

Coaxial Frequency Mixer

Level 17 (LO Power +17 dBm) 0.05 to 300 MHz

ZFM-3H+



Generic photo used for illustration purposes only

CASE STYLE: K18

Connectors	Model
BNC	ZFM-3H+
SMA	ZFM-3H-S(+)
BRACKET (OPTION "B")	

+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 Power	200mW
IF Current	40mA

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

Coaxial Connections

LO	1
RF	2
IF	3

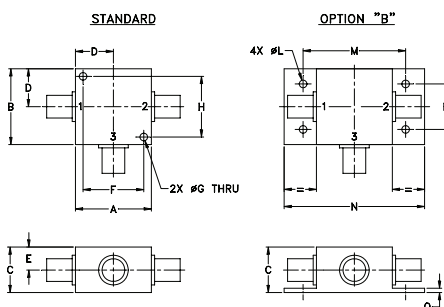
Features

- low conversion loss, 5.18 dB typ.
- high L-R isolation, 40 dB typ, L-I, 35 dB typ.
- rugged shielded case

Applications

- VHF
- FM radio
- defense & federal communications
- instrumentation

Outline Drawing



Outline Dimensions (inch)

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.00	.125	1.000
31.75	31.75	19.05	16.00	9.65	25.40	3.18	25.40
J	K	L	M	N	P	Q	wt
--	--	.125	1.688	2.18	.75	.07	grams
--	--	3.18	42.88	55.37	19.05	1.78	70.0

Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)					
LO/RF f_L - f_U	IF	Mid-Band m		Total Range		L		M		U		L		M		U	
		$\bar{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
0.05-300	DC-300	5.18	0.11	7.0	8.5	55	45	40	30	30	25	50	40	35	25	25	20

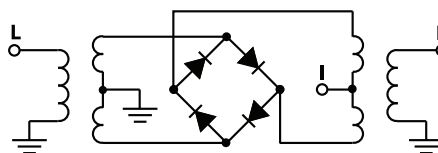
1 dB COMP.: +14 dBm typ.

L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]
m = mid band [$2f_L$ to $f_U/2$]

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +17dBm	LO +7dBm	LO +17dBm	LO +17dBm	LO +17dBm
0.05	30.05	5.81	65.01	59.81	1.63	1.53
1.00	31.00	4.70	61.51	56.17	1.64	1.52
2.00	32.00	4.63	62.05	56.05	1.64	1.39
10.00	40.00	4.79	64.41	56.12	1.61	1.53
20.00	50.00	5.00	57.00	52.66	1.61	1.46
29.94	59.94	4.75	51.03	48.60	1.60	1.56
49.23	79.23	4.69	47.42	46.33	1.56	1.51
68.52	98.52	4.67	42.12	42.25	1.53	1.51
87.81	57.81	4.57	38.18	38.54	1.51	1.54
100.00	70.00	4.50	36.56	37.81	1.46	1.59
136.03	106.03	4.45	35.70	36.26	1.40	1.60
155.32	125.32	4.61	33.06	33.98	1.31	1.59
174.61	144.61	4.84	32.15	32.92	1.28	1.59
193.90	163.90	4.96	31.48	32.48	1.22	1.65
213.19	183.19	4.98	29.23	30.80	1.17	1.75
232.48	202.48	5.17	27.78	29.94	1.11	1.87
242.13	212.13	5.27	28.94	32.37	1.05	1.81
261.42	231.42	5.60	31.41	33.19	1.03	1.76
280.71	250.71	6.03	34.81	33.60	1.02	1.78
300.00	270.00	6.64	36.67	31.62	1.02	1.72

