

Coaxial Frequency Mixer

Level 10 (LO Power +10 dBm) 3700 to 8000 MHz

ZMX-8GLH



Generic photo used for illustration purposes only

CASE STYLE: BU413

Connectors	Model
SMA	ZMX-8GLH

Maximum Ratings

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

Coaxial Connections

LO	1
RF	2
IF	3

Features

- wide frequency range, 3700 to 8000 MHz
- low conversion loss, 5.5 dB typ.
- high L-R isolation, 40 dB typ.

Applications

- SATCOM
- instrumentation
- defense & federal communications
- SHF

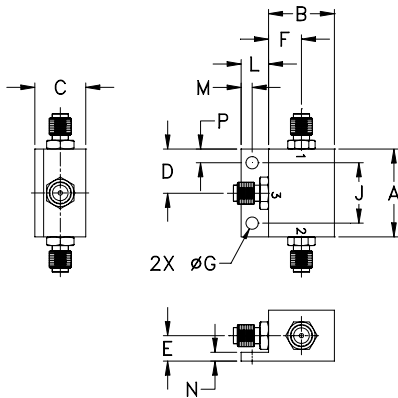
Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS* (dB)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)	
		Typ.	Min.	Typ.	Min.
3700-8000	DC-2000	40	20	18	8

1 dB COMP.: +5 dBm typ.

* Above 750 MHz IF, conversion loss increases up to 9.8 dB max.

Outline Drawing



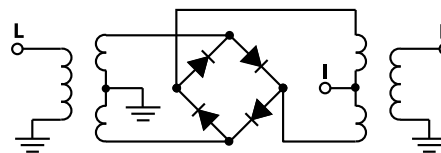
Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
1.00	.75	.58	.50	.29	.38	.140	--
25.40	19.05	14.73	12.70	7.37	9.65	3.56	--
J	K	L	M	N	P	wt	
.687	--	.32	.13	.10	.16	grams	
17.45	--	8.13	3.30	2.54	4.06	25.0	

Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
3700.00	3730.00	5.07	34.59	10.57	5.02
3918.64	3948.64	5.14	34.05	11.06	5.42
4000.00	4030.00	5.12	34.96	11.46	5.47
4283.05	4313.05	5.15	40.84	12.40	5.55
4574.58	4604.58	4.92	41.61	13.36	6.15
4866.10	4896.10	4.80	37.25	14.74	5.69
5000.00	4970.00	4.54	39.42	15.24	5.09
5303.39	5273.39	4.35	44.52	16.07	3.30
5594.92	5564.92	4.53	45.25	16.55	2.15
5886.44	5856.44	5.22	47.16	17.07	1.77
6000.00	5970.00	5.01	40.82	17.08	1.74
6323.73	6293.73	4.46	37.37	17.40	1.73
6615.25	6585.25	4.28	34.74	17.53	1.64
6906.78	6876.78	4.30	34.56	17.94	1.59
7000.00	6970.00	4.29	34.69	18.21	1.55
7271.19	7241.19	4.28	32.95	18.54	1.40
7562.71	7532.71	4.48	30.79	18.69	1.25
7854.24	7824.24	4.94	31.13	19.25	1.13
7927.12	7897.12	5.07	31.80	19.44	1.10
8000.00	7970.00	5.20	32.79	19.74	1.08

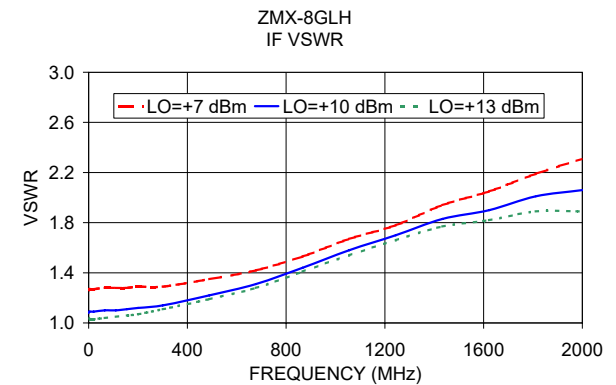
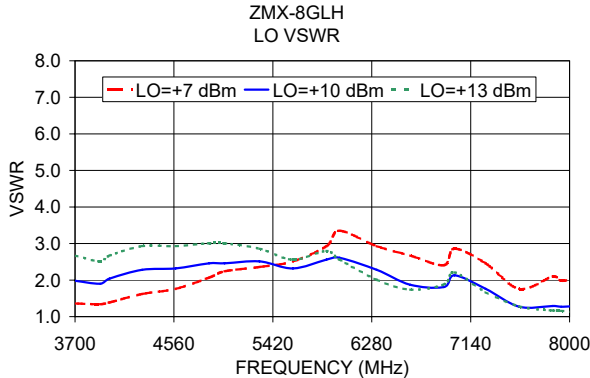
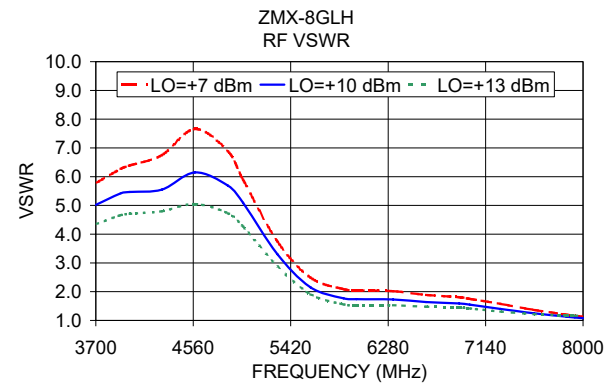
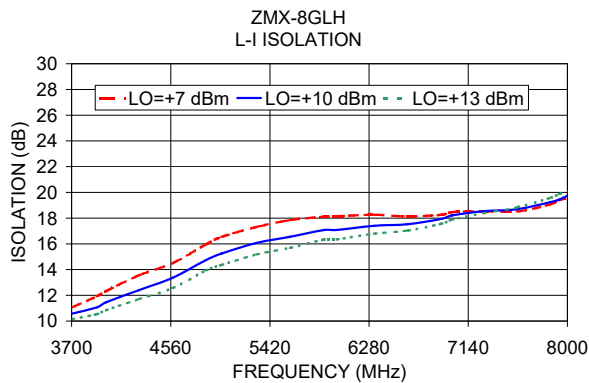
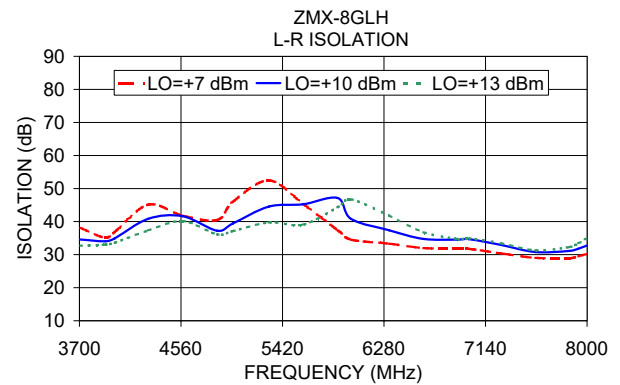
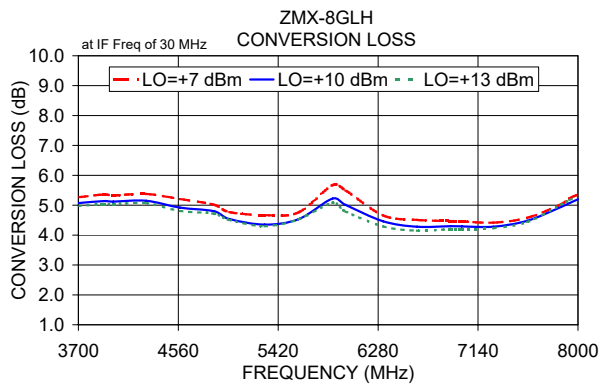
Electrical Schematic



