Surface Mount

Frequency Mixer

ADE-1ASK+

Level 7 (LO Power +7 dBm) 2 to 600 MHz



Generic photo used for illustration purposes only

CASE STYLE: CD542

+RoHS Compliant

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200
13"	500, 1000

Maximum Ratings

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

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

Pin Connections

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

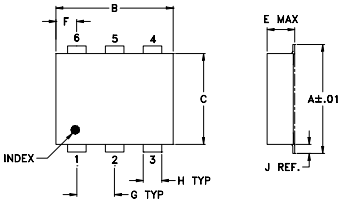
Features

- low conversion loss, 5.3 dB typ.
- excellent L-R isolation, 50 dB typ.
- low profile package
- aqueous washable
- protected by U.S. Patent 6,133,525

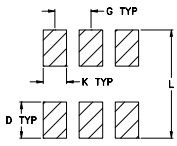
Applications

- VSAT systems
- instrumentation
- cellular

Outline Drawing



PCB Land Pattern



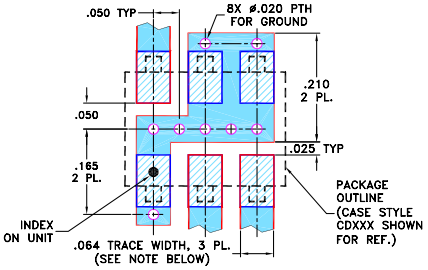
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.272	.310	.220	.100	.112	.055	.100
6.91	7.87	5.59	2.54	2.84	1.40	2.54

H	J	K	L	wt
.030	.026	.065	.300	grams
0.76	0.66	1.65	7.62	0.20

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)
		Mid-Band m			Total Range	L		M		U		L		M		U		
LO/RF	IF																	
f_L-f_U		$\overline{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.
2-600	DC-600	5.3	0.10	6.5	7.5	55	45	50	30	40	25	50	40	45	24	35	18	16

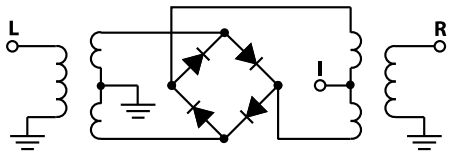
1 dB COMP.: +1 dBm typ.
Phase detection, positive polarity

L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U = upper range [f_U/2 to f_U]
m= mid band [2f_L to f_U/2]

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
1.00	31.00	6.13	67.70	64.10	1.38	2.58
2.00	32.00	5.68	67.90	64.20	1.22	2.55
2.18	32.18	5.68	67.90	64.00	1.21	2.52
4.73	34.73	5.45	66.90	64.10	1.12	2.55
10.29	40.29	5.40	66.00	63.10	1.09	2.52
22.37	52.37	5.49	63.30	61.10	1.07	2.52
48.66	78.66	5.44	59.70	57.50	1.04	2.52
105.82	135.82	5.42	54.50	52.40	1.00	2.52
230.13	260.13	5.49	48.90	47.20	1.05	2.61
500.50	530.50	5.96	46.80	38.20	1.25	2.88
556.00	586.00	6.18	47.40	36.40	1.20	2.92
600.00	630.00	6.29	45.90	35.20	1.21	2.96
611.50	641.50	6.31	45.10	35.00	1.21	2.88
667.00	697.00	6.43	42.60	31.90	1.26	3.21
722.50	752.50	6.81	41.00	30.90	1.38	3.01
778.00	808.00	6.93	38.60	29.20	1.58	3.21
833.50	863.50	7.22	36.80	28.10	1.78	3.38
889.00	919.00	7.46	35.20	28.60	1.99	3.16
944.50	974.50	7.58	33.10	26.60	2.25	3.64
1000.00	1030.00	7.83	30.70	24.00	2.49	3.64

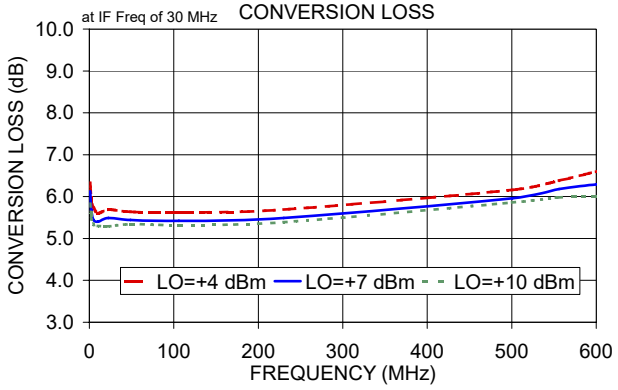
Electrical Schematic



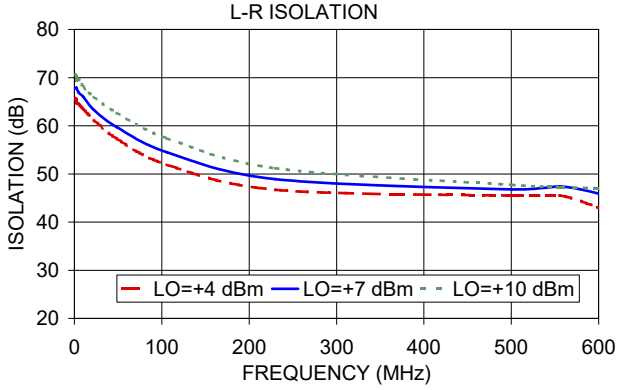
Notes

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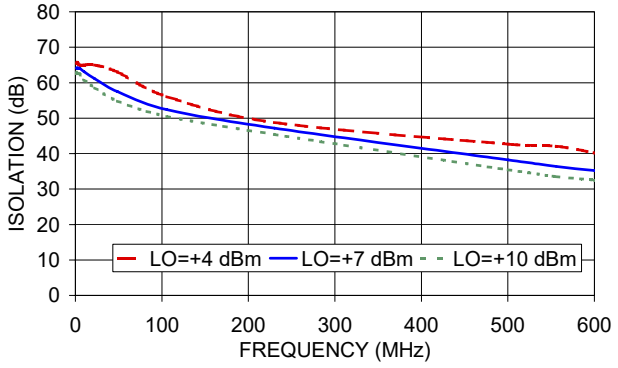
ADE-1ASK
at IF Freq of 30 MHz CONVERSION LOSS



