Engineering Development Model

Frequency Mixer HJK-ED17125/1

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.

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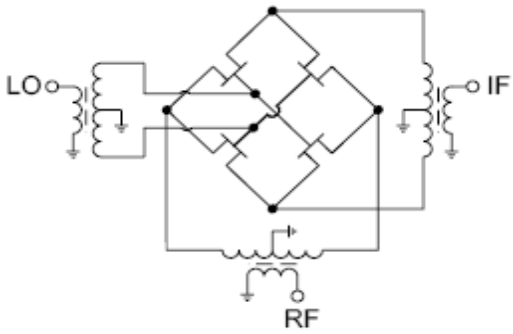
CASE STYLE : TTT881

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency	**LO** (fL to fU)	660		1210	MHz
	RF (fL to fU)	10		560	MHz
	IF	450		790	MHz
Conversion Loss			7.6		dB
LO-RF Isolation			38		dB
LO-IF Isolation			36		dB
Input IP3			+31		dBm
1 dB Compression			+20		dBm

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

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

Electrical Schematics



Frequency Mixer HJK-ED17125/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=650MHz (dB) @LO (dBm)		
		+14	+17	+20
10.1	660.1	7.74	7.66	7.67
55.1	705.1	7.43	7.30	7.23
100.1	750.1	7.50	7.36	7.25
145.1	795.1	7.00	6.82	6.67
190.1	840.1	7.04	6.87	6.73
235.1	885.1	6.78	6.58	6.43
285.1	935.1	7.00	6.82	6.68
330.1	980.1	6.94	6.75	6.61
375.1	1025.1	7.29	7.11	6.99
420.1	1070.1	7.39	7.23	7.12
465.1	1115.1	7.67	7.54	7.44
510.1	1160.1	7.73	7.61	7.55
560.1	1210.1	7.76	7.62	7.55
605.1	1255.1	7.84	7.67	7.57
650.1	1300.1	7.91	7.70	7.58
695.1	1345.1	8.05	7.82	7.66
740.1	1390.1	8.33	8.07	7.90
790.1	1440.1	8.51	8.24	8.05
835.1	1485.1	8.69	8.41	8.21
880.1	1530.1	8.84	8.56	8.36
925.1	1575.1	9.01	8.73	8.53
970.1	1620.1	9.18	8.90	8.70
1015.1	1665.1	9.36	9.10	8.89
1065.1	1715.1	9.57	9.32	9.13
1110.1	1760.1	9.74	9.51	9.34
1155.1	1805.1	9.87	9.66	9.51
1200.1	1850.1	9.98	9.79	9.67
1245.1	1895.1	10.04	9.86	9.76
1295.1	1945.1	10.15	9.97	9.89
1340.1	1990.1	10.14	9.95	9.88
1385.1	2035.1	10.28	10.07	9.99
1430.1	2080.1	10.41	10.19	10.11
1475.1	2125.1	10.63	10.39	10.29
1520.1	2170.1	10.65	10.38	10.28
1570.1	2220.1	10.90	10.57	10.42
1615.1	2265.1	10.87	10.50	10.31
1660.1	2310.1	11.15	10.70	10.45
1705.1	2355.1	11.11	10.60	10.28
1750.1	2400.1	11.48	10.89	10.50
1800.1	2450.1	11.55	10.91	10.49

RF (IN) (MHz)	LO (MHz)	IP-3 INPUT (dBm) @LO (dBm)		
		+14	+17	+20
10.1	660.1	30.63	34.45	36.85
55.1	705.1	30.14	33.27	35.72
100.1	750.1	30.79	34.55	36.17
145.1	795.1	31.12	34.48	35.36
190.1	840.1	32.48	36.88	37.65
235.1	885.1	32.32	36.59	38.07
285.1	935.1	29.08	33.18	37.56
330.1	980.1	27.74	31.75	36.54
375.1	1025.1	27.55	31.78	36.85
420.1	1070.1	27.89	32.82	39.09
465.1	1115.1	27.29	32.68	38.94
510.1	1160.1	26.70	31.89	37.21
560.1	1210.1	26.12	31.04	36.17
605.1	1255.1	25.57	30.29	35.80
650.1	1300.1	24.88	29.02	34.85
695.1	1345.1	24.36	27.85	33.22
740.1	1390.1	23.77	26.68	31.65
790.1	1440.1	23.83	26.41	31.37
835.1	1485.1	23.83	26.20	30.62
880.1	1530.1	23.87	26.18	30.28
925.1	1575.1	23.77	25.87	29.69
970.1	1620.1	23.95	25.73	29.29
1015.1	1665.1	24.87	25.98	29.18
1065.1	1715.1	25.80	26.19	28.81
1110.1	1760.1	26.24	26.42	28.45
1155.1	1805.1	26.74	26.93	28.47
1200.1	1850.1	26.24	27.18	28.40
1245.1	1895.1	25.47	27.39	28.61
1295.1	1945.1	24.20	27.37	28.85
1340.1	1990.1	23.44	27.18	28.93
1385.1	2035.1	22.31	26.73	28.91
1430.1	2080.1	22.04	26.50	28.87
1475.1	2125.1	20.96	25.56	29.09
1520.1	2170.1	20.79	25.54	29.62
1570.1	2220.1	19.70	24.13	29.35
1615.1	2265.1	19.44	23.73	28.92
1660.1	2310.1	18.57	22.60	27.39
1705.1	2355.1	18.17	21.98	26.44
1750.1	2400.1	17.35	20.90	25.11
1800.1	2450.1	16.88	20.28	24.38

