Engineering Development Model

Frequency Mixer JYM-ED9655/1

Level 17 (LO Power +17 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.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : BJ293

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency	**LO** (fL to fU)	1510		3000	MHz
	RF (fL to fU)	1510		3000	MHz
	IF	1		1200	MHz
Conversion Loss			8.0		dB
LO-RF Isolation			40		dB
LO-IF Isolation			32		dB
IP3 Input			+27		dBm

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

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

Frequency Mixer JYM-ED9655/1

Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB) @LO (dBm)		
		+14	+17	+20
1510.0	1509.0	7.70	6.76	6.34
1530.0	1527.0	6.44	5.73	5.47
1550.0	1545.0	6.63	5.95	5.68
1570.0	1563.0	6.72	6.10	5.86
1590.0	1581.0	6.76	6.15	5.91
1610.0	1600.0	6.70	6.08	5.87
1625.0	1600.0	6.69	6.07	5.86
1640.0	1600.0	6.86	6.16	5.92
1655.0	1600.0	6.57	5.98	5.80
1685.0	1600.0	6.75	6.09	5.83
1700.0	1600.0	6.58	5.96	5.78
1740.0	1590.0	6.86	6.18	5.94
1780.0	1580.0	6.87	6.23	6.02
1820.0	1570.0	6.87	6.25	6.09
1860.0	1560.0	7.07	6.48	6.29
1900.0	1550.0	7.23	6.55	6.33
1940.0	1540.0	7.53	6.91	6.68
1980.0	1530.0	7.77	7.11	6.80
2020.0	1520.0	7.72	7.13	6.87
2060.0	1510.0	7.98	7.32	7.00
2100.0	1500.0	8.07	7.49	7.25
2140.0	1490.0	8.11	7.66	7.41
2180.0	1480.0	8.07	7.67	7.50
2220.0	1470.0	8.14	7.82	7.62
2260.0	1460.0	8.42	8.09	7.83
2300.0	1450.0	8.53	8.09	7.80
2340.0	1440.0	8.25	7.72	7.40
2380.0	1430.0	8.14	7.57	7.19
2420.0	1420.0	8.02	7.49	7.13
2460.0	1440.0	8.20	7.66	7.30
2500.0	1460.0	8.48	7.94	7.54
2562.5	1502.5	8.57	8.00	7.59
2625.0	1545.0	8.64	8.04	7.61
2687.5	1587.5	8.91	8.31	7.81
2750.0	1630.0	8.82	8.19	7.69
2812.5	1672.5	8.48	7.85	7.31
2875.0	1715.0	8.47	7.89	7.37
2937.5	1757.5	8.22	7.71	7.26
3000.0	1800.0	8.45	7.94	7.46

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+14	+17	+20	+14	+17	+20
1420.0	31.9	34.6	38.0	31.2	31.8	32.1
1430.0	32.3	35.2	38.6	31.6	32.2	32.5
1440.0	33.0	35.9	39.2	31.7	32.4	32.8
1440.0	31.2	33.8	36.7	30.9	31.5	31.8
1450.0	33.6	36.3	39.1	32.1	32.7	33.1
1460.0	34.3	36.6	39.3	32.0	32.7	33.2
1460.0	30.8	33.2	35.8	30.7	31.3	31.6
1470.0	34.5	36.7	39.4	32.3	32.9	33.5
1480.0	34.9	37.6	40.4	32.2	32.9	33.5
1490.0	35.2	38.0	41.1	32.2	32.9	33.5
1500.0	35.4	38.5	41.7	32.4	33.2	33.9
1502.5	30.4	32.5	34.4	30.0	30.6	30.7
1509.0	50.5	45.2	39.5	32.4	32.0	31.6
1510.0	35.8	39.1	42.4	32.7	33.4	34.0
1520.0	36.2	40.0	43.5	32.9	33.5	34.1
1527.0	47.8	47.9	40.7	32.5	32.2	31.9
1530.0	36.7	40.9	44.4	33.1	33.6	34.1
1540.0	37.4	41.9	45.1	33.1	33.6	34.1
1545.0	45.6	50.2	41.3	32.9	32.5	32.2
1545.0	31.7	33.7	35.2	29.3	29.7	29.6
1550.0	37.7	42.3	45.4	33.3	33.5	34.1
1560.0	38.2	42.8	46.2	33.0	33.3	33.9
1563.0	45.1	50.2	41.6	33.1	32.7	32.4
1570.0	39.1	44.2	47.2	33.1	33.4	33.6
1580.0	40.0	44.3	45.8	33.0	33.3	33.6
1581.0	43.8	49.6	42.2	32.9	32.6	32.5
1587.5	32.8	34.8	35.7	29.0	29.2	29.0
1590.0	40.6	44.5	44.1	33.2	33.2	33.4
1600.0	42.4	48.2	42.7	33.1	32.9	33.0
1600.0	41.9	47.0	42.6	33.3	33.1	33.1
1600.0	41.4	46.0	42.3	33.4	33.1	33.2
1600.0	41.3	45.1	42.0	33.5	33.3	33.3
1600.0	41.0	44.4	42.2	33.4	33.4	33.6
1600.0	40.9	44.5	42.7	33.3	33.3	33.5
1630.0	33.2	35.0	35.5	29.2	29.2	29.0
1672.5	33.4	34.7	34.9	29.4	29.3	29.3
1715.0	32.2	33.4	33.7	29.7	29.7	29.6
1757.5	30.7	31.8	32.1	29.7	29.8	29.7
1800.0	29.3	30.6	31.1	29.9	30.0	30.0

