

X3 Frequency Multiplier

50Ω Output 6000 to 8100 MHz

ZX90-3-812+



Generic photo used for illustration purposes only

CASE STYLE: JA1242

Connectors Model
SMA ZX90-3-812-S+

+RoHS Compliant

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

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input Power	17 dBm

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

Coaxial Connections

INPUT	1
OUTPUT	2

Features

- broadband
- high rejection F1, 30 dBc typ.; F2, 48 dBc typ., F4, 55 dBc typ.
- rugged construction
- protected by US Patent 6,790,049

Applications

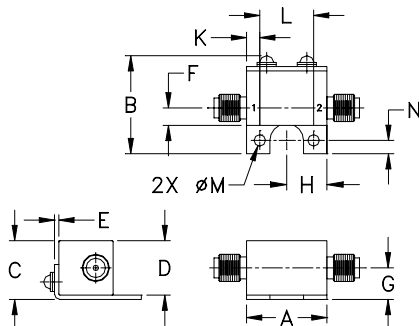
- synthesizers
- local oscillators
- satellite up and down converters

Electrical Specifications

MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1 Input	F3 Output	Min.	Max.	Typ.	Max.	F1		F2		F4	
3	2000-2700	6000-8100	0	5	15	22	30	21	48	30	48	27

* Harmonics of input frequency below the power level of F3

Outline Drawing



Outline Dimensions (inch/mm)

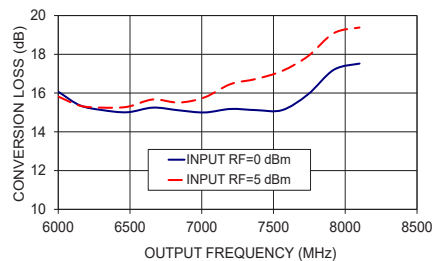
A	B	C	D	E	F	G
.74	.90	.54	.50	.04	.16	.29
18.80	22.86	13.72	12.70	1.02	4.06	7.37

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

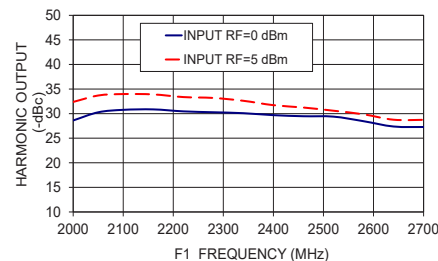
Typical Performance Data

Input Frequency (MHz)	INPUT RF= 0 dBm				INPUT RF= 5 dBm			
	Conversion Loss (dB)	Harmonic Output Below F3 (-dBc)			Conversion Loss (dB)	Harmonic Output Below F3 (-dBc)		
		F3	F1	F2		F4	F3	F1
2000.00	16.07	28.61	39.71	32.76	15.82	32.38	40.92	47.75
2050.00	15.37	30.27	43.04	36.29	15.35	33.69	42.23	44.35
2100.00	15.13	30.77	52.29	38.99	15.25	33.98	55.15	40.09
2160.00	15.01	30.86	54.04	44.45	15.29	33.91	64.18	43.05
2220.00	15.25	30.46	54.81	46.76	15.67	33.37	58.33	47.65
2280.00	15.11	30.28	57.32	48.63	15.51	33.19	53.77	53.41
2340.00	15.00	30.09	55.94	49.94	15.78	32.61	49.10	55.01
2400.00	15.18	29.69	50.59	52.35	16.46	31.72	45.50	55.73
2460.00	15.12	29.47	46.97	51.62	16.73	31.24	43.44	51.87
2520.00	15.12	29.39	44.21	49.41	17.14	30.59	41.38	47.42
2580.00	15.93	28.46	43.39	47.25	17.90	29.86	39.40	44.54
2640.00	17.20	27.38	42.79	44.54	19.09	28.76	37.26	41.18
2700.00	17.52	27.28	42.93	43.92	19.38	28.74	36.75	39.96