Electrical Schematic



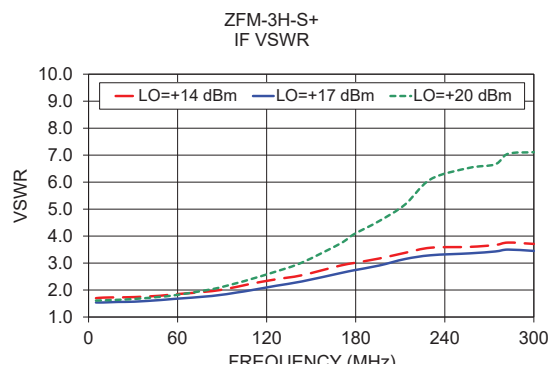
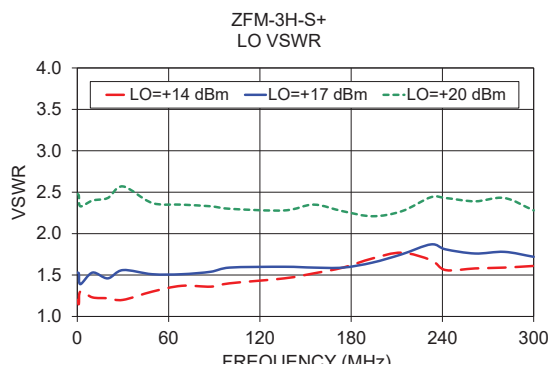
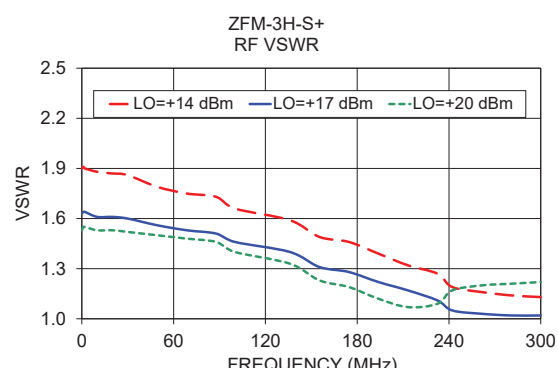
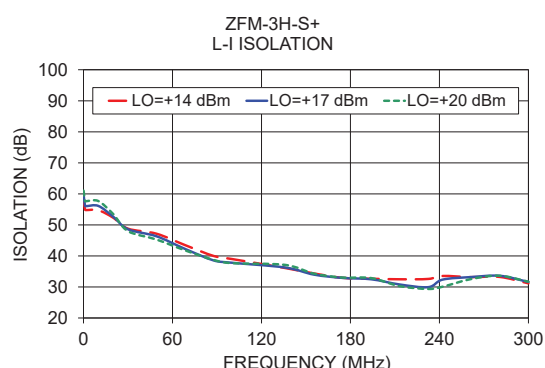
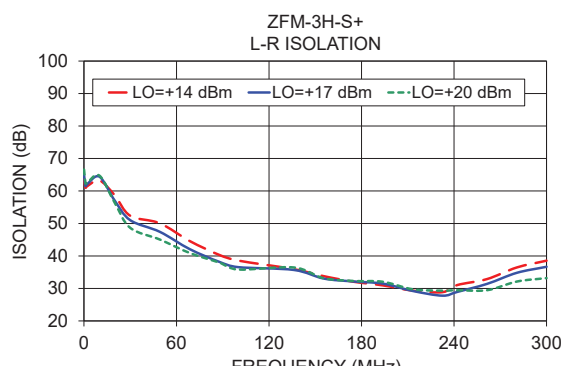
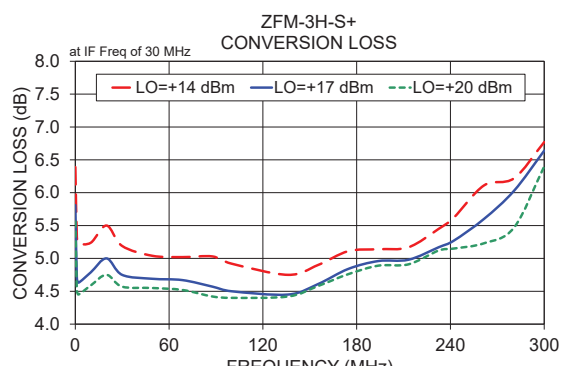
Notes