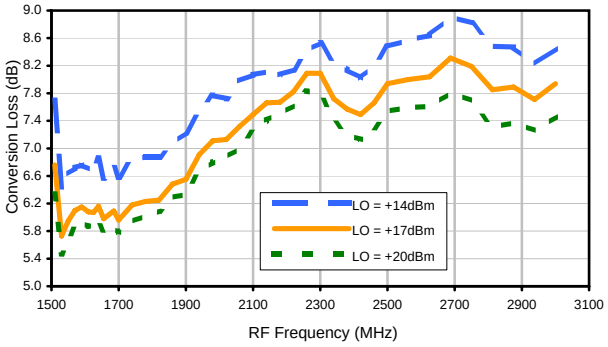
Frequency Mixer JYM-ED9655/1

Typical Performance Data

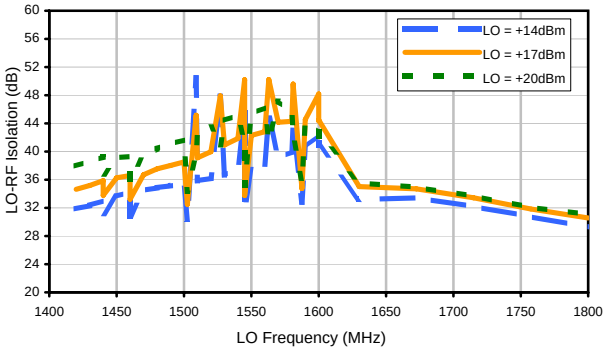
RF/LO (MHz)	RF VSWR (:1) @LO (dBm)			LO VSWR (:1) @LO (dBm)			IF (MHz)	IF VSWR (:1) @LO (dBm)		
	+14	+17	+20	+14	+17	+20		+14	+17	+20
1510.0	2.02	1.83	1.76	1.92	1.29	1.44	1.0	1.89	2.13	2.21
1530.0	2.26	2.03	1.90	1.96	1.31	1.44	3.0	1.42	1.39	1.38
1550.0	2.39	2.11	1.96	2.10	1.34	1.46	5.0	1.33	1.23	1.22
1570.0	2.35	2.09	1.94	2.07	1.34	1.50	7.0	1.29	1.17	1.17
1590.0	2.30	2.04	1.89	2.00	1.32	1.47	9.0	1.27	1.14	1.15
1610.0	2.30	2.04	1.89	1.99	1.31	1.43	10.0	1.28	1.13	1.12
1625.0	2.29	2.02	1.88	2.03	1.33	1.43	25.0	1.28	1.11	1.09
1640.0	2.32	2.04	1.90	2.14	1.35	1.45	40.0	1.32	1.12	1.07
1655.0	2.27	2.02	1.90	2.12	1.34	1.45	55.0	1.32	1.11	1.07
1685.0	2.28	2.06	1.95	2.04	1.32	1.38	70.0	1.33	1.12	1.07
1700.0	2.27	2.05	1.93	2.05	1.33	1.36	85.0	1.32	1.11	1.10
1740.0	2.31	2.12	1.99	2.12	1.34	1.38	100.0	1.29	1.12	1.17
1780.0	2.37	2.17	2.05	2.02	1.30	1.30	150.0	1.27	1.15	1.23
1820.0	2.54	2.31	2.19	2.09	1.30	1.31	200.0	1.27	1.16	1.26
1860.0	2.56	2.34	2.21	1.95	1.26	1.24	250.0	1.28	1.20	1.33
1900.0	2.80	2.56	2.41	2.06	1.25	1.23	300.0	1.31	1.28	1.44
1940.0	2.95	2.68	2.49	1.97	1.22	1.20	350.0	1.38	1.38	1.54