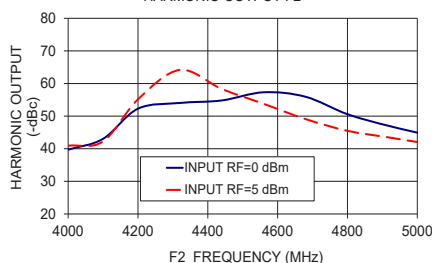
ZX90-3-812-S+ CONVERSION LOSS



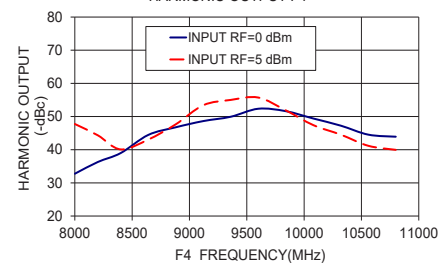
ZX90-3-812-S+ HARMONIC OUTPUT F1



ZX90-3-812-S+ HARMONIC OUTPUT F2



ZX90-3-812-S+ HARMONIC OUTPUT F4



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-Circuit's 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 (Tripler)

ZX90-3-812+

Typical Performance Data

FREQUENCY (MHz)				RF IN=0 dBm			
				CONVERSION LOSS (dB)	HARMONIC OUTPUT*		
					X 3 OUTPUT	X 1 OUTPUT	X 2 OUTPUT
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT				
1700	3400	5100	6800	19.29	36.60	53.52	38.60
1750	3500	5250	7000	19.09	37.05	49.33	39.47
1800	3600	5400	7200	18.66	38.55	46.43	37.94
1840	3680	5520	7360	18.56	41.97	43.47	36.31
1880	3760	5640	7520	18.06	47.02	41.86	31.32
1920	3840	5760	7680	19.33	25.14	39.70	26.36
1960	3920	5880	7840	16.86	25.52	48.03	30.69
2000	4000	6000	8000	16.07	28.61	39.71	32.76
2050	4100	6150	8200	15.37	30.27	43.04	36.29
2100	4200	6300	8400	15.13	30.77	52.29	38.99
2160	4320	6480	8640	15.01	30.86	54.04	44.45
2220	4440	6660	8880	15.25	30.46	54.81	46.76
2280	4560	6840	9120	15.11	30.28	57.32	48.63
2340	4680	7020	9360	15.00	30.09	55.94	49.94
2400	4800	7200	9600	15.18	29.69	50.59	52.35
2460	4920	7380	9840	15.12	29.47	46.97	51.62
2520	5040	7560	10080	15.12	29.39	44.21	49.41
2580	5160	7740	10320	15.93	28.46	43.39	47.25
2640	5280	7920	10560	17.20	27.38	42.79	44.54
2700	5400	8100	10800	17.52	27.28	42.93	43.92
2750	5500	8250	11000	18.52	26.71	41.28	42.69
2800	5600	8400	11200	19.64	26.14	39.04	41.57
2840	5680	8520	11360	20.07	26.47	36.83	41.17
2886	5772	8658	11544	20.37	27.41	35.32	41.56
2932	5864	8796	11728	20.64	29.07	34.47	40.56
2978	5956	8934	11912	21.55	31.52	32.68	39.17
3024	6048	9072	12096	22.22	36.43	30.83	38.12
3070	6140	9210	12280	22.11	33.80	29.85	36.95
3116	6232	9348	12464	22.04	26.50	28.99	35.71
3162	6324	9486	12648	22.75	20.99	27.53	33.83
3208	6416	9624	12832	23.73	16.08	25.70	32.78
3254	6508	9762	13016	23.33	13.17	25.06	33.39
3300	6600	9900	13200	22.74	10.92	25.13	35.32

*Harmonic Output below power level of X 3 Output .



