Frequency Mixer

ADE-92LH+

Level 10 (LO Power +10 dBm) 400 to 900 MHz

The Big Deal

- Excellent IP3: +24dBm with reduced LO power (+10dBm)
- High LO-RF Isolation across the entire band
- Low cost, miniature size

CASE STYLE: CD636

Product Overview

The ADE-92LH+ is passive double balanced mixer featuring a FET quad in a ring configuration providing high dynamic range performance in a small, low cost, RoHS-compliant package. The ADE-92LH+ provides RF/LO response from 400 to 900 MHz and IF response from DC to 150 MHz. It is especially useful in systems where cost and performance are critical, such as GSM cellular system applications. This mixer is ideal for upconverter and downconverter applications and does not require external matching components or DC power.

Key Features

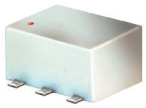
Feature	Advantages
High IP3, +24 dBm typ. with reduced LO power requirement.	Allows for improved dynamic range, a critical factor in receiver applications.
Low conversion loss, 7 dB typ.	Enables lower NF front ends, which can improve system sensitivity.
High LO to RF isolation, 40 dB typ.	Reduced levels of unwanted responses that can interfere with system performance.
Broadband matching	The IF port VSWR is less than 1.6 to 1 over the specified frequency range, which simplifies impedance matching with adjoining components.
Insensitive to LO power level variations	Allows the use of an LO amplifier with less stringent gain flatness, enabling the use of lower cost amplifiers.
Small package 0.310” x 0.220” x 0.162”	Enables high density packaging.

High IP3

Frequency Mixer

ADE-92LH+

Level 10 (LO Power +10 dBm) 400 to 900 MHz



CASE STYLE: CD636

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

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

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

LO	6
RF	3
IF	2
GROUND	1,4,5

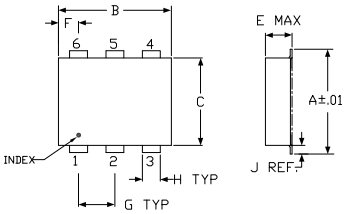
Features

- high IP3, 24 dBm typ.
- good L-R isolation, 40 dB typ.
- good L-I isolation, 26 dB typ.
- aqueous washable
- patent pending

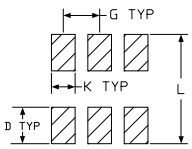
Applications

- cellular
- GSM
- ISM

Outline Drawing



PCB Land Pattern



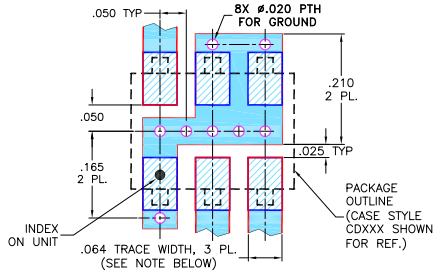
Suggested Layout
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.272	.310	.220	.100	.162	.055	.100
6.91	7.87	5.58	2.54	4.11	1.40	2.54

H	J	K	L	wt
.030	.026	.065	.300	grams
0.76	0.66	1.65	7.62	.25

Demo Board MCL P/N: TB-03
Suggested PCB Layout (PL-052)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B 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

Electrical Specifications

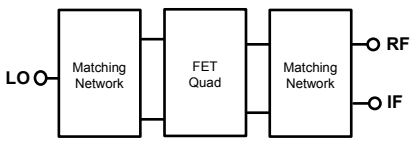
FREQUENCY (MHz)		CONVERSION LOSS (dB)			LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)
LO/RF	IF								
f_L-f_U		$\bar{X}$	σ	Max.	Typ.	Min.	Typ.	Min.	Typ.
400-900	DC-150*	6.8	0.1	9.5	40	31	26	18	24

1 dB COMP.: +14 dBm typ.
* Conversion Loss increases up to 10dB @ IF Frequency 120-150MHz.

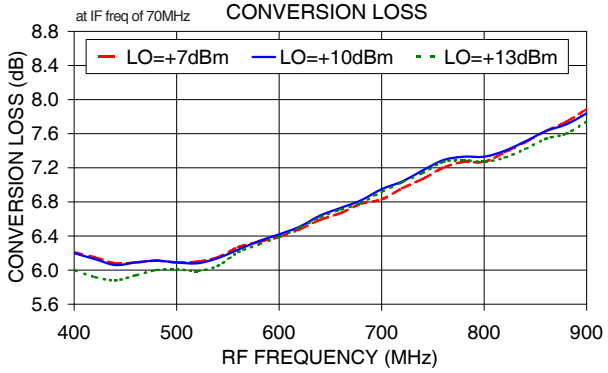
Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF PORT (:1)	VSWR LO PORT (:1)	IP3 (dBm)
RF	LO	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
400.10	470.10	6.20	40.91	29.23	1.96	23.19	19.62
420.10	490.10	6.13	41.31	29.59	1.97	21.89	19.85
460.10	530.10	6.09	41.99	29.79	2.03	18.94	20.67
500.10	570.10	6.09	42.30	29.06	2.15	15.20	22.3
520.10	590.10	6.08	42.21	28.27	2.18	13.20	22.9
540.10	610.10	6.14	41.80	27.41	2.21	11.41	23.42
580.10	650.10	6.34	40.68	26.00	2.39	8.37	25.68
600.10	670.10	6.42	39.89	25.43	2.49	7.13	27.57
620.10	690.10	6.51	39.15	24.94	2.58	6.08	28.71
640.10	710.10	6.64	38.42	24.58	2.62	5.23	28.63
680.10	750.10	6.82	37.37	24.21	2.79	4.05	28.3
700.10	770.10	6.95	37.26	24.10	2.91	3.65	26.13
740.10	810.10	7.17	37.77	24.14	2.98	3.21	24.34
760.10	830.10	7.29	38.66	24.35	3.04	3.13	25.79
780.10	850.10	7.33	39.66	24.66	3.06	3.12	29.27
800.10	870.10	7.33	39.87	25.06	3.02	3.17	28.2
840.10	910.10	7.51	39.14	25.81	3.07	3.37	28.53
860.10	930.10	7.63	38.82	25.96	3.18	3.51	28.36
880.10	950.10	7.71	38.55	25.93	3.26	3.66	27.7
900.10	970.10	7.84	38.38	25.96	3.31	3.83	27.45