1980.0	3.06	2.77	2.57	2.02	1.21	1.22	400.0	1.47	1.45	1.60
2020.0	3.19	2.90	2.66	1.94	1.20	1.22	450.0	1.48	1.51	1.64
2060.0	3.29	2.97	2.71	1.96	1.20	1.25	500.0	1.55	1.61	1.76
2100.0	3.38	3.08	2.82	1.98	1.22	1.30	550.0	1.63	1.74	1.88
2140.0	3.50	3.16	2.87	1.99	1.27	1.31	600.0	1.71	1.86	2.03
2180.0	3.57	3.21	2.91	2.02	1.30	1.38	650.0	1.95	2.19	2.37
2220.0	3.65	3.24	2.93	1.94	1.31	1.38	700.0	2.06	2.26	2.40
2260.0	3.68	3.27	2.97	1.99	1.35	1.45	750.0	2.06	2.18	2.25
2300.0	3.84	3.35	3.03	1.97	1.35	1.45	800.0	1.93	2.01	2.05
2340.0	3.67	3.24	2.95	2.00	1.39	1.53	850.0	1.87	1.92	1.97
2380.0	3.81	3.36	3.05	1.92	1.40	1.53	900.0	1.74	1.82	1.91
2420.0	3.89	3.42	3.11	1.92	1.43	1.60	950.0	1.59	1.67	1.76
2460.0	3.80	3.37	3.09	1.89	1.46	1.64	1000.0	1.53	1.60	1.68
2500.0	3.95	3.56	3.26	1.84	1.51	1.71	1020.0	1.52	1.58	1.65
2562.5	4.03	3.60	3.31	1.81	1.56	1.81	1040.0	1.50	1.50	1.54
2625.0	4.33	3.84	3.50	1.84	1.73	2.11	1060.0	1.42	1.37	1.38
2687.5	4.28	3.82	3.45	1.87	1.91	2.45	1080.0	1.42	1.29	1.23
2750.0	4.37	3.90	3.54	1.85	2.03	2.60	1100.0	1.38	1.19	1.07
2812.5	4.13	3.73	3.35	1.82	2.09	2.68	1120.0	1.32	1.16	1.06
2875.0	4.29	3.86	3.47	1.82	2.22	2.84	1140.0	1.31	1.18	1.16
2937.5	4.04	3.60	3.20	1.79	2.30	2.92	1160.0	1.36	1.29	1.31
3000.0	4.21	3.73	3.24	1.76	2.27	2.87	1200.0	1.40	1.39	1.45

