Coaxial

Frequency Mixer

ZP-1MH+

Level 13 (LO Power +13 dBm) 2 to 600 MHz

Generic photo used for illustration purposes only

CASE STYLE: GG60

Connectors	Model
BNC	ZP-1MH+
SMA	ZP-1MH-S+

+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	L
RF	R
IF	X

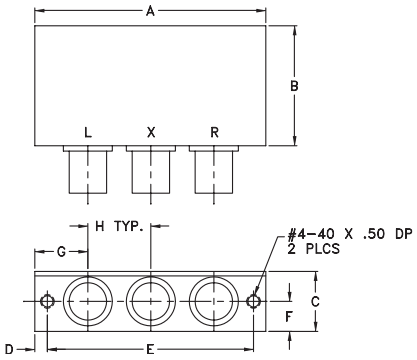
Features

- low conversion loss, 6.3 dB typ.
- high L-R isolation, 50 dB typ., L-I, 48 dB typ.
- rugged shielded case

Applications

- VHF/UHF
- instrumentation

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	wt
2.31	1.20	.60	.125	2.062	.30	.53	.63	grams
58.67	30.48	15.24	3.18	52.37	7.62	13.46	16.00	75.0

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		$\overline{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
2-600	DC-600	6.3	0.12	7.0	8.0	68	50	50	30	43	25	65	45	48	30	37	22

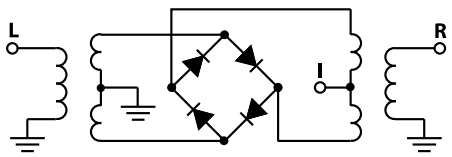
1 dB COMP.: +9 dBm typ.

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)	VSWR RF Port (:1)	Frequency (MHz)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR LO Port (:1)
RF	LO	LO +13dBm	LO +13dBm	LO	LO +13dBm	LO +13dBm	LO +13dBm
2.00	32.00	6.69	1.71	2.30	72.70	67.41	2.47
4.00	34.00	6.16	1.37	5.30	70.19	66.64	2.38
10.00	40.00	5.88	1.15	10.30	66.20	64.23	2.34
16.00	46.00	5.86	1.10	15.30	63.06	61.97	2.28
33.00	63.00	5.84	1.05	20.30	60.88	60.01	2.30
50.00	80.00	5.81	1.03	30.30	58.09	57.73	2.22
101.00	131.00	5.84	1.03	40.10	56.62	56.49	2.23
171.00	201.00	5.97	1.07	80.00	50.45	50.68	2.16
211.00	241.00	6.00	1.09	114.00	48.55	49.14	2.21
271.00	301.00	5.99	1.12	161.00	46.23	47.36	2.14
311.00	341.00	6.02	1.14	201.00	44.75	46.87	2.19
331.00	361.00	6.00	1.16	241.00	43.64	46.01	2.11
355.00	385.00	6.01	1.17	301.00	41.84	43.65	2.18
398.00	428.00	6.00	1.18	346.00	40.23	41.40	2.19
441.00	471.00	6.08	1.19	406.50	39.17	39.27	2.18
484.00	514.00	6.16	1.22	449.50	38.01	37.50	2.14
505.50	535.50	6.14	1.23	471.00	37.37	36.34	2.18
548.50	578.50	6.19	1.26	514.00	36.67	36.01	2.20
570.00	600.00	6.16	1.27	557.00	36.02	35.09	2.25
600.00	630.00	6.30	1.30	600.00	35.65	33.93	2.18

Electrical Schematic



Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
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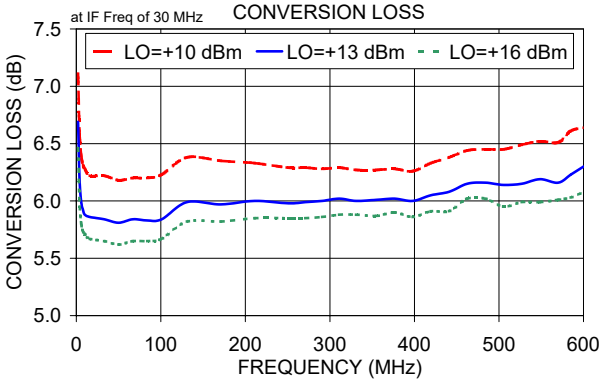
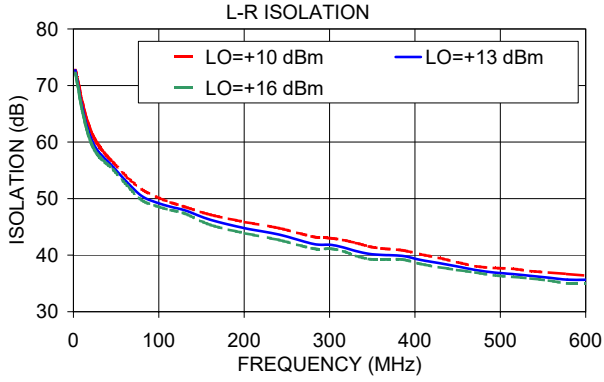
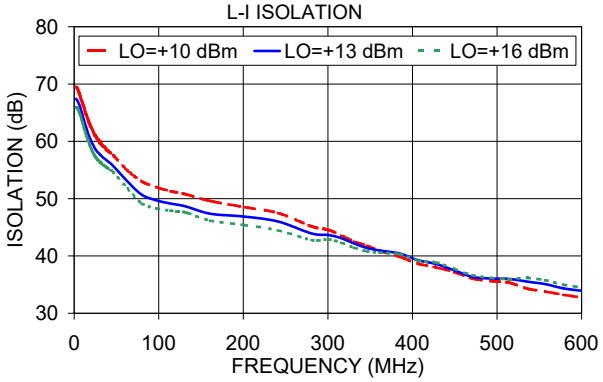
ZP-1MH+
CONVERSION LOSS
at IF Freq of 30 MHz



