

Non-Catalog Model

Frequency Mixer

TUF-11AMH

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

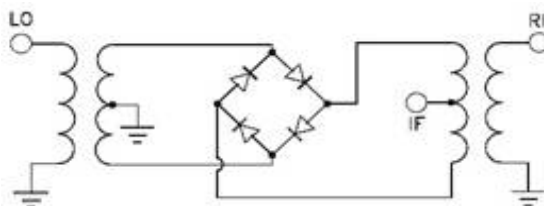
ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency	LO (fL to fU)	1400		1900	MHz
	RF (fL to fU)	1400		1900	MHz
	IF	40		500	MHz
Conversion Loss	mid band		7.4	8.6	dB
LO-RF Isolation	Low Range	20	33		dB
LO-IF Isolation	Low Range	15	24		dB
1 dB Comp. Input Power			+9		dBm

Note: 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

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=40MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
800.1	840.1	10.53	9.90	9.56
860.1	900.1	9.36	8.77	8.51
920.1	960.1	8.59	8.06	7.84
980.1	1020.1	8.19	7.69	7.48
1040.1	1080.1	8.09	7.57	7.38
1100.1	1140.1	8.19	7.64	7.43
1160.1	1200.1	8.43	7.78	7.57
1220.1	1260.1	8.61	7.85	7.63
1280.1	1320.1	8.91	7.90	7.60
1340.1	1380.1	8.91	7.85	7.45
1400.1	1440.1	8.89	7.74	7.31
1460.1	1500.1	8.89	7.67	7.18
1520.1	1560.1	8.77	7.55	7.08
1580.1	1620.1	8.80	7.55	7.06
1640.1	1680.1	8.70	7.53	7.03
1700.1	1740.1	8.64	7.57	7.10
1740.1	1780.1	8.64	7.55	7.07
1800.1	1840.1	8.64	7.63	7.15
1840.1	1880.1	8.70	7.69	7.21
1900.1	1940.1	8.62	7.64	7.20
1940.1	1980.1	8.70	7.68	7.26
2000.1	2040.1	8.58	7.63	7.26
2040.1	2080.1	8.68	7.67	7.31
2100.1	2140.1	8.48	7.65	7.33
2140.1	2180.1	8.62	7.75	7.39
2200.1	2240.1	8.58	7.82	7.53
2240.1	2280.1	8.78	7.98	7.66
2300.1	2340.1	8.81	8.12	7.80
2340.1	2380.1	9.01	8.28	7.94
2400.1	2440.1	9.03	8.40	8.06
2440.1	2480.1	9.21	8.55	8.21
2500.1	2540.1	9.35	8.74	8.41
2540.1	2580.1	9.53	8.88	8.53
2600.1	2640.1	9.64	9.06	8.71
2640.1	2680.1	9.82	9.22	8.87
2700.1	2740.1	10.07	9.48	9.10
2740.1	2780.1	10.25	9.65	9.23
2800.1	2840.1	10.41	9.78	9.37
2840.1	2880.1	10.53	9.90	9.49
2900.1	2940.1	10.76	10.06	9.63

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
800.1	840.1	18.39	18.84	19.07
860.1	900.1	16.47	16.71	17.23
920.1	960.1	14.41	14.79	15.42
980.1	1020.1	13.04	13.79	14.56
1040.1	1080.1	12.50	13.64	14.73
1100.1	1140.1	12.38	13.90	15.50
1160.1	1200.1	13.14	14.86	16.55
1220.1	1260.1	14.98	15.90	17.64
1280.1	1320.1	15.88	16.09	17.34
1340.1	1380.1	15.28	16.00	16.54
1400.1	1440.1	14.27	15.16	15.82
1460.1	1500.1	13.10	14.39	15.26
1520.1	1560.1	12.01	13.59	14.46
1580.1	1620.1	11.52	13.13	14.09
1640.1	1680.1	11.24	12.72	13.87
1700.1	1740.1	11.21	12.70	14.05
1740.1	1780.1	11.47	12.93	14.36
1800.1	1840.1	11.48	12.99	14.47
1840.1	1880.1	11.42	12.85	14.40
1900.1	1940.1	12.07	13.55	15.03
1940.1	1980.1	12.11	13.77	15.33
2000.1	2040.1	12.38	14.16	15.59
2040.1	2080.1	12.51	14.30	15.76
2100.1	2140.1	13.19	14.66	16.24
2140.1	2180.1	13.52	14.76	16.52
2200.1	2240.1	14.69	15.54	17.33
2240.1	2280.1	15.49	15.94	17.28
2300.1	2340.1	17.11	16.95	17.39
2340.1	2380.1	17.18	17.63	16.96
2400.1	2440.1	18.46	19.88	17.88
2440.1	2480.1	17.91	20.56	19.70
2500.1	2540.1	18.42	20.14	21.79
2540.1	2580.1	19.43	19.45	21.83
2600.1	2640.1	19.76	19.92	21.58
2640.1	2680.1	20.13	19.73	22.81
2700.1	2740.1	20.90	19.68	22.46
2740.1	2780.1	20.45	18.83	21.13
2800.1	2840.1	19.51	20.34	19.95
2840.1	2880.1	17.78	21.41	20.91
2900.1	2940.1	16.22	21.25	20.94

