

# Engineering Development Model

## Frequency Mixer

## ADE-ED10905/1

Level 7 (LO Power + 7 dBm)

### Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability. At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.



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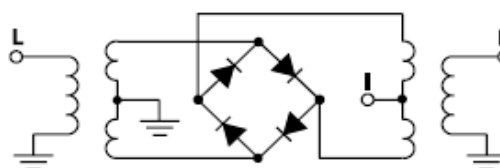
**CASE STYLE : CD542**

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
<b>Frequency</b>	<b>LO</b> (fL to fU)	847		1917	MHz
	<b>RF</b> (fL to fU)	847		1917	MHz
	<b>IF</b>	55		900	MHz
<b>Conversion Loss</b>	<b>Total Range</b>		6.5		dB
<b>LO-RF Isolation</b>			42		dB
<b>LO-IF Isolation</b>			27		dB
<b>Input IP3</b>			+14		dBm
<b>1 dB Compression</b>			0		dBm

MAXIMUM RATINGS	
<b>Operating Temperature</b>	-40°C to +85°C
<b>Storage Temperature</b>	-55°C to +100°C

PIN CONNECTIONS	
<b>LO</b>	6
<b>RF</b>	3
<b>IF</b>	4
<b>GROUND</b>	1,2,5

### Electrical Schematics



# Frequency Mixer

# ADE-ED10905/1

## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=836.5MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=0dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+4	+7	+10			+4	+7	+10			+4	+7	+10
847.1	10.6	6.96	6.55	6.33	847.1	10.6	13.80	18.35	19.33	847.1	10.6	0.56	0.35	0.24
882.1	45.6	6.88	6.43	6.21	882.1	45.6	14.36	15.22	15.59	882.1	45.6	0.59	0.41	0.30
917.1	80.6	6.92	6.44	6.17	917.1	80.6	12.04	11.59	16.04	917.1	80.6	0.69	0.52	0.41
952.1	115.6	6.63	6.22	6.07	952.1	115.6	12.24	17.37	18.61	952.1	115.6	0.88	0.64	0.44
987.1	150.6	6.47	6.14	6.02	987.1	150.6	14.18	15.59	18.98	987.1	150.6	1.04	0.70	0.47
1022.1	185.6	6.41	6.10	6.01	1022.1	185.6	16.92	16.06	19.49	1022.1	185.6	1.06	0.74	0.50
1057.1	220.6	6.32	6.06	5.98	1057.1	220.6	13.05	18.00	18.97	1057.1	220.6	1.11	0.73	0.47
1092.1	255.6	6.27	6.05	5.98	1092.1	255.6	12.90	18.74	18.01	1092.1	255.6	1.13	0.77	0.53
1127.1	290.6	6.24	6.04	5.94	1127.1	290.6	12.92	18.00	17.53	1127.1	290.6	1.25	0.83	0.60
1162.1	325.6	6.19	5.97	5.89	1162.1	325.6	15.92	18.03	16.99	1162.1	325.6	1.24	0.84	0.63
1197.1	360.6	6.25	6.02	5.94	1197.1	360.6	17.72	16.58	16.15	1197.1	360.6	1.28	0.89	0.67
1232.1	395.6	6.24	6.04	5.95	1232.1	395.6	16.06	15.18	15.01	1232.1	395.6	1.30	0.93	0.68
1267.1	430.6	6.24	6.06	5.98	1267.1	430.6	15.49	16.05	15.21	1267.1	430.6	1.36	0.96	0.72
1302.1	465.6	6.27	6.10	5.99	1302.1	465.6	16.16	16.37	15.90	1302.1	465.6	1.40	1.00	0.76
1332.1	495.6	6.29	6.11	6.02	1332.1	495.6	16.62	15.42	14.88	1332.1	495.6	1.42	1.03	0.78
1367.1	530.6	6.37	6.15	6.06	1367.1	530.6	19.31	16.11	14.16	1367.1	530.6	1.44	1.10	0.83
1397.1	560.6	6.38	6.16	6.01	1397.1	560.6	19.31	15.74	13.78	1397.1	560.6	1.58	1.23	0.97
1432.1	595.6	6.44	6.17	6.04	1432.1	595.6	18.25	14.30	13.96	1432.1	595.6	1.64	1.30	1.07
1462.1	625.6	6.44	6.13	5.96	1462.1	625.6	14.14	13.00	13.39	1462.1	625.6	1.65	1.36	1.14
1497.1	660.6	6.37	6.04	5.85	1497.1	660.6	12.85	11.90	12.11	1497.1	660.6	1.76	1.50	1.28
1527.1	690.6	6.46	6.11	5.87	1527.1	690.6	12.39	11.50	11.65	1527.1	690.6	1.75	1.51	1.32
1562.1	725.6	6.45	6.09	5.85	1562.1	725.6	10.47	10.36	10.49	1562.1	725.6	1.73	1.51	1.35
1592.1	755.6	6.47	6.14	5.92	1592.1	755.6	9.34	9.63	9.84	1592.1	755.6	1.70	1.48	1.36
1627.1	790.6	6.68	6.36	6.14	1627.1	790.6	8.79	8.99	9.24	1627.1	790.6	1.54	1.39	1.30
1657.1	820.6	6.76	6.43	6.24	1657.1	820.6	8.27	8.54	8.80	1657.1	820.6	1.48	1.31	1.23
1692.1	855.6	6.87	6.61	6.45	1692.1	855.6	8.23	8.62	9.02	1692.1	855.6	1.45	1.27	1.21
1722.1	885.6	7.05	6.75	6.62	1722.1	885.6	8.34	9.14	9.75	1722.1	885.6	1.30	1.16	1.13
1757.1	920.6	7.09	6.76	6.61	1757.1	920.6	8.36	9.34	10.38	1757.1	920.6	1.33	1.17	1.16
1787.1	950.6	7.38	7.02	6.88	1787.1	950.6	8.42	9.68	10.50	1787.1	950.6	1.24	1.10	1.13
1822.1	985.6	7.66	7.30	7.13	1822.1	985.6	9.02	9.72	10.69	1822.1	985.6	1.11	1.02	1.09
1852.1	1015.6	7.78	7.41	7.22	1852.1	1015.6	9.66	10.15	10.79	1852.1	1015.6	1.08	1.02	1.07
1887.1	1050.6	8.29	7.92	7.71	1887.1	1050.6	10.29	10.43	10.84	1887.1	1050.6	0.91	0.89	0.98
1917.1	1080.6	8.47	8.10	7.88	1917.1	1080.6	10.56	10.72	10.79	1917.1	1080.6	0.81	0.84	0.96
1952.1	1115.6	8.59	8.24	8.02	1952.1	1115.6	11.01	10.57	10.41	1952.1	1115.6	0.79	0.84	0.98
1982.1	1145.6	9.06	8.72	8.53	1982.1	1145.6	10.65	10.26	10.25	1982.1	1145.6	0.69	0.76	0.92
2017.1	1180.6	9.19	8.87	8.70	2017.1	1180.6	10.94	10.25	9.05	2017.1	1180.6	0.68	0.79	0.95
2047.1	1210.6	9.38	9.07	8.95	2047.1	1210.6	10.78	10.03	8.20	2047.1	1210.6	0.67	0.78	0.94
2082.1	1245.6	9.97	9.68	9.65	2082.1	1245.6	10.98	9.77	8.12	2082.1	1245.6	0.54	0.66	0.77
2112.1	1275.6	10.12	9.84	9.99	2112.1	1275.6	10.39	8.75	8.04	2112.1	1275.6	0.53	0.65	0.62
2147.1	1310.6	10.42	10.24	10.61	2147.1	1310.6	9.94	8.73	9.08	2147.1	1310.6	0.46	0.54	0.36

