

Non-Catalog Model

Frequency Mixer

TUF-3MH

Level 13 (LO Power +13 dBm)

Important Note

This is a non-catalog model and can be manufactured on specific request.
Pricing and delivery information can be supplied upon request.



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CASE STYLE : B02

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency	LO (fL to fU)	0.15		400	MHz
	RF (fL to fU)	0.15		400	MHz
	IF	0		400	MHz
Conversion Loss	mid band		5.0	7.0	dB
	Total Range			8.0	dB
LO-RF Isolation	Low Range	50	60		dB
	Mid Range	30	46		dB
	Upper Range	25	35		dB
LO-IF Isolation	Low Range	40	60		dB
	Mid Range	25	42		dB
	Upper Range	20	35		dB
1 dB Comp. Input Power			+9		dBm

Notes: Low Range = [fL to 10fL]
mid band = [2fL to fU/2]

Mid Range = [10fL to fU/2]

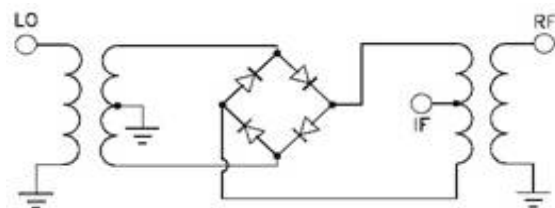
Upper Range = [fU/2 to fU]

Non-hermetic

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

PIN CONNECTIONS	
LO	4
RF	1
IF	2
GROUND	3

Electrical Schematics



Frequency Mixer

TUF-3MH

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+10	+13	+16
0.1	30.1	5.47	5.15	4.95
1.0	31.0	4.85	4.57	4.42
5.0	35.0	4.92	4.68	4.54
10.0	40.0	4.99	4.73	4.56
27.8	57.8	4.92	4.69	4.55
45.5	75.5	5.00	4.74	4.61
63.2	93.2	4.92	4.71	4.57
80.9	110.9	4.90	4.73	4.63
98.6	128.6	4.93	4.75	4.64
133.9	163.9	4.98	4.81	4.71
151.6	181.6	5.04	4.83	4.71
169.3	199.3	5.11	4.95	4.83
187.0	217.0	5.14	4.95	4.83
204.7	234.7	5.11	4.90	4.81
222.4	252.4	5.27	5.00	4.84
240.1	270.1	5.31	5.10	4.91
257.8	287.8	5.27	5.15	5.04
275.5	305.5	5.26	5.12	5.02
293.2	323.2	5.30	5.14	5.03
310.9	340.9	5.43	5.19	5.05
328.6	358.6	6.12	5.33	5.01
346.3	376.3	6.82	5.69	5.05
363.9	393.9	7.08	5.92	5.16
381.6	411.6	7.19	6.13	5.32
399.3	429.3	7.59	6.54	5.65
417.0	447.0	7.76	6.89	6.15
434.7	464.7	7.91	7.08	6.42
452.4	482.4	7.57	6.87	6.49
470.1	500.1	7.36	6.93	6.75
487.8	517.8	7.55	7.18	6.97
505.5	535.5	7.57	7.23	7.05
523.2	553.2	7.48	7.21	7.09
540.9	570.9	7.42	7.29	7.27
558.6	588.6	7.62	7.58	7.64
576.3	606.3	7.89	7.87	7.90
593.9	623.9	8.15	8.19	8.25
611.6	641.6	8.39	8.46	8.54
629.3	659.3	9.32	9.40	9.53
647.0	677.0	9.65	9.78	9.89
664.7	694.7	10.04	10.17	10.30
682.4	712.4			
700.1	730.1			

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	24.64	25.70	35.07
27.8	57.8	27.92	35.29	34.28
45.5	75.5	24.74	28.25	28.25
63.2	93.2	23.59	24.40	23.70
80.9	110.9	29.22	27.17	22.72
98.6	128.6	27.44	21.79	20.83
116.3	146.3	24.15	22.81	21.99
133.9	163.9	26.28	20.15	19.03
151.6	181.6	19.95	20.29	20.34
169.3	199.3	17.39	16.44	17.04
187.0	217.0	19.79	18.07	18.11
204.7	234.7	24.48	25.22	22.87
222.4	252.4	21.21	28.07	21.39
240.1	270.1	15.52	15.82	18.67
257.8	287.8	15.78	15.76	16.73
275.5	305.5	16.02	16.05	17.15
293.2	323.2	15.05	15.35	15.76
310.9	340.9	14.73	15.03	17.23
328.6	358.6	14.30	16.70	21.58
346.3	376.3	12.69	18.59	25.79
363.9	393.9	9.18	15.81	21.90
381.6	411.6	8.58	13.02	17.97
399.3	429.3	9.82	13.86	15.98
417.0	447.0	10.99	16.29	16.31
434.7	464.7	12.31	17.16	19.50
452.4	482.4	12.64	17.85	20.86
470.1	500.1	15.52	29.32	27.37
487.8	517.8	19.63	22.55	23.08
505.5	535.5	21.19	21.60	21.32
523.2	553.2	20.04	18.78	20.18
540.9	570.9	19.07	16.71	19.18
558.6	588.6	16.16	16.02	18.68
576.3	606.3	14.77	15.90	18.86
593.9	623.9	14.22	15.44	18.31
611.6	641.6	13.50	14.76	17.50
629.3	659.3	12.89	13.51	15.64
647.0	677.0	13.62	14.03	15.77
664.7	694.7	14.14	14.15	15.11
682.4	712.4	15.39	14.68	15.07
700.1	730.1	16.02	15.22	15.35

