

# X12 Frequency Multiplier

50  $\Omega$  Output 4500 to 6000 MHz

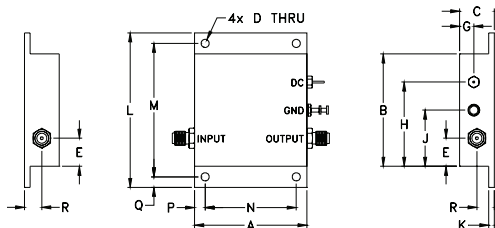
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -55°C to 100°C |
| Storage Temperature                                             | -55°C to 100°C |
| RF Input Power                                                  | 13dBm          |
| DC Voltage                                                      | 8.5 V          |
| Permanent damage may occur if any of these limits are exceeded. |                |

## Coaxial Connections

|        |   |
|--------|---|
| INPUT  | 1 |
| OUTPUT | 2 |

## Outline Drawing



## Outline Dimensions (inch)

| A     | B     | C     | D     | E     | F    | G    | H     | J     |
|-------|-------|-------|-------|-------|------|------|-------|-------|
| 2.00  | 2.00  | .62   | .144  | .50   | --   | .26  | 1.50  | 1.00  |
| 50.80 | 50.80 | 15.75 | 3.66  | 12.70 | --   | 6.60 | 38.10 | 25.40 |
| K     | L     | M     | N     | P     | Q    | R    | wt    |       |
| .100  | 2.75  | 2.375 | 1.625 | .19   | .19  | .31  | grams |       |
| 2.54  | 69.85 | 60.33 | 41.28 | 4.83  | 4.83 | 7.87 | 71.80 |       |

## Features

- broadband
- excellent spurious and harmonics suppression, 40 dBc typ.

## Applications

- military radio
- test equipment
- mobile

ZX90-12-63+



CASE STYLE: BY1298

| Connectors | Model         | Price   | Qty.  |
|------------|---------------|---------|-------|
| SMA        | ZX90-12-63-S+ | \$49.95 | (1-9) |

## +RoHS Compliant

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

## Electrical Specifications T<sub>AMB</sub> = 25°C

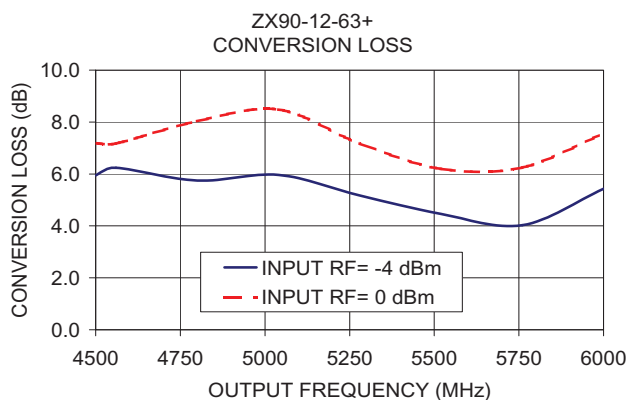
| MULTIPLICATION FACTOR | FREQUENCY (MHz) |            | INPUT POWER (dBm) |      | CONVERSION LOSS (dB) |      | *HARMONIC OUTPUT (dBc) |       |          |            |  | DC POWER               |              |
|-----------------------|-----------------|------------|-------------------|------|----------------------|------|------------------------|-------|----------|------------|--|------------------------|--------------|
|                       | F1 Input        | F12 Output | Min.              | Max. | Typ.                 | Max. | F1 to F3               | F4    | F5 to F9 | F10 to F16 |  | Volts <sup>1</sup> (V) | Current (mA) |
| 12                    | 375-500         | 4500-6000  | -4                | 0    | 6.5                  | 12   | 65 50                  | 34 23 | 48 33    | 26 20      |  | 8                      | 200          |

\* Harmonics of input frequency below the power level of F12

1. Other volts available upon request.

## Typical Performance Data

| Frequency   |              | Conversion Loss (dB) at RF Input Power |       |
|-------------|--------------|----------------------------------------|-------|
| Input (MHz) | Output (MHz) | -4 dBm                                 | 0 dBm |
| 375.00      | 4500.00      | 5.95                                   | 7.19  |
| 380.00      | 4560.00      | 6.24                                   | 7.17  |
| 400.00      | 4800.00      | 5.75                                   | 8.03  |
| 420.00      | 5040.00      | 5.96                                   | 8.48  |
| 440.00      | 5280.00      | 5.17                                   | 7.17  |
| 460.00      | 5520.00      | 4.46                                   | 6.20  |
| 480.00      | 5760.00      | 4.03                                   | 6.25  |
| 500.00      | 6000.00      | 5.43                                   | 7.56  |