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
800.1	840.1	0.86	0.71	0.62
860.1	900.1	1.36	1.14	0.99
920.1	960.1	1.61	1.30	1.08
980.1	1020.1	1.61	1.16	0.94
1040.1	1080.1	1.46	0.92	0.72
1100.1	1140.1	1.25	0.70	0.52
1160.1	1200.1	1.12	0.65	0.44
1220.1	1260.1	1.09	0.66	0.44
1280.1	1320.1	0.97	0.80	0.61
1340.1	1380.1	1.05	0.96	0.80
1400.1	1440.1	1.25	1.11	0.96
1460.1	1500.1	1.29	1.17	1.04
1520.1	1560.1	1.37	1.23	1.10
1580.1	1620.1	1.46	1.26	1.12
1640.1	1680.1	1.52	1.26	1.10
1700.1	1740.1	1.53	1.26	1.03
1740.1	1780.1	1.57	1.25	1.08
1800.1	1840.1	1.49	1.13	0.99
1840.1	1880.1	1.51	1.11	0.96
1900.1	1940.1	1.50	1.05	0.87
1940.1	1980.1	1.45	1.00	0.84
2000.1	2040.1	1.43	0.98	0.76
2040.1	2080.1	1.41	0.94	0.74
2100.1	2140.1	1.41	0.94	0.67
2140.1	2180.1	1.43	0.90	0.66
2200.1	2240.1	1.28	0.81	0.58
2240.1	2280.1	1.28	0.76	0.56
2300.1	2340.1	1.17	0.70	0.50
2340.1	2380.1	1.23	0.70	0.46
2400.1	2440.1	1.18	0.64	0.45
2440.1	2480.1	1.24	0.65	0.43
2500.1	2540.1	1.15	0.59	0.39
2540.1	2580.1	1.20	0.58	0.37
2600.1	2640.1	1.13	0.55	0.32
2640.1	2680.1	1.20	0.53	0.32
2700.1	2740.1	1.18	0.46	0.29
2740.1	2780.1	1.26	0.41	0.26
2800.1	2840.1	1.49	0.44	0.23
2840.1	2880.1	1.54	0.45	0.23
2900.1	2940.1	1.66	0.50	0.23

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1650.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1400.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1900.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
250.0	1400.1	6.53	40.0	1440.1	7.73	500.0	1400.1	6.20
237.4	1412.7	6.63	51.8	1451.9	7.71	488.2	1411.9	6.23
224.7	1425.4	6.64	63.6	1463.7	7.73	476.4	1423.7	6.23
212.1	1438.0	6.61	75.4	1475.5	7.67	464.6	1435.5	6.29
199.5	1450.6	6.71	87.2	1487.3	7.75	452.8	1447.3	6.29
186.8	1463.3	6.68	99.0	1499.1	7.82	441.0	1459.1	6.31
174.2	1475.9	6.75	110.8	1510.9	7.77	429.2	1470.9	6.38
161.6	1488.5	6.82	122.6	1522.7	7.79	417.4	1482.7	6.41
148.9	1501.2	6.82	134.4	1534.5	7.82	405.6	1494.5	6.41
136.3	1513.8	6.93	146.2	1546.3	7.76	393.8	1506.3	6.48
123.7	1526.4	6.98	157.9	1558.0	7.84	382.1	1518.0	6.51
111.1	1539.0	6.97	169.7	1569.8	7.87	370.3	1529.8	6.53
98.4	1551.7	7.08	181.5	1581.6	7.82	358.5	1541.6	6.60
85.8	1564.3	7.10	193.3	1593.4	7.91	346.7	1553.4	6.58
73.2	1576.9	7.15	205.1	1605.2	7.93	334.9	1565.2	6.62
60.5	1589.6	7.31	216.9	1617.0	7.86	323.1	1577.0	6.70
47.9	1602.2	7.35	228.7	1628.8	7.88	311.3	1588.8	6.71
35.3	1614.8	7.53	240.5	1640.6	7.84	299.5	1600.6	6.75
22.6	1627.5	7.77	252.3	1652.4	7.77	287.7	1612.4	6.84
10.0	1640.1	8.38	264.1	1664.2	7.83	275.9	1624.2	6.83
10.0	1660.1	8.16	275.9	1676.0	7.79	264.1	1636.0	6.87
22.6	1672.7	7.57	287.7	1687.8	7.77	252.3	1647.8	6.95
35.3	1685.4	7.56	299.5	1699.6	7.80	240.5	1659.6	6.96
47.9	1698.0	7.48	311.3	1711.4	7.72	228.7	1671.4	7.05
60.5	1710.6	7.42	323.1	1723.2	7.71	216.9	1683.2	7.14
73.2	1723.3	7.47	334.9	1735.0	7.74	205.1	1695.0	7.12
85.8	1735.9	7.40	346.7	1746.8	7.70	193.3	1706.8	7.21
98.4	1748.5	7.40	358.5	1758.6	7.69	181.5	1718.6	7.25
111.1	1761.2	7.40	370.3	1770.4	7.74	169.7	1730.4	7.23
123.7	1773.8	7.34	382.1	1782.2	7.72	157.9	1742.2	7.34
136.3	1786.4	7.40	393.8	1793.9	7.74	146.2	1753.9	7.34
148.9	1799.0	7.37	405.6	1805.7	7.73	134.4	1765.7	7.35
161.6	1811.7	7.32	417.4	1817.5	7.65	122.6	1777.5	7.47
174.2	1824.3	7.35	429.2	1829.3	7.63	110.8	1789.3	7.51
186.8	1836.9	7.27	441.0	1841.1	7.60	99.0	1801.1	7.51
199.5	1849.6	7.28	452.8	1852.9	7.54	87.2	1812.9	7.61
212.1	1862.2	7.28	464.6	1864.7	7.54	75.4	1824.7	7.63
224.7	1874.8	7.22	476.4	1876.5	7.52	63.6	1836.5	7.66
237.4	1887.5	7.30	488.2	1888.3	7.50	51.8	1848.3	7.79
250.0	1900.1	7.30	500.0	1900.1	7.47	40.0	1860.1	7.85

