X3 Frequency Multiplier

50Ω Output 5100 to 6900 MHz

ZX90-3-692-S+

Generic photo used for illustration purposes only

CASE STYLE: JA1242

Connectors	Model
SMA	ZX90-3-692-S+

+RoHS Compliant

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

Maximum Ratings

Operating Temperature	-45°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

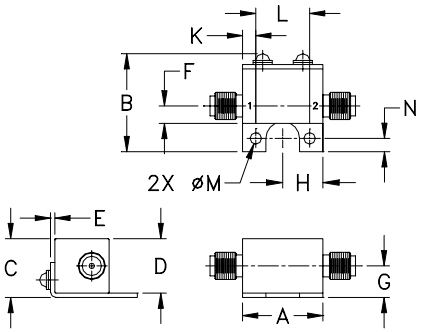
Features

- broadband
- low conversion loss, 14.7 dB typ.
- high rejection F2, 40 dBc typ., F4, 40 dBc typ.
- protected by US Patent 6,790,049

Applications

- synthesizers
- local oscillators
- satellite up and down converters

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

Electrical Specifications

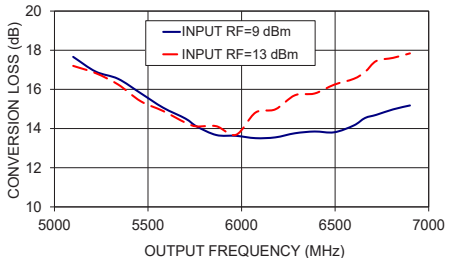
MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1	F3					F1		F2		F4	
	Input	Output	Min.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.
3	1700-2300	5100-6900	9	13	14.7	20	40	29	40	25	40	25

* Harmonics of input frequency below the power level of F3

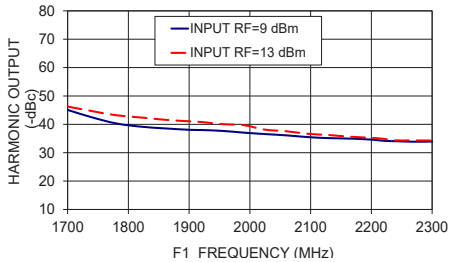
Typical Performance Data

Input Frequency (MHz)	INPUT RF= 9 dBm Conversion Loss (dB)	Harmonic Output Below F3 (-dBc) F1	F2	F4	INPUT RF= 13 dBm Conversion Loss (dB)	Harmonic Output Below F3 (-dBc) F1	F2	F4
1700.00	17.66	45.09	38.29	30.95	17.20	46.26	42.35	37.26
1740.00	16.91	42.47	43.03	33.81	16.83	44.67	45.43	41.48
1780.00	16.54	40.32	47.74	35.67	16.25	43.20	48.36	43.12
1820.00	15.81	39.19	52.11	38.92	15.40	42.43	49.87	47.84
1860.00	15.07	38.57	50.31	42.93	14.90	41.61	51.99	47.31
1900.00	14.51	38.08	47.88	45.91	14.30	41.07	49.21	46.19
1920.00	14.11	37.99	47.14	47.16	14.11	40.82	49.27	47.80
1955.00	13.67	37.69	45.51	47.61	14.12	40.07	46.82	51.10
1990.00	13.63	37.07	44.16	48.80	13.68	39.71	42.91	53.60
2025.00	13.51	36.57	42.87	49.78	14.82	38.12	39.54	50.88
2060.00	13.55	36.12	41.51	50.68	14.98	37.56	36.44	47.05
2095.00	13.76	35.51	39.27	49.20	15.70	36.67	33.89	44.01
2130.00	13.85	35.14	37.68	47.32	15.79	36.23	32.14	38.63
2165.00	13.81	34.97	35.97	44.81	16.24	35.63	31.61	37.48
2200.00	14.16	34.62	34.71	42.48	16.54	35.24	31.37	36.94
2220.00	14.54	34.19	33.82	41.01	16.89	34.89	31.43	36.68
2240.00	14.70	34.06	33.21	39.49	17.45	34.34	31.26	35.98
2270.00	14.98	33.87	32.75	38.13	17.61	34.33	31.71	35.46
2300.00	15.18	33.94	32.13	36.76	17.84	34.29	32.61	37.36