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# ADE-ED10905/1

## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=881.5MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=858.9MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=904.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
871.5	10.0	6.58	10.1	869.0	6.28	894.1	10.0	6.55
824.5	57.0	6.42	50.7	909.6	6.38	873.5	30.6	6.51
777.5	104.0	6.30	91.3	950.2	6.45	853.0	51.1	6.38
730.5	151.0	6.14	131.9	990.8	6.65	832.4	71.7	6.38
683.5	198.0	6.09	172.6	1031.5	6.84	811.9	92.2	6.31
636.5	245.0	6.09	213.2	1072.1	7.04	791.3	112.8	6.22
589.6	291.9	6.09	253.8	1112.7	7.21	770.8	133.3	6.17
542.6	338.9	6.05	294.4	1153.3	7.30	750.2	153.9	6.09
495.6	385.9	5.99	335.0	1193.9	7.40	729.6	174.5	6.12
448.6	432.9	6.01	375.6	1234.5	7.46	709.1	195.0	6.06
401.6	479.9	6.00	416.3	1275.2	7.54	688.5	215.6	6.09
354.6	526.9	5.99	456.9	1315.8	7.56	668.0	236.1	6.02
307.6	573.9	6.03	497.5	1356.4	7.61	647.4	256.7	6.06
260.6	620.9	6.08	538.1	1397.0	7.47	626.8	277.3	6.04
213.6	667.9	6.05	578.7	1437.6	7.36	606.3	297.8	6.04
166.6	714.9	6.19	599.0	1457.9	7.25	585.7	318.4	6.05
119.6	761.9	6.21	639.6	1498.5	6.98	565.2	338.9	6.00
72.7	808.8	6.34	659.9	1518.8	6.98	544.6	359.5	6.05
25.7	855.8	6.32	700.6	1559.5	6.91	524.1	380.0	5.99
34.3	915.8	6.38	720.9	1579.8	6.82	503.5	400.6	6.02
107.3	988.8	6.61	761.5	1620.4	6.92	482.9	421.2	5.97
180.4	1061.9	6.95	781.8	1640.7	7.08	462.4	441.7	5.96
253.4	1134.9	7.22	822.4	1681.3	7.15	441.8	462.3	5.92
326.4	1207.9	7.34	842.7	1701.6	7.25	421.3	482.8	5.90
399.4	1280.9	7.47	883.3	1742.2	7.60	400.7	503.4	5.98
472.4	1353.9	7.51	903.6	1762.5	7.77	380.1	524.0	5.96
545.4	1426.9	7.33	944.3	1803.2	8.12	359.6	544.5	6.00
618.4	1499.9	6.97	964.6	1823.5	8.26	339.0	565.1	6.00
667.1	1548.6	6.88	1005.2	1864.1	8.40	318.5	585.6	6.02
740.1	1621.6	6.92	1025.5	1884.4	8.49	297.9	606.2	6.06
788.8	1670.3	7.06	1066.1	1925.0	8.65	277.4	626.7	6.00
861.8	1743.3	7.57	1086.4	1945.3	8.63	256.8	647.3	6.08
910.4	1791.9	7.89	1127.0	1985.9	8.79	215.7	688.4	6.14
983.5	1865.0	8.31	1147.3	2006.2	9.10	195.1	709.0	6.06
1032.1	1913.6	8.62	1187.9	2046.8	9.30	154.0	750.1	6.14
1105.1	1986.6	8.85	1208.3	2067.2	9.22	133.4	770.7	6.25
1153.8	2035.3	9.08	1248.9	2107.8	9.60	92.3	811.8	6.28
1226.8	2108.3	9.69	1269.2	2128.1	9.99	71.8	832.3	6.31
1275.5	2157.0	10.05	1309.8	2168.7	10.25	30.7	873.4	6.39
1348.5	2230.0	10.78	1330.1	2189.0	10.19	10.1	894.0	6.24

