

Non-Catalog Model

Frequency Mixer

SYM-11J

Level 7 (LO Power +7 dBm)

Important Note

This is a non-catalog model and can be manufactured on specific request.
Pricing and delivery information can be supplied upon request.



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CASE STYLE : CG581

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency	LO (fL to fU)	1		2500	MHz
	RF (fL to fU)	1		2500	MHz
	IF	10		500	MHz
Conversion Loss	mid band		7.4	8.0	dB
	Total Range			9.8	dB
LO-RF Isolation	Low Range	40	64		dB
	Mid Range	24	43		dB
	Upper Range	20	35		dB
LO-IF Isolation	Low Range	40	60		dB
	Mid Range	20	35		dB
	Upper Range	15	30		dB
1 dB Comp. Input Power			+1		dBm

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

Mid Range = [10fL to fU/2]

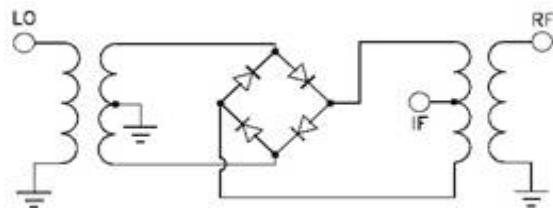
Upper Range = [fU/2 to fU]

Units are non-hermetic and aqueous washable

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

PIN CONNECTIONS	
LO	11
RF	5
IF	2
GROUND	1, 3, 4, 6, 7, 8, 9, 10, 12

Electrical Schematics



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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
1.0	31.0	7.07	6.77	6.67
2.8	32.8	6.56	6.36	6.26
7.7	37.7	6.41	6.21	6.01
10.1	40.1	6.21	5.95	5.79
90.1	120.1	6.44	6.16	5.99
170.1	200.1	6.76	6.41	6.17
250.1	280.1	7.13	6.64	6.28
330.1	360.1	7.43	6.77	6.35
490.1	520.1	7.90	7.10	6.68
570.1	600.1	8.06	7.28	6.87
650.1	680.1	8.23	7.61	7.25
730.1	760.1	8.37	7.80	7.47
810.1	840.1	8.29	7.86	7.60
890.1	920.1	8.08	7.73	7.54
970.1	1000.1	7.89	7.55	7.40
1050.1	1080.1	7.81	7.43	7.30
1130.1	1160.1	7.79	7.38	7.23
1210.1	1240.1	7.92	7.43	7.24
1290.1	1320.1	8.08	7.53	7.30
1370.1	1400.1	8.20	7.62	7.38
1450.1	1480.1	8.23	7.65	7.39
1550.1	1580.1	8.13	7.55	7.28
1630.1	1660.1	8.09	7.53	7.26
1730.1	1760.1	7.98	7.47	7.21
1910.1	1940.1	7.67	7.22	6.97
1990.1	2020.1	7.54	7.11	6.87
2090.1	2120.1	7.53	7.08	6.86
2170.1	2200.1	7.54	7.11	6.86
2270.1	2300.1	7.57	7.12	6.87
2350.1	2380.1	7.62	7.20	6.94
2450.1	2480.1	7.76	7.34	7.10
2530.1	2560.1	7.85	7.43	7.22
2630.1	2660.1	8.03	7.61	7.38
2810.1	2840.1	8.55	8.07	7.87
2890.1	2920.1	8.83	8.29	8.05
2990.1	3020.1	9.26	8.66	8.39
3070.1	3100.1	9.61	9.00	8.71
3170.1	3200.1	10.20	9.46	9.18
3250.1	3280.1	10.69	9.84	9.51
3350.1	3380.1	11.49	10.46	10.10

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	15.74	15.34	14.22
90.1	120.1	8.81	8.55	9.01
170.1	200.1	6.46	7.68	10.15
250.1	280.1	6.20	8.89	12.24
330.1	360.1	7.54	10.77	14.35
410.1	440.1	8.81	12.33	13.39
490.1	520.1	8.86	10.75	14.03
570.1	600.1	8.67	10.69	12.60
650.1	680.1	8.76	9.98	11.46
730.1	760.1	8.35	9.60	10.49
810.1	840.1	8.00	9.74	10.41
890.1	920.1	8.87	9.63	12.64
970.1	1000.1	10.00	10.34	11.37
1050.1	1080.1	11.58	12.54	12.91
1130.1	1160.1	13.77	11.51	14.05
1210.1	1240.1	13.65	14.52	12.50
1290.1	1320.1	12.37	14.03	15.16
1370.1	1400.1	13.27	13.37	18.47
1450.1	1480.1	11.18	12.56	13.71
1550.1	1580.1	10.75	11.39	13.67
1630.1	1660.1	11.06	11.39	13.62
1730.1	1760.1	9.44	11.64	11.92
1810.1	1840.1	10.07	10.43	12.30
1910.1	1940.1	10.17	10.72	10.67
1990.1	2020.1	9.12	10.18	12.23
2090.1	2120.1	8.91	9.89	11.24
2170.1	2200.1	9.05	9.69	10.86
2270.1	2300.1	9.10	9.64	10.70
2350.1	2380.1	10.44	10.46	11.00
2450.1	2480.1	10.22	9.98	12.19
2530.1	2560.1	9.66	10.03	11.91
2630.1	2660.1	9.79	9.65	11.70
2710.1	2740.1	9.70	11.87	11.92
2810.1	2840.1	10.74	12.48	13.13
2890.1	2920.1	12.46	13.24	12.77
2990.1	3020.1	12.32	13.33	13.43
3070.1	3100.1	17.32	14.48	16.57
3170.1	3200.1	14.62	13.17	18.75
3250.1	3280.1	16.47	16.54	15.29
3350.1	3380.1	17.21	16.25	18.95

