

X2 Frequency Multiplier ZXF90-2-183-K+

50Ω Output 12 to 18 GHz

The Big Deal

- Ultra-wideband, output from 12 to 18 GHz
- Wide input power range, +14 to +20 dBm
- Low conversion loss, 17 dB
- Good fundamental and harmonic suppression:
F1, 35 dBc; F3, 43 dBc
- Patented, Reflectionless Filters on Input and Output absorb and terminate out-of-band signals internally.
- Reduced need for external attenuator pads that increase overall conversion loss.



CASE STYLE: UU2776

Product Overview

Mini-Circuits' ZXF90-2-183-K+ is an ultra-wideband frequency doubler, converting input frequencies from 6 to 9 GHz into output frequencies from 12 to 18 GHz. Its wide output range makes this model ideal for a wide range of broadband systems including satellite up and down converters, defense radar and communications and more. The multiplier comes housed in a rugged, 2.92mm connectorized housing (0.68 x 0.73 x 0.36"), saving space in crowded layouts.

Key Features

Feature	Advantages
Broadband, 12 to 18 GHz output	With an output frequency range spanning 12 to 18 GHz, this multiplier supports broadband applications such as defense and instrumentation as well as a wide range of narrowband system requirements.
Low conversion loss, 17 dB typ.	With a low conversion loss, ZXF90-2-183-K+ produces higher output power, reducing the need for amplification.
Excellent fundamental and harmonic suppression: <ul style="list-style-type: none">• F1, 35 dBc• F3, 43 dBc• F4, 20 dBc	Reduces spurious signals and the need for additional filtering.
Wide input power range, +14 to +20 dBm	Wide input power signal range accommodates different input signal levels while still maintaining a low conversion loss.
2.92mm-F connectorized housing	Ideal for assembled systems and lab use. High frequency connector mates with 2.92mm and SMA connectors.
Small size, 0.68 x 0.73 x 0.36"	Saves space in crowded layouts.

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.
C. 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



X2 Frequency Multiplier

50Ω Output 12 to 18 GHz

ZXF90-2-183-K+



Generic photo used for illustration purposes only

CASE STYLE: UU2776

Connectors	Model
2.92 mm Female	ZXF90-2-183-K+

+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	1
OUTPUT	2

Features

- broadband
- low conversion loss, 17 dB typ.
- excellent harmonics suppression F1, 35 dBc typ F3 43 dBc typ.
- rugged construction

Applications

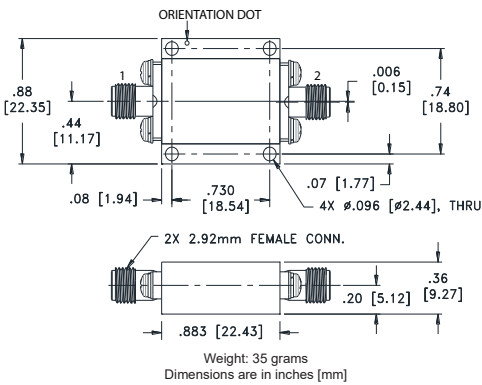
- synthesizers
- local oscillators
- satellite up and down converters
- defense radar and communications
- mobile
- fixed microwave

Electrical Specifications

Parameter	Min.	Typ.	Max.	Unit
Multiplier Factor		2		
Frequency Range, Input (F1)	6	—	9	GHz
Frequency Range, Output (F2)	12	—	18	GHz
Input Power	14	—	20	dBm
Conversion Loss	—	17	25	dB
Harmonic Output*, dBc				dBc
F1	—	35	—	
F3	—	43	—	
F4	—	20	—	