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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
10.6	68.44	65.16	66.80	51.93	52.66	53.59
45.6	58.79	58.65	58.58	40.16	41.11	41.98
80.6	55.49	55.28	55.61	36.24	37.65	39.11
115.6	52.96	53.05	53.31	34.05	36.01	37.97
150.6	50.70	51.03	51.20	32.28	34.65	36.36
185.6	48.61	48.98	49.27	31.23	33.57	35.18
220.6	47.05	47.51	47.68	30.20	32.40	33.97
255.6	45.82	46.28	46.54	29.39	31.43	32.94
290.6	44.67	45.11	45.31	28.32	30.28	31.83
325.6	43.52	44.09	44.44	27.49	29.48	31.12
360.6	42.96	43.48	43.72	26.65	28.59	30.24
395.6	42.12	42.69	42.96	25.98	27.96	29.64
430.6	41.41	41.99	42.36	25.07	27.10	28.87
465.6	40.90	41.60	41.96	24.40	26.37	28.07
495.6	40.31	40.84	41.08	23.93	26.00	27.80
530.6	39.89	40.52	40.78	23.33	25.29	27.14
560.6	38.84	39.44	39.84	22.79	24.71	26.48
595.6	38.37	38.93	39.36	22.59	24.52	26.25
625.6	37.95	38.59	39.02	22.19	24.19	25.86
660.6	37.85	38.65	39.17	21.77	23.79	25.50
690.6	37.32	38.17	38.62	21.43	23.49	25.26
725.6	36.95	38.00	38.71	21.23	23.18	24.94
755.6	36.61	37.73	38.64	20.96	22.77	24.47
790.6	36.56	37.77	38.68	20.74	22.39	23.91
820.6	36.32	37.51	38.39	20.79	22.35	23.76
855.6	35.87	37.05	37.86	20.67	22.16	23.43
885.6	35.39	36.34	36.94	20.76	22.29	23.55
920.6	34.84	35.74	36.22	21.25	23.05	24.43
950.6	34.32	35.24	35.77	21.50	23.54	25.03
985.6	33.75	34.60	35.12	21.49	23.78	25.40
1015.6	33.34	34.24	34.80	21.66	24.14	25.79
1050.6	32.71	33.56	34.11	21.74	24.29	25.87
1080.6	32.08	32.87	33.36	21.81	24.25	25.62
1115.6	31.43	32.27	32.84	22.21	24.47	25.33
1145.6	31.06	31.97	32.70	22.46	24.47	24.82
1180.6	30.64	31.74	32.64	22.67	24.28	24.11
1210.6	30.29	31.39	32.44	23.03	24.08	23.37
1245.6	30.23	31.31	32.40	23.36	23.84	22.46
1275.6	30.37	31.43	32.83	23.50	23.49	21.92
1310.6	30.43	31.75	33.69	23.75	23.10	20.84

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
847.1	10.6	39.17	38.64	37.75
882.1	45.6	40.50	40.63	39.80
917.1	80.6	40.55	41.98	41.96
952.1	115.6	39.23	41.60	42.90
987.1	150.6	37.65	39.87	41.14
1022.1	185.6	35.36	36.77	37.56
1057.1	220.6	33.68	34.73	35.38
1092.1	255.6	31.66	32.31	32.90
1127.1	290.6	29.90	30.43	30.84
1162.1	325.6	28.64	29.09	29.37
1197.1	360.6	27.46	27.87	28.24
1232.1	395.6	26.50	26.77	27.10
1267.1	430.6	25.40	25.69	25.77
1302.1	465.6	24.58	24.64	24.63
1332.1	495.6	24.01	23.98	23.98
1367.1	530.6	23.68	23.72	23.76
1397.1	560.6	23.57	23.65	23.64
1432.1	595.6	23.74	23.78	23.92
1462.1	625.6	24.15	24.34	24.44
1497.1	660.6	24.81	24.96	25.14
1527.1	690.6	25.31	25.45	25.58
1562.1	725.6	26.48	26.62	26.67
1592.1	755.6	27.85	27.96	28.01
1627.1	790.6	28.74	28.63	28.50
1657.1	820.6	27.95	27.59	27.36
1692.1	855.6	26.84	26.27	25.80
1722.1	885.6	25.81	25.25	24.67
1757.1	920.6	23.96	23.47	22.95
1787.1	950.6	22.53	22.12	21.65
1822.1	985.6	21.19	20.94	20.60
1852.1	1015.6	20.17	20.00	19.80
1887.1	1050.6	19.01	18.91	18.81
1917.1	1080.6	18.22	18.21	18.13
1952.1	1115.6	17.30	17.26	17.30
1982.1	1145.6	16.66	16.53	16.53
2017.1	1180.6	15.67	15.56	15.50
2047.1	1210.6	15.20	15.03	14.91
2082.1	1245.6	14.78	14.59	14.35
2112.1	1275.6	14.35	14.16	13.78
2147.1	1310.6	14.11	13.93	13.53