Typical Performance Curves

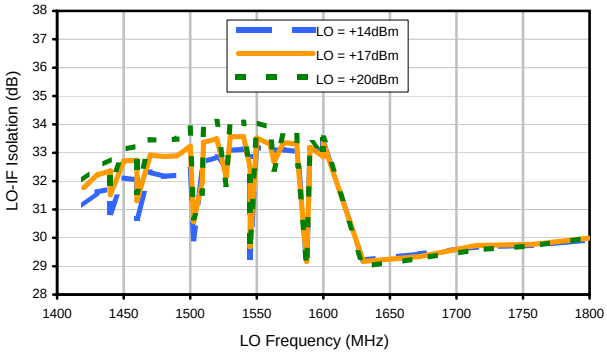
Conversion Loss



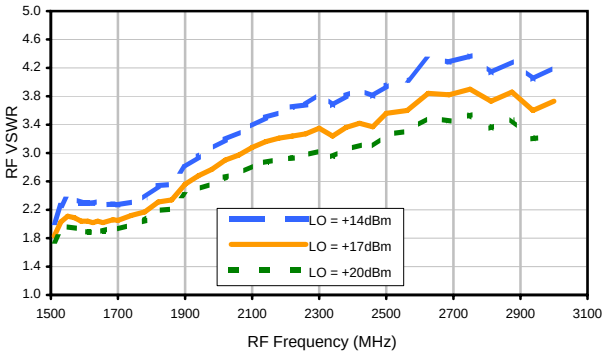
LO-RF Isolation



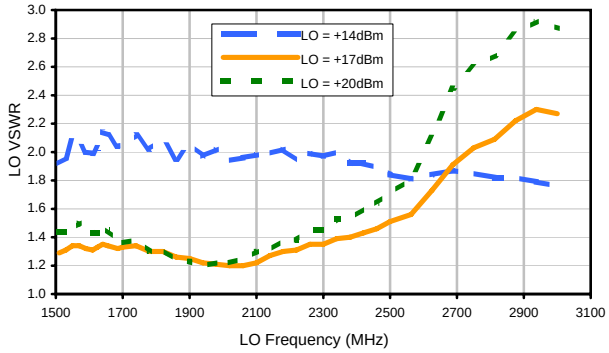
LO-IF Isolation



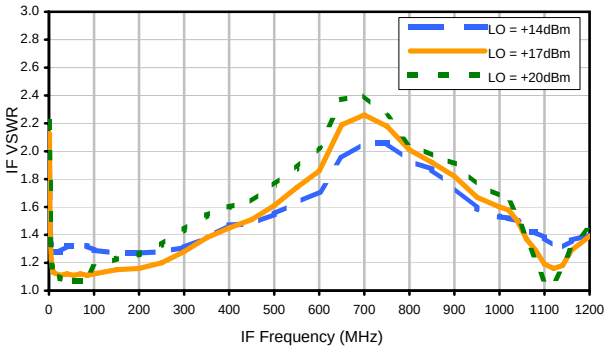
RF VSWR



LO VSWR



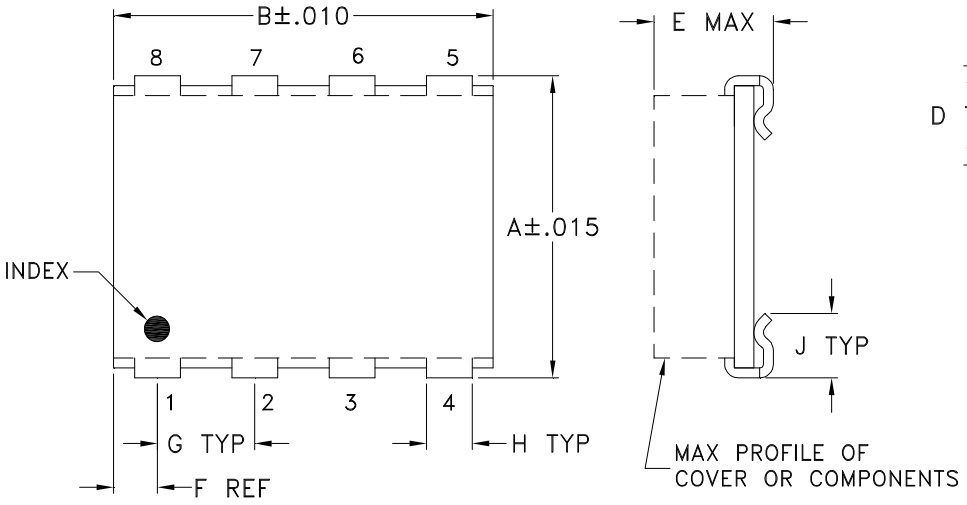
IF VSWR



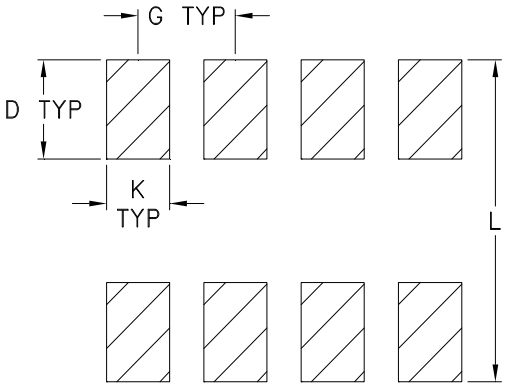
Case Style BJ

BJ293
BJ398

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.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. ± .01; 3Pl. ± .005