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	1.76	1.42	1.20
27.8	57.8	1.61	1.27	1.09
45.5	75.5	1.62	1.33	1.08
63.2	93.2	1.55	1.21	0.99
80.9	110.9	1.50	1.18	0.97
98.6	128.6	1.43	1.07	0.90
116.3	146.3	1.33	1.02	0.86
133.9	163.9	1.37	1.09	0.93
151.6	181.6	1.35	1.06	0.88
169.3	199.3	1.20	0.92	0.79
187.0	217.0	1.25	0.95	0.82
204.7	234.7	1.31	0.99	0.81
222.4	252.4	1.30	1.12	0.92
240.1	270.1	1.45	1.21	1.08
257.8	287.8	1.72	1.39	1.22
275.5	305.5	1.99	1.63	1.45
293.2	323.2	2.35	1.82	1.62
310.9	340.9	2.49	1.88	1.67
328.6	358.6	2.69	2.06	1.78
346.3	376.3	2.56	2.30	1.98
363.9	393.9	2.37	2.43	2.19
381.6	411.6	2.17	2.31	2.17
399.3	429.3	2.00	2.18	2.14
417.0	447.0	1.69	1.93	2.02
434.7	464.7	1.49	1.68	1.82
452.4	482.4	1.50	1.69	1.80
470.1	500.1	1.71	1.80	1.73
487.8	517.8	1.67	1.60	1.48
505.5	535.5	1.65	1.42	1.35
523.2	553.2	1.62	1.32	1.31
540.9	570.9	1.77	1.35	1.25
558.6	588.6	1.76	1.22	1.15
576.3	606.3	1.57	1.04	0.94
593.9	623.9	1.55	0.96	0.84
611.6	641.6	1.40	0.84	0.77
629.3	659.3	1.46	0.81	0.69
647.0	677.0	1.34	0.78	0.75
664.7	694.7	1.22	0.83	0.88
682.4	712.4	1.41	1.00	1.04
700.1	730.1	1.46	1.14	1.23