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+20dBm (dB) @LO (dBm)		
		+14	+17	+20
10.1	660.1	0.95	0.43	0.19
55.1	705.1	1.14	0.47	0.20
100.1	750.1	1.11	0.41	0.17
145.1	795.1	1.35	0.47	0.16
190.1	840.1	1.38	0.44	0.11
235.1	885.1	1.62	0.53	0.13
285.1	935.1	1.66	0.60	0.19
330.1	980.1	2.00	0.73	0.23
375.1	1025.1	1.76	0.61	0.22
420.1	1070.1	1.55	0.57	0.22
465.1	1115.1	1.44	0.55	0.24
510.1	1160.1	1.48	0.63	0.29
560.1	1210.1	1.72	0.80	0.36
605.1	1255.1	1.87	0.92	0.43
650.1	1300.1	2.32	1.17	0.52
695.1	1345.1	2.11	1.05	0.53
740.1	1390.1	2.33	1.16	0.60
790.1	1440.1	2.44	1.22	0.62
835.1	1485.1	2.55	1.31	0.69
880.1	1530.1	2.65	1.36	0.72
925.1	1575.1	2.79	1.43	0.75
970.1	1620.1	2.79	1.43	0.77
1015.1	1665.1	2.74	1.32	0.66
1065.1	1715.1	2.77	1.27	0.57
1110.1	1760.1	3.02	1.39	0.57
1155.1	1805.1	3.35	1.63	0.64
1200.1	1850.1	3.68	1.84	0.72
1245.1	1895.1	4.00	2.09	0.85
1295.1	1945.1	4.48	2.49	1.05
1340.1	1990.1	4.77	2.74	1.19
1385.1	2035.1	5.16	3.09	1.44
1430.1	2080.1	5.30	3.23	1.53
1475.1	2125.1	5.67	3.61	1.80
1520.1	2170.1	5.60	3.55	1.79
1570.1	2220.1	5.79	3.81	2.01
1615.1	2265.1	6.05	4.06	2.21
1660.1	2310.1	6.26	4.34	2.49
1705.1	2355.1	6.68	4.79	2.90
1750.1	2400.1	6.78	4.94	3.10
1800.1	2450.1	7.18	5.35	3.49

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=265.1MHz (dB) @LO (dBm) +17
255.0	10.1	16.52
243.0	22.1	13.32
231.0	34.1	12.93
219.0	46.1	13.14
207.0	58.1	13.42
195.0	70.1	13.71
183.0	82.1	14.54
169.0	96.1	16.18
157.0	108.1	16.34
145.0	120.1	16.37
133.0	132.1	17.12
121.0	144.1	16.29
109.0	156.1	15.93
95.0	170.1	13.89
83.0	182.1	13.96
71.0	194.1	15.56
59.0	206.1	15.93
47.0	218.1	16.93
155.0	420.1	9.76
215.0	480.1	7.80
275.0	540.1	7.53
335.0	600.1	7.27
395.0	660.1	7.09
455.0	720.1	6.83
515.0	780.1	6.77
575.0	840.1	6.80
635.0	900.1	6.65
695.0	960.1	6.64
755.0	1020.1	6.73
815.0	1080.1	6.83
875.0	1140.1	7.07
935.0	1200.1	7.41
995.0	1260.1	7.70
1055.0	1320.1	7.94
1115.0	1380.1	8.38
1175.0	1440.1	9.24
1235.0	1500.1	10.48
1295.0	1560.1	11.32

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=30MHz (dB) @LO (dBm) +17
410.1	440.1	8.67
430.1	460.1	8.02
460.1	490.1	7.55
480.1	510.1	7.50
510.1	540.1	7.42
530.1	560.1	7.34
560.1	590.1	7.48
580.1	610.1	7.47
600.1	630.1	7.43
630.1	660.1	7.40
650.1	680.1	7.40
680.1	710.1	7.39
700.1	730.1	7.38
730.1	760.1	7.27
750.1	780.1	7.27
770.1	800.1	7.31
800.1	830.1	7.27
820.1	850.1	7.18
850.1	880.1	7.24
870.1	900.1	7.21
900.1	930.1	7.14
920.1	950.1	7.11
950.1	980.1	7.19
970.1	1000.1	7.25
990.1	1020.1	7.28
1020.1	1050.1	7.42
1040.1	1070.1	7.51
1070.1	1100.1	7.71
1090.1	1120.1	7.81
1120.1	1150.1	8.04
1140.1	1170.1	8.24
1160.1	1190.1	8.51
1190.1	1220.1	8.66
1210.1	1240.1	8.94
1240.1	1270.1	9.50
1260.1	1290.1	9.80
1290.1	1320.1	10.08
1340.1	1370.1	11.08

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB) @LO (dBm) +17
480.0	20.1	16.21
470.0	30.1	14.56
455.0	45.1	14.06
445.0	55.1	14.07
430.0	70.1	14.04
420.0	80.1	14.31
405.0	95.1	14.95
395.0	105.1	15.28
380.0	120.1	15.65
370.0	130.1	16.82
355.0	145.1	17.53
345.0	155.1	16.97
330.0	170.1	14.67
320.0	180.1	13.98
310.0	190.1	14.15
295.0	205.1	16.03
285.0	215.1	17.69
270.0	230.1	21.16
260.0	240.1	22.91
245.0	255.1	24.82
235.0	265.1	28.02
220.0	280.1	32.66
210.0	290.1	32.92
195.0	305.1	32.65
185.0	315.1	31.98
170.0	330.1	27.56
160.0	340.1	25.88
150.0	350.1	25.86
135.0	365.1	26.04
125.0	375.1	23.56
110.0	390.1	19.34
100.0	400.1	16.35
85.0	415.1	13.45
75.0	425.1	11.83
60.0	440.1	10.41
50.0	450.1	10.58
35.0	465.1	11.60
25.0	475.1	13.30

