

Frequency Mixer

TAK-1WH+

Level 17 (LO Power +17 dBm) 5 to 750 MHz

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA

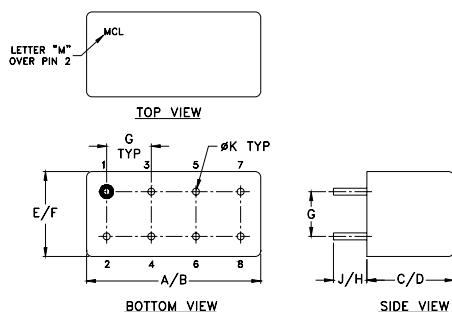
Permanent damage may occur if any of these limits are exceeded.

Pin Connections

LO	8
RF	1
IF	3,4 [^]
GROUND	2,5,6,7
CASE GROUND	2,5,6,7

[^] pins must be connected together externally

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F
.770	.800	.240	.250	.370	.400
19.56	20.32	6.10	6.35	9.40	10.16
G	H	J	K	wt	
.200	.20	.14	.031	grams	
5.08	5.08	3.56	0.79	3.7	

Features

- low conversion loss, 5.71 dB typ.
- high isolation, 40 dB typ. L-R, 35 dB typ. L-I
- rugged welded construction
- hermetically sealed

Applications

- VHF/UHF
- FM radio
- defense & federal communication
- instrumentation



Generic photo used for illustration purposes only

CASE STYLE: A05

+RoHS Compliant

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

Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)					
LO/RF	IF	Mid-Band m		Total Range		L		M		U		L		M		U	
f_L - f_U		$\bar{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
5-750	DC-750	5.71	0.08	7.5	9.0	50	40	40	30	30	25	45	35	35	25	30	20

1 dB COMP.: +14 dBm typ.

L = low range [f_L to $10 f_L$]

M = mid range [$10 f_L$ to $f_U/2$]

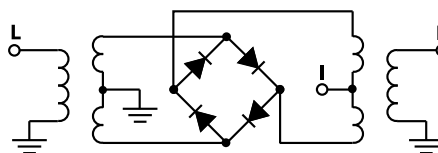
U = upper range [$f_U/2$ to f_U]

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 +17dBm	LO +17dBm	LO +17dBm	LO +17dBm
5.00	35.00	5.75	63.53	62.84	1.14	1.53
10.00	40.00	5.93	59.56	57.61	1.06	1.52
20.00	50.00	5.97	51.08	48.85	1.03	1.41
50.00	80.00	5.91	46.53	44.54	1.04	1.54
100.00	70.00	5.77	42.94	41.21	1.05	1.48
125.84	95.84	5.75	40.60	39.07	1.05	1.48
175.77	145.77	5.75	37.40	36.16	1.06	1.43
225.70	195.70	5.81	35.63	34.27	1.08	1.45
250.67	220.67	5.69	35.33	33.54	1.10	1.40
300.60	270.60	5.68	34.13	32.33	1.14	1.51
350.54	320.54	6.07	33.75	30.78	1.19	1.44
400.47	370.47	6.22	33.94	29.35	1.24	1.56
450.41	420.41	6.24	33.76	28.19	1.28	1.60
500.00	470.00	6.26	35.44	29.36	1.32	1.59
525.31	495.31	6.57	33.37	28.37	1.35	1.68
550.27	520.27	6.80	31.48	26.00	1.37	1.74
600.21	570.21	6.81	29.25	22.84	1.39	1.68
650.14	620.14	6.95	29.21	20.68	1.38	1.89
700.08	670.08	7.41	32.78	22.79	1.35	1.94
750.00	720.00	7.73	31.78	24.62	1.29	1.96