- 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 Mixer

ZFM-3H+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
+14	+17	+20	+14	+17	+20	+14	+17	+20						
0.1	30.1	6.39	5.81	5.56	10.1	40.1	31.08	28.29	27.62	10.1	40.1	1.23	0.78	0.55
1.0	31.0	5.32	4.70	4.51	22.7	52.7	32.27	27.51	25.95	22.7	52.7	0.99	0.64	0.45
2.0	32.0	5.23	4.63	4.45	35.2	65.2	27.65	26.21	25.01	35.2	65.2	1.06	0.65	0.42
10.0	40.0	5.24	4.79	4.59	47.8	77.8	27.27	24.88	24.83	47.8	77.8	1.01	0.62	0.40
22.7	52.7	5.64	5.26	5.07	60.4	90.4	26.83	24.27	26.73	60.4	90.4	1.01	0.56	0.39
35.2	65.2	5.66	5.29	5.11	72.9	102.9	23.08	23.30	26.61	72.9	102.9	0.95	0.55	0.36
47.8	77.8	5.69	5.34	5.14	85.5	115.5	22.16	21.94	25.75	85.5	115.5	1.02	0.50	0.31
60.4	90.4	5.64	5.29	5.12	98.0	128.0	22.86	24.54	28.86	98.0	128.0	0.96	0.45	0.30
72.9	102.9	5.65	5.32	5.12	110.6	140.6	22.97	31.79	27.24	110.6	140.6	0.95	0.46	0.32
85.5	115.5	5.65	5.30	5.13	123.2	153.2	21.68	26.64	30.77	123.2	153.2	0.91	0.53	0.33
98.0	128.0	5.62	5.32	5.14	135.7	165.7	20.85	23.66	32.22	135.7	165.7	0.86	0.49	0.38
110.6	140.6	5.58	5.29	5.15	148.3	178.3	20.74	23.80	25.53	148.3	178.3	0.80	0.35	0.33
123.2	153.2	5.66	5.27	5.13	160.9	190.9	22.01	24.85	26.49	160.9	190.9	0.95	0.36	0.26
135.7	165.7	5.83	5.38	5.13	173.4	203.4	21.53	24.95	28.59	173.4	203.4	1.08	0.46	0.33
148.3	178.3	5.89	5.56	5.29	186.0	216.0	19.82	24.75	27.37	186.0	216.0	1.32	0.60	0.38
160.9	190.9	5.86	5.59	5.42	198.6	228.6	19.16	25.46	28.80	198.6	228.6	1.50	0.82	0.46
173.4	203.4	5.84	5.59	5.45	211.1	241.1	20.96	26.85	21.97	211.1	241.1	1.40	1.03	0.51
186.0	216.0	5.85	5.58	5.44	223.7	253.7	21.99	23.64	22.17	223.7	253.7	1.22	1.17	0.62
198.6	228.6	5.90	5.52	5.39	236.3	266.3	17.57	19.58	21.98	236.3	266.3	1.22	1.10	0.86
211.1	241.1	6.16	5.61	5.44	248.8	278.8	16.10	15.61	18.44	248.8	278.8	1.31	1.14	0.96
236.3	266.3	6.85	6.24	5.67	261.4	291.4	16.10	14.56	14.40	261.4	291.4	1.47	1.25	0.94
248.8	278.8	7.01	6.53	6.01	273.9	303.9	16.39	14.70	13.84	273.9	303.9	1.68	1.35	1.02
261.4	291.4	6.98	6.59	6.29	286.5	316.5	16.16	15.03	14.37	286.5	316.5	1.78	1.41	1.12
273.9	303.9	7.08	6.74	6.48	299.1	329.1	16.71	15.93	15.56	299.1	329.1	1.60	1.22	0.96
286.5	316.5	7.12	6.80	6.54	311.6	341.6	16.31	15.91	16.06	311.6	341.6	1.67	1.21	0.99
299.1	329.1	7.32	7.02	6.77	324.2	354.2	17.19	16.90	17.42	324.2	354.2	1.60	1.09	0.93
311.6	341.6	7.51	7.21	6.94	336.8	366.8	17.13	17.24	17.34	336.8	366.8	1.44	0.97	0.93
336.8	366.8	7.83	7.46	6.92	349.3	379.3	17.40	17.31	17.02	349.3	379.3	1.45	1.03	1.07
349.3	379.3	7.79	7.30	6.65	361.9	391.9	18.45	17.56	18.17	361.9	391.9	1.33	1.06	1.05
361.9	391.9	8.11	7.37	6.69	374.5	404.5	18.24	16.47	18.79	374.5	404.5	1.47	1.33	1.19
374.5	404.5	7.95	7.05	6.58	387.0	417.0	20.11	16.55	20.12	387.0	417.0	1.63	1.45	1.15
387.0	417.0	7.95	7.03	6.73	399.6	429.6	19.55	17.10	22.05	399.6	429.6	1.84	1.67	1.21
399.6	429.6	8.12	7.03	6.74	412.2	442.2	23.10	18.00	23.22	412.2	442.2	2.11	1.68	1.10
412.2	442.2	8.09	7.10	6.93	424.7	454.7	22.50	19.36	23.76	424.7	454.7	2.12	1.74	1.20
437.3	467.3	8.44	7.36	7.26	437.3	467.3	21.20	19.98	22.41	437.3	467.3	2.34	1.78	1.13
449.8	479.8	9.12	7.81	7.72	449.8	479.8	20.90	20.25	22.13	449.8	479.8	2.33	1.70	1.00
462.4	492.4	9.53	8.02	8.05	462.4	492.4	20.56	19.96	22.01	462.4	492.4	2.23	1.67	0.89
475.0	505.0	10.75	8.73	8.79	475.0	505.0	21.55	20.75	22.50	475.0	505.0	1.81	1.54	0.67
487.5	517.5	11.78	9.10	9.16	487.5	517.5	24.89	20.42	21.97	487.5	517.5	1.73	1.71	0.69
500.1	530.1	12.65	9.83	9.92	500.1	530.1	23.02	20.24	21.02	500.1	530.1	1.79	1.72	0.56

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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED • RoHS compliant

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Frequency Mixer

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=150.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=300.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
140.0	10.1	5.48	10.0	20.1	5.11	290.0	10.1	6.89
136.7	13.4	5.50	17.2	27.3	5.11	282.8	17.3	6.74
133.3	16.8	5.49	24.4	34.5	4.97	275.6	24.5	6.56
130.0	20.1	5.42	31.5	41.6	4.98	268.5	31.6	6.50
126.7	23.4	5.36	38.7	48.8	5.00	261.3	38.8	6.39
123.3	26.8	5.40	45.9	56.0	5.06	254.1	46.0	6.33
120.0	30.1	5.33	53.1	63.2	5.07	246.9	53.2	6.25
116.7	33.4	5.24	60.3	70.4	5.06	239.7	60.4	6.21
113.3	36.8	5.15	67.4	77.5	5.11	232.6	67.5	6.16
110.0	40.1	5.13	74.6	84.7	5.14	225.4	74.7	6.06
106.7	43.4	5.18	81.8	91.9	5.18	218.2	81.9	6.00
103.3	46.8	5.13	89.0	99.1	5.19	211.0	89.1	5.98
100.0	50.1	5.10	96.2	106.3	5.21	203.8	96.3	5.99
96.7	53.4	5.09	103.3	113.4	5.25	196.7	103.4	5.99
93.3	56.8	5.10	110.5	120.6	5.32	189.5	110.6	5.97
90.0	60.1	5.11	117.7	127.8	5.37	182.3	117.8	5.98
86.7	63.4	5.09	124.9	135.0	5.36	175.1	125.0	5.97
83.3	66.8	5.05	132.1	142.2	5.30	167.9	132.2	6.01
80.0	70.1	5.03	139.2	149.3	5.34	160.8	139.3	5.99
76.7	73.4	5.00	146.4	156.5	5.40	153.6	146.5	6.02
73.3	76.8	5.01	153.6	163.7	5.53	146.4	153.7	6.09
70.0	80.1	5.06	160.8	170.9	5.69	139.2	160.9	6.14
66.7	83.4	5.07	167.9	178.0	5.89	132.1	168.0	6.10
63.3	86.8	5.08	175.1	185.2	6.00	124.9	175.2	6.01
60.0	90.1	5.12	182.3	192.4	5.99	117.7	182.4	5.94
56.7	93.4	5.12	189.5	199.6	5.98	110.5	189.6	5.94
53.3	96.8	5.10	196.7	206.8	6.01	103.3	196.8	5.97
50.0	100.1	5.10	203.8	213.9	6.11	96.2	203.9	5.97
46.7	103.4	5.08	211.0	221.1	6.10	89.0	211.1	6.00
43.3	106.8	5.07	218.2	228.3	6.06	81.8	218.3	6.06
40.0	110.1	5.09	225.4	235.5	5.99	74.6	225.5	6.14
36.7	113.4	5.11	232.6	242.7	6.05	67.4	232.7	6.18
33.3	116.8	5.15	239.7	249.8	6.01	60.3	239.8	6.21
30.0	120.1	5.17	246.9	257.0	6.13	53.1	247.0	6.23
26.7	123.4	5.21	254.1	264.2	6.23	45.9	254.2	6.35
23.3	126.8	5.23	261.3	271.4	6.48	38.7	261.4	6.50
20.0	130.1	5.25	268.5	278.6	6.42	31.5	268.6	6.66
16.7	133.4	5.27	275.6	285.7	6.47	24.4	275.7	6.74
13.3	136.8	5.25	282.8	292.9	6.26	17.2	282.9	6.77
10.0	140.1	5.29	290.0	300.1	6.26	10.0	290.1	6.80