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	1.11	0.83	0.66
90.1	120.1	1.05	0.79	0.63
170.1	200.1	1.25	0.99	0.81
250.1	280.1	1.39	1.18	1.05
330.1	360.1	1.55	1.40	1.22
410.1	440.1	1.37	1.36	1.18
490.1	520.1	1.25	1.13	1.01
570.1	600.1	1.22	1.10	0.92
650.1	680.1	0.89	0.77	0.64
730.1	760.1	0.73	0.57	0.50
810.1	840.1	0.58	0.41	0.34
890.1	920.1	0.50	0.38	0.29
970.1	1000.1	0.41	0.30	0.24
1050.1	1080.1	0.36	0.26	0.18
1130.1	1160.1	0.32	0.21	0.17
1210.1	1240.1	0.25	0.22	0.10
1290.1	1320.1	0.24	0.15	0.11
1370.1	1400.1	0.26	0.18	0.16
1450.1	1480.1	0.24	0.21	0.18
1550.1	1580.1	0.31	0.27	0.23
1630.1	1660.1	0.40	0.32	0.26
1730.1	1760.1	0.41	0.38	0.31
1810.1	1840.1	0.49	0.41	0.34
1910.1	1940.1	0.54	0.46	0.38
1990.1	2020.1	0.59	0.47	0.40
2090.1	2120.1	0.62	0.46	0.36
2170.1	2200.1	0.66	0.48	0.37
2270.1	2300.1	0.72	0.48	0.39
2350.1	2380.1	0.75	0.49	0.36
2450.1	2480.1	0.71	0.46	0.34
2530.1	2560.1	0.74	0.39	0.34
2630.1	2660.1	0.72	0.43	0.30
2710.1	2740.1	0.73	0.38	0.26
2810.1	2840.1	0.67	0.37	0.25
2890.1	2920.1	0.65	0.36	0.22
2990.1	3020.1	0.62	0.30	0.19
3070.1	3100.1	0.55	0.25	0.16
3170.1	3200.1	0.51	0.28	0.22
3250.1	3280.1	0.46	0.28	0.18
3350.1	3380.1	0.36	0.26	0.14

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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED • RoHS compliant

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1250.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
500.0	750.1	7.95	10.0	20.1	5.93	500.0	2000.1	7.99
487.4	762.7	7.96	22.3	32.4	5.77	487.4	2012.7	7.98
474.9	775.2	7.90	34.6	44.7	5.76	474.9	2025.2	7.95
462.3	787.8	7.83	46.9	57.0	5.79	462.3	2037.8	7.91
449.7	800.4	7.92	59.2	69.3	5.80	449.7	2050.4	7.84
437.2	812.9	7.86	71.5	81.6	5.81	437.2	2062.9	7.79
424.6	825.5	7.81	83.8	93.9	5.83	424.6	2075.5	7.77
412.1	838.0	7.88	96.2	106.3	5.81	412.1	2088.0	7.77
399.5	850.6	7.80	108.5	118.6	5.81	399.5	2100.6	7.76
386.9	863.2	7.75	120.8	130.9	5.80	386.9	2113.2	7.71
374.4	875.7	7.83	133.1	143.2	5.77	374.4	2125.7	7.65
361.8	888.3	7.82	145.4	155.5	5.77	361.8	2138.3	7.61
349.2	900.9	7.83	157.7	167.8	5.78	349.2	2150.9	7.61
336.7	913.4	7.81	170.0	180.1	5.75	336.7	2163.4	7.58
324.1	926.0	7.80	182.3	192.4	5.76	324.1	2176.0	7.56
311.5	938.6	7.77	194.6	204.7	5.73	311.5	2188.6	7.53
299.0	951.1	7.76	206.9	217.0	5.72	299.0	2201.1	7.53
286.4	963.7	7.75	219.2	229.3	5.69	286.4	2213.7	7.52
273.8	976.3	7.73	231.5	241.6	5.67	273.8	2226.3	7.50
261.3	988.8	7.71	243.8	253.9	5.67	261.3	2238.8	7.47
248.7	1001.4	7.69	256.2	266.3	5.66	248.7	2251.4	7.46
236.2	1013.9	7.70	268.5	278.6	5.68	236.2	2263.9	7.45
223.6	1026.5	7.69	280.8	290.9	5.67	223.6	2276.5	7.45
211.0	1039.1	7.69	293.1	303.2	5.67	211.0	2289.1	7.45
198.5	1051.6	7.70	305.4	315.5	5.65	198.5	2301.6	7.43
185.9	1064.2	7.69	317.7	327.8	5.66	185.9	2314.2	7.43
173.3	1076.8	7.67	330.0	340.1	5.65	173.3	2326.8	7.42
160.8	1089.3	7.66	342.3	352.4	5.65	160.8	2339.3	7.42
148.2	1101.9	7.63	354.6	364.7	5.67	148.2	2351.9	7.40
135.6	1114.5	7.63	366.9	377.0	5.67	135.6	2364.5	7.40
123.1	1127.0	7.64	379.2	389.3	5.69	123.1	2377.0	7.41
110.5	1139.6	7.63	391.5	401.6	5.71	110.5	2389.6	7.42
97.9	1152.2	7.63	403.8	413.9	5.74	97.9	2402.2	7.42
85.4	1164.7	7.60	416.2	426.3	5.75	85.4	2414.7	7.43
72.8	1177.3	7.59	428.5	438.6	5.76	72.8	2427.3	7.44
60.3	1189.8	7.55	440.8	450.9	5.80	60.3	2439.8	7.43
47.7	1202.4	7.52	453.1	463.2	5.83	47.7	2452.4	7.42
35.1	1215.0	7.48	465.4	475.5	5.88	35.1	2465.0	7.39
22.6	1227.5	7.48	477.7	487.8	5.91	22.6	2477.5	7.39
10.0	1240.1	7.65	490.0	500.1	5.94	10.0	2490.1	7.49

