

Non-Catalog Model

Frequency Mixer

JYM-20H

Level 17 (LO Power +17 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 : BJ293

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency	LO (fL to fU)	2		2000	MHz
	RF (fL to fU)	2		2000	MHz
	IF	4		700	MHz
Conversion Loss	mid band		5.7	8.5	dB
	Total Range			9.0	dB
LO-RF Isolation	Low Range	30	40		dB
	Mid Range	28	44		dB
	Upper Range	25	40		dB
LO-IF Isolation	Low Range	35	40		dB
	Mid Range	22	40		dB
	Upper Range	15	29		dB
IP3 Input		+27.5	+30		dBm
1 dB Comp. Input Power			+10		dBm

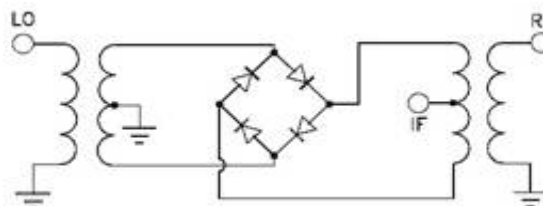
Notes: Low Range = [fL to 10fL] Mid Range = [10fL to fU/2] Upper Range = [fU/2 to fU]
mid band = [2fL to fU/2]

IP3 : RF Power = 0 dBm @ 200 MHz & 202 MHz , LO Power = +17 dBm @ 180 MHz

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA

PIN CONNECTIONS	
LO	5
RF	1
IF	7
GROUND	2, 3, 4, 6, 8

Electrical Schematics



Frequency Mixer

JYM-20H

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+14	+17	+20
2.0	32.0	6.04	5.76	5.71
4.0	34.0	5.89	5.71	5.58
10.9	40.9	5.86	5.68	5.55
90.3	120.3	5.68	5.50	5.42
170.6	200.6	5.81	5.61	5.50
250.8	280.8	5.88	5.65	5.53
331.0	361.0	5.88	5.65	5.55
491.5	521.5	5.97	5.72	5.61
571.8	601.8	6.01	5.80	5.69
652.0	682.0	6.04	5.84	5.74
732.2	762.2	6.11	5.91	5.80
812.5	842.5	6.22	6.00	5.89
892.7	922.7	6.34	6.14	6.02
972.9	1002.9	6.46	6.28	6.16
1053.2	1083.2	6.49	6.34	6.25
1133.4	1163.4	6.44	6.31	6.24
1233.7	1263.7	6.42	6.29	6.22
1313.9	1343.9	6.40	6.29	6.24
1414.2	1444.2	6.48	6.35	6.30
1494.5	1524.5	6.51	6.37	6.32
1594.8	1624.8	6.53	6.43	6.38
1675.0	1705.0	6.59	6.49	6.46
1775.3	1805.3	6.71	6.57	6.53
1855.5	1885.5	6.83	6.67	6.61
1955.8	1985.8	6.95	6.75	6.67
2036.1	2066.1	7.11	6.90	6.79
2136.4	2166.4	7.30	7.08	6.96
2216.6	2246.6	7.46	7.24	7.10
2397.1	2427.1	7.58	7.35	7.23
2497.4	2527.4	7.69	7.43	7.30
2577.7	2607.7	7.82	7.54	7.39
2678.0	2708.0	7.92	7.64	7.48
2758.2	2788.2	7.95	7.68	7.52
2858.5	2888.5	8.15	7.86	7.72
2938.7	2968.7	8.34	8.06	7.93
3039.0	3069.0	8.69	8.42	8.26
3119.3	3149.3	9.07	8.77	8.60
3219.6	3249.6	9.57	9.25	9.06
3299.8	3329.8	10.11	9.78	9.56
3400.1	3430.1	10.70	10.37	10.13

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	28.69	27.54	28.14
90.3	120.3	25.70	23.24	24.61
170.6	200.6	21.28	23.32	25.41
250.8	280.8	21.84	23.57	28.95
331.0	361.0	22.52	26.21	36.42
411.3	441.3	24.31	31.99	30.96
491.5	521.5	25.69	32.45	27.13
571.8	601.8	34.77	26.64	26.04
652.0	682.0	32.71	25.39	24.85
732.2	762.2	26.20	24.38	24.48
812.5	842.5	24.81	25.22	25.41
892.7	922.7	23.31	23.71	24.37
972.9	1002.9	22.08	22.89	23.89
1053.2	1083.2	21.38	22.05	23.16
1133.4	1163.4	20.67	21.94	22.85
1233.7	1263.7	21.46	22.07	23.05
1313.9	1343.9	21.81	22.63	22.79
1414.2	1444.2	21.57	22.18	23.24
1494.5	1524.5	22.43	23.30	24.01
1594.8	1624.8	22.31	23.73	24.28
1675.0	1705.0	23.44	23.46	24.02
1775.3	1805.3	24.59	24.87	25.35
1855.5	1885.5	24.51	24.07	25.07
1955.8	1985.8	24.96	24.50	24.13
2036.1	2066.1	24.51	24.82	25.01
2136.4	2166.4	24.20	25.61	27.12
2216.6	2246.6	23.93	23.57	23.92
2316.9	2346.9	22.17	22.25	22.33
2397.1	2427.1	21.68	22.29	22.80
2497.4	2527.4	20.78	21.63	22.30
2577.7	2607.7	19.39	20.90	21.86
2678.0	2708.0	18.39	19.62	20.63
2758.2	2788.2	17.76	18.71	19.74
2858.5	2888.5	16.88	17.83	18.74
2938.7	2968.7	16.66	17.65	18.58
3039.0	3069.0	16.95	18.14	19.45
3119.3	3149.3	17.36	18.70	20.03
3219.6	3249.6	17.51	18.77	20.03
3299.8	3329.8	17.98	19.39	20.42
3400.1	3430.1	18.84	20.14	20.86

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+10dBm (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	0.68	0.46	0.31
90.3	120.3	0.57	0.38	0.25
170.6	200.6	0.56	0.38	0.26
250.8	280.8	0.59	0.43	0.30
331.0	361.0	0.70	0.53	0.39
411.3	441.3	0.78	0.59	0.43
491.5	521.5	0.85	0.65	0.48
571.8	601.8	0.93	0.67	0.50
652.0	682.0	0.94	0.70	0.51
732.2	762.2	0.95	0.72	0.53
812.5	842.5	0.91	0.71	0.54
892.7	922.7	0.91	0.69	0.55
972.9	1002.9	0.79	0.63	0.51
1053.2	1083.2	0.67	0.52	0.42
1133.4	1163.4	0.61	0.49	0.42
1233.7	1263.7	0.51	0.42	0.38
1313.9	1343.9	0.44	0.35	0.33
1414.2	1444.2	0.36	0.29	0.27
1494.5	1524.5	0.33	0.25	0.25
1594.8	1624.8	0.33	0.25	0.25
1675.0	1705.0	0.32	0.22	0.22
1775.3	1805.3	0.29	0.20	0.18
1855.5	1885.5	0.30	0.19	0.17
1955.8	1985.8	0.35	0.25	0.22
2036.1	2066.1	0.39	0.29	0.27
2136.4	2166.4	0.40	0.32	0.31
2216.6	2246.6	0.42	0.31	0.31
2316.9	2346.9	0.49	0.36	0.34
2397.1	2427.1	0.58	0.42	0.38
2497.4	2527.4	0.60	0.46	0.41
2577.7	2607.7	0.68	0.50	0.45
2678.0	2708.0	0.75	0.58	0.52
2758.2	2788.2	0.87	0.66	0.60
2858.5	2888.5	0.89	0.65	0.59
2938.7	2968.7	0.90	0.66	0.57
3039.0	3069.0	0.88	0.63	0.54
3119.3	3149.3	0.78	0.54	0.46
3219.6	3249.6	0.69	0.44	0.38
3299.8	3329.8	0.63	0.36	0.30
3400.1	3430.1	0.57	0.28	0.22

REV. X2

JYM-20H

100817

Page 1 of 5



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)=1000.1MHz (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)=2000.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
700.0	300.1	6.62	10.0	20.1	5.34	700.0	1300.1	6.99
682.3	317.8	6.61	27.7	37.8	5.26	682.3	1317.8	6.99
664.6	335.5	6.59	45.4	55.5	5.29	664.6	1335.5	7.01
646.9	353.2	6.62	63.1	73.2	5.31	646.9	1353.2	7.00
629.2	370.9	6.59	80.8	90.9	5.37	629.2	1370.9	7.00
611.5	388.6	6.55	98.5	108.6	5.30	611.5	1388.6	6.97
593.8	406.3	6.50	116.2	126.3	5.31	593.8	1406.3	6.99
576.2	423.9	6.50	133.8	143.9	5.26	576.2	1423.9	7.00
558.5	441.6	6.48	151.5	161.6	5.31	558.5	1441.6	6.99
540.8	459.3	6.51	169.2	179.3	5.29	540.8	1459.3	6.98
523.1	477.0	6.48	186.9	197.0	5.32	523.1	1477.0	6.98
505.4	494.7	6.46	204.6	214.7	5.28	505.4	1494.7	6.97
487.7	512.4	6.42	222.3	232.4	5.29	487.7	1512.4	6.98
470.0	530.1	6.40	240.0	250.1	5.27	470.0	1530.1	6.99
452.3	547.8	6.41	257.7	267.8	5.31	452.3	1547.8	6.97
434.6	565.5	6.39	275.4	285.5	5.28	434.6	1565.5	6.96
416.9	583.2	6.37	293.1	303.2	5.30	416.9	1583.2	6.95
399.2	600.9	6.31	310.8	320.9	5.28	399.2	1600.9	6.95
381.5	618.6	6.32	328.5	338.6	5.31	381.5	1618.6	6.92
363.8	636.3	6.29	346.2	356.3	5.28	363.8	1636.3	6.91
346.2	653.9	6.34	363.8	373.9	5.30	346.2	1653.9	6.90
328.5	671.6	6.32	381.5	391.6	5.28	328.5	1671.6	6.90
310.8	689.3	6.34	399.2	409.3	5.30	310.8	1689.3	6.87
293.1	707.0	6.29	416.9	427.0	5.29	293.1	1707.0	6.90
275.4	724.7	6.33	434.6	444.7	5.32	275.4	1724.7	6.89
257.7	742.4	6.29	452.3	462.4	5.32	257.7	1742.4	6.90
240.0	760.1	6.33	470.0	480.1	5.31	240.0	1760.1	6.89
222.3	777.8	6.30	487.7	497.8	5.32	222.3	1777.8	6.90
204.6	795.5	6.34	505.4	515.5	5.31	204.6	1795.5	6.87
186.9	813.2	6.30	523.1	533.2	5.34	186.9	1813.2	6.88
169.2	830.9	6.35	540.8	550.9	5.35	169.2	1830.9	6.86
151.5	848.6	6.32	558.5	568.6	5.38	151.5	1848.6	6.85
133.8	866.3	6.35	576.2	586.3	5.37	133.8	1866.3	6.82
116.2	883.9	6.30	593.8	603.9	5.39	116.2	1883.9	6.83
98.5	901.6	6.33	611.5	621.6	5.37	98.5	1901.6	6.82
80.8	919.3	6.28	629.2	639.3	5.43	80.8	1919.3	6.81
63.1	937.0	6.32	646.9	657.0	5.42	63.1	1937.0	6.79
45.4	954.7	6.29	664.6	674.7	5.46	45.4	1954.7	6.80
27.7	972.4	6.34	682.3	692.4	5.44	27.7	1972.4	6.79
10.0	990.1	6.40	700.0	710.1	5.48	10.0	1990.1	6.85

REV. X2

JYM-20H

100817

Page 2 of 5



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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
2.0	36.48	39.54	42.11	40.00	42.16	43.85
4.0	39.05	41.85	44.78	43.65	45.90	47.47
10.9	40.60	43.45	46.14	45.97	48.50	49.80
90.3	41.60	44.13	46.41	46.11	48.80	50.79
170.6	41.95	44.47	46.63	46.50	48.72	49.91
250.8	42.55	45.33	47.70	47.30	49.05	48.81
331.0	43.16	46.07	48.43	46.82	47.39	46.17
491.5	45.08	48.90	51.77	44.65	42.52	40.69
571.8	47.49	52.53	56.66	42.79	40.22	38.32
652.0	49.57	55.90	65.98	40.71	38.00	36.30
732.2	52.54	58.90	58.74	38.54	36.18	34.42
812.5	56.75	56.13	52.59	36.61	34.60	33.05
892.7	57.57	51.11	48.48	34.64	32.49	31.28
972.9	54.28	47.60	45.06	33.47	31.39	30.08
1053.2	52.72	46.34	43.75	32.25	30.29	29.12
1133.4	51.67	45.92	43.32	31.31	29.53	28.38
1233.7	52.07	45.62	42.82	30.74	29.08	27.92
1313.9	52.90	45.62	42.74	30.51	29.00	27.70
1414.2	51.10	45.43	42.98	29.72	28.33	27.35
1494.5	49.90	45.52	43.39	29.23	28.30	27.45
1594.8	49.07	45.28	43.21	28.45	27.78	27.14
1675.0	49.23	45.82	43.84	27.76	27.21	26.74
1775.3	48.45	46.91	45.20	26.95	26.40	25.93
1855.5	47.78	47.35	46.32	26.42	25.79	25.43
1955.8	46.89	50.13	50.06	26.03	25.66	25.15
2036.1	45.32	49.95	53.16	25.57	25.51	25.25
2136.4	42.21	44.73	46.37	25.18	25.17	25.25
2216.6	39.36	41.15	42.54	24.81	25.07	25.14
2397.1	35.86	38.00	39.78	24.70	25.12	25.44
2497.4	34.49	36.43	38.11	24.75	25.24	25.65
2577.7	33.86	35.75	37.24	24.82	25.34	25.68
2678.0	32.62	34.47	35.85	24.64	25.39	25.76
2758.2	31.90	33.68	34.93	24.65	25.48	25.86
2858.5	31.13	32.81	34.09	24.55	25.49	26.20
2938.7	30.36	32.07	33.56	24.47	25.52	26.42
3039.0	29.67	31.40	32.87	24.34	25.66	26.61
3119.3	29.45	31.34	32.98	24.10	25.51	26.63
3219.6	29.44	31.57	33.49	23.84	25.22	26.30
3299.8	30.04	32.45	34.57	23.62	25.08	26.10
3400.1	31.32	33.97	36.38	23.11	24.55	25.62

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	40.1	33.82	33.92	34.58
90.3	120.3	34.32	34.70	35.55
170.6	200.6	34.87	35.39	36.23
250.8	280.8	36.23	37.21	38.20
331.0	361.0	37.88	39.20	40.88
411.3	441.3	38.68	40.11	41.93
491.5	521.5	39.82	40.66	41.63
571.8	601.8	40.72	41.83	43.50
652.0	682.0	40.73	42.29	44.87
732.2	762.2	42.09	44.23	47.55
812.5	842.5	41.47	42.14	43.93
892.7	922.7	40.83	40.94	42.03
972.9	1002.9	40.79	41.32	41.92
1053.2	1083.2	40.31	40.94	41.66
1133.4	1163.4	40.51	40.71	41.23
1233.7	1263.7	40.75	40.46	40.55
1313.9	1343.9	40.11	40.18	40.18
1414.2	1444.2	39.63	39.55	39.36
1494.5	1524.5	40.01	39.84	39.82
1594.8	1624.8	42.99	43.24	44.24
1675.0	1705.0	44.90	46.26	48.05
1775.3	1805.3	40.80	40.57	40.67
1855.5	1885.5	36.52	36.60	36.67
1955.8	1985.8	34.01	34.08	33.89
2036.1	2066.1	32.54	32.55	32.49
2136.4	2166.4	30.66	30.78	30.81
2216.6	2246.6	29.89	29.99	30.16
2316.9	2346.9	29.81	29.73	29.90
2397.1	2427.1	29.78	29.64	29.76
2497.4	2527.4	29.77	29.72	29.85
2577.7	2607.7	29.58	29.48	29.67
2678.0	2708.0	29.46	29.32	29.40
2758.2	2788.2	29.67	29.67	29.63
2858.5	2888.5	29.80	30.48	30.78
2938.7	2968.7	29.87	31.13	32.53
3039.0	3069.0	30.21	32.08	35.03
3119.3	3149.3	30.52	32.74	36.33
3219.6	3249.6	31.81	34.04	38.06
3299.8	3329.8	32.78	35.41	39.73
3400.1	3430.1	33.01	36.02	40.11

Frequency Mixer

JYM-20H

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=2000.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
2.0	32.0	1.48	1.37	1.29	2.0	1.53	2.20	3.02	4.0	1.28	1.51	1.68
4.0	34.0	1.49	1.37	1.29	4.0	1.49	2.18	2.98	8.0	1.27	1.50	1.67
10.9	40.9	1.49	1.37	1.28	10.9	1.47	2.12	2.94	10.0	1.18	1.31	1.39
90.3	120.3	1.19	1.09	1.03	90.3	1.71	2.45	3.35	27.7	1.20	1.33	1.43
170.6	200.6	1.20	1.11	1.06	170.6	1.71	2.45	3.34	45.4	1.19	1.34	1.46
250.8	280.8	1.23	1.15	1.11	250.8	1.71	2.46	3.36	63.1	1.19	1.35	1.49
331.0	361.0	1.29	1.22	1.18	331.0	1.69	2.43	3.30	80.8	1.17	1.32	1.45
411.3	441.3	1.36	1.29	1.25	411.3	1.65	2.35	3.17	98.5	1.16	1.30	1.40
491.5	521.5	1.47	1.40	1.35	491.5	1.59	2.26	3.03	116.2	1.20	1.33	1.44
571.8	601.8	1.58	1.51	1.46	571.8	1.54	2.18	2.91	133.8	1.23	1.37	1.49
652.0	682.0	1.69	1.62	1.57	652.0	1.51	2.13	2.82	151.5	1.25	1.39	1.51
732.2	762.2	1.83	1.74	1.68	732.2	1.48	2.08	2.75	169.2	1.23	1.37	1.49
812.5	842.5	1.93	1.84	1.77	812.5	1.45	2.03	2.67	186.9	1.23	1.37	1.49
892.7	922.7	2.02	1.94	1.88	892.7	1.42	1.98	2.59	204.6	1.24	1.37	1.48
972.9	1002.9	2.10	2.03	1.97	972.9	1.39	1.93	2.51	222.3	1.24	1.36	1.46
1053.2	1083.2	2.12	2.05	2.00	1053.2	1.37	1.88	2.44	240.0	1.26	1.37	1.47
1133.4	1163.4	2.11	2.04	1.99	1133.4	1.34	1.84	2.39	257.7	1.28	1.40	1.50
1233.7	1263.7	2.07	1.99	1.93	1233.7	1.32	1.81	2.33	275.4	1.31	1.42	1.52
1313.9	1343.9	2.02	1.94	1.88	1313.9	1.30	1.78	2.29	293.1	1.32	1.41	1.50
1414.2	1444.2	1.96	1.86	1.80	1414.2	1.28	1.75	2.25	310.8	1.31	1.41	1.49
1494.5	1524.5	1.89	1.79	1.73	1494.5	1.27	1.73	2.21	328.5	1.34	1.45	1.53
1594.8	1624.8	1.81	1.71	1.64	1594.8	1.26	1.71	2.18	346.2	1.38	1.49	1.58
1675.0	1705.0	1.77	1.66	1.59	1675.0	1.26	1.69	2.14	363.8	1.37	1.47	1.55
1775.3	1805.3	1.74	1.63	1.55	1775.3	1.26	1.68	2.11	381.5	1.34	1.43	1.52
1855.5	1885.5	1.77	1.64	1.56	1855.5	1.26	1.66	2.07	399.2	1.34	1.43	1.51
1955.8	1985.8	1.83	1.70	1.61	1955.8	1.28	1.65	2.04	416.9	1.37	1.46	1.53
2036.1	2066.1	1.87	1.76	1.67	2036.1	1.30	1.66	2.03	434.6	1.41	1.49	1.56
2136.4	2166.4	1.90	1.80	1.72	2136.4	1.35	1.68	2.03	452.3	1.41	1.50	1.57
2216.6	2246.6	1.94	1.83	1.74	2216.6	1.40	1.73	2.07	470.0	1.41	1.51	1.60
2316.9	2346.9	1.97	1.86	1.76	2316.9	1.48	1.79	2.11	487.7	1.41	1.50	1.58
2397.1	2427.1	1.99	1.88	1.79	2397.1	1.56	1.87	2.19	505.4	1.39	1.47	1.53
2497.4	2527.4	1.97	1.87	1.81	2497.4	1.66	1.97	2.28	523.1	1.40	1.48	1.55
2577.7	2607.7	1.94	1.84	1.77	2577.7	1.75	2.07	2.38	540.8	1.46	1.54	1.61
2678.0	2708.0	1.88	1.79	1.72	2678.0	1.88	2.20	2.51	558.5	1.48	1.57	1.63
2758.2	2788.2	1.80	1.72	1.68	2758.2	1.99	2.32	2.62	576.2	1.45	1.53	1.59
2858.5	2888.5	1.71	1.67	1.65	2858.5	2.15	2.50	2.80	593.8	1.42	1.50	1.56
2938.7	2968.7	1.65	1.66	1.68	2938.7	2.27	2.61	2.92	611.5	1.46	1.54	1.60
3039.0	3069.0	1.67	1.72	1.78	3039.0	2.43	2.78	3.09	629.2	1.52	1.58	1.63
3119.3	3149.3	1.76	1.83	1.90	3119.3	2.55	2.90	3.21	646.9	1.52	1.58	1.63
3219.6	3249.6	1.92	2.03	2.12	3219.6	2.71	3.06	3.36	664.6	1.48	1.55	1.60
3299.8	3329.8	2.05	2.19	2.32	3299.8	2.89	3.22	3.52	682.3	1.47	1.53	1.59
3400.1	3430.1	2.24	2.42	2.57	3400.1	3.09	3.41	3.70	700.0	1.48	1.53	1.58

REV. X2

JYM-20H

100817

Page 4 of 5



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	2	19	8	21	10	32	15	35	17	41
1	-	33	+0	38	14	40	21	53	32	60	38	46
2	90	71	61	69	56	68	57	64	52	77	52	74
3	>100	>89	62	>89	63	88	65	84	76	>89	77	>89
4	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
5	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
6	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
7	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
8	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
9	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
10	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1000.1 MHz; -5.00 dBm.
LO IN: 1030.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -11.4 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	12	29	19	31	21	43	27	47	30	56
1	-	34	+0	38	14	41	21	55	32	62	38	49
2	82	59	51	58	46	55	46	56	43	70	44	65
3	>100	65	41	67	43	68	45	68	55	81	57	81
4	>100	88	83	75	70	75	66	74	66	73	62	80
5	>100	86	74	81	65	80	63	83	63	82	66	90
6	>100	>99	80	97	84	91	84	89	84	86	82	84
7	>100	>99	91	>99	95	92	88	91	83	92	80	94
8	>100	>99	98	>99	96	>99	92	>99	93	96	96	98
9	>100	>99	>99	>99	>99	>99	>99	>99	95	>99	98	>99
10	>100	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1000.1 MHz; 5.00 dBm.
LO IN: 1030.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -1.43 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.

REV. X2
JYM-20H
100817
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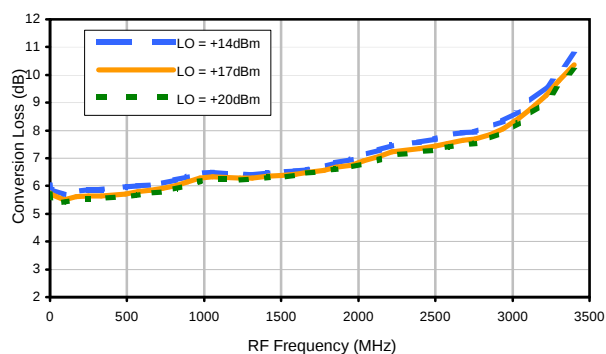


Frequency Mixer

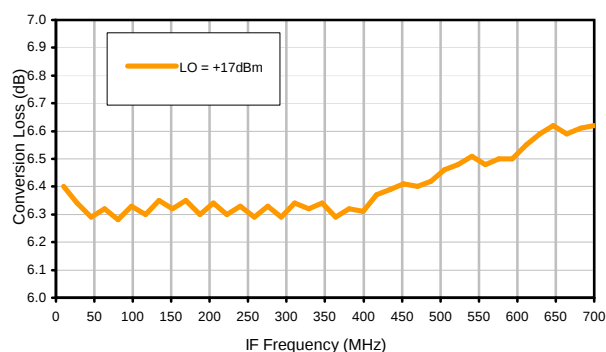
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Typical Performance Curves

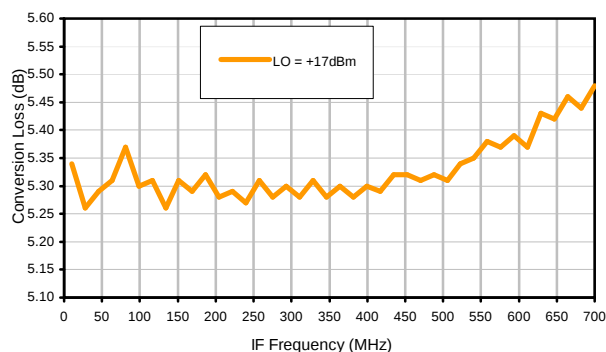
Conversion Loss @ IF=30MHz



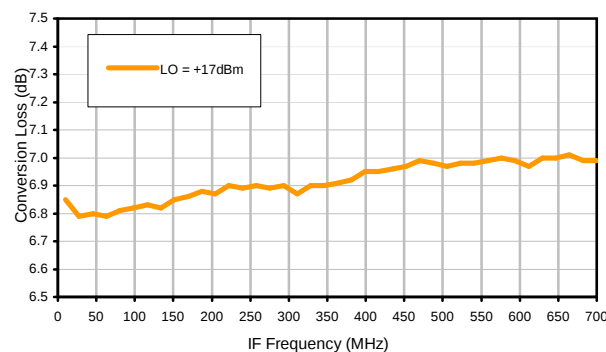
Conversion Loss vs. IF @ RF=1000.1MHz



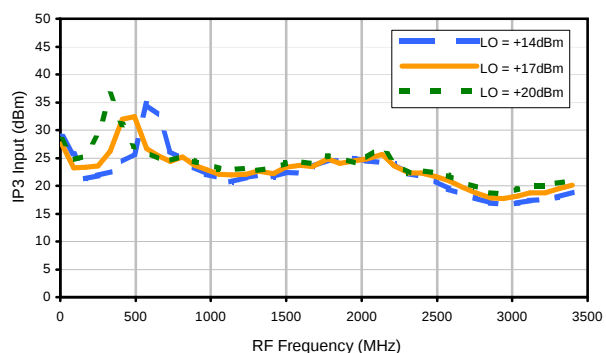
Conversion Loss vs. IF @ RF=10.1MHz



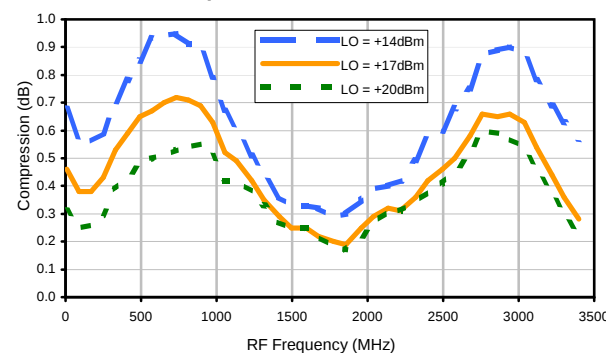
Conversion Loss vs. IF @ RF=2000.1MHz



IP3 Input



Compression @ RF IN=+10dBm



REV. X2

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Page 1 of 3



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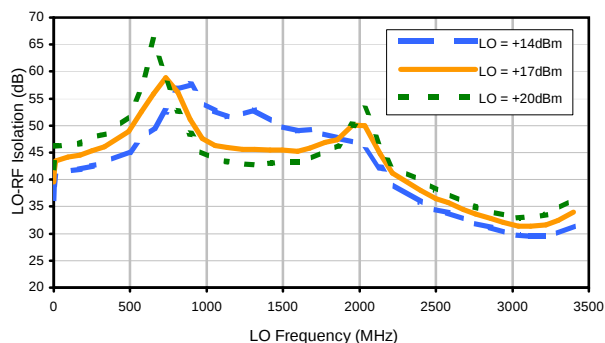


Frequency Mixer

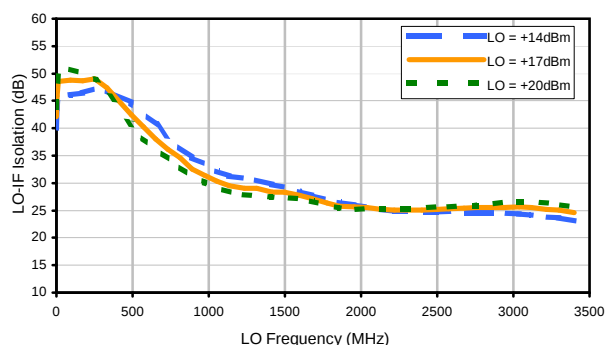
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Typical Performance Curves

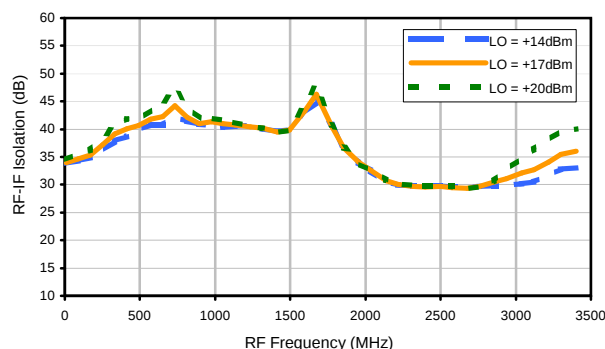
LO-RF Isolation



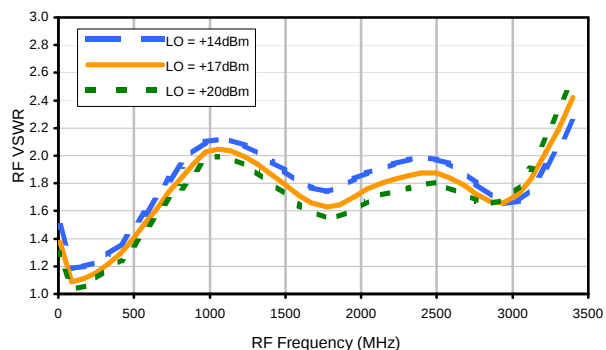
LO-IF Isolation



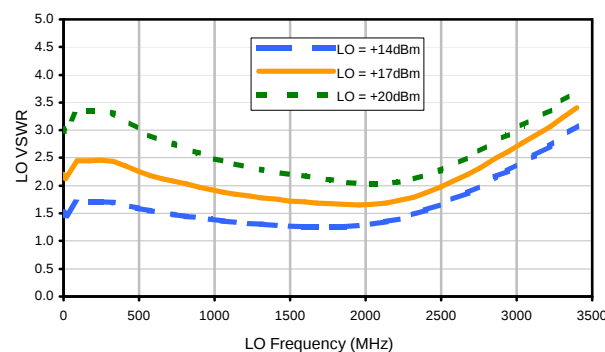
RF-IF Isolation



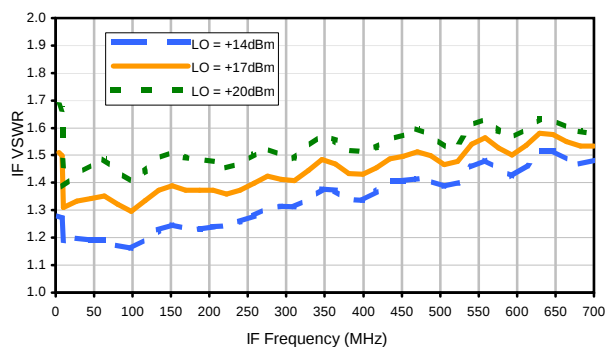
RF VSWR



LO VSWR



IF VSWR



REV. X2

JYM-20H

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Page 2 of 3



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	2	19	8	21	10	32	15	35	17	41
1	-	33	+0	38	14	40	21	53	32	60	38	46
2	90	71	61	69	56	68	57	64	52	77	52	74
3	>100	>89	62	>89	63	88	65	84	76	>89	77	>89
4	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
5	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
6	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
7	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
8	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
9	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
10	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1000.1 MHz; -5.00 dBm.
LO IN: 1030.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -11.4 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	12	29	19	31	21	43	27	47	30	56
1	-	34	+0	38	14	41	21	55	32	62	38	49
2	82	59	51	58	46	55	46	56	43	70	44	65
3	>100	65	41	67	43	68	45	68	55	81	57	81
4	>100	88	83	75	70	75	66	74	66	73	62	80
5	>100	86	74	81	65	80	63	83	63	82	66	90
6	>100	>99	80	97	84	91	84	89	84	86	82	84
7	>100	>99	91	>99	95	92	88	91	83	92	80	94
8	>100	>99	98	>99	96	>99	92	>99	93	96	96	98
9	>100	>99	>99	>99	>99	>99	>99	>99	95	>99	98	>99
10	>100	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1000.1 MHz; 5.00 dBm.
LO IN: 1030.01 MHz; +17.00 dBm
IF OUT: 29.91 MHz; -1.43 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.

REV. X2
JYM-20H
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Page 3 of 3



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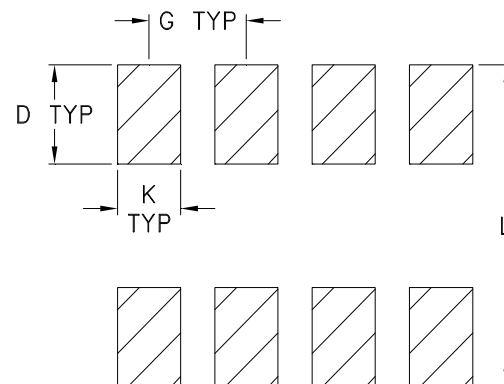
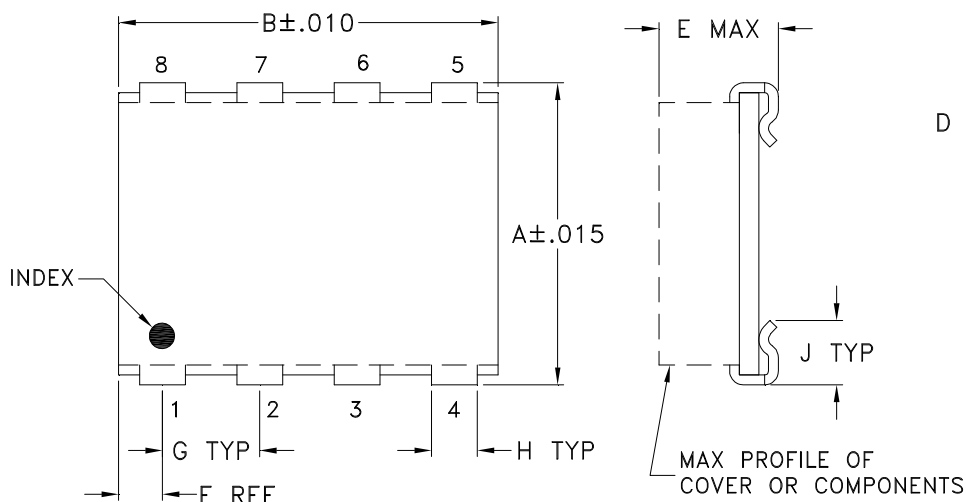


Outline Dimensions

BJ293

BJ398

PCB Land Pattern



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

CASE#	A	B	C	D	E	F	G	H	J	K	L	WT. GRAMS
BJ293	.395 (10.03)	.500 (12.70)	-- --	.100 (2.54)	.230 (5.84)	.100 (2.54)	.100 (2.54)	.047 (1.19)	.065 (1.65)	.065 (1.65)	.425 (10.80)	.80
BJ398	.305 (7.75)	.390 (9.91)	-- --	.100 (2.54)	.105 (2.67)	.045 (1.14)	.100 (2.54)	.047 (1.19)	.065 (1.65)	.065 (1.65)	.325 (8.26)	.20

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

Notes:

- Case material: Plastic.
- Base material: Printed wiring laminate.
- 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.



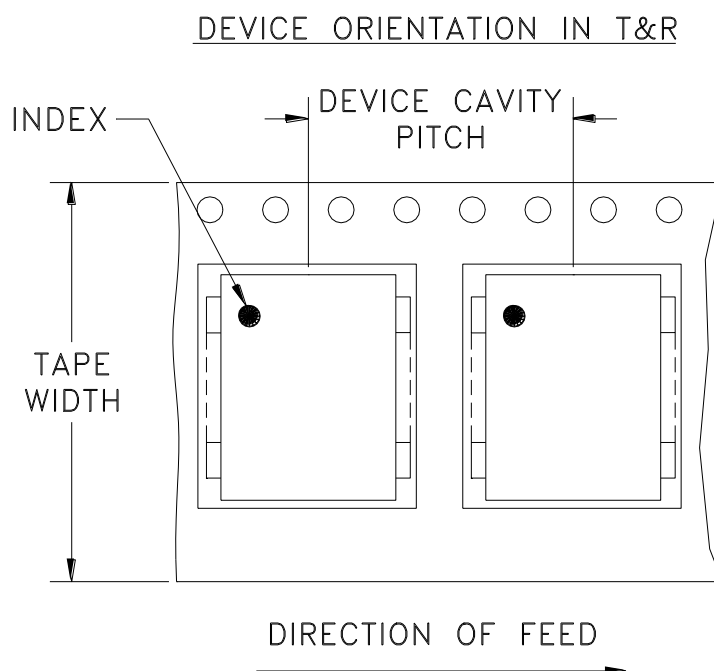
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Tape & Reel Packaging TR-F10



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	16	7	10,20,50,100,200
		13	500

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

Note: Please consult individual model data sheet to determine device per reel availability.



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REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M94649	NEW RELEASE	10/11/04	MMG	WL
A	M102713	ADDED "...WITH SMOBC"	01/14/06	GF	IL

20X $\varnothing$.020 PTH FOR GROUND

.066 TRACE WIDTH, 3 PL.
(SEE NOTE BELOW)

.105, 2 PL.
.055, 2 PL.

.040

.194

.040 TYP

.036

.052

.050 TYP

PACKAGE OUTLINE

PIN 1

5X .072 = .360

NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.030" $\pm$ 0.002"; 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 SOLDERMASK

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE _____

DIMENSIONS ARE IN INCHES

DRAWN

MMG

10/04/04

TOLERANCES ON:

CLIQUE

AV

10/11/04

2 PL DECIMALS ±

CHECK	
-------	--

10/11/04

3 PL DECIMALS ± .005
ANGLES ±

APPROV

WL

10/11/04

ANGLES $\pm$
FRACTIONS $\pm$

1

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10

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Brooklyn NY 11235

PL, hp, BJ293, JYM, TB-259

SIZE
A

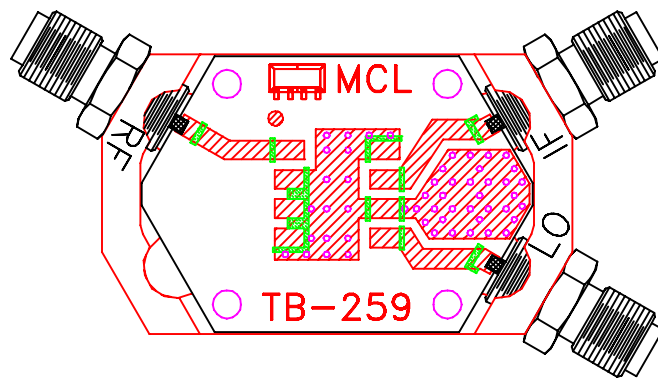
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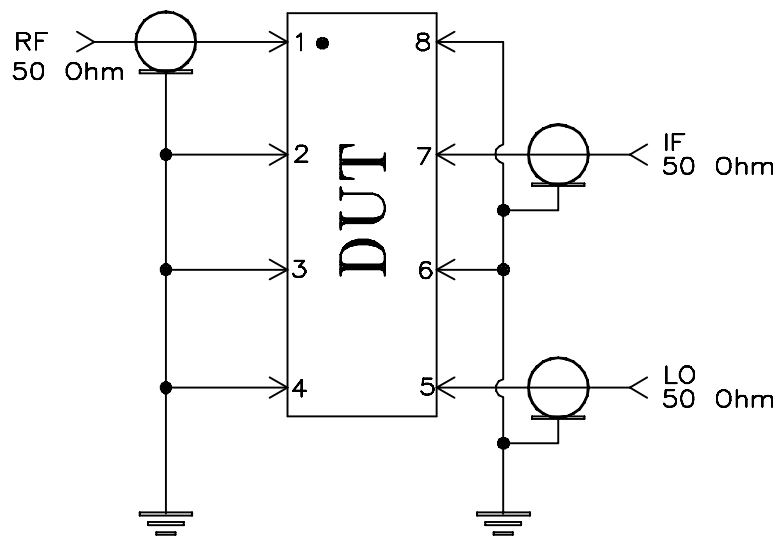
REV:	A
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FILE: 98PL080	SCALE: 8:1	SHEET: 1 OF 1
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Evaluation Board and Circuit



TB-259



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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