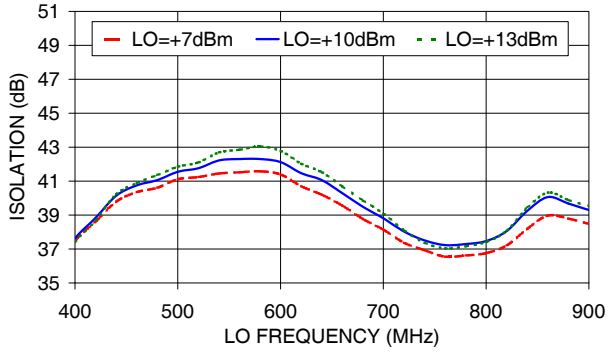
Electrical Schematic



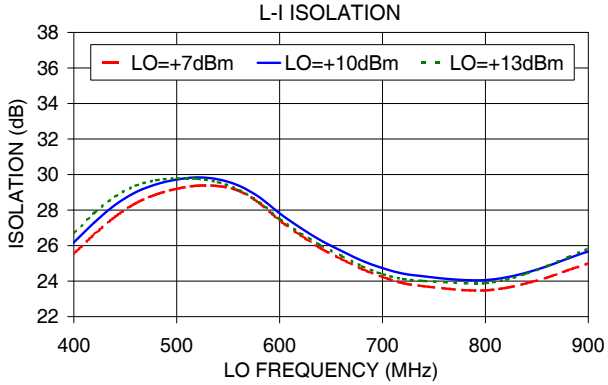
ADE-92LH+
at IF freq of 70MHz
CONVERSION LOSS