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





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.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp



Frequency Mixer

ZMX-8GLH

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+7	+10	+13			+7	+10	+13			+7	+10	+13
1500.1	1530.1	11.03	9.19	8.54	1500.1	1530.1	9.24	11.15	14.38	1500.1	1530.1	2.27	1.38	1.39
1755.1	1785.1	9.17	7.86	7.34	1755.1	1785.1	13.08	11.06	9.47	1755.1	1785.1	1.74	1.75	1.67
2010.1	2040.1	7.69	6.79	6.35	2010.1	2040.1	11.84	10.69	9.54	2010.1	2040.1	1.92	1.95	1.97
2265.1	2295.1	6.96	6.21	5.84	2265.1	2295.1	12.71	14.04	11.82	2265.1	2295.1	2.09	2.00	2.03
2520.1	2550.1	6.21	5.75	5.46	2520.1	2550.1	11.56	13.70	13.46	2520.1	2550.1	2.26	2.02	1.84
2775.1	2805.1	5.26	5.02	4.96	2775.1	2805.1	12.11	12.39	11.48	2775.1	2805.1	2.83	2.34	2.01
3030.1	3060.1	5.09	4.96	4.95	3030.1	3060.1	14.46	15.02	14.80	3030.1	3060.1	2.15	1.79	1.54
3285.1	3315.1	4.93	4.83	4.82	3285.1	3315.1	11.64	12.90	13.16	3285.1	3315.1	1.73	1.54	1.37
3540.1	3570.1	4.73	4.65	4.66	3540.1	3570.1	11.49	13.09	13.80	3540.1	3570.1	1.59	1.38	1.22
3795.1	3825.1	5.02	4.80	4.71	3795.1	3825.1	12.32	13.08	13.33	3795.1	3825.1	1.10	0.98	0.94
4050.1	4080.1	5.08	4.84	4.77	4050.1	4080.1	11.57	12.10	13.04	4050.1	4080.1	1.00	0.82	0.73
4305.1	4335.1	5.17	4.96	4.90	4305.1	4335.1	11.81	13.12	14.67	4305.1	4335.1	1.00	0.73	0.62
4560.1	4590.1	5.35	5.16	5.11	4560.1	4590.1	12.85	13.69	14.15	4560.1	4590.1	0.96	0.67	0.55
4815.1	4845.1	5.44	5.28	5.22	4815.1	4845.1	13.74	18.03	18.12	4815.1	4845.1	0.78	0.48	0.38
5070.1	5100.1	5.45	5.34	5.32	5070.1	5100.1	12.39	16.39	19.06	5070.1	5100.1	0.76	0.36	0.18
5325.1	5355.1	5.21	5.18	5.30	5325.1	5355.1	14.07	14.54	15.32	5325.1	5355.1	1.60	1.06	0.69
5580.1	5610.1	7.17	6.73	6.51	5580.1	5610.1	10.46	14.65	18.75	5580.1	5610.1	2.00	1.58	1.08
5835.1	5865.1	7.49	6.92	6.63	5835.1	5865.1	13.73	14.99	15.56	5835.1	5865.1	1.07	0.87	0.62
6090.1	6120.1	6.91	6.52	6.41	6090.1	6120.1	12.64	14.42	16.86	6090.1	6120.1	0.96	0.68	0.52
6345.1	6375.1	6.97	6.53	6.46	6345.1	6375.1	15.32	13.90	16.24	6345.1	6375.1	0.67	0.47	0.40
6600.1	6630.1	6.81	6.43	6.42	6600.1	6630.1	19.59	13.63	14.76	6600.1	6630.1	0.65	0.44	0.36
6880.6	6910.6	6.77	6.42	6.44	6880.6	6910.6	20.84	15.95	15.01	6880.6	6910.6	0.59	0.41	0.32
7135.6	7165.6	7.17	6.72	6.69	7135.6	7165.6	17.53	21.06	16.82	7135.6	7165.6	0.50	0.35	0.26
7416.1	7446.1	7.61	7.08	6.95	7416.1	7446.1	15.25	19.21	18.92	7416.1	7446.1	0.52	0.41	0.31
7671.1	7701.1	8.00	7.41	7.11	7671.1	7701.1	17.43	22.63	16.91	7671.1	7701.1	0.40	0.45	0.46
7951.6	7981.6	7.79	7.37	7.17	7951.6	7981.6	17.15	18.97	16.72	7951.6	7981.6	0.49	0.47	0.47
8206.6	8236.6	7.68	7.37	7.22	8206.6	8236.6	19.14	18.88	17.83	8206.6	8236.6	0.54	0.49	0.47
8487.1	8517.1	7.35	7.08	6.97	8487.1	8517.1	17.76	17.18	16.34	8487.1	8517.1	0.84	0.72	0.66
8742.1	8772.1	7.18	6.96	6.86	8742.1	8772.1	17.36	16.49	15.31	8742.1	8772.1	0.89	0.73	0.65
9022.6	9052.6	6.89	6.70	6.61	9022.6	9052.6	16.49	16.46	15.26	9022.6	9052.6	1.12	0.96	0.86
9277.6	9307.6	6.47	6.33	6.28	9277.6	9307.6	14.07	14.18	13.36	9277.6	9307.6	1.59	1.36	1.18
9558.1	9588.1	6.21	6.10	6.09	9558.1	9588.1	11.42	11.72	11.31	9558.1	9588.1	1.94	1.64	1.40
9813.1	9843.1	6.13	5.94	5.87	9813.1	9843.1	9.10	10.47	10.95	9813.1	9843.1	2.13	1.70	1.43
10093.6	10123.6	6.14	5.85	5.76	10093.6	10123.6	6.99	9.73	11.03	10093.6	10123.6	2.50	1.81	1.63
10348.6	10378.6	6.48	6.07	5.96	10348.6	10378.6	5.76	9.01	11.00	10348.6	10378.6	2.82	1.86	1.68
10629.1	10659.1	7.36	6.78	6.65	10629.1	10659.1	5.36	7.95	11.55	10629.1	10659.1	3.26	1.92	1.53
10884.1	10914.1	8.29	7.58	7.40	10884.1	10914.1	5.94	10.42	12.49	10884.1	10914.1	3.26	1.77	1.18
11164.6	11194.6	11.22	8.89	8.29	11164.6	11194.6	10.53	10.31	12.05	11164.6	11194.6	1.63	1.64	0.99
11419.6	11449.6	10.03	9.58	9.39	11419.6	11449.6	4.39	8.05	16.14	11419.6	11449.6	3.48	1.90	0.65
11700.1	11730.1	12.72	11.56	11.59	11700.1	11730.1	6.37	13.10	16.93	11700.1	11730.1	2.02	0.92	0.22