REV. X2

TUF-3MH

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Frequency Mixer

TUF-3MH

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=200.1MHz (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)=400.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+13			+13			+13
190.0	10.1	5.10	10.0	20.1	4.61	390.0	10.1	5.96
185.4	14.7	5.11	19.7	29.8	4.46	380.3	19.8	5.89
180.8	19.3	5.06	29.5	39.6	4.39	370.5	29.6	5.82
176.2	23.9	4.99	39.2	49.3	4.44	360.8	39.3	5.79
171.5	28.6	4.99	49.0	59.1	4.48	351.0	49.1	5.76
166.9	33.2	4.93	58.7	68.8	4.45	341.3	58.8	5.73
162.3	37.8	4.91	68.5	78.6	4.50	331.5	68.6	5.72
157.7	42.4	4.90	78.2	88.3	4.54	321.8	78.3	5.79
153.1	47.0	4.92	87.9	98.0	4.53	312.1	88.0	5.78
148.5	51.6	4.88	97.7	107.8	4.55	302.3	97.8	5.74
143.8	56.3	4.82	107.4	117.5	4.57	292.6	107.5	5.77
139.2	60.9	4.86	117.2	127.3	4.57	282.8	117.3	5.76
134.6	65.5	4.84	126.9	137.0	4.56	273.1	127.0	5.75
130.0	70.1	4.85	136.7	146.8	4.60	263.3	136.8	5.80
125.4	74.7	4.86	146.4	156.5	4.68	253.6	146.5	5.87
120.8	79.3	4.87	156.2	166.3	4.70	243.8	156.3	5.85
116.2	83.9	4.86	165.9	176.0	4.65	234.1	166.0	5.83
111.5	88.6	4.86	175.6	185.7	4.66	224.4	175.7	5.87
106.9	93.2	4.85	185.4	195.5	4.73	214.6	185.5	5.88
102.3	97.8	4.81	195.1	205.2	4.68	204.9	195.2	5.87
97.7	102.4	4.83	204.9	215.0	4.64	195.1	205.0	5.90
93.1	107.0	4.85	214.6	224.7	4.70	185.4	214.7	5.89
88.5	111.6	4.87	224.4	234.5	4.68	175.6	224.5	5.88
83.8	116.3	4.86	234.1	244.2	4.69	165.9	234.2	5.83
79.2	120.9	4.86	243.8	253.9	4.85	156.2	243.9	5.86
74.6	125.5	4.83	253.6	263.7	5.00	146.4	253.7	5.87
70.0	130.1	4.84	263.3	273.4	4.95	136.7	263.4	5.89
65.4	134.7	4.82	273.1	283.2	5.02	126.9	273.2	5.99
60.8	139.3	4.84	282.8	292.9	5.03	117.2	282.9	6.04
56.2	143.9	4.85	292.6	302.7	4.90	107.4	292.7	5.95
51.5	148.6	4.85	302.3	312.4	4.94	97.7	302.4	6.01
46.9	153.2	4.86	312.1	322.2	4.95	87.9	312.2	6.09
42.3	157.8	4.85	321.8	331.9	4.82	78.2	321.9	6.00
37.7	162.4	4.85	331.5	341.6	4.84	68.5	331.6	5.90
33.1	167.0	4.85	341.3	351.4	4.78	58.7	341.4	5.73
28.5	171.6	4.89	351.0	361.1	4.71	49.0	351.1	5.65
23.8	176.3	4.88	360.8	370.9	4.84	39.2	360.9	5.55
19.2	180.9	4.85	370.5	380.6	4.85	29.5	370.6	5.48
14.6	185.5	4.95	380.3	390.4	4.78	19.7	380.4	5.63
10.0	190.1	5.07	390.0	400.1	4.88	10.0	390.1	5.70

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
0.1	70.00	73.00	76.00	59.41	60.91	63.34
1.0	70.00	73.00	76.00	59.03	60.66	63.06
5.0	70.00	73.00	76.00	58.89	60.53	62.89
10.0	70.00	73.00	71.81	58.55	60.07	62.11
27.8	59.55	60.37	61.04	56.36	54.09	53.18
45.5	55.47	56.19	56.92	51.16	49.68	48.12
63.2	52.61	53.48	54.35	48.26	46.39	45.78
80.9	50.41	51.48	52.27	45.04	44.31	44.15
98.6	48.77	49.63	50.02	43.07	42.64	42.47
133.9	45.76	46.16	46.42	40.12	40.26	39.90
151.6	44.86	45.75	46.13	39.99	39.94	39.27
169.3	42.34	43.16	43.64	40.08	39.54	38.66
187.0	41.14	41.18	41.43	41.05	39.70	38.29
204.7	40.29	40.81	41.25	39.39	38.34	37.07
222.4	40.15	39.92	39.95	38.86	37.68	36.30
240.1	42.00	40.71	40.47	37.16	35.44	34.49
257.8	46.62	43.74	41.23	38.41	33.92	31.87
275.5	49.17	45.26	41.86	40.33	35.17	31.87
293.2	47.31	45.08	42.73	41.94	35.84	32.56
310.9	42.95	41.85	39.92	44.89	36.15	32.23
346.3	38.07	38.29	37.67	37.26	31.84	27.66
363.9	36.65	37.51	37.76	33.32	28.80	25.97
381.6	36.50	37.27	38.23	32.19	28.16	25.57
399.3	36.66	36.44	36.58	31.14	26.73	24.44
417.0	37.96	38.40	38.32	29.63	25.13	22.70
434.7	37.75	37.39	35.87	29.16	24.91	21.54
452.4	38.83	38.60	36.46	27.81	23.88	20.71
470.1	39.10	38.73	36.24	27.39	24.03	20.53
487.8	38.51	37.68	34.22	26.86	23.40	19.74
505.5	36.94	35.26	32.10	25.79	22.16	18.24
523.2	34.72	32.56	29.40	24.54	21.54	17.36
540.9	33.62	31.16	28.10	22.96	19.56	15.84
558.6	31.82	29.62	26.89	21.51	18.44	15.08
576.3	30.08	27.80	25.16	20.18	17.19	14.04
593.9	27.97	25.68	23.51	18.56	15.52	12.88
611.6	25.43	23.83	22.03	16.92	14.74	12.35
629.3	23.69	22.44	21.08	15.48	13.76	11.82
647.0	20.82	20.07	19.04	13.67	12.43	10.76
664.7	19.82	19.14	18.40	13.19	11.83	10.48
682.4	19.11	18.44	17.62	12.86	11.55	10.03
700.1						