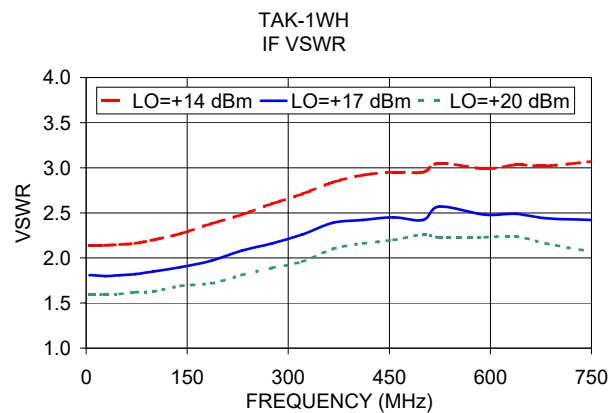
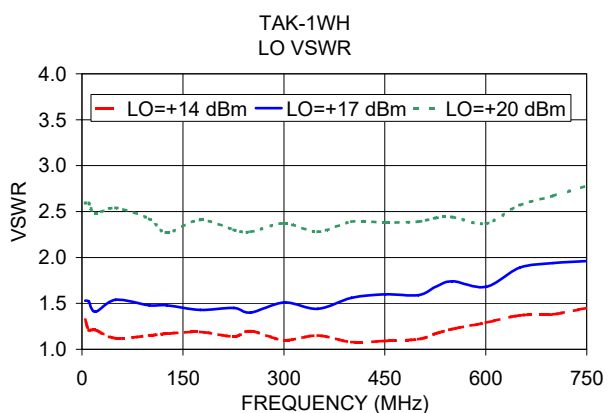
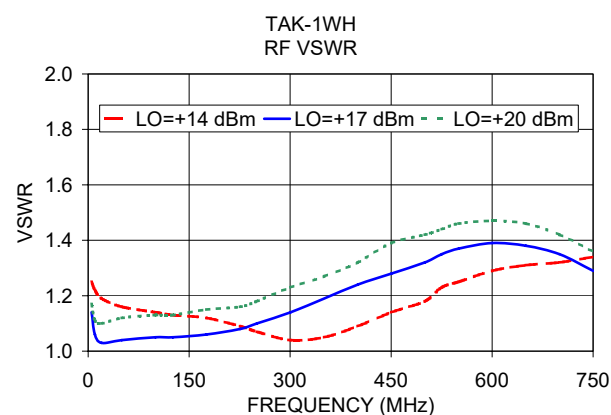
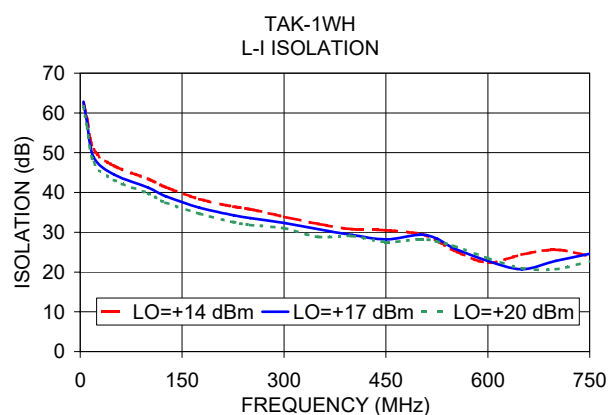
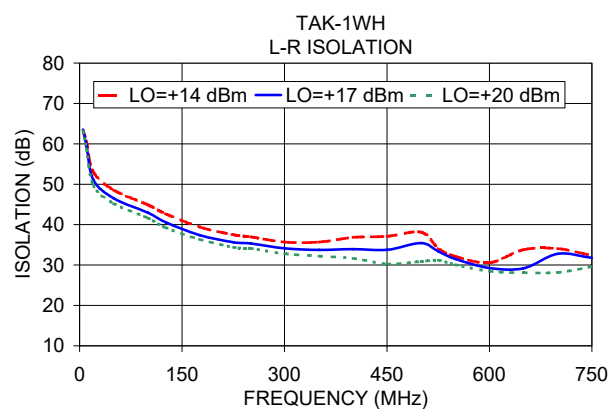
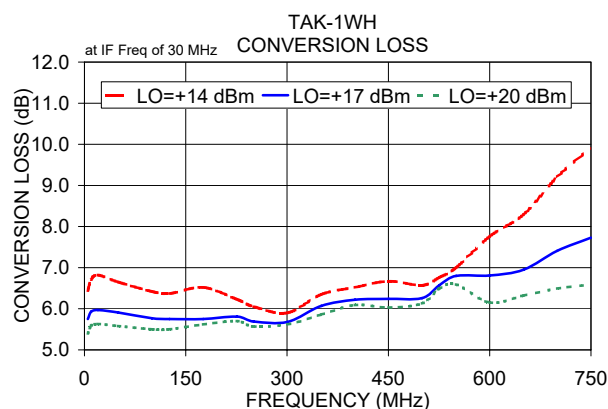
Electrical Schematic



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.
- 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





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TAK-1WH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+14	+17	+20
5.0	35.0	6.44	5.75	5.40
10.0	40.0	6.71	5.93	5.59
30.4	60.4	7.01	6.23	6.08
50.8	80.8	7.06	6.27	6.14
71.2	101.2	6.96	6.20	6.10
91.6	121.6	7.06	6.23	6.10
112.0	142.0	6.95	6.14	6.10
132.4	162.4	6.82	6.12	6.10
152.8	182.8	6.89	6.15	6.11
173.2	203.2	6.78	6.13	6.12
193.5	223.5	6.68	6.08	6.11
213.9	243.9	6.68	6.10	6.10
234.3	264.3	6.66	6.11	6.13
254.7	284.7	6.65	6.12	6.14
275.1	305.1	6.69	6.16	6.18
295.5	325.5	6.69	6.16	6.20
315.9	345.9	6.77	6.25	6.25
336.3	366.3	6.83	6.34	6.31
356.7	386.7	6.89	6.39	6.37
377.1	407.1	6.91	6.46	6.49
397.5	427.5	6.97	6.51	6.54
417.9	447.9	6.97	6.51	6.54
438.3	468.3	6.97	6.51	6.54
458.7	488.7	6.97	6.51	6.54
479.1	509.1	6.97	6.51	6.54
499.5	529.5	6.97	6.51	6.54
519.9	549.9	6.97	6.51	6.54
540.3	570.3	6.97	6.51	6.54
560.7	590.7	6.97	6.51	6.54
581.1	611.1	6.97	6.51	6.54
601.5	631.5	6.97	6.51	6.54
621.9	651.9	6.97	6.51	6.54
642.3	672.3	6.97	6.51	6.54
662.7	692.7	6.97	6.51	6.54
683.1	713.1	6.97	6.51	6.54
703.5	733.5	6.97	6.51	6.54
723.9	753.9	6.97	6.51	6.54
744.3	774.3	6.97	6.51	6.54
764.7	794.7	6.97	6.51	6.54
785.1	815.1	6.97	6.51	6.54
805.5	835.5	6.97	6.51	6.54
825.9	855.9	6.97	6.51	6.54
846.3	876.3	6.97	6.51	6.54
866.7	896.7	6.97	6.51	6.54
887.1	917.1	6.97	6.51	6.54
907.5	937.5	6.97	6.51	6.54
927.9	957.9	6.97	6.51	6.54
948.3	978.3	6.97	6.51	6.54
968.7	998.7	6.97	6.51	6.54
989.1	1019.1	6.97	6.51	6.54
1009.5	1039.5	6.97	6.51	6.54
1029.9	1059.9	6.97	6.51	6.54
1050.3	1080.3	6.97	6.51	6.54