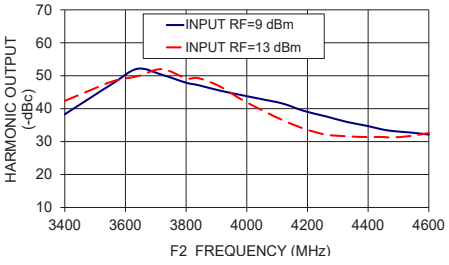
ZX90-3-692-S+
CONVERSION LOSS



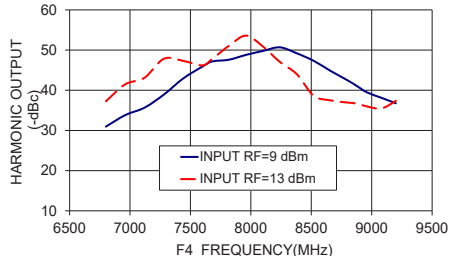
ZX90-3-692-S+
HARMONIC OUTPUT F1



ZX90-3-692-S+
HARMONIC OUTPUT F2



ZX90-3-692-S+
HARMONIC OUTPUT F4



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.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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Frequency Multiplier (Tripler) ZX90-3-692+

Typical Performance Data

FREQUENCY (MHz)				RF IN=+9 dBm			
				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT	X 3OUTPUT	X 1 OUTPUT	X 2 OUTPUT	X 4 OUTPUT
1500	3000	4500	6000	19.86	18.51	47.56	33.55
1550	3100	4650	6200	19.49	18.32	30.89	22.70
1600	3200	4800	6400	18.87	31.12	31.52	27.75
1650	3300	4950	6600	18.54	40.89	34.92	29.60
1700	3400	5100	6800	17.66	45.09	38.29	30.95
1740	3480	5220	6960	16.91	42.47	43.03	33.81
1780	3560	5340	7120	16.54	40.32	47.74	35.67
1820	3640	5460	7280	15.81	39.19	52.11	38.92
1860	3720	5580	7440	15.07	38.57	50.31	42.93
1900	3800	5700	7600	14.51	38.08	47.88	45.91
1920	3840	5760	7680	14.11	37.99	47.14	47.16
1955	3910	5865	7820	13.67	37.69	45.51	47.61
1990	3980	5970	7960	13.63	37.07	44.16	48.80
2025	4050	6075	8100	13.51	36.57	42.87	49.78
2060	4120	6180	8240	13.55	36.12	41.51	50.68
2095	4190	6285	8380	13.76	35.51	39.27	49.20
2130	4260	6390	8520	13.85	35.14	37.68	47.32
2165	4330	6495	8660	13.81	34.97	35.97	44.81
2200	4400	6600	8800	14.16	34.62	34.71	42.48
2220	4440	6660	8880	14.54	34.19	33.82	41.01
2240	4480	6720	8960	14.70	34.06	33.21	39.49
2270	4540	6810	9080	14.98	33.87	32.75	38.13
2300	4600	6900	9200	15.18	33.94	32.13	36.76
2355	4710	7065	9420	14.93	34.87	31.46	37.68
2410	4820	7230	9640	15.67	35.58	30.66	38.12
2465	4930	7395	9860	16.45	37.41	30.32	38.24
2520	5040	7560	10080	17.61	40.60	30.32	38.05
2575	5150	7725	10300	19.07	36.88	30.13	39.56
2630	5260	7890	10520	19.91	28.93	31.09	39.94
2685	5370	8055	10740	20.79	22.46	31.57	41.18
2740	5480	8220	10960	22.01	16.78	30.95	41.64
2795	5590	8385	11180	22.94	12.09	30.33	40.69
2850	5700	8550	11400	22.54	8.84	31.10	42.14

*Harmonic Output below power level of X 3 Output .