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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
1.0	68.90	69.70	70.50	59.10	58.70	57.90
2.8	63.10	64.20	64.80	50.80	50.10	49.70
7.7	63.10	63.70	64.20	50.40	49.70	49.20
10.1	76.86	78.28	79.18	65.56	63.14	77.05
90.1	58.36	59.70	60.86	90.00	76.91	76.12
170.1	53.14	54.67	55.95	60.78	61.91	62.34
250.1	50.35	51.88	53.22	51.74	52.31	52.24
330.1	48.32	49.75	51.02	46.30	46.70	46.31
490.1	45.43	46.48	47.36	38.73	38.97	38.51
570.1	45.05	45.82	46.55	36.75	36.43	35.86
650.1	45.20	45.74	46.16	34.93	34.23	33.56
730.1	44.31	44.64	44.91	33.27	32.42	31.56
810.1	43.88	44.01	44.31	32.16	30.97	30.06
890.1	43.62	43.84	44.08	31.11	29.74	28.63
970.1	43.79	43.90	44.19	29.93	28.43	27.23
1050.1	44.32	44.31	44.41	28.99	27.38	26.07
1130.1	45.29	45.36	45.32	28.06	26.34	24.89
1210.1	46.45	46.45	45.87	27.47	25.54	24.12
1290.1	48.22	45.60	42.97	27.94	25.77	24.23
1370.1	49.94	43.89	40.67	34.55	31.74	29.91
1450.1	45.17	45.52	45.32	34.62	33.02	31.81
1550.1	41.42	42.14	42.74	30.09	28.31	27.02
1630.1	40.02	40.76	41.30	29.34	27.47	26.21
1730.1	38.53	39.47	40.11	29.40	27.51	26.09
1910.1	36.22	37.21	37.85	30.73	28.73	27.14
1990.1	35.68	36.74	37.56	32.00	29.52	28.06
2090.1	34.92	36.04	36.79	34.50	31.28	29.32
2170.1	34.16	35.17	36.00	38.43	33.56	30.94
2270.1	33.56	34.37	35.09	50.23	37.46	33.30
2350.1	33.29	34.01	34.58	43.82	39.98	35.27
2450.1	33.04	33.46	33.84	35.22	35.97	34.34
2530.1	32.86	33.10	33.26	31.69	32.41	32.07
2630.1	33.15	33.33	33.44	28.95	29.40	29.26
2810.1	33.95	34.01	33.92	26.21	26.31	26.18
2890.1	34.50	34.54	34.46	25.35	25.41	25.25
2990.1	35.06	35.10	35.10	24.36	24.36	24.22
3070.1	35.53	35.17	35.15	23.81	23.66	23.54
3170.1	35.82	35.11	34.77	23.25	23.20	23.17
3250.1	35.93	34.94	34.39	23.09	23.07	22.98
3350.1	35.47	34.28	33.57	23.22	23.12	23.07

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	20.08	20.05	20.67
90.1	120.1	20.47	20.76	20.94
170.1	200.1	21.18	21.56	21.83
250.1	280.1	22.07	22.63	23.12
330.1	360.1	23.09	23.72	24.23
410.1	440.1	24.34	24.77	25.14
490.1	520.1	26.02	26.24	26.36
570.1	600.1	27.27	27.56	27.77
650.1	680.1	27.91	28.05	28.27
730.1	760.1	29.20	29.14	29.23
810.1	840.1	30.61	30.57	30.64
890.1	920.1	31.83	31.79	31.96
970.1	1000.1	31.28	31.50	31.76
1050.1	1080.1	30.43	30.62	30.81
1130.1	1160.1	29.17	29.65	29.84
1210.1	1240.1	27.89	28.68	29.20
1290.1	1320.1	25.30	26.10	26.71
1370.1	1400.1	21.20	21.70	22.09
1450.1	1480.1	19.43	19.78	19.98
1550.1	1580.1	18.56	18.91	19.06
1630.1	1660.1	18.09	18.23	18.40
1730.1	1760.1	17.50	17.77	18.02
1810.1	1840.1	17.32	17.60	17.82
1910.1	1940.1	17.28	17.67	17.98
1990.1	2020.1	17.45	17.88	18.24
2090.1	2120.1	17.90	18.45	18.79
2170.1	2200.1	18.48	19.14	19.66
2270.1	2300.1	19.30	20.03	20.61
2350.1	2380.1	19.95	20.48	20.89
2450.1	2480.1	20.08	20.31	20.41
2530.1	2560.1	19.91	19.87	19.82
2630.1	2660.1	19.49	19.32	19.18
2710.1	2740.1	19.13	18.93	18.84
2810.1	2840.1	18.66	18.53	18.42
2890.1	2920.1	18.37	18.16	18.07
2990.1	3020.1	18.15	17.82	17.59
3070.1	3100.1	17.85	17.46	17.19
3170.1	3200.1	17.70	17.13	16.82
3250.1	3280.1	17.40	16.92	16.61
3350.1	3380.1	16.99	16.60	16.33