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+14	+17	+20
10.0	40.0	25.74	31.37	30.94
30.4	60.4	24.59	28.71	27.86
50.8	80.8	26.67	27.68	26.69
71.2	101.2	28.19	26.30	27.50
91.6	121.6	23.59	24.55	30.46
112.0	142.0	24.14	27.10	33.88
132.4	162.4	24.77	28.01	31.95
152.8	182.8	23.30	27.39	30.97
173.2	203.2	23.69	38.32	28.24
193.5	223.5	24.41	31.23	29.12
213.9	243.9	25.59	30.47	30.47
234.3	264.3	28.16	27.22	28.65
254.7	284.7	26.83	25.27	26.89
275.1	305.1	36.45	24.29	25.68
295.5	325.5	25.91	23.93	24.77
315.9	345.9	26.93	25.17	24.56
336.3	366.3	27.91	28.59	28.53
356.7	386.7	26.21	26.29	25.76
377.1	407.1	24.55	24.98	23.66
397.5	427.5	22.33	24.07	24.07
417.9	447.9	19.60	24.55	28.80
438.3	468.3	18.91	22.88	28.94
458.7	488.7	17.71	19.33	23.63
479.1	509.1	17.12	18.59	21.51
499.5	529.5	16.74	18.58	20.08
519.9	549.9	16.44	18.78	20.28
540.3	570.3	16.87	20.10	23.32
560.7	590.7	18.25	22.23	28.23
581.1	611.1	18.83	25.20	24.12
601.5	631.5	18.05	23.79	22.54
621.9	651.9	17.11	23.53	21.94
642.3	672.3	16.67	24.14	22.63
662.7	692.7	15.95	20.35	22.86
683.1	713.1	16.18	19.33	22.37
703.5	733.5	16.48	17.14	18.75
723.9	753.9	17.16	16.84	17.91
744.3	774.3	19.22	17.83	17.52
764.7	794.7	20.59	19.00	18.09
785.1	815.1	23.37	21.52	20.70
805.5	835.5	23.83	22.77	22.18

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB)		
		@LO (dBm)		
		+14	+17	+20
10.0	40.0	0.66	0.28	0.16
30.4	60.4	0.68	0.39	0.24
50.8	80.8	0.74	0.45	0.24
71.2	101.2	0.85	0.38	0.23
91.6	121.6	0.72	0.39	0.23
112.0	142.0	0.69	0.37	0.20
132.4	162.4	0.75	0.39	0.21
152.8	182.8	0.85	0.39	0.22
173.2	203.2	0.79	0.37	0.20
193.5	223.5	0.92	0.38	0.21
213.9	243.9	0.92	0.40	0.23
234.3	264.3	0.99	0.43	0.24
254.7	284.7	0.97	0.41	0.25
275.1	305.1	0.92	0.39	0.28
295.5	325.5	0.94	0.41	0.30
315.9	345.9	0.91	0.37	0.27
336.3	366.3	1.00	0.46	0.38
356.7	386.7	1.03	0.47	0.38
377.1	407.1	1.22	0.66	0.50
397.5	427.5	1.36	0.79	0.60
417.9	447.9	1.51	0.98	0.73
438.3	468.3	1.45	0.92	0.70
458.7	488.7	1.72	1.15	0.93
479.1	509.1	1.82	1.23	1.01
499.5	529.5	1.93	1.37	1.17
519.9	549.9	2.00	1.48	1.25
540.3	570.3	1.94	1.52	1.27
560.7	590.7	1.95	1.56	1.26
581.1	611.1	1.76	1.65	1.29
601.5	631.5	1.61	1.63	1.29
621.9	651.9	1.35	1.56	1.31
642.3	672.3	1.21	1.53	1.35
662.7	692.7	1.02	1.37	1.36
683.1	713.1	0.89	1.25	1.28
703.5	733.5	0.71	0.98	0.99
723.9	753.9	0.60	0.81	0.82
744.3	774.3	0.52	0.56	0.56
764.7	794.7	0.43	0.42	0.40
785.1	815.1	0.44	0.31	0.24
805.5	835.5	0.37	0.23	0.15