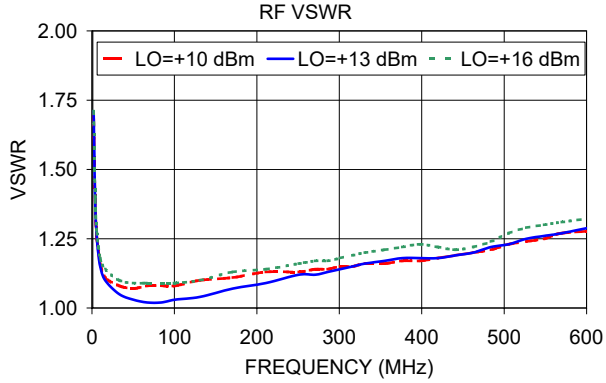
ZP-1MH+
L-R ISOLATION



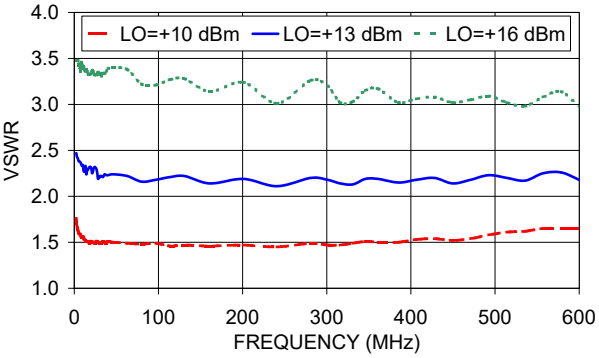
ZP-1MH+
L-I ISOLATION



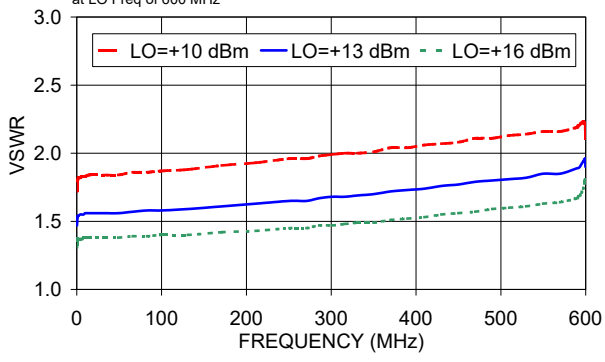
ZP-1MH+
RF VSWR



ZP-1MH+
LO VSWR



ZP-1MH+
IF VSWR
at LO Freq of 600 MHz



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Frequency Mixer ZP-1MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+10	+13	+16
2.0	32.0	7.06	6.55	6.24
5.0	35.0	6.49	6.06	5.82
10.0	40.0	6.42	5.98	5.73
50.4	80.4	6.11	5.76	5.61
90.7	120.7	6.06	5.72	5.57
131.0	161.0	5.97	5.66	5.54
171.3	201.3	6.04	5.68	5.55
211.5	241.5	5.88	5.63	5.52
251.8	281.8	5.94	5.68	5.57
292.1	322.1	5.93	5.67	5.55
332.4	362.4	5.94	5.69	5.59
372.7	402.7	5.98	5.73	5.61
413.0	443.0	5.95	5.69	5.60
453.3	483.3	6.06	5.79	5.62
493.6	523.6	6.05	5.82	5.69
574.2	604.2	6.12	5.82	5.69
614.4	644.4	6.24	5.92	5.73
654.7	684.7	6.29	6.05	5.85
695.0	725.0	6.33	6.12	5.99
735.3	765.3	6.45	6.27	6.13
775.6	805.6	6.49	6.30	6.16
815.9	845.9	6.54	6.31	6.16
856.2	886.2	6.68	6.29	6.15
896.5	926.5	6.99	6.36	6.17
916.6	946.6	7.26	6.49	6.22
956.9	986.9	7.65	6.66	6.31
977.1	1007.1	8.01	6.79	6.35
1017.3	1047.3	8.48	7.20	6.54
1037.5	1067.5	8.50	7.28	6.55
1077.8	1107.8	9.07	7.93	6.98
1097.9	1127.9	9.12	8.10	7.19
1138.2	1168.2	9.45	8.53	7.66
1158.4	1188.4	9.69	8.81	7.92
1218.8	1248.8	9.93	9.34	8.61
1259.1	1289.1	10.04	9.51	8.96
1279.2	1309.2	10.05	9.60	9.08
1319.5	1349.5	10.14	9.72	9.31
1339.7	1369.7	10.30	9.87	9.51
1380.0	1410.0	10.32	10.04	9.79
1400.1	1430.1	10.30	10.07	9.93