Frequency Mixer

ZMX-8GLH

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=5850MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=3690MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=8010.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+10			+10			+10
2149.9	3700.1	5.88	10.1	3700.1	5.06	2810.0	5200.1	11.53
2029.9	3820.1	5.86	90.1	3780.1	4.72	2730.0	5280.1	10.54
1909.9	3940.1	5.88	170.1	3860.1	4.74	2650.0	5360.1	9.66
1809.9	4040.1	5.93	250.1	3940.1	4.78	2570.0	5440.1	9.15
1689.9	4160.1	5.95	330.1	4020.1	4.84	2490.0	5520.1	8.76
1589.9	4260.1	5.93	410.1	4100.1	4.88	2410.0	5600.1	8.53
1469.9	4380.1	5.83	490.1	4180.1	5.03	2330.0	5680.1	8.34
1369.9	4480.1	5.65	570.1	4260.1	5.09	2250.0	5760.1	8.11
1249.9	4600.1	5.59	650.1	4340.1	5.16	2170.0	5840.1	8.00
1149.9	4700.1	5.38	710.1	4400.1	5.31	2110.0	5900.1	7.75
1030.0	4820.0	5.40	790.1	4480.1	5.40	2030.0	5980.1	7.67
930.0	4920.0	5.56	850.1	4540.1	5.46	1970.0	6040.1	7.60
810.0	5040.0	5.95	930.1	4620.1	5.61	1890.0	6120.1	7.58
710.0	5140.0	6.62	990.1	4680.1	5.63	1830.0	6180.1	7.40
590.0	5260.0	7.63	1070.1	4760.1	5.55	1750.0	6260.1	7.38
490.0	5360.0	8.31	1130.1	4820.1	5.47	1690.0	6320.1	7.22
370.0	5480.0	8.61	1210.1	4900.1	5.00	1610.0	6400.1	6.96
270.0	5580.0	8.24	1270.1	4960.1	4.87	1550.0	6460.1	7.05
150.0	5700.0	7.21	1350.1	5040.1	5.09	1470.0	6540.1	7.08
50.0	5800.0	6.96	1410.1	5100.1	5.05	1410.0	6600.1	7.17
70.0	5920.0	6.86	1490.1	5180.1	5.34	1330.0	6680.1	7.26
170.0	6020.0	6.78	1550.1	5240.1	5.38	1270.0	6740.1	7.36
290.0	6140.0	6.66	1630.1	5320.1	5.45	1190.0	6820.1	7.37
390.0	6240.0	6.61	1690.1	5380.1	5.54	1130.0	6880.1	7.63
510.0	6360.0	6.58	1770.1	5460.1	5.71	1050.0	6960.1	7.74
610.0	6460.0	6.63	1830.1	5520.1	5.60	990.0	7020.1	7.85
730.0	6580.0	6.65	1910.1	5600.1	5.75	910.0	7100.1	8.07
830.0	6680.0	6.62	1970.1	5660.1	5.81	850.0	7160.1	8.00
950.0	6800.0	6.47	2050.1	5740.1	5.91	770.0	7240.1	8.06
1050.0	6900.0	6.30	2110.1	5800.1	6.02	710.0	7300.1	8.05
1170.1	7020.1	6.20	2190.1	5880.1	6.24	630.0	7380.1	8.02
1270.1	7120.1	6.21	2250.1	5940.1	6.47	570.0	7440.1	7.92
1390.1	7240.1	6.30	2330.1	6020.1	6.75	490.0	7520.1	7.83
1490.1	7340.1	6.35	2390.1	6080.1	7.06	430.0	7580.1	7.70
1610.1	7460.1	6.49	2470.1	6160.1	7.36	350.0	7660.1	7.63
1710.1	7560.1	6.75	2530.1	6220.1	7.68	290.0	7720.1	7.43
1830.1	7680.1	7.04	2610.1	6300.1	8.06	210.0	7800.1	7.44
1930.1	7780.1	7.82	2670.1	6360.1	8.67	150.0	7860.1	7.43
2050.1	7900.1	8.54	2750.1	6440.1	9.41	70.0	7940.1	7.49
2150.1	8000.1	9.10	2810.1	6500.1	10.11	10.0	8000.1	7.85



