

Non-Catalog Model

Frequency Mixer

Level 10 (LO Power +10 dBm)

JMS-5LH

Important Note

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



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

CASE STYLE : BH292

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency	LO (fL to fU)	5		1500	MHz
	RF (fL to fU)	5		1500	MHz
	IF	0		1000	MHz
Conversion Loss	mid band		6.0	8.0	dB
	Total Range			9.5	dB
LO-RF Isolation	Low Range	40	60		dB
	Mid Range	25	50		dB
	Upper Range	20	35		dB
LO-IF Isolation	Low Range	40	55		dB
	Mid Range	14	35		dB
	Upper Range	6	15		dB
1 dB Comp. Input Power			+5		dBm

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

Mid Range = [10fL to fU/2]

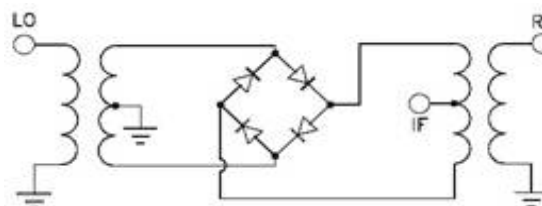
Upper Range = [fU/2 to fU]

Phase detection, positive polarity

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	6
RF	3
IF	2
GROUND	1, 4, 5

Electrical Schematics



Frequency Mixer

JMS-5LH

Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB)			LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
		@LO (dBm)				@LO (dBm)			@LO (dBm)		
		+7	+10	+13		+7	+10	+13	+7	+10	+13
10.0	40.0	6.19	5.72	5.52	10.0	67.9	67.7	67.1	67.8	67.0	61.3
20.0	50.0	5.96	5.51	5.37	20.0	67.0	65.4	63.7	64.7	62.1	55.7
50.0	80.0	5.72	5.28	5.12	50.0	67.8	62.5	59.9	58.2	56.4	48.9
100.0	70.0	5.66	5.24	5.10	100.0	81.3	60.6	56.9	52.3	50.7	43.5
154.2	124.2	5.68	5.27	5.13	154.2	63.6	57.7	53.5	48.9	47.0	39.5
200.0	170.0	5.64	5.26	5.14	200.0	55.4	54.0	50.9	44.7	43.8	36.5
298.4	263.4	5.83	5.39	5.21	298.4	45.5	46.2	45.4	38.9	37.5	32.0
442.6	412.6	6.36	5.83	5.59	442.6	37.7	38.4	38.1	33.2	30.5	26.4
500.0	470.0	6.53	6.00	5.59	500.0	35.5	36.3	36.3	31.0	28.2	24.7
586.8	556.8	6.76	6.07	5.62	536.8	32.8	33.5	33.7	27.6	24.9	22.2
731.0	701.0	7.69	6.90	6.39	731.0	29.2	30.2	30.6	22.3	20.7	18.7
750.0	720.0	7.35	6.57	6.11	750.0	28.9	29.9	30.4	21.7	20.1	18.3
875.2	845.2	7.75	7.15	6.81	875.2	27.0	28.4	29.3	19.1	16.9	15.4
1000.0	970.0	8.13	7.62	7.23	1000.0	25.9	27.4	28.6	16.9	15.4	13.9
1019.4	989.4	7.41	6.91	6.57	1019.4	25.5	27.0	28.3	16.5	15.0	13.6
1163.6	1133.5	8.22	7.82	7.69	1163.6	24.2	25.7	26.9	13.6	12.8	11.9
1259.7	1229.7	8.28	7.99	7.82	1259.7	23.6	25.0	26.2	12.4	11.9	11.2
1403.9	1373.9	8.44	7.89	7.76	1403.9	22.1	23.6	24.6	10.8	10.7	10.3
1451.9	1421.9	8.80	8.03	7.83	1451.9	21.7	23.2	24.3	10.6	10.6	10.4
1500.0	1470.0	9.07	8.11	7.81	1500.0	21.2	22.6	23.8	10.4	10.5	10.2