REV. X2

TAK-1WH+

100818

Page 1 of 5



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

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Frequency Mixer

TAK-1WH+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=375.1MHz (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)=750.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
365.0	10.1	6.86	10.0	20.1	6.26	740.0	10.1	8.62
355.9	19.2	6.81	28.7	38.8	6.13	721.3	28.8	8.52
346.8	28.3	6.77	47.4	57.5	6.22	702.6	47.5	8.41
337.7	37.4	6.62	66.2	76.3	6.23	683.8	66.3	8.30
328.6	46.5	6.63	84.9	95.0	6.25	665.1	85.0	8.24
319.5	55.6	6.53	103.6	113.7	6.20	646.4	103.7	8.12
310.4	64.7	6.52	122.3	132.4	6.20	627.7	122.4	8.08
301.3	73.8	6.50	141.0	151.1	6.30	609.0	141.1	7.93
292.2	82.9	6.39	159.7	169.8	6.35	590.3	159.8	7.84
283.1	92.0	6.40	178.5	188.6	6.30	571.5	178.6	7.84
274.0	101.1	6.29	197.2	207.3	6.28	552.8	197.3	7.84
264.9	110.2	6.24	215.9	226.0	6.34	534.1	216.0	7.85
255.8	119.3	6.21	234.6	244.7	6.39	515.4	234.7	7.78
246.7	128.4	6.12	253.3	263.4	6.45	496.7	253.4	7.84
237.6	137.5	6.14	272.1	282.2	6.41	477.9	272.2	7.72
228.5	146.6	6.07	290.8	300.9	6.43	459.2	290.9	7.77
219.4	155.7	6.05	309.5	319.6	6.46	440.5	309.6	7.83
210.3	164.8	6.08	328.2	338.3	6.56	421.8	328.3	7.78
201.2	173.9	6.09	346.9	357.0	6.52	403.1	347.0	7.73
192.1	183.0	6.06	365.6	375.7	6.69	384.4	365.7	7.72
182.9	192.2	6.10	384.4	394.5	6.73	365.6	384.5	7.83
173.8	201.3	6.12	403.1	413.2	6.73	346.9	403.2	7.70
164.7	210.4	6.14	421.8	431.9	6.90	328.2	421.9	7.72
155.6	219.5	6.14	440.5	450.6	6.93	309.5	440.6	7.71
146.5	228.6	6.16	459.2	469.3	6.99	290.8	459.3	7.71
137.4	237.7	6.18	477.9	488.0	6.87	272.1	478.0	7.68
128.3	246.8	6.17	496.7	506.8	6.92	253.3	496.8	7.70
119.2	255.9	6.19	515.4	525.5	6.86	234.6	515.5	7.67
110.1	265.0	6.23	534.1	544.2	6.81	215.9	534.2	7.74
101.0	274.1	6.28	552.8	562.9	6.79	197.2	552.9	7.72
91.9	283.2	6.28	571.5	581.6	6.64	178.5	571.6	7.67
82.8	292.3	6.31	590.3	600.4	6.60	159.7	590.4	7.66
73.7	301.4	6.36	609.0	619.1	6.54	141.0	609.1	7.60
64.6	310.5	6.38	627.7	637.8	6.51	122.3	627.8	7.58
55.5	319.6	6.38	646.4	656.5	6.50	103.6	646.5	7.48
46.4	328.7	6.39	665.1	675.2	6.48	84.9	665.2	7.50
37.3	337.8	6.43	683.8	693.9	6.52	66.2	683.9	7.39
28.2	346.9	6.45	702.6	712.7	6.55	47.4	702.7	7.44
19.1	356.0	6.45	721.3	731.4	6.71	28.7	721.4	7.37
10.0	365.1	6.51	740.0	750.1	6.88	10.0	740.1	7.42

REV. X2
TAK-1WH+
100818
Page 2 of 5

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TAK-1WH+

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
5.0	63.21	63.53	63.16	62.44	62.84	61.66
10.0	60.61	59.56	58.73	58.61	57.61	56.43
30.4	66.45	69.82	73.20	50.54	47.99	46.36
50.8	62.41	66.68	71.08	46.56	43.87	42.38
71.2	59.62	63.36	67.95	43.44	41.17	39.48
91.6	57.86	62.06	68.19	41.61	39.02	37.64
112.0	55.90	59.95	66.59	40.04	37.70	36.00
132.4	54.35	59.75	69.88	38.76	36.09	34.84
152.8	53.41	58.49	66.46	37.70	35.23	34.05
173.2	52.08	57.76	68.01	36.73	34.60	33.61
193.5	51.09	57.25	65.99	36.06	34.28	33.39
213.9	50.55	57.70	65.12	35.17	33.61	32.64
234.3	50.11	57.84	60.96	35.05	33.57	32.36
254.7	49.37	56.19	64.96	34.91	33.49	32.03
275.1	49.10	57.58	59.56	33.95	32.80	31.45
295.5	48.63	56.57	60.94	34.43	32.91	31.41
315.9	48.68	57.28	56.40	34.24	32.49	30.83
356.7	47.73	54.69	54.98	33.33	31.14	29.56
377.1	48.18	54.71	54.42	32.52	30.55	28.96
417.9	47.15	52.10	50.64	31.86	29.37	27.97
438.3	47.22	53.60	51.22	31.03	28.60	27.03
499.5	46.25	50.37	45.77	30.34	27.79	25.56
540.2	47.63	50.08	45.01	29.37	27.68	25.30
560.6	47.64	49.04	45.97	28.30	27.10	25.16
601.4	45.89	46.43	43.95	27.48	25.92	23.81
621.8	45.50	46.15	43.62	26.55	24.90	23.07
662.6	43.58	44.55	43.06	26.23	24.05	21.84
683.0	42.36	42.63	41.19	25.83	23.60	21.21
723.8	41.12	42.44	41.13	25.90	23.12	20.36
744.2	40.06	42.50	41.89	25.95	23.49	20.34
785.0	39.76	43.00	42.00	25.39	24.18	21.00
805.4	39.77	44.21	42.10	25.01	24.32	20.88
846.2	38.80	43.17	43.14	23.91	24.24	21.02
866.6	38.21	41.29	41.44	23.67	24.03	20.93
907.3	38.55	40.97	40.46	22.77	23.41	20.48
927.7	38.74	41.46	41.14	22.71	22.96	20.03
968.5	39.73	43.42	40.67	22.13	22.17	19.40
988.9	41.50	45.44	39.62	22.02	21.77	19.03
1029.7	44.18	43.92	37.17	21.70	20.78	18.05
1050.1	45.17	42.81	36.60	21.59	20.45	17.88