* Harmonics of input frequency below the power level of F2

Outline Drawing



Typical Performance Data

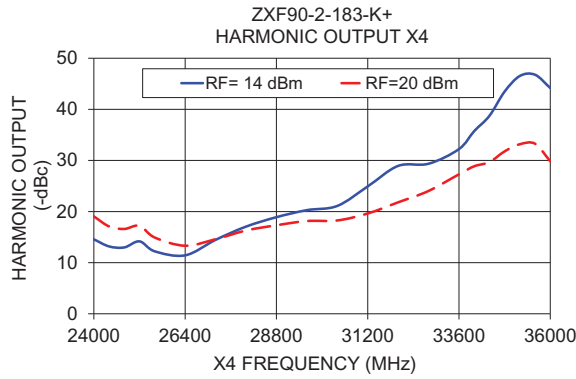
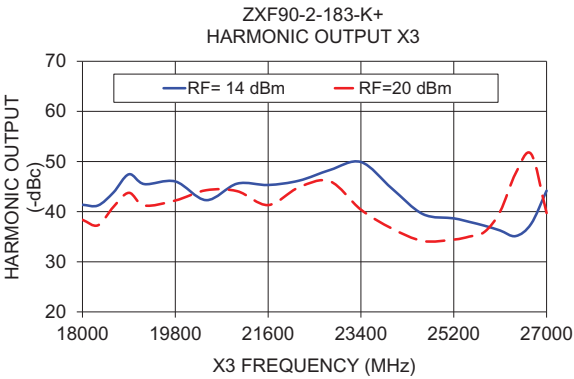
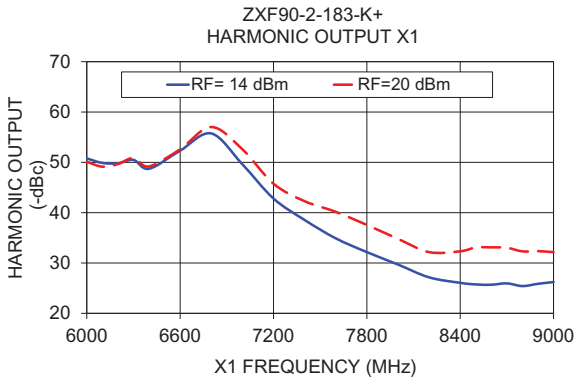
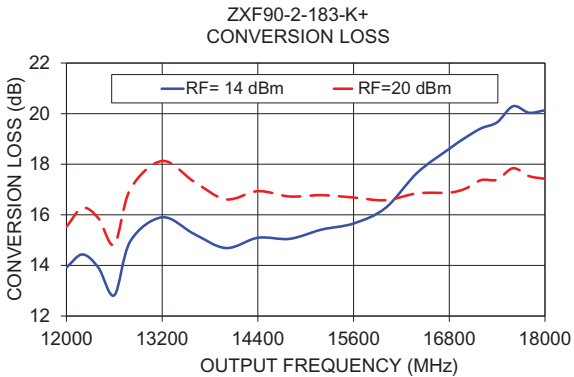
Input Frequency (GHz)	INPUT RF= 14 dBm					INPUT RF= 20 dBm			
	Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)			Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)			
		F1	F3	F4		F1	F3	F4	
6000	13.92	50.78	41.37	14.57	15.53	50.11	38.37	19.05	
6100	14.44	49.89	41.23	13.18	16.27	49.14	37.28	17.10	
6200	13.92	49.81	43.82	12.98	15.87	49.66	40.94	16.60	
6300	12.82	50.49	47.45	14.17	14.83	50.85	43.76	17.22	
6400	14.95	48.73	45.50	12.22	17.01	49.19	41.22	14.92	
6600	15.90	52.32	46.03	11.43	18.13	52.59	42.22	13.31	
6800	15.25	55.74	42.29	14.47	17.31	57.02	44.28	14.59	
7000	14.69	49.62	45.59	17.05	16.61	52.59	44.09	16.29	
7200	15.09	42.82	45.32	18.90	16.94	45.77	41.31	17.32	
7400	15.05	38.55	46.18	20.27	16.73	42.28	44.87	18.14	
7600	15.42	34.91	48.31	21.10	16.78	40.17	46.05	18.26	
7800	15.66	32.17	49.90	24.92	16.68	37.57	40.39	19.62	
8000	16.27	29.70	44.62	28.93	16.58	34.80	36.64	21.81	
8200	17.67	27.15	39.52	29.36	16.85	32.16	34.15	24.03	
8400	18.61	26.06	38.66	32.23	16.88	32.33	34.43	27.29	
8500	19.05	25.74	37.96	35.74	17.03	33.08	35.02	28.86	
8600	19.42	25.68	37.18	38.73	17.37	33.11	35.99	29.68	
8700	19.66	25.95	36.24	43.48	17.39	33.03	40.03	31.78	
8800	20.29	25.42	35.12	46.53	17.84	32.31	47.65	33.17	
8900	20.04	25.87	37.56	46.77	17.53	32.36	51.52	33.27	
9000	20.13	26.21	44.18	44.18	17.43	32.15	39.73	29.84	