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
800.1	40.68	44.20	49.46	20.84	20.30	19.97
860.1	36.99	40.12	44.53	20.68	20.19	19.96
920.1	34.39	37.31	41.10	20.63	20.18	19.96
980.1	32.60	35.39	38.67	20.70	20.28	20.13
1040.1	31.66	34.49	37.50	20.68	20.29	20.12
1100.1	31.01	33.85	36.55	20.82	20.54	20.33
1160.1	30.52	33.34	35.90	21.27	20.96	20.66
1220.1	30.06	33.08	35.79	21.57	21.42	21.10
1280.1	29.73	32.95	35.84	22.07	21.94	21.73
1340.1	29.28	32.69	35.78	22.76	22.55	22.33
1400.1	29.06	32.41	35.62	23.76	23.41	23.06
1460.1	28.74	32.22	35.26	24.97	24.37	23.78
1520.1	28.29	31.63	34.49	26.56	25.59	24.62
1580.1	28.37	31.26	33.75	28.38	26.73	25.13
1640.1	28.05	30.90	33.17	30.61	27.60	25.67
1700.1	27.82	30.39	32.41	32.45	28.45	26.08
1740.1	27.94	30.44	32.21	32.53	28.63	26.23
1800.1	27.62	29.95	31.51	31.85	28.51	26.38
1840.1	27.72	29.82	31.18	30.47	28.12	26.22
1900.1	27.67	29.47	30.65	28.61	27.52	26.19
1940.1	27.72	29.38	30.36	27.43	26.77	25.86
2000.1	27.41	29.01	29.88	25.76	25.97	25.62
2040.1	27.64	28.93	29.61	24.95	25.30	25.34
2100.1	27.50	28.87	29.47	23.65	24.40	24.90
2140.1	27.72	28.97	29.49	23.05	23.94	24.60
2200.1	27.70	28.94	29.53	22.20	23.05	23.95
2240.1	27.99	29.09	29.49	21.79	22.69	23.50
2300.1	27.95	29.21	29.68	21.23	22.13	22.89
2340.1	28.23	29.38	29.79	21.11	21.97	22.67
2400.1	28.11	29.49	30.27	20.70	21.59	22.29
2440.1	28.31	29.53	30.34	20.76	21.60	22.33
2500.1	28.20	29.56	30.47	20.65	21.56	22.35
2540.1	28.61	29.94	30.85	20.77	21.65	22.38
2600.1	28.73	30.11	31.09	20.85	21.79	22.54
2640.1	28.79	30.18	31.09	20.94	21.94	22.67
2700.1	28.97	30.32	31.42	21.21	22.19	23.11
2740.1	29.27	30.62	31.68	21.50	22.50	23.43
2800.1	29.66	30.92	32.10	21.95	22.98	24.00
2840.1	29.97	31.11	32.26	22.35	23.40	24.45
2900.1	30.61	31.70	32.56	23.03	24.16	25.20