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+10	+13	+16
10.1	40.1	23.62	26.66	28.16
50.4	80.4	22.21	25.36	26.08
90.7	120.7	21.08	22.75	25.58
131.0	161.0	22.18	24.86	28.27
171.3	201.3	21.15	25.17	28.52
211.5	241.5	23.34	28.18	25.34
251.8	281.8	26.47	23.17	24.20
292.1	322.1	24.45	22.71	25.31
332.4	362.4	21.91	24.22	33.79
372.7	402.7	21.88	21.61	23.26
413.0	443.0	19.62	23.45	25.86
453.3	483.3	19.03	20.76	28.05
493.6	523.6	21.07	22.16	24.38
533.9	563.9	23.43	28.72	37.10
574.2	604.2	20.82	27.79	28.58
614.4	644.4	17.22	22.59	29.92
654.7	684.7	16.34	17.95	22.24
695.0	725.0	15.77	16.41	17.85
735.3	765.3	15.56	16.87	17.52
775.6	805.6	15.46	17.54	20.13
815.9	845.9	15.99	19.65	24.40
856.2	886.2	16.98	21.92	26.93
896.5	926.5	15.98	23.14	33.25
916.6	946.6	15.17	24.50	26.29
956.9	986.9	13.10	21.67	26.43
977.1	1007.1	11.91	21.28	27.16
1017.3	1047.3	11.80	17.87	27.97
1037.5	1067.5	12.19	17.33	26.76
1077.8	1107.8	12.86	15.24	25.77
1097.9	1127.9	13.54	15.87	22.57
1138.2	1168.2	14.10	16.66	20.19
1158.4	1188.4	14.59	16.84	21.10
1198.7	1228.7	14.94	16.80	20.25
1218.8	1248.8	15.70	17.38	21.22
1259.1	1289.1	16.02	16.70	20.94
1279.2	1309.2	16.13	17.06	21.37
1319.5	1349.5	16.27	17.76	22.06
1339.7	1369.7	16.50	17.68	21.52
1380.0	1410.0	17.02	19.22	22.95
1400.1	1430.1	17.05	19.96	23.01

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.42	1.19	1.02
50.4	80.4	1.22	1.00	0.85
90.7	120.7	1.11	0.99	0.85
131.0	161.0	1.22	1.02	0.82
171.3	201.3	1.16	0.96	0.81
211.5	241.5	1.16	0.92	0.75
251.8	281.8	1.16	0.91	0.75
292.1	322.1	1.16	0.88	0.76
332.4	362.4	1.12	0.85	0.72
372.7	402.7	1.09	0.83	0.70
413.0	443.0	1.01	0.80	0.66
453.3	483.3	0.95	0.74	0.65
493.6	523.6	1.05	0.79	0.68
533.9	563.9	1.05	0.84	0.69
574.2	604.2	1.20	1.00	0.82
614.4	644.4	1.25	1.06	0.91
654.7	684.7	1.40	1.13	0.96
695.0	725.0	1.55	1.23	1.05
735.3	765.3	1.75	1.39	1.20
775.6	805.6	1.93	1.52	1.33
815.9	845.9	1.97	1.59	1.38
856.2	886.2	2.08	1.63	1.39
896.5	926.5	1.98	1.67	1.40
916.6	946.6	1.86	1.74	1.45
956.9	986.9	1.62	1.70	1.48
977.1	1007.1	1.46	1.72	1.52
1017.3	1047.3	1.24	1.59	1.53
1037.5	1067.5	1.15	1.48	1.50
1077.8	1107.8	0.84	1.10	1.33
1097.9	1127.9	0.75	0.99	1.22
1138.2	1168.2	0.54	0.75	0.95
1158.4	1188.4	0.52	0.67	0.89
1198.7	1228.7	0.56	0.56	0.74
1218.8	1248.8	0.54	0.53	0.67
1259.1	1289.1	0.70	0.63	0.70
1279.2	1309.2	0.65	0.61	0.69
1319.5	1349.5	0.68	0.68	0.72
1339.7	1369.7	0.67	0.67	0.68
1380.0	1410.0	0.61	0.58	0.57
1400.1	1430.1	0.64	0.52	0.44

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=300.1MHz (dB) @LO (dBm) +13
290.0	10.1	5.86
282.8	17.3	5.88
275.6	24.5	5.81
268.5	31.6	5.83
261.3	38.8	5.76
254.1	46.0	5.81
246.9	53.2	5.73
239.7	60.4	5.80
232.6	67.5	5.79
225.4	74.7	5.75
218.2	81.9	5.74
211.0	89.1	5.74
203.8	96.3	5.73
196.7	103.4	5.75
189.5	110.6	5.72
182.3	117.8	5.69
175.1	125.0	5.67
167.9	132.2	5.66
160.8	139.3	5.68
153.6	146.5	5.62
146.4	153.7	5.65
139.2	160.9	5.64
132.1	168.0	5.69
124.9	175.2	5.65
117.7	182.4	5.63
110.5	189.6	5.63
103.3	196.8	5.65
96.2	203.9	5.68
89.0	211.1	5.63
81.8	218.3	5.63
74.6	225.5	5.62
67.4	232.7	5.66
60.3	239.8	5.63
53.1	247.0	5.63
45.9	254.2	5.61
38.7	261.4	5.66
31.5	268.6	5.67
24.4	275.7	5.67
17.2	282.9	5.64
10.0	290.1	5.81