Notes

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ZXF90-2-183-K+



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Typical Performance Data

Frequency (MHz)				RF IN = 14dBm			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X2 Output	X1 Output	X3 Output	X4 Output
5800	11600	17400	23200	13.96	51.42	40.68	15.25
5850	11700	17550	23400	13.68	51.49	41.33	15.05
5900	11800	17700	23600	13.09	51.83	41.95	15.68
5950	11900	17850	23800	13.47	51.43	41.63	16.20
6000	12000	18000	24000	13.92	50.78	41.37	14.57
6050	12100	18150	24200	14.31	50.25	40.90	13.61
6100	12200	18300	24400	14.44	49.89	41.23	13.18
6200	12400	18600	24800	13.92	49.81	43.82	12.98
6300	12600	18900	25200	12.82	50.49	47.45	14.17
6400	12800	19200	25600	14.95	48.73	45.50	12.22
6500	13000	19500	26000	15.78	49.63	43.85	11.22
6600	13200	19800	26400	15.90	52.32	46.03	11.43
6700	13400	20100	26800	15.09	55.01	46.02	14.06
6800	13600	20400	27200	15.25	55.74	42.29	14.47
6900	13800	20700	27600	15.38	53.63	43.30	15.05
7000	14000	21000	28000	14.69	49.62	45.59	17.05
7100	14200	21300	28400	14.59	46.03	46.51	18.55
7200	14400	21600	28800	15.09	42.82	45.32	18.90
7300	14600	21900	29200	15.43	40.27	44.88	19.33
7400	14800	22200	29600	15.05	38.55	46.18	20.27
7500	15000	22500	30000	15.26	36.56	46.82	20.43
7600	15200	22800	30400	15.42	34.91	48.31	21.10
7700	15400	23100	30800	16.15	32.85	49.53	22.04
7800	15600	23400	31200	15.66	32.17	49.90	24.92
7900	15800	23700	31600	15.74	31.07	48.04	27.56
8000	16000	24000	32000	16.27	29.70	44.62	28.93
8100	16200	24300	32400	17.02	28.27	41.79	29.01
8200	16400	24600	32800	17.67	27.15	39.52	29.36
8300	16600	24900	33200	18.19	26.50	38.62	29.79
8400	16800	25200	33600	18.61	26.06	38.66	32.23
8500	17000	25500	34000	19.05	25.74	37.96	35.74
8600	17200	25800	34400	19.42	25.68	37.18	38.73
8700	17400	26100	34800	19.66	25.95	36.24	43.48
8800	17600	26400	35200	20.29	25.42	35.12	46.53
8900	17800	26700	35600	20.04	25.87	37.56	46.77
9000	18000	27000	36000	20.13	26.21	40.49	44.18
9050	18100	27150	36200	19.82	26.80	39.68	41.60
9100	18200	27300	36400	19.92	26.95	36.92	39.30
9150	18300	27450	36600	20.45	26.37	35.04	38.31
9200	18400	27600	36800	19.37	27.39	34.37	35.95

*Harmonic Output below power level of X2 Output .