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
0.1	63.69	65.01	66.59	58.11	59.81	61.05
1.0	61.00	61.51	62.33	54.94	56.17	57.68
2.0	61.43	62.05	62.47	54.78	56.05	57.65
10.0	63.25	64.41	64.74	54.73	56.12	57.68
22.7	76.09	77.69	78.64	60.48	57.58	55.91
35.2	71.82	73.49	75.46	56.93	56.01	54.70
47.8	68.97	70.56	72.90	54.65	53.91	53.57
60.4	66.83	68.35	69.89	51.72	51.56	52.19
72.9	64.79	66.96	69.08	48.71	49.56	50.73
85.5	64.48	65.78	66.70	46.60	47.84	49.05
98.0	62.50	66.41	70.25	44.96	46.67	47.80
110.6	59.98	61.25	63.19	43.82	45.52	46.88
123.2	60.58	62.43	64.08	42.62	44.62	46.05
135.7	62.88	65.85	66.29	40.66	42.05	43.63
148.3	60.56	63.52	64.31	40.87	41.71	42.70
160.9	55.82	59.57	61.68	41.06	42.32	42.73
173.4	52.89	55.34	58.53	40.99	42.96	44.25
186.0	51.33	53.27	55.07	39.31	40.78	42.29
198.6	49.51	51.71	54.20	37.88	39.52	40.86
211.1	49.33	52.26	55.00	37.60	39.45	40.56
236.3	49.89	50.87	51.58	37.38	38.91	38.24
248.8	52.64	52.63	56.00	39.52	38.93	36.84
261.4	53.57	57.89	52.28	40.45	39.65	36.62
273.9	52.70	53.94	50.51	38.81	38.86	37.02
286.5	50.59	51.28	51.15	35.76	35.40	35.45
299.1	47.92	47.02	44.89	34.11	33.93	34.05
311.6	47.24	45.46	43.53	33.73	33.44	33.25
336.8	48.61	46.61	43.41	34.02	33.14	32.23
349.3	47.09	43.95	41.16	34.27	32.92	31.69
361.9	47.40	44.21	41.52	34.94	32.93	30.98
374.5	49.09	45.53	39.44	35.42	33.53	29.35
387.0	45.99	41.39	34.86	34.95	34.10	26.89
399.6	45.46	40.91	33.97	32.75	32.89	25.00
412.2	43.18	40.07	33.19	29.74	30.41	23.35
437.3	34.84	34.66	29.91	24.48	26.11	21.38
449.8	32.05	32.98	28.94	22.48	24.52	20.59
462.4	29.39	30.98	27.87	20.78	23.20	20.25
475.0	27.21	28.76	26.25	19.41	21.85	19.58
487.5	25.66	27.21	25.57	18.28	20.21	18.80
500.1	24.45	25.41	24.54	17.81	18.89	18.06