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
800.1	840.1	19.18	18.90	18.67
860.1	900.1	18.78	18.63	18.40
920.1	960.1	18.71	18.76	18.74
980.1	1020.1	18.64	18.93	19.06
1040.1	1080.1	18.55	18.96	19.16
1100.1	1140.1	18.08	18.54	18.77
1160.1	1200.1	17.53	18.11	18.34
1220.1	1260.1	17.26	17.96	18.29
1280.1	1320.1	17.32	18.21	18.55
1340.1	1380.1	17.81	18.70	19.19
1400.1	1440.1	18.73	19.65	20.29
1460.1	1500.1	20.13	21.13	21.77
1520.1	1560.1	21.92	22.96	23.61
1580.1	1620.1	24.07	25.13	25.79
1640.1	1680.1	26.85	28.01	28.58
1700.1	1740.1	30.51	31.75	32.30
1740.1	1780.1	33.52	35.05	35.61
1800.1	1840.1	41.59	44.79	46.65
1840.1	1880.1	55.06	54.65	49.66
1900.1	1940.1	39.29	37.43	36.19
1940.1	1980.1	34.90	33.47	32.37
2000.1	2040.1	30.64	29.32	28.39
2040.1	2080.1	28.64	27.29	26.42
2100.1	2140.1	25.89	24.67	23.81
2140.1	2180.1	24.55	23.27	22.40
2200.1	2240.1	22.47	21.26	20.49
2240.1	2280.1	21.50	20.33	19.51
2300.1	2340.1	19.97	18.99	18.23
2340.1	2380.1	19.28	18.39	17.59
2400.1	2440.1	18.17	17.51	16.84
2440.1	2480.1	17.62	17.06	16.48
2500.1	2540.1	16.93	16.54	16.10
2540.1	2580.1	16.57	16.15	15.88
2600.1	2640.1	16.03	15.83	15.56
2640.1	2680.1	15.79	15.64	15.44
2700.1	2740.1	15.52	15.44	15.34
2740.1	2780.1	15.37	15.30	15.23
2800.1	2840.1	15.23	15.21	15.20
2840.1	2880.1	15.09	15.13	15.12
2900.1	2940.1	14.93	15.03	15.10