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +13
10.0	20.1	5.46
24.9	35.0	5.44
39.7	49.8	5.47
54.6	64.7	5.52
69.5	79.6	5.55
84.4	94.5	5.58
99.2	109.3	5.55
114.1	124.2	5.57
129.0	139.1	5.56
143.8	153.9	5.55
158.7	168.8	5.63
173.6	183.7	5.62
188.5	198.6	5.64
203.3	213.4	5.62
218.2	228.3	5.59
233.1	243.2	5.59
247.9	258.0	5.63
262.8	272.9	5.62
277.7	287.8	5.62
292.6	302.7	5.64
307.4	317.5	5.61
322.3	332.4	5.66
337.2	347.3	5.62
352.1	362.2	5.63
366.9	377.0	5.67
381.8	391.9	5.67
396.7	406.8	5.70
411.5	421.6	5.62
426.4	436.5	5.68
441.3	451.4	5.70
456.2	466.3	5.67
471.0	481.1	5.72
485.9	496.0	5.71
500.8	510.9	5.76
515.6	525.7	5.72
530.5	540.6	5.76
545.4	555.5	5.74
560.3	570.4	5.79
575.1	585.2	5.78
590.0	600.1	5.75

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=600.1MHz (dB) @LO (dBm) +13
590.0	10.1	6.18
575.1	25.0	6.07
560.3	39.8	6.07
545.4	54.7	6.04
530.5	69.6	6.00
515.6	84.5	6.01
500.8	99.3	5.95
485.9	114.2	5.91
471.0	129.1	5.84
456.2	143.9	5.87
441.3	158.8	5.87
426.4	173.7	5.88
411.5	188.6	5.82
396.7	203.4	5.81
381.8	218.3	5.84
366.9	233.2	5.82
352.1	248.0	5.86
337.2	262.9	5.84
322.3	277.8	5.89
307.4	292.7	5.88
292.6	307.5	5.86
277.7	322.4	5.86
262.8	337.3	5.85
247.9	352.2	5.91
233.1	367.0	5.87
218.2	381.9	5.91
203.3	396.8	5.91
188.5	411.6	5.92
173.6	426.5	5.92
158.7	441.4	5.92
143.8	456.3	5.92
129.0	471.1	5.93
114.1	486.0	5.95
99.2	500.9	5.90
84.4	515.7	5.90
69.5	530.6	5.91
54.6	545.5	5.89
39.7	560.4	5.88
24.9	575.2	5.88
10.0	590.1	6.05

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+10	+13	+16	+10	+13	+16
2.0	65.69	61.53	59.57	70.00	62.13	57.11
5.0	64.70	60.97	59.24	70.00	60.92	56.61
10.0	64.09	60.65	59.12	70.00	60.61	56.57
50.4	61.80	62.59	63.40	60.04	57.75	56.52
90.7	56.73	57.49	58.19	54.93	53.01	51.75
131.0	53.32	54.45	55.06	51.61	49.54	48.40
171.3	51.03	51.93	52.78	49.36	47.38	46.45
211.5	49.19	50.29	50.95	47.23	45.82	45.10
251.8	47.66	48.93	49.55	45.75	44.79	44.07
292.1	46.65	47.67	48.06	45.17	44.27	43.27
332.4	45.89	46.53	46.96	44.53	43.12	42.12
372.7	44.34	45.43	45.87	43.83	42.40	40.48
413.0	43.44	43.93	44.07	43.37	41.54	40.31
453.3	42.87	43.39	43.26	44.28	41.09	38.73
493.6	42.35	42.49	42.89	41.62	40.51	38.68
574.2	43.71	42.98	42.24	40.09	37.18	35.87
614.4	43.85	44.14	43.33	40.06	35.76	33.81
654.7	42.75	43.24	42.73	41.29	36.86	33.46
695.0	41.71	42.06	41.92	39.97	37.82	34.81
735.3	40.37	40.72	40.74	37.54	35.75	34.10
775.6	39.22	39.48	39.52	37.00	34.90	33.04
815.9	38.45	38.72	39.10	35.64	33.26	31.14
856.2	39.11	40.43	41.15	33.56	31.14	28.91
896.5	39.73	41.37	41.86	33.04	29.83	27.74
916.6	39.02	41.28	42.39	33.64	29.50	27.37
956.9	38.49	40.53	41.41	34.40	29.87	27.08
977.1	39.15	41.18	42.03	33.66	29.32	26.65
1017.3	38.86	40.55	41.49	33.55	30.33	26.92
1037.5	39.13	40.19	40.56	32.47	30.54	27.40
1077.8	39.23	39.83	39.92	31.24	30.62	28.34
1097.9	39.29	40.14	40.06	29.68	29.37	28.01
1138.2	38.80	39.50	39.32	28.84	28.16	26.79
1158.4	38.67	39.24	39.11	28.11	27.31	26.02
1218.8	36.83	37.01	36.92	27.36	26.53	25.11
1259.1	35.80	35.61	35.59	27.04	25.99	24.46
1279.2	35.39	35.17	35.14	26.74	26.11	24.42
1319.5	34.10	33.74	33.35	26.25	25.70	23.76
1339.7	33.58	33.12	32.66	25.91	25.14	22.81
1380.0	32.42	31.79	31.07	25.37	24.32	21.63
1400.1	31.68	31.03	30.11	25.07	23.29	20.61