REV. X1
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Frequency Mixer

JMS-5LH

Typical Performance Data

RF/LO (MHz)	RF VSWR (:1)			LO VSWR (:1)			IF (MHz)	IF VSWR (:1)			LO/RF (MHz)	max. DC output (mV)	DC Offset (mV)
	@LO (dBm)			@LO (dBm)				@LO (dBm)			@LO (dBm)		
	+7	+10	+13	+7	+10	+13		+7	+10	+13	+10		
10.0	1.67	1.65	1.71	1.89	2.80	4.01	10.0	1.10	1.12	1.35	10.0	328.4	0.06
20.0	1.30	1.30	1.33	1.85	2.77	4.01	20.0	1.10	1.13	1.35	20.0	331.2	0.04
50.0	1.06	1.04	1.04	1.96	2.82	4.19	50.0	1.15	1.16	1.37	50.0	339.1	0.09
100.0	1.26	1.21	1.22	1.87	2.67	3.92	100.0	1.27	1.21	1.37	100.0	333.4	0.04
154.2	1.54	1.47	1.50	1.84	2.56	3.67	106.1	1.29	1.22	1.37	106.1	328.8	0.08
200.0	1.80	1.70	1.74	1.78	2.44	3.33	200.0	1.56	1.39	1.40	200.0	325.6	0.18
298.4	2.34	2.15	2.24	1.71	2.24	2.90	202.3	1.56	1.39	1.40	250.3	325.6	0.65
442.6	2.89	2.60	2.74	1.59	1.92	2.32	250.3	1.67	1.45	1.39	394.5	315.4	1.74
500.0	2.91	2.60	2.75	1.54	1.88	2.36	298.4	1.75	1.50	1.39	500.0	306.9	2.80
586.8	2.63	2.43	2.55	1.52	1.88	2.34	394.5	1.83	1.53	1.35	538.7	287.6	2.51
731.0	2.53	2.37	2.48	1.79	2.39	3.07	442.6	1.82	1.51	1.31	682.9	285.8	4.90
750.0	2.51	2.36	2.47	1.97	2.56	3.27	500.0	1.76	1.46	1.25	731.0	293.6	6.73
875.2	3.36	3.20	3.44	2.58	3.36	4.25	538.7	1.68	1.40	1.21	875.2	297.9	9.35
1000.0	4.95	4.75	5.31	3.38	4.08	4.91	586.8	1.56	1.31	1.17	1000.0	296.0	8.51
1019.4	4.62	4.51	5.00	3.45	4.11	4.96	634.8	1.42	1.23	1.18	1019.4	301.9	8.65
1163.6	6.86	6.63	7.80	4.18	4.54	5.23	731.0	1.38	1.45	1.63	1163.6	302.5	7.10
1259.7	6.32	6.05	6.97	5.00	4.67	5.04	779.0	1.28	1.40	1.62	1259.7	289.8	6.81
1403.9	4.48	4.25	4.68	4.62	4.06	4.04	827.1	1.31	1.51	1.78	1403.9	288.7	10.07
1451.9	3.98	3.76	4.09	4.44	3.86	3.70	875.2	1.40	1.64	1.93	1451.9	287.5	13.78
1500.0	3.51	3.33	3.59	4.40	3.66	3.50	900.0	1.43	1.73	2.03	1500.0	277.6	19.02

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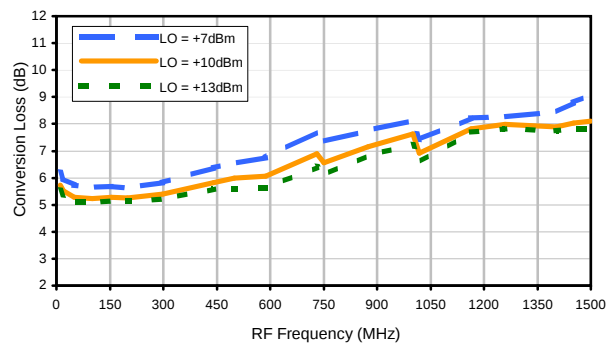