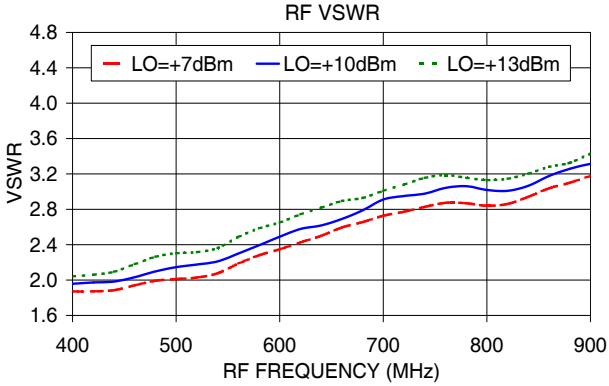
ADE-92LH+
L-R ISOLATION



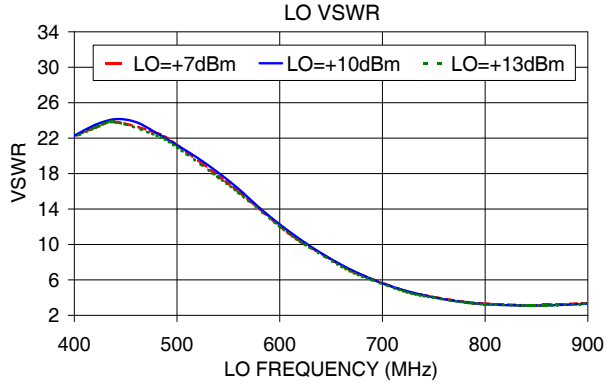
ADE-92LH+
L-I ISOLATION



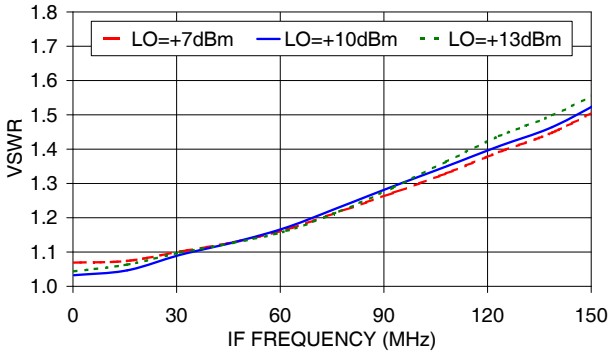
ADE-92LH+
RF VSWR



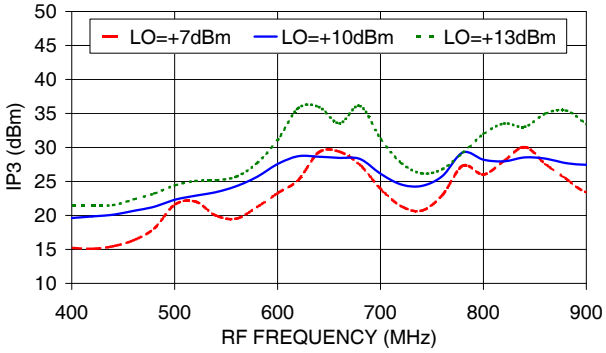
ADE-92LH+
LO VSWR



ADE-92LH+
IF VSWR



ADE-92LH+
IP3



Frequency Mixer ADE-92LH+

Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB) @LO (dBm)		
		+7	+10	+13
200.1	270.1	11.48	11.36	10.96
220.1	290.1	10.44	10.25	9.91
240.1	310.1	9.30	9.10	8.72
260.1	330.1	8.18	8.11	7.68
280.1	350.1	7.55	7.53	7.12
300.1	370.1	7.11	7.10	6.75
320.1	390.1	6.86	6.82	6.54
340.1	410.1	6.62	6.57	6.32
360.1	430.1	6.42	6.40	6.18
380.1	450.1	6.30	6.29	6.09
400.1	470.1	6.21	6.20	6.00
420.1	490.1	6.15	6.13	5.92
440.1	510.1	6.08	6.06	5.88
460.1	530.1	6.09	6.09	5.94
480.1	550.1	6.11	6.11	6.00
500.1	570.1	6.09	6.09	6.01
520.1	590.1	6.10	6.08	5.99
540.1	610.1	6.15	6.14	6.05
560.1	630.1	6.27	6.24	6.21
580.1	650.1	6.33	6.34	6.30
600.1	670.1	6.39	6.42	6.39
620.1	690.1	6.48	6.51	6.50
640.1	710.1	6.59	6.64	6.62
660.1	730.1	6.67	6.73	6.71
680.1	750.1	6.78	6.82	6.79
700.1	770.1	6.83	6.95	6.92
720.1	790.1	6.96	7.04	7.03
740.1	810.1	7.07	7.17	7.14
760.1	830.1	7.20	7.29	7.27
780.1	850.1	7.27	7.33	7.29
800.1	870.1	7.27	7.33	7.27
820.1	890.1	7.38	7.40	7.32
840.1	910.1	7.50	7.51	7.42
860.1	930.1	7.63	7.63	7.54
880.1	950.1	7.74	7.71	7.60
900.1	970.1	7.89	7.84	7.74
920.1	990.1	8.06	7.99	7.86
940.1	1010.1	8.19	8.11	7.96
960.1	1030.1	8.35	8.25	8.09
980.1	1050.1	8.51	8.38	8.20
1000.1	1070.1	8.72	8.58	8.40
1020.1	1090.1	8.89	8.74	8.55
1040.1	1110.1	9.06	8.90	8.69
1060.1	1130.1	9.23	9.06	8.84
1080.1	1150.1	9.46	9.27	9.04
1100.1	1170.1	9.73	9.52	9.28
1120.1	1190.1	9.92	9.71	9.48
1140.1	1210.1	10.11	9.88	9.64
1160.1	1230.1	10.32	10.07	9.81
1180.1	1250.1	10.55	10.30	10.03
1200.1	1270.1	10.80	10.56	10.29

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+7	+10	+13	+7	+10	+13
200.1	26.09	25.85	25.63	16.87	17.12	17.30
220.1	25.00	24.94	24.86	16.21	16.51	16.71
240.1	24.47	24.47	24.38	16.42	16.75	16.98
260.1	24.69	24.70	24.59	17.19	17.55	17.80
280.1	25.55	25.57	25.47	18.29	18.65	18.93
300.1	26.95	26.97	26.91	19.47	19.88	20.17
320.1	28.78	28.84	28.79	20.88	21.35	21.71
340.1	31.40	31.60	31.67	22.34	22.88	23.31
360.1	33.71	33.92	33.91	23.56	24.12	24.58
380.1	35.64	35.83	35.69	24.60	25.20	25.72
400.1	37.48	37.63	37.43	25.56	26.19	26.72
420.1	38.62	38.84	38.68	26.64	27.31	27.85
440.1	39.79	40.14	40.22	27.62	28.29	28.76
460.1	40.35	40.75	40.88	28.38	29.00	29.37
480.1	40.61	41.06	41.36	28.88	29.45	29.68
500.1	41.11	41.55	41.85	29.20	29.72	29.78
520.1	41.24	41.76	42.10	29.37	29.84	29.76
540.1	41.45	42.22	42.69	29.35	29.73	29.57
560.1	41.52	42.30	42.85	29.09	29.38	29.14
580.1	41.58	42.30	43.04	28.40	28.73	28.45
600.1	41.39	42.12	42.78	27.41	27.81	27.50
620.1	40.70	41.47	42.03	26.59	27.01	26.70
640.1	40.20	41.06	41.53	25.84	26.29	26.02
660.1	39.56	40.29	40.69	25.24	25.70	25.42
680.1	38.77	39.49	39.86	24.68	25.15	24.84
700.1	38.14	38.81	39.09	24.23	24.73	24.39
720.1	37.37	38.03	38.11	23.88	24.42	24.12
740.1	36.93	37.51	37.37	23.71	24.27	24.01
760.1	36.55	37.23	37.04	23.59	24.14	23.94
780.1	36.62	37.29	37.16	23.49	24.06	23.88
800.1	36.76	37.47	37.42	23.48	24.06	23.89
820.1	37.21	38.06	38.07	23.62	24.21	24.08
840.1	38.19	39.25	39.44	23.88	24.48	24.42
860.1	38.97	40.06	40.32	24.20	24.84	24.85
880.1	38.79	39.68	39.89	24.61	25.27	25.34
900.1	38.48	39.30	39.54	24.99	25.67	25.82
920.1	38.20	38.98	39.29	25.27	25.95	26.19
940.1	38.06	38.66	39.06	25.35	25.96	26.22
960.1	37.99	38.44	38.94	25.39	25.90	26.11
980.1	37.88	38.32	38.87	25.64	26.02	26.19
1000.1	38.06	38.47	39.05	26.01	26.34	26.46
1020.1	38.21	38.69	39.19	26.52	26.75	26.84
1040.1	38.49	39.04	39.42	27.07	27.28	27.35
1060.1	38.76	39.19	39.53	27.66	27.86	27.87
1080.1	39.27	39.63	40.03	28.14	28.35	28.32
1100.1	39.99	40.10	40.56	28.60	28.85	28.76
1120.1	40.74	40.45	40.85	29.09	29.37	29.26
1140.1	41.50	40.82	41.22	29.64	29.96	29.81
1160.1	41.88	41.39	41.68	30.27	30.44	30.33
1180.1	42.37	42.25	42.34	30.76	30.81	30.74
1200.1	42.71	42.60	42.58	31.21	31.31	31.22