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	48.16	47.69	48.31
50.4	80.4	36.45	36.16	36.35
90.7	120.7	31.53	31.70	31.81
131.0	161.0	28.78	29.07	29.12
171.3	201.3	27.02	27.29	27.50
211.5	241.5	25.95	26.25	26.35
251.8	281.8	25.24	25.56	25.67
292.1	322.1	25.09	25.40	25.56
332.4	362.4	25.02	25.48	25.75
372.7	402.7	25.01	25.60	26.02
413.0	443.0	25.51	26.02	26.49
453.3	483.3	26.48	26.71	26.91
493.6	523.6	27.75	27.98	28.08
533.9	563.9	28.46	28.98	29.42
574.2	604.2	27.21	28.43	29.43
614.4	644.4	24.88	25.61	26.64
654.7	684.7	22.78	22.87	23.11
695.0	725.0	21.27	21.08	20.92
735.3	765.3	20.03	19.67	19.33
775.6	805.6	18.94	18.46	17.97
815.9	845.9	18.02	17.42	16.98
856.2	886.2	17.16	16.62	16.32
896.5	926.5	16.67	16.09	15.76
916.6	946.6	16.53	16.01	15.70
956.9	986.9	16.13	15.71	15.46
977.1	1007.1	16.13	15.67	15.38
1017.3	1047.3	15.86	15.63	15.41
1037.5	1067.5	15.75	15.63	15.55
1077.8	1107.8	15.64	15.60	15.61
1097.9	1127.9	15.54	15.51	15.55
1138.2	1168.2	15.49	15.48	15.50
1158.4	1188.4	15.42	15.42	15.43
1198.7	1228.7	15.25	15.34	15.42
1218.8	1248.8	15.18	15.28	15.34
1259.1	1289.1	14.88	15.02	15.06
1279.2	1309.2	14.76	14.93	14.96
1319.5	1349.5	14.43	14.47	14.46
1339.7	1369.7	14.26	14.25	14.23
1380.0	1410.0	13.82	13.76	13.71
1400.1	1430.1	13.63	13.51	13.34

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+10	+13	+16
5.0	32.0	1.31	1.24	1.23
10.0	35.0	1.23	1.12	1.11
50.4	80.4	1.07	1.04	1.10
90.7	120.7	1.09	1.07	1.12
131.0	161.0	1.11	1.12	1.16
171.3	201.3	1.15	1.15	1.19
211.5	241.5	1.17	1.19	1.22
251.8	281.8	1.21	1.22	1.25
292.1	322.1	1.25	1.25	1.27
332.4	362.4	1.26	1.27	1.30
372.7	402.7	1.29	1.29	1.32
413.0	443.0	1.31	1.31	1.34
453.3	483.3	1.34	1.34	1.36
493.6	523.6	1.37	1.38	1.39
533.9	563.9	1.40	1.41	1.43
574.2	604.2	1.42	1.43	1.46
614.4	644.4	1.45	1.45	1.48
654.7	684.7	1.45	1.45	1.47
695.0	725.0	1.43	1.43	1.44
735.3	765.3	1.43	1.42	1.42
775.6	805.6	1.43	1.42	1.43
815.9	845.9	1.47	1.46	1.46
856.2	886.2	1.57	1.54	1.54
896.5	926.5	1.71	1.66	1.64
916.6	946.6	1.79	1.73	1.70
956.9	986.9	1.98	1.87	1.83
977.1	1007.1	2.11	1.96	1.91
1017.3	1047.3	2.30	2.13	2.04
1037.5	1067.5	2.39	2.22	2.11
1077.8	1107.8	2.59	2.43	2.28
1097.9	1127.9	2.66	2.51	2.37
1138.2	1168.2	2.82	2.67	2.55
1158.4	1188.4	2.88	2.75	2.63
1198.7	1228.7	2.98	2.88	2.78
1218.8	1248.8	3.00	2.92	2.83
1259.1	1289.1	3.05	2.98	2.92
1279.2	1309.2	3.07	3.01	2.95
1319.5	1349.5	3.10	3.05	2.99
1339.7	1369.7	3.12	3.08	3.03
1380.0	1410.0	3.11	3.07	3.05
1400.1	1430.1	3.08	3.05	3.05

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+10	+13	+16
5.0	1.25	1.92	2.86
10.0	1.15	1.78	2.68
50.4	1.59	2.51	3.70
90.7	1.56	2.37	3.49
131.0	1.55	2.41	3.54
171.3	1.53	2.31	3.29
211.5	1.53	2.32	3.34
251.8	1.54	2.35	3.38
292.1	1.60	2.32	3.26
332.4	1.61	2.36	3.37
372.7	1.67	2.46	3.50
413.0	1.64	2.36	3.31
453.3	1.67	2.36	3.27
493.6	1.67	2.34	3.22
533.9	1.72	2.39	3.30
574.2	1.76	2.32	3.18
614.4	1.84	2.43	3.24
654.7	1.89	2.53	3.41
695.0	1.87	2.46	3.28
735.3	1.89	2.46	3.27
775.6	1.88	2.38	3.15
815.9	1.90	2.37	3.11
856.2	1.97	2.35	3.02
896.5	2.04	2.40	3.06
916.6	2.06	2.44	3.10
956.9	2.11	2.50	3.13
977.1	2.17	2.59	3.22
1017.3	2.15	2.60	3.25
1037.5	2.20	2.63	3.21
1077.8	2.20	2.65	3.25
1097.9	2.14	2.57	3.18
1138.2	2.14	2.57	3.19
1158.4	2.18	2.63	3.26
1198.7	2.12	2.53	3.14
1218.8	2.15	2.57	3.16
1259.1	2.17	2.59	3.21
1279.2	2.09	2.46	3.05
1319.5	2.07	2.40	2.95
1339.7	2.06	2.41	3.00
1380.0	2.00	2.30	2.84
1400.1	1.99	2.35	2.89