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
10.1	40.1	38.46	37.04	36.30
27.8	57.8	30.78	31.01	31.12
45.5	75.5	26.97	27.09	27.30
63.2	93.2	24.78	24.94	25.21
80.9	110.9	23.19	23.52	23.76
98.6	128.6	22.18	22.38	22.48
116.3	146.3	21.62	22.00	22.08
133.9	163.9	20.89	21.26	21.53
151.6	181.6	20.49	21.04	21.60
169.3	199.3	20.42	20.84	21.25
187.0	217.0	21.20	21.42	21.66
204.7	234.7	21.82	22.20	22.49
222.4	252.4	22.71	23.54	24.22
240.1	270.1	23.18	24.33	25.62
257.8	287.8	23.45	24.46	25.78
275.5	305.5	21.98	22.69	23.59
293.2	323.2	20.09	20.52	20.85
310.9	340.9	18.61	18.73	18.62
328.6	358.6	17.37	17.29	17.27
346.3	376.3	16.51	16.51	16.53
363.9	393.9	15.88	15.69	15.77
381.6	411.6	15.87	15.76	15.87
399.3	429.3	15.97	15.83	15.62
417.0	447.0	16.40	16.30	15.97
434.7	464.7	16.13	16.05	15.70
452.4	482.4	15.72	15.62	15.10
470.1	500.1	14.95	14.73	14.23
487.8	517.8	14.20	13.78	13.38
505.5	535.5	13.60	13.03	12.82
523.2	553.2	12.84	12.36	12.25
540.9	570.9	12.07	11.65	11.43
558.6	588.6	11.37	10.98	10.70
576.3	606.3	10.46	10.01	9.58
593.9	623.9	9.64	9.22	8.87
611.6	641.6	8.64	8.26	7.98
629.3	659.3	7.80	7.47	7.26
647.0	677.0	7.13	6.82	6.66
664.7	694.7	6.48	6.21	6.05
682.4	712.4	6.14	5.94	5.82
700.1	730.1	5.81	5.62	5.47