# Frequency Mixer

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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=45MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
847.1	10.6	1.45	1.37	1.32	10.6	1.13	1.91	3.88	55.1	1.05	1.24	1.42
882.1	45.6	1.39	1.32	1.28	45.6	1.30	2.48	6.05	80.1	1.06	1.29	1.49
917.1	80.6	1.38	1.29	1.24	80.6	1.18	1.80	2.79	105.1	1.09	1.31	1.51
952.1	115.6	1.35	1.26	1.24	115.6	1.14	1.69	2.51	130.1	1.10	1.31	1.51
987.1	150.6	1.26	1.19	1.20	150.6	1.18	1.69	2.44	155.1	1.07	1.29	1.49
1022.1	185.6	1.23	1.18	1.18	185.6	1.16	1.60	2.25	180.1	1.06	1.28	1.48
1057.1	220.6	1.19	1.18	1.20	220.6	1.16	1.63	2.30	205.1	1.08	1.27	1.46
1092.1	255.6	1.11	1.13	1.16	255.6	1.17	1.62	2.25	230.1	1.10	1.24	1.41
1127.1	290.6	1.11	1.12	1.15	290.6	1.16	1.61	2.21	255.1	1.12	1.24	1.41
1162.1	325.6	1.09	1.14	1.18	325.6	1.18	1.64	2.27	280.1	1.13	1.27	1.44
1197.1	360.6	1.05	1.12	1.16	360.6	1.18	1.63	2.21	300.1	1.14	1.32	1.51
1232.1	395.6	1.07	1.14	1.19	395.6	1.19	1.65	2.23	325.1	1.14	1.30	1.48
1267.1	430.6	1.13	1.20	1.25	430.6	1.20	1.66	2.23	345.1	1.14	1.23	1.38
1302.1	465.6	1.14	1.20	1.24	465.6	1.21	1.67	2.22	370.1	1.14	1.24	1.40
1332.1	495.6	1.16	1.23	1.27	495.6	1.24	1.70	2.26	390.1	1.19	1.33	1.49
1367.1	530.6	1.21	1.26	1.31	530.6	1.26	1.72	2.27	415.1	1.21	1.33	1.49
1397.1	560.6	1.22	1.26	1.29	560.6	1.27	1.73	2.26	435.1	1.17	1.25	1.39
1432.1	595.6	1.26	1.30	1.33	595.6	1.30	1.78	2.32	460.1	1.16	1.24	1.39
1462.1	625.6	1.37	1.40	1.43	625.6	1.32	1.78	2.31	480.1	1.24	1.32	1.47
1497.1	660.6	1.44	1.46	1.49	660.6	1.35	1.81	2.32	505.1	1.26	1.34	1.47
1527.1	690.6	1.55	1.57	1.60	690.6	1.39	1.86	2.39	525.1	1.22	1.29	1.42
1562.1	725.6	1.78	1.78	1.80	725.6	1.41	1.88	2.40	550.1	1.19	1.27	1.42
1592.1	755.6	1.90	1.89	1.90	755.6	1.43	1.90	2.42	570.1	1.26	1.30	1.42
1627.1	790.6	2.15	2.14	2.15	790.6	1.48	1.96	2.48	595.1	1.30	1.34	1.44
1657.1	820.6	2.40	2.39	2.39	820.6	1.51	1.97	2.48	615.1	1.29	1.33	1.44
1692.1	855.6	2.53	2.52	2.53	855.6	1.53	2.00	2.50	640.1	1.25	1.32	1.44
1722.1	885.6	2.78	2.78	2.79	885.6	1.58	2.05	2.56	660.1	1.27	1.30	1.40
1757.1	920.6	3.06	3.04	3.04	920.6	1.61	2.07	2.57	685.1	1.32	1.33	1.42
1787.1	950.6	3.11	3.08	3.08	950.6	1.64	2.10	2.59	705.1	1.35	1.37	1.45
1822.1	985.6	3.45	3.42	3.42	985.6	1.70	2.17	2.68	730.1	1.32	1.34	1.43
1852.1	1015.6	3.63	3.60	3.58	1015.6	1.74	2.21	2.71	750.1	1.29	1.32	1.41
1887.1	1050.6	3.65	3.61	3.60	1050.6	1.77	2.24	2.72	775.1	1.33	1.33	1.41
1917.1	1080.6	3.95	3.91	3.90	1080.6	1.84	2.31	2.80	795.1	1.39	1.36	1.41
1952.1	1115.6	3.95	3.91	3.90	1115.6	1.89	2.36	2.85	820.1	1.35	1.33	1.38
1982.1	1145.6	3.88	3.85	3.83	1145.6	1.91	2.38	2.85	840.1	1.33	1.34	1.41
2017.1	1180.6	4.15	4.10	4.09	1180.6	1.98	2.45	2.93	865.1	1.34	1.33	1.40
2047.1	1210.6	4.09	4.04	4.00	1210.6	2.03	2.50	2.97	885.1	1.38	1.33	1.36
2082.1	1245.6	3.95	3.90	3.86	1245.6	2.04	2.50	2.95	910.1	1.35	1.29	1.31
2112.1	1275.6	4.21	4.16	4.09	1275.6	2.11	2.57	3.03	930.1	1.37	1.34	1.38
2147.1	1310.6	4.04	3.99	3.91	1310.6	2.17	2.63	3.07	955.1	1.36	1.33	1.37

