Non-Catalog Model

Frequency Mixer TSM-2

Level 7 (LO Power +7 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.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : A11

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency	**LO** (fL to fU)	1		1000	MHz
	RF (fL to fU)	1		1000	MHz
	IF	0		1000	MHz
Conversion Loss	**mid band**		5.6	7.5	dB
	Total Range			10.0	dB
LO-RF Isolation	**Low Range**	45	55		dB
	Mid Range	20	40		dB
	Upper Range	18	35		dB
LO-IF Isolation	**Low Range**	40	50		dB
	Mid Range	20	40		dB
	Upper Range	18	25		dB
1 dB Comp. Input Power			+1		dBm

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

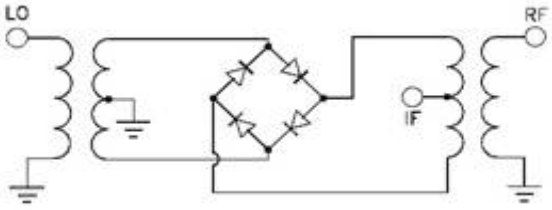
Hermetically sealed

MAXIMUM RATINGS	
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

PIN CONNECTIONS	
LO	8
RF	1
IF	3, 4 ^
GROUND	2, 5, 6, 7

^ - pins must be connected together externally

Electrical Schematics



Frequency Mixer TSM-2

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+4	+7	+10
1.0	31.0	7.65	7.23	7.05
2.0	32.0	6.99	6.50	6.38
5.0	35.0	6.14	5.80	5.68
10.0	40.0	6.01	5.62	5.47
50.4	80.4	5.98	5.72	5.59
90.7	120.7	5.98	5.74	5.62
131.0	161.0	5.99	5.77	5.66
171.3	201.3	5.97	5.76	5.65
251.8	281.8	5.99	5.78	5.68
292.1	322.1	5.99	5.81	5.70
332.4	362.4	6.06	5.85	5.73
372.7	402.7	6.13	5.90	5.75
413.0	443.0	6.20	5.99	5.85
453.3	483.3	6.18	5.96	5.85
493.6	523.6	6.32	6.08	5.94
533.9	563.9	6.47	6.24	6.07
574.2	604.2	6.64	6.41	6.24
614.4	644.4	6.77	6.50	6.30
654.7	684.7	6.76	6.45	6.26
695.0	725.0	6.82	6.45	6.24
735.3	765.3	6.97	6.44	6.18
815.9	845.9	7.48	6.65	6.19
856.2	886.2	7.82	6.94	6.35
896.5	926.5	8.01	7.21	6.56
916.6	946.6	8.20	7.44	6.79
956.9	986.9	8.50	7.81	7.18
977.1	1007.1	8.57	7.93	7.31
1017.3	1047.3	8.81	8.24	7.66
1037.5	1067.5	8.90	8.36	7.81
1077.8	1107.8	8.88	8.47	8.06
1097.9	1127.9	8.83	8.52	8.22
1138.2	1168.2	8.73	8.55	8.39
1158.4	1188.4	8.68	8.51	8.39
1198.7	1228.7	8.75	8.60	8.50
1259.1	1289.1	9.05	8.89	8.78
1279.2	1309.2	9.21	9.05	8.95
1319.5	1349.5	9.52	9.34	9.23
1339.7	1369.7	9.67	9.49	9.37
1380.0	1410.0	10.08	9.88	9.77
1400.1	1430.1	10.24	10.05	9.94