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+14	+17	+20	+14	+17	+20
660.1	47.57	47.26	46.88	37.00	37.15	37.28
705.1	45.28	45.00	44.69	36.98	37.21	37.40
750.1	43.26	43.06	42.85	36.77	37.11	37.42
795.1	41.79	41.68	41.59	36.77	37.17	37.56
840.1	40.35	40.32	40.28	36.59	36.98	37.36
885.1	39.73	39.73	39.74	36.98	37.48	37.91
935.1	39.06	39.10	39.20	37.68	38.36	38.98
980.1	37.32	37.22	37.25	38.31	39.20	40.02
1025.1	33.94	33.61	33.44	38.20	39.11	40.00
1070.1	33.29	33.11	33.08	37.70	38.64	39.52
1115.1	33.64	33.53	33.56	37.48	38.49	39.46
1160.1	33.98	33.89	33.93	37.59	38.62	39.62
1210.1	34.54	34.46	34.44	37.45	38.53	39.54
1255.1	35.13	35.04	35.00	37.67	38.72	39.70
1300.1	35.70	35.61	35.56	37.54	38.47	39.33
1345.1	36.15	36.04	35.97	37.85	38.66	39.34
1390.1	36.53	36.41	36.32	38.23	38.95	39.58
1440.1	36.43	36.29	36.16	38.94	39.67	40.30
1485.1	36.17	35.99	35.82	38.96	39.69	40.33
1530.1	35.94	35.73	35.54	39.64	40.37	40.98
1575.1	36.12	35.87	35.67	39.97	40.72	41.40
1620.1	36.02	35.77	35.57	40.36	41.16	41.82
1665.1	36.07	35.79	35.59	40.88	41.61	42.27
1715.1	35.80	35.49	35.28	41.03	41.66	42.21
1760.1	35.80	35.49	35.28	41.51	42.03	42.47
1805.1	35.93	35.59	35.35	41.91	42.32	42.66
1850.1	36.24	35.90	35.66	42.67	42.95	43.25
1895.1	36.14	35.79	35.53	43.06	43.37	43.65
1945.1	36.53	36.17	35.89	43.17	43.52	43.82
1990.1	36.35	36.02	35.76	41.73	41.86	41.95
2035.1	36.88	36.60	36.37	39.68	39.48	39.27
2080.1	36.43	36.19	36.00	37.33	36.99	36.69
2125.1	36.94	36.74	36.56	36.30	35.98	35.72
2170.1	36.16	35.99	35.85	34.96	34.72	34.52
2220.1	36.23	36.12	36.03	34.53	34.34	34.19
2265.1	35.46	35.40	35.36	33.87	33.71	33.59
2310.1	35.46	35.43	35.43	33.85	33.71	33.62
2355.1	34.95	34.91	34.91	33.25	33.13	33.06
2400.1	34.93	34.87	34.85	33.40	33.30	33.24
2450.1	34.84	34.75	34.71	32.69	32.60	32.54

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+14	+17	+20
10.1	660.1	56.39	55.65	53.89
55.1	705.1	42.28	41.39	39.88
100.1	750.1	40.48	40.09	38.80
145.1	795.1	38.65	38.57	37.76
190.1	840.1	38.09	38.17	37.38
235.1	885.1	37.87	38.12	37.41
285.1	935.1	38.91	39.32	38.68
330.1	980.1	40.44	40.90	40.18
375.1	1025.1	47.57	50.68	51.02
420.1	1070.1	54.66	70.94	65.61
465.1	1115.1	57.32	61.39	55.63
510.1	1160.1	58.21	58.22	53.01
560.1	1210.1	59.50	56.04	50.67
605.1	1255.1	57.38	56.32	49.39
650.1	1300.1	52.72	59.46	50.36
695.1	1345.1	48.77	61.34	54.73
740.1	1390.1	45.00	51.57	65.61
790.1	1440.1	42.83	46.83	53.86
835.1	1485.1	42.16	45.15	49.71
880.1	1530.1	42.61	45.52	49.49
925.1	1575.1	43.13	46.26	50.65
970.1	1620.1	43.25	46.81	52.69
1015.1	1665.1	42.07	45.22	50.02
1065.1	1715.1	40.65	43.30	47.38
1110.1	1760.1	39.37	41.56	44.51
1155.1	1805.1	38.41	40.09	42.39
1200.1	1850.1	37.40	38.69	40.32
1245.1	1895.1	37.56	38.56	39.94
1295.1	1945.1	38.01	38.75	39.70
1340.1	1990.1	39.21	39.84	40.49
1385.1	2035.1	40.21	40.65	41.12
1430.1	2080.1	40.37	40.58	40.77
1475.1	2125.1	39.75	39.77	39.84
1520.1	2170.1	39.11	39.05	39.10
1570.1	2220.1	38.66	38.55	38.50
1615.1	2265.1	38.15	37.94	37.85
1660.1	2310.1	38.24	37.99	37.82
1705.1	2355.1	37.58	37.26	37.06
1750.1	2400.1	37.73	37.42	37.19
1800.1	2450.1	37.13	36.78	36.54