REV. X2  
ADE-ED10905/1  
101013  
Page 4 of 5



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## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	15	34	22	53	24	57	26	55	29	56
1	-	35	+0	38	11	40	19	42	30	46	52	51
2	>90	62	58	62	61	66	64	>69	65	>69	64	>69
3	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
4	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
5	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
6	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
7	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
8	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
9	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
10	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 881.5 MHz; -15.00 dBm.  
 LO IN: 45 MHz; +7.00 dBm  
 IF OUT: 836.5 MHz; -21.44 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	26	45	35	57	37	61	40	64	44	64
1	-	34	+0	38	11	40	19	44	28	48	46	53
2	72	54	54	54	58	59	65	65	71	76	66	74
3	>90	62	64	67	58	74	55	77	54	70	54	68
4	>90	>79	72	>79	72	>79	74	>79	76	>79	75	>79
5	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
6	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
7	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
8	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
9	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
10	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

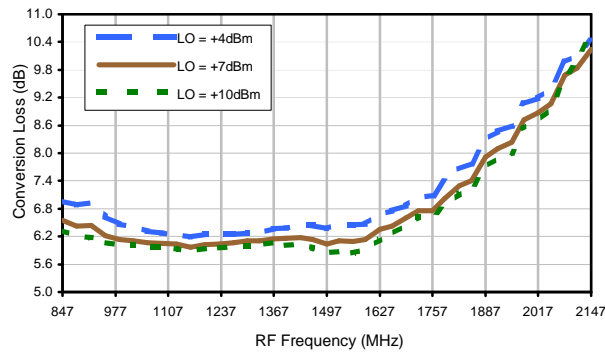
### LO HARMONICS ORDER

Test conditions: RF IN: 881.5 MHz; -5.00 dBm.  
 LO IN: 45 MHz; +7.00 dBm  
 IF OUT: 836.5 MHz; -11.45 dBm

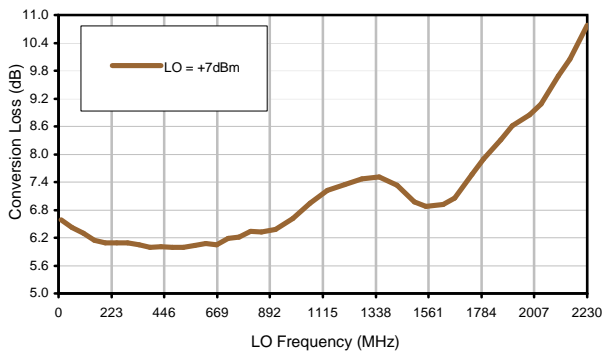
- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.  
 2. + entry denotes harmonics are in (dBc) above IF OUTPUT.  
 3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