Typical Performance Data

RF (MHz)	LO (MHz)	IP3 Input (dBm)		
		@LO (dBm) +7	@LO (dBm) +10	@LO (dBm) +13
200.1	270.1	15.94	17.93	22.67
220.1	290.1	22.04	18.62	27.97
240.1	310.1	18.34	16.96	21.09
260.1	330.1	11.84	16.15	17.47
280.1	350.1	11.37	16.68	18.14
300.1	370.1	12.88	17.63	19.87
320.1	390.1	14.07	18.27	21.27
340.1	410.1	14.24	18.76	21.59
360.1	430.1	14.66	19.16	21.36
380.1	450.1	15.29	19.39	21.42
400.1	470.1	15.22	19.62	21.44
420.1	490.1	15.08	19.85	21.45
440.1	510.1	15.46	20.10	21.52
460.1	530.1	16.35	20.67	22.35
480.1	550.1	18.07	21.27	23.21
500.1	570.1	21.58	22.30	24.42
520.1	590.1	22.04	22.90	25.06
540.1	610.1	19.98	23.42	25.17
560.1	630.1	19.53	24.31	25.72
580.1	650.1	21.23	25.68	27.70
600.1	670.1	23.28	27.57	31.09
620.1	690.1	25.20	28.71	35.77
640.1	710.1	29.29	28.63	35.96
660.1	730.1	29.37	28.46	33.54
680.1	750.1	27.42	28.30	36.11
700.1	770.1	23.91	26.13	31.27
720.1	790.1	21.36	24.55	27.73
740.1	810.1	20.70	24.34	26.18
760.1	830.1	22.99	25.79	26.81
780.1	850.1	27.33	29.27	29.23
800.1	870.1	26.02	28.20	31.98
820.1	890.1	28.03	27.96	33.52
840.1	910.1	30.06	28.53	33.03
860.1	930.1	27.58	28.36	34.97
880.1	950.1	25.41	27.70	35.44
900.1	970.1	23.43	27.45	33.43
920.1	990.1	23.96	27.57	30.99
940.1	1010.1	27.47	28.67	31.76
960.1	1030.1	30.13	28.51	35.22
980.1	1050.1	25.56	27.25	36.31
1000.1	1070.1	23.10	25.98	31.35
1020.1	1090.1	21.52	25.24	29.45
1040.1	1110.1	20.40	24.46	27.90
1060.1	1130.1	19.31	23.68	25.81
1080.1	1150.1	18.32	23.10	24.00
1100.1	1170.1	17.54	22.83	22.87
1120.1	1190.1	17.25	22.85	22.28
1140.1	1210.1	17.35	23.62	22.18
1160.1	1230.1	17.87	26.84	22.55
1180.1	1250.1	18.90	25.96	23.72
1200.1	1270.1	18.85	21.24	25.72

Typical Performance Data

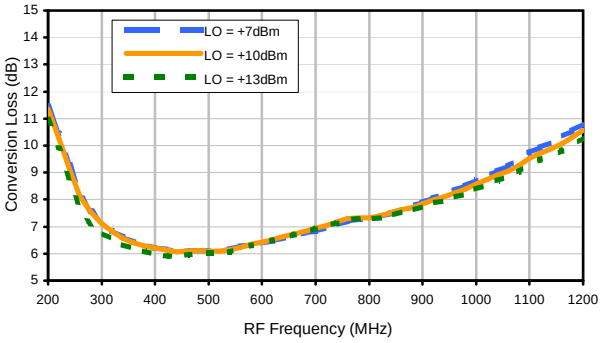
RF/LO (MHz)	RF VSWR (:1) @LO (dBm)			LO VSWR (:1) @LO (dBm)		
	+7	+10	+13	+7	+10	+13
280.1	2.20	2.18	2.19	11.09	10.96	10.96
300.1	2.06	2.08	2.09	13.29	13.19	13.19
320.1	1.98	2.03	2.03	15.53	15.67	15.53
340.1	1.92	1.96	1.99	17.75	17.93	17.75
360.1	1.90	1.95	2.02	19.76	19.76	19.54
380.1	1.89	1.95	2.04	21.20	21.20	20.95
420.1	1.87	1.97	2.06	23.18	23.49	23.18
440.1	1.89	1.98	2.09	23.81	24.14	23.81
480.1	1.99	2.10	2.26	22.58	22.58	22.29
500.1	2.01	2.15	2.30	21.20	21.20	20.95
540.1	2.08	2.21	2.36	17.75	18.11	17.57
560.1	2.19	2.30	2.49	15.96	16.26	15.81
600.1	2.35	2.49	2.65	12.09	12.26	12.01
620.1	2.43	2.58	2.74	10.37	10.56	10.31
660.1	2.59	2.69	2.89	7.63	7.70	7.50
680.1	2.66	2.79	2.93	6.53	6.56	6.39
720.1	2.77	2.95	3.08	4.83	4.86	4.74
740.1	2.83	2.98	3.16	4.27	4.28	4.19
780.1	2.87	3.06	3.16	3.51	3.49	3.45
800.1	2.84	3.02	3.13	3.30	3.27	3.24
840.1	2.94	3.07	3.20	3.14	3.11	3.10
860.1	3.04	3.18	3.28	3.18	3.13	3.13
900.1	3.18	3.31	3.43	3.37	3.31	3.31
920.1	3.25	3.34	3.49	3.50	3.44	3.45
960.1	3.45	3.52	3.62	3.81	3.74	3.76
980.1	3.52	3.58	3.71	3.98	3.91	3.93
1020.1	3.70	3.70	3.90	4.31	4.25	4.28
1040.1	3.81	3.80	3.99	4.46	4.41	4.43
1080.1	4.01	4.00	4.24	4.75	4.68	4.72
1100.1	4.11	4.09	4.32	4.91	4.86	4.88
1140.1	4.37	4.36	4.51	5.10	5.04	5.07
1160.1	4.48	4.48	4.68	5.20	5.14	5.16
1200.1	4.70	4.75	4.89	5.36	5.31	5.33