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.0	40.0	51.44	46.25	46.49
30.4	60.4	41.05	41.09	41.67
50.8	80.8	36.94	37.46	37.59
71.2	101.2	34.43	34.78	34.98
91.6	121.6	32.64	33.19	33.42
112.0	142.0	31.32	31.78	32.08
132.4	162.4	30.36	30.82	30.95
152.8	182.8	29.49	29.96	30.26
173.2	203.2	28.95	29.38	29.56
193.5	223.5	28.71	29.12	29.33
213.9	243.9	28.26	28.81	29.08
234.3	264.3	28.04	28.85	29.20
254.7	284.7	27.91	28.63	29.17
275.1	305.1	27.45	28.30	28.86
295.5	325.5	27.69	28.46	28.94
315.9	345.9	27.63	28.19	28.56
356.7	386.7	28.17	28.74	28.98
377.1	407.1	28.15	28.82	29.29
417.9	447.9	27.83	28.65	29.42
438.3	468.3	27.48	28.30	28.84
479.1	509.1	26.16	26.95	27.30
499.5	529.5	25.44	26.21	26.50
540.2	570.2	24.03	24.63	25.06
560.6	590.6	23.52	24.03	24.43
601.4	631.4	22.58	22.36	22.14
621.8	651.8	22.27	21.89	21.54
662.6	692.6	22.33	21.92	21.44
683.0	713.0	22.47	22.20	21.78
723.8	753.8	23.11	23.32	23.53
744.2	774.2	23.45	23.49	23.45
785.0	815.0	23.34	22.59	21.57
805.4	835.4	23.03	21.88	20.81
846.2	876.2	22.24	20.70	19.54
866.6	896.6	22.01	20.46	19.15
907.3	937.3	21.38	20.37	19.28
927.7	957.7	21.02	20.35	19.45
968.5	998.5	20.16	19.90	19.37
988.9	1018.9	19.50	19.36	19.00
1029.7	1059.7	18.29	18.18	18.00
1050.1	1080.1	17.67	17.54	17.45