Frequency Multiplier (Tripler)

ZX90-3-812+

Typical Performance Data

FREQUENCY (MHz)				RF IN=+5 dBm			
				CONVERSION LOSS (dB)	HARMONIC OUTPUT*		
					X 3 OUTPUT	X 1 OUTPUT	X 2 OUTPUT
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT				
1700	3400	5100	6800	19.04	36.96	62.95	30.39
1750	3500	5250	7000	18.49	37.72	57.42	32.68
1800	3600	5400	7200	17.83	38.97	52.47	33.65
1840	3680	5520	7360	17.54	41.69	46.94	35.25
1880	3760	5640	7520	16.92	56.69	46.51	34.82
1920	3840	5760	7680	17.06	31.56	47.98	34.76
1960	3920	5880	7840	16.31	29.83	55.19	36.24
2000	4000	6000	8000	15.82	32.38	40.92	47.75
2050	4100	6150	8200	15.35	33.69	42.23	44.35
2100	4200	6300	8400	15.25	33.98	55.15	40.09
2160	4320	6480	8640	15.29	33.91	64.18	43.05
2220	4440	6660	8880	15.67	33.37	58.33	47.65
2280	4560	6840	9120	15.51	33.19	53.77	53.41
2340	4680	7020	9360	15.78	32.61	49.10	55.01
2400	4800	7200	9600	16.46	31.72	45.50	55.73
2460	4920	7380	9840	16.73	31.24	43.44	51.87
2520	5040	7560	10080	17.14	30.59	41.38	47.42
2580	5160	7740	10320	17.90	29.86	39.40	44.54
2640	5280	7920	10560	19.09	28.76	37.26	41.18
2700	5400	8100	10800	19.38	28.74	36.75	39.96
2750	5500	8250	11000	20.20	28.34	35.67	38.65
2800	5600	8400	11200	21.09	28.03	34.44	37.17
2840	5680	8520	11360	21.39	28.62	33.41	36.95
2886	5772	8658	11544	21.33	30.06	32.56	37.24
2932	5864	8796	11728	21.29	32.16	31.75	36.63
2978	5956	8934	11912	21.86	35.55	30.53	35.74
3024	6048	9072	12096	22.44	44.64	29.33	35.29
3070	6140	9210	12280	22.14	38.06	28.98	34.47
3116	6232	9348	12464	21.92	29.73	29.27	33.64
3162	6324	9486	12648	22.56	24.25	28.73	32.46
3208	6416	9624	12832	23.25	19.59	28.47	32.21
3254	6508	9762	13016	22.60	16.97	28.93	33.46
3300	6600	9900	13200	21.75	14.90	29.34	35.89

*Harmonic Output below power level of X 3 Output .

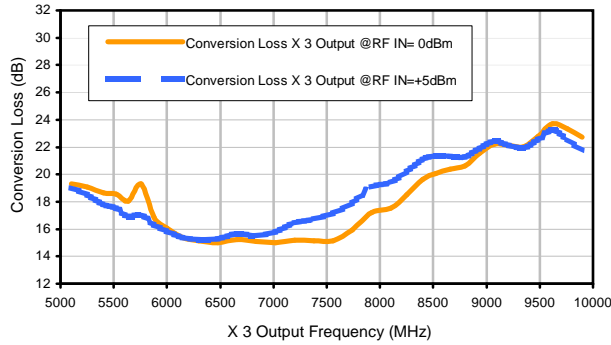


Frequency Multiplier (Tripler)