IF (MHz)	IF VSWR (:1) @LO (dBm)		
	+7	+10	+13
0.3	1.07	1.03	1.04
15.7	1.07	1.05	1.06
31.1	1.10	1.09	1.10
46.4	1.13	1.13	1.13
61.8	1.17	1.17	1.16
77.2	1.22	1.23	1.22
92.6	1.27	1.29	1.29
107.9	1.33	1.35	1.36
123.3	1.39	1.41	1.44
138.7	1.45	1.46	1.50
154.1	1.53	1.55	1.58
169.4	1.61	1.64	1.66
184.8	1.69	1.72	1.75
200.2	1.73	1.77	1.82
215.6	1.70	1.73	1.81
231.0	1.64	1.65	1.75
246.3	1.55	1.56	1.67
261.7	1.48	1.49	1.59
277.1	1.45	1.46	1.56
292.5	1.44	1.45	1.54
307.8	1.44	1.45	1.54
323.2	1.45	1.47	1.55
338.6	1.48	1.50	1.58
354.0	1.52	1.54	1.63
369.3	1.56	1.59	1.67
384.7	1.60	1.63	1.71
400.1	1.64	1.67	1.75
415.5	1.68	1.71	1.80
430.9	1.74	1.77	1.87
446.2	1.79	1.82	1.93
461.6	1.82	1.85	1.97
477.0	1.85	1.88	2.01
492.4	1.87	1.91	2.04
507.7	1.91	1.96	2.08
523.1	1.97	2.03	2.16
538.5	2.03	2.08	2.23
553.9	2.07	2.10	2.27
569.2	2.10	2.13	2.31
584.6	2.13	2.16	2.34
600.0	2.17	2.20	2.37