REV. X2
TAK-1WH+
100818
Page 3 of 5

Frequency Mixer

TAK-1WH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=750.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
5.0	35.0	1.25	1.14	1.17	5.0	1.32	1.53	2.59	5.0	2.14	1.81	1.60
10.0	40.0	1.22	1.06	1.11	10.0	1.21	1.52	2.59	10.0	2.14	1.81	1.60
30.4	60.4	1.21	1.06	1.02	30.4	1.03	1.62	2.39	29.0	2.52	1.87	1.57
50.8	80.8	1.17	1.05	1.04	50.8	1.04	1.61	2.36	47.9	2.44	1.80	1.50
71.2	101.2	1.16	1.03	1.07	71.2	1.01	1.54	2.22	66.9	2.38	1.76	1.48
91.6	121.6	1.16	1.04	1.09	91.6	1.02	1.53	2.21	85.9	2.47	1.83	1.55
112.0	142.0	1.14	1.05	1.13	112.0	1.02	1.54	2.23	104.9	2.60	1.95	1.65
132.4	162.4	1.12	1.06	1.14	132.4	1.01	1.58	2.31	123.8	2.57	1.92	1.64
152.8	182.8	1.14	1.06	1.14	152.8	1.03	1.57	2.27	142.8	2.54	1.90	1.62
173.2	203.2	1.11	1.08	1.17	173.2	1.02	1.53	2.20	161.8	2.61	1.96	1.68
193.5	223.5	1.09	1.11	1.19	193.5	1.01	1.54	2.20	180.8	2.71	2.05	1.77
213.9	243.9	1.09	1.11	1.21	213.9	1.03	1.58	2.27	199.7	2.69	2.04	1.77
234.3	264.3	1.08	1.13	1.22	234.3	1.03	1.60	2.30	218.7	2.71	2.04	1.77
254.7	284.7	1.07	1.14	1.23	254.7	1.05	1.59	2.26	237.7	2.77	2.10	1.82
275.1	305.1	1.07	1.13	1.23	275.1	1.06	1.59	2.25	256.7	2.73	2.08	1.82
295.5	325.5	1.07	1.15	1.24	295.5	1.06	1.59	2.25	275.6	2.73	2.08	1.82
315.9	345.9	1.08	1.17	1.24	315.9	1.09	1.63	2.30	294.6	2.80	2.13	1.86
356.7	386.7	1.10	1.20	1.29	356.7	1.12	1.64	2.28	313.6	2.86	2.18	1.91
377.1	407.1	1.11	1.22	1.31	377.1	1.14	1.64	2.27	332.6	2.82	2.15	1.88
417.9	447.9	1.12	1.25	1.34	417.9	1.17	1.70	2.34	351.5	2.80	2.13	1.86
438.3	468.3	1.13	1.27	1.36	438.3	1.20	1.71	2.34	370.5	2.90	2.21	1.92
479.1	509.1	1.11	1.25	1.32	479.1	1.23	1.71	2.32	389.5	2.92	2.23	1.94
499.5	529.5	1.12	1.23	1.30	499.5	1.26	1.75	2.35	408.5	2.87	2.18	1.89
540.2	570.2	1.06	1.15	1.21	540.2	1.30	1.78	2.37	427.4	2.90	2.20	1.89
560.6	590.6	1.04	1.12	1.17	560.6	1.32	1.78	2.35	446.4	2.96	2.24	1.92
601.4	631.4	1.07	1.07	1.13	601.4	1.36	1.82	2.39	465.4	2.96	2.24	1.91
621.8	651.8	1.12	1.10	1.14	621.8	1.39	1.83	2.39	484.4	2.92	2.20	1.86
662.6	692.6	1.24	1.21	1.23	662.6	1.43	1.84	2.37	503.3	2.96	2.23	1.87
683.0	713.0	1.32	1.29	1.30	683.0	1.46	1.86	2.38	522.3	2.97	2.23	1.87
723.8	753.8	1.52	1.47	1.47	723.8	1.51	1.90	2.39	541.3	2.94	2.20	1.82
744.2	774.2	1.63	1.56	1.56	744.2	1.53	1.92	2.39	560.3	2.97	2.22	1.82
785.0	815.0	1.89	1.78	1.75	785.0	1.57	1.96	2.43	579.2	3.00	2.23	1.82
805.4	835.4	2.01	1.88	1.83	805.4	1.59	1.98	2.46	598.2	2.97	2.22	1.79
846.2	876.2	2.31	2.13	2.03	846.2	1.62	2.00	2.46	617.2	2.89	2.15	1.73
866.6	896.6	2.46	2.27	2.15	866.6	1.64	2.01	2.48	636.2	2.95	2.20	1.76
907.3	937.3	2.78	2.60	2.48	907.3	1.67	2.04	2.51	655.1	3.03	2.26	1.80
927.7	957.7	2.95	2.78	2.66	927.7	1.71	2.07	2.53	674.1	3.00	2.23	1.77
968.5	998.5	3.27	3.13	3.00	968.5	1.73	2.07	2.52	693.1	2.97	2.23	1.77
988.9	1018.9	3.40	3.27	3.16	988.9	1.76	2.08	2.53	712.1	2.96	2.23	1.78
1029.7	1059.7	3.67	3.55	3.45	1029.7	1.82	2.11	2.54	731.0	2.98	2.25	1.80
1050.1	1080.1	3.77	3.66	3.57	1050.1	1.85	2.13	2.53	750.0	2.35	1.69	1.29

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	5	36	10	34	17	52	31	42	32	50
1	-	23	+0	33	12	38	29	48	32	42	36	55
2	98	56	37	56	38	55	38	58	50	64	49	65
3	>100	70	61	72	62	67	58	72	68	82	60	73
4	>100	78	67	73	66	71	69	71	70	83	87	81
5	>100	>92	91	>92	>92	>92	84	88	84	88	92	>92
6	>100	>92	>92	>92	>92	>92	>92	89	>92	89	>92	>92
7	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
8	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
9	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
10	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 370.1 MHz; -1.00 dBm.
LO IN: 400.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -7.53 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	14	47	26	48	32	60	47	51	47	65
1	-	23	+0	32	13	39	29	49	38	49	46	67
2	86	60	33	69	34	57	34	53	43	66	50	63
3	>100	58	43	58	44	56	41	71	61	63	47	59
4	>100	70	49	66	47	68	49	67	48	67	60	69
5	>100	82	68	76	59	73	56	65	53	67	66	79
6	>100	80	70	74	59	68	59	67	60	67	63	79
7	>100	86	82	93	77	>102	78	97	75	86	73	92
8	>100	89	84	92	82	82	72	77	71	74	70	74
9	>100	>102	>102	101	89	>102	80	88	83	86	81	86
10	>100	>102	96	96	102	101	101	87	91	84	82	79
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 370.1 MHz; 9.00 dBm.
LO IN: 400.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; 2.38 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.

REV. X2
TAK-1WH+
100818
Page 5 of 5

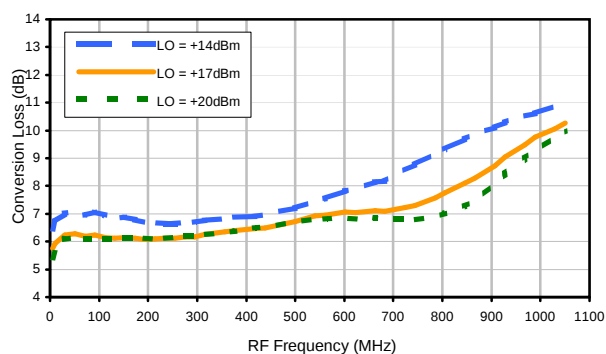


Frequency Mixer

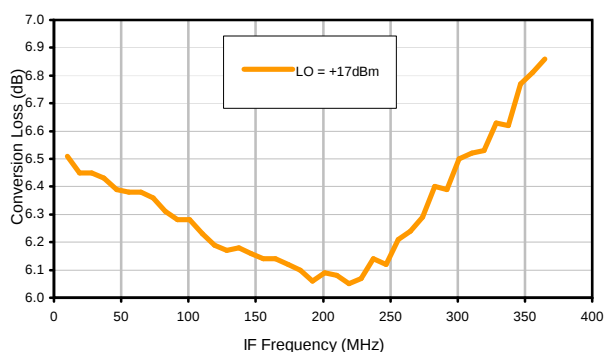
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Typical Performance Curves