Frequency Mixer

ZMX-8GLH

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)					@LO (dBm)		
	+7	+10	+13	+7	+10	+13			+7	+10	+13
1500.1	28.34	32.00	35.19	8.57	10.63	15.52	1500.1	1530.1	13.71	12.30	11.41
1755.1	36.83	44.73	37.30	7.86	10.29	12.69	1755.1	1785.1	13.17	12.91	12.26
2010.1	33.49	34.97	33.98	7.64	9.66	11.67	2010.1	2040.1	15.09	14.83	14.95
2265.1	29.05	30.44	30.24	7.63	9.06	10.14	2265.1	2295.1	19.01	17.59	17.97
2520.1	29.42	28.85	28.92	6.93	7.71	8.20	2520.1	2550.1	23.17	23.15	22.33
2775.1	36.63	33.48	32.00	6.51	7.23	7.64	2775.1	2805.1	21.05	21.92	23.06
3030.1	35.96	35.66	35.62	7.39	7.67	7.87	3030.1	3060.1	19.22	19.42	19.75
3285.1	33.85	34.53	34.78	8.73	8.79	8.57	3285.1	3315.1	20.72	20.43	20.37
3540.1	33.14	33.10	32.55	9.86	9.57	8.77	3540.1	3570.1	22.13	21.83	21.61
3795.1	35.19	34.94	34.35	10.81	10.21	9.65	3795.1	3825.1	23.57	23.68	23.75
4050.1	39.37	37.47	36.13	12.16	10.79	10.20	4050.1	4080.1	24.38	24.61	24.68
4305.1	38.25	36.80	35.65	12.87	11.83	11.09	4305.1	4335.1	25.59	25.89	26.14
4560.1	40.95	37.39	35.17	13.76	12.61	11.93	4560.1	4590.1	26.91	27.37	27.67
4815.1	41.21	41.64	38.82	14.52	13.55	12.80	4815.1	4845.1	28.30	28.66	29.08
5070.1	38.06	38.78	37.11	15.16	14.32	13.42	5070.1	5100.1	30.01	30.47	30.87
5325.1	37.06	37.87	37.24	15.98	14.77	14.21	5325.1	5355.1	30.60	30.87	31.06
5580.1	37.91	41.14	43.75	16.55	15.70	14.92	5580.1	5610.1	29.98	29.89	29.85
5835.1	33.66	35.96	38.05	16.95	16.35	15.60	5835.1	5865.1	32.34	32.42	32.38
6090.1	33.10	35.51	37.53	17.18	16.90	16.19	6090.1	6120.1	33.94	33.95	33.98
6345.1	32.56	35.35	37.95	17.61	17.20	16.98	6345.1	6375.1	34.74	34.63	34.52
6600.1	32.27	35.47	38.47	18.00	17.83	17.80	6600.1	6630.1	35.02	34.82	34.70
6880.6	31.48	34.22	36.23	18.50	18.49	18.68	6880.6	6910.6	34.87	34.57	34.34
7135.6	31.98	34.65	36.32	18.85	19.23	19.43	7135.6	7165.6	33.70	33.38	33.14
7416.1	32.41	35.05	36.72	19.62	20.18	20.80	7416.1	7446.1	32.30	32.08	31.77
7671.1	31.54	32.70	32.15	20.03	21.04	21.68	7671.1	7701.1	30.62	30.52	30.32
7951.6	32.34	33.11	32.25	21.07	22.27	23.11	7951.6	7981.6	28.80	28.69	28.55
8206.6	34.87	36.28	35.79	22.27	23.75	25.03	8206.6	8236.6	27.62	27.57	27.44
8487.1	37.36	44.03	46.20	24.10	25.75	27.40	8487.1	8517.1	27.61	27.53	27.36
8742.1	34.05	38.12	42.64	25.11	27.04	28.72	8742.1	8772.1	28.36	28.30	28.14
9022.6	30.80	33.31	35.32	26.14	27.91	29.18	9022.6	9052.6	29.50	29.42	29.30
9277.6	28.86	31.07	32.93	27.17	28.55	29.45	9277.6	9307.6	30.43	30.27	30.07
9558.1	26.38	28.52	30.22	28.07	28.86	28.98	9558.1	9588.1	30.69	30.37	30.07
9813.1	24.14	26.24	28.03	29.65	29.71	29.39	9813.1	9843.1	31.00	30.40	29.93
10093.6	22.23	24.08	25.82	32.22	30.77	30.14	10093.6	10123.6	31.13	29.82	29.04
10348.6	20.36	22.14	23.93	36.01	32.94	31.42	10348.6	10378.6	31.82	29.10	27.76
10629.1	18.65	20.25	21.77	43.68	39.61	35.12	10629.1	10659.1	35.16	31.56	28.05
10884.1	17.82	19.53	21.18	48.43	44.95	36.47	10884.1	10914.1	36.84	34.84	29.90
11164.6	18.16	20.19	22.10	30.33	33.10	32.39	11164.6	11194.6	36.33	36.63	35.54
11419.6	22.59	23.11	23.64	26.69	28.99	29.46	11419.6	11449.6	34.16	35.90	39.27
11700.1	26.23	25.31	25.14	25.88	27.47	28.19	11700.1	11730.1	30.54	31.93	34.03