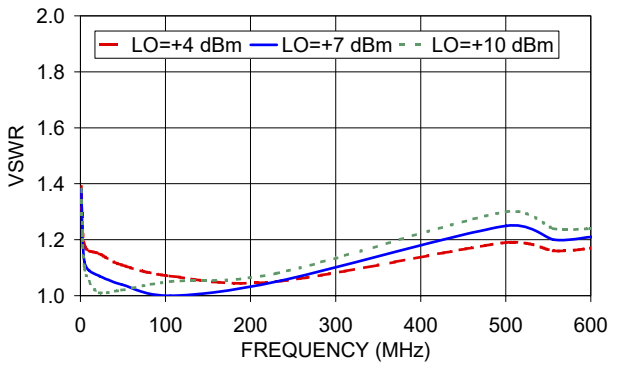
ADE-1ASK
L-R ISOLATION



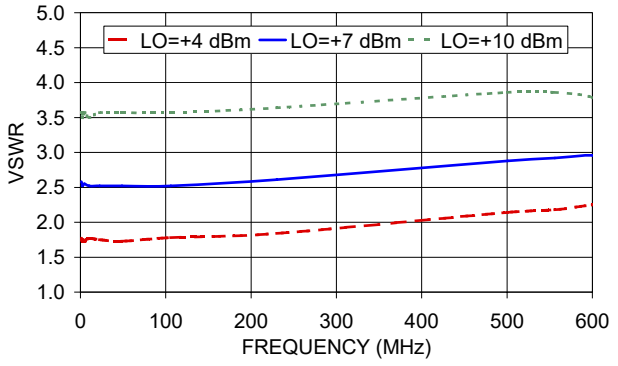
ADE-1ASK
L-I ISOLATION



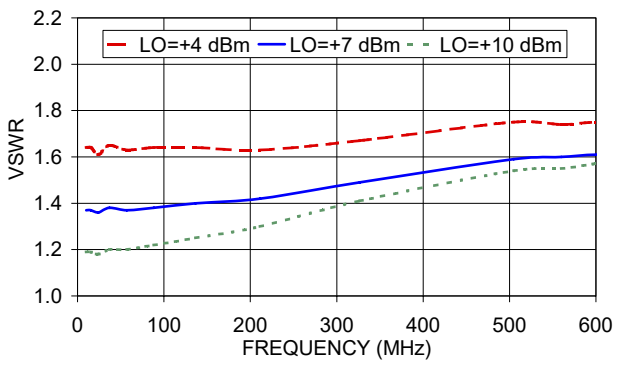
ADE-1ASK
RF VSWR



ADE-1ASK
LO VSWR



ADE-1ASK
IF VSWR



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Frequency Mixer ADE-1ASK+

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	6.33	6.13	5.83
2.0	32.0	5.98	5.68	5.58
2.2	32.2	5.88	5.68	5.48
4.7	34.7	5.75	5.45	5.35
10.1	40.1	5.62	5.38	5.25
50.1	80.1	5.59	5.35	5.21
90.1	120.1	5.62	5.37	5.24
170.1	200.1	5.65	5.41	5.30
210.1	240.1	5.68	5.46	5.32
250.1	280.1	5.71	5.49	5.35
290.1	320.1	5.74	5.50	5.36
330.1	360.1	5.83	5.58	5.43
350.1	380.1	5.83	5.60	5.45
390.1	420.1	5.86	5.58	5.41
410.1	440.1	5.88	5.58	5.42
450.1	480.1	5.99	5.72	5.52
470.1	500.1	6.04	5.78	5.60
510.1	540.1	6.10	5.87	5.70
570.1	600.1	6.25	5.90	5.68
590.1	620.1	6.29	5.89	5.68
630.1	660.1	6.52	5.96	5.68
650.1	680.1	6.67	6.03	5.70
690.1	720.1	7.03	6.25	5.81
710.1	740.1	7.17	6.41	5.88
750.1	780.1	7.35	6.64	6.06
770.1	800.1	7.45	6.79	6.21
810.1	840.1	7.62	7.06	6.54
870.1	900.1	7.80	7.36	6.96
890.1	920.1	7.82	7.37	7.00
930.1	960.1	7.83	7.37	7.05
950.1	980.1	7.82	7.37	7.08
990.1	1020.1	7.81	7.42	7.18
1010.1	1040.1	7.89	7.51	7.30
1050.1	1080.1	8.03	7.70	7.52
1070.1	1100.1	8.17	7.87	7.72
1110.1	1140.1	8.47	8.18	8.08
1170.1	1200.1	9.10	8.85	8.79
1190.1	1220.1	9.33	9.07	9.02
1230.1	1260.1	9.90	9.63	9.57
1250.1	1280.1	10.22	9.93	9.84

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
10.1	40.1	20.53	23.89	24.57
50.1	80.1	25.78	24.49	23.75
90.1	120.1	20.19	21.34	23.32
130.1	160.1	22.55	22.09	18.90
170.1	200.1	24.23	19.41	18.17
210.1	240.1	19.25	16.93	17.29
250.1	280.1	18.72	16.51	19.36
290.1	320.1	16.16	17.21	19.33
330.1	360.1	14.72	13.32	17.43
350.1	380.1	16.30	15.81	16.31
390.1	420.1	22.24	33.70	21.60
410.1	440.1	25.98	19.89	22.04
450.1	480.1	12.19	14.64	19.77
470.1	500.1	11.10	11.60	14.10
510.1	540.1	9.54	10.02	10.95
530.1	560.1	9.55	10.32	11.64
570.1	600.1	9.99	12.03	16.30
590.1	620.1	11.24	14.85	23.07
630.1	660.1	11.21	19.77	17.15
650.1	680.1	10.34	18.98	19.94
690.1	720.1	7.96	15.96	16.29
710.1	740.1	7.19	13.05	17.56
750.1	780.1	7.93	11.22	18.02
770.1	800.1	8.11	11.02	17.07
810.1	840.1	8.67	11.06	15.53
830.1	860.1	8.88	10.88	12.90
870.1	900.1	10.00	11.95	13.81
890.1	920.1	10.07	12.14	13.68
930.1	960.1	11.06	12.97	13.92
950.1	980.1	11.71	13.86	15.82
990.1	1020.1	12.09	14.74	14.33
1010.1	1040.1	12.96	14.75	15.30
1050.1	1080.1	11.07	12.28	13.70
1070.1	1100.1	10.29	11.54	12.12
1110.1	1140.1	9.93	11.12	11.95
1130.1	1160.1	10.03	11.22	11.57
1170.1	1200.1	10.74	11.29	13.01
1190.1	1220.1	10.71	13.12	13.22
1230.1	1260.1	10.85	13.23	15.40
1250.1	1280.1	9.67	13.21	14.28

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	1.52	1.14	0.95
50.1	80.1	1.27	0.83	0.68
90.1	120.1	1.13	0.87	0.72
130.1	160.1	1.07	0.78	0.65
170.1	200.1	1.23	0.85	0.65
210.1	240.1	1.11	0.80	0.63
250.1	280.1	1.10	0.77	0.61
290.1	320.1	1.10	0.91	0.71
330.1	360.1	1.05	0.84	0.66
350.1	380.1	0.99	0.81	0.64
390.1	420.1	1.02	0.83	0.64
410.1	440.1	1.08	0.92	0.77
450.1	480.1	1.16	0.94	0.77
470.1	500.1	1.18	1.01	0.73
510.1	540.1	1.43	1.18	1.00
530.1	560.1	1.53	1.29	1.00
570.1	600.1	1.69	1.32	1.24
590.1	620.1	1.77	1.42	1.19
630.1	660.1	1.96	1.62	1.41
650.1	680.1	1.96	1.68	1.42
690.1	720.1	1.67	1.68	1.58
710.1	740.1	1.73	1.78	1.56
750.1	780.1	1.61	1.62	1.55
770.1	800.1	1.65	1.57	1.49
810.1	840.1	1.52	1.45	1.37
830.1	860.1	1.45	1.41	1.17
870.1	900.1	1.47	1.20	1.22
890.1	920.1	1.48	1.35	1.08
930.1	960.1	1.57	1.26	1.26
950.1	980.1	1.59	1.38	1.12
990.1	1020.1	1.59	1.29	1.07
1010.1	1040.1	1.57	1.22	1.10
1050.1	1080.1	1.42	1.23	0.98
1070.1	1100.1	1.44	1.15	0.94
1110.1	1140.1	1.41	0.94	0.75
1130.1	1160.1	1.40	0.83	0.70
1170.1	1200.1	1.27	0.75	0.67
1190.1	1220.1	1.21	0.87	0.57
1230.1	1260.1	1.11	0.71	0.60
1250.1	1280.1	1.14	0.77	0.60