IF (OUT) (MHz)	IF VSWR @LO=600.1MHz (:1) @LO (dBm)		
	+10	+13	+16
5.0	1.54	1.35	1.25
10.0	1.55	1.35	1.26
25.1	1.63	1.40	1.25
40.3	1.53	1.30	1.17
55.4	1.48	1.25	1.15
70.5	1.50	1.28	1.18
85.6	1.54	1.34	1.23
100.8	1.60	1.38	1.26
115.9	1.62	1.39	1.27
131.0	1.62	1.39	1.27
146.2	1.61	1.38	1.27
161.3	1.58	1.36	1.27
176.4	1.59	1.37	1.27
191.5	1.64	1.42	1.30
206.7	1.69	1.47	1.34
221.8	1.69	1.47	1.35
236.9	1.66	1.44	1.33
252.1	1.65	1.42	1.32
267.2	1.70	1.47	1.36
282.3	1.73	1.52	1.40
297.4	1.74	1.53	1.41
312.6	1.74	1.53	1.41
327.7	1.77	1.54	1.42
342.8	1.80	1.57	1.45
357.9	1.81	1.59	1.49
373.1	1.82	1.60	1.49
388.2	1.83	1.61	1.50
403.3	1.86	1.64	1.51
418.5	1.89	1.67	1.54
433.6	1.91	1.70	1.57
448.7	1.92	1.70	1.58
463.8	1.95	1.72	1.60
479.0	1.98	1.75	1.63
494.1	2.00	1.77	1.64
509.2	1.98	1.76	1.63
524.4	1.97	1.76	1.63
539.5	2.01	1.79	1.66
554.6	2.07	1.85	1.72
569.7	2.13	1.90	1.77
584.9	2.14	1.90	1.77
600.0	2.12	2.08	2.10

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	17	28	20	31	20	34	31	53	37	46
1	-	19	+0	28	12	33	19	33	34	45	39	43
2	>100	66	57	64	58	67	57	65	51	63	60	75
3	>100	72	74	75	63	72	56	84	55	69	57	77
4	>100	86	84	84	82	84	80	>88	80	>88	82	>88
5	>100	85	82	>88	82	87	78	88	80	>88	78	88
6	>100	>88	>88	>88	>88	>88	88	86	>88	>88	>88	>88
7	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
8	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
9	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
10	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	80	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 300.1 MHz; -6.00 dBm.**
LO IN: 330.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -11.98 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	26	38	32	45	33	51	52	61	63	65
1	-	19	+0	29	12	34	20	35	33	52	49	53
2	95	64	49	70	50	65	50	57	45	58	54	93
3	>100	48	47	51	48	53	43	52	47	61	51	60
4	>100	66	87	64	70	65	68	66	62	91	60	71
5	>100	70	66	59	55	60	52	58	49	63	48	63
6	>100	82	77	84	77	79	87	76	79	77	72	90
7	>100	86	70	77	66	79	71	75	79	71	72	71
8	>100	96	93	92	93	96	91	89	86	86	88	82
9	>100	94	83	87	76	83	77	83	81	75	89	76
10	>100	>98	>98	>98	94	89	87	86	86	89	>98	>98
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

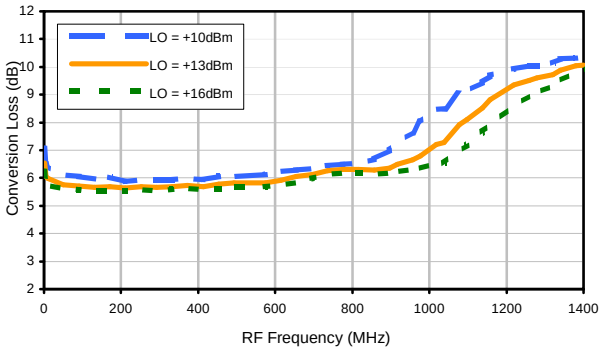
Test conditions: **RF IN: 300.1 MHz; 4.00 dBm.**
LO IN: 330.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -1.92 dBm

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.