Frequency Mixer

ZMX-8GLH

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=800MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+7	+10	+13		+7	+10	+13		+7	+10	+13
1500.1	1530.1	7.83	6.37	5.77	1500.1	7.80	5.72	4.30	10.0	1.32	1.60	1.90
1755.1	1785.1	5.38	4.44	4.08	1755.1	4.80	3.96	4.08	90.0	1.33	1.64	1.98
2010.1	2040.1	4.29	3.40	2.98	2010.1	3.09	2.88	3.21	170.0	1.32	1.64	1.98
2265.1	2295.1	3.96	3.25	2.57	2265.1	2.25	2.30	2.76	250.0	1.31	1.62	1.94
2520.1	2550.1	2.88	2.63	2.39	2520.1	1.98	2.10	2.45	330.0	1.28	1.56	1.88
2775.1	2805.1	2.33	2.16	2.12	2775.1	1.76	1.88	2.34	410.0	1.25	1.52	1.84
3030.1	3060.1	1.91	1.80	1.76	3030.1	1.54	1.84	2.31	490.0	1.24	1.52	1.84
3285.1	3315.1	1.68	1.53	1.45	3285.1	1.38	1.83	2.36	570.0	1.24	1.53	1.86
3540.1	3570.1	1.74	1.54	1.43	3540.1	1.35	1.85	2.37	650.0	1.21	1.48	1.80
3795.1	3825.1	1.95	1.72	1.56	3795.1	1.37	1.95	2.54	730.0	1.16	1.40	1.69
4050.1	4080.1	2.08	1.83	1.67	4050.1	1.46	2.00	2.67	810.0	1.12	1.34	1.61
4305.1	4335.1	2.07	1.88	1.77	4305.1	1.55	2.06	2.67	890.0	1.09	1.29	1.55
4560.1	4590.1	1.93	1.76	1.65	4560.1	1.71	2.18	2.79	970.0	1.06	1.27	1.53
4815.1	4845.1	1.97	1.79	1.67	4815.1	1.83	2.20	2.74	1050.0	1.04	1.25	1.49
5070.1	5100.1	1.89	1.66	1.55	5070.1	2.11	2.37	2.88	1130.0	1.02	1.20	1.42
5325.1	5355.1	1.87	1.46	1.26	5325.1	2.32	2.40	2.80	1210.0	1.07	1.13	1.33
5580.1	5610.1	3.47	3.22	3.03	5580.1	2.46	2.42	2.78	1290.0	1.14	1.04	1.23
5835.1	5865.1	4.30	3.86	3.52	5835.1	2.72	2.37	2.51	1370.0	1.23	1.12	1.19
6090.1	6120.1	3.86	3.43	3.21	6090.1	2.99	2.41	2.42	1450.0	1.33	1.23	1.21
6345.1	6375.1	4.07	3.43	3.19	6345.1	3.20	2.32	2.14	1530.0	1.42	1.31	1.26
6600.1	6630.1	3.83	3.13	2.81	6600.1	3.18	2.23	1.92	1610.0	1.53	1.41	1.34
6880.6	6910.6	3.76	3.00	2.55	6880.6	3.30	2.06	1.59	1690.0	1.69	1.58	1.49
7135.6	7165.6	3.43	2.78	2.36	7135.6	2.99	1.82	1.31	1770.0	1.88	1.76	1.64
7416.1	7446.1	3.86	3.31	2.88	7416.1	2.65	1.59	1.12	1850.0	2.10	1.97	1.83
7671.1	7701.1	4.09	3.73	3.30	7671.1	2.47	1.53	1.36	1930.0	2.36	2.22	2.08
7951.6	7981.6	4.01	3.70	3.37	7951.6	2.11	1.67	1.81	2010.0	2.62	2.50	2.36
8206.6	8236.6	3.12	2.95	2.75	8206.6	2.02	1.96	2.30	2090.0	2.81	2.71	2.57
8487.1	8517.1	3.12	2.93	2.78	8487.1	2.12	2.49	3.12	2170.0	2.92	2.83	2.72
8742.1	8772.1	3.00	2.82	2.68	8742.1	2.20	2.83	3.62	2250.0	3.09	3.00	2.90
9022.6	9052.6	2.75	2.59	2.48	9022.6	2.56	3.44	4.46	2310.0	3.37	3.27	3.16
9277.6	9307.6	2.36	2.24	2.14	9277.6	3.13	4.23	5.44	2390.0	3.66	3.58	3.48
9558.1	9588.1	1.96	1.87	1.78	9558.1	3.70	4.82	6.05	2450.0	3.59	3.53	3.46
9813.1	9843.1	1.74	1.64	1.57	9813.1	4.66	5.61	6.76	2530.0	3.79	3.76	3.71
10093.6	10123.6	1.45	1.35	1.32	10093.6	6.21	6.86	7.97	2590.0	4.03	3.99	3.93
10348.6	10378.6	1.29	1.43	1.54	10348.6	8.23	8.20	9.18	2670.0	3.98	3.96	3.95
10629.1	10659.1	1.32	1.69	1.92	10629.1	10.07	8.68	9.04	2730.0	4.12	4.14	4.19
10884.1	10914.1	2.27	3.09	3.67	10884.1	11.38	9.63	10.19	2810.0	4.36	4.43	4.52
11164.6	11194.6	3.16	3.73	4.01	11164.6	9.69	10.07	10.43	2870.0	3.89	3.97	4.09
11419.6	11449.6	5.68	6.19	7.25	11419.6	9.28	9.48	9.28	2950.0	3.95	4.12	4.37
11700.1	11730.1	7.47	7.76	9.04	11700.1	9.04	8.39	8.01	3010.0	4.36	4.60	4.92

