

X2 Frequency Multiplier

50Ω Output 2200 to 3800 MHz

ZX90-2-19-S+



Generic photo used for illustration purposes only

CASE STYLE: JA1242

Connectors	Model
SMA	ZX90-2-19-S+

+RoHS Compliant

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

Maximum Ratings

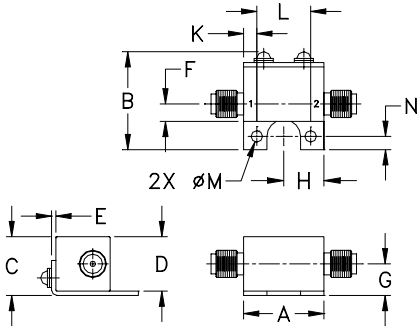
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Input Power, 25°C	23 dBm

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

Coaxial Connections

INPUT	2
OUTPUT	1

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

Features

- broadband
- low conversion loss, 10.5 dB typ.
- rugged construction
- protected by US Patent 6,790,049

Applications

- synthesizers
- local oscillators

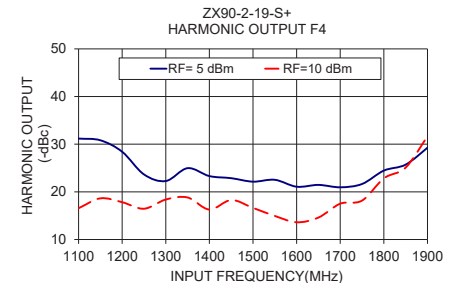
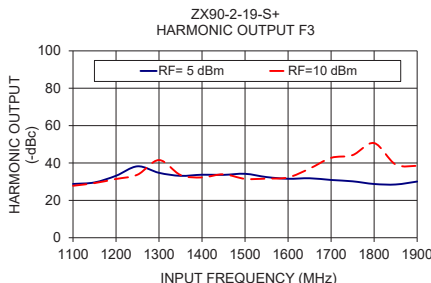
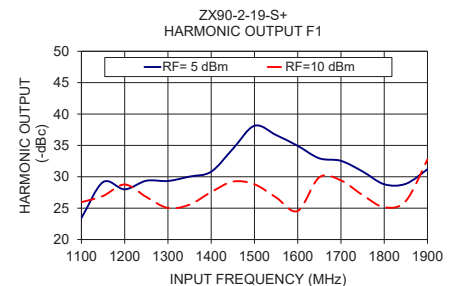
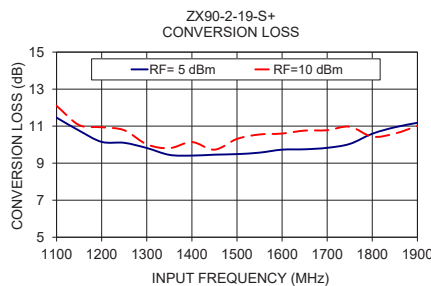
Electrical Specifications

MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1 Input	F2 Output	Min.	Max.	Typ.	Max.	F1		F3		F4	
							Typ.	Min.	Typ.	Min.	Typ.	Min.
2	1100-1900	2200-3800	5	10	10.5	14.5	27	20	30	23	17	11

* Harmonics of input frequency below the power level of F2

Typical Performance Data

Input Frequency (MHz)	INPUT RF= 5 dBm					INPUT RF= 10 dBm				
	Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)			Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)				
		F1	F3	F4		F1	F3	F4		
1100.00	11.46	23.43	28.77	31.18	12.10	25.95	27.81	16.56		
1150.00	10.76	29.15	29.59	30.82	11.06	26.94	29.25	18.64		
1200.00	10.15	28.00	33.16	28.41	10.94	28.77	31.44	17.83		
1250.00	10.10	29.37	38.22	23.66	10.78	26.78	33.74	16.46		
1300.00	9.82	29.33	34.73	22.27	10.02	25.03	41.56	18.39		
1350.00	9.45	30.03	33.13	24.97	9.81	25.56	33.58	18.82		
1400.00	9.41	30.81	33.72	23.31	10.14	27.56	32.27	16.29		
1450.00	9.46	34.44	33.65	22.87	9.73	29.23	33.94	18.28		
1500.00	9.49	38.13	34.21	22.14	10.31	28.80	31.51	16.64		
1550.00	9.57	36.65	32.46	22.53	10.55	26.71	31.65	14.95		
1600.00	9.73	34.93	31.55	21.08	10.60	24.56	32.26	13.62		
1650.00	9.75	32.94	31.83	21.46	10.76	29.92	36.99	14.61		
1700.00	9.83	32.54	30.91	20.96	10.78	29.42	42.75	17.52		
1750.00	10.04	30.85	30.19	21.65	10.97	27.09	44.22	18.17		
1800.00	10.59	28.81	28.76	24.46	10.43	25.15	50.65	22.83		
1850.00	10.94	28.88	28.49	25.71	10.60	26.14	39.20	25.09		
1900.00	11.18	31.20	30.07	29.26	11.01	32.76	38.51	31.67		