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+14	+17	+20
10.1	660.1	2.92	2.97	3.46
55.1	705.1	2.62	2.77	2.90
100.1	750.1	2.49	2.61	2.74
145.1	795.1	2.10	2.19	2.29
190.1	840.1	1.93	2.03	2.11
235.1	885.1	1.88	1.98	2.08
285.1	935.1	1.97	2.07	2.17
330.1	980.1	2.22	2.32	2.43
375.1	1025.1	2.36	2.47	2.57
420.1	1070.1	2.59	2.70	2.81
465.1	1115.1	2.58	2.69	2.79
510.1	1160.1	2.63	2.75	2.86
560.1	1210.1	2.47	2.56	2.65
605.1	1255.1	2.43	2.52	2.60
650.1	1300.1	2.35	2.42	2.48
695.1	1345.1	2.23	2.29	2.35
740.1	1390.1	2.17	2.22	2.27
790.1	1440.1	2.01	2.06	2.11
835.1	1485.1	1.92	1.98	2.03
880.1	1530.1	1.79	1.84	1.89
925.1	1575.1	1.70	1.77	1.82
970.1	1620.1	1.60	1.66	1.72
1015.1	1665.1	1.51	1.59	1.65
1065.1	1715.1	1.45	1.53	1.61
1110.1	1760.1	1.40	1.50	1.58
1155.1	1805.1	1.41	1.51	1.61
1200.1	1850.1	1.39	1.50	1.60
1245.1	1895.1	1.47	1.59	1.70
1295.1	1945.1	1.48	1.60	1.72
1340.1	1990.1	1.61	1.74	1.87
1385.1	2035.1	1.61	1.74	1.86
1430.1	2080.1	1.77	1.92	2.06
1475.1	2125.1	1.78	1.94	2.09
1520.1	2170.1	1.91	2.07	2.23
1570.1	2220.1	1.96	2.13	2.29
1615.1	2265.1	2.02	2.18	2.34
1660.1	2310.1	2.09	2.25	2.41
1705.1	2355.1	2.07	2.21	2.34
1750.1	2400.1	2.15	2.29	2.42
1800.1	2450.1	2.13	2.25	2.37

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+14	+17	+20
660.1	3.14	3.11	3.07
705.1	2.67	2.66	2.63
750.1	2.35	2.33	2.31
795.1	2.13	2.12	2.11
840.1	2.02	2.01	2.01
885.1	2.01	2.02	2.03
935.1	2.11	2.13	2.15
980.1	2.29	2.32	2.35
1025.1	2.56	2.60	2.65
1070.1	3.02	3.09	3.14
1115.1	3.58	3.66	3.75
1160.1	4.21	4.29	4.39
1210.1	4.96	5.08	5.20
1255.1	5.64	5.76	5.80
1300.1	6.23	6.35	6.43
1345.1	6.63	6.72	6.71
1390.1	6.89	6.96	6.98
1440.1	6.85	6.90	6.84
1485.1	6.71	6.75	6.73
1530.1	6.43	6.44	6.38
1575.1	6.09	6.11	6.09
1620.1	5.72	5.69	5.64
1665.1	5.30	5.29	5.28
1715.1	4.87	4.86	4.80
1760.1	4.49	4.50	4.48
1805.1	4.16	4.15	4.11
1850.1	3.84	3.84	3.82
1895.1	3.54	3.53	3.51
1945.1	3.26	3.25	3.24
1990.1	3.02	3.01	2.99
2035.1	2.82	2.81	2.80
2080.1	2.62	2.62	2.61
2125.1	2.47	2.46	2.44
2170.1	2.32	2.32	2.32
2220.1	2.20	2.20	2.18
2265.1	2.10	2.10	2.10
2310.1	2.03	2.03	2.02
2355.1	1.97	1.97	1.98
2400.1	1.95	1.94	1.93
2450.1	1.93	1.93	1.93

IF (OUT) (MHz)	IF VSWR @LO=1195MHz (:1) @LO (dBm)		
	+14	+17	+20
70.1	2.79	2.71	2.64
100.1	2.14	2.07	2.03
130.1	1.85	1.80	1.76
160.1	1.71	1.66	1.62
190.1	1.61	1.56	1.52
220.1	1.59	1.54	1.50
250.1	1.57	1.51	1.47
280.1	1.54	1.48	1.44
310.1	1.57	1.50	1.46
340.1	1.59	1.53	1.48
370.1	1.58	1.52	1.47
400.1	1.64	1.57	1.51
430.1	1.68	1.61	1.56
460.1	1.68	1.61	1.55
490.1	1.75	1.67	1.61
520.1	1.80	1.73	1.67
550.1	1.80	1.73	1.67
580.1	1.87	1.79	1.73
610.1	1.93	1.86	1.80
640.1	1.93	1.85	1.79
670.1	1.99	1.92	1.86
700.1	2.05	1.99	1.93
730.1	2.04	1.98	1.93
760.1	2.10	2.05	2.01
790.1	2.19	2.14	2.12
820.1	2.15	2.12	2.11
850.1	2.26	2.24	2.24
880.1	2.31	2.32	2.34
910.1	2.30	2.32	2.35
940.1	2.43	2.47	2.52
970.1	2.53	2.60	2.66
1000.1	2.55	2.63	2.71
1030.1	2.73	2.82	2.91
1060.1	2.94	3.06	3.18
1090.1	3.03	3.16	3.29
1120.1	3.31	3.46	3.61
1150.1	3.71	3.91	4.09
1160.1	3.77	3.96	4.14
1170.1	3.81	4.01	4.21
1180.1	3.96	4.18	4.39