## Typical Performance Curves

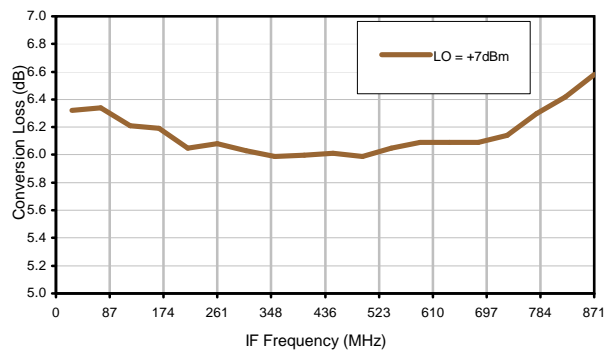
Conversion Loss @ IF=836.5MHz



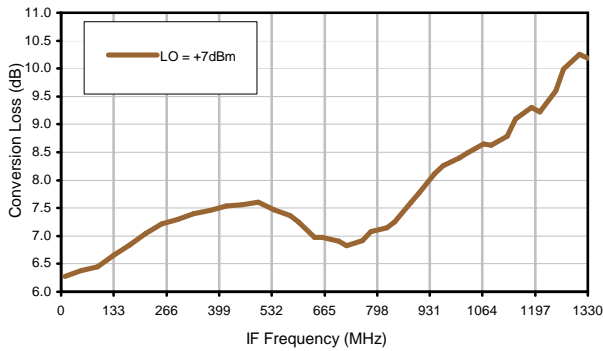
Conversion Loss vs. LO @ RF=881.5MHz



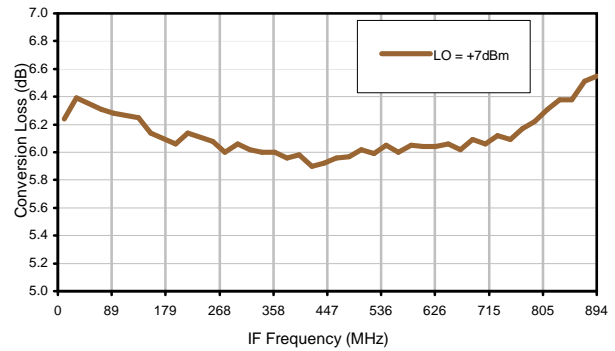
Conversion Loss vs. IF @ RF=881.5MHz



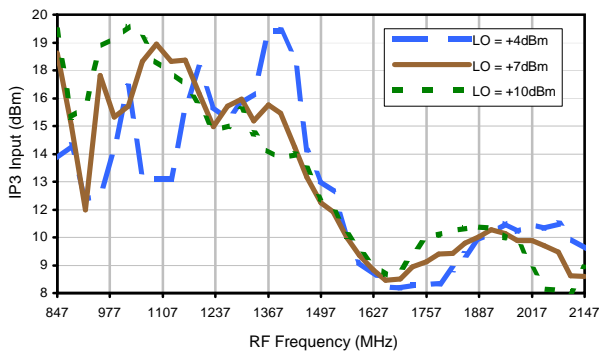
Conversion Loss vs. IF @ RF=858.9MHz



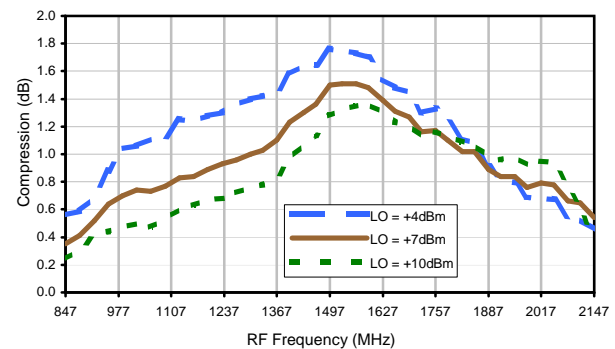
Conversion Loss vs. IF @ RF=904.1MHz



IP3 Input

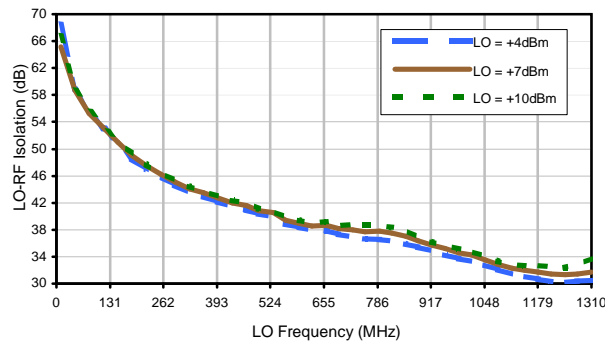


Compression @ RF IN=0dBm

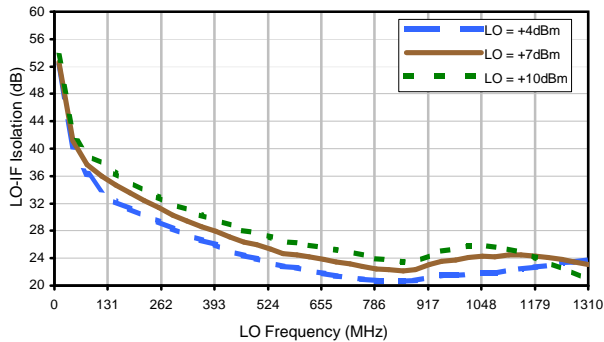


## Typical Performance Curves

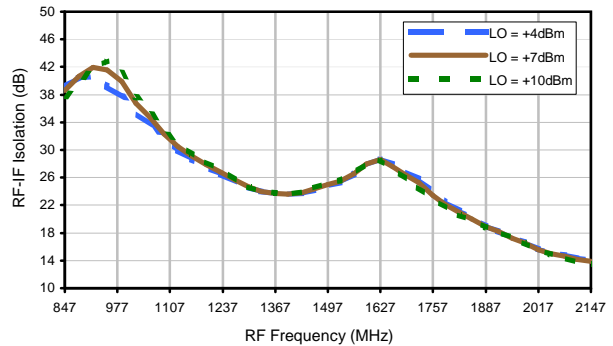
LO-RF Isolation



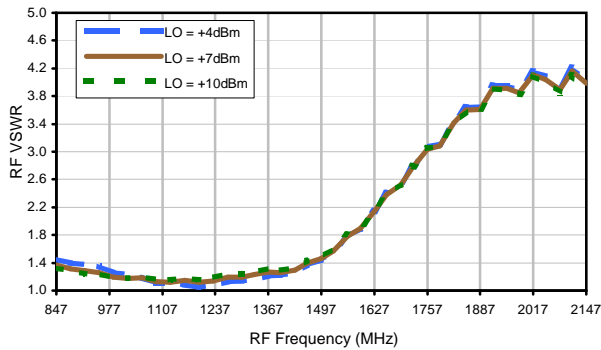
LO-IF Isolation



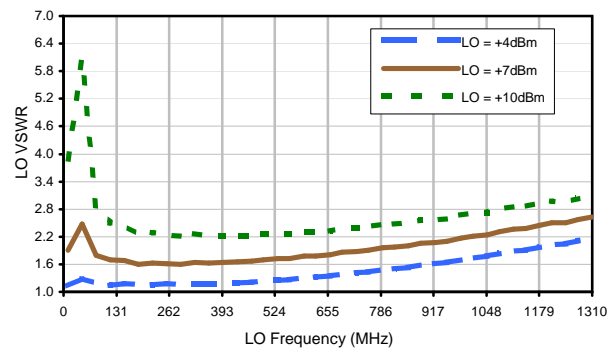
RF-IF Isolation



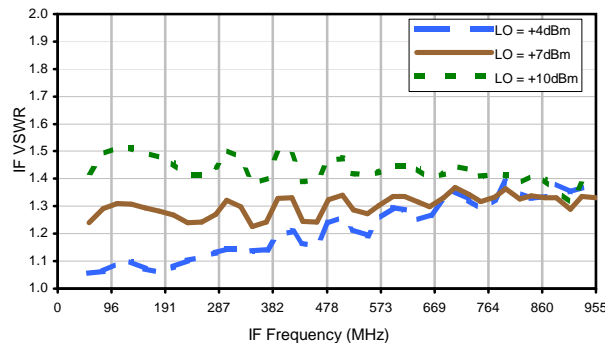
RF VSWR



LO VSWR



IF VSWR



## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(dBc)										
0	-	-	15	34	22	53	24	57	26	55	29	56
1	-	35	+0	38	11	40	19	42	30	46	52	51
2	>90	62	58	62	61	66	64	>69	65	>69	64	>69
3	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
4	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
5	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
6	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
7	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
8	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
9	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
10	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 881.5 MHz; -15.00 dBm.  
 LO IN: 45 MHz; +7.00 dBm  
 IF OUT: 836.5 MHz; -21.44 dBm

RF HARMONICS ORDER

	(-dBm)	(dBc)										
0	-	-	26	45	35	57	37	61	40	64	44	64
1	-	34	+0	38	11	40	19	44	28	48	46	53
2	72	54	54	54	58	59	65	65	71	76	66	74
3	>90	62	64	67	58	74	55	77	54	70	54	68
4	>90	>79	72	>79	72	>79	74	>79	76	>79	75	>79