## Notes

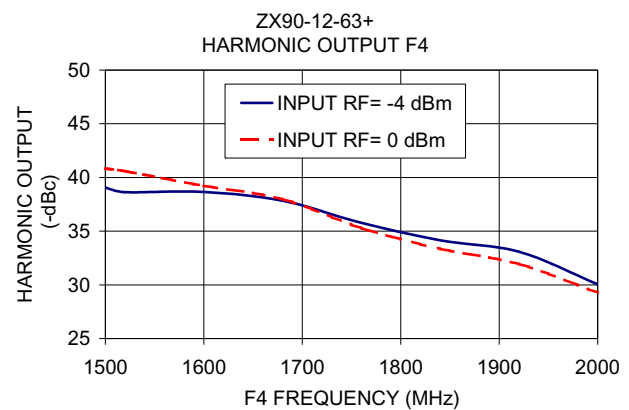
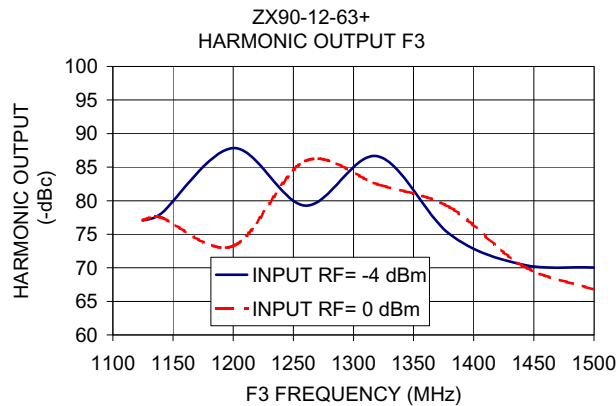
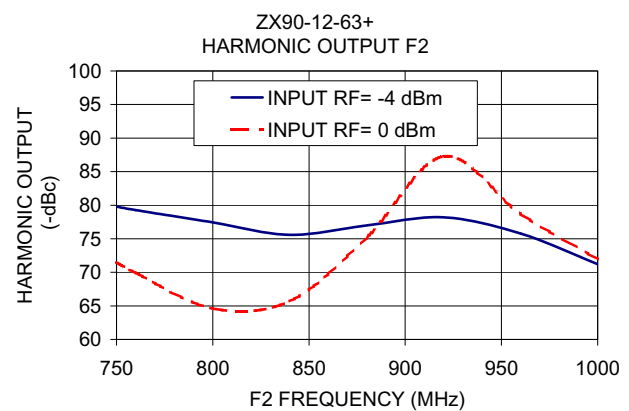
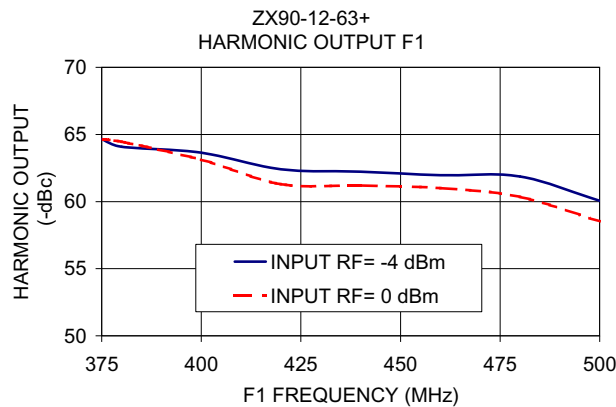
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
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## Typical Performance Data