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
10.1	40.1	21.28	21.23	20.02
50.4	80.4	18.95	20.63	24.50
90.7	120.7	20.55	20.29	22.38
131.0	161.0	20.91	20.52	23.84
171.3	201.3	18.04	21.57	25.21
211.5	241.5	16.10	19.83	24.72
251.8	281.8	18.87	24.24	26.16
292.1	322.1	14.33	15.91	19.41
332.4	362.4	14.38	18.15	26.14
372.7	402.7	15.23	19.91	20.35
413.0	443.0	22.25	21.58	18.61
453.3	483.3	20.74	20.52	19.94
493.6	523.6	12.77	18.11	23.52
533.9	563.9	9.27	11.03	14.34
574.2	604.2	8.16	9.47	11.65
614.4	644.4	8.41	10.77	14.39
654.7	684.7	11.07	14.93	20.43
695.0	725.0	17.79	19.74	17.49
735.3	765.3	18.61	13.07	12.93
775.6	805.6	11.82	11.71	11.20
815.9	845.9	7.84	10.30	10.31
856.2	886.2	6.17	8.83	9.19
896.5	926.5	5.23	7.23	8.60
916.6	946.6	4.54	6.32	7.83
956.9	986.9	3.68	4.93	6.49
977.1	1007.1	3.40	4.39	5.83
1017.3	1047.3	3.37	4.02	5.28
1037.5	1067.5	3.75	4.38	5.74
1077.8	1107.8	5.27	6.29	7.88
1097.9	1127.9	6.59	7.52	8.93
1138.2	1168.2	9.86	10.08	10.72
1158.4	1188.4	11.16	11.20	11.79
1198.7	1228.7	13.34	13.03	13.67
1218.8	1248.8	14.29	13.97	14.38
1259.1	1289.1	14.68	14.52	14.06
1279.2	1309.2	14.91	15.27	14.54
1319.5	1349.5	15.67	16.82	16.41
1339.7	1369.7	15.93	17.69	16.97
1380.0	1410.0	16.34	18.80	18.34
1400.1	1430.1	16.30	17.62	19.71

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	0.98	0.69	0.48
50.4	80.4	0.97	0.68	0.46
90.7	120.7	0.90	0.62	0.40
131.0	161.0	0.93	0.63	0.41
171.3	201.3	0.85	0.56	0.36
211.5	241.5	0.87	0.58	0.40
251.8	281.8	0.78	0.52	0.36
292.1	322.1	0.78	0.54	0.39
332.4	362.4	0.75	0.53	0.39
372.7	402.7	0.72	0.52	0.39
413.0	443.0	0.85	0.59	0.44
453.3	483.3	1.00	0.70	0.50
493.6	523.6	1.12	0.84	0.60
533.9	563.9	1.28	0.98	0.74
574.2	604.2	1.39	1.08	0.84
614.4	644.4	1.59	1.25	1.02
654.7	684.7	1.79	1.41	1.12
695.0	725.0	1.97	1.52	1.21
735.3	765.3	2.08	1.69	1.35
775.6	805.6	1.98	1.71	1.37
815.9	845.9	1.82	1.72	1.43
856.2	886.2	1.61	1.56	1.37
896.5	926.5	1.51	1.43	1.29
916.6	946.6	1.43	1.36	1.24
956.9	986.9	1.31	1.23	1.15
977.1	1007.1	1.28	1.20	1.13
1017.3	1047.3	1.15	1.09	1.11
1037.5	1067.5	1.07	1.02	1.06
1077.8	1107.8	1.01	0.91	0.91
1097.9	1127.9	0.99	0.82	0.77
1138.2	1168.2	1.03	0.77	0.62
1158.4	1188.4	1.03	0.75	0.59
1198.7	1228.7	0.90	0.64	0.48
1218.8	1248.8	0.81	0.57	0.42
1259.1	1289.1	0.69	0.44	0.31
1279.2	1309.2	0.62	0.39	0.26
1319.5	1349.5	0.49	0.31	0.20
1339.7	1369.7	0.46	0.27	0.18
1380.0	1410.0	0.38	0.22	0.15
1400.1	1430.1	0.33	0.19	0.13

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)
		@LO (dBm)
		+7
490.0	10.1	6.10
477.7	22.4	6.05
465.4	34.7	6.01
453.1	47.0	5.97
440.8	59.3	5.94
428.5	71.6	5.89
416.2	83.9	5.86
403.8	96.3	5.87
391.5	108.6	5.85
379.2	120.9	5.85
366.9	133.2	5.86
354.6	145.5	5.87
342.3	157.8	5.87
330.0	170.1	5.88
317.7	182.4	5.90
305.4	194.7	5.90
293.1	207.0	5.91
280.8	219.3	5.92
268.5	231.6	5.94
256.2	243.9	5.93
243.8	256.3	5.95
231.5	268.6	5.96
219.2	280.9	5.95
206.9	293.2	5.96
194.6	305.5	5.99
182.3	317.8	6.01
170.0	330.1	6.02
157.7	342.4	6.01
145.4	354.7	6.01
133.1	367.0	6.01
120.8	379.3	6.00
108.5	391.6	6.01
96.2	403.9	6.02
83.8	416.3	6.02
71.5	428.6	6.03
59.2	440.9	6.06
46.9	453.2	6.05
34.6	465.5	6.04
22.3	477.8	6.06
10.0	490.1	6.02