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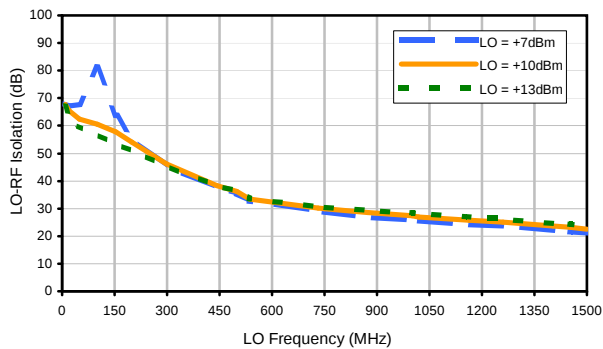


Typical Performance Curves

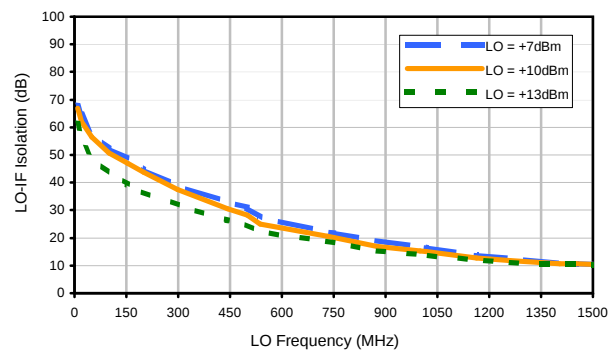
Conversion Loss



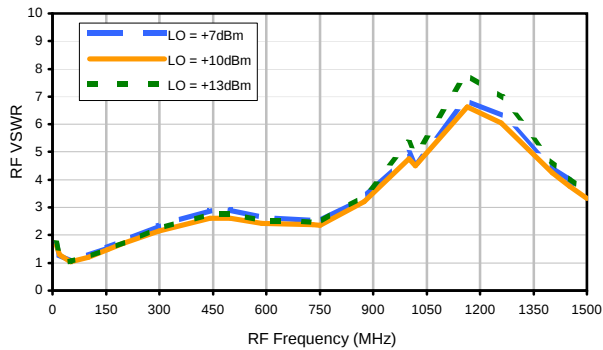
LO-RF Isolation



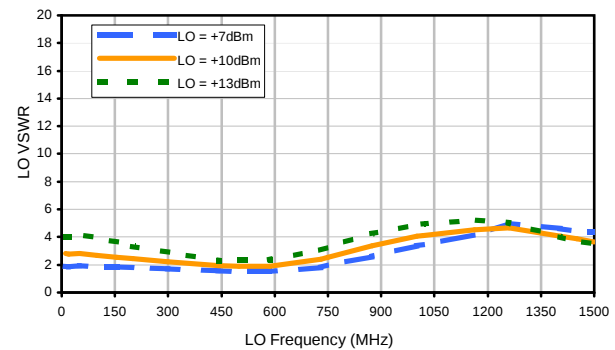
LO-IF Isolation



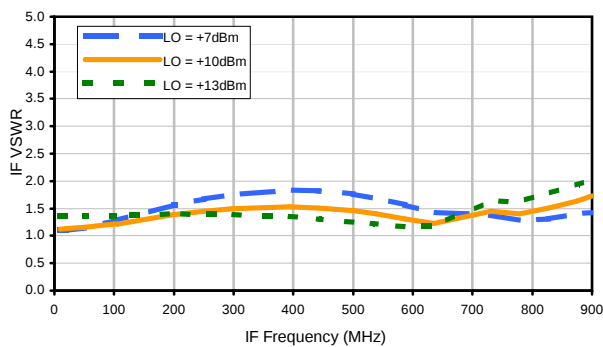
RF VSWR



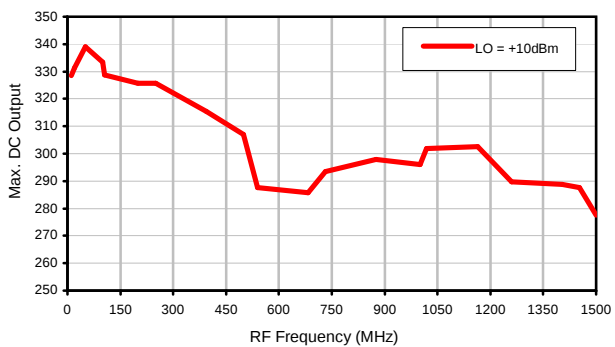
LO VSWR



IF VSWR



Max. DC Output



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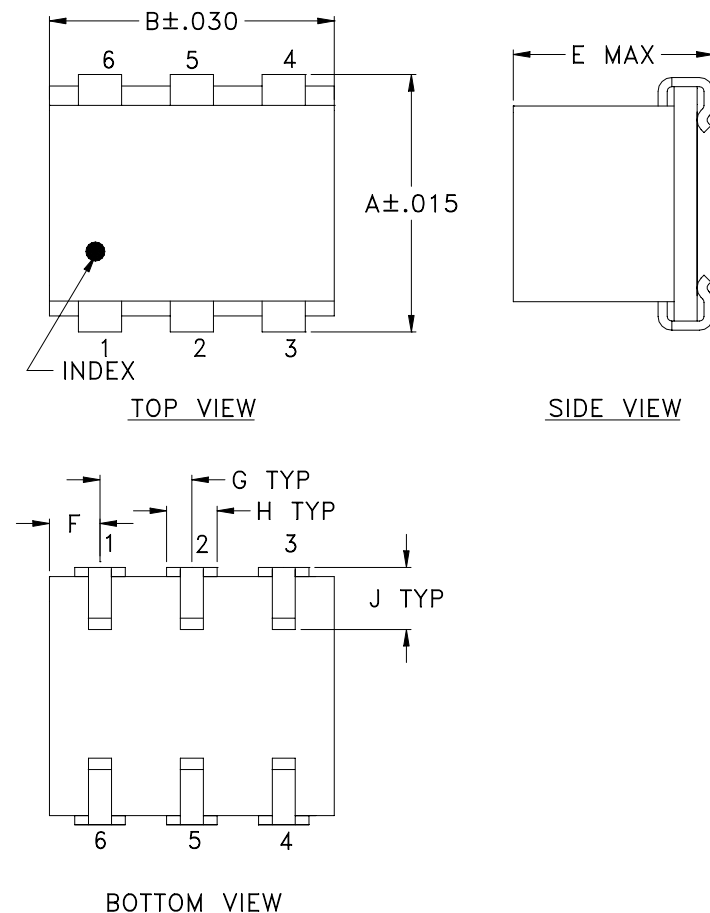