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	36.96	37.44	37.20
22.7	52.7	32.23	32.64	33.09
35.2	65.2	28.89	29.46	29.70
47.8	77.8	27.10	27.47	27.81
60.4	90.4	25.50	26.13	26.50
72.9	102.9	24.37	24.74	25.02
85.5	115.5	23.89	24.50	24.85
98.0	128.0	23.16	23.87	24.47
110.6	140.6	22.64	23.42	23.92
123.2	153.2	22.13	23.05	23.61
135.7	165.7	21.46	22.27	23.04
148.3	178.3	21.61	22.18	22.81
160.9	190.9	21.96	22.53	22.84
173.4	203.4	22.20	22.87	23.31
186.0	216.0	22.53	23.46	23.98
198.6	228.6	21.49	22.65	23.40
211.1	241.1	20.22	21.74	22.71
223.7	253.7	18.77	20.12	20.80
236.3	266.3	17.73	18.65	19.48
248.8	278.8	16.99	17.60	18.25
261.4	291.4	16.45	16.80	17.13
273.9	303.9	16.23	16.45	16.77
286.5	316.5	15.84	15.92	16.15
299.1	329.1	15.78	15.81	15.96
311.6	341.6	15.59	15.61	15.74
324.2	354.2	15.72	15.75	15.98
336.8	366.8	15.76	15.80	16.18
349.3	379.3	15.62	15.73	16.14
361.9	391.9	15.96	16.07	16.20
374.5	404.5	15.65	15.62	15.51
387.0	417.0	15.55	15.28	14.79
399.6	429.6	15.35	14.68	13.98
412.2	442.2	14.51	13.52	12.94
424.7	454.7	13.87	12.74	12.21
437.3	467.3	12.93	11.79	11.25
449.8	479.8	12.08	11.00	10.59
462.4	492.4	11.28	10.16	9.84
475.0	505.0	10.59	9.37	9.06
487.5	517.5	9.94	8.75	8.49
500.1	530.1	9.26	8.13	7.80

Frequency Mixer

ZFM-3H+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=300.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
5.0	35.0	1.90	1.63	1.53	5.0	1.20	1.53	2.48	5.0	1.70	1.54	1.61
10.0	40.0	1.91	1.64	1.55	10.0	1.15	1.52	2.46	10.0	1.72	1.54	1.62
22.7	52.7	1.80	1.57	1.44	22.7	1.20	1.43	2.15	17.4	3.58	3.21	2.87
35.2	65.2	1.77	1.57	1.43	35.2	1.20	1.46	2.24	24.9	3.23	2.92	2.60
47.8	77.8	1.76	1.55	1.41	47.8	1.19	1.45	2.20	32.3	3.10	2.82	2.51
60.4	90.4	1.76	1.53	1.39	60.4	1.15	1.42	2.12	39.7	2.92	2.67	2.37
72.9	102.9	1.72	1.51	1.38	72.9	1.13	1.40	2.06	47.2	2.88	2.66	2.36
85.5	115.5	1.69	1.44	1.32	85.5	1.13	1.40	2.04	54.6	2.92	2.69	2.39
98.0	128.0	1.63	1.44	1.29	98.0	1.14	1.42	2.08	62.1	2.95	2.73	2.42
110.6	140.6	1.59	1.40	1.30	110.6	1.13	1.45	2.14	69.5	2.97	2.76	2.46
123.2	153.2	1.58	1.38	1.29	123.2	1.11	1.49	2.20	76.9	3.02	2.81	2.52
135.7	165.7	1.61	1.39	1.26	135.7	1.08	1.51	2.23	84.4	3.04	2.83	2.57
148.3	178.3	1.54	1.40	1.27	148.3	1.08	1.52	2.20	91.8	3.09	2.87	2.61
160.9	190.9	1.44	1.32	1.25	160.9	1.10	1.53	2.18	99.2	3.12	2.89	2.64
173.4	203.4	1.36	1.25	1.21	173.4	1.08	1.55	2.19	106.7	3.18	2.94	2.69
186.0	216.0	1.33	1.23	1.21	186.0	1.07	1.58	2.24	114.1	3.18	2.95	2.71
198.6	228.6	1.33	1.24	1.25	198.6	1.09	1.62	2.31	121.5	3.17	2.95	2.72
211.1	241.1	1.39	1.29	1.33	211.1	1.15	1.67	2.37	129.0	3.11	2.91	2.69
223.7	253.7	1.49	1.33	1.38	223.7	1.21	1.70	2.39	136.4	3.06	2.89	2.67
236.3	266.3	1.56	1.37	1.39	236.3	1.27	1.73	2.38	143.8	3.04	2.86	2.65
248.8	278.8	1.62	1.46	1.40	248.8	1.31	1.77	2.38	151.3	3.02	2.85	2.64
261.4	291.4	1.61	1.48	1.42	261.4	1.31	1.83	2.43	158.7	2.99	2.83	2.63
273.9	303.9	1.58	1.49	1.43	273.9	1.33	1.89	2.52	166.2	2.98	2.82	2.64
286.5	316.5	1.54	1.47	1.43	286.5	1.36	1.95	2.62	173.6	2.96	2.80	2.64
299.1	329.1	1.51	1.44	1.39	299.1	1.40	2.02	2.72	181.0	2.99	2.82	2.67
311.6	341.6	1.52	1.45	1.40	311.6	1.44	2.07	2.78	188.5	3.01	2.84	2.68
324.2	354.2	1.43	1.35	1.27	324.2	1.47	2.10	2.81	195.9	3.04	2.86	2.70
336.8	366.8	1.44	1.35	1.20	336.8	1.51	2.12	2.82	203.3	3.01	2.84	2.69
349.3	379.3	1.37	1.24	1.07	349.3	1.54	2.14	2.83	210.8	2.95	2.78	2.63
361.9	391.9	1.41	1.23	1.13	361.9	1.58	2.18	2.87	218.2	2.86	2.69	2.55
374.5	404.5	1.35	1.18	1.16	374.5	1.63	2.24	2.93	225.6	2.80	2.62	2.47
387.0	417.0	1.39	1.28	1.31	387.0	1.70	2.30	2.99	233.1	2.78	2.61	2.44
399.6	429.6	1.46	1.36	1.39	399.6	1.76	2.34	3.01	240.5	2.79	2.61	2.44
412.2	442.2	1.53	1.51	1.55	412.2	1.82	2.37	3.00	247.9	2.76	2.59	2.42
424.7	454.7	1.66	1.62	1.66	424.7	1.87	2.37	2.99	255.4	2.73	2.56	2.39
437.3	467.3	1.72	1.72	1.77	437.3	1.93	2.39	2.98	262.8	2.72	2.54	2.38
449.8	479.8	1.92	1.91	1.95	449.8	2.02	2.45	3.00	270.3	2.76	2.56	2.39
462.4	492.4	2.00	1.96	2.02	462.4	2.12	2.51	3.05	277.7	2.81	2.60	2.41
475.0	505.0	2.21	2.09	2.14	475.0	2.23	2.58	3.10	285.1	2.84	2.61	2.42
487.5	517.5	2.37	2.11	2.14	487.5	2.36	2.65	3.14	292.6	2.80	2.58	2.39
500.1	530.1	2.54	2.19	2.18	500.1	2.48	2.71	3.17	300.0	2.74	2.53	2.37