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm)
		+7
10.0	20.1	5.70
30.0	40.1	5.75
50.0	60.1	5.76
70.0	80.1	5.75
90.0	100.1	5.76
110.0	120.1	5.78
130.0	140.1	5.82
150.0	160.1	5.82
170.0	180.1	5.80
190.0	200.1	5.82
210.0	220.1	5.84
230.0	240.1	5.88
250.0	260.1	5.87
270.0	280.1	5.87
290.0	300.1	5.90
310.0	320.1	5.94
330.0	340.1	5.97
350.0	360.1	5.93
370.0	380.1	5.94
390.0	400.1	5.98
430.0	440.1	6.08
450.0	460.1	6.11
490.0	500.1	6.20
510.0	520.1	6.28
550.0	560.1	6.37
570.0	580.1	6.36
610.0	620.1	6.26
630.0	640.1	6.16
670.0	680.1	5.96
690.0	700.1	5.89
730.0	740.1	5.79
750.0	760.1	5.75
790.0	800.1	5.77
810.0	820.1	5.85
850.0	860.1	5.93
870.0	880.1	5.92
910.0	920.1	5.84
930.0	940.1	5.80
970.0	980.1	5.73
990.0	1000.1	5.70

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB)
		@LO (dBm)
		+7
990.0	10.1	7.30
970.0	30.1	7.34
950.0	50.1	7.39
930.0	70.1	7.49
910.0	90.1	7.53
890.0	110.1	7.53
870.0	130.1	7.55
850.0	150.1	7.55
830.0	170.1	7.60
810.0	190.1	7.59
790.0	210.1	7.57
770.0	230.1	7.54
750.0	250.1	7.44
730.0	270.1	7.53
710.0	290.1	7.48
690.0	310.1	7.49
670.0	330.1	7.48
650.0	350.1	7.42
630.0	370.1	7.32
610.0	390.1	7.35
570.0	430.1	7.37
550.0	450.1	7.24
510.0	490.1	7.03
490.0	510.1	7.08
450.0	550.1	7.21
430.0	570.1	7.26
390.0	610.1	7.25
370.0	630.1	7.14
330.0	670.1	6.85
310.0	690.1	6.76
270.0	730.1	6.78
250.0	750.1	6.74
210.0	790.1	6.78
190.0	810.1	6.83
150.0	850.1	7.03
130.0	870.1	7.22
90.0	910.1	7.50
70.0	930.1	7.62
30.0	970.1	7.92
10.0	990.1	8.00

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
1.0	64.00	67.00	70.00	64.00	67.00	70.00
2.0	64.00	67.00	70.00	64.00	67.00	70.00
5.0	64.00	67.00	70.00	64.00	67.00	70.00
10.0	64.00	67.00	70.00	64.00	67.00	70.00
50.4	62.13	63.60	65.16	63.99	59.79	57.39
90.7	57.17	58.97	60.78	59.23	55.10	52.73
131.0	53.75	55.73	57.46	57.35	53.36	50.65
171.3	51.57	53.51	55.18	54.59	51.47	48.77
251.8	48.27	50.12	51.73	48.12	47.70	46.05
292.1	47.12	48.92	50.35	45.33	45.48	44.34
332.4	45.57	47.18	48.65	43.22	44.04	43.56
372.7	45.19	47.12	48.73	41.09	42.06	42.00
413.0	44.70	46.43	47.95	39.43	40.58	40.78
453.3	43.89	45.30	46.48	38.28	39.84	40.43
493.6	43.19	44.90	46.12	37.40	38.91	39.44
533.9	41.51	43.25	44.74	36.15	37.57	38.38
574.2	40.29	42.06	43.70	35.04	36.39	37.14
614.4	39.51	41.37	43.21	33.79	35.27	36.19
654.7	39.01	41.26	43.45	32.81	34.40	35.49
695.0	38.95	41.23	43.23	31.75	33.30	34.41
735.3	38.28	40.57	42.74	30.72	32.24	33.48
815.9	37.45	39.76	41.91	29.46	30.74	31.97
856.2	37.15	39.37	41.50	29.39	30.65	31.81
896.5	37.26	39.45	41.51	29.03	30.40	31.54
916.6	37.46	39.79	42.06	28.84	30.26	31.40
956.9	37.40	39.47	41.65	28.52	29.96	31.19
977.1	37.51	39.49	41.51	28.33	29.77	30.95
1017.3	37.60	39.43	41.29	27.91	29.21	30.23
1037.5	37.44	38.99	40.42	27.70	28.92	29.83
1077.8	37.56	38.96	40.06	27.41	28.34	29.01
1097.9	37.69	39.10	40.21	27.14	27.91	28.46
1138.2	39.17	40.40	41.14	26.78	27.35	27.77
1158.4	40.16	41.36	41.89	26.65	27.16	27.49
1198.7	40.66	41.38	41.42	26.52	26.85	27.02
1259.1	41.15	41.06	40.46	26.64	26.65	26.59
1279.2	41.37	40.93	40.14	26.68	26.55	26.41
1319.5	41.21	40.11	39.01	26.57	26.20	25.90
1339.7	41.50	40.14	38.95	26.64	26.16	25.82
1380.0	42.19	39.89	38.33	26.65	25.99	25.51
1400.1	42.08	39.50	37.81	26.53	25.85	25.30