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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=2500.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
1.0	31.0	1.85	2.72	3.86	1.0	1.31	1.34	1.37	10.1	1.30	1.36	1.63
2.8	32.8	1.88	2.72	3.86	2.8	1.15	1.16	1.20	22.4	1.15	1.18	1.17
7.7	37.7	1.85	2.68	3.79	7.7	1.09	1.07	1.11	34.6	1.12	1.26	1.32
10.1	40.1	1.08	1.03	1.09	10.1	1.74	2.40	3.45	46.9	1.10	1.28	1.39
90.1	120.1	1.16	1.07	1.04	90.1	1.77	2.55	3.57	59.1	1.11	1.27	1.44
170.1	200.1	1.31	1.23	1.19	170.1	1.81	2.56	3.54	71.4	1.14	1.32	1.43
250.1	280.1	1.60	1.52	1.47	250.1	1.83	2.52	3.46	83.6	1.14	1.28	1.38
330.1	360.1	2.04	1.92	1.84	330.1	1.83	2.45	3.33	95.9	1.14	1.28	1.40
490.1	520.1	3.17	2.92	2.77	490.1	1.78	2.24	2.97	108.1	1.14	1.24	1.38
570.1	600.1	3.71	3.42	3.24	570.1	1.79	2.15	2.81	120.4	1.15	1.28	1.39
650.1	680.1	4.04	3.80	3.63	650.1	1.82	2.07	2.66	132.6	1.18	1.28	1.41
730.1	760.1	4.26	4.03	3.86	730.1	1.87	1.98	2.48	144.9	1.17	1.30	1.43
810.1	840.1	4.24	4.07	3.95	810.1	1.93	1.89	2.29	157.1	1.18	1.31	1.43
890.1	920.1	4.04	3.91	3.81	890.1	1.99	1.80	2.09	169.4	1.18	1.30	1.44
970.1	1000.1	3.85	3.68	3.58	970.1	2.00	1.68	1.90	181.6	1.18	1.30	1.43
1050.1	1080.1	3.67	3.44	3.31	1050.1	2.01	1.58	1.73	193.9	1.17	1.29	1.41
1130.1	1160.1	3.56	3.25	3.08	1130.1	1.98	1.46	1.54	206.1	1.18	1.29	1.40
1210.1	1240.1	3.53	3.19	2.98	1210.1	1.95	1.36	1.37	218.4	1.19	1.30	1.42
1290.1	1320.1	3.56	3.22	3.01	1290.1	1.93	1.29	1.23	230.6	1.21	1.32	1.44
1370.1	1400.1	3.47	3.16	2.96	1370.1	1.87	1.24	1.17	242.9	1.23	1.34	1.46
1450.1	1480.1	3.34	3.04	2.85	1450.1	1.72	1.13	1.24	255.1	1.25	1.36	1.50
1550.1	1580.1	3.12	2.82	2.64	1550.1	1.59	1.15	1.40	267.4	1.26	1.38	1.51
1630.1	1660.1	2.89	2.64	2.47	1630.1	1.50	1.25	1.56	279.6	1.26	1.39	1.51
1730.1	1760.1	2.60	2.40	2.25	1730.1	1.44	1.40	1.76	291.9	1.27	1.39	1.52
1910.1	1940.1	2.09	1.92	1.79	1910.1	1.41	1.68	2.15	304.1	1.29	1.41	1.54
1990.1	2020.1	1.92	1.77	1.66	1990.1	1.45	1.82	2.34	316.4	1.30	1.42	1.55
2090.1	2120.1	1.74	1.60	1.50	2090.1	1.52	1.97	2.55	328.6	1.31	1.45	1.57
2170.1	2200.1	1.60	1.47	1.37	2170.1	1.58	2.08	2.67	340.9	1.33	1.46	1.60
2270.1	2300.1	1.49	1.36	1.28	2270.1	1.68	2.22	2.84	353.1	1.34	1.48	1.62
2350.1	2380.1	1.42	1.33	1.28	2350.1	1.76	2.31	2.93	365.4	1.35	1.50	1.63
2450.1	2480.1	1.37	1.32	1.29	2450.1	1.86	2.42	3.04	377.6	1.37	1.51	1.64
2530.1	2560.1	1.35	1.32	1.32	2530.1	1.96	2.51	3.13	389.9	1.39	1.53	1.66
2630.1	2660.1	1.38	1.38	1.42	2630.1	2.08	2.61	3.21	402.1	1.39	1.53	1.66
2810.1	2840.1	1.48	1.51	1.56	2810.1	2.37	2.83	3.39	414.4	1.39	1.53	1.68
2890.1	2920.1	1.54	1.57	1.62	2890.1	2.51	2.93	3.47	426.6	1.41	1.56	1.70
2990.1	3020.1	1.66	1.68	1.74	2990.1	2.71	3.07	3.57	438.9	1.43	1.58	1.73
3070.1	3100.1	1.75	1.77	1.82	3070.1	2.86	3.17	3.62	451.1	1.44	1.60	1.75
3170.1	3200.1	1.85	1.84	1.87	3170.1	3.04	3.27	3.67	463.4	1.46	1.61	1.78
3250.1	3280.1	1.92	1.89	1.89	3250.1	3.15	3.29	3.64	487.9	1.49	1.65	1.80
3350.1	3380.1	2.01	1.96	1.96	3350.1	3.31	3.36	3.65	500.1	1.51	1.67	1.83

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+3	20	18	37	24	39	24	42	35	50
1	-	21	+0	40	17	42	34	31	45	51	46	48
2	96	68	72	72	65	73	67	76	64	75	59	73
3	>100	>78	66	>78	67	>78	71	>78	77	71	78	>78
4	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
5	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
6	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
7	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
8	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
9	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
10	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1250.1 MHz; -14.00 dBm.
LO IN: 1280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -21.62 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	7	30	29	47	35	50	37	57	50	74
1	-	21	+0	42	17	44	34	33	47	53	51	51
2	78	58	60	61	57	63	59	66	56	66	53	67
3	>100	62	46	62	49	60	53	67	59	53	60	75
4	>100	>88	85	81	83	80	83	85	84	>88	74	79
5	>100	>88	88	>88	74	85	66	84	68	83	75	72
6	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
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10	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1250.1 MHz; -4.00 dBm.
LO IN: 1280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -11.69 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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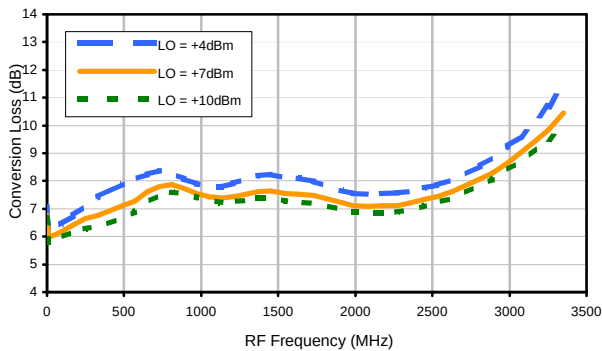


