

# X2 Frequency Multiplier

50Ω Output 7000 to 10000 MHz

## ZX90-2-50-S+



Generic photo used for illustration purposes only

CASE STYLE: JA1242

Connectors Model  
SMA ZX90-2-50-S+

+RoHS Compliant

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

### Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Input Power, 25°C	23 dBm

Permanent damage may occur if any of these limits are exceeded.

### Coaxial Connections

INPUT	2
OUTPUT	1

### Features

- broadband
- low conversion loss, 12.5 dB typ.
- rugged construction
- protected by US Patent 6,790,049

### Applications

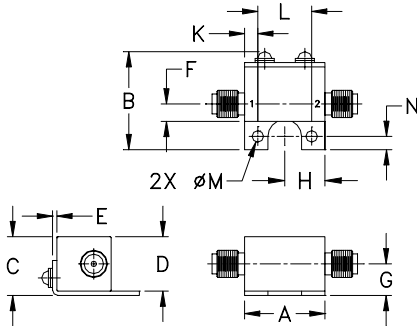
- synthesizers
- local oscillators

### Electrical Specifications

MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1	F2					F1		F3		F4	
	Input	Output	Min.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.
2	3500-5000	7000-10000	7	12	12.5	17	15	7	28	17	30	17
	3800-4500	7600-9000	7	12	11.3	15.5	20	10	30	20	30	17

\* Harmonics of input frequency below the power level of F2

### Outline Drawing



### Outline Dimensions (inch)

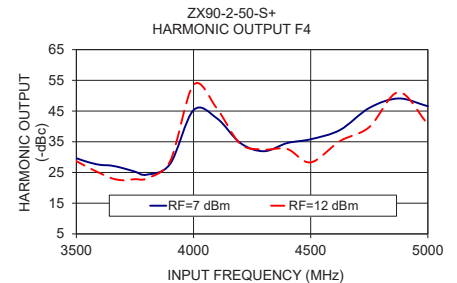
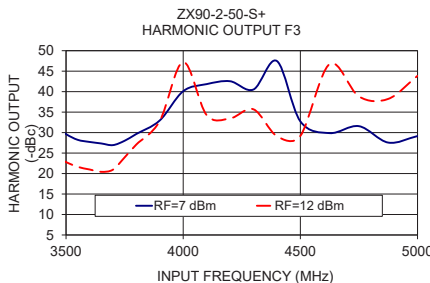
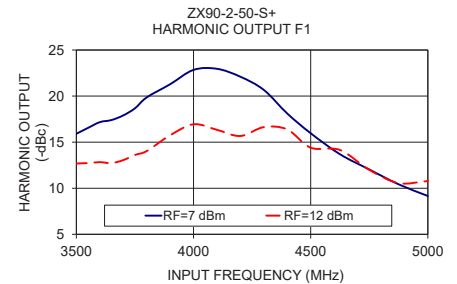
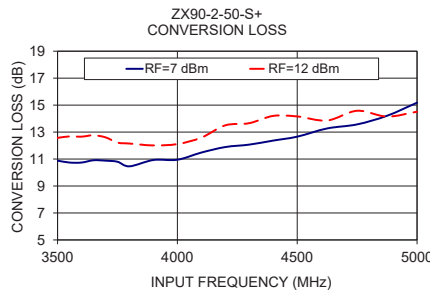
A	B	C	D	E	F	G
.74	.90	.54	.50	.04	.16	.29
18.80	22.86	13.72	12.70	1.02	4.06	7.37

H	J	K	L	M	N	wt
.37	--	.122	.496	.106	.122	grams
9.40	--	3.10	12.60	2.69	3.10	19.0

### Typical Performance Data

Input Frequency (MHz)	INPUT RF= 7 dBm				INPUT RF= 12 dBm			
	Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)			Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)		
		F1	F3	F4		F1	F3	F4
3500.00	10.88	15.91	29.63	29.65	12.57	12.68	22.80	28.70
3550.00	10.74	16.55	28.23	28.38	12.68	12.73	21.63	26.66
3600.00	10.74	17.17	27.72	27.50	12.66	12.83	21.00	24.82
3650.00	10.91	17.40	27.35	27.23	12.76	12.73	20.42	23.12
3700.00	10.88	17.90	26.94	26.38	12.61	13.05	20.94	22.45
3750.00	10.80	18.67	28.00	25.28	12.22	13.61	23.93	22.83
3800.00	10.46	19.85	29.66	24.28	12.15	14.03	27.08	23.05
3900.00	10.93	21.28	32.96	27.76	12.01	15.74	32.82	28.60
4000.00	10.95	22.84	40.10	45.29	12.11	16.94	47.23	53.48
4100.00	11.48	22.96	41.83	42.62	12.59	16.34	34.29	45.83
4200.00	11.89	22.10	42.54	34.58	13.50	15.67	33.45	34.29
4300.00	12.07	20.67	40.52	31.92	13.66	16.63	35.68	32.49
4400.00	12.37	18.11	47.47	34.58	14.20	16.38	29.12	32.64
4500.00	12.66	15.97	32.75	35.82	14.16	14.40	29.17	28.29
4625.00	13.27	13.69	29.87	38.82	13.86	14.15	46.73	35.22
4750.00	13.57	12.04	31.57	46.00	14.58	12.00	38.82	39.76
4875.00	14.21	10.43	27.56	49.09	14.15	10.56	38.22	51.13
5000.00	15.18	9.16	29.15	46.56	14.51	10.78	43.85	40.76