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	18	28	20	39	28	42	29	42	39	52
1	-	16	+0	28	15	29	26	43	28	51	33	48
2	>100	70	53	61	51	65	63	65	56	75	52	60
3	>100	54	52	57	46	62	44	60	47	66	51	60
4	>100	77	67	79	69	84	67	76	73	84	72	83
5	>100	87	70	77	68	72	65	76	66	80	89	>93
6	>100	>93	89	92	86	>93	51	90	83	93	85	>93
7	>100	>93	89	93	84	85	82	81	>93	93	92	>93
8	>100	>93	>93	>93	>93	>93	>93	>93	93	>93	>93	>93
9	>100	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
10	>100	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 150.1 MHz; -1.00 dBm.
LO IN: 180.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -6.59 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	28	41	31	49	41	58	42	64	50	71
1	-	17	+0	29	14	33	30	46	36	54	43	56
2	80	52	64	56	56	52	63	80	60	64	53	60
3	>100	41	36	44	57	47	47	45	41	56	43	56
4	>100	78	62	66	63	68	71	69	63	75	67	73
5	>100	68	62	63	50	69	44	60	45	64	53	67
6	>100	88	76	80	74	81	55	78	72	73	73	83
7	>100	69	71	70	61	83	61	66	54	69	56	76
8	>100	>103	83	96	82	79	75	82	78	85	74	77
9	>100	83	80	91	86	82	67	72	66	70	64	70
10	>100	85	84	92	86	93	81	89	91	96	82	96
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 150.1 MHz; 9.00 dBm.
LO IN: 180.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; 3.48 dBm

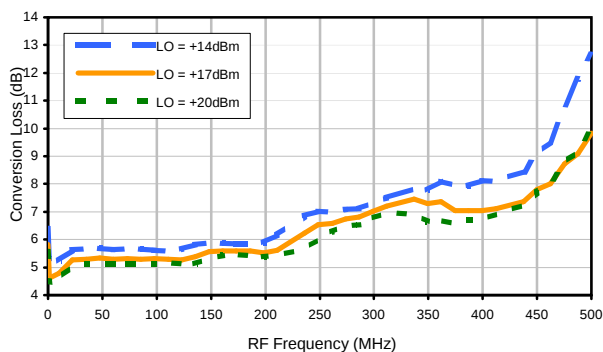
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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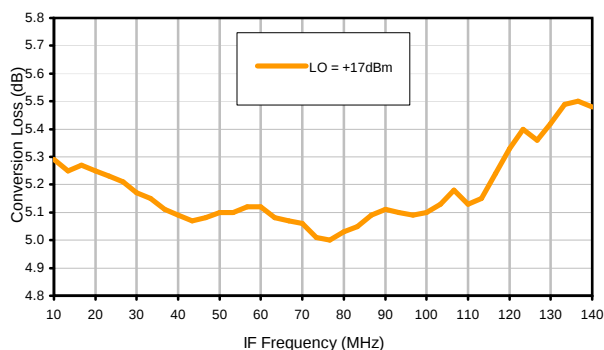