Frequency Multiplier (Tripler) ZX90-3-692+

Typical Performance Data

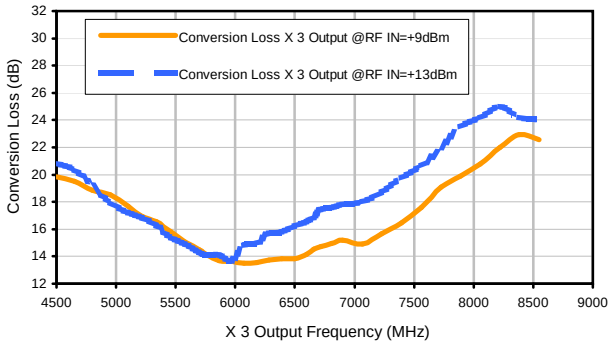
FREQUENCY (MHz)				RF IN=+13 dBm			
				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X 1 OUTPUT	X 2 OUTPUT	X 3 OUTPUT	X 4 OUTPUT	X 3 OUTPUT	X 1 OUTPUT	X 2 OUTPUT	X 4 OUTPUT
1500	3000	4500	6000	20.81	20.87	53.93	33.09
1550	3100	4650	6200	20.38	20.59	30.97	22.31
1600	3200	4800	6400	19.16	33.84	33.49	27.98
1650	3300	4950	6600	17.98	43.18	38.02	33.71
1700	3400	5100	6800	17.20	46.26	42.35	37.26
1740	3480	5220	6960	16.83	44.67	45.43	41.48
1780	3560	5340	7120	16.25	43.20	48.36	43.12
1820	3640	5460	7280	15.40	42.43	49.87	47.84
1860	3720	5580	7440	14.90	41.61	51.99	47.31
1900	3800	5700	7600	14.30	41.07	49.21	46.19
1920	3840	5760	7680	14.11	40.82	49.27	47.80
1955	3910	5865	7820	14.12	40.07	46.82	51.10
1990	3980	5970	7960	13.68	39.71	42.91	53.60
2025	4050	6075	8100	14.82	38.12	39.54	50.88
2060	4120	6180	8240	14.98	37.56	36.44	47.05
2095	4190	6285	8380	15.70	36.67	33.89	44.01
2130	4260	6390	8520	15.79	36.23	32.14	38.63
2165	4330	6495	8660	16.24	35.63	31.61	37.48
2200	4400	6600	8800	16.54	35.24	31.37	36.94
2220	4440	6660	8880	16.89	34.89	31.43	36.68
2240	4480	6720	8960	17.45	34.34	31.26	35.98
2270	4540	6810	9080	17.61	34.33	31.71	35.46
2300	4600	6900	9200	17.84	34.29	32.61	37.36
2355	4710	7065	9420	18.00	34.96	32.81	34.82
2410	4820	7230	9640	18.73	35.72	32.08	35.21
2465	4930	7395	9860	19.75	37.24	31.62	35.97
2520	5040	7560	10080	20.66	39.45	31.62	37.23
2575	5150	7725	10300	22.00	35.80	31.62	39.64
2630	5260	7890	10520	23.52	28.00	31.45	42.55
2685	5370	8055	10740	24.18	22.16	31.06	50.89
2740	5480	8220	10960	25.00	16.83	29.59	47.31
2795	5590	8385	11180	24.21	13.74	29.97	47.26
2850	5700	8550	11400	24.02	10.31	30.17	47.33

*Harmonic Output below power level of X 3 Output .

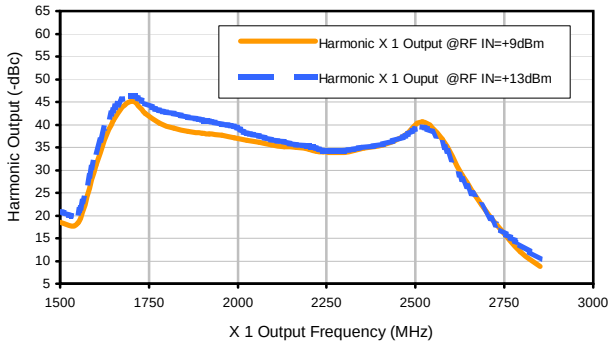
Frequency Multiplier (Tripler) ZX90-3-692+