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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document 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



Frequency Multiplier (Doublers)

ZX90-2-19+

Typical Performance Data

FREQUENCY (MHz)				RF IN=+5dBm			
				CONVERSION LOSS (dB)	HARMONIC OUTPUT*		
					X 2 OUTPUT	X 1 OUTPUT	X 3 OUTPUT
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT	X 2 OUTPUT	X 1 OUTPUT	X 3 OUTPUT	X 4 OUTPUT
1050	2100	3150	4200	12.30	24.01	37.27	22.28
1100	2200	3300	4400	11.46	23.43	28.77	31.18
1150	2300	3450	4600	10.76	29.15	29.59	30.82
1200	2400	3600	4800	10.15	28.00	33.16	28.41
1250	2500	3750	5000	10.10	29.37	38.22	23.66
1300	2600	3900	5200	9.82	29.33	34.73	22.27
1350	2700	4050	5400	9.45	30.03	33.13	24.97
1400	2800	4200	5600	9.41	30.81	33.72	23.31
1450	2900	4350	5800	9.46	34.44	33.65	22.87
1500	3000	4500	6000	9.49	38.13	34.21	22.14
1550	3100	4650	6200	9.57	36.65	32.46	22.53
1600	3200	4800	6400	9.73	34.93	31.55	21.08
1650	3300	4950	6600	9.75	32.94	31.83	21.46
1700	3400	5100	6800	9.83	32.54	30.91	20.96
1750	3500	5250	7000	10.04	30.85	30.19	21.65
1800	3600	5400	7200	10.59	28.81	28.76	24.46
1850	3700	5550	7400	10.94	28.88	28.49	25.71
1900	3800	5700	7600	11.18	31.20	30.07	29.26
1950	3900	5850	7800	9.92	33.99	29.64	22.69

*Harmonic Output below power level of X 2 Output .

FREQUENCY (MHz)				RF IN=+10dBm			
				CONVERSION LOSS (dB)	HARMONIC OUTPUT*		
					X 2 OUTPUT	X 1 OUTPUT	X 3 OUTPUT
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT	X 2 OUTPUT	X 1 OUTPUT	X 3 OUTPUT	X 4 OUTPUT
1050	2100	3150	4200	12.40	28.59	33.72	21.13
1100	2200	3300	4400	12.10	25.95	27.81	16.56
1150	2300	3450	4600	11.06	26.94	29.25	18.64
1200	2400	3600	4800	10.94	28.77	31.44	17.83
1250	2500	3750	5000	10.78	26.78	33.74	16.46
1300	2600	3900	5200	10.02	25.03	41.56	18.39
1350	2700	4050	5400	9.81	25.56	33.58	18.82
1400	2800	4200	5600	10.14	27.56	32.27	16.29
1450	2900	4350	5800	9.73	29.23	33.94	18.28
1500	3000	4500	6000	10.31	28.80	31.51	16.64
1550	3100	4650	6200	10.55	26.71	31.65	14.95
1600	3200	4800	6400	10.60	24.56	32.26	13.62
1650	3300	4950	6600	10.76	29.92	36.99	14.61
1700	3400	5100	6800	10.78	29.42	42.75	17.52
1750	3500	5250	7000	10.97	27.09	44.22	18.17
1800	3600	5400	7200	10.43	25.15	50.65	22.83
1850	3700	5550	7400	10.60	26.14	39.20	25.09
1900	3800	5700	7600	11.01	32.76	38.51	31.67
1950	3900	5850	7800	11.57	30.38	35.06	29.33

*Harmonic Output below power level of X 2 Output .

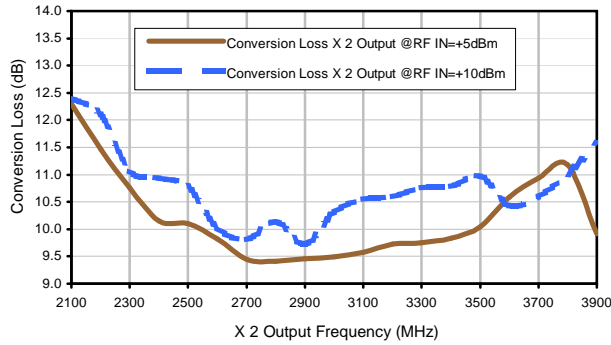


Frequency Multiplier (Doublers)