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=1900.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
800.1	840.1	6.71	6.26	6.03	800.1	1.58	1.82	2.30	40.0	1.68	1.46	1.33
860.1	900.1	5.33	4.88	4.64	860.1	1.68	1.83	2.26	51.8	1.62	1.39	1.27
920.1	960.1	4.22	3.85	3.62	920.1	1.77	1.87	2.26	63.6	1.57	1.34	1.23
980.1	1020.1	3.42	3.11	2.95	980.1	1.85	1.89	2.24	75.4	1.55	1.32	1.22
1040.1	1080.1	2.87	2.65	2.55	1040.1	1.94	1.92	2.24	87.2	1.61	1.37	1.25
1100.1	1140.1	2.56	2.40	2.38	1100.1	2.01	1.92	2.21	99.0	1.66	1.42	1.28
1160.1	1200.1	2.36	2.27	2.29	1160.1	2.10	1.95	2.20	110.8	1.68	1.43	1.28
1220.1	1260.1	2.22	2.15	2.19	1220.1	2.18	1.98	2.19	122.6	1.67	1.42	1.26
1280.1	1320.1	2.06	1.99	2.01	1280.1	2.23	2.01	2.18	134.4	1.64	1.40	1.25
1340.1	1380.1	1.83	1.75	1.79	1340.1	2.29	2.06	2.20	146.2	1.63	1.38	1.24
1400.1	1440.1	1.59	1.52	1.57	1400.1	2.31	2.07	2.18	157.9	1.62	1.37	1.25
1460.1	1500.1	1.41	1.31	1.39	1460.1	2.37	2.10	2.19	169.7	1.62	1.38	1.25
1520.1	1560.1	1.25	1.15	1.28	1520.1	2.45	2.12	2.18	181.5	1.62	1.37	1.24
1580.1	1620.1	1.18	1.06	1.25	1580.1	2.44	2.12	2.16	193.3	1.62	1.37	1.23
1640.1	1680.1	1.16	1.14	1.31	1640.1	2.53	2.14	2.15	205.1	1.62	1.36	1.22
1700.1	1740.1	1.23	1.27	1.42	1700.1	2.60	2.15	2.11	216.9	1.63	1.38	1.23
1740.1	1780.1	1.30	1.36	1.49	1740.1	2.61	2.15	2.08	228.7	1.64	1.39	1.24
1800.1	1840.1	1.43	1.50	1.62	1800.1	2.68	2.14	2.02	240.5	1.62	1.37	1.23
1840.1	1880.1	1.52	1.58	1.69	1840.1	2.67	2.12	1.98	252.3	1.58	1.34	1.20
1900.1	1940.1	1.62	1.69	1.81	1900.1	2.71	2.10	1.89	264.1	1.55	1.30	1.18
1940.1	1980.1	1.67	1.74	1.86	1940.1	2.71	2.07	1.84	275.9	1.54	1.30	1.17
2000.1	2040.1	1.76	1.85	1.97	2000.1	2.81	2.06	1.76	287.7	1.56	1.31	1.17
2040.1	2080.1	1.83	1.93	2.04	2040.1	2.73	2.01	1.71	299.5	1.58	1.33	1.19
2100.1	2140.1	1.98	2.08	2.17	2100.1	2.81	2.02	1.65	311.3	1.58	1.33	1.19
2140.1	2180.1	2.07	2.17	2.26	2140.1	2.72	1.98	1.60	323.1	1.55	1.31	1.17
2200.1	2240.1	2.21	2.29	2.36	2200.1	2.76	1.96	1.55	334.9	1.52	1.28	1.14
2240.1	2280.1	2.26	2.32	2.38	2240.1	2.61	1.90	1.51	346.7	1.51	1.26	1.12
2300.1	2340.1	2.31	2.34	2.40	2300.1	2.60	1.87	1.47	358.5	1.51	1.26	1.13
2340.1	2380.1	2.32	2.35	2.41	2340.1	2.43	1.80	1.44	370.3	1.51	1.27	1.14
2400.1	2440.1	2.36	2.39	2.46	2400.1	2.37	1.75	1.40	382.1	1.49	1.25	1.13
2440.1	2480.1	2.42	2.46	2.53	2440.1	2.21	1.68	1.38	393.8	1.46	1.23	1.11
2500.1	2540.1	2.58	2.63	2.68	2500.1	2.13	1.63	1.37	405.6	1.44	1.21	1.09
2540.1	2580.1	2.68	2.73	2.76	2540.1	1.99	1.58	1.37	417.4	1.43	1.20	1.07
2600.1	2640.1	2.83	2.86	2.88	2600.1	1.88	1.54	1.38	429.2	1.43	1.20	1.08
2640.1	2680.1	2.88	2.91	2.92	2640.1	1.78	1.51	1.41	441.0	1.42	1.19	1.09
2700.1	2740.1	2.89	2.91	2.94	2700.1	1.67	1.49	1.45	452.8	1.39	1.18	1.10
2740.1	2780.1	2.89	2.92	2.97	2740.1	1.59	1.48	1.49	464.6	1.36	1.16	1.11
2800.1	2840.1	2.92	2.97	3.05	2800.1	1.50	1.47	1.54	476.4	1.34	1.13	1.10
2840.1	2880.1	3.00	3.07	3.15	2840.1	1.45	1.49	1.59	488.2	1.34	1.12	1.09
2900.1	2940.1	3.22	3.30	3.37	2900.1	1.39	1.51	1.65	500.0	1.34	1.13	1.09