| Frequency      |                 | Harmonic Rejection Below F12 (-dBc)<br>at RF Input Power -4 dBm |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
|----------------|-----------------|-----------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| Input<br>(MHz) | Output<br>(MHz) | F1                                                              | F2    | F3    | F4    | F5    | F6    | F7    | F8    | F9    | F10   | F11   | F13   | F14   | F15   | F16   |  |
| 375.00         | 4500.00         | 64.66                                                           | 79.80 | 77.05 | 39.05 | 62.08 | 55.81 | 64.27 | 71.85 | 71.12 | 42.22 | 32.97 | 24.73 | 28.12 | 48.25 | 31.03 |  |
| 380.00         | 4560.00         | 64.08                                                           | 79.28 | 78.05 | 38.64 | 62.22 | 56.04 | 63.03 | 63.68 | 73.49 | 38.30 | 33.03 | 25.13 | 28.42 | 47.76 | 31.68 |  |
| 400.00         | 4800.00         | 63.64                                                           | 77.43 | 87.83 | 38.65 | 61.23 | 59.64 | 62.54 | 63.22 | 58.33 | 38.54 | 38.24 | 30.38 | 30.61 | 53.46 | 30.96 |  |
| 420.00         | 5040.00         | 62.40                                                           | 75.57 | 79.26 | 37.84 | 61.73 | 57.78 | 66.74 | 54.32 | 50.14 | 38.04 | 38.07 | 34.73 | 30.83 | 50.99 | 32.06 |  |
| 440.00         | 5280.00         | 62.22                                                           | 76.98 | 86.65 | 35.78 | 64.41 | 67.28 | 77.48 | 61.62 | 49.55 | 43.77 | 31.07 | 32.03 | 53.14 | 51.43 | 34.49 |  |
| 460.00         | 5520.00         | 61.96                                                           | 78.19 | 75.03 | 34.15 | 62.06 | 70.03 | 71.28 | 47.47 | 46.70 | 38.28 | 30.83 | 32.41 | 56.21 | 49.98 | 46.38 |  |
| 480.00         | 5760.00         | 61.87                                                           | 75.78 | 70.51 | 33.08 | 58.06 | 64.02 | 68.63 | 42.16 | 48.94 | 34.41 | 27.95 | 31.70 | 42.42 | 57.20 | 49.95 |  |
| 500.00         | 6000.00         | 60.06                                                           | 71.20 | 70.04 | 30.05 | 54.70 | 63.89 | 58.01 | 43.20 | 49.53 | 30.60 | 24.01 | 28.91 | 38.06 | 62.56 | 57.80 |  |