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=300.1MHz (dB)
		@LO (dBm)
		+7
290.0	10.1	5.67
282.8	17.3	5.67
275.6	24.5	5.67
268.5	31.6	5.64
261.3	38.8	5.57
254.1	46.0	5.57
246.9	53.2	5.54
239.7	60.4	5.54
232.6	67.5	5.50
225.4	74.7	5.47
218.2	81.9	5.49
211.0	89.1	5.49
203.8	96.3	5.48
196.7	103.4	5.49
189.5	110.6	5.48
182.3	117.8	5.49
175.1	125.0	5.47
167.9	132.2	5.46
160.8	139.3	5.45
153.6	146.5	5.46
146.4	153.7	5.48
139.2	160.9	5.50
132.1	168.0	5.53
124.9	175.2	5.49
117.7	182.4	5.48
110.5	189.6	5.48
103.3	196.8	5.50
96.2	203.9	5.49
89.0	211.1	5.49
81.8	218.3	5.49
74.6	225.5	5.40
67.4	232.7	5.39
60.3	239.8	5.42
53.1	247.0	5.49
45.9	254.2	5.52
38.7	261.4	5.52
31.5	268.6	5.53
24.4	275.7	5.51
17.2	282.9	5.63
10.0	290.1	5.66

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm)
		+7
10.0	20.1	5.43
24.5	34.6	5.35
39.0	49.1	5.27
53.5	63.6	5.22
68.0	78.1	5.20
82.5	92.6	5.17
97.0	107.1	5.18
111.5	121.6	5.09
126.0	136.1	5.03
140.5	150.6	4.94
155.0	165.1	5.00
169.5	179.6	5.01
184.0	194.1	5.01
198.5	208.6	5.03
213.0	223.1	5.02
227.5	237.6	5.01
242.0	252.1	5.08
256.5	266.6	5.07
271.0	281.1	5.08
285.5	295.6	5.11
300.0	310.1	5.10
314.5	324.6	5.15
329.0	339.1	5.10
343.5	353.6	5.13
358.0	368.1	5.14
372.5	382.6	5.22
387.0	397.1	5.21
401.5	411.6	5.14
416.0	426.1	5.55
430.5	440.6	5.64
445.0	455.1	5.30
459.5	469.6	5.35
474.0	484.1	5.41
488.5	498.6	5.42
503.0	513.1	5.49
517.5	527.6	5.49
532.0	542.1	5.48
546.5	556.6	5.44
575.5	585.6	5.37
590.0	600.1	5.35

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=600.1MHz (dB)
		@LO (dBm)
		+7
590.0	10.1	6.08
575.1	25.0	6.01
560.3	39.8	5.96
545.4	54.7	5.94
530.5	69.6	5.90
515.6	84.5	5.88
500.8	99.3	5.86
485.9	114.2	5.86
471.0	129.1	5.83
456.2	143.9	5.85
441.3	158.8	5.90
426.4	173.7	5.91
411.5	188.6	5.86
396.7	203.4	5.85
381.8	218.3	5.87
366.9	233.2	5.88
352.1	248.0	5.90
337.2	262.9	5.88
322.3	277.8	5.89
307.4	292.7	5.88
292.6	307.5	5.89
277.7	322.4	5.92
262.8	337.3	5.91
247.9	352.2	5.93
233.1	367.0	5.92
218.2	381.9	5.94
203.3	396.8	5.93
188.5	411.6	5.90
173.6	426.5	5.90
158.7	441.4	5.95
143.8	456.3	5.96
129.0	471.1	6.04
114.1	486.0	6.07
99.2	500.9	6.08
84.4	515.7	6.11
69.5	530.6	6.11
54.6	545.5	6.12
39.7	560.4	6.14
24.9	575.2	6.11
10.0	590.1	5.76

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
1.0	65.70	67.70	70.60	65.50	64.10	62.90
2.0	65.40	67.90	70.30	65.40	64.20	62.60
2.2	64.80	67.90	69.50	65.70	64.00	62.50
4.7	64.50	66.90	69.60	65.00	64.10	62.50
10.1	66.91	72.51	77.06	58.18	51.70	64.23
50.1	67.72	76.48	88.12	55.41	53.98	53.76
90.1	61.36	66.99	77.09	49.85	49.00	48.46
170.1	54.35	59.13	64.29	43.96	43.64	43.40
210.1	52.13	56.36	60.24	42.31	41.90	41.69
250.1	50.06	53.78	56.67	41.01	40.61	40.31
290.1	48.58	51.80	54.34	39.77	39.48	38.83
330.1	46.17	49.18	51.69	38.74	38.40	37.77
350.1	44.93	47.49	49.79	38.27	37.58	37.07
390.1	43.50	45.40	46.93	37.57	36.94	36.19
410.1	43.13	45.04	46.47	37.14	36.47	35.72
450.1	42.91	44.38	44.88	36.01	35.04	34.21
470.1	42.44	43.60	44.00	35.46	34.17	33.23
510.1	41.71	42.57	42.71	34.86	33.18	31.84
570.1	40.26	41.12	41.00	33.69	31.80	30.39
590.1	39.72	40.66	40.58	33.22	31.25	29.65
630.1	38.55	39.58	39.22	31.65	29.70	28.20
650.1	37.84	38.79	38.65	30.81	28.98	27.58
690.1	36.07	36.88	37.04	28.79	27.30	26.05
710.1	35.17	35.95	36.13	28.07	26.36	25.15
750.1	33.54	34.37	34.63	27.23	25.48	24.03
770.1	33.06	33.84	34.11	26.77	25.04	23.52
810.1	32.32	33.12	33.33	25.82	24.08	22.61
870.1	31.14	31.82	32.08	24.70	23.08	21.66
890.1	30.82	31.43	31.63	24.13	22.61	21.11
930.1	30.05	30.48	30.36	23.37	21.87	20.27
950.1	29.63	29.89	29.61	23.04	21.49	19.82
990.1	28.72	28.48	27.83	22.04	20.47	18.72
1010.1	28.09	27.53	26.73	21.44	19.93	18.15
1050.1	27.03	25.88	24.96	20.56	19.07	17.39
1070.1	26.43	25.15	24.26	20.03	18.61	17.06
1110.1	25.10	23.61	22.69	18.86	17.76	16.41
1170.1	23.18	21.75	20.84	17.13	16.70	15.71
1190.1	22.54	21.09	20.22	16.60	16.28	15.44
1230.1	21.38	20.13	19.18	15.68	15.77	15.11
1250.1	20.82	19.58	18.67	15.23	15.40	14.87