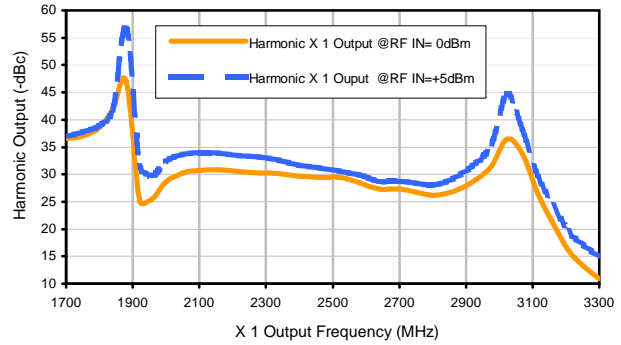
ZX90-3-812+

Typical Performance Curves

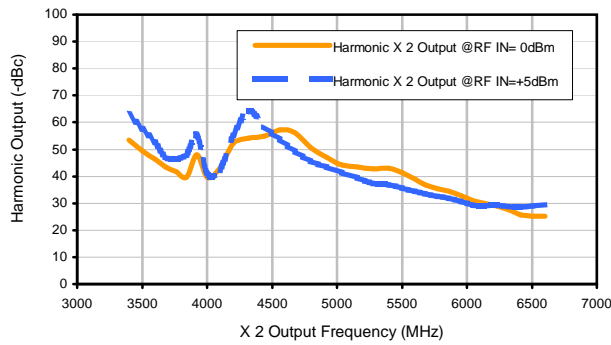
Conversion Loss X 3 Output



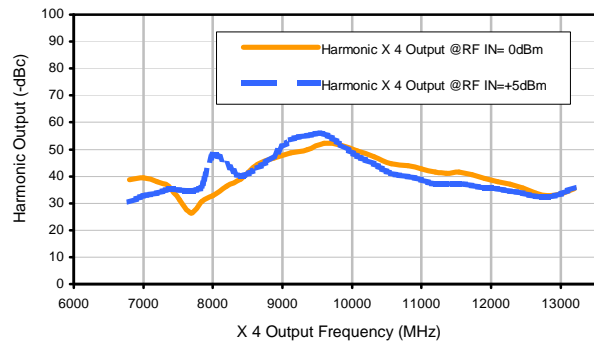
Harmonic X 1 Output



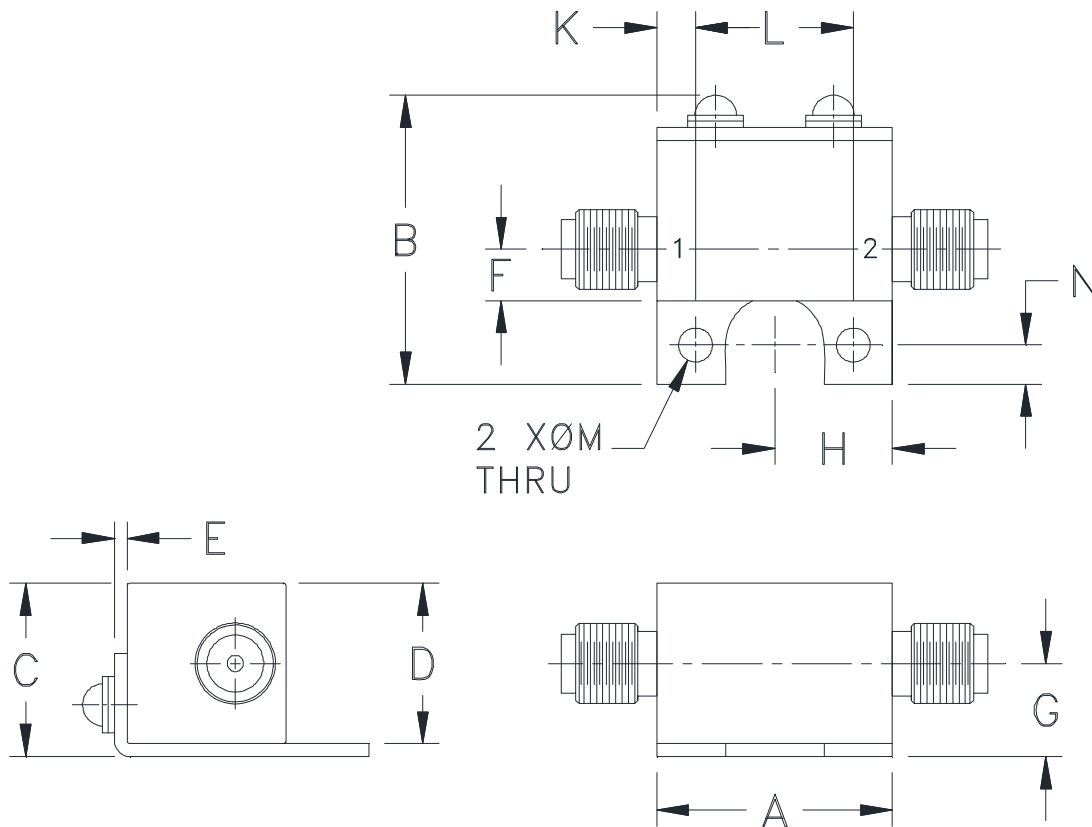
Harmonic X 2 Output



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	-40° to 85°C	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