

Coaxial

## Voltage Controlled Oscillator

ZX95-209-S+

Ultra Low Noise 203 to 209 MHz

## Features

- ultra low phase noise, -131 dBc/Hz typ. @ 10kHz offset
- linear tuning characteristics
- low pulling, 0.04 MHz typ.
- low pushing, 0.1 MHz/V typ.
- protected by US patent 6,790,049

## Applications

- wireless communications
- test equipment
- R & D
- lab



Generic photo used for illustration purposes only

CASE STYLE: GB956

| Connectors | Model       |
|------------|-------------|
| SMA        | ZX95-209-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 |      |      |      | TUNING |                   |                       |               |                                 | NON HARMONIC SPURIOUS (dBc) | HARMONICS (dBc) |      | PULLING pk-pk @12 dB <sub>r</sub> (MHz) | PUSHING (MHz/V) | DC OPERATING POWER |      |      |                         |              |
|-------------|-------------|------|--------------------|--------------------------------------------------|------|------|------|--------|-------------------|-----------------------|---------------|---------------------------------|-----------------------------|-----------------|------|-----------------------------------------|-----------------|--------------------|------|------|-------------------------|--------------|
|             | Min.        | Max. |                    | Typ.                                             | 1    | 10   | 100  | 1000   | VOLTAGE RANGE (V) | SENSI- TIVITY (MHz/V) | PORT CAP (pF) | 3 dB MODULATION BANDWIDTH (MHz) |                             | Typ.            | Typ. |                                         |                 | Max.               | Typ. | Typ. | V <sub>cc</sub> (volts) | Current (mA) |
|             |             |      |                    |                                                  |      |      |      |        |                   |                       |               |                                 |                             |                 |      |                                         |                 |                    |      |      |                         |              |
| ZX95-209-S+ | 203         | 209  | +9                 | -105                                             | -131 | -152 | -166 | 1      | 11                | 1.1                   | 1.6           | 365                             | 8                           | -90             | -19  | -12                                     | 0.04            | 0.1                | 5    | 26   |                         |              |

## Maximum Ratings

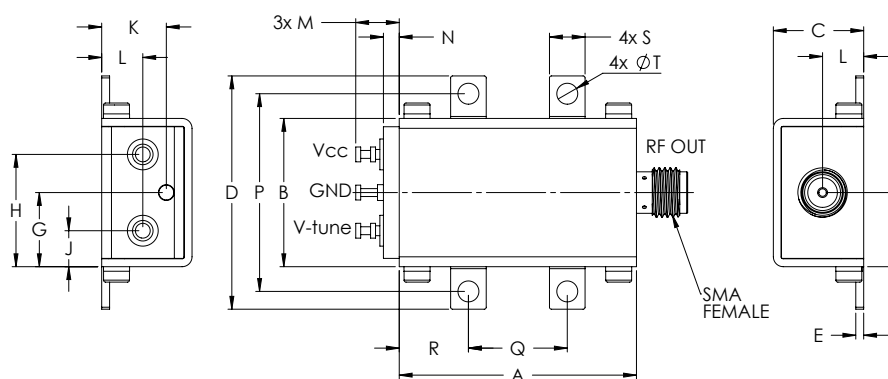
|                                      |                |
|--------------------------------------|----------------|
| Operating Temperature                | -55°C to 85°C  |
| Storage Temperature                  | -55°C to 100°C |
| Absolute Max. Supply Voltage (Vcc)   | 6V             |
| Absolute Max. Tuning Voltage (Vtune) | 13V            |
| 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