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	42.01	38.27	36.20
50.1	80.1	33.78	33.97	33.74
90.1	120.1	28.98	29.35	29.64
130.1	160.1	26.85	26.63	26.88
170.1	200.1	25.05	25.36	25.53
210.1	240.1	24.04	24.27	24.40
250.1	280.1	23.53	23.86	24.06
290.1	320.1	23.36	23.91	24.26
330.1	360.1	23.46	23.77	24.15
350.1	380.1	23.55	23.82	24.14
390.1	420.1	23.96	24.53	24.91
410.1	440.1	24.04	24.92	25.58
450.1	480.1	23.95	24.93	25.76
470.1	500.1	23.52	24.10	24.71
510.1	540.1	21.76	21.93	22.07
530.1	560.1	20.72	20.76	20.69
570.1	600.1	18.91	18.75	18.59
590.1	620.1	18.32	18.13	18.02
630.1	660.1	17.55	17.41	17.39
650.1	680.1	17.35	17.32	17.36
690.1	720.1	17.12	17.15	17.31
710.1	740.1	17.19	17.16	17.30
750.1	780.1	17.26	17.06	17.04
770.1	800.1	17.23	16.96	16.88
810.1	840.1	17.13	16.81	16.60
830.1	860.1	16.97	16.68	16.42
870.1	900.1	16.54	16.22	15.93
890.1	920.1	16.16	15.91	15.59
930.1	960.1	15.30	15.04	14.90
950.1	980.1	14.66	14.46	14.32
990.1	1020.1	13.45	13.27	13.13
1010.1	1040.1	12.75	12.58	12.36
1050.1	1080.1	11.55	11.30	10.98
1070.1	1100.1	10.92	10.61	10.28
1110.1	1140.1	9.72	9.35	9.01
1130.1	1160.1	9.16	8.77	8.41
1170.1	1200.1	8.16	7.76	7.34
1190.1	1220.1	7.70	7.28	6.90
1230.1	1260.1	6.90	6.49	6.09
1250.1	1280.1	6.49	6.08	5.72

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
1.0	31.0	1.39	1.38	1.38
2.0	32.0	1.25	1.22	1.22
2.2	32.2	1.24	1.21	1.20
4.7	34.7	1.18	1.12	1.10
10.1	40.1	1.33	1.36	1.19
50.1	80.1	1.07	1.04	1.07
90.1	120.1	1.13	1.07	1.05
170.1	200.1	1.12	1.06	1.05
210.1	240.1	1.06	1.04	1.08
250.1	280.1	1.09	1.07	1.09
290.1	320.1	1.06	1.06	1.10
330.1	360.1	1.10	1.09	1.11
350.1	380.1	1.10	1.09	1.11
390.1	420.1	1.12	1.14	1.18
410.1	440.1	1.12	1.14	1.19
450.1	480.1	1.11	1.12	1.17
470.1	500.1	1.11	1.13	1.18
510.1	540.1	1.09	1.10	1.12
570.1	600.1	1.12	1.11	1.13
590.1	620.1	1.13	1.11	1.12
630.1	660.1	1.21	1.18	1.18
650.1	680.1	1.28	1.24	1.24
690.1	720.1	1.42	1.36	1.33
710.1	740.1	1.50	1.44	1.41
750.1	780.1	1.71	1.63	1.57
770.1	800.1	1.76	1.69	1.62
810.1	840.1	1.93	1.87	1.81
870.1	900.1	2.15	2.10	2.05
890.1	920.1	2.24	2.20	2.15
930.1	960.1	2.36	2.31	2.26
950.1	980.1	2.33	2.29	2.23
990.1	1020.1	2.45	2.41	2.37
1010.1	1040.1	2.50	2.45	2.40
1050.1	1080.1	2.48	2.44	2.40
1070.1	1100.1	2.56	2.51	2.46
1110.1	1140.1	2.53	2.47	2.42
1170.1	1200.1	2.57	2.51	2.45
1190.1	1220.1	2.51	2.43	2.37
1230.1	1260.1	2.49	2.42	2.36
1250.1	1280.1	2.48	2.39	2.33

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
1.0	1.77	2.58	3.57
2.0	1.73	2.55	3.57
2.2	1.75	2.52	3.50
4.7	1.73	2.55	3.57
10.1	1.86	2.59	3.62
50.1	1.86	2.72	3.84
90.1	1.78	2.57	3.58
170.1	1.80	2.59	3.60
210.1	1.82	2.60	3.60
250.1	1.86	2.65	3.65
290.1	1.85	2.61	3.58
330.1	1.92	2.71	3.69
350.1	1.94	2.72	3.70
390.1	1.95	2.71	3.66
410.1	1.98	2.73	3.68
450.1	2.04	2.80	3.73
470.1	2.05	2.81	3.75
510.1	2.11	2.88	3.83
570.1	2.16	2.88	3.77
590.1	2.18	2.89	3.78
630.1	2.27	2.96	3.84
650.1	2.31	2.98	3.84
690.1	2.40	3.09	3.91
710.1	2.44	3.15	3.97
750.1	2.48	3.19	4.01
770.1	2.50	3.21	4.02
810.1	2.56	3.27	4.09
870.1	2.60	3.27	4.05
890.1	2.62	3.29	4.06
930.1	2.66	3.30	4.04
950.1	2.66	3.27	4.00
990.1	2.66	3.24	3.90
1010.1	2.67	3.24	3.88
1050.1	2.69	3.21	3.83
1070.1	2.69	3.19	3.80
1110.1	2.76	3.25	3.82
1170.1	2.89	3.31	3.83
1190.1	2.93	3.33	3.81
1230.1	3.06	3.41	3.85
1250.1	3.08	3.43	3.84

IF (OUT) (MHz)	IF VSWR @LO=600.1MHz (:1) @LO (dBm)		
	+4	+7	+10
10.0	1.57	1.63	1.41
24.8	1.71	1.48	1.26
39.5	1.61	1.36	1.27
54.3	1.58	1.35	1.21
69.0	1.58	1.36	1.21
83.8	1.60	1.41	1.23
98.5	1.66	1.45	1.30
113.3	1.69	1.46	1.31
128.0	1.70	1.44	1.29
142.8	1.65	1.43	1.26
157.5	1.63	1.43	1.28
172.3	1.64	1.43	1.29
187.0	1.66	1.45	1.30
201.8	1.67	1.45	1.31
216.5	1.68	1.46	1.31
231.3	1.65	1.45	1.31
246.0	1.66	1.45	1.31
260.8	1.65	1.46	1.32
275.5	1.68	1.48	1.34
290.3	1.69	1.49	1.36
305.0	1.69	1.49	1.35
319.8	1.70	1.49	1.37
334.5	1.70	1.50	1.36
349.3	1.68	1.50	1.38
364.0	1.71	1.52	1.39
378.8	1.72	1.54	1.42
393.5	1.74	1.55	1.44
408.3	1.75	1.57	1.45
423.0	1.74	1.56	1.46
437.8	1.75	1.57	1.47
452.5	1.76	1.59	1.49
467.3	1.77	1.61	1.51
482.0	1.78	1.62	1.52
496.8	1.81	1.64	1.54
511.5	1.81	1.65	1.55
526.3	1.81	1.66	1.56
541.0	1.82	1.68	1.58
555.8	1.84	1.69	1.61
585.3	1.86	1.72	1.64
600.0	1.91	1.98	2.07