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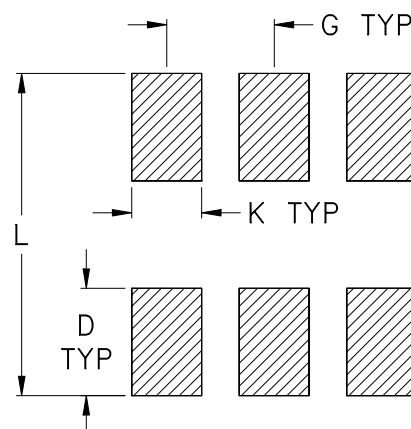
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Outline Dimensions



PCB Land Pattern



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

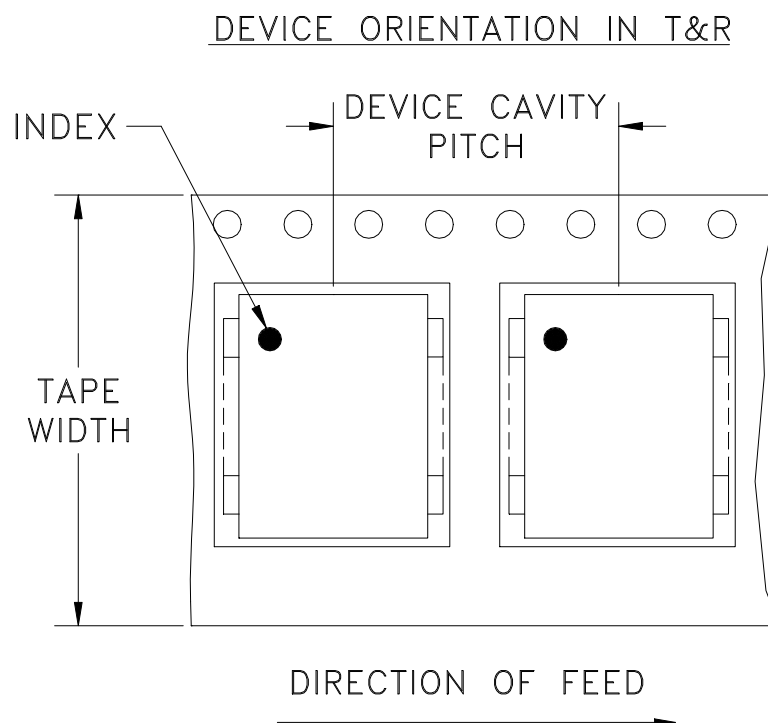
CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAM
BH292	.280 (7.11)	.310 (7.87)	- -	.100 (2.54)	.225 (5.72)	.055 (1.40)	.100 (2.54)	.047 (1.19)	.065 (1.65)	.065 (1.65)	.300 (7.62)	.45