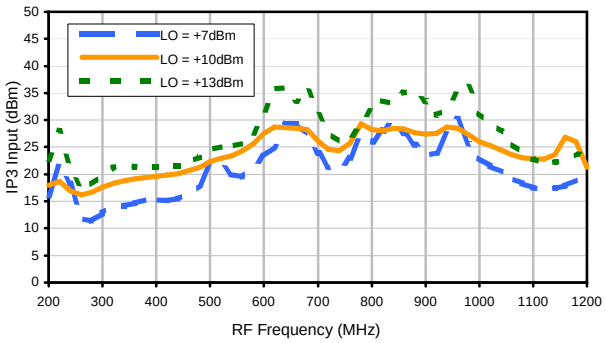
Frequency Mixer ADE-92LH+

Typical Performance Curves

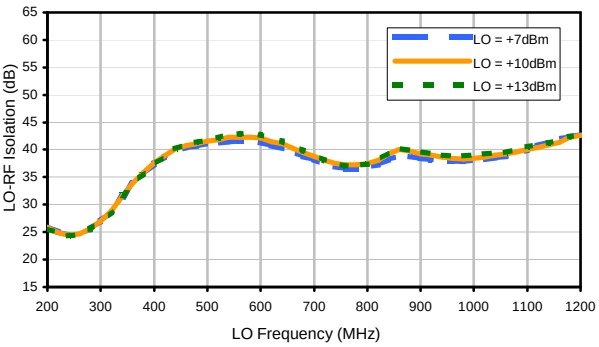
Conversion Loss



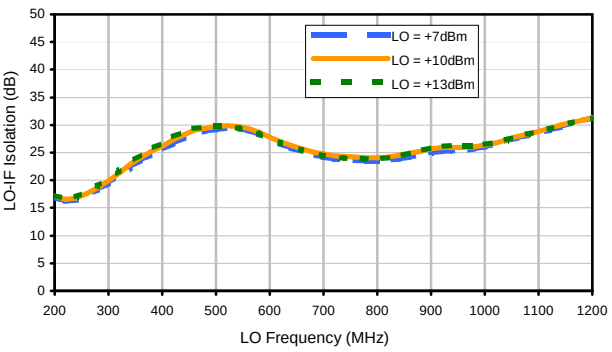
IP3 Input



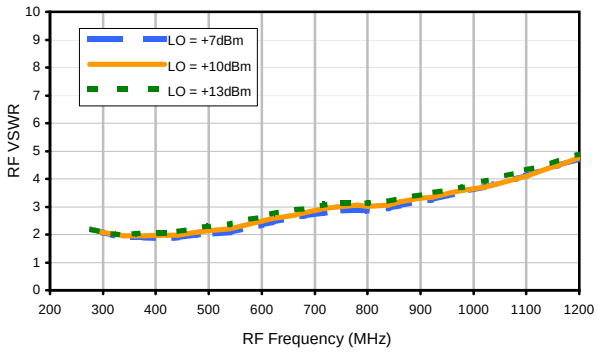
LO-RF Isolation



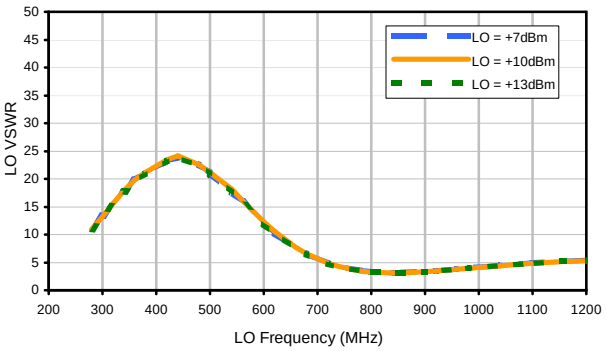
LO-IF Isolation



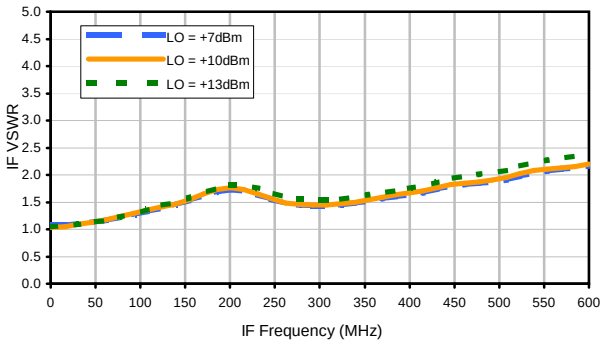
RF VSWR



LO VSWR



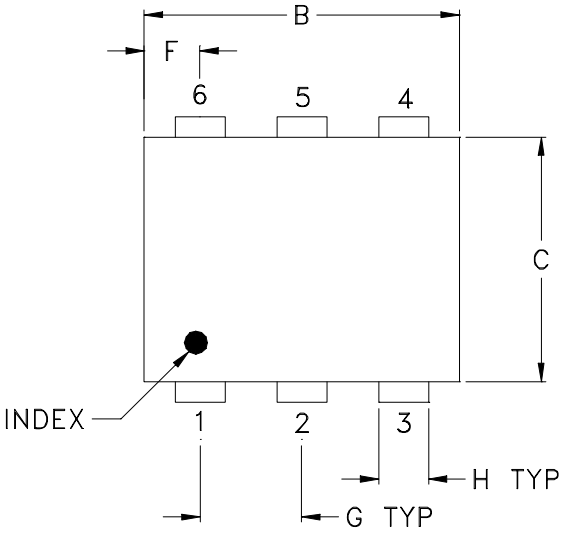
IF VSWR

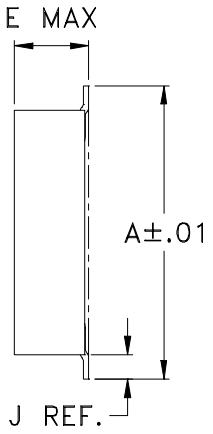


Case Style CD

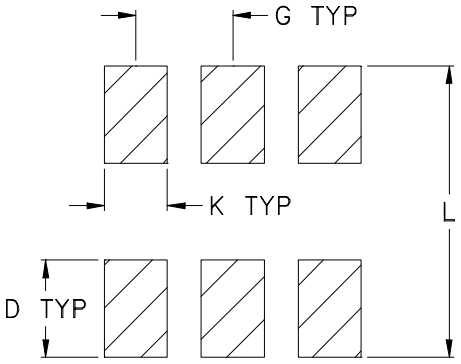
CD541
CD542
CD636
CD637

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, GRAM
CD541	.272 (6.91)	.310 (7.87)	.220 (5.58)	.100 (2.54)	.082 (2.08)	.055 (1.40)	.100 (2.54)	.030 (0.76)	.026 (0.66)	.065 (1.65)	.300 (7.62)	.15
CD542					.112 (2.84)							.20
CD636					.162 (4.11)							.25
CD637					.206 (5.23)							.40

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

Notes:

1. Case material: Plastic.
2. 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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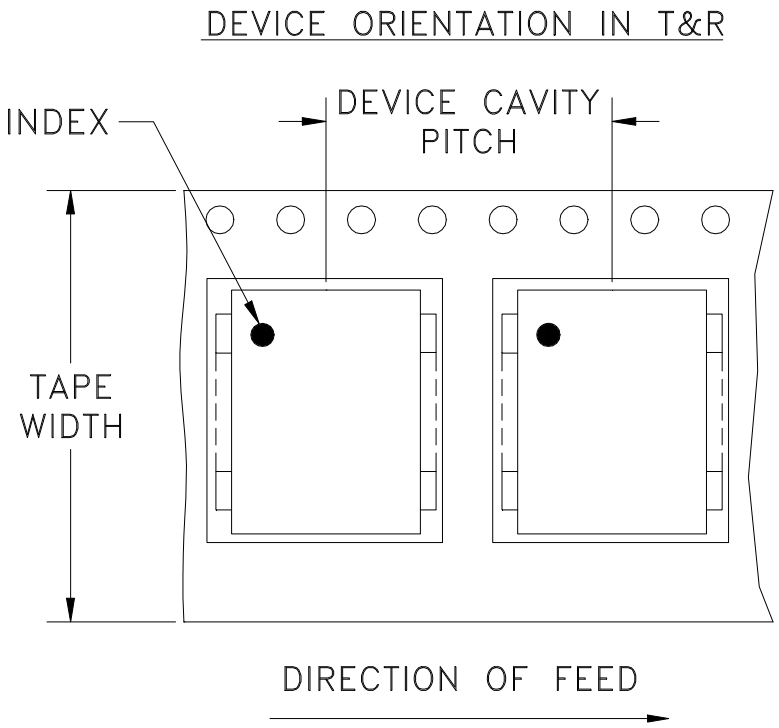
Tape & Reel Packaging TR-F34



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

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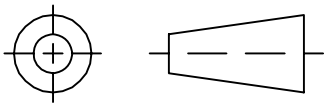
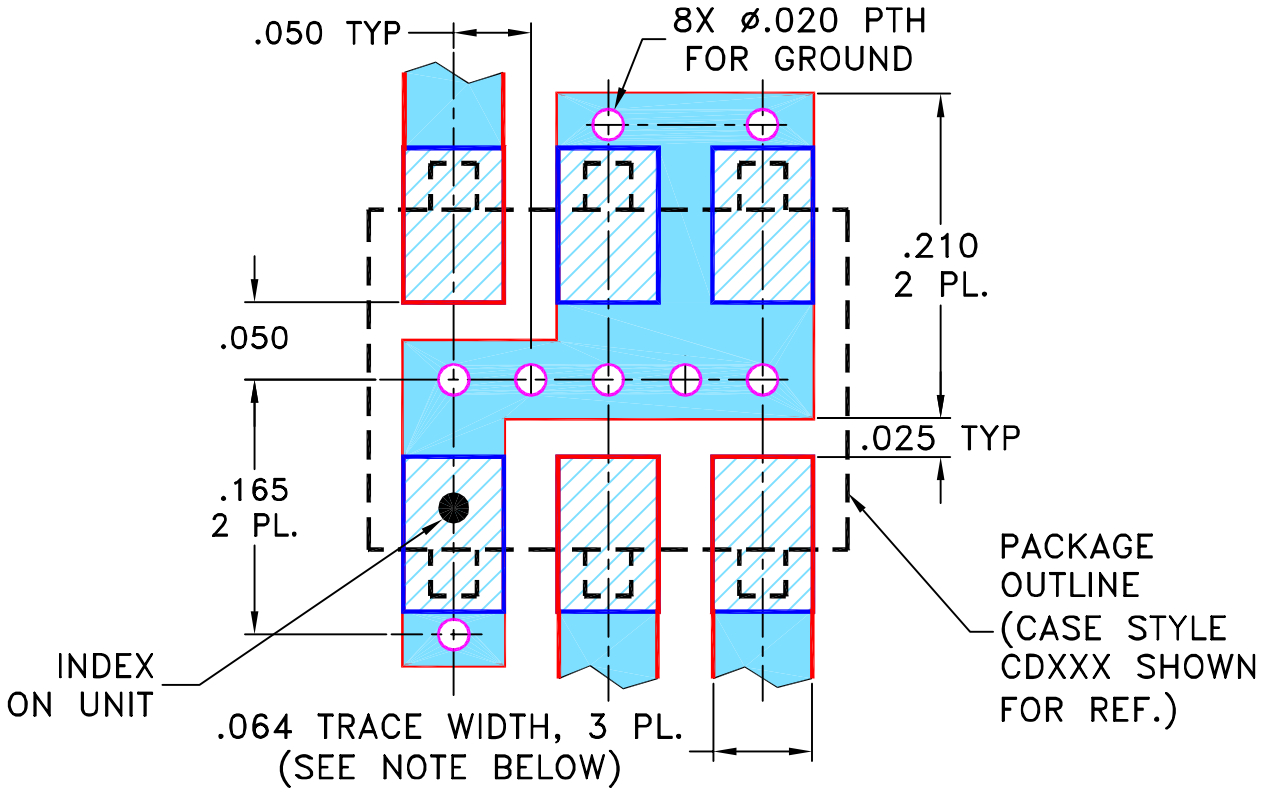
THIRD ANGLE PROJECTION