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+11	33	20	48	---	---	---	---	---	---
1	-	25	+0	49	29	45	54	---	---	---	---	---
2	82	63	55	51	54	>73	66	64	---	---	---	---
3	>90	72	>73	>73	67	>73	>73	>73	>73	---	---	---
4	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	---	---
5	---	---	>73	>73	>73	>73	>73	>73	>73	>73	>73	---
6	---	---	---	>73	>73	>73	>73	>73	>73	>73	>73	>73
7	---	---	---	---	>73	>73	>73	>73	>73	>73	>73	>73
8	---	---	---	---	---	>73	>73	>73	>73	>73	>73	>73
9	---	---	---	---	---	---	>73	>73	>73	>73	>73	>73
10	---	---	---	---	---	---	---	>73	>73	>73	>73	>73
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 5850 MHz; -10.00 dBm.
 LO IN: 5880 MHz; +10.00 dBm
 IF OUT: 30 MHz; -17.11 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+1	42	30	67	---	---	---	---	---	---
1	-	25	+0	50	29	48	57	---	---	---	---	---
2	63	53	45	39	46	65	57	60	---	---	---	---
3	>90	53	54	69	44	67	66	66	72	---	---	---
4	>90	73	74	>83	69	60	68	77	74	70	---	---
5	---	---	>83	>83	82	>83	64	79	80	79	83	---
6	---	---	---	>83	>83	>83	>83	70	>83	>83	>83	81
7	---	---	---	---	>83	>83	>83	>83	79	>83	>83	>83
8	---	---	---	---	---	>83	>83	>83	>83	>83	>83	>83
9	---	---	---	---	---	---	>83	>83	>83	>83	>83	>83
10	---	---	---	---	---	---	---	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 5850 MHz; 0.00 dBm.
 LO IN: 5880 MHz; +10.00 dBm
 IF OUT: 30 MHz; -7.18 dBm

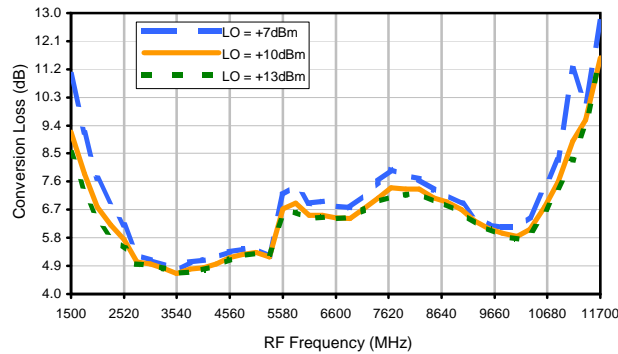
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
 2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
 3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Frequency Mixer