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	50.21	46.26	43.86
50.4	80.4	42.65	42.92	42.78
90.7	120.7	38.37	38.73	39.04
131.0	161.0	36.17	36.48	36.80
171.3	201.3	35.04	35.41	35.75
211.5	241.5	34.40	34.80	35.24
251.8	281.8	34.73	35.27	35.65
292.1	322.1	35.26	36.32	37.09
332.4	362.4	35.30	35.84	35.90
372.7	402.7	33.79	33.91	33.87
413.0	443.0	32.57	33.09	33.51
453.3	483.3	31.25	32.12	32.65
493.6	523.6	28.61	28.54	28.44
533.9	563.9	26.07	25.67	25.25
574.2	604.2	23.88	23.43	23.02
614.4	644.4	22.07	21.57	21.12
654.7	684.7	20.65	20.09	19.67
695.0	725.0	19.81	19.25	18.88
735.3	765.3	19.65	19.03	18.63
775.6	805.6	19.53	19.13	18.80
815.9	845.9	19.30	19.06	18.86
856.2	886.2	19.01	18.68	18.44
896.5	926.5	18.79	18.51	18.14
916.6	946.6	18.65	18.46	18.09
956.9	986.9	18.27	18.14	17.93
977.1	1007.1	18.04	17.92	17.76
1017.3	1047.3	17.44	17.23	17.02
1037.5	1067.5	17.12	16.87	16.60
1077.8	1107.8	16.29	15.94	15.64
1097.9	1127.9	15.77	15.41	15.13
1138.2	1168.2	14.67	14.30	14.03
1158.4	1188.4	14.10	13.73	13.48
1198.7	1228.7	13.06	12.71	12.47
1218.8	1248.8	12.66	12.29	12.02
1259.1	1289.1	11.89	11.53	11.27
1279.2	1309.2	11.55	11.20	10.93
1319.5	1349.5	10.92	10.56	10.34
1339.7	1369.7	10.63	10.30	10.07
1380.0	1410.0	10.16	9.83	9.60
1400.1	1430.1	9.92	9.59	9.39

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
5.0	35.0	1.26	1.30	1.34
10.0	40.0	1.12	1.15	1.20
50.4	80.4	1.05	1.03	1.09
90.7	120.7	1.02	1.06	1.12
131.0	161.0	1.04	1.10	1.15
171.3	201.3	1.04	1.10	1.15
211.5	241.5	1.07	1.14	1.18
251.8	281.8	1.06	1.13	1.17
292.1	322.1	1.10	1.17	1.22
332.4	362.4	1.09	1.15	1.20
372.7	402.7	1.08	1.15	1.20
413.0	443.0	1.12	1.19	1.24
453.3	483.3	1.15	1.23	1.29
493.6	523.6	1.20	1.28	1.35
533.9	563.9	1.14	1.21	1.27
574.2	604.2	1.15	1.20	1.24
614.4	644.4	1.06	1.10	1.14
654.7	684.7	1.03	1.07	1.11
695.0	725.0	1.15	1.15	1.16
735.3	765.3	1.25	1.23	1.24
775.6	805.6	1.43	1.41	1.41
815.9	845.9	1.61	1.55	1.53
856.2	886.2	1.84	1.77	1.73
896.5	926.5	2.11	2.02	1.95
916.6	946.6	2.21	2.12	2.05
956.9	986.9	2.55	2.46	2.37
977.1	1007.1	2.71	2.62	2.53
1017.3	1047.3	2.90	2.84	2.74
1037.5	1067.5	3.07	3.02	2.92
1077.8	1107.8	3.26	3.25	3.18
1097.9	1127.9	3.26	3.27	3.23
1138.2	1168.2	3.42	3.48	3.48
1158.4	1188.4	3.43	3.47	3.49
1198.7	1228.7	3.42	3.46	3.48
1218.8	1248.8	3.52	3.55	3.57
1259.1	1289.1	3.66	3.68	3.72
1279.2	1309.2	3.59	3.60	3.62
1319.5	1349.5	3.66	3.65	3.67
1339.7	1369.7	3.75	3.74	3.76
1380.0	1410.0	3.71	3.70	3.70
1400.1	1430.1	3.73	3.71	3.71