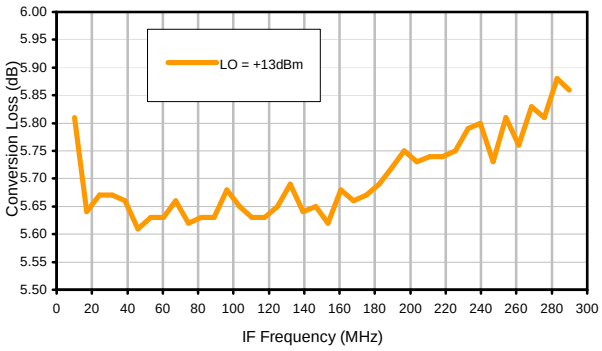
Frequency Mixer ZP-1MH+

Typical Performance Curves

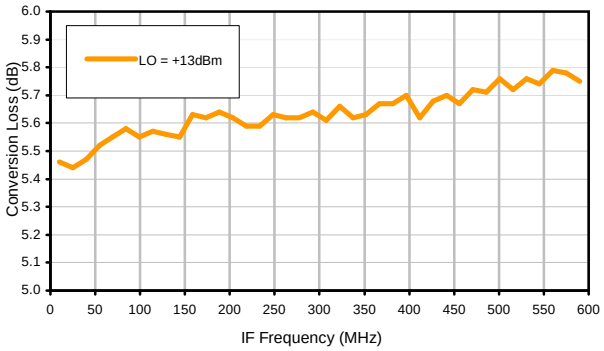
Conversion Loss @ IF=30MHz



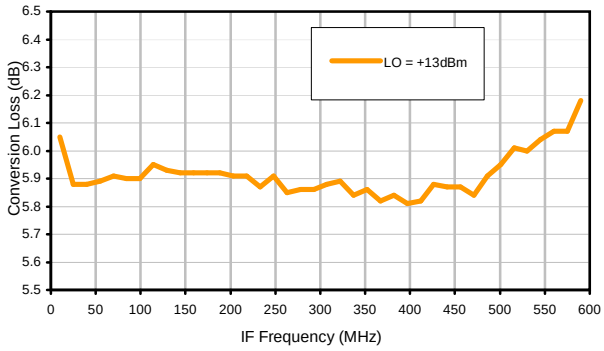
Conversion Loss vs. IF @ RF=300.1MHz



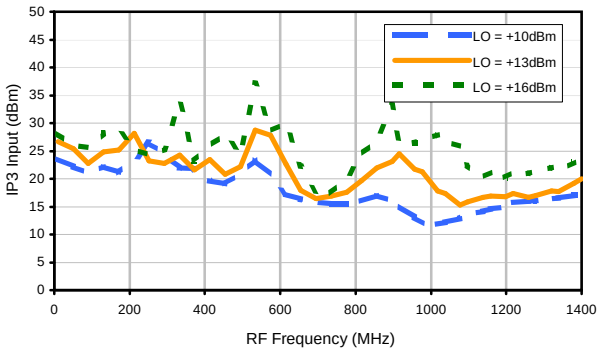
Conversion Loss vs. IF @ RF=10.1MHz



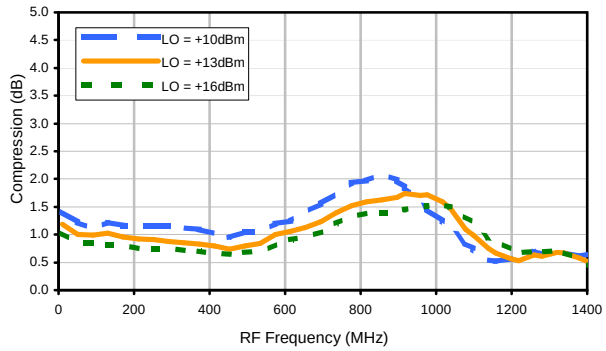
Conversion Loss vs. IF @ RF=600.1MHz



IP3 Input

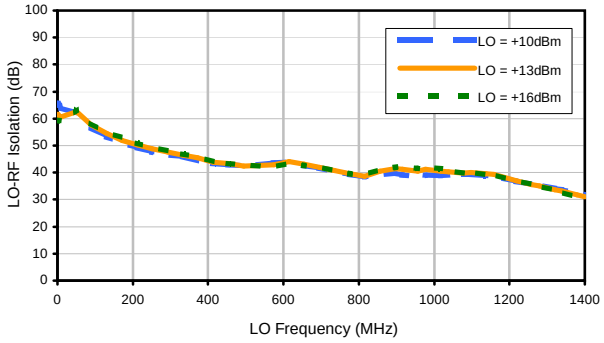


Compression @ RF IN=+9dBm

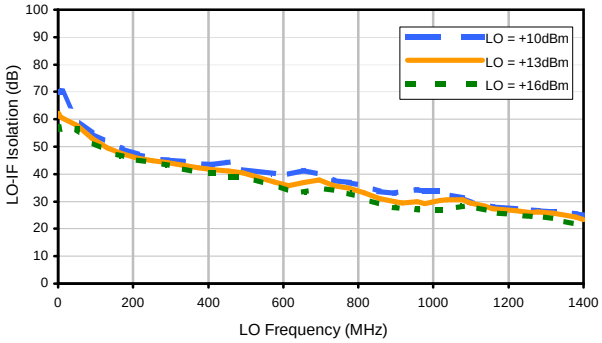


Typical Performance Curves

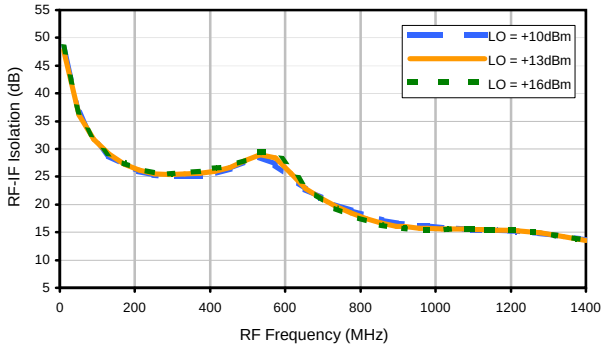
LO-RF Isolation



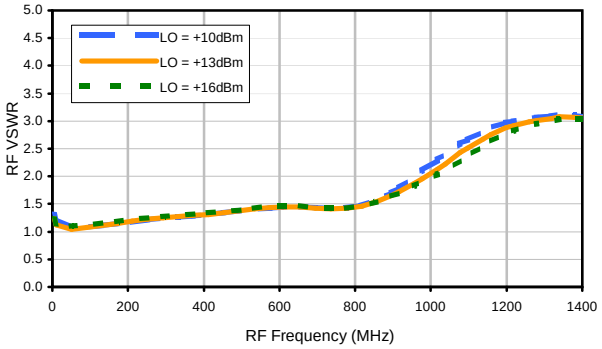
LO-IF Isolation



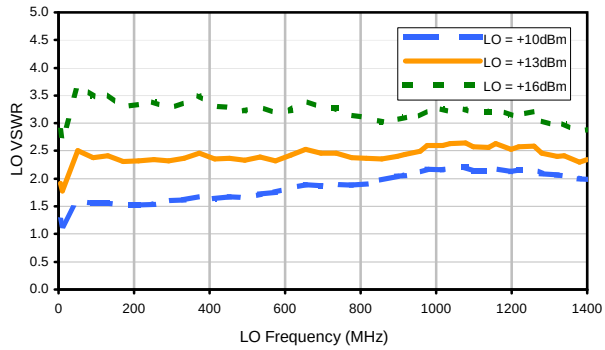
RF-IF Isolation



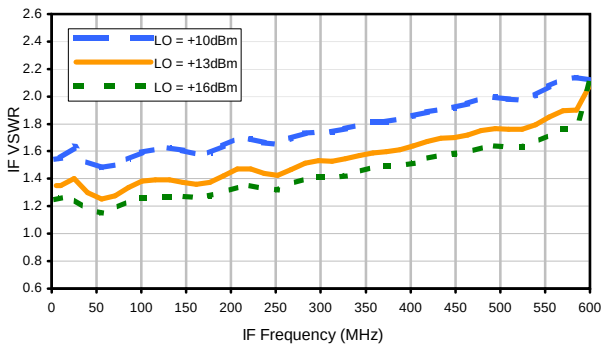
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	17	28	20	31	20	34	31	53	37	46
1	-	19	+0	28	12	33	19	33	34	45	39	43
2	>100	66	57	64	58	67	57	65	51	63	60	75
3	>100	72	74	75	63	72	56	84	55	69	57	77
4	>100	86	84	84	82	84	80	>88	80	>88	82	>88
5	>100	85	82	>88	82	87	78	88	80	>88	78	88
6	>100	>88	>88	>88	>88	>88	88	86	>88	>88	>88	>88
7	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
8	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
9	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