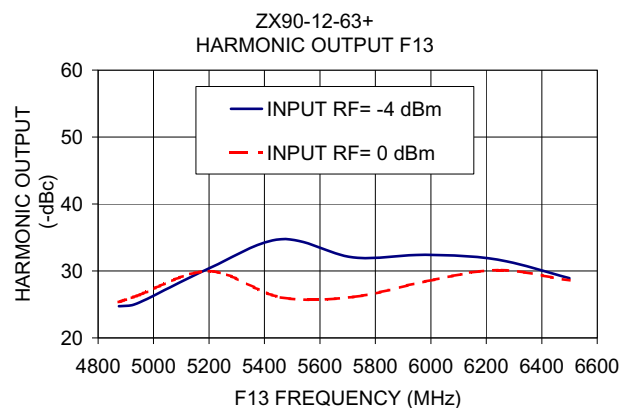
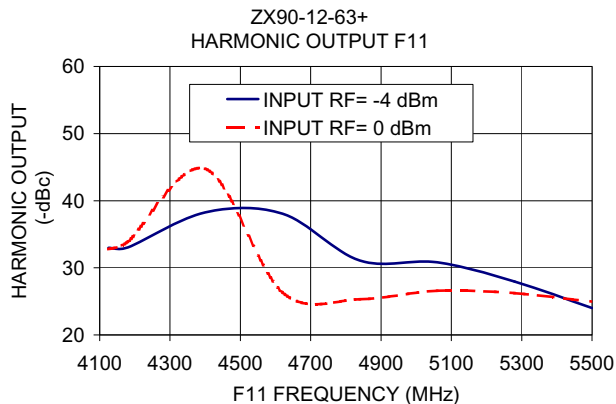
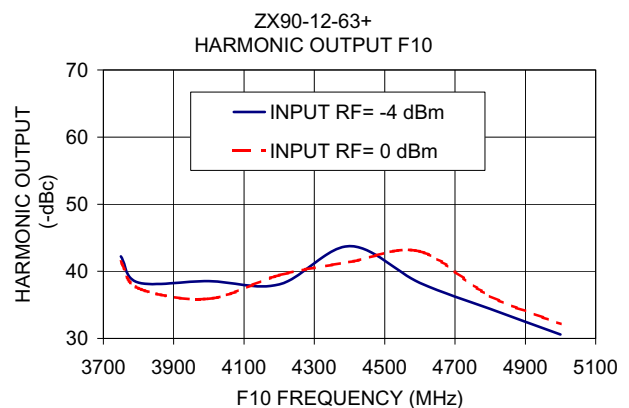
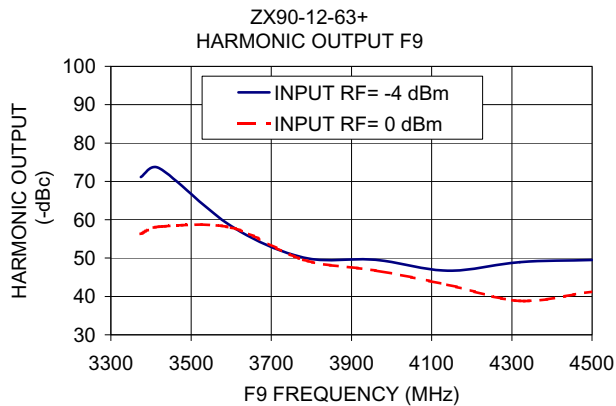
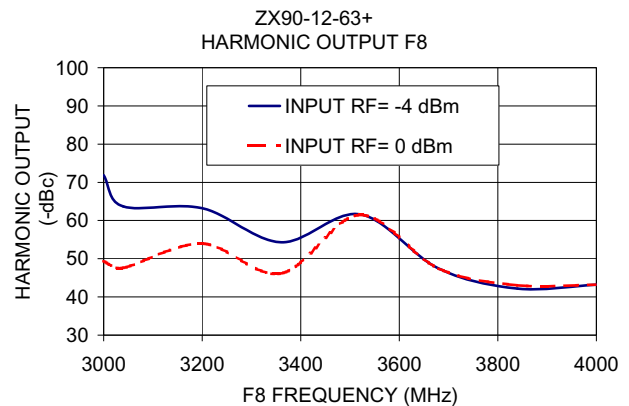
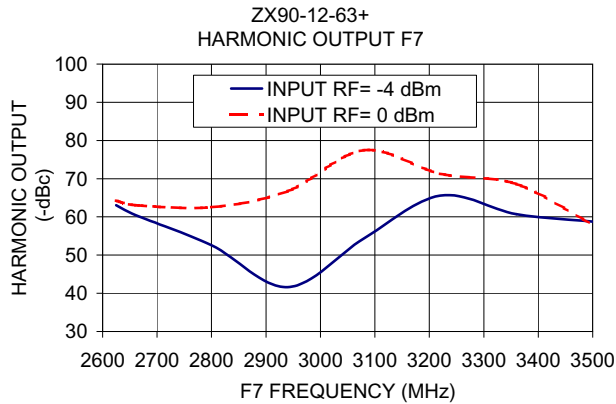
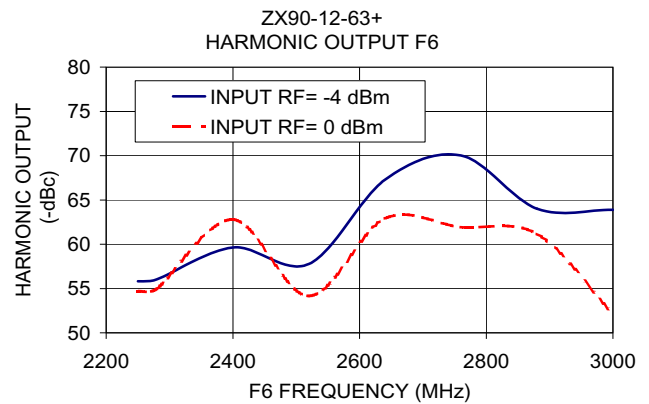
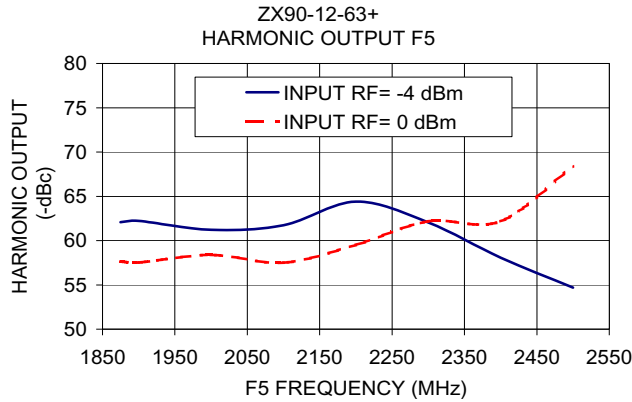
| Frequency      |                 | Harmonic Rejection Below F12 (-dBc)<br>at RF Input Power 0 dBm |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
|----------------|-----------------|----------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| Input<br>(MHz) | Output<br>(MHz) | F1                                                             | F2    | F3    | F4    | F5    | F6    | F7    | F8    | F9    | F10   | F11   | F13   | F14   | F15   | F16   |  |
| 375.00         | 4500.00         | 64.64                                                          | 71.46 | 77.11 | 40.83 | 57.63 | 54.72 | 63.03 | 49.41 | 56.29 | 41.40 | 32.78 | 25.37 | 28.28 | 45.86 | 29.60 |  |
| 380.00         | 4560.00         | 64.46                                                          | 69.90 | 77.51 | 40.59 | 57.54 | 54.96 | 60.50 | 47.64 | 58.19 | 37.48 | 33.89 | 26.28 | 28.11 | 46.11 | 30.60 |  |
| 400.00         | 4800.00         | 63.12                                                          | 64.59 | 73.24 | 39.23 | 58.38 | 62.79 | 52.58 | 53.99 | 57.95 | 35.91 | 44.77 | 29.96 | 30.64 | 53.53 | 31.81 |  |
| 420.00         | 5040.00         | 61.29                                                          | 65.69 | 85.91 | 37.97 | 57.50 | 54.15 | 41.63 | 46.14 | 49.55 | 39.42 | 26.32 | 26.03 | 32.55 | 49.93 | 34.58 |  |
| 440.00         | 5280.00         | 61.19                                                          | 75.16 | 82.45 | 35.28 | 59.51 | 62.90 | 54.34 | 61.47 | 46.75 | 41.37 | 25.32 | 26.12 | 53.65 | 46.65 | 38.53 |  |
| 460.00         | 5520.00         | 61.01                                                          | 87.29 | 79.04 | 33.35 | 62.18 | 61.94 | 65.60 | 47.47 | 43.06 | 42.98 | 26.59 | 28.42 | 44.73 | 49.11 | 50.63 |  |
| 480.00         | 5760.00         | 60.35                                                          | 78.71 | 70.37 | 31.95 | 62.17 | 61.17 | 60.69 | 43.05 | 38.82 | 36.28 | 26.22 | 30.12 | 39.82 | 52.65 | 53.32 |  |
| 500.00         | 6000.00         | 58.53                                                          | 71.98 | 66.76 | 29.27 | 68.41 | 52.10 | 58.78 | 43.19 | 41.26 | 32.15 | 24.96 | 28.59 | 39.01 | 59.79 | 60.16 |  |