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 RO4350B 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		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	MMG	07/17/02
TOLERANCES ON:	CHECKED	WL	08/02/02
2 PL DECIMALS ±	APPROVED	DJ	08/05/02
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

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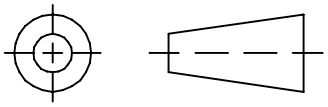
PL, gk/ht/hu/nd/w, BH292, CD541/542/636/637, TT100/240, TB-03

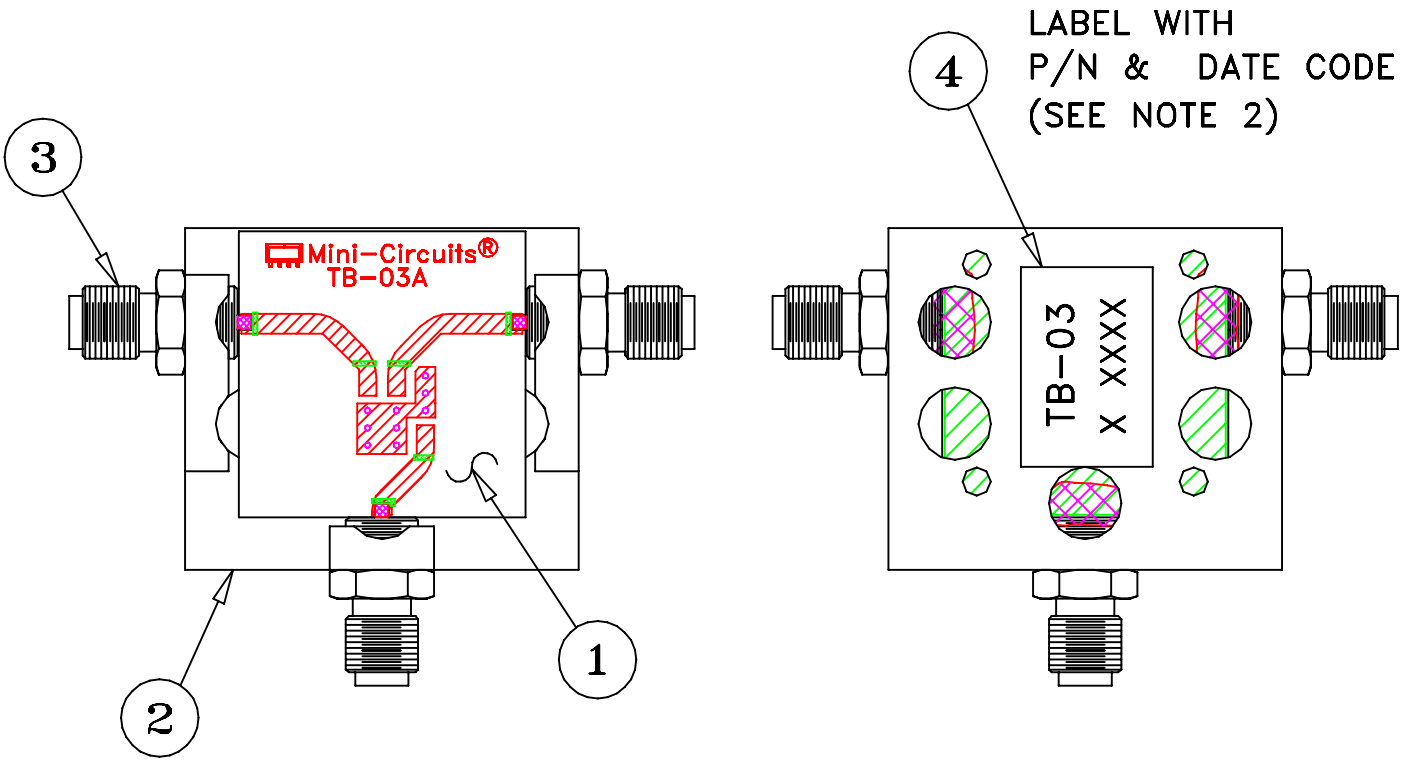
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-052	C

FILE:	SCALE:	SHEET:
98PL052	8:1	1 OF 1

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	DRAWN	S.WOLYNSKI	06.29.99
TOLERANCES ON:	CHECKED	SG	07.06.99
2 PL DECIMALS ±	APPROVED	MG	07.10.99
3 PL DECIMALS ±			
ANGLES ±			
FRACTIONS ±			