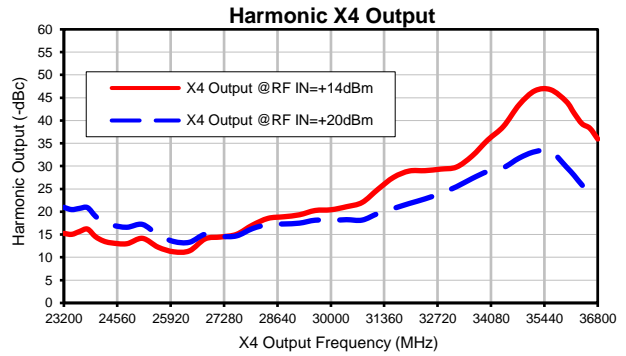
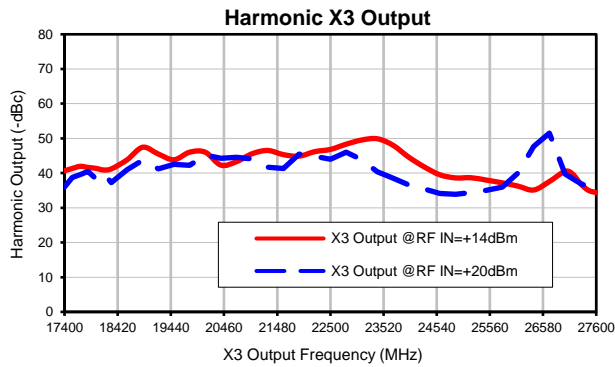
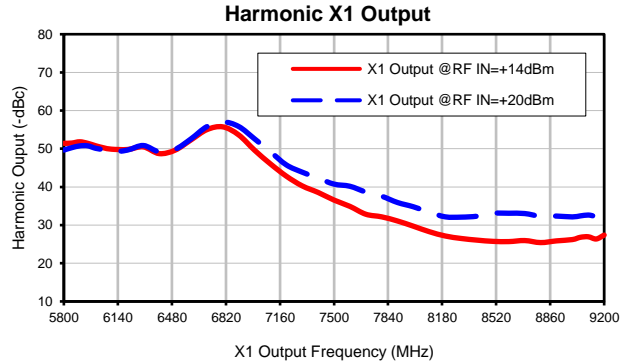
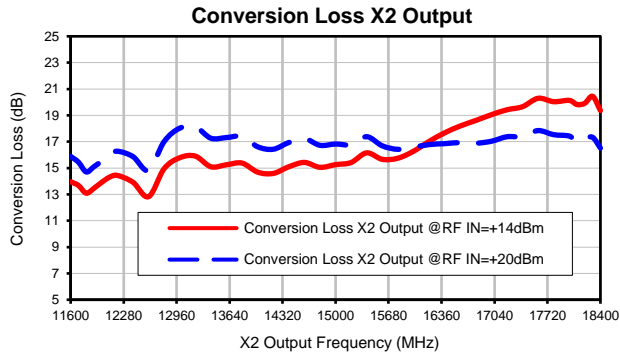
Typical Performance Data

Frequency (MHz)				RF IN = 20dBm			
				Conversion Loss (dB)	Harmonic Output* (-dBc)		
X1 Output	X2 Output	X3 Output	X4 Output	X2 Output	X1 Output	X3 Output	X4 Output
5800	11600	17400	23200	15.88	49.66	35.98	20.97
5850	11700	17550	23400	15.45	50.28	38.76	20.47
5900	11800	17700	23600	14.70	50.75	39.53	20.74
5950	11900	17850	23800	15.11	50.77	40.50	20.91
6000	12000	18000	24000	15.53	50.11	38.37	19.05
6050	12100	18150	24200	16.01	49.74	40.01	17.72
6100	12200	18300	24400	16.27	49.14	37.28	17.10
6200	12400	18600	24800	15.87	49.66	40.94	16.60
6300	12600	18900	25200	14.83	50.85	43.76	17.22
6400	12800	19200	25600	17.01	49.19	41.22	14.92
6500	13000	19500	26000	18.03	49.84	42.52	13.47
6600	13200	19800	26400	18.13	52.59	42.22	13.31
6700	13400	20100	26800	17.26	55.80	45.17	15.07
6800	13600	20400	27200	17.31	57.02	44.28	14.59
6900	13800	20700	27600	17.40	55.84	44.56	14.71
7000	14000	21000	28000	16.61	52.59	44.09	16.29
7100	14200	21300	28400	16.43	49.20	41.65	17.21
7200	14400	21600	28800	16.94	45.77	41.31	17.32
7300	14600	21900	29200	17.23	43.86	45.50	17.50
7400	14800	22200	29600	16.73	42.28	44.87	18.14
7500	15000	22500	30000	16.82	40.74	44.03	18.09
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7900	15800	23700	31600	16.42	35.91	38.55	20.72
8000	16000	24000	32000	16.58	34.80	36.64	21.81
8100	16200	24300	32400	16.78	33.38	35.42	22.83
8200	16400	24600	32800	16.85	32.16	34.15	24.03
8300	16600	24900	33200	16.93	32.09	33.89	25.48
8400	16800	25200	33600	16.88	32.33	34.43	27.29
8500	17000	25500	34000	17.03	33.08	35.02	28.86
8600	17200	25800	34400	17.37	33.11	35.99	29.68
8700	17400	26100	34800	17.39	33.03	40.03	31.78
8800	17600	26400	35200	17.84	32.31	47.65	33.17
8900	17800	26700	35600	17.53	32.36	51.52	33.27
9000	18000	27000	36000	17.43	32.15	39.73	29.84
9050	18100	27150	36200	17.01	32.41	38.37	27.96
9100	18200	27300	36400	17.22	32.64	36.96	25.87
9150	18300	27450	36600	17.33	32.44	36.06	24.40
9200	18400	27600	36800	16.51	33.78	36.70	24.06