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
5.0	1.77	2.70	4.33
10.0	1.71	2.63	3.91
50.4	1.71	2.44	3.35
90.7	1.77	2.54	3.50
131.0	1.73	2.45	3.34
171.3	1.72	2.44	3.32
211.5	1.77	2.51	3.40
251.8	1.72	2.39	3.22
292.1	1.82	2.55	3.43
332.4	1.78	2.46	3.27
372.7	1.82	2.51	3.33
413.0	1.88	2.58	3.40
453.3	1.86	2.50	3.26
493.6	1.96	2.64	3.43
533.9	1.96	2.61	3.35
574.2	2.00	2.65	3.39
614.4	2.04	2.68	3.42
654.7	2.02	2.60	3.29
695.0	2.11	2.71	3.41
735.3	2.18	2.75	3.41
775.6	2.25	2.81	3.45
815.9	2.33	2.90	3.54
856.2	2.34	2.89	3.50
896.5	2.40	2.98	3.60
916.6	2.44	3.01	3.65
956.9	2.43	2.98	3.60
977.1	2.44	2.99	3.60
1017.3	2.48	3.02	3.63
1037.5	2.47	3.00	3.60
1077.8	2.44	2.95	3.54
1097.9	2.44	2.95	3.56
1138.2	2.46	2.98	3.59
1158.4	2.47	2.97	3.58
1198.7	2.56	3.05	3.65
1218.8	2.63	3.12	3.70
1259.1	2.76	3.20	3.75
1279.2	2.82	3.24	3.76
1319.5	3.00	3.38	3.90
1339.7	3.09	3.45	3.94
1380.0	3.23	3.52	3.97
1400.1	3.31	3.58	4.02

IF (OUT) (MHz)	IF VSWR @LO=1000.1MHz (:1) @LO (dBm)		
	+4	+7	+10
5.0	1.43	1.24	1.09
10.0	1.44	1.25	1.10
30.2	2.67	2.27	1.93
50.4	2.68	2.28	1.94
70.6	2.71	2.31	1.96
90.8	2.73	2.33	1.98
111.0	2.73	2.34	1.99
131.2	2.75	2.35	1.99
151.4	2.78	2.38	2.02
171.6	2.82	2.41	2.05
191.8	2.84	2.43	2.07
212.0	2.85	2.45	2.09
232.2	2.87	2.48	2.11
252.4	2.93	2.53	2.16
272.7	2.97	2.57	2.20
292.9	2.99	2.59	2.22
313.1	2.98	2.60	2.24
333.3	2.99	2.62	2.27
353.5	2.99	2.64	2.29
373.7	2.99	2.66	2.32
393.9	3.00	2.67	2.34
434.3	3.01	2.72	2.41
454.5	3.00	2.72	2.42
494.9	2.96	2.69	2.42
515.1	2.95	2.69	2.43
555.5	2.89	2.64	2.40
575.7	2.86	2.62	2.37
616.1	2.79	2.56	2.34
636.3	2.74	2.51	2.30
676.7	2.67	2.44	2.23
696.9	2.63	2.40	2.20
737.3	2.50	2.27	2.08
757.6	2.44	2.22	2.03
798.0	2.34	2.12	1.94
818.2	2.25	2.04	1.86
858.6	2.11	1.90	1.73
878.8	2.06	1.86	1.68
919.2	1.91	1.71	1.55
939.4	1.85	1.65	1.49
979.8	1.74	1.55	1.39
1000.0	1.46	1.47	1.55