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

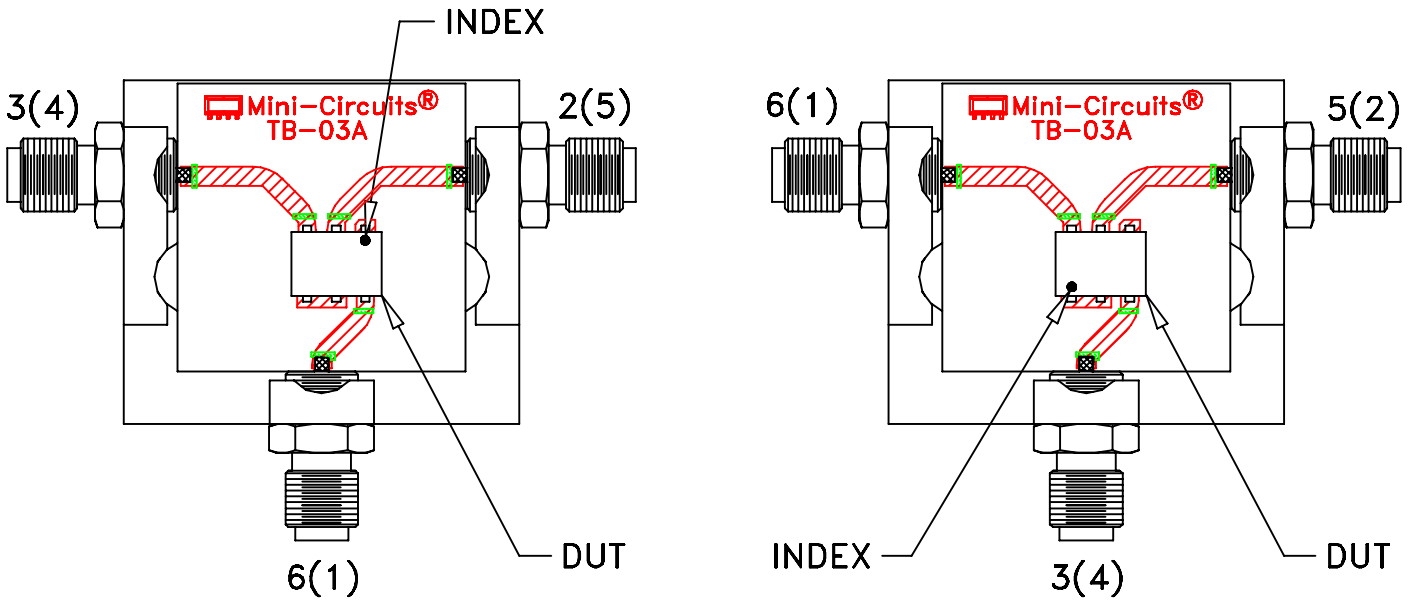
TB,ADE,CD542/636,06MX01,50

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	TB-03-20	H

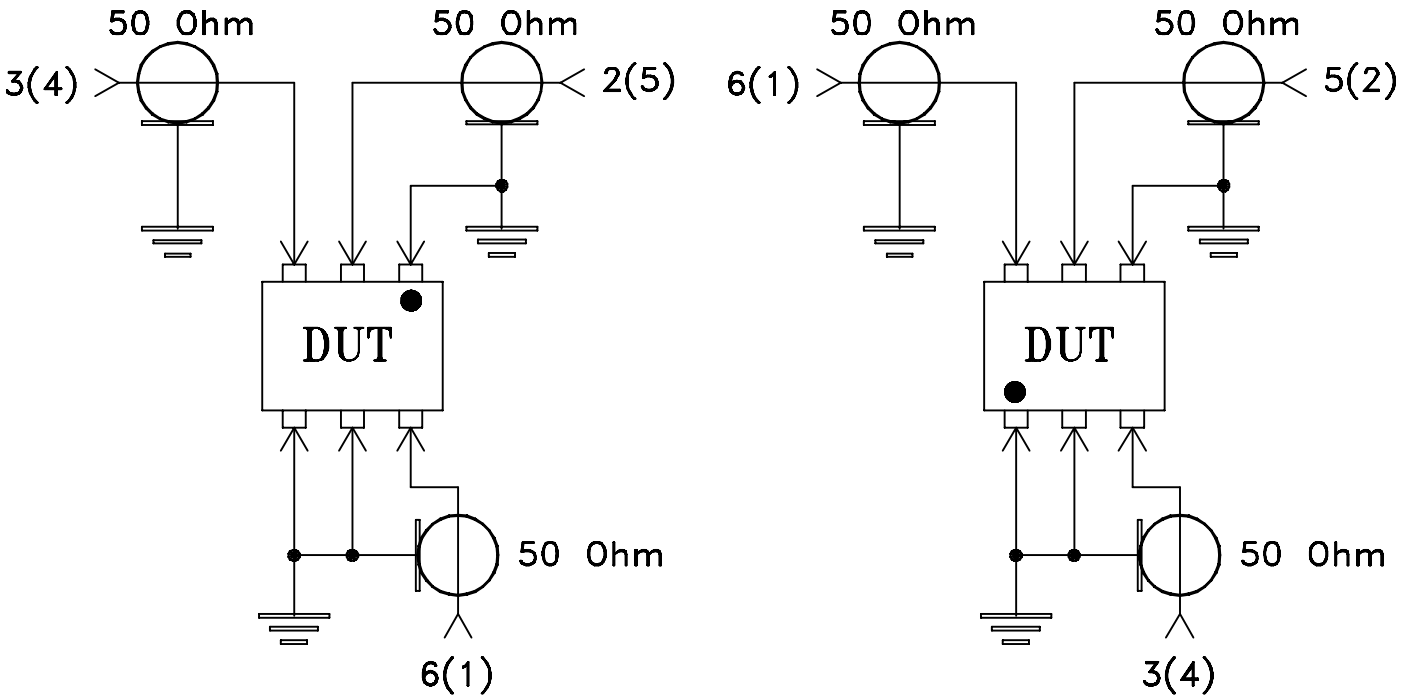
FILE:	SCALE:	SHEET:
WTB-03	1.5:1	1 OF 2

Evaluation Board and Circuit

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



TB-03



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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Environmental Specifications ENV03T2

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
HAST	130°C, 85% RH, 96 hours	JESD22-A110
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 Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
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