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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	5	14	12	31	18	33	43	52	33	48
1	-	16	0	33	12	31	40	46	46	51	54	59
2	116	68	44	58	43	73	50	63	55	62	79	73
3	117	65	56	62	55	64	56	75	74	84	75	85
4	117	97	97	88	87	86	84	90	96	89	102	92
5	115	109	103	101	91	93	85	89	90	106	104	115
6	111	100	106	103	104	103	118	84	99	109	111	108
7	117	111	103	112	100	103	95	96	94	104	107	102
8	120	108	113	106	110	106	96	97	98	92	103	110
9	111	116	111	106	111	104	106	96	96	100	103	110
10	118	125	106	108	104	108	104	113	115	110	86	95
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -14.00 dBm.**
LO IN: 530.1 MHz; +7.00 dBm
IF OUT: 30 MHz; -19.63 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	14	26	23	42	30	44	54	65	44	67
1	-	16	0	31	13	34	39	50	54	57	58	68
2	95	46	39	56	39	48	42	58	47	61	69	69
3	115	44	38	51	40	63	41	51	65	64	62	71
4	120	68	62	68	53	57	52	57	60	65	66	68
5	106	71	70	73	53	57	51	59	55	75	70	77
6	108	81	88	79	77	73	69	79	80	69	77	78
7	129	94	92	94	83	86	70	71	65	68	67	88
8	118	106	92	89	96	90	83	78	73	75	74	83
9	116	111	104	104	104	124	100	92	82	87	82	82
10	119	112	107	114	110	101	109	97	92	90	86	90
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -4.00 dBm.**
LO IN: 530.1 MHz; +7.00 dBm
IF OUT: 30 MHz; -9.61 dBm

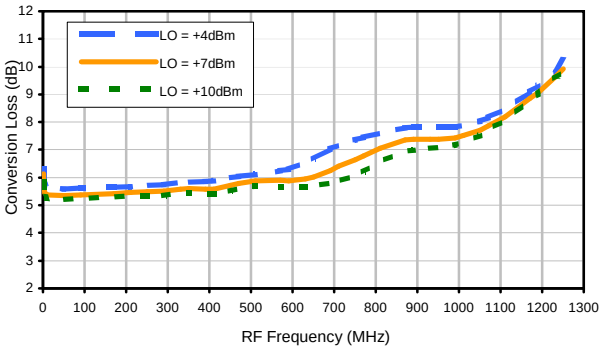
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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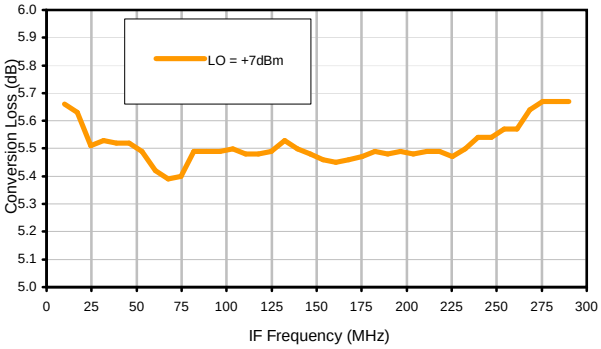
Frequency Mixer ADE-1ASK+

Typical Performance Curves

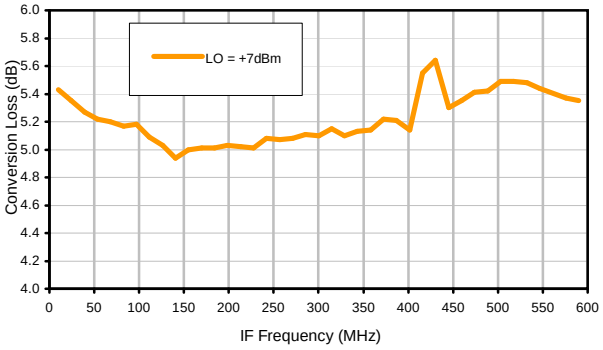
Conversion Loss @ IF=30MHz



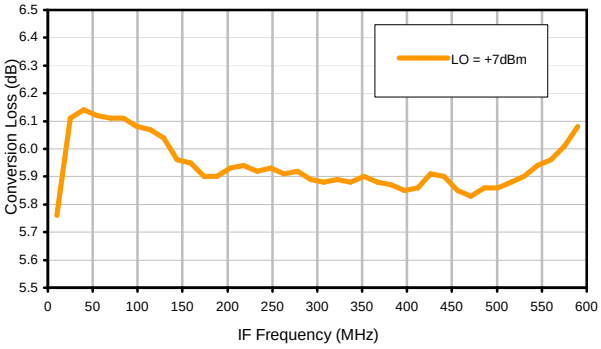
Conversion Loss vs. IF @ RF=300.1MHz



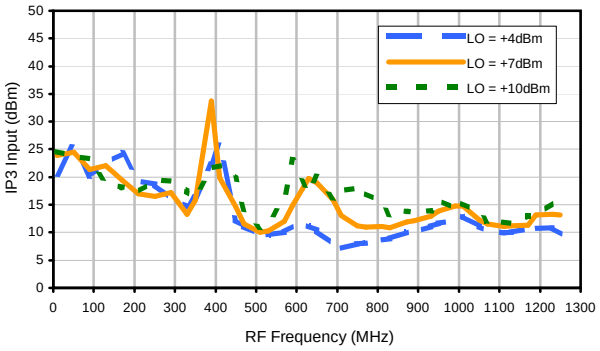
Conversion Loss vs. IF @ RF=10.1MHz



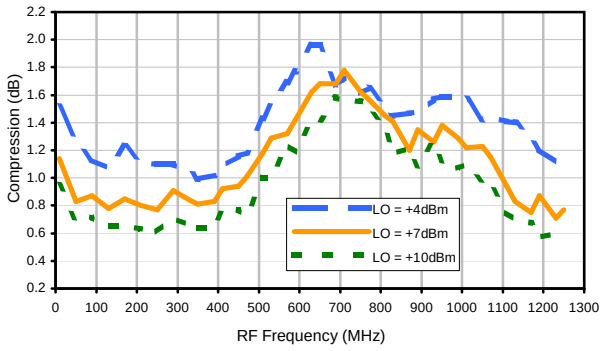
Conversion Loss vs. IF @ RF=600.1MHz



IP3 Input



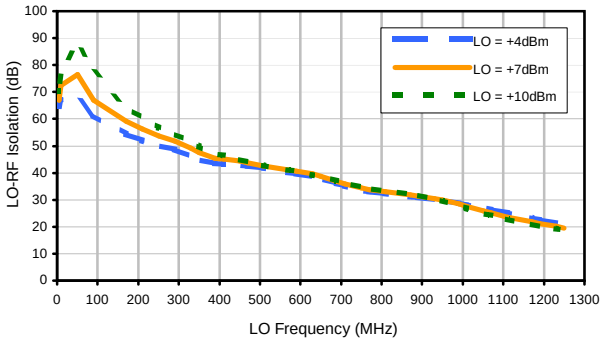
Compression @ RF IN=+1dBm



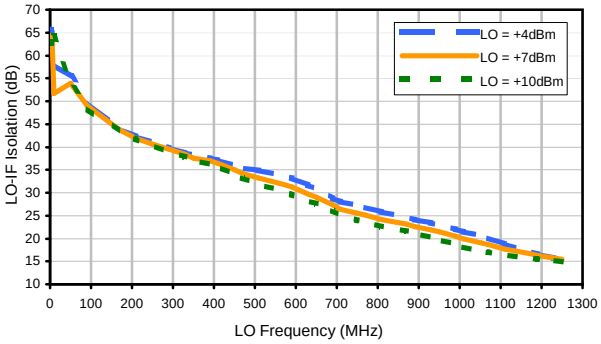
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Typical Performance Curves