Notes:
1. Case material: Plastic.
2. Base material: Printed wiring laminate.
3. 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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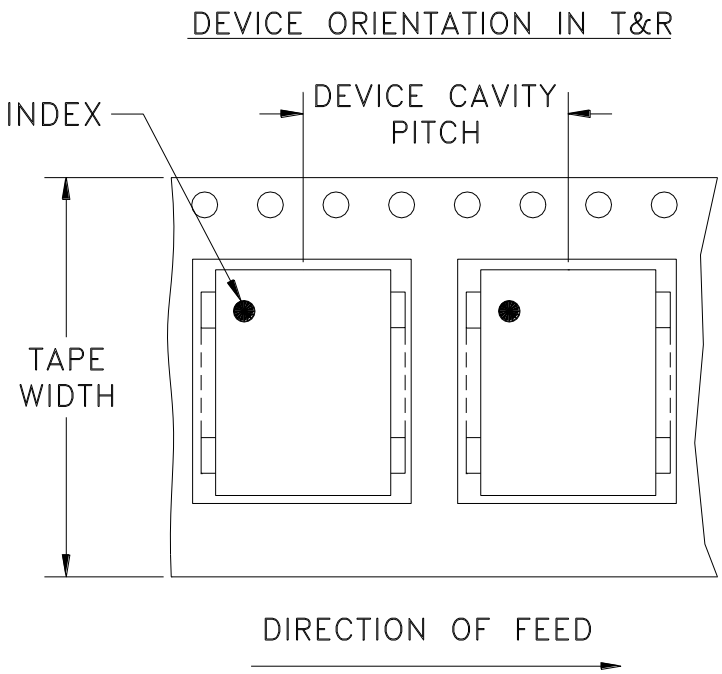
Tape & Reel Packaging TR-F10



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

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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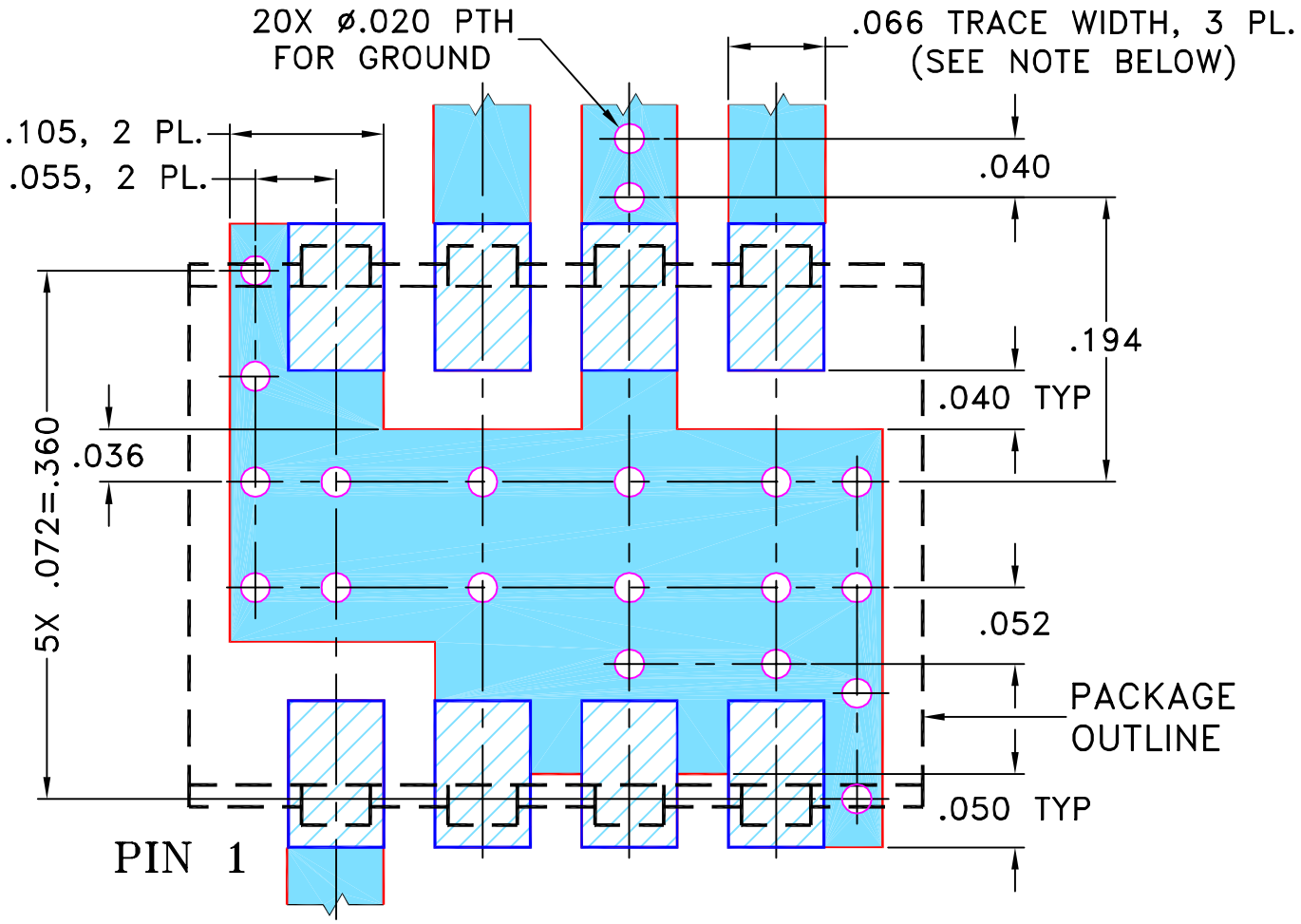
THIRD ANGLE PROJECTION