Frequency Mixer

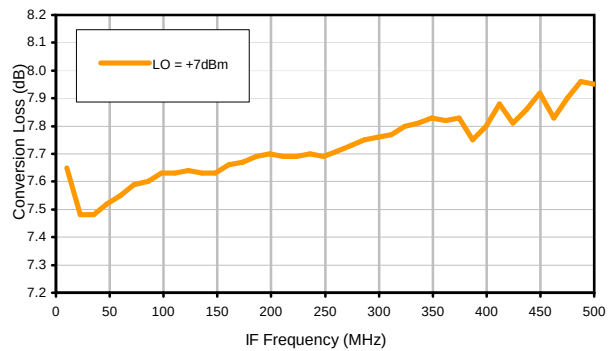
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Typical Performance Curves

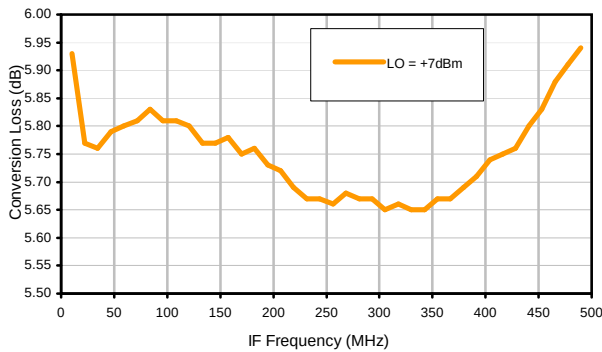
Conversion Loss @ IF=30MHz



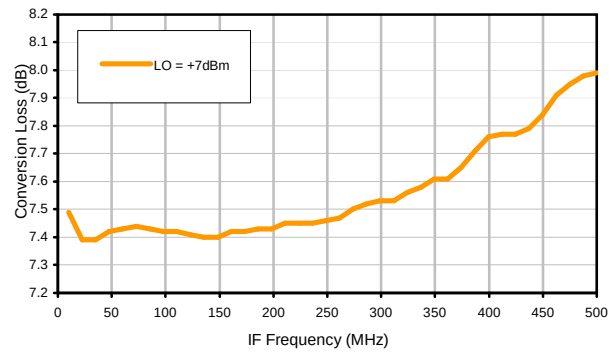
Conversion Loss vs. IF @ RF=1250.1MHz



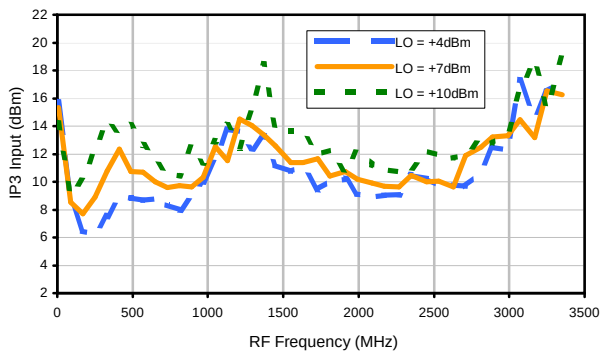
Conversion Loss vs. IF @ RF=10.1MHz



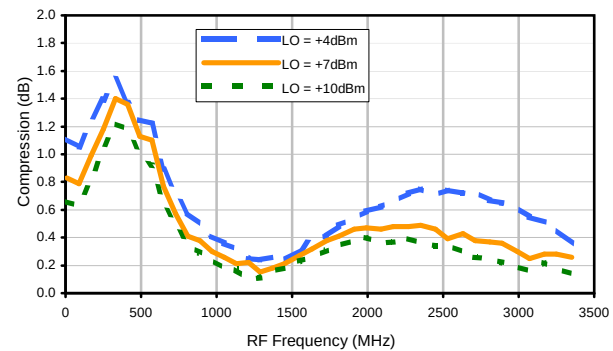
Conversion Loss vs. IF @ RF=2500.1MHz



IP3 Input



Compression @ RF IN=+1dBm



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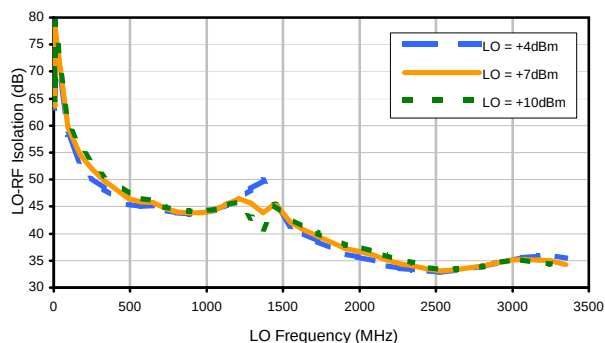


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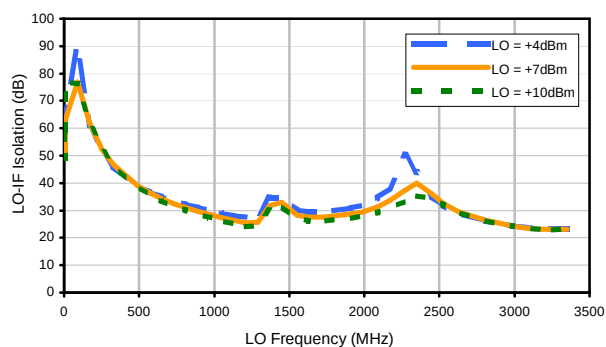