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	14	14	44	30	35	39	54	45	33	50
1	---	33	---	48	38	53	30	49	48	56	52	58
2	99	72	49	67	75	76	81	80	102	85	69	84
3	113	86	71	83	94	93	92	93	94	102	96	89
4	115	95	81	97	89	103	95	103	96	101	100	104
5	113	104	91	104	96	104	103	102	102	102	104	100
6	115	104	100	104	100	104	101	101	102	103	103	103
7	114	103	97	103	95	104	101	100	102	103	102	103
8	115	104	101	102	102	106	103	103	103	102	101	102
9	115	102	104	104	103	104	104	102	103	100	103	104
10	113	99	105	95	106	97	104	103	102	102	103	105
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 270 MHz; 0 dBm.**
LO IN: 920 MHz; +17.00 dBm
IF OUT: 650 MHz; -7.45 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	25	24	58	40	45	49	65	54	44	65
1	---	33	---	47	38	53	30	50	55	55	56	63
2	88	58	39	55	63	67	63	76	69	76	64	71
3	97	62	46	64	66	76	67	80	71	98	77	78
4	107	74	67	76	82	88	91	85	92	99	81	85
5	108	90	69	87	78	95	102	101	99	92	102	113
6	108	107	84	95	82	99	104	101	96	98	108	95
7	107	107	85	103	81	114	113	108	92	106	112	114
8	108	110	88	100	86	104	111	111	99	105	111	109
9	106	113	97	112	89	106	105	113	96	111	105	113
10	105	114	105	106	91	105	104	113	105	113	109	115
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

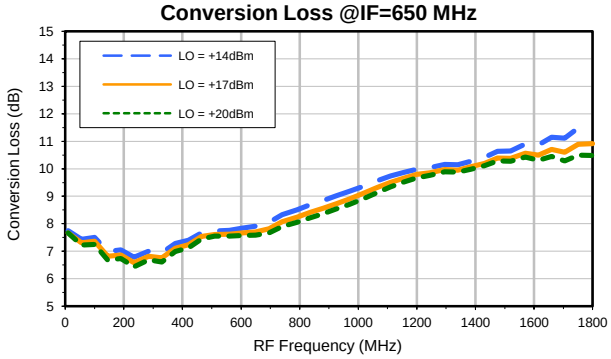
LO HARMONICS ORDER

Test conditions: **RF IN: 270 MHz; 10 dBm.**
LO IN: 920 MHz; +17.00 dBm
IF OUT: 650 MHz; 2.93 dBm

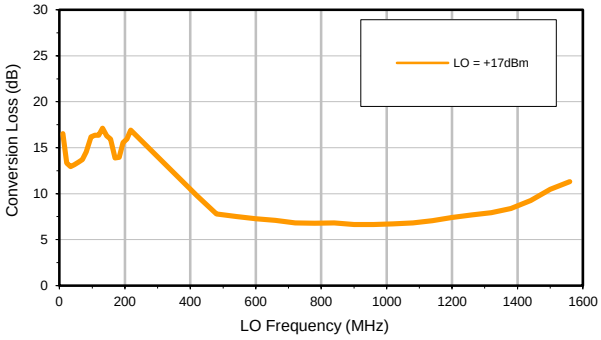
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT
2. + entry denotes harmonics are in (dBc) above IF OUTPUT
3. RF Cal represents the Harmonics level of the RF Input Signal to the mixer