10	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	80	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 300.1 MHz; -6.00 dBm.**
LO IN: 330.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -11.98 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	26	38	32	45	33	51	52	61	63	65
1	-	19	+0	29	12	34	20	35	33	52	49	53
2	95	64	49	70	50	65	50	57	45	58	54	93
3	>100	48	47	51	48	53	43	52	47	61	51	60
4	>100	66	87	64	70	65	68	66	62	91	60	71
5	>100	70	66	59	55	60	52	58	49	63	48	63
6	>100	82	77	84	77	79	87	76	79	77	72	90
7	>100	86	70	77	66	79	71	75	79	71	72	71
8	>100	96	93	92	93	96	91	89	86	86	88	82
9	>100	94	83	87	76	83	77	83	81	75	89	76
10	>100	>98	>98	>98	94	89	87	86	86	89	>98	>98
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

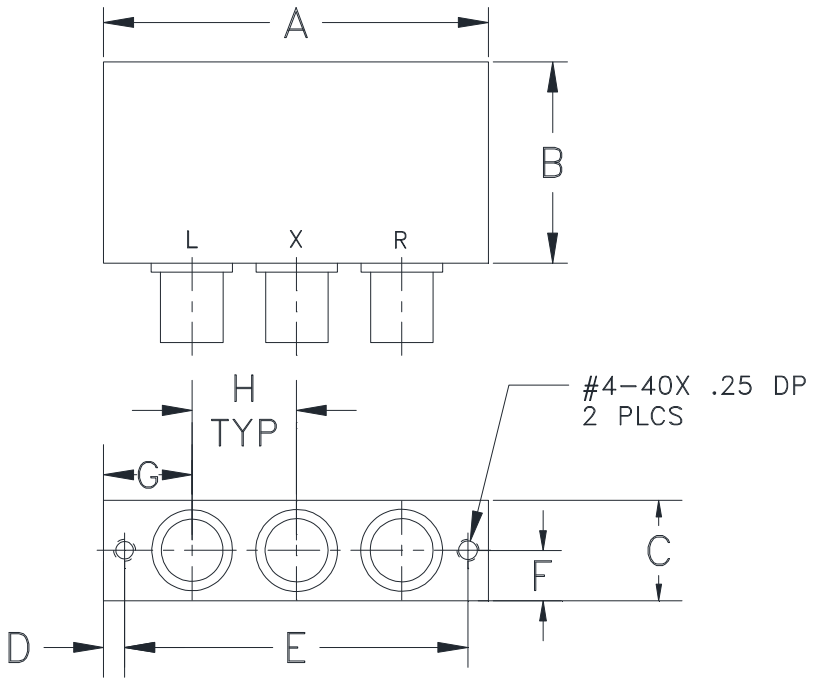
LO HARMONICS ORDER

Test conditions: **RF IN: 300.1 MHz; 4.00 dBm.**
LO IN: 330.01 MHz; +13.00 dBm
IF OUT: 29.91 MHz; -1.92 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.

Case Style GG

Outline Dimensions GG60



CASE #.	A	B	C	D	E	F	G	H	WT. GRAM
GG60	2.31 (58.67)	1.20 (30.48)	.60 (15.24)	.125 (3.18)	2.062 (52.37)	.30 (7.62)	.53 (13.46)	.63 (16.00)	75.0

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.

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Environmental Specifications ENV28

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