*Harmonic Output below power level of X2 Output .

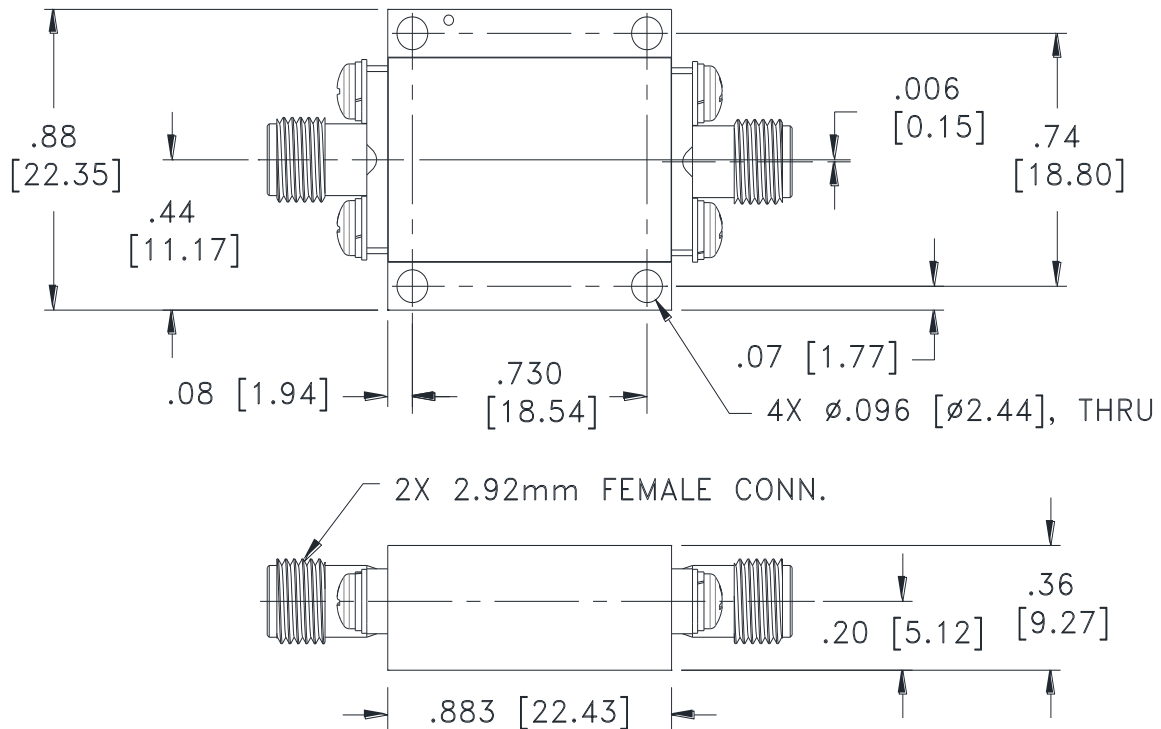


Typical Performance Curves



Outline Dimensions

UU2776



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

Notes:

1. Case material: Brass alloy 360.
2. Case finish: Gold Plating.
3. Weight: 35 grams.

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RF/IF MICROWAVE COMPONENTS



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
Thermal Shock	-55° to 85°C, 25 cycles	MIL-STD-202F: Method 107G