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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	11	30	18	31	21	33	31	51	56	58
1	-	22	+0	33	10	34	30	38	61	40	54	53
2	>100	69	66	62	61	65	61	79	63	75	66	>80
3	>100	66	66	67	67	66	61	71	>80	70	73	80
4	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
5	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
6	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
7	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
8	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
9	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
10	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -14.00 dBm.**
LO IN: 530.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -20.2 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	21	38	30	42	32	43	45	63	72	70
1	-	23	+0	33	11	37	31	43	46	46	55	59
2	88	59	56	52	49	56	51	65	55	67	60	80
3	>100	47	46	54	47	51	41	56	58	52	65	57
4	>100	>90	70	78	67	75	65	67	69	84	72	75
5	>100	75	81	69	58	63	57	62	55	65	74	71
6	>100	>90	>90	>90	81	79	78	77	75	78	84	>90
7	>100	87	86	>90	84	83	82	87	78	78	72	80
8	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	85	86
9	>100	>90	>90	>90	>90	>90	>90	>90	88	>90	87	86
10	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -4.00 dBm.**
LO IN: 530.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -10.27 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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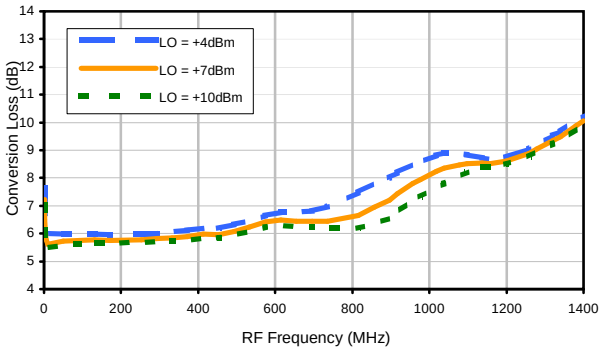
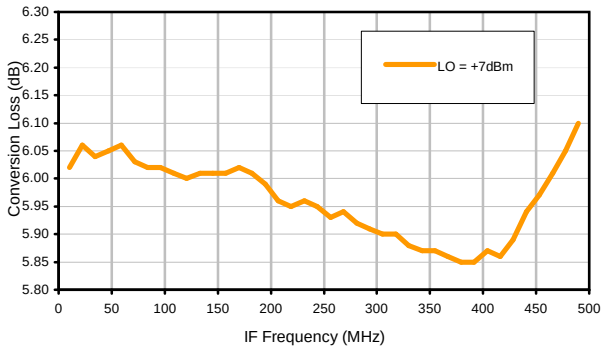
Typical Performance Curves