Typical Performance Curves

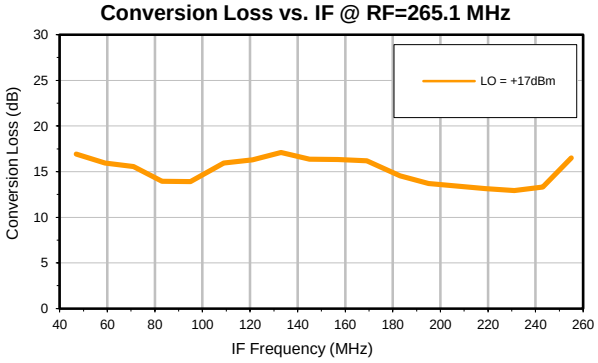
Conversion Loss @IF=650 MHz



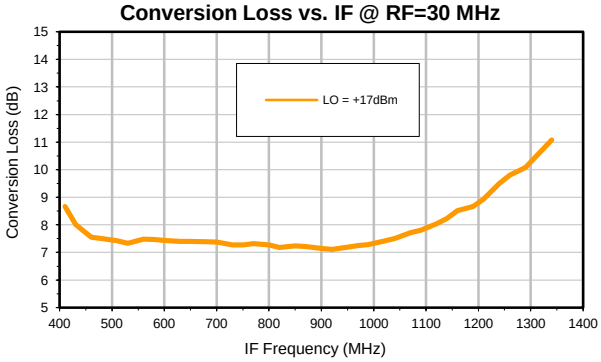
Conversion Loss vs. LO @ RF=265.1 MHz



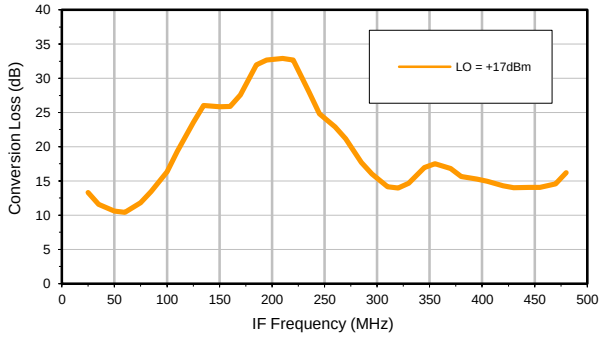
Conversion Loss vs. IF @ RF=265.1 MHz



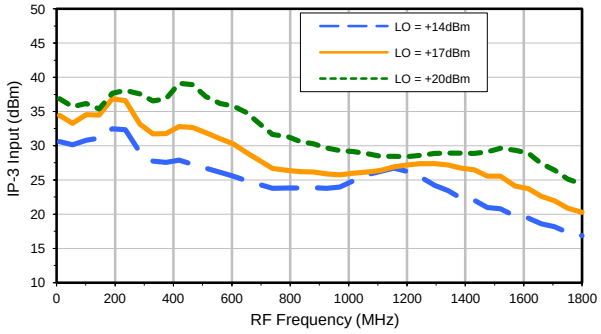
Conversion Loss vs. IF @ RF=30 MHz



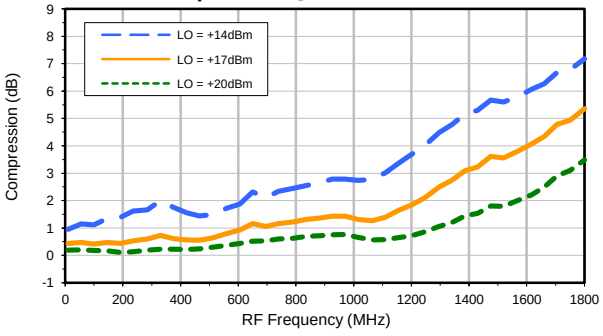
Conversion Loss vs. IF @ RF=500.1 MHz



IP-3 Input

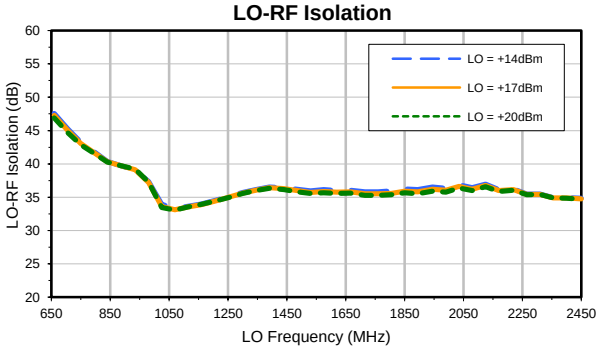


Compression @RF IN=+20 dBm

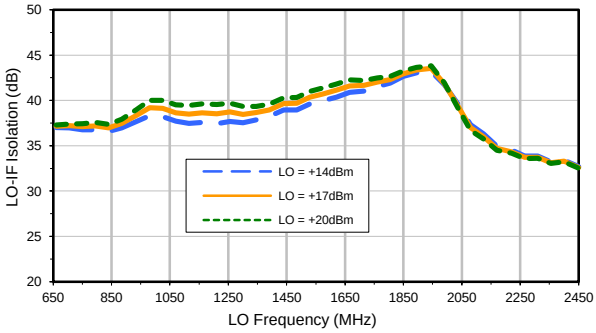


Typical Performance Curves

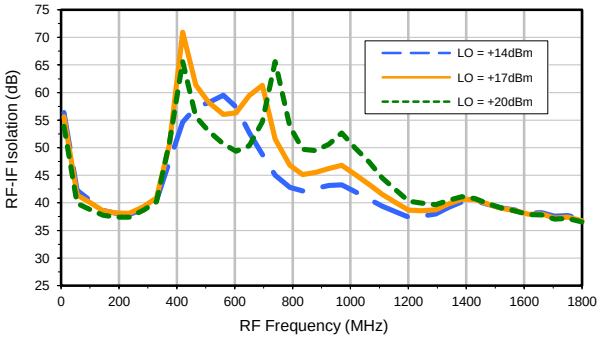
LO-RF Isolation



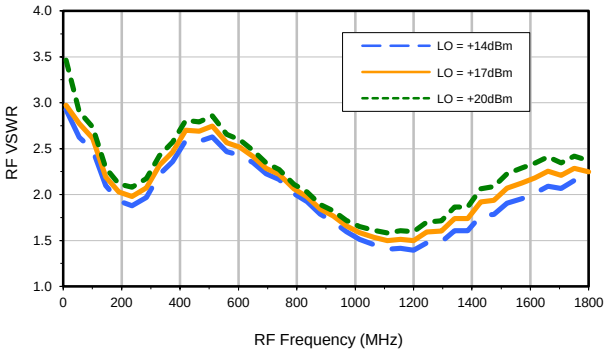
LO-IF Isolation



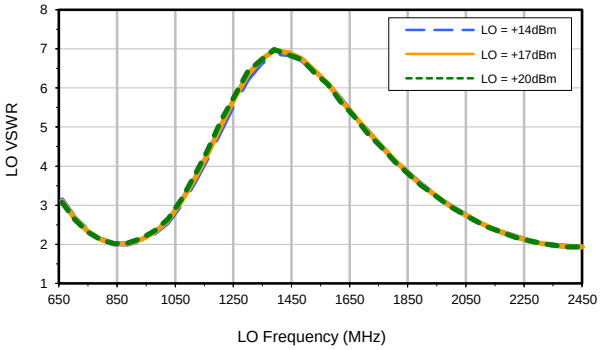
RF-IF Isolation



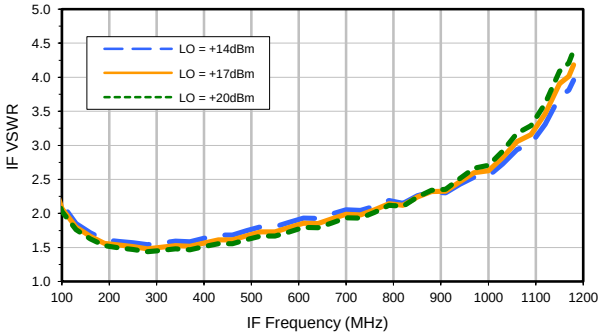
RF VSWR



LO VSWR



IF VSWR



Frequency Mixer HJK-ED17125/1

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	14	14	44	30	35	39	54	45	33	50
1	---	33	---	48	38	53	30	49	48	56	52	58
2	99	72	49	67	75	76	81	80	102	85	69	84
3	113	86	71	83	94	93	92	93	94	102	96	89
4	115	95	81	97	89	103	95	103	96	101	100	104
5	113	104	91	104	96	104	103	102	102	102	104	100
6	115	104	100	104	100	104	101	101	102	103	103	103
7	114	103	97	103	95	104	101	100	102	103	102	103
8	115	104	101	102	102	106	103	103	103	102	101	102