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

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.

Tape & Reel Packaging TR-F24



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
16	12	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



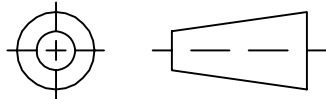
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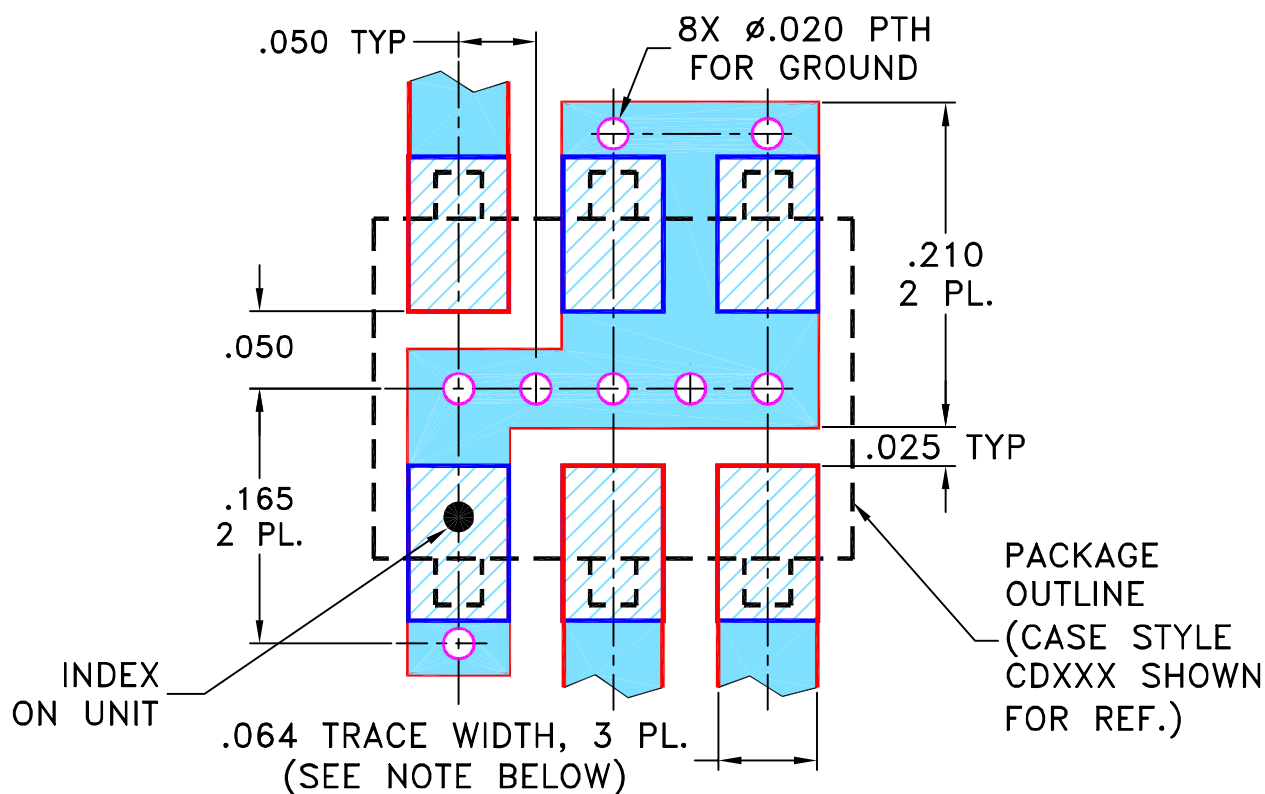
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
A	M101143	ADDED "gk" PIN CONNECTION, TT100 CASE STYLE & NOTE 2	10/10/05	MMG	DJ
B	M102713	ADDED "...WITH SMOBC"	01/17/06	MMG	IL
C	M108637	REMOVED "PIN 1", ADDED INDEX ON UNIT	12/01/06	MYG	FL