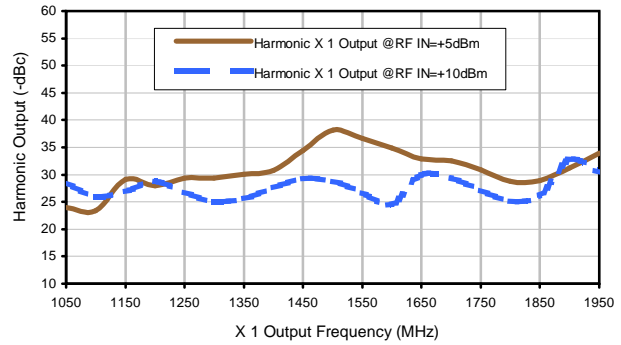
ZX90-2-19+

Typical Performance Curves

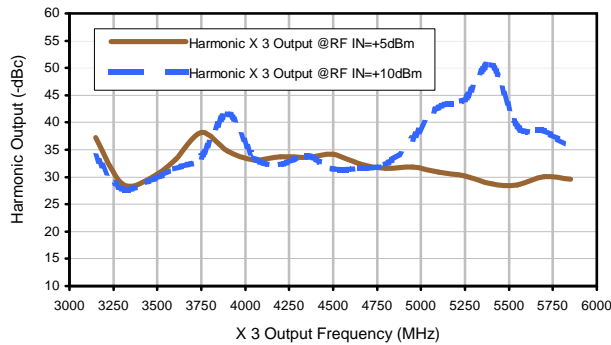
Conversion Loss X 2 Output



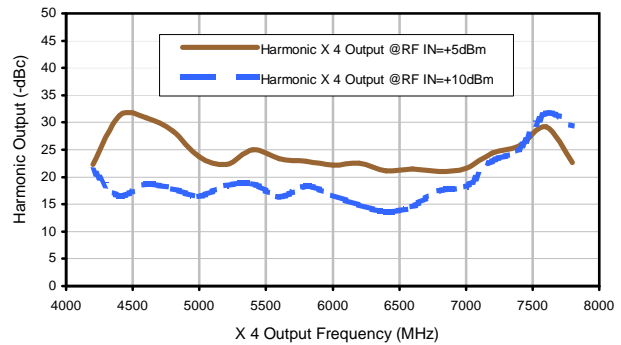
Harmonic X 1 Output



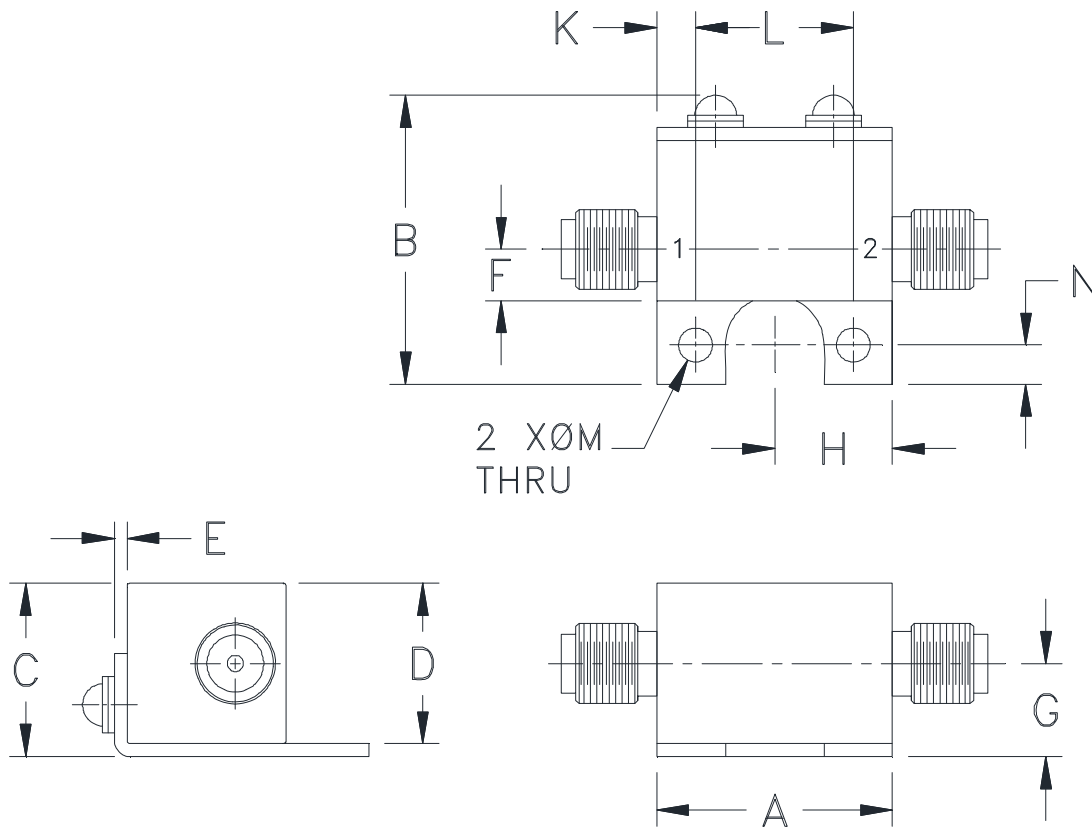
Harmonic X 3 Output



Harmonic X 4 Output



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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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
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