9	115	102	104	104	103	104	104	102	103	100	103	104
10	113	99	105	95	106	97	104	103	102	102	103	105
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 270 MHz; 0 dBm.**
LO IN: 920 MHz; +17.00 dBm
IF OUT: 650 MHz; -7.45 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	25	24	58	40	45	49	65	54	44	65
1	---	33	---	47	38	53	30	50	55	55	56	63
2	88	58	39	55	63	67	63	76	69	76	64	71
3	97	62	46	64	66	76	67	80	71	98	77	78
4	107	74	67	76	82	88	91	85	92	99	81	85
5	108	90	69	87	78	95	102	101	99	92	102	113
6	108	107	84	95	82	99	104	101	96	98	108	95
7	107	107	85	103	81	114	113	108	92	106	112	114
8	108	110	88	100	86	104	111	111	99	105	111	109
9	106	113	97	112	89	106	105	113	96	111	105	113
10	105	114	105	106	91	105	104	113	105	113	109	115
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

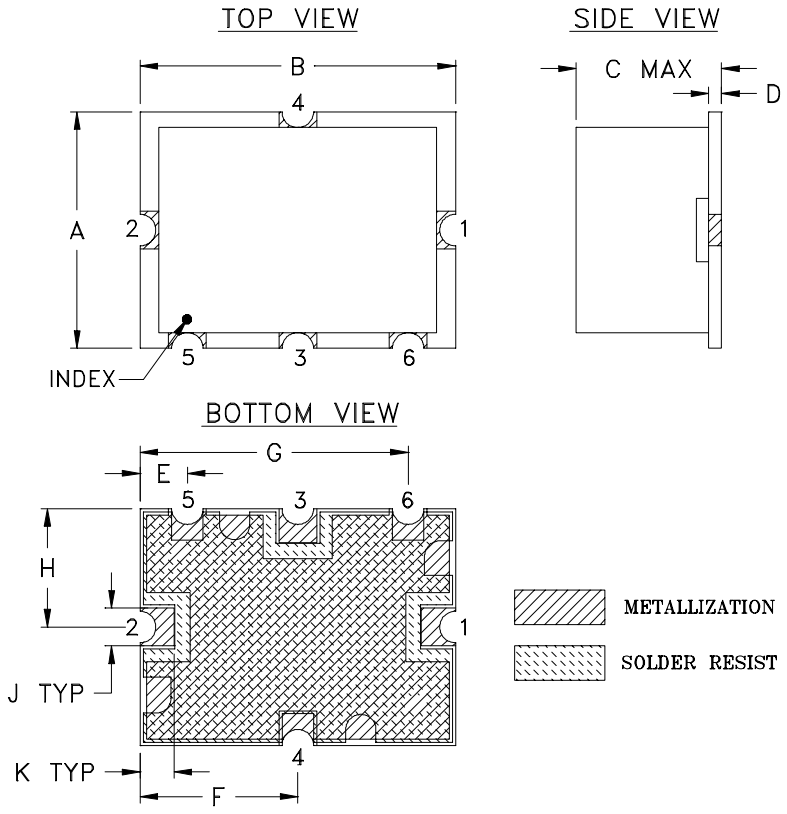
Test conditions: **RF IN: 270 MHz; 10 dBm.**
LO IN: 920 MHz; +17.00 dBm
IF OUT: 650 MHz; 2.93 dBm

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

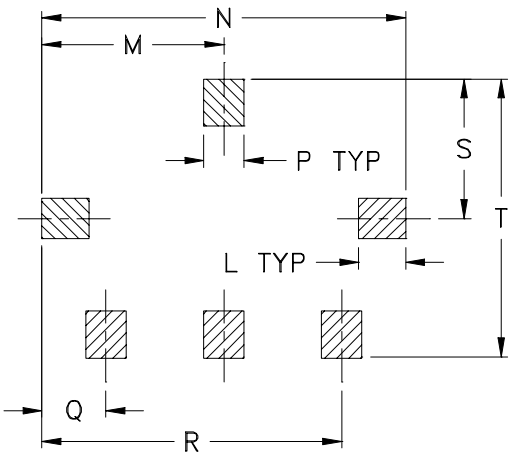
Case Style TTT

Outline Dimensions

TTT881



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N
TTT881	.38 (9.65)	.50 (12.70)	.23 (5.84)	.020 (0.51)	.075 (1.91)	.250 (6.35)	.425 (10.80)	.187 (4.75)	.050 (1.27)	.050 (1.27)	.070 (1.78)	.270 (6.86)	.540 (13.72)