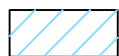
SUGGESTED MOUNTING CONFIGURATION
FOR BH292, CD541/542/636/637, TT100/240 CASE
STYLES, "gk", "ht", "hu", "nd", "w" PIN CONNECTIONS



- 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

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

DRAWN

MMG

07/17/02

CHECKED

WL

08/02/02

APPROVED

DJ

08/05/02



Mini-Circuits®

13 Neptune Avenue
 Brooklyn NY 11235

PL, gk/ht/hu/nd/w, BH292,
 CD541/542/636/637, TT100/240, TB-03

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-052

REV:

C

FILE:

98PL052

SCALE:

8:1

SHEET:

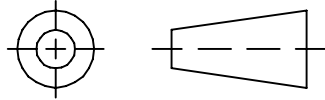
1 OF 1

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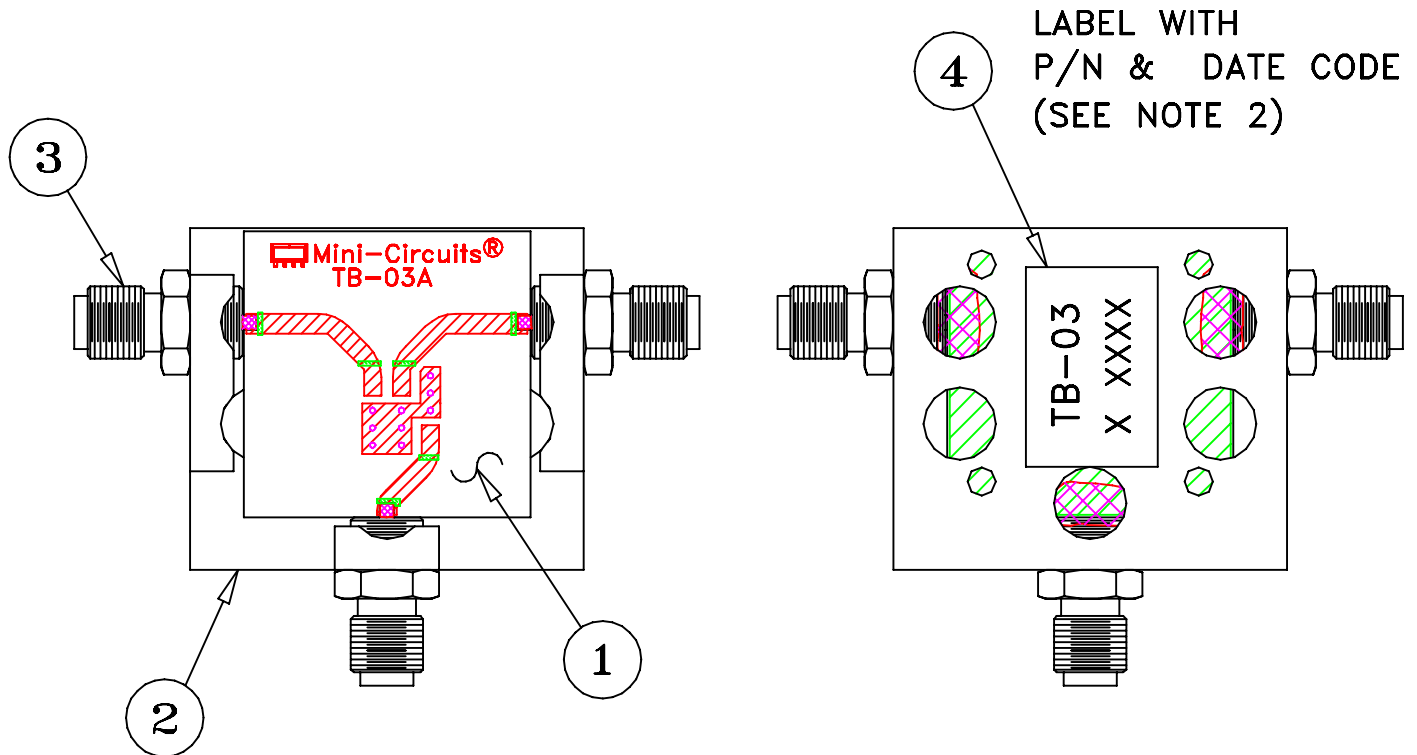
ASHEETA1.DWG REV:A DATE:01/12/95

THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
E	M119737	UPDATED PCB	10.08	MF	AD
F	M127659	UPDATED CARR	06.10	SW	SG
G	M127846	UPDATED SCHEMATIC DIAGRAM	06.10	SW	SG
H	M131840	UPDATED DWG	05.11	MF	AD

**NOTES:**

1. REFER TO -09 PAGE FOR ITEM DESCRIPTIONS.
DESIGNATION NUMBERS ON -20 PAGE CORRESPOND TO THE NUMBERS ON -09 PAGE.
2. FOR TEXT HEIGHT & STYLE ON THE LABEL REFER TO: D3-G209.

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:
2 PL DECIMALS ±
3 PL DECIMALS ±
ANGLES ±
FRACTIONS ±

DRAWN

S.WOLYNSKI

06.29.99

CHECKED

SG

07.06.99

APPROVED

MG

07.10.99

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Brooklyn NY 11235

TB,ADE,CD542/636,06MX01,50

 SIZE
A

 CODE IDENT
15542

 DRAWING NO:
TB-03-20

 REV:
H

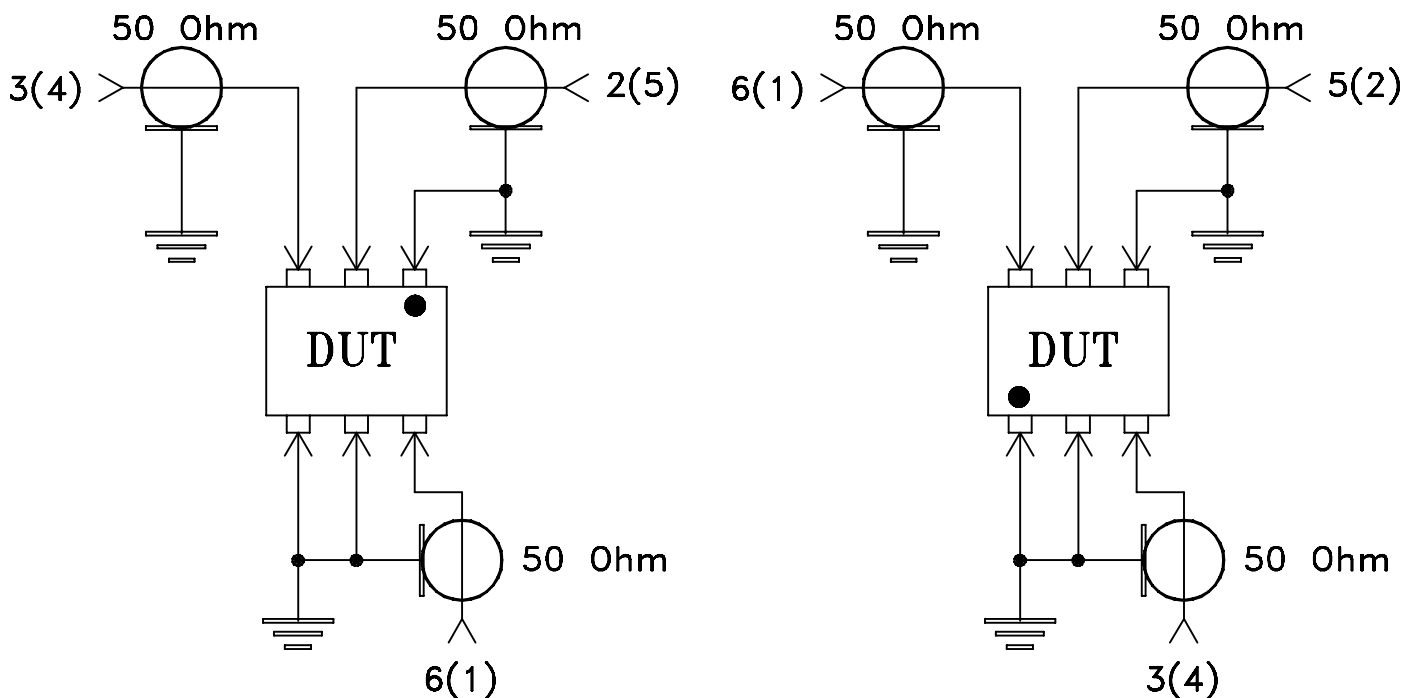
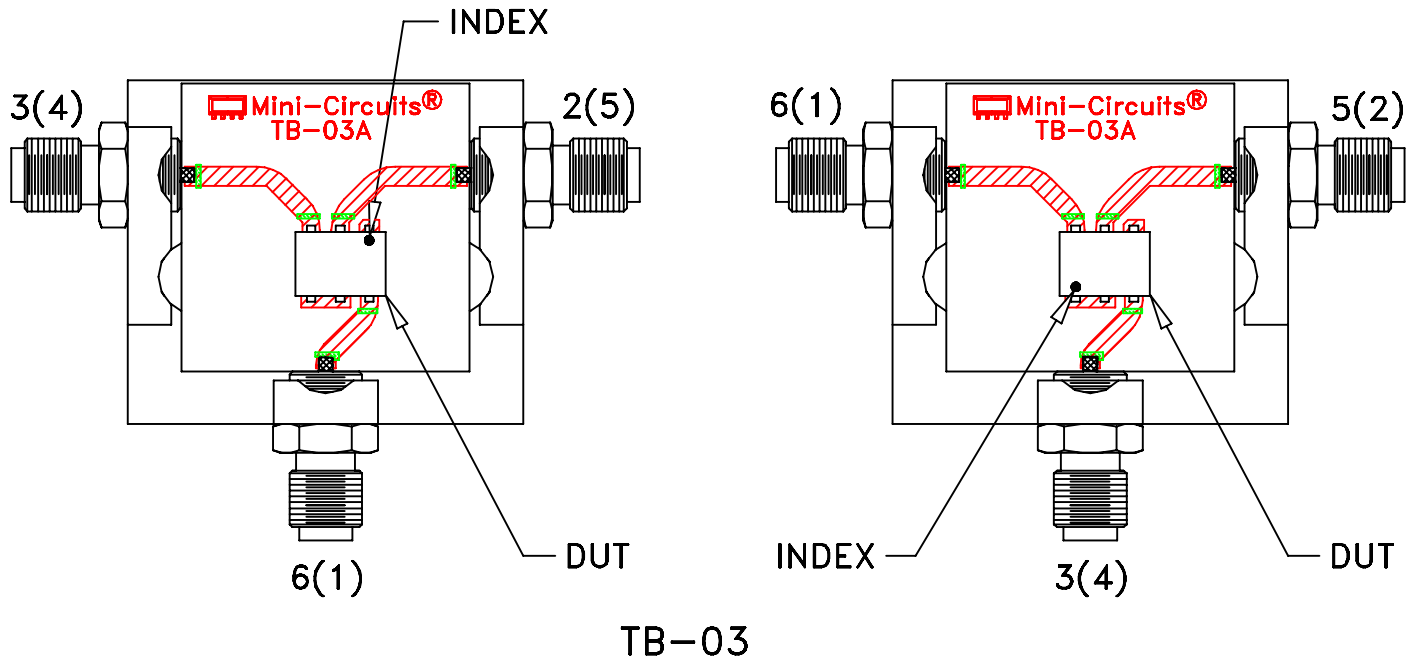
FILE: WTB-03

SCALE: 1.5:1

SHEET: 1 OF 2

Evaluation Board and Circuit

For Pin Connections and DUT Orientation Refer to
Data Sheet of the DUT



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.030 inch.

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