Frequency Mixer

TUF-3MH

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=400.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
5.0	35.0	1.51	1.33	1.21	5.0	1.05	1.72	2.63	5.0	1.69	1.54	1.45
10.0	40.0	1.52	1.33	1.22	10.0	1.04	1.65	2.54	10.0	1.69	1.54	1.45
27.8	57.8	1.39	1.25	1.16	27.8	1.33	2.10	3.10	20.0	2.46	1.74	1.38
45.5	75.5	1.42	1.27	1.17	45.5	1.35	2.14	3.15	30.0	2.42	1.74	1.38
63.2	93.2	1.37	1.22	1.14	63.2	1.31	2.02	2.94	40.0	2.23	1.60	1.27
80.9	110.9	1.34	1.22	1.14	80.9	1.29	1.96	2.84	50.0	2.13	1.56	1.23
98.6	128.6	1.30	1.19	1.13	98.6	1.30	1.99	2.84	60.0	2.07	1.52	1.21
116.3	146.3	1.30	1.19	1.11	116.3	1.33	2.03	2.92	70.0	2.08	1.53	1.23
133.9	163.9	1.30	1.19	1.13	133.9	1.38	2.09	3.01	80.0	2.22	1.64	1.30
151.6	181.6	1.31	1.17	1.10	151.6	1.38	2.07	2.94	90.0	2.32	1.70	1.37
169.3	199.3	1.29	1.19	1.12	169.3	1.38	2.01	2.84	100.0	2.40	1.78	1.43
187.0	217.0	1.25	1.17	1.12	187.0	1.40	2.08	2.90	110.0	2.46	1.81	1.47
204.7	234.7	1.21	1.11	1.07	204.7	1.41	2.06	2.90	120.0	2.40	1.78	1.45
222.4	252.4	1.25	1.11	1.07	222.4	1.48	2.13	2.98	130.0	2.34	1.73	1.41
240.1	270.1	1.25	1.13	1.06	240.1	1.54	2.15	2.96	140.0	2.31	1.72	1.40
257.8	287.8	1.20	1.12	1.06	257.8	1.55	2.16	2.94	150.0	2.32	1.74	1.42
275.5	305.5	1.18	1.10	1.05	275.5	1.55	2.25	3.06	160.0	2.36	1.81	1.48
293.2	323.2	1.18	1.11	1.06	293.2	1.54	2.14	2.95	170.0	2.41	1.86	1.54
310.9	340.9	1.23	1.15	1.10	310.9	1.59	2.21	3.02	180.0	2.46	1.88	1.58
328.6	358.6	1.34	1.22	1.18	328.6	1.64	2.23	3.02	190.0	2.48	1.90	1.59
346.3	376.3	1.51	1.35	1.28	346.3	1.70	2.22	2.97	200.0	2.46	1.90	1.59
363.9	393.9	1.72	1.50	1.37	363.9	1.80	2.34	3.13	210.0	2.42	1.89	1.60
381.6	411.6	1.83	1.59	1.41	381.6	1.83	2.32	3.02	220.0	2.44	1.90	1.61
399.3	429.3	1.87	1.67	1.46	399.3	1.86	2.44	3.14	230.0	2.45	1.92	1.63
417.0	447.0	2.06	1.85	1.64	417.0	1.91	2.56	3.27	240.0	2.46	1.95	1.66
434.7	464.7	2.14	1.95	1.74	434.7	1.88	2.50	3.22	250.0	2.43	1.95	1.68
452.4	482.4	2.17	1.96	1.76	452.4	1.92	2.60	3.31	260.0	2.37	1.92	1.68
470.1	500.1	2.06	1.87	1.73	470.1	1.88	2.48	3.15	270.0	2.37	1.91	1.67
487.8	517.8	1.99	1.84	1.76	487.8	1.87	2.48	3.17	280.0	2.40	1.93	1.68
505.5	535.5	2.09	1.97	1.91	505.5	1.92	2.56	3.22	290.0	2.43	1.97	1.72
523.2	553.2	2.11	2.02	1.97	523.2	1.89	2.48	3.11	300.0	2.42	1.99	1.77
540.9	570.9	2.07	2.00	1.97	540.9	1.90	2.49	3.06	310.0	2.41	1.98	1.76
558.6	588.6	2.04	2.01	1.99	558.6	1.88	2.41	2.93	320.0	2.39	1.96	1.74
576.3	606.3	2.08	2.08	2.06	576.3	1.88	2.37	2.88	330.0	2.34	1.93	1.72
593.9	623.9	2.16	2.14	2.13	593.9	1.91	2.40	2.86	340.0	2.28	1.91	1.71
611.6	641.6	2.18	2.17	2.15	611.6	1.90	2.34	2.79	350.0	2.26	1.88	1.70
629.3	659.3	2.14	2.15	2.15	629.3	1.93	2.35	2.77	360.0	2.31	1.89	1.70
647.0	677.0	2.14	2.15	2.14	647.0	1.99	2.39	2.78	370.0	2.36	1.94	1.73
664.7	694.7	2.14	2.15	2.14	664.7	1.98	2.35	2.74	380.0	2.35	1.95	1.76
682.4	712.4	2.15	2.13	2.12	682.4	2.01	2.39	2.77	390.0	2.28	1.91	1.74
700.1	730.1	2.12	2.09	2.07	700.1	1.99	2.36	2.74	400.0	2.34	1.97	1.82

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	21	33	20	43	34	51	38	45	39	50
1	-	17	+0	24	12	36	29	46	37	47	41	53
2	92	49	40	49	42	44	41	60	53	55	46	57
3	>100	43	38	45	43	49	40	58	52	51	46	51
4	>100	62	59	53	53	53	52	60	57	76	65	78
5	>100	65	54	49	46	54	46	56	47	61	58	62
6	>100	75	77	76	80	64	63	62	61	66	70	69
7	>100	76	>99	76	70	59	61	64	61	67	63	89
8	>100	87	83	94	88	75	74	69	90	66	65	72
9	>100	80	78	80	77	78	67	64	67	72	69	72
10	>100	88	89	88	91	89	86	83	77	74	85	75
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 200.1 MHz; 4.00 dBm.

LO IN: 230.01 MHz; +13.00 dBm

IF OUT: 29.91 MHz; -1.32 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	12	23	8	30	25	34	22	33	29	37
1	-	17	+0	23	11	34	30	39	36	41	32	43
2	>100	50	48	47	48	49	47	65	54	62	59	62
3	>100	80	72	74	59	64	58	78	60	65	57	67
4	>100	>89	76	76	73	73	70	74	77	85	72	86
5	>100	>89	84	>89	85	>89	80	83	80	87	>89	88
6	>100	>89	>89	>89	>89	>89	79	>89	>89	>89	>89	>89
7	>100	>89	>89	>89	>89	>89	>89	81	>89	>89	>89	>89
8	>100	>89	>89	>89	>89	>89	>89	88	67	88	>89	>89
9	>100	>89	>89	>89	>89	>89	>89	>89	>89	80	>89	>89
10	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions:

RF IN: 200.1 MHz; -6.00 dBm.