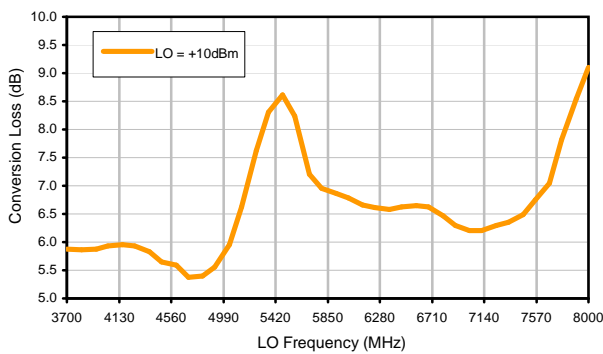
ZMX-8GLH

Typical Performance Curves

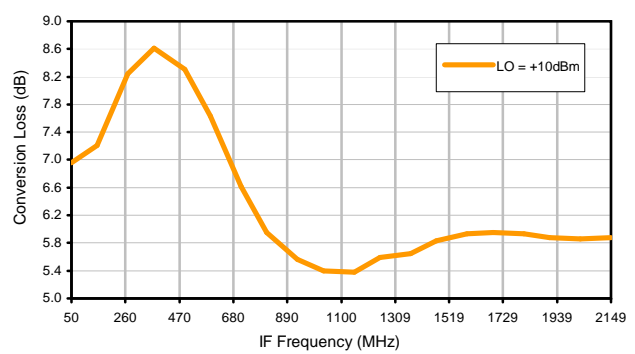
Conversion Loss @ IF=30MHz



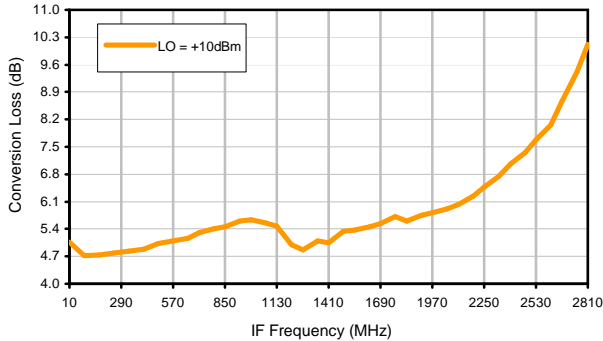
Conversion Loss vs. LO @ RF=5850MHz



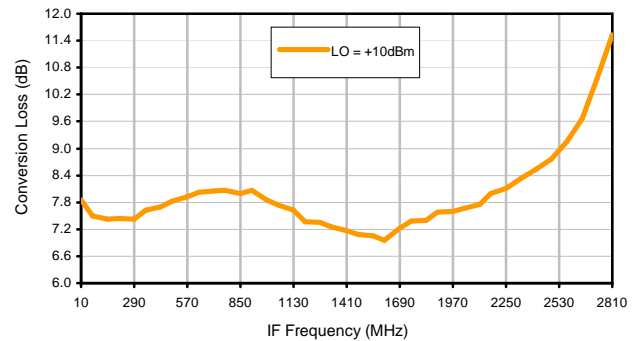
Conversion Loss vs. IF @ RF=5850MHz



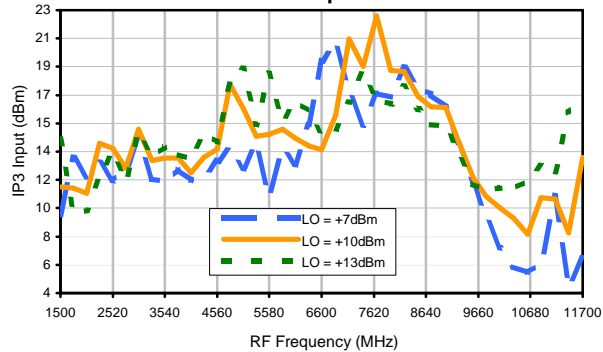
Conversion Loss vs. IF @ RF=3690MHz



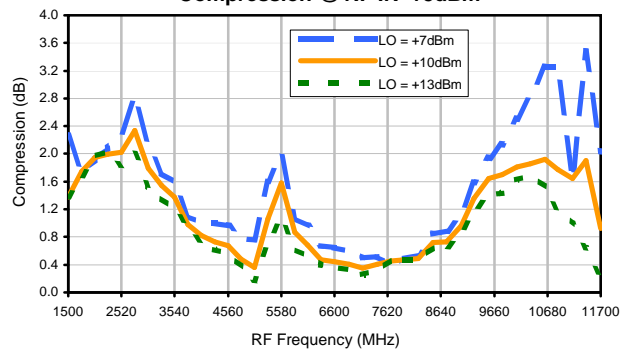
Conversion Loss vs. IF @ RF=8010.1MHz



IP3 Input

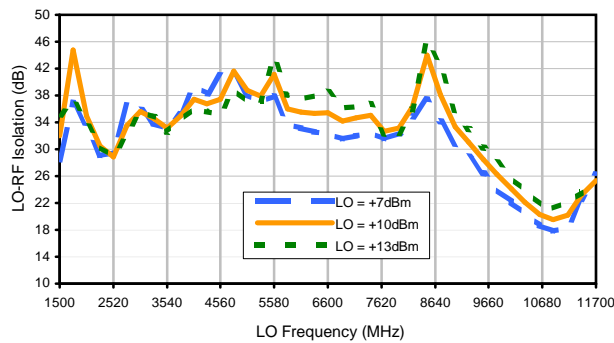


Compression @ RF IN=+5dBm

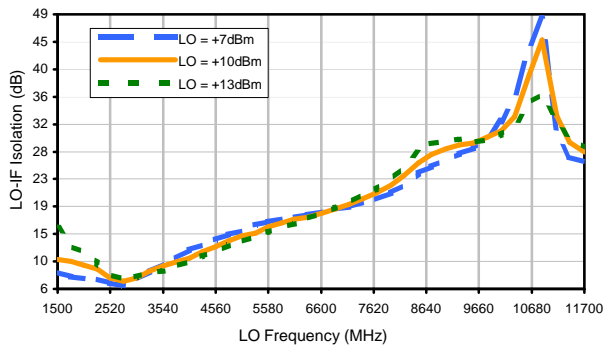


Typical Performance Curves

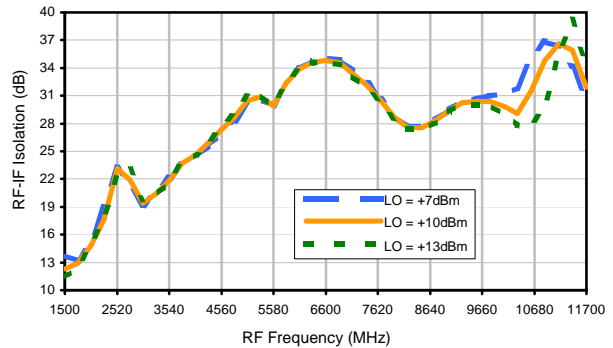
LO-RF Isolation



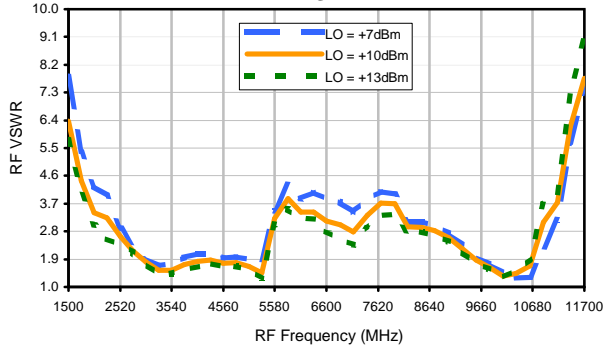
LO-IF Isolation



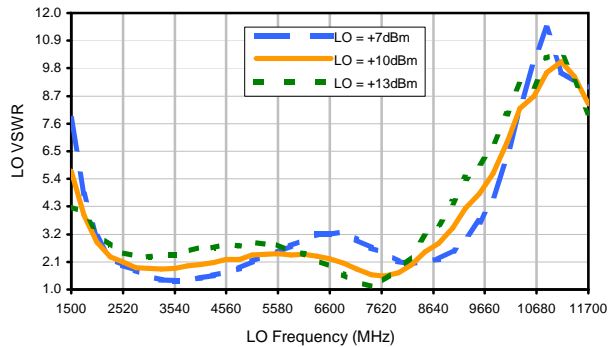
RF-IF Isolation



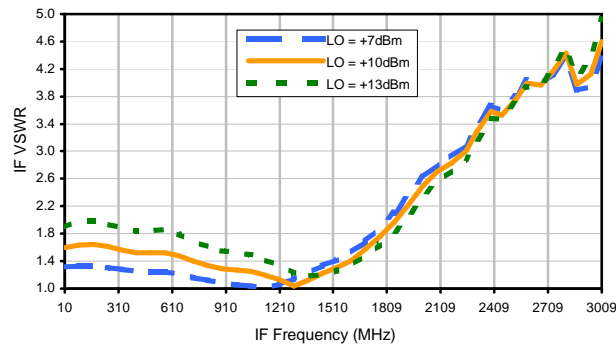
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+11	33	20	48	---	---	---	---	---	---
1	-	25	+0	49	29	45	54	---	---	---	---	---
2	82	63	55	51	54	>73	66	64	---	---	---	---
3	>90	72	>73	>73	67	>73	>73	>73	>73	---	---	---
4	>90	>73	>73	>73	>73	>73	>73	>73	>73	>73	---	---
5	---	---	>73	>73	>73	>73	>73	>73	>73	>73	>73	---
6	---	---	---	>73	>73	>73	>73	>73	>73	>73	>73	>73
7	---	---	---	---	>73	>73	>73	>73	>73	>73	>73	>73
8	---	---	---	---	---	>73	>73	>73	>73	>73	>73	>73
9	---	---	---	---	---	---	>73	>73	>73	>73	>73	>73
10	---	---	---	---	---	---	---	>73	>73	>73	>73	>73