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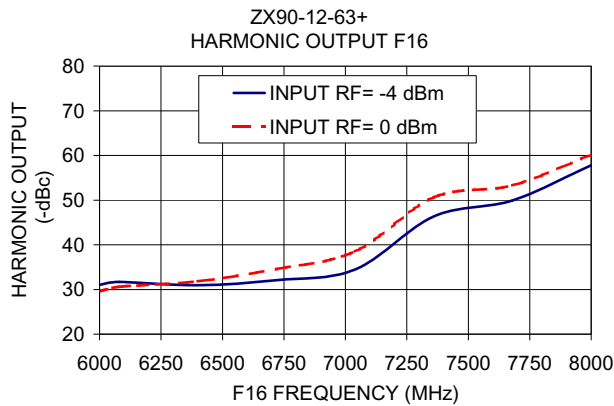
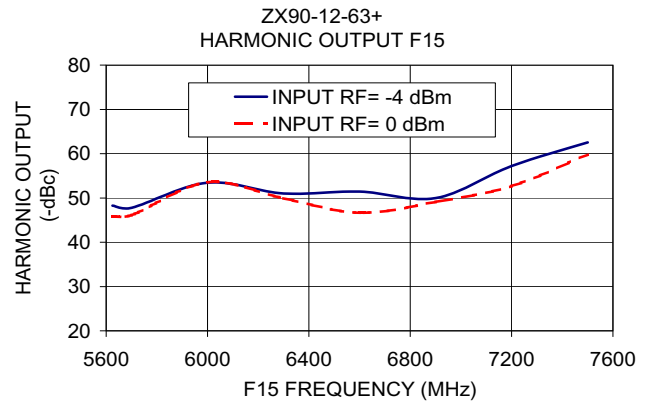
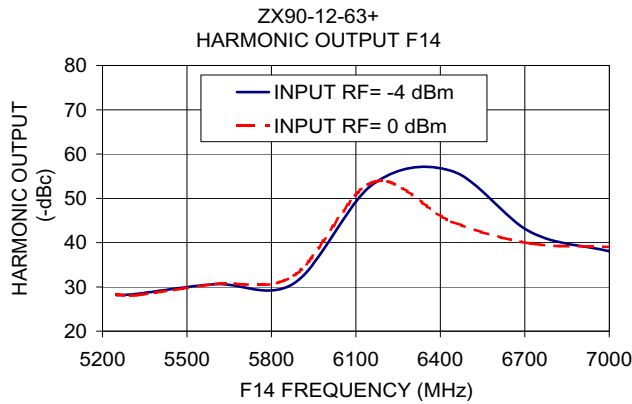




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