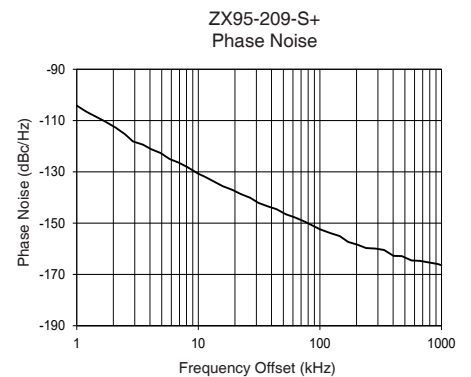
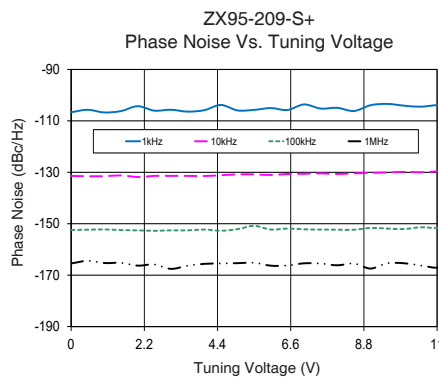
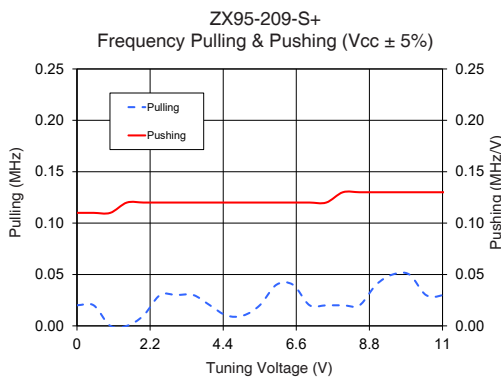
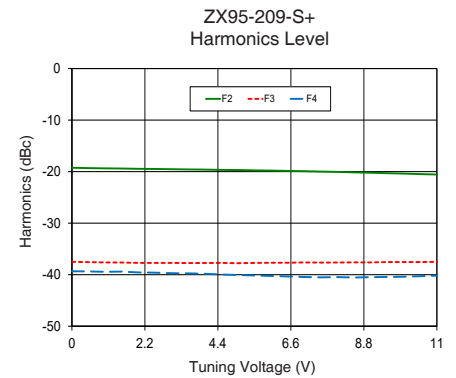
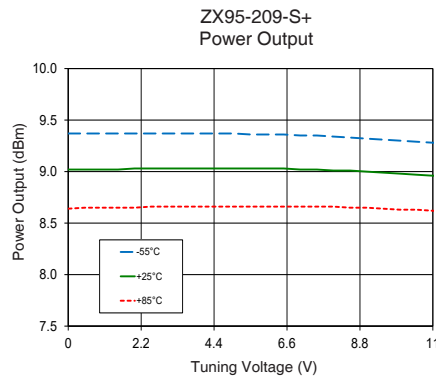
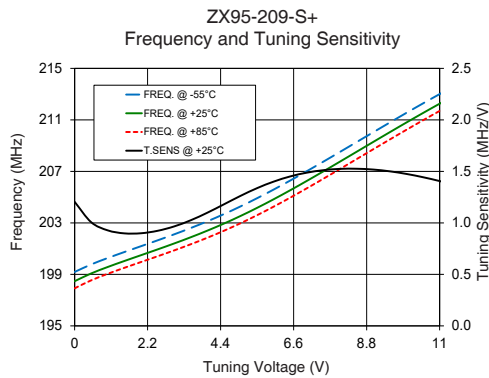


## Outline Dimensions (inch/mm)

| 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 | 19.15 | 11.61 | 30.07 | 1.02 | 9.53 | 9.53 | 14.43 | 4.62 | 8.31 | 5.28 | 5.59 | 2.03 | 25.40 | 12.70 | 8.89 | 4.57 | 2.69 | 35.0  |