5	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
6	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
7	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
8	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
9	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
10	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 881.5 MHz; -5.00 dBm.  
 LO IN: 45 MHz; +7.00 dBm  
 IF OUT: 836.5 MHz; -11.45 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

# CD

CD541  
CD542  
CD636  
CD637

## Outline Dimensions



## PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm .002$

CASE#	A	B	C	D	E	F	G	H	J	K	L	WT, GRAM
CD541					.082 (2.08)							.15
CD542	.272 (6.91)	.310 (7.87)	.220 (5.58)	.100 (2.54)	.112 (2.84)	.055 (1.40)	.100 (2.54)	.030 (0.76)	.026 (0.66)	.065 (1.65)	.300 (7.62)	.20
CD636					.162 (4.11)							.25
CD637					.206 (5.23)							.40

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .01$ ; 3 Pl.  $\pm .005$

### Notes:

- Case material: Plastic.
- Termination finish:
  - For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
  - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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# Tape & Reel Packaging TR-F34



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
16	12	7	Small quantity standard (see note)	20
				50
				100
				200
		13	Standard	500
				1000

Note: Availability of small reel quantity varies by model.  
Refer to pricing and availability on individual model dashboard.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



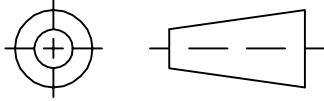
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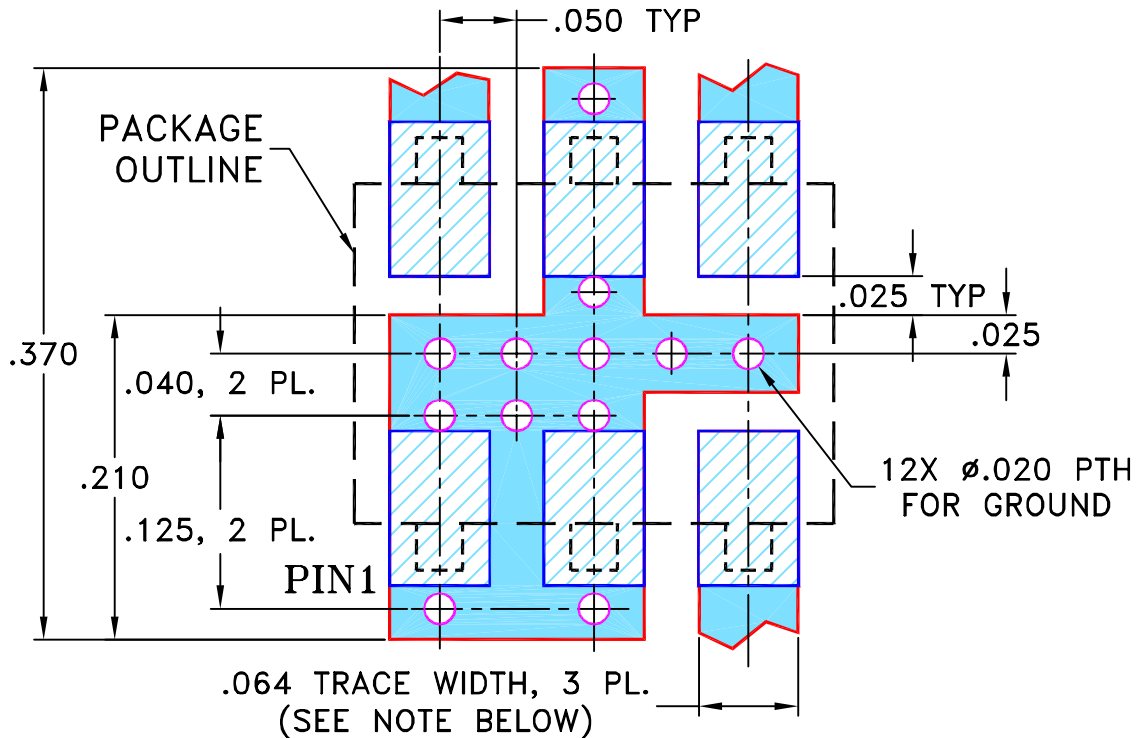
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M82272	NEW RELEASE	08/05/02	MMG	DJ
A	M102713	ADDED NOTE 2 & "...WITH SMOBC"	01/17/06	MMG	IL