### 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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# Frequency Multiplier (Doublers)

# ZX90-2-50-S+

## Typical Performance Data

Frequency (MHz)				RF IN = 7dBm			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X2 Output	X1 Output	X3 Output	X4 Output
3500	7000	10500	14000	10.88	15.91	29.63	29.65
3550	7100	10650	14200	10.74	16.55	28.23	28.38
3600	7200	10800	14400	10.74	17.17	27.72	27.50
3650	7300	10950	14600	10.91	17.40	27.35	27.23
3700	7400	11100	14800	10.88	17.90	26.94	26.38
3750	7500	11250	15000	10.80	18.67	28.00	25.28
3800	7600	11400	15200	10.46	19.85	29.66	24.28
3900	7800	11700	15600	10.93	21.28	32.96	27.76
4000	8000	12000	16000	10.95	22.84	40.10	45.29
4100	8200	12300	16400	11.48	22.96	41.83	42.62
4200	8400	12600	16800	11.89	22.10	42.54	34.58
4300	8600	12900	17200	12.07	20.67	40.52	31.92
4400	8800	13200	17600	12.37	18.11	47.47	34.58
4500	9000	13500	18000	12.66	15.97	32.75	35.82
4625	9250	13875	18500	13.27	13.69	29.87	38.82
4750	9500	14250	19000	13.57	12.04	31.57	46.00
4875	9750	14625	19500	14.21	10.43	27.56	49.09
5000	10000	15000	20000	15.18	9.16	29.15	46.56

\*Harmonic Output below power level of X2 Output .

Frequency (MHz)				RF IN = 12dBm			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X2 Output	X1 Output	X3 Output	X4 Output
3500	7000	10500	14000	12.57	12.68	22.80	28.70
3550	7100	10650	14200	12.68	12.73	21.63	26.66
3600	7200	10800	14400	12.66	12.83	21.00	24.82
3650	7300	10950	14600	12.76	12.73	20.42	23.12
3700	7400	11100	14800	12.61	13.05	20.94	22.45
3750	7500	11250	15000	12.22	13.61	23.93	22.83
3800	7600	11400	15200	12.15	14.03	27.08	23.05
3900	7800	11700	15600	12.01	15.74	32.82	28.60
4000	8000	12000	16000	12.11	16.94	47.23	53.48
4100	8200	12300	16400	12.59	16.34	34.29	45.83
4200	8400	12600	16800	13.50	15.67	33.45	34.29
4300	8600	12900	17200	13.66	16.63	35.68	32.49
4400	8800	13200	17600	14.20	16.38	29.12	32.64
4500	9000	13500	18000	14.16	14.40	29.17	28.29
4625	9250	13875	18500	13.86	14.15	46.73	35.22
4750	9500	14250	19000	14.58	12.00	38.82	39.76
4875	9750	14625	19500	14.15	10.56	38.22	51.13
5000	10000	15000	20000	14.51	10.78	43.85	40.76

\*Harmonic Output below power level of X2 Output .



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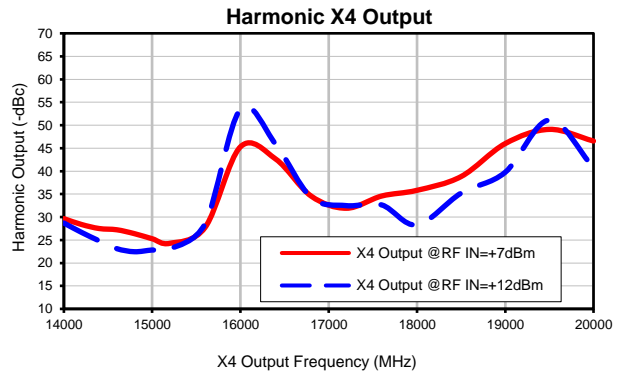
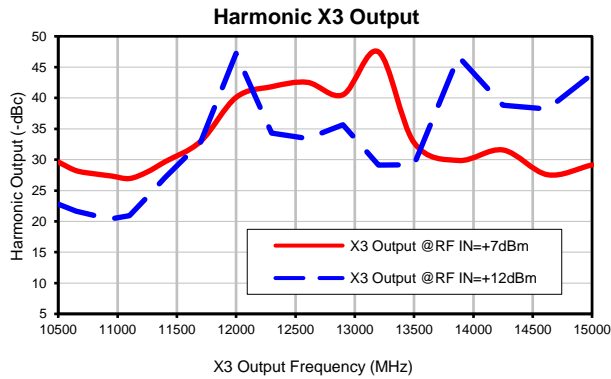
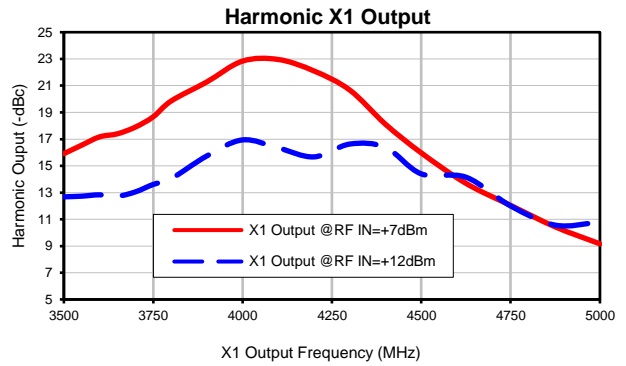
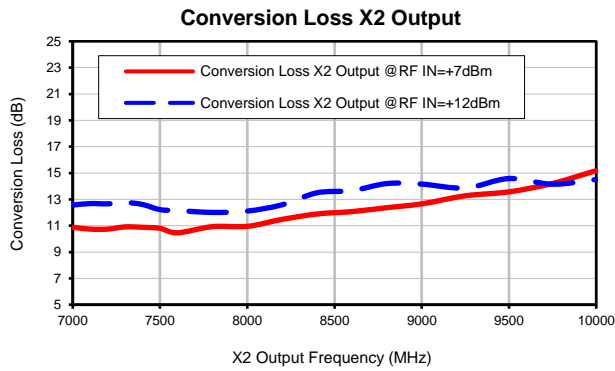