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 5850 MHz; -10.00 dBm.
 LO IN: 5880 MHz; +10.00 dBm
 IF OUT: 30 MHz; -17.11 dBm

RF HARMONICS ORDER

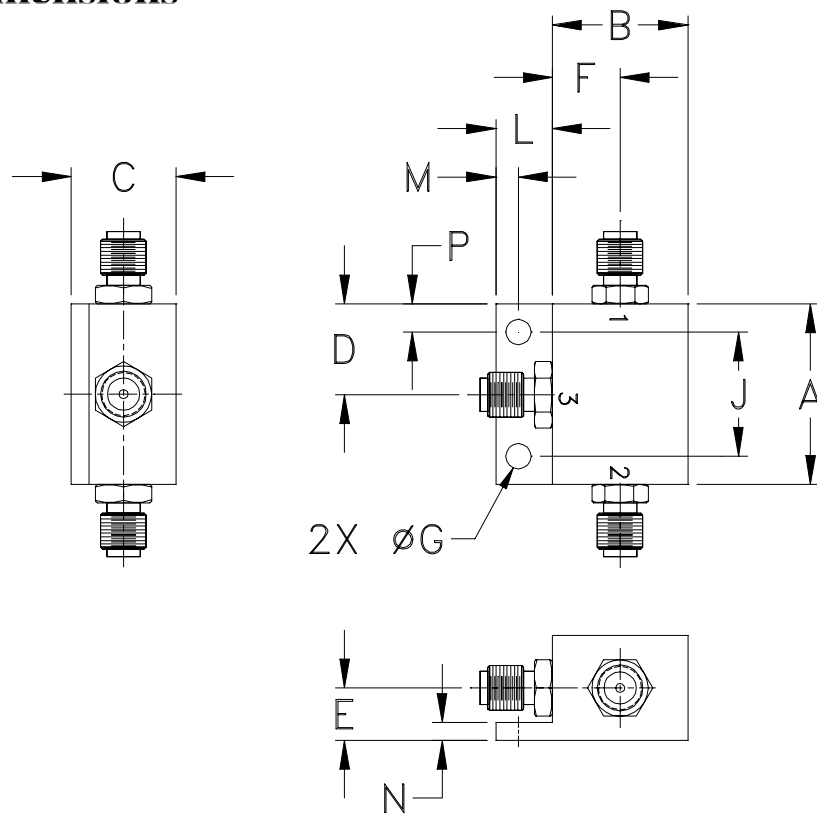
	(-dBm)	(-dBc)										
0	-	-	+1	42	30	67	---	---	---	---	---	---
1	-	25	+0	50	29	48	57	---	---	---	---	---
2	63	53	45	39	46	65	57	60	---	---	---	---
3	>90	53	54	69	44	67	66	66	72	---	---	---
4	>90	73	74	>83	69	60	68	77	74	70	---	---
5	---	---	>83	>83	82	>83	64	79	80	79	83	---
6	---	---	---	>83	>83	>83	>83	70	>83	>83	>83	81
7	---	---	---	---	>83	>83	>83	>83	79	>83	>83	>83
8	---	---	---	---	---	>83	>83	>83	>83	>83	>83	>83
9	---	---	---	---	---	---	>83	>83	>83	>83	>83	>83
10	---	---	---	---	---	---	---	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 5850 MHz; 0.00 dBm.
 LO IN: 5880 MHz; +10.00 dBm
 IF OUT: 30 MHz; -7.18 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.

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BU413	1.00 (25.40)	.75 (19.05)	.58 (14.73)	.50 (12.70)	.29 (7.37)	.38 (9.65)	.140 (3.56)	--	.687 (17.45)	--	.32 (8.13)	.13 (3.30)	.10 (2.54)

CASE#	P	WT. GRAMS
BU413	.16 (4.06)	25

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

Notes:

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

Mini-Circuits[®]

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified



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