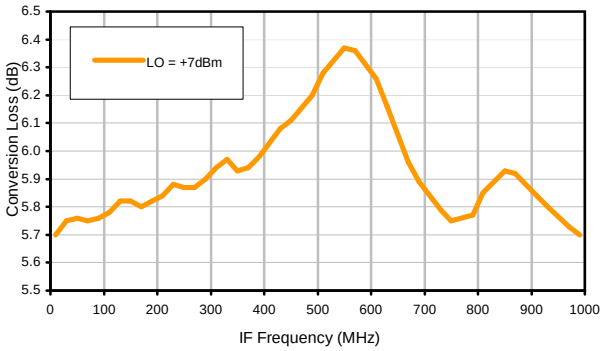
Conversion Loss @ IF=30MHz



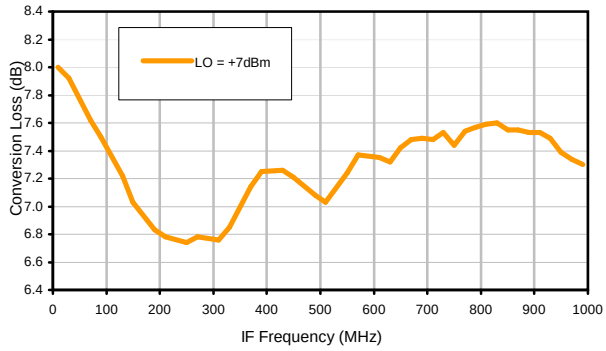
Conversion Loss vs. IF @ RF=500.1MHz



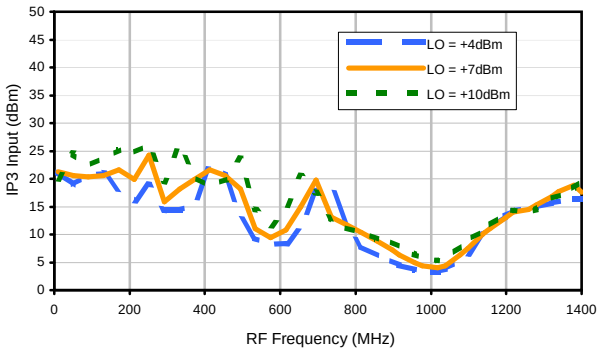
Conversion Loss vs. IF @ RF=10.1MHz



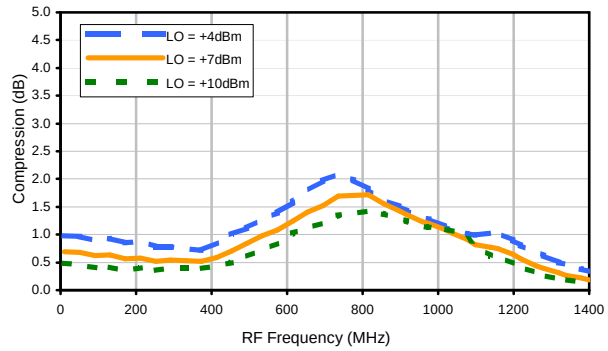
Conversion Loss vs. IF @ RF=1000.1MHz



IP3 Input



Compression @ RF IN=+1dBm



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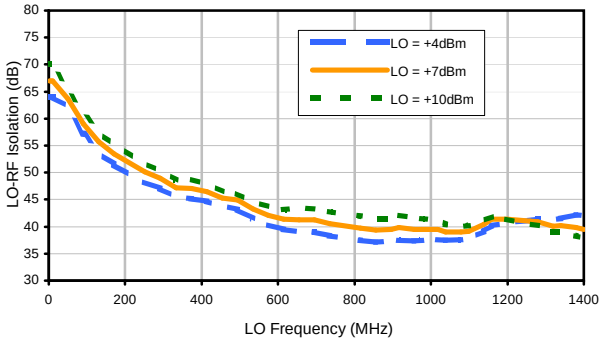
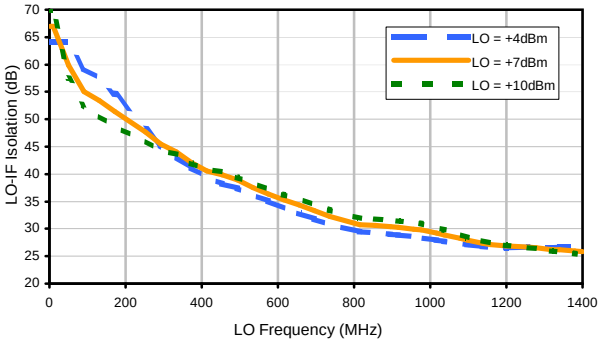
Typical Performance Curves