Typical Performance Curves

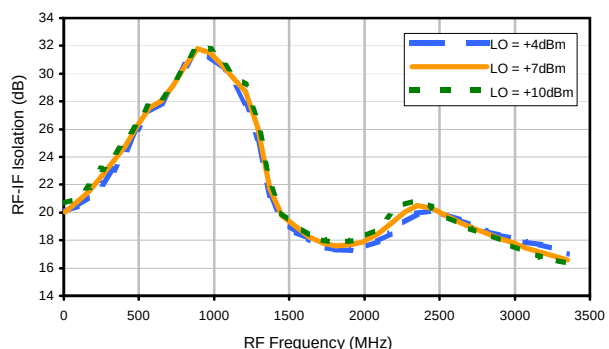
LO-RF Isolation



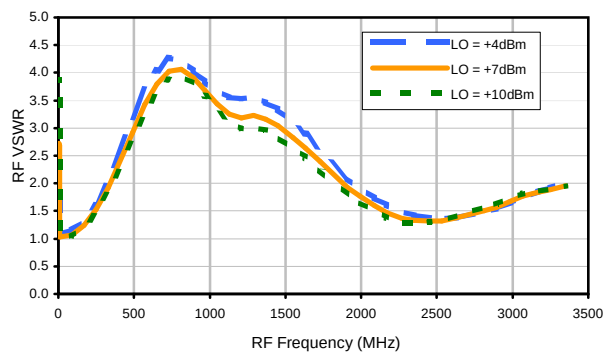
LO-IF Isolation



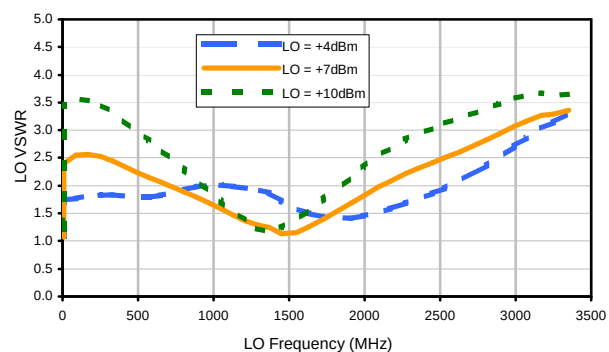
RF-IF Isolation



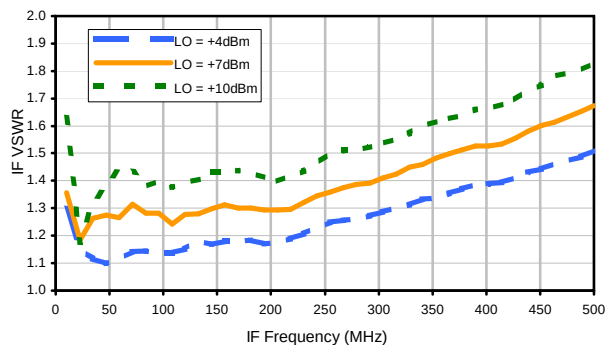
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+3	20	18	37	24	39	24	42	35	50
1	-	21	+0	40	17	42	34	31	45	51	46	48
2	96	68	72	72	65	73	67	76	64	75	59	73
3	>100	>78	66	>78	67	>78	71	>78	77	71	78	>78
4	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
5	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
6	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
7	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
8	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
9	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
10	>100	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1250.1 MHz; -14.00 dBm.
LO IN: 1280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -21.62 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	7	30	29	47	35	50	37	57	50	74
1	-	21	+0	42	17	44	34	33	47	53	51	51
2	78	58	60	61	57	63	59	66	56	66	53	67
3	>100	62	46	62	49	60	53	67	59	53	60	75
4	>100	>88	85	81	83	80	83	85	84	>88	74	79
5	>100	>88	88	>88	74	85	66	84	68	83	75	72
6	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
7	>100	>88	>88	>88	>88	>88	>88	>88	87	>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	>88	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1250.1 MHz; -4.00 dBm.
LO IN: 1280.01 MHz; +7.00 dBm
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- 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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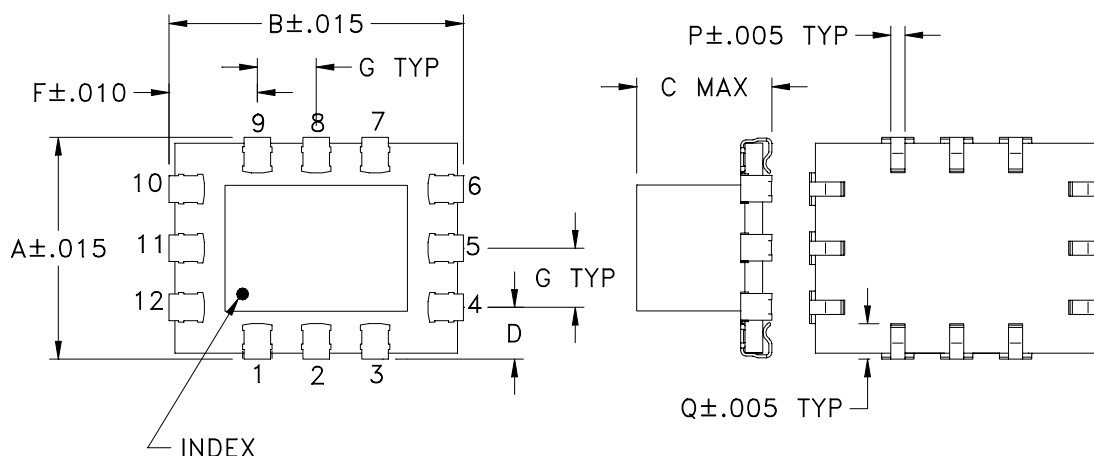
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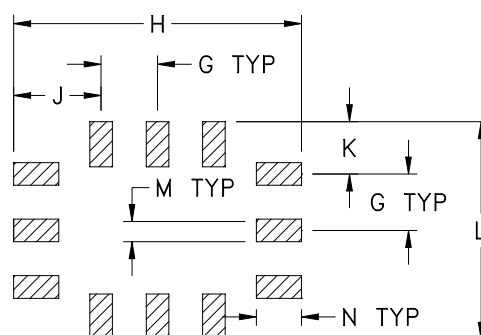
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Outline Dimensions