**SUGGESTED MOUNTING CONFIGURATION  
FOR CD541/542/636/637 CASE STYLES,  
"jv", "ju", "jw" PIN CONNECTIONS**



- NOTES:** 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES  
TOLERANCES ON:  
2 PL DECIMALS ±  
3 PL DECIMALS ± .005  
ANGLES ±  
FRACTIONS ±

	INITIALS	DATE
DRAWN	MMG	07/17/02
CHECKED	WL	08/02/02
APPROVED	DJ	08/05/02



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PL, jv/ju/jw, CD541/542/636/637, ADE, TB-02

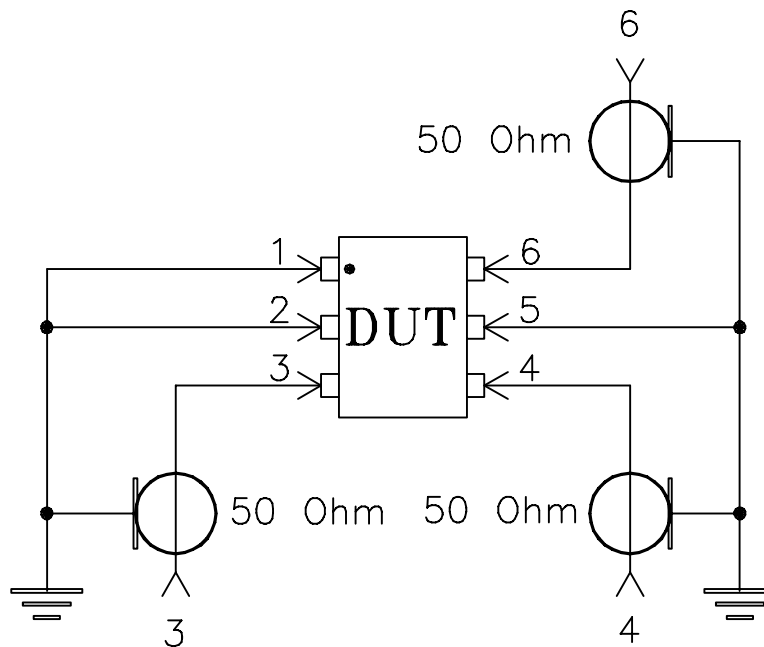
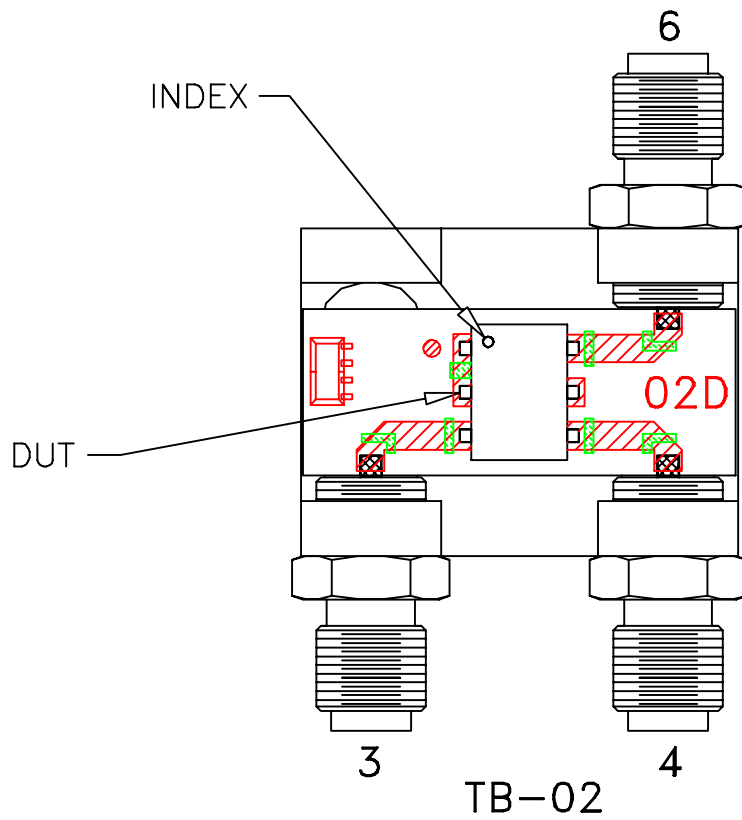
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ASHEETA1.DWG REV:A DATE:01/12/95

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-051	A
FILE:	98PL051	SCALE: 8:1	SHEET: 1 OF 1

# Evaluation Board and Circuit

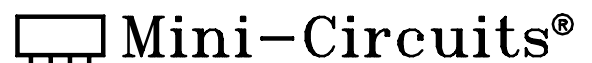
For Pin Connections refer to Data Sheet of the DUT



Schematic Diagram

## Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,  
Dielectric Constant=3.5, Thickness=.030 inch.



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	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
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
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