CASE #	P	Q	R	S	T	WT. GRAM
TTT881	.060 (1.52)	.095 (2.41)	.445 (11.30)	.208 (5.28)	.415 (10.54)	.8

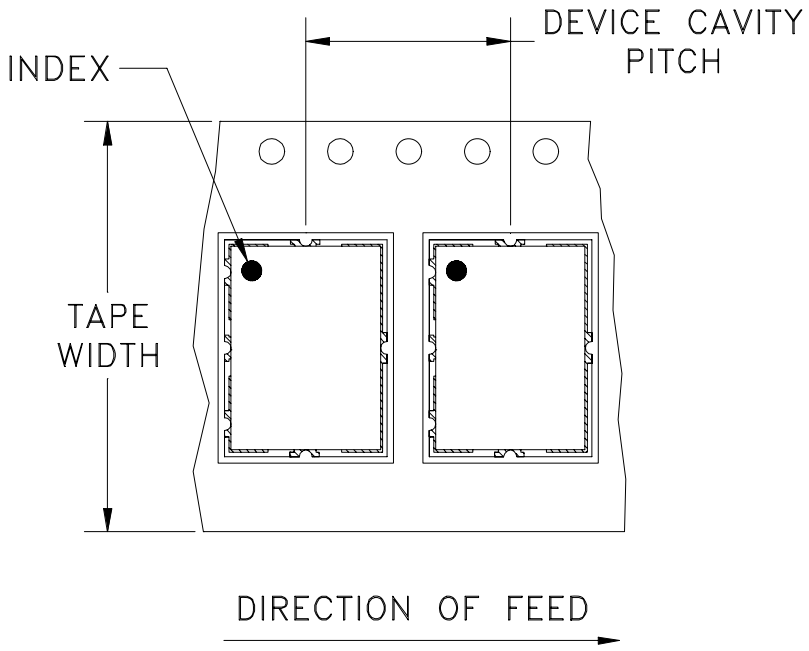
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005

Note:

1. Case material: Nickel-Silver alloy.
2. Base material: Printed wiring laminate.
3. Termination finish:
   - For RoHS Case Styles: 3-5 µ inch (.08-.13 microns) Gold over 120-240 µ inch (3.05-6.10 microns) Nickel plate. All models, (+) suffix.
   - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

Tape & Reel Packaging TR-F12

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
24	12	7	Small quantity standards (see note)	10
				20
				50
				100
				200
		13	Standard	500

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

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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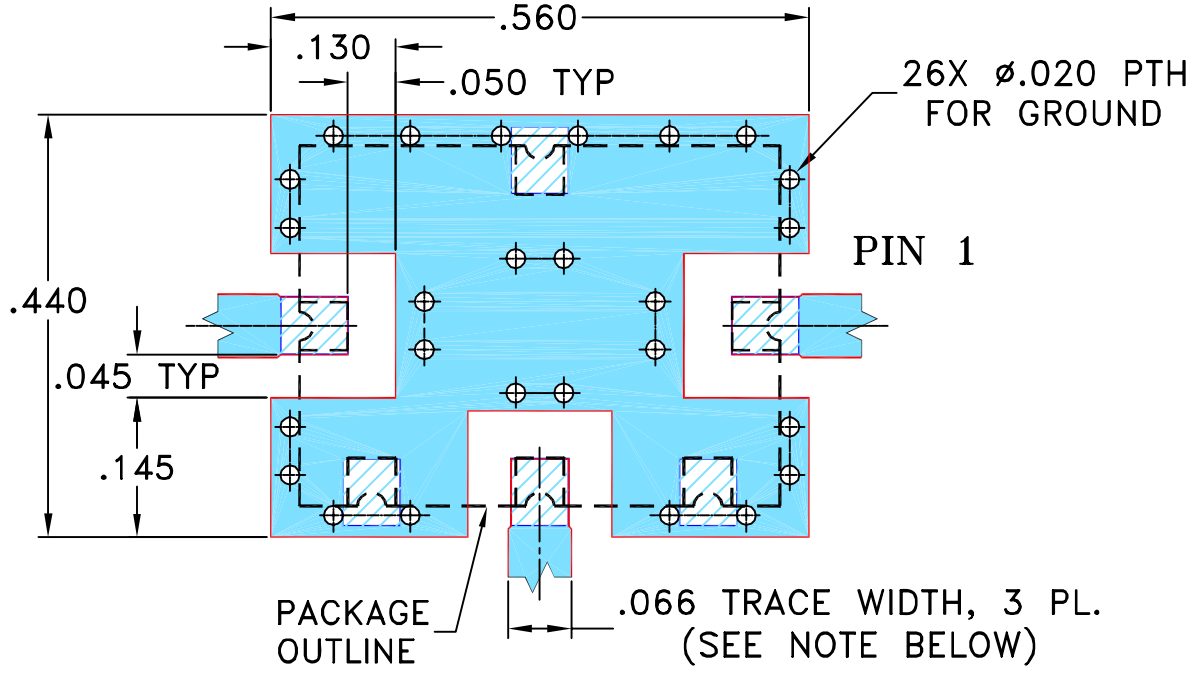
Mini-Circuits ISO 9001 & ISO 14001 Certified

THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
A	M86762	ADDED CONNECTIONS "lp & lq"	05/23/03	MMG	WL
B	M94598	ADDED CONNECTION "hk"	10/08/04	MMG	HY
C	M102713	UPDATED NOTES & DESCRIPTION	01/14/06	GF	IL
D	M132989	UPDATED NOTE 2	08/24/11	GF	DJ

SUGGESTED MOUNTING CONFIGURATION FOR TTT166/167 CASE STYLE, "hk"/"lp"/"lq" "x"/"ck"/"ec" PIN CONNECTIONS



NOTE:

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. THE USE OF SOLDER MASK OVER THE GROUND AREA UNDER THE UNIT AS SHOWN IS RECOMMENDED TO PREVENT POTENTIAL SHORTING. IF USER CHOOSES TO EXPOSE METAL UNDER THE ENTIRE UNIT GROUND PAD FOR IMPROVED GROUNDING, IT IS RECOMMENDED A SOLDER MASK DAM BE APPLIED AROUND EACH GROUND PAD TO ENSURE FILLET AND CONNECTION AT GROUND PADS.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	GF	03/18/03
TOLERANCES ON:	CHECKED	IL	04/15/03
2 PL DECIMALS ±	APPROVED	DJ	04/15/03
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