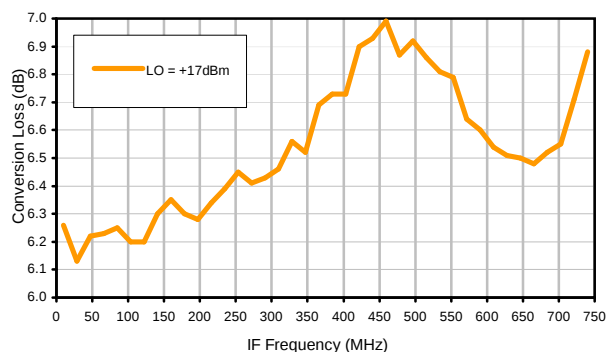
Conversion Loss @ IF=30MHz



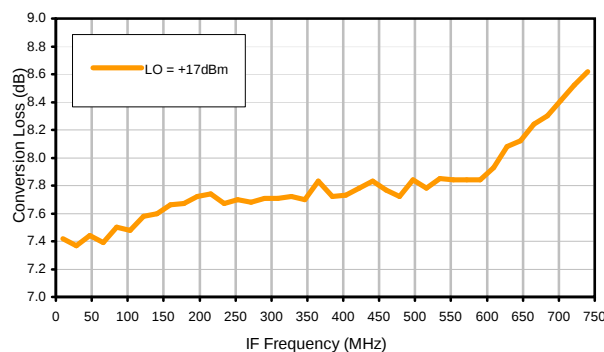
Conversion Loss vs. IF @ RF=375.1MHz



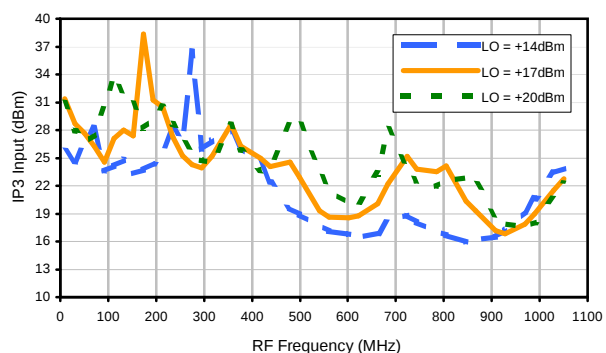
Conversion Loss vs. IF @ RF=10.1MHz



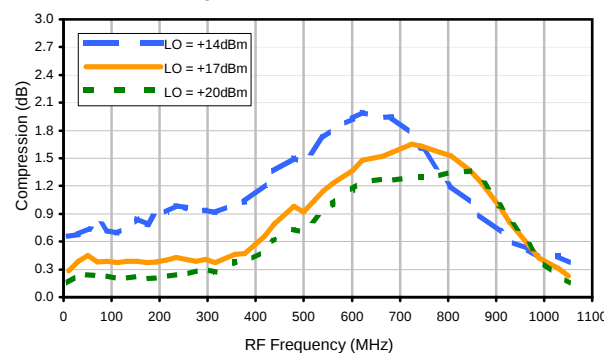
Conversion Loss vs. IF @ RF=750.1MHz



IP3 Input

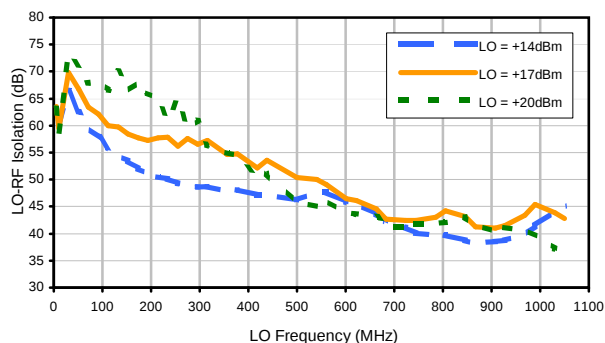


Compression @ RF IN=+14dBm

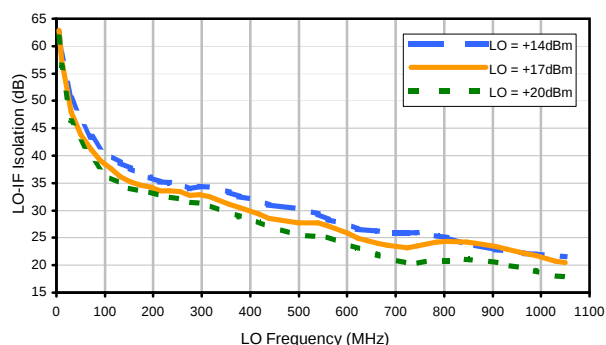


Typical Performance Curves

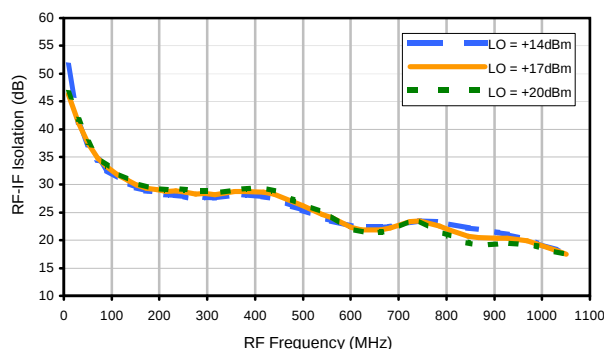
LO-RF Isolation



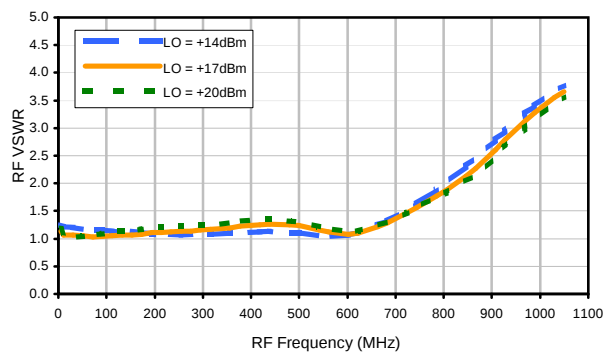
LO-IF Isolation



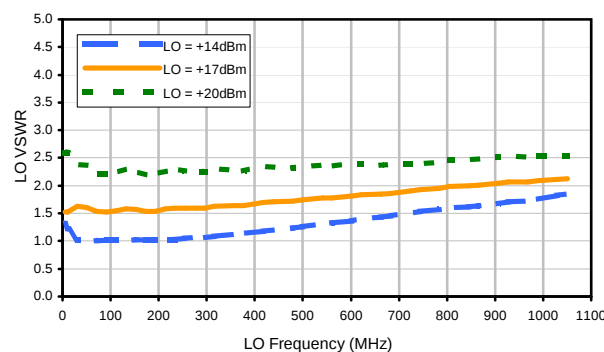
RF-IF Isolation



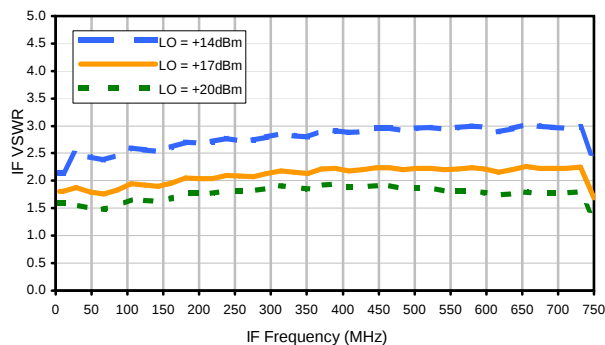
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	5	36	10	34	17	52	31	42	32	50
1	-	23	+0	33	12	38	29	48	32	42	36	55
2	98	56	37	56	38	55	38	58	50	64	49	65
3	>100	70	61	72	62	67	58	72	68	82	60	73
4	>100	78	67	73	66	71	69	71	70	83	87	81
5	>100	>92	91	>92	>92	>92	84	88	84	88	92	>92
6	>100	>92	>92	>92	>92	>92	>92	89	>92	89	>92	>92
7	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
8	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
9	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
10	>100	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92	>92
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 370.1 MHz; -1.00 dBm.
LO IN: 400.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -7.53 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	14	47	26	48	32	60	47	51	47	65
1	-	23	+0	32	13	39	29	49	38	49	46	67
2	86	60	33	69	34	57	34	53	43	66	50	63
3	>100	58	43	58	44	56	41	71	61	63	47	59
