                  |
| 3.75      | 32.67                   | 1021.7             | 1016.1 | 1011.5 | 5.92                  | 6.59  | 6.59  | 27.79       | -35.2           | -26.3 | -49.4 | 0.69                     | 1.26                   | -80.8                              | -107.2 | -129.1 | -149.1 | 302.4                   | -140.91                                  |
| 4.00      | 32.00                   | 1029.9             | 1024.3 | 1019.6 | 5.91                  | 6.56  | 6.54  | 27.87       | -34.9           | -24.8 | -49.0 | 0.71                     | 1.63                   | -79.9                              | -107.2 | -129.2 | -149.4 | 361.5                   | -142.31                                  |
| 4.25      | 31.27                   | 1037.8             | 1032.3 | 1027.6 | 5.87                  | 6.52  | 6.50  | 27.95       | -34.7           | -24.2 | -48.2 | 0.69                     | 1.85                   | -81.4                              | -107.4 | -129.2 | -149.5 | 507.5                   | -145.41                                  |
| 4.50      | 30.69                   | 1045.6             | 1040.1 | 1035.5 | 5.83                  | 6.48  | 6.46  | 28.04       | -34.8           | -24.0 | -48.3 | 0.70                     | 1.98                   | -80.1                              | -106.9 | -129.1 | -149.2 | 606.7                   | -146.95                                  |
| 4.80      | 30.04                   | 1054.8             | 1049.3 | 1044.7 | 5.79                  | 6.44  | 6.41  | 28.13       | -34.4           | -23.8 | -48.5 | 0.69                     | 2.10                   | -79.9                              | -106.6 | -129.0 | -149.1 | 851.6                   | -149.05                                  |
| 5.00      | 29.64                   | 1060.8             | 1055.3 | 1050.7 | 5.77                  | 6.42  | 6.38  | 28.19       | -34.0           | -23.5 | -47.8 | 0.69                     | 2.18                   | -80.0                              | -106.4 | -128.9 | -149.1 | 1000.0                  | -150.16                                  |

\*at 25°C unless mentioned otherwise



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