Typical Performance Curves

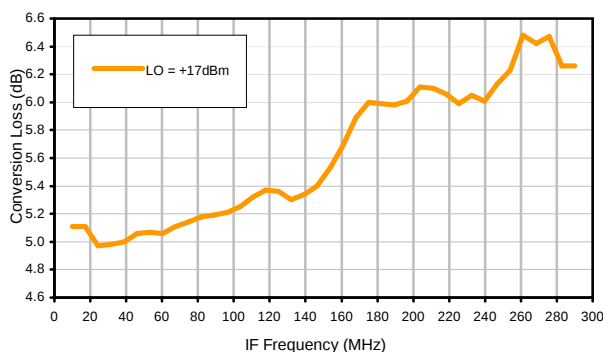
Conversion Loss @ IF=30MHz



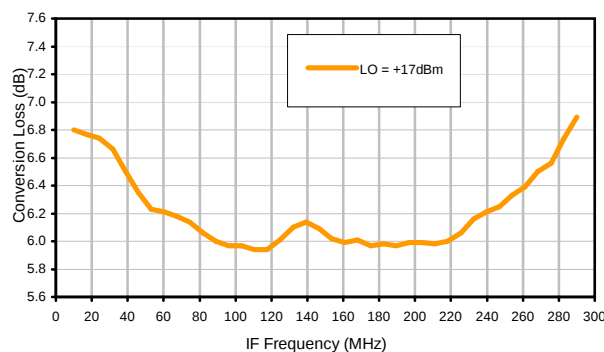
Conversion Loss vs. IF @ RF=150.1MHz



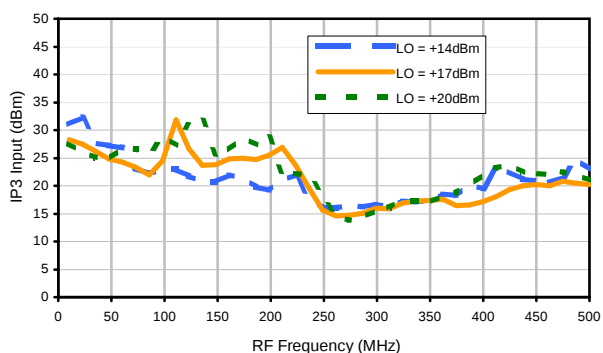
Conversion Loss vs. IF @ RF=10.1MHz



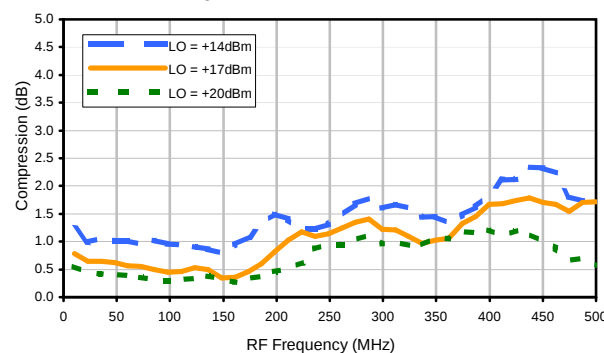
Conversion Loss vs. IF @ RF=300.1MHz



IP3 Input

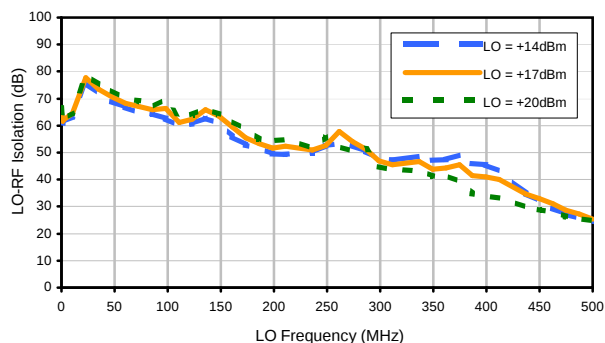


Compression @ RF IN=+14dBm

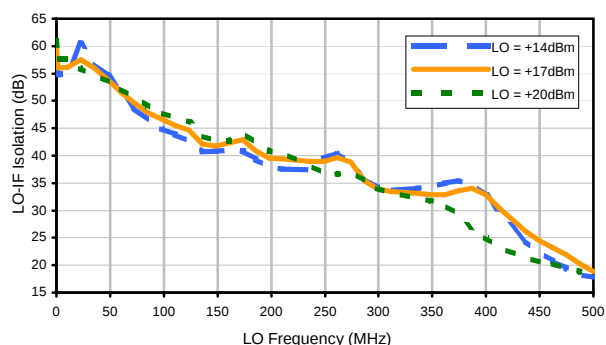


Typical Performance Curves

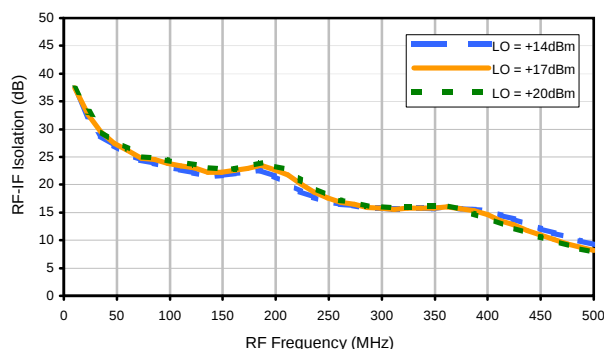
LO-RF Isolation



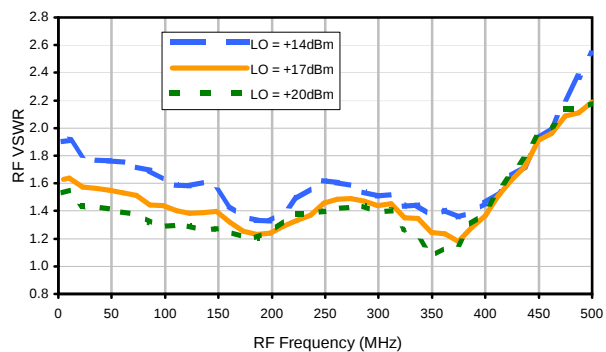
LO-IF Isolation



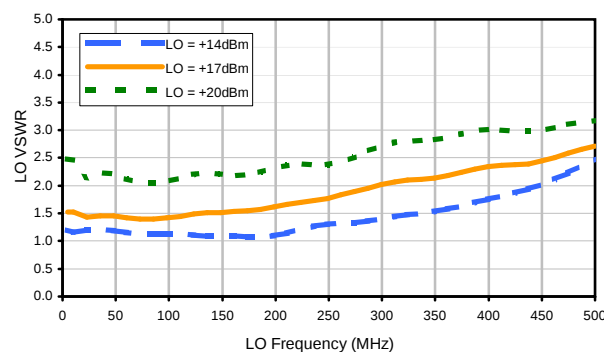
RF-IF Isolation



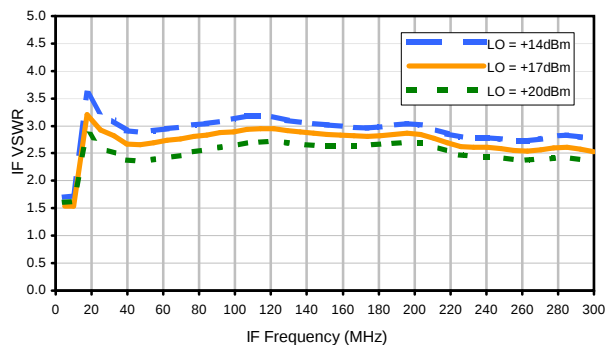
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	18	28	20	39	28	42	29	42	39	52
1	-	16	+0	28	15	29	26	43	28	51	33	48
2	>100	70	53	61	51	65	63	65	56	75	52	60
3	>100	54	52	57	46	62	44	60	47	66	51	60
4	>100	77	67	79	69	84	67	76	73	84	72	83
5	>100	87	70	77	68	72	65	76	66	80	89	>93
6	>100	>93	89	92	86	>93	51	90	83	93	85	>93
7	>100	>93	89	93	84	85	82	81	>93	93	92	>93
8	>100	>93	>93	>93	>93	>93	>93	>93	93	>93	>93	>93
9	>100	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
10	>100	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 150.1 MHz; -1.00 dBm.
LO IN: 180.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -6.59 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	28	41	31	49	41	58	42	64	50	71