PCB Land Pattern



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

CASE #	A	B	C	D	E	F	G	H	J	K	L	M
CG581	.375 (9.53)	.500 (12.70)	.230 (5.84)	.087 (2.21)	-- --	.15 (3.81)	.100 (2.54)	.510 (12.95)	.155 (3.94)	.093 (2.36)	.385 (9.78)	.040 (1.02)

CASE #	N	P	Q	WT. GRAM
CG581	.080 (2.03)	.024 (0.61)	.060 (1.52)	0.6

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

Notes:

- Case material: Ceramic.
- 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.



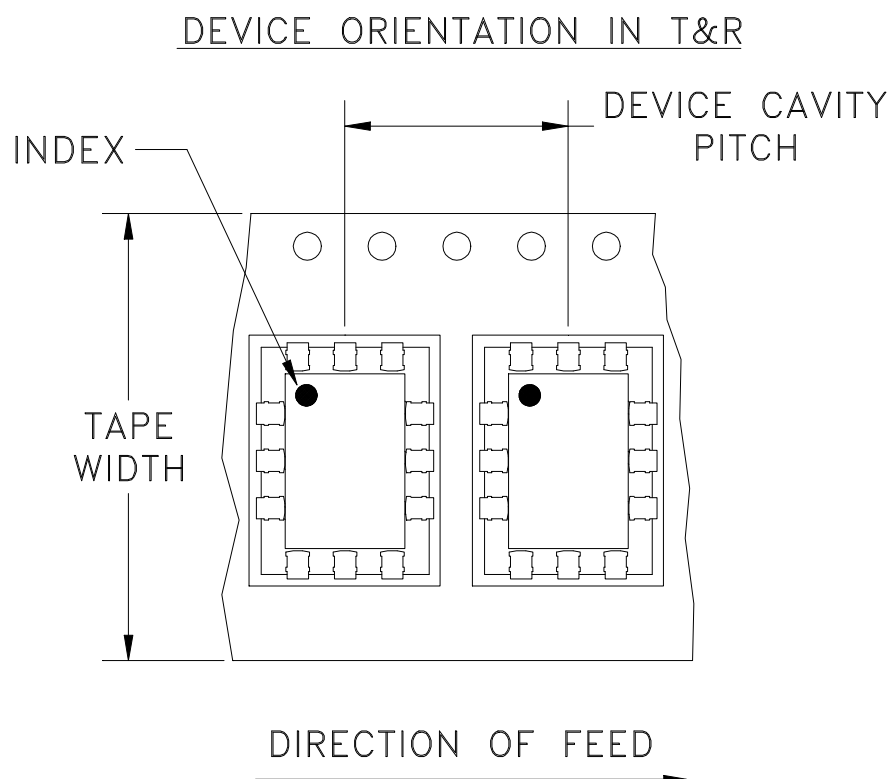
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Tape & Reel Packaging TR-F36



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	12	13	500

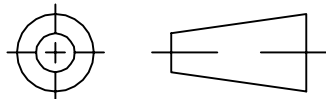
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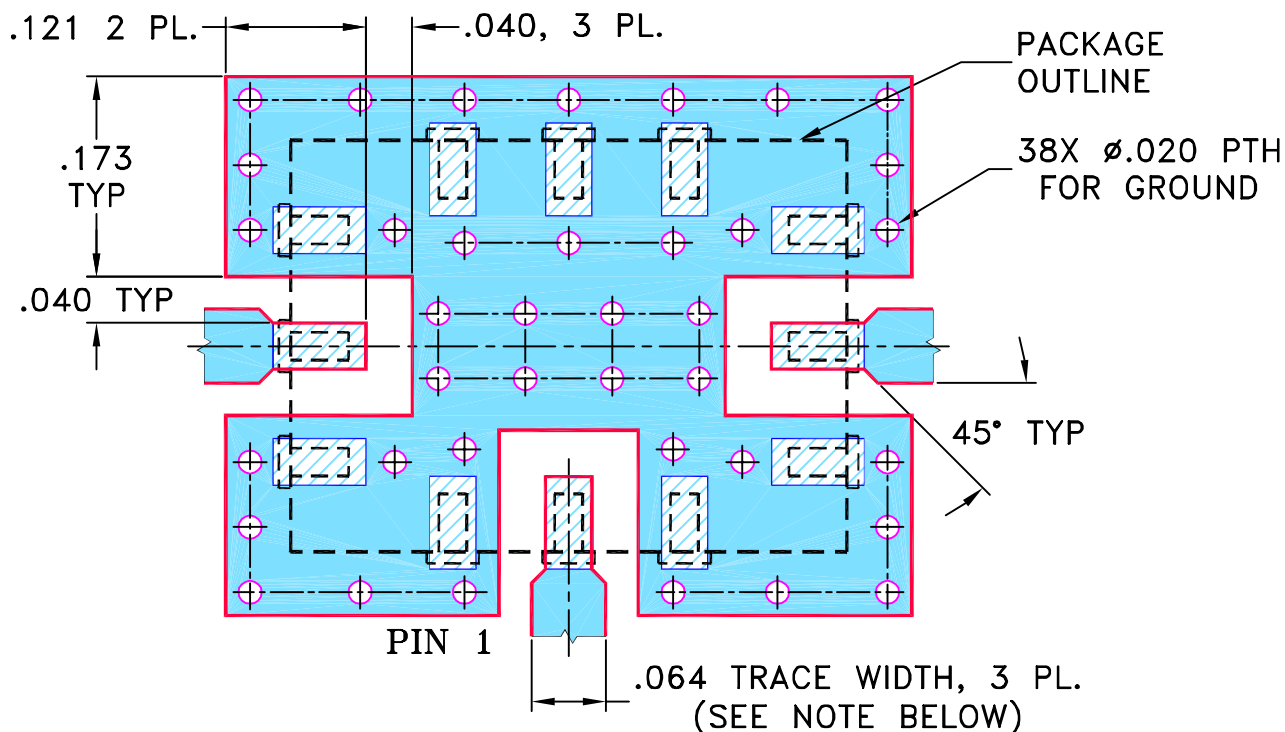
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M87005	NEW RELEASE	06/23/03	MMG	WL
A	M91639	REMOVED NOTE 2	04/14/04	AV	DJ
B	M102713	UPDATED NOTES, ADDED "...WITH SMOBC"	01/16/06	GT	IL