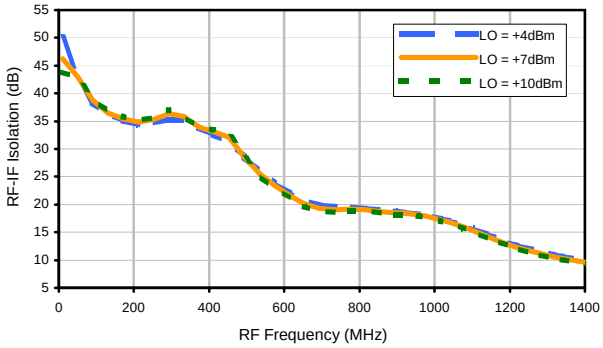
LO-RF Isolation



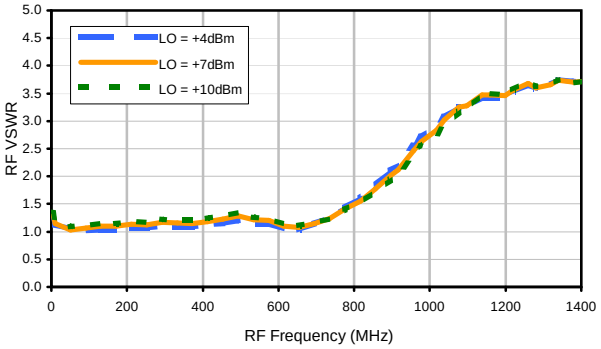
LO-IF Isolation



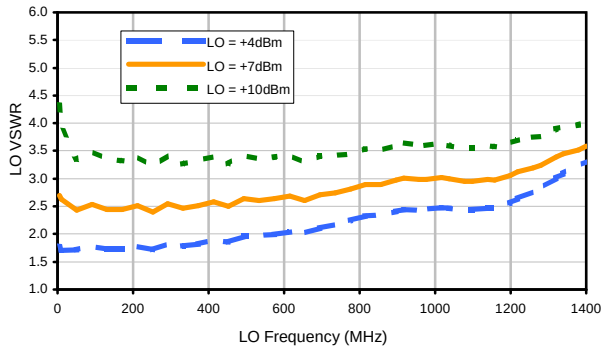
RF-IF Isolation



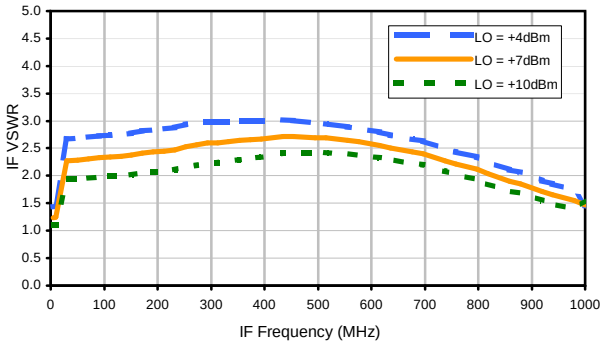
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	11	30	18	31	21	33	31	51	56	58
1	-	22	+0	33	10	34	30	38	61	40	54	53
2	>100	69	66	62	61	65	61	79	63	75	66	>80
3	>100	66	66	67	67	66	61	71	>80	70	73	80
4	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
5	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
6	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
7	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
8	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
9	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
10	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -14.00 dBm.**
LO IN: 530.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -20.2 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	21	38	30	42	32	43	45	63	72	70
1	-	23	+0	33	11	37	31	43	46	46	55	59
2	88	59	56	52	49	56	51	65	55	67	60	80
3	>100	47	46	54	47	51	41	56	58	52	65	57
4	>100	>90	70	78	67	75	65	67	69	84	72	75
5	>100	75	81	69	58	63	57	62	55	65	74	71
6	>100	>90	>90	>90	81	79	78	77	75	78	84	>90
7	>100	87	86	>90	84	83	82	87	78	78	72	80
8	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	85	86
9	>100	>90	>90	>90	>90	>90	>90	>90	88	>90	87	86
10	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -4.00 dBm.**
LO IN: 530.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -10.27 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
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3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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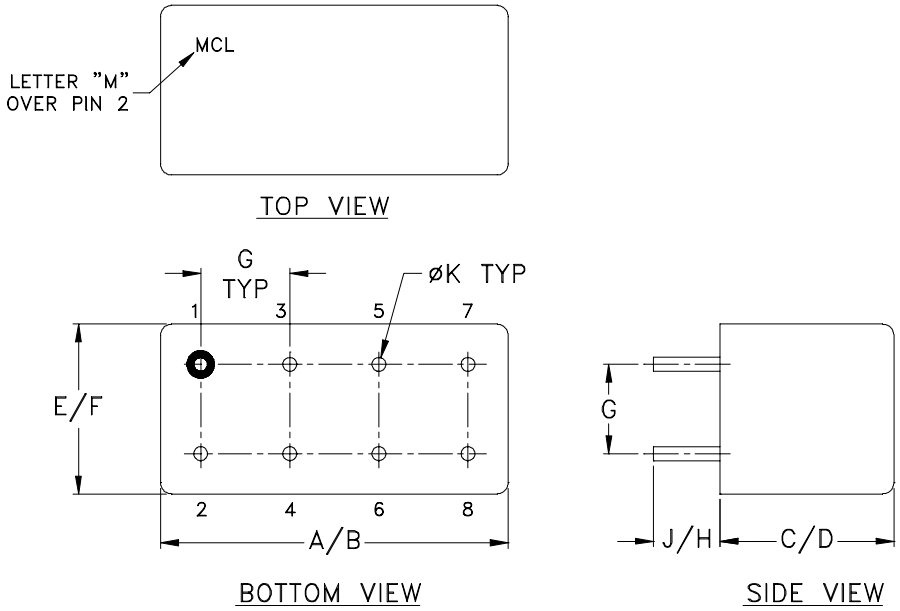
Case Style A

A03
A11

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A03	.480 (12.19)	.500 (12.70)	.390 (9.91)	.405 (10.29)	.210 (5.33)	.230 (5.84)	.100 (2.54)	.20 (5.08)	.14 (3.56)	.020 (.51)	2.3
A11			.240 (6.10)	.255 (6.48)							1.9

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

Notes:

1. Header material: C.R.S.
   Pin material: #52 alloy.
   Cover material: Cupro-Nickel.
2. Pin finish: Electro Tin-Silver.
3. Insulated spacer available. Request P/N B14-047-01.
4. Tolerance on pin diameter +/-.005 inch.
5. Glass meniscus 0.015 inch max.
6. Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.

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Environmental Specifications ENV01

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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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

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