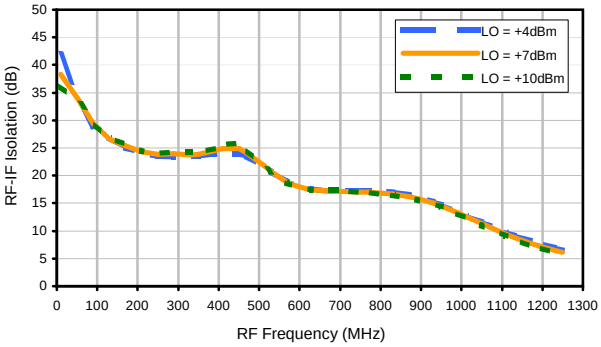
LO-RF Isolation



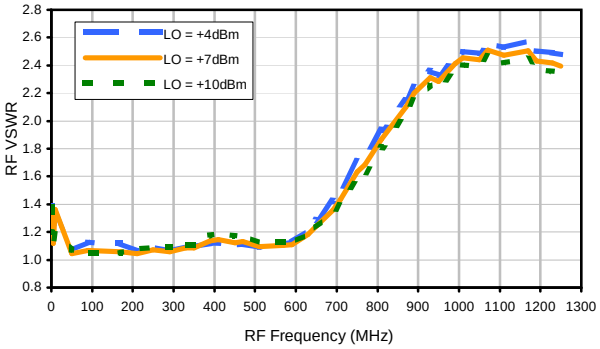
LO-IF Isolation



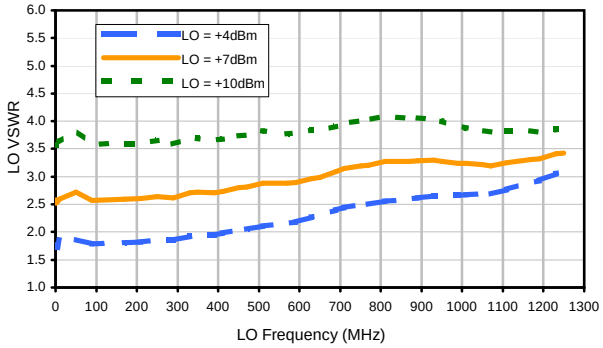
RF-IF Isolation



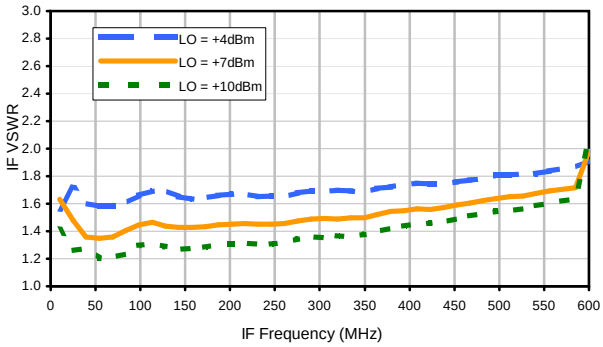
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	5	14	12	31	18	33	43	52	33	48
1	-	16	0	33	12	31	40	46	46	51	54	59
2	116	68	44	58	43	73	50	63	55	62	79	73
3	117	65	56	62	55	64	56	75	74	84	75	85
4	117	97	97	88	87	86	84	90	96	89	102	92
5	115	109	103	101	91	93	85	89	90	106	104	115
6	111	100	106	103	104	103	118	84	99	109	111	108
7	117	111	103	112	100	103	95	96	94	104	107	102
8	120	108	113	106	110	106	96	97	98	92	103	110
9	111	116	111	106	111	104	106	96	96	100	103	110
10	118	125	106	108	104	108	104	113	115	110	86	95
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -14.00 dBm.**
LO IN: 530.1 MHz; +7.00 dBm
IF OUT: 30 MHz; -19.63 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	14	26	23	42	30	44	54	65	44	67
1	-	16	0	31	13	34	39	50	54	57	58	68
2	95	46	39	56	39	48	42	58	47	61	69	69
3	115	44	38	51	40	63	41	51	65	64	62	71
4	120	68	62	68	53	57	52	57	60	65	66	68
5	106	71	70	73	53	57	51	59	55	75	70	77
6	108	81	88	79	77	73	69	79	80	69	77	78
7	129	94	92	94	83	86	70	71	65	68	67	88
8	118	106	92	89	96	90	83	78	73	75	74	83
9	116	111	104	104	104	124	100	92	82	87	82	82
10	119	112	107	114	110	101	109	97	92	90	86	90
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 500.1 MHz; -4.00 dBm.**
LO IN: 530.1 MHz; +7.00 dBm
IF OUT: 30 MHz; -9.61 dBm

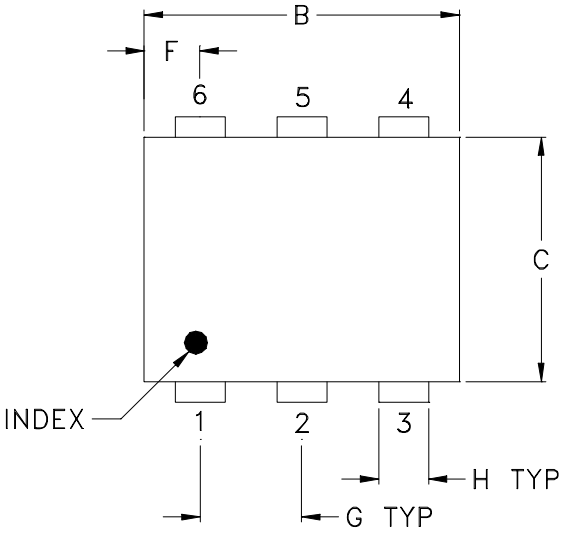
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

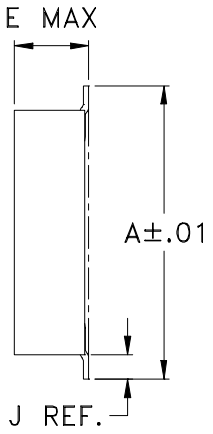
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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant
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The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see minicircuits.com

Case Style CD

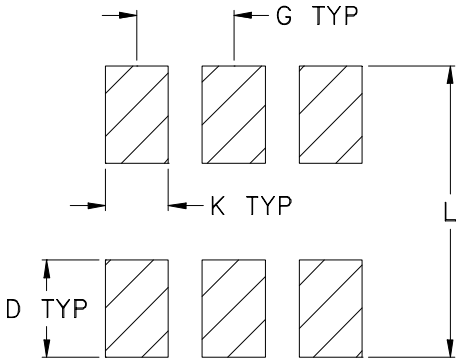
CD541
CD542
CD636
CD637

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:

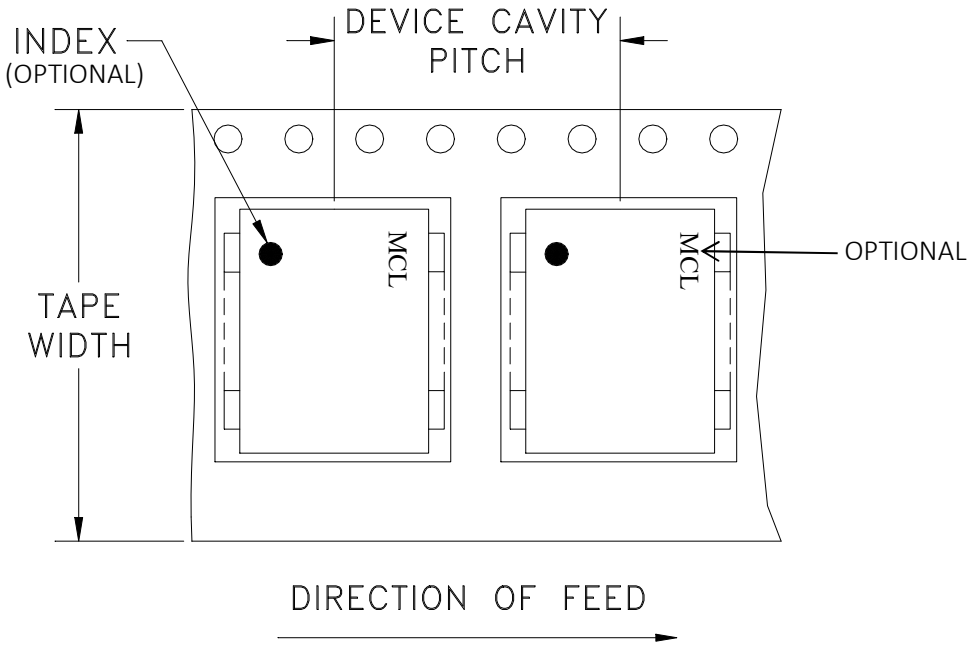
1. Case material: Plastic.
2. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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Tape & Reel Packaging TR-F34

DEVICE ORIENTATION IN T&R



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.

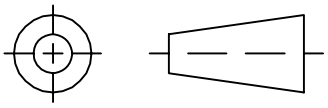
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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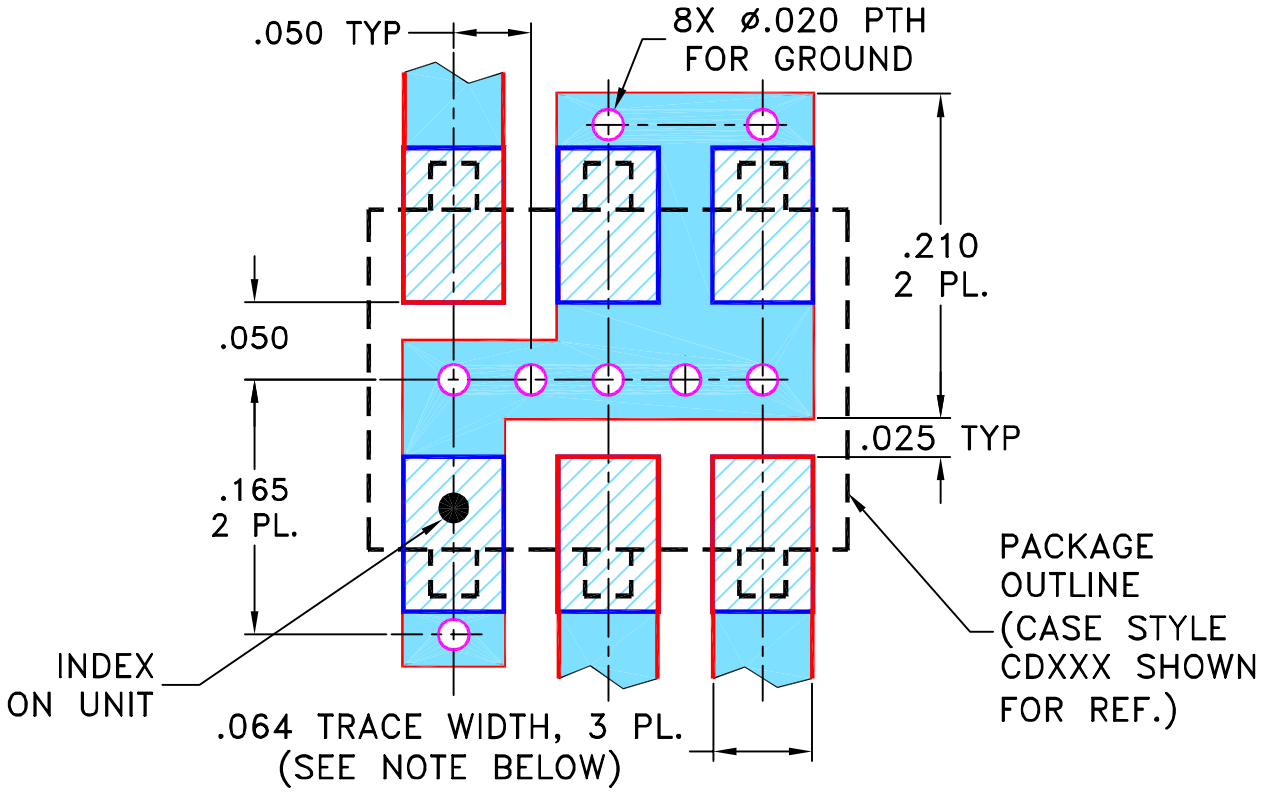
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
A	M101143	ADDED "gk" PIN CONNECTION,	10/10/05	MMG	DJ
		TT100 CASE STYLE & NOTE 2			
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 ±			

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

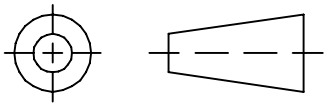
Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

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

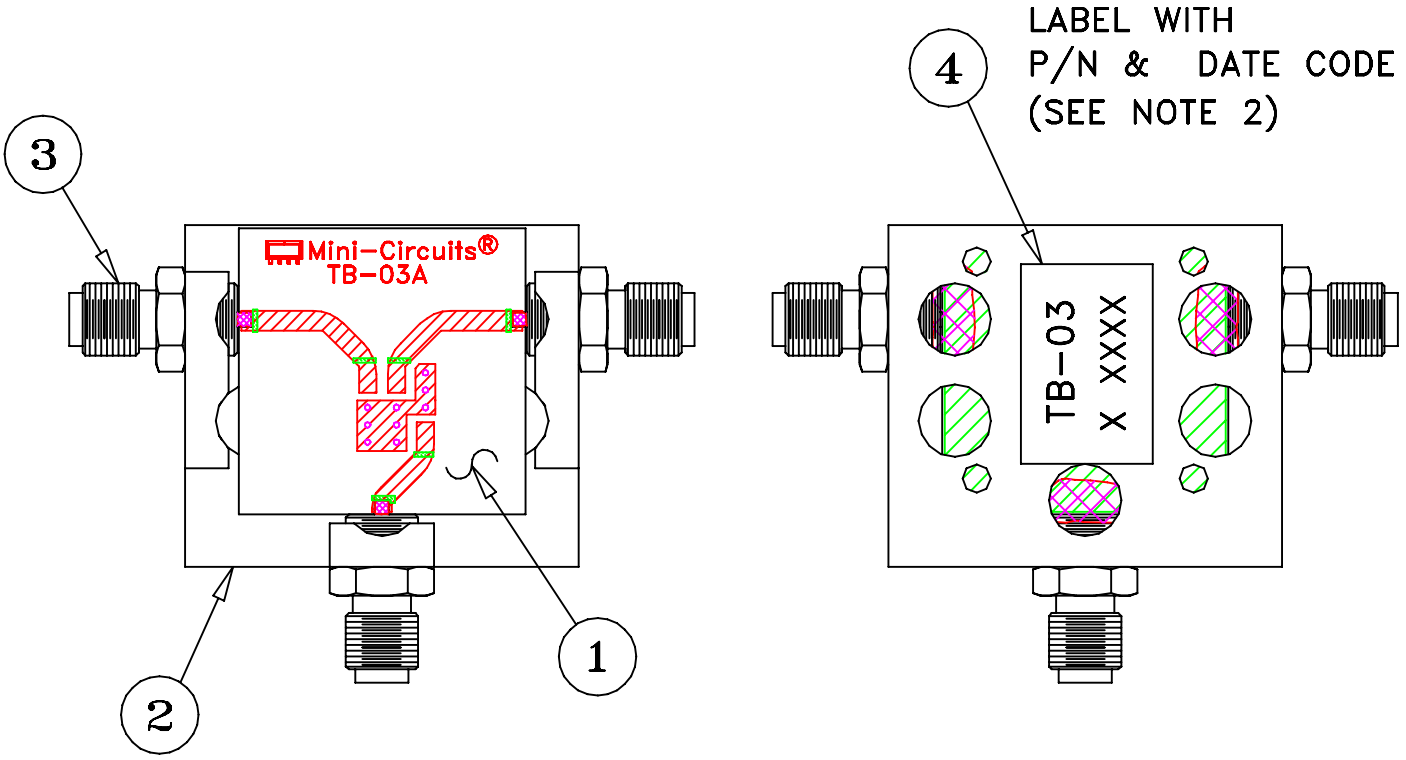
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-052	C