LO IN: 230.01 MHz; +13.00 dBm

IF OUT: 29.91 MHz; -11.3 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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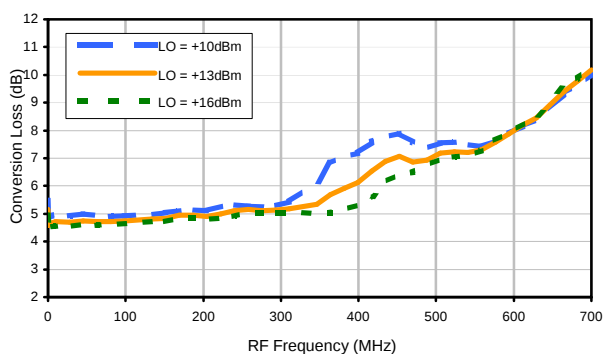


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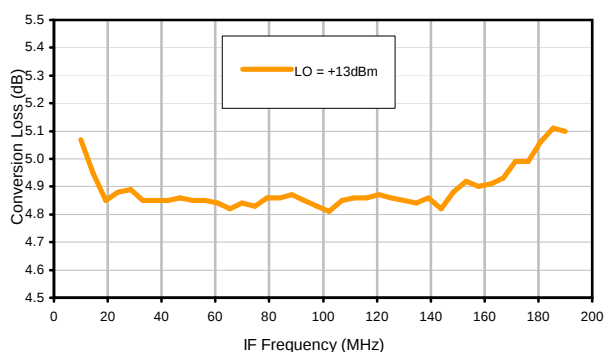