SUGGESTED MOUNTING CONFIGURATION
FOR CG581 CASE STYLE, "ka" PIN CONNECTION.

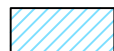


- NOTES:** 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" $\pm$.002".
COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

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 $\pm$
3 PL DECIMALS $\pm$.005
ANGLES $\pm$ 1°
FRACTIONS $\pm$

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

INITIALS

DATE

DRAWN

MMG

05/14/03

CHECKED

AV

06/23/03

APPROVED

WL

06/23/03



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Brooklyn NY 11235

PL, ka, CG581, SYMJ, TB-199

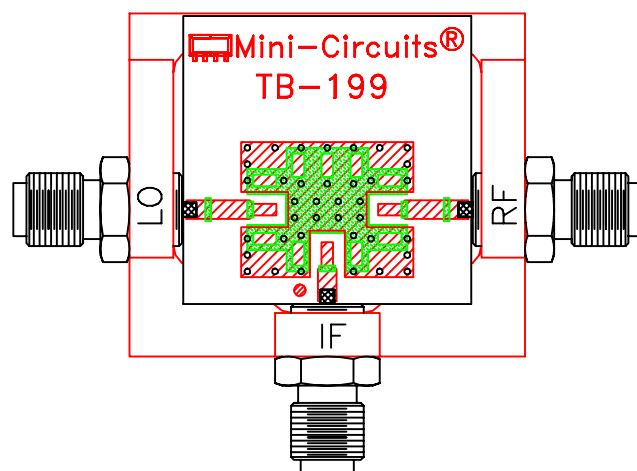
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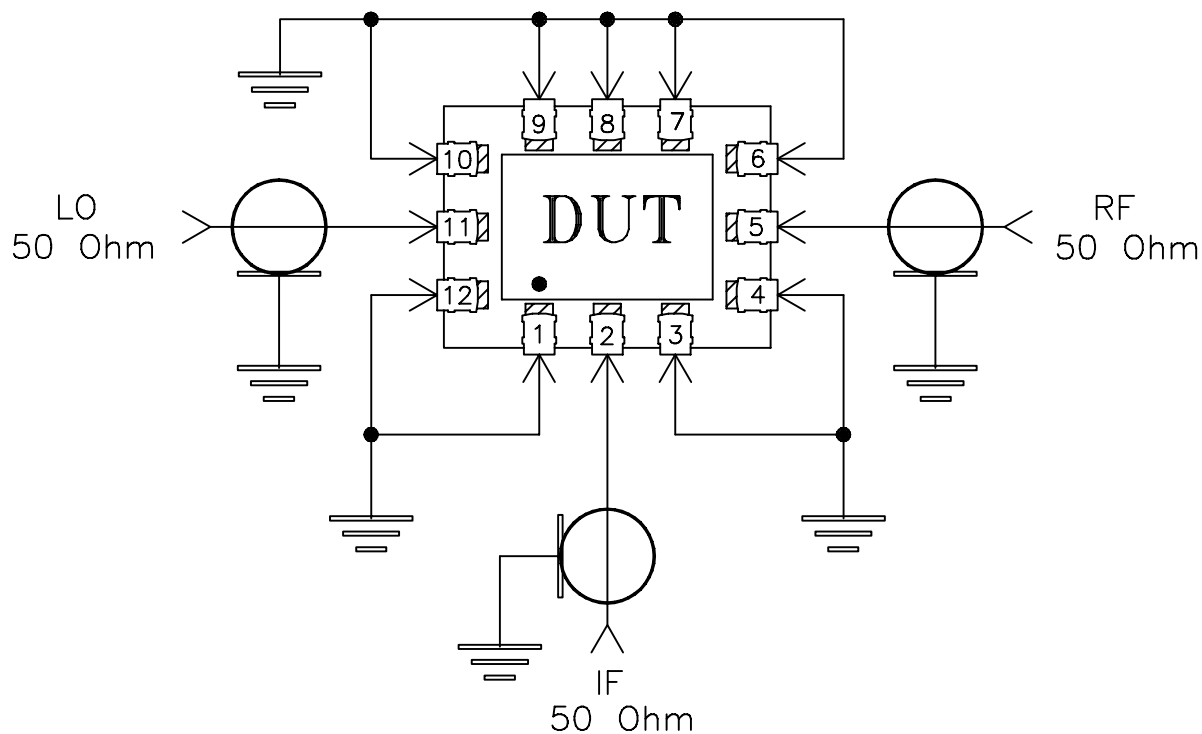
SCALE: 6:1

SHEET: 1 OF 1

Evaluation Board and Circuit



TB-199



Schematic Diagram

Notes:

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

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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	-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