| 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>206 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      | 1.21                    | 199.2              | 198.5 | 197.9 | 9.37                  | 9.02  | 8.64  | 16.76       | -19.3           | -37.5 | -39.3 | 0.11                     | 0.02                   | -106.61                            | -131.4 | -152.4 | -165.5 | 1.0                     | -104.15                                  |
| 1.00      | 0.93                    | 200.3              | 199.6 | 199.0 | 9.37                  | 9.02  | 8.65  | 16.73       | -19.4           | -37.6 | -39.5 | 0.11                     | 0.00                   | -106.70                            | -131.5 | -152.2 | -165.3 | 2.1                     | -112.82                                  |
| 1.50      | 0.90                    | 200.7              | 200.0 | 199.5 | 9.37                  | 9.02  | 8.65  | 16.71       | -19.4           | -37.6 | -39.4 | 0.12                     | 0.00                   | -106.16                            | -131.2 | -152.5 | -165.2 | 3.5                     | -119.39                                  |
| 2.00      | 0.90                    | 201.2              | 200.5 | 200.0 | 9.37                  | 9.03  | 8.65  | 16.70       | -19.5           | -37.7 | -39.6 | 0.12                     | 0.01                   | -104.27                            | -131.8 | -152.6 | -166.3 | 5.8                     | -124.99                                  |
| 2.50      | 0.92                    | 201.6              | 200.9 | 200.4 | 9.37                  | 9.03  | 8.66  | 16.70       | -19.5           | -37.7 | -39.6 | 0.12                     | 0.03                   | -106.00                            | -131.4 | -152.8 | -165.8 | 8.1                     | -128.12                                  |
| 3.00      | 0.97                    | 202.1              | 201.4 | 200.9 | 9.37                  | 9.03  | 8.66  | 16.68       | -19.5           | -37.7 | -39.7 | 0.12                     | 0.03                   | -105.65                            | -131.4 | -152.6 | -167.6 | 10.0                    | -130.73                                  |
| 3.50      | 1.03                    | 202.6              | 201.9 | 201.3 | 9.37                  | 9.03  | 8.66  | 16.66       | -19.6           | -37.7 | -39.7 | 0.12                     | 0.03                   | -106.37                            | -131.4 | -152.6 | -166.3 | 22.3                    | -138.63                                  |
| 4.00      | 1.10                    | 203.1              | 202.4 | 201.8 | 9.37                  | 9.03  | 8.66  | 16.65       | -19.6           | -37.7 | -39.8 | 0.12                     | 0.02                   | -105.83                            | -131.4 | -152.3 | -165.6 | 37.5                    | -143.48                                  |
| 4.50      | 1.18                    | 203.7              | 202.9 | 202.4 | 9.37                  | 9.03  | 8.66  | 16.63       | -19.7           | -37.7 | -40.0 | 0.12                     | 0.01                   | -103.79                            | -131.1 | -152.7 | -165.5 | 61.8                    | -147.73                                  |
| 5.00      | 1.26                    | 204.3              | 203.5 | 203.0 | 9.37                  | 9.03  | 8.66  | 16.61       | -19.7           | -37.8 | -40.1 | 0.12                     | 0.01                   | -105.91                            | -130.8 | -152.1 | -165.3 | 86.7                    | -150.91                                  |
| 5.50      | 1.34                    | 204.9              | 204.2 | 203.6 | 9.36                  | 9.03  | 8.66  | 16.59       | -19.8           | -37.7 | -40.2 | 0.12                     | 0.02                   | -105.70                            | -130.8 | -150.8 | -165.2 | 100.0                   | -152.39                                  |
| 6.00      | 1.40                    | 205.6              | 204.8 | 204.3 | 9.36                  | 9.03  | 8.66  | 16.58       | -19.8           | -37.7 | -40.3 | 0.12                     | 0.04                   | -105.00                            | -131.0 | -152.3 | -166.3 | 145.5                   | -155.03                                  |
| 6.50      | 1.45                    | 206.3              | 205.5 | 205.0 | 9.36                  | 9.03  | 8.66  | 16.55       | -19.9           | -37.7 | -40.3 | 0.12                     | 0.04                   | -105.74                            | -130.6 | -151.9 | -166.2 | 170.8                   | -157.34                                  |
| 7.00      | 1.49                    | 207.0              | 206.3 | 205.7 | 9.35                  | 9.02  | 8.66  | 16.54       | -19.9           | -37.6 | -40.5 | 0.12                     | 0.02                   | -103.59                            | -130.6 | -152.2 | -165.4 | 204.2                   | -158.43                                  |
| 7.50      | 1.51                    | 207.8              | 207.0 | 206.4 | 9.35                  | 9.02  | 8.66  | 16.52       | -20.0           | -37.7 | -40.5 | 0.12                     | 0.02                   | -105.19                            | -130.4 | -152.3 | -165.5 | 286.7                   | -159.92                                  |
| 8.00      | 1.52                    | 208.5              | 207.8 | 207.2 | 9.34                  | 9.01  | 8.66  | 16.51       | -20.1           | -37.6 | -40.5 | 0.13                     | 0.02                   | -104.91                            | -130.7 | -152.3 | -166.2 | 336.6                   | -160.47                                  |
| 9.00      | 1.52                    | 210.0              | 209.3 | 208.7 | 9.32                  | 9.00  | 8.65  | 16.49       | -20.2           | -37.6 | -40.5 | 0.13                     | 0.04                   | -103.89                            | -130.2 | -151.6 | -167.4 | 472.5                   | -162.88                                  |
| 9.50      | 1.50                    | 210.8              | 210.0 | 209.5 | 9.31                  | 8.99  | 8.64  | 16.48       | -20.3           | -37.6 | -40.4 | 0.13                     | 0.05                   | -103.38                            | -130.1 | -151.9 | -165.4 | 564.9                   | -164.52                                  |
| 10.50     | 1.44                    | 212.3              | 211.5 | 211.0 | 9.29                  | 8.97  | 8.63  | 16.47       | -20.5           | -37.6 | -40.3 | 0.13                     | 0.03                   | -104.46                            | -130.0 | -151.4 | -166.2 | 931.1                   | -165.93                                  |
| 11.00     | 1.41                    | 213.0              | 212.3 | 211.7 | 9.28                  | 8.96  | 8.62  | 16.46       | -20.6           | -37.5 | -40.2 | 0.13                     | 0.03                   | -103.83                            | -129.6 | -151.7 | -167.1 | 1000.0                  | -166.42                                  |

\*at 25°C unless mentioned otherwise



### Additional 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.
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