Typical Performance Curves

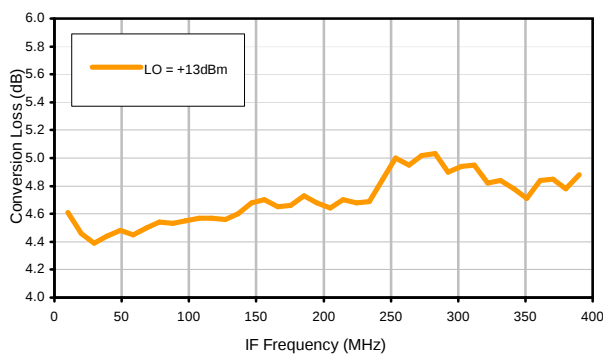
Conversion Loss @ IF=30MHz



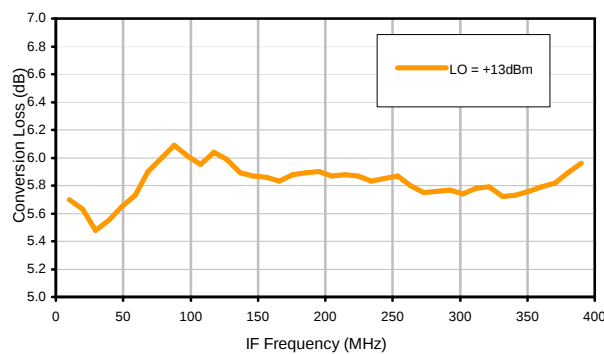
Conversion Loss vs. IF @ RF=200.1MHz



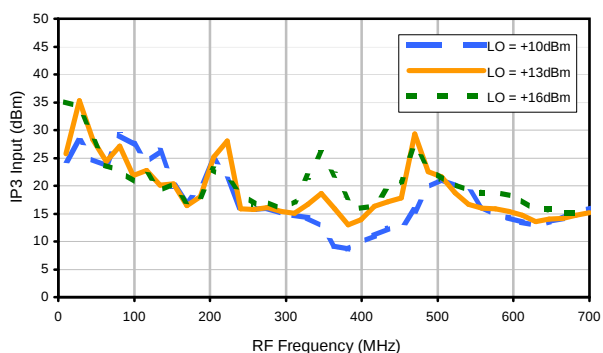
Conversion Loss vs. IF @ RF=10.1MHz



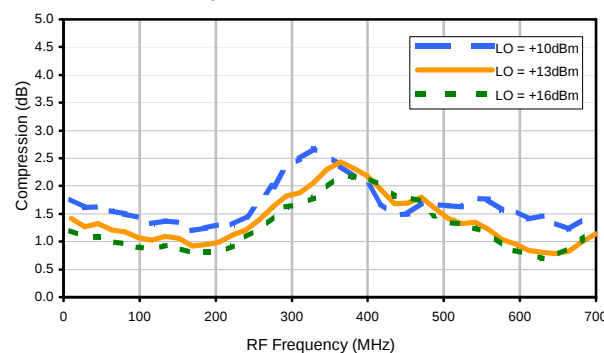
Conversion Loss vs. IF @ RF=400.1MHz



IP3 Input

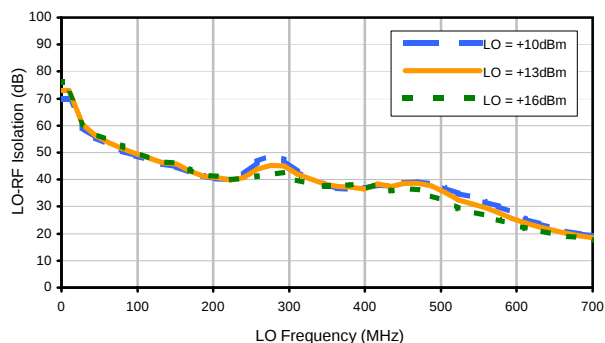


Compression @ RF IN=+9dBm

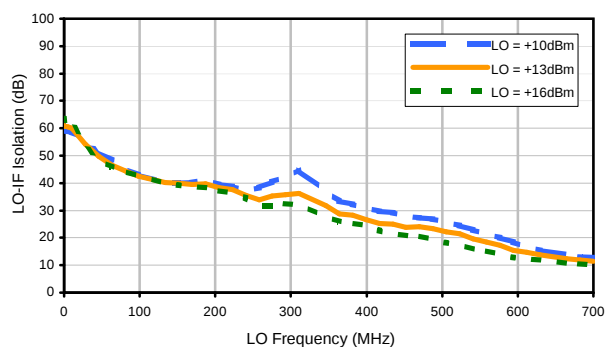


Typical Performance Curves

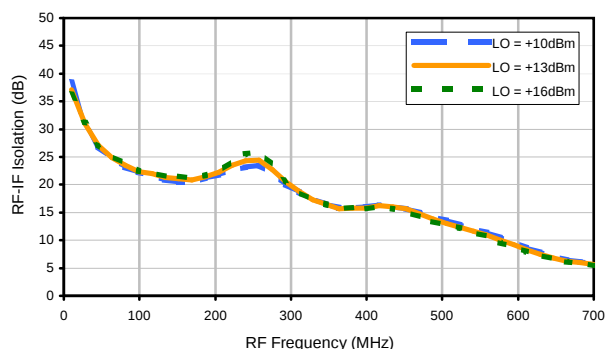
LO-RF Isolation



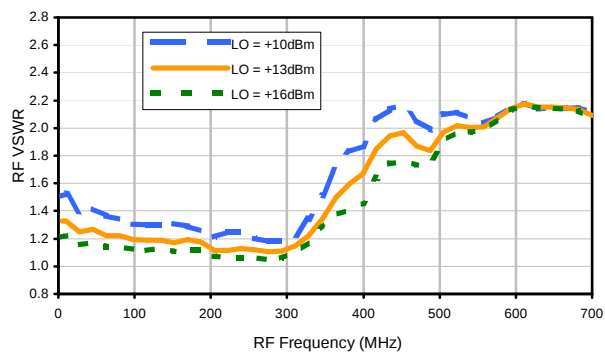
LO-IF Isolation



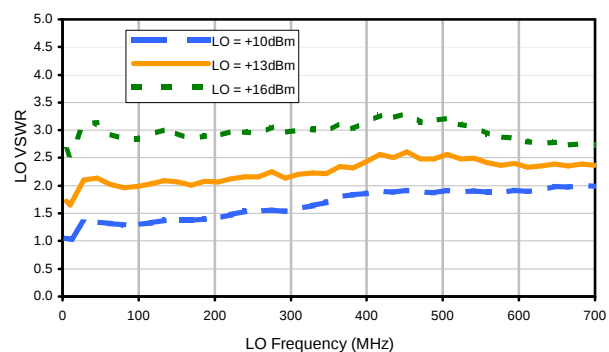
RF-IF Isolation



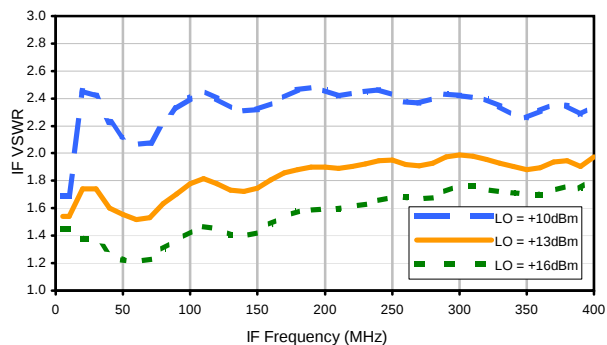
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	21	33	20	43	34	51	38	45	39	50
1	-	17	+0	24	12	36	29	46	37	47	41	53
2	92	49	40	49	42	44	41	60	53	55	46	57
3	>100	43	38	45	43	49	40	58	52	51	46	51
4	>100	62	59	53	53	53	52	60	57	76	65	78
5	>100	65	54	49	46	54	46	56	47	61	58	62
6	>100	75	77	76	80	64	63	62	61	66	70	69
7	>100	76	>99	76	70	59	61	64	61	67	63	89
8	>100	87	83	94	88	75	74	69	90	66	65	72
9	>100	80	78	80	77	78	67	64	67	72	69	72
10	>100	88	89	88	91	89	86	83	77	74	85	75
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 200.1 MHz; 4.00 dBm.
LO IN: 230.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -1.32 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	12	23	8	30	25	34	22	33	29	37