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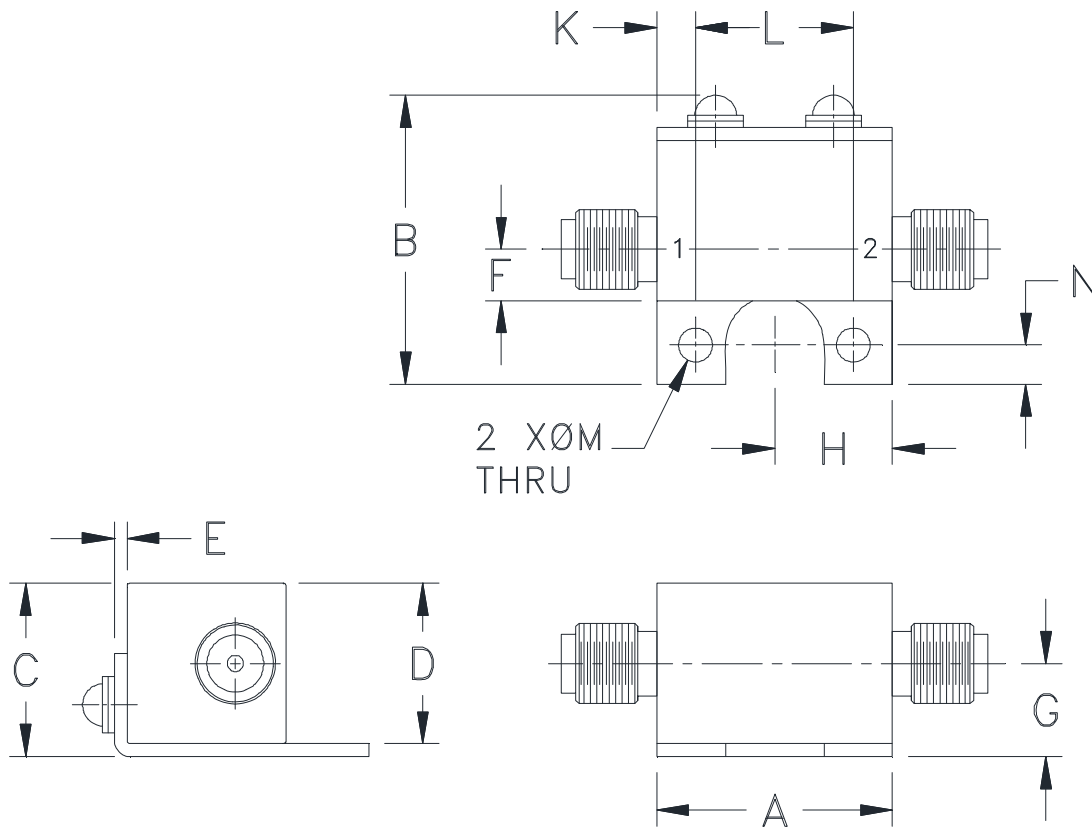
IF/RF MICROWAVE COMPONENTS

REV. OR  
ZX90-2-50-S+  
1/3/2019  
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## Typical Performance Curves



### Outline Dimensions



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N	WT, GRAM
JA1242	.74 (18.80)	.90 (22.86)	.54 (13.72)	.50 (12.70)	.04 (1.02)	.16 (4.06)	.29 (7.37)	.37 (9.40)	- -	.122 (3.10)	.496 (12.60)	.106 (2.69)	.122 (3.10)	19.0

**Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3Pl.  $\pm .015$ .**

**Tolerance on hole size and interaxes dimensions to be  $\pm .005$ .**

#### Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I