Typical Performance Curves

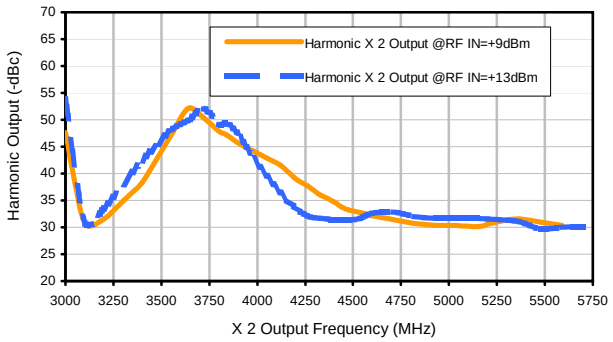
Conversion Loss X 3 Output



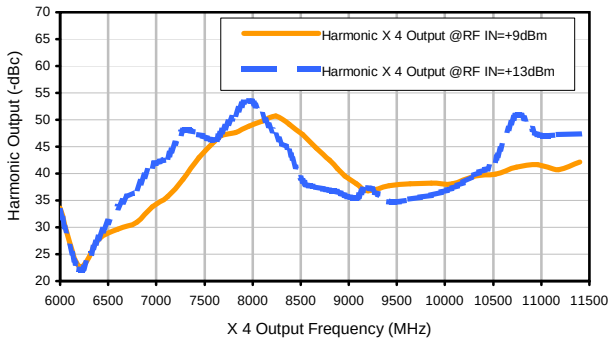
Harmonic X 1 Output



Harmonic X 2 Output



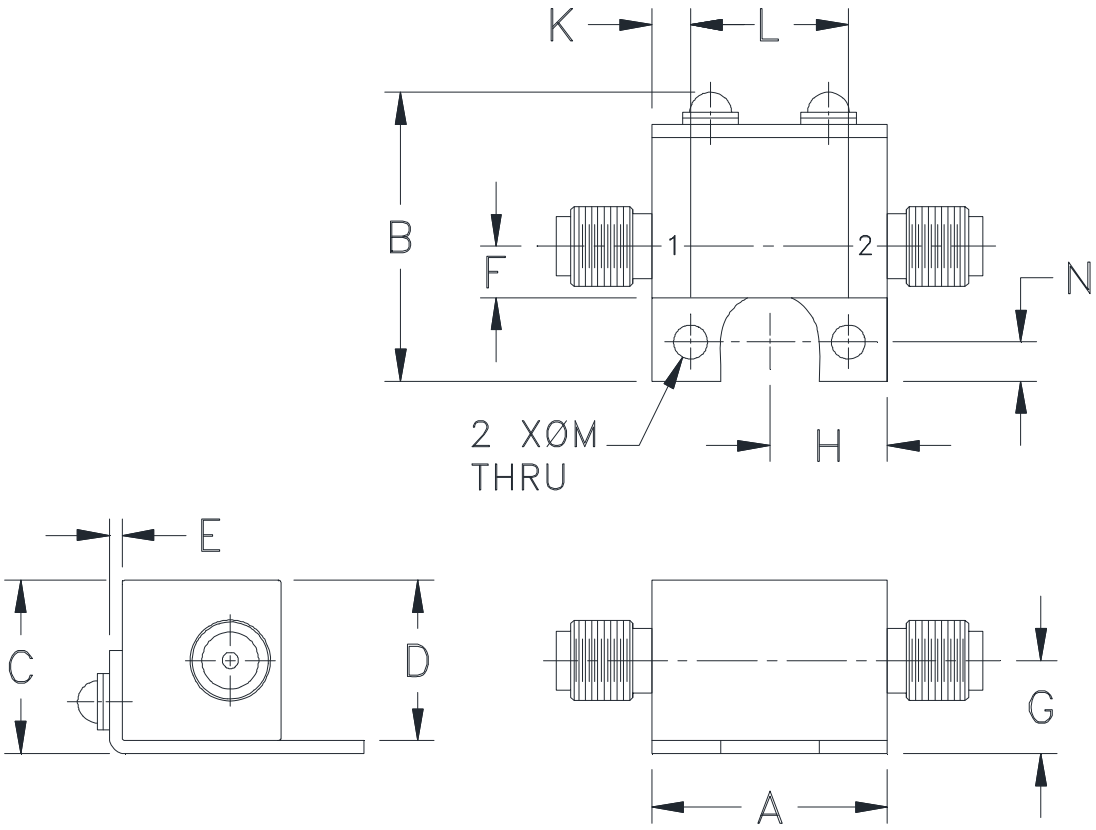
Harmonic X 4 Output



Case Style JA

JA1242

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. ± .03; 3Pl. ± .015.
Tolerance on hole size and interaxes dimensions to be ±.005.

Notes:

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

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Environmental Specifications **ENV28T5**

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