1	-	17	+0	23	11	34	30	39	36	41	32	43
2	>100	50	48	47	48	49	47	65	54	62	59	62
3	>100	80	72	74	59	64	58	78	60	65	57	67
4	>100	>89	76	76	73	73	70	74	77	85	72	86
5	>100	>89	84	>89	85	>89	80	83	80	87	>89	88
6	>100	>89	>89	>89	>89	>89	79	>89	>89	>89	>89	>89
7	>100	>89	>89	>89	>89	>89	>89	81	>89	>89	>89	>89
8	>100	>89	>89	>89	>89	>89	>89	88	67	88	>89	>89
9	>100	>89	>89	>89	>89	>89	>89	>89	>89	80	>89	>89
10	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 200.1 MHz; -6.00 dBm.
LO IN: 230.01 MHz; +13.00 dBm
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- 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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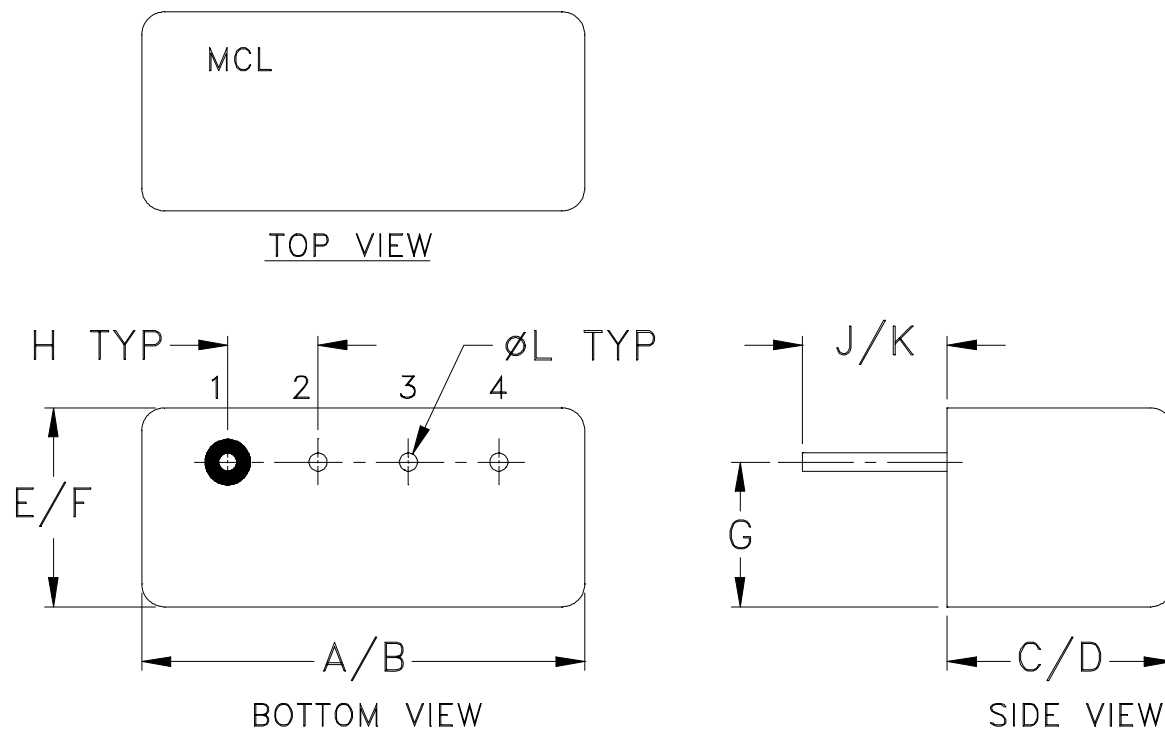
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B02

B13

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	WT, GRAM
B02	.480 (12.19)	.500 (12.70)	.240 (6.10)	.255 (6.48)	.210 (5.33)	.230 (5.84)	.16 (4.06)	.100 (2.54)	.14 (3.56)	.20 (5.08)	.020 (.51)	1.9
B13			.390 (9.91)	.405 (10.29)								2.3

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.
- 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



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Specification	Test/Inspection Condition	Reference/Spec
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D