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	30	31	62	51	61	34	55	71	79
1	-	21	+0	39	17	50	60	63	58	67	61	80
2	>100	52	36	42	37	52	53	70	76	71	49	69
3	>100	58	42	48	32	65	47	66	69	74	68	67
4	>100	79	59	75	46	55	59	61	58	75	85	72
5	>100	79	82	88	56	60	43	75	52	77	76	87
6	>100	88	90	93	74	72	54	84	67	70	66	82
7	>100	85	90	94	96	84	67	69	63	81	69	85
8	>100	85	>96	95	>96	>96	76	82	63	74	73	78
9	>100	>96	92	>96	94	>96	>96	93	80	75	66	88
10	>100	>96	95	90	93	>96	>96	>96	91	82	68	74
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 1650.10 MHz; +4.00 dBm.
LO IN: 1690.01 MHz; +13.00 dBm
IF OUT: 39.91 MHz; -3.59 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	1	20	22	45	37	42	21	36	51	55
1	-	21	+0	37	16	43	51	52	49	47	48	56
2	>100	59	42	46	46	56	58	69	71	62	53	54
3	>100	76	59	71	49	81	57	77	76	81	75	73
4	>100	>86	81	>86	73	81	83	>86	81	>86	>86	82
5	>100	>86	>86	>86	>86	>86	85	>86	>86	>86	>86	>86
6	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
7	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
8	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
9	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
10	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 1650.10 MHz; -6.00 dBm.
LO IN: 1690.01 MHz; +13.00 dBm
IF OUT: 39.91 MHz; -13.62 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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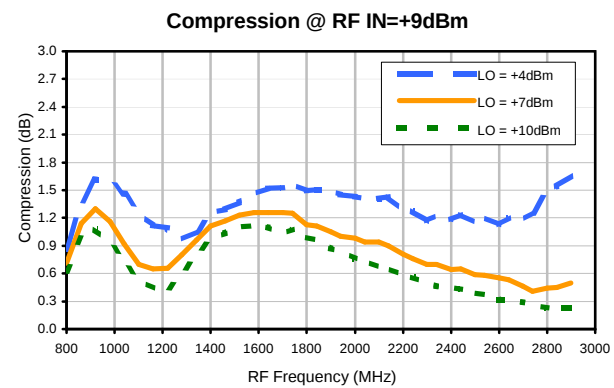
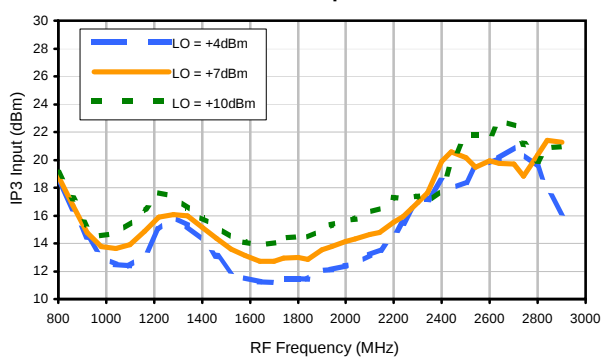
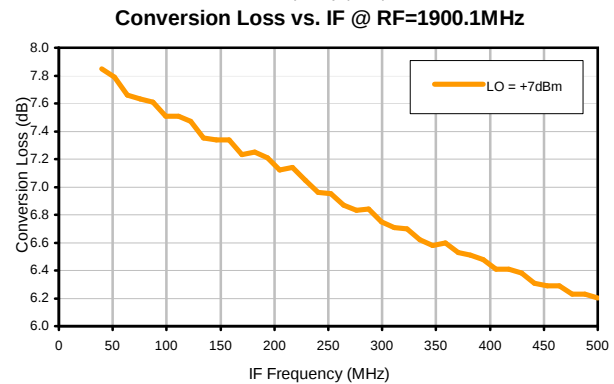
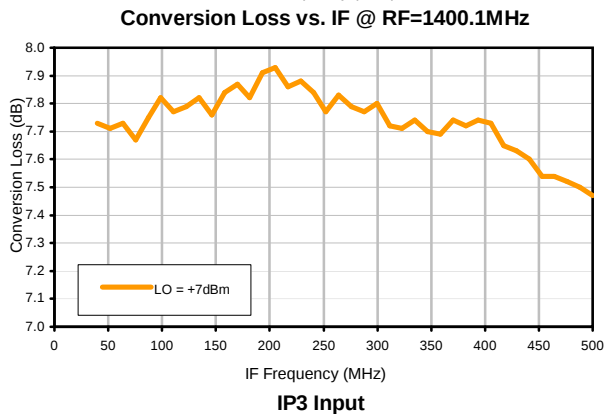
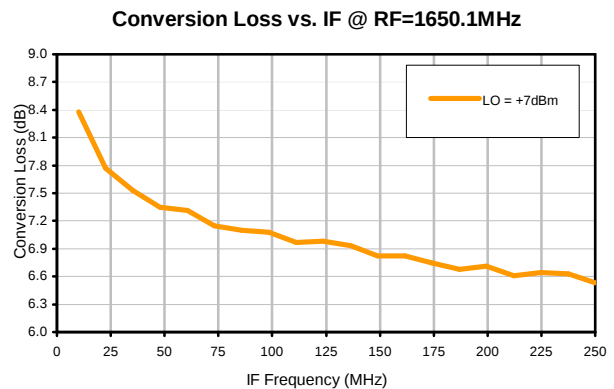
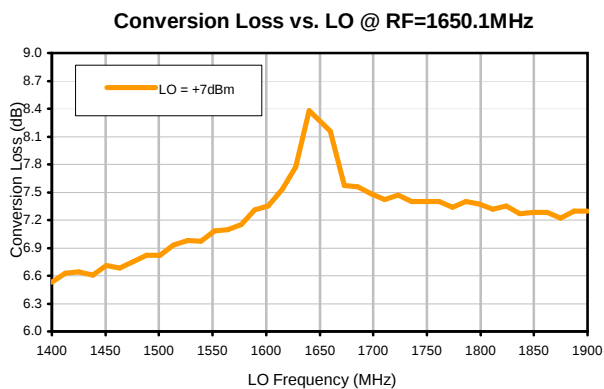
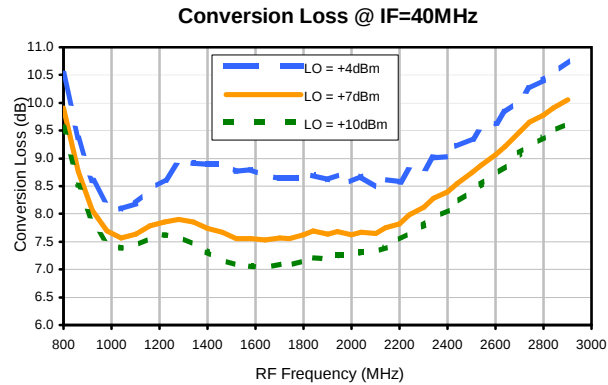
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Frequency Mixer