1	-	17	+0	29	14	33	30	46	36	54	43	56
2	80	52	64	56	56	52	63	80	60	64	53	60
3	>100	41	36	44	57	47	47	45	41	56	43	56
4	>100	78	62	66	63	68	71	69	63	75	67	73
5	>100	68	62	63	50	69	44	60	45	64	53	67
6	>100	88	76	80	74	81	55	78	72	73	73	83
7	>100	69	71	70	61	83	61	66	54	69	56	76
8	>100	>103	83	96	82	79	75	82	78	85	74	77
9	>100	83	80	91	86	82	67	72	66	70	64	70
10	>100	85	84	92	86	93	81	89	91	96	82	96
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

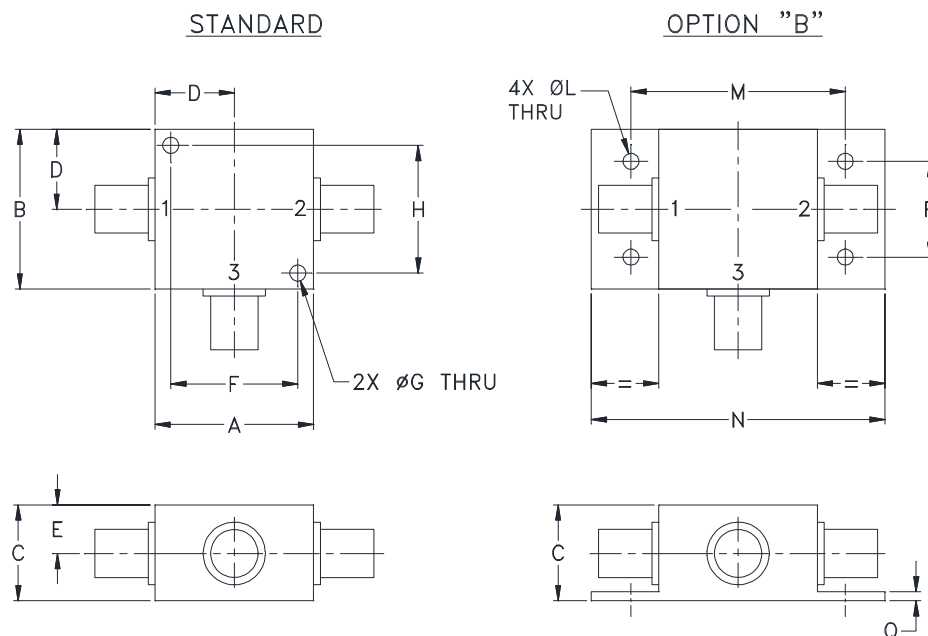
Test conditions: RF IN: 150.1 MHz; 9.00 dBm.
LO IN: 180.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; 3.48 dBm

- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
K18	1.25 (31.75)	1.25 (31.75)	.75 (19.05)	.63 (16.00)	.38 (9.65)	1.000 (25.40)	.125 (3.18)	1.000 (25.40)	--	--	.125 (3.18)	1.688 (42.88)	2.18 (55.37)

CASE#	P	Q	WT. GRAMS
K18	.75 (19.05)	.07 (1.78)	70.0

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

Notes:

- Case material: Aluminum alloy.
- Case finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
- Mounting bracket available on request. Add suffix B to part number.
- For port marking 1, 2, and 3 see specifications data sheet.
- For bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
- Refer to the individual model data sheet for the type of connectors available.



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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