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 ±			

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

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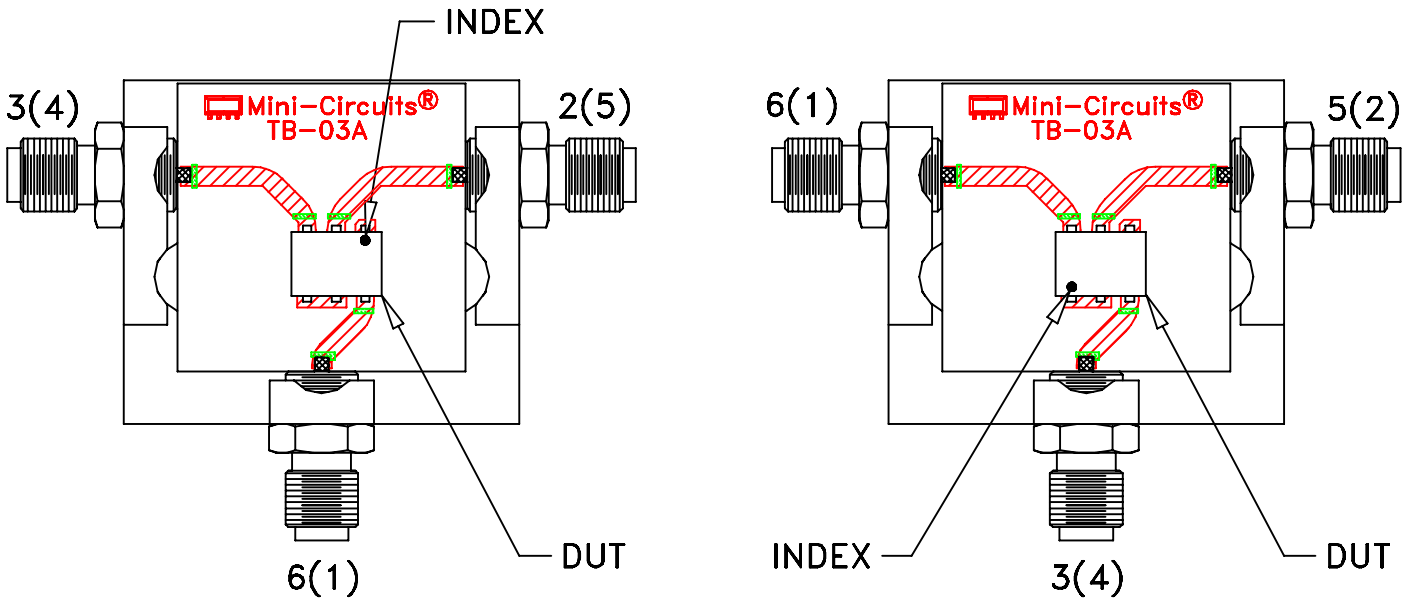
TB,ADE,CD542/636,06MX01,50

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

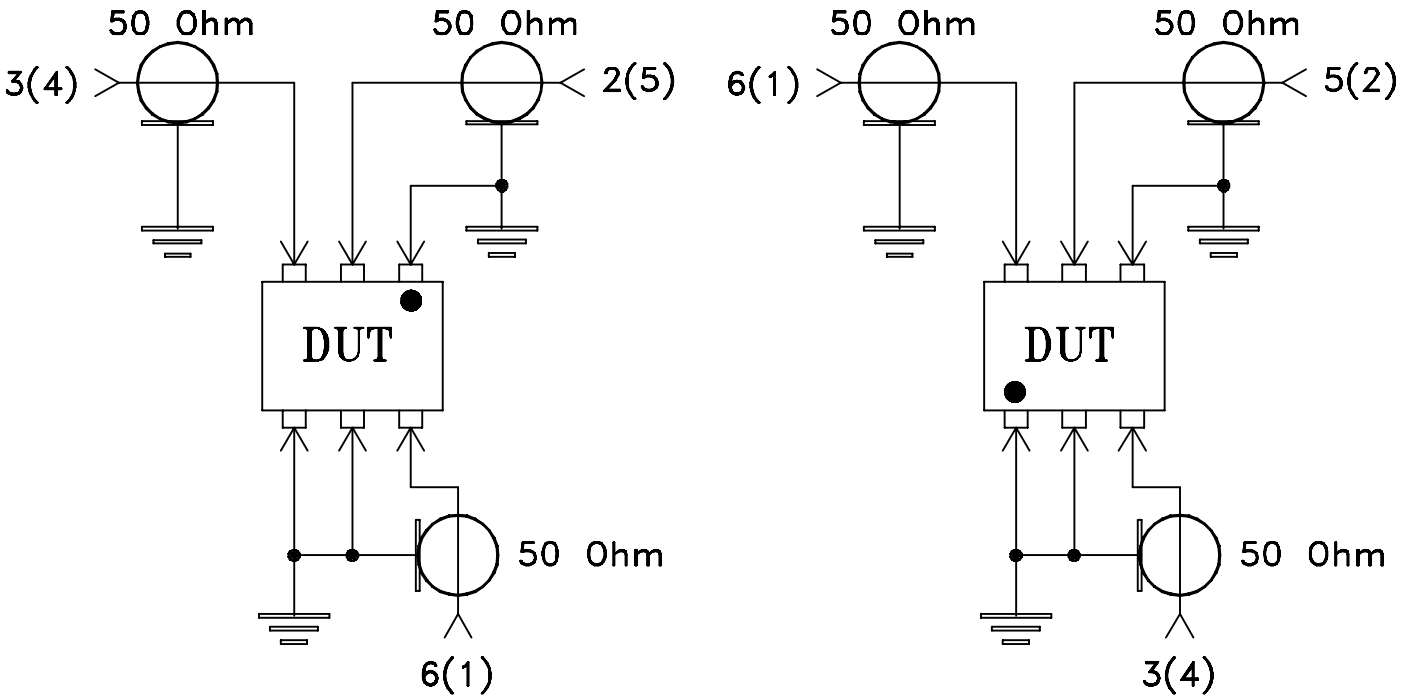
FILE:	SCALE:	SHEET:
WTB-03	1.5:1	1 OF 2

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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Mini-Circuits

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

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