4	>100	70	49	66	47	68	49	67	48	67	60	69
5	>100	82	68	76	59	73	56	65	53	67	66	79
6	>100	80	70	74	59	68	59	67	60	67	63	79
7	>100	86	82	93	77	>102	78	97	75	86	73	92
8	>100	89	84	92	82	82	72	77	71	74	70	74
9	>100	>102	>102	101	89	>102	80	88	83	86	81	86
10	>100	>102	96	96	102	101	101	87	91	84	82	79
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 370.1 MHz; 9.00 dBm.
LO IN: 400.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; 2.38 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.

REV. X2
TAK-1WH+
100818
Page 3 of 3



A01
A04
A05
A06

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A01	.770 (19.56)	.800 (20.32)	.385 (9.78)	.400 (10.16)	.370 (9.40)	.400 (10.16)	.200 (5.08)	.20 (5.08)	.14 (3.56)	.031 (.79)	5.2
A04			.200 (5.08)	.210 (5.33)							3.7
A05			.240 (6.10)	.250 (6.35)							3.7
A06			.285 (7.24)	.310 (7.87)							5.2

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

Notes:

- Header material: C.R.S.
Pin material: #52 alloy.
Cover material: Cupro-Nickel.
- Pin finish: Electro Tin-Silver.
- Insulated spacer available. Request P/N B14-045-01.
- Tolerance on pin diameter $\pm .005$ inch.
- Glass meniscus 0.015 inch max.
- Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.



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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
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A



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
Gross Leak	125°C Bubble Test	MIL-STD-202, Method 112, Condition D
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D