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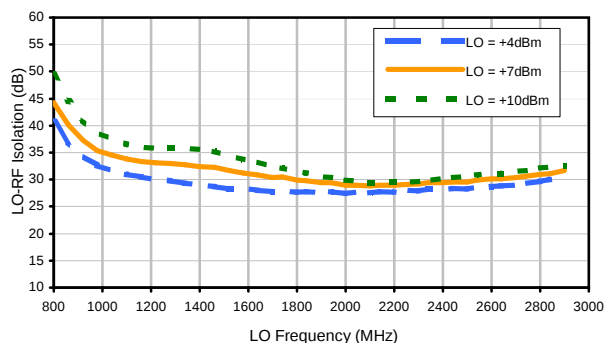
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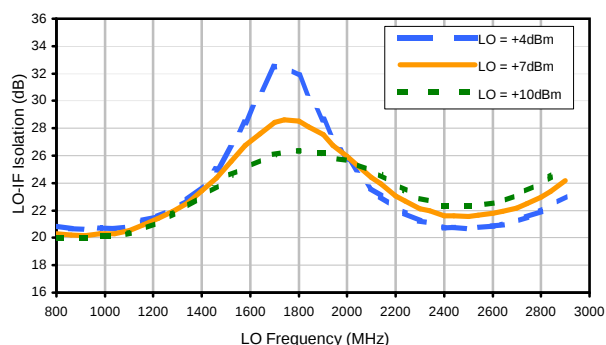
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Typical Performance Curves

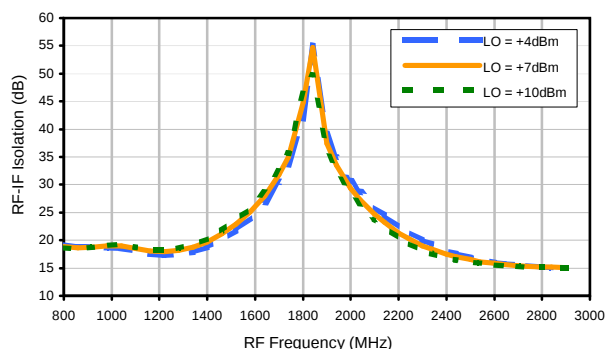
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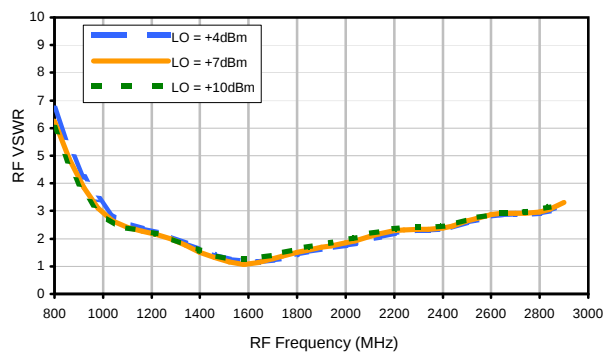
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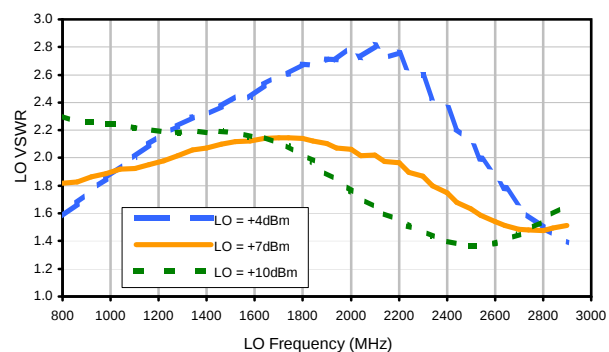
RF-IF Isolation



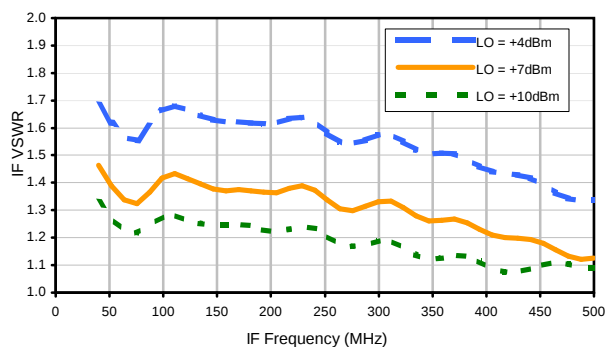
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	30	31	62	51	61	34	55	71	79
1	-	21	+0	39	17	50	60	63	58	67	61	80
2	>100	52	36	42	37	52	53	70	76	71	49	69
3	>100	58	42	48	32	65	47	66	69	74	68	67
4	>100	79	59	75	46	55	59	61	58	75	85	72
5	>100	79	82	88	56	60	43	75	52	77	76	87
6	>100	88	90	93	74	72	54	84	67	70	66	82
7	>100	85	90	94	96	84	67	69	63	81	69	85
8	>100	85	>96	95	>96	>96	76	82	63	74	73	78
9	>100	>96	92	>96	94	>96	>96	93	80	75	66	88
10	>100	>96	95	90	93	>96	>96	>96	91	82	68	74
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 1650.10 MHz; +4.00 dBm.
LO IN: 1690.01 MHz; +13.00 dBm
IF OUT: 39.91 MHz; -3.59 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	1	20	22	45	37	42	21	36	51	55
1	-	21	+0	37	16	43	51	52	49	47	48	56
2	>100	59	42	46	46	56	58	69	71	62	53	54
3	>100	76	59	71	49	81	57	77	76	81	75	73
4	>100	>86	81	>86	73	81	83	>86	81	>86	>86	82
5	>100	>86	>86	>86	>86	>86	85	>86	>86	>86	>86	>86
6	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
7	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
8	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
9	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
10	>100	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86	>86
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 1650.10 MHz; -6.00 dBm.
LO IN: 1690.01 MHz; +13.00 dBm
IF OUT: 39.91 MHz; -13.62 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.

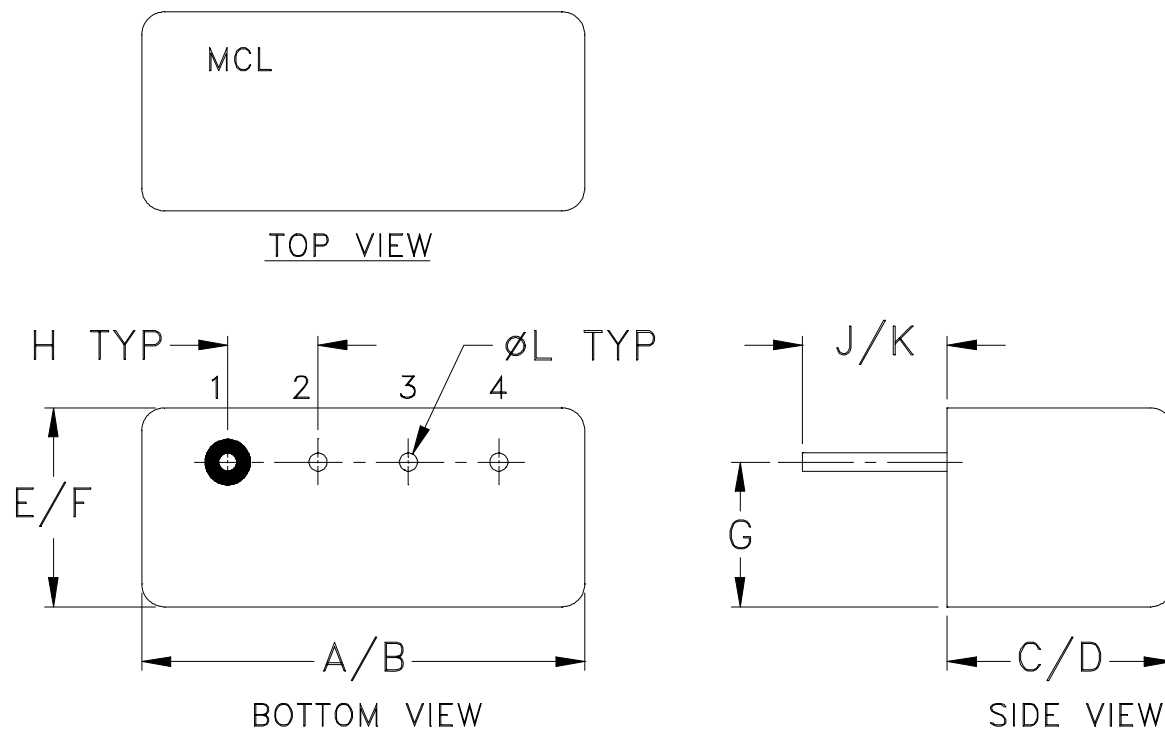
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B02

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