REVISIONS					
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

SUGGESTED MOUNTING CONFIGURATION FOR BJ293 CASE STYLE, "hp" PIN CONNECTION.



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 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:	CHECKED	AV	10/11/04
2 PL DECIMALS ±	APPROVED	WL	10/11/04
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

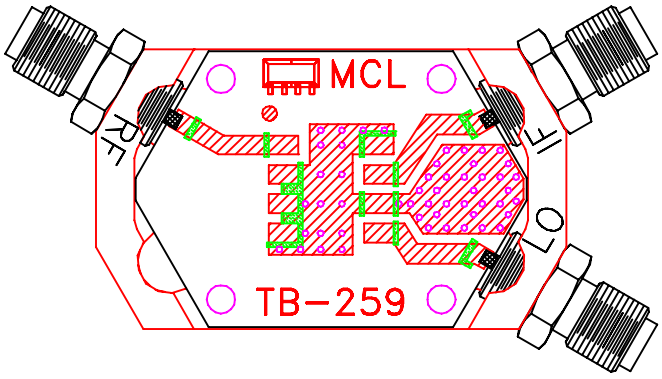
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, hp, BJ293, JYM, TB-259

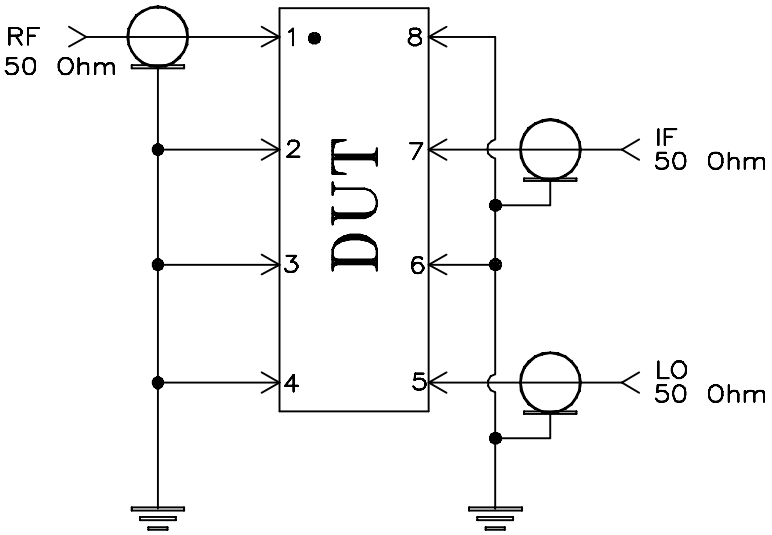
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-080	A

FILE:	SCALE:	SHEET:
98PL080	8:1	1 OF 1

Evaluation Board and Circuit



TB-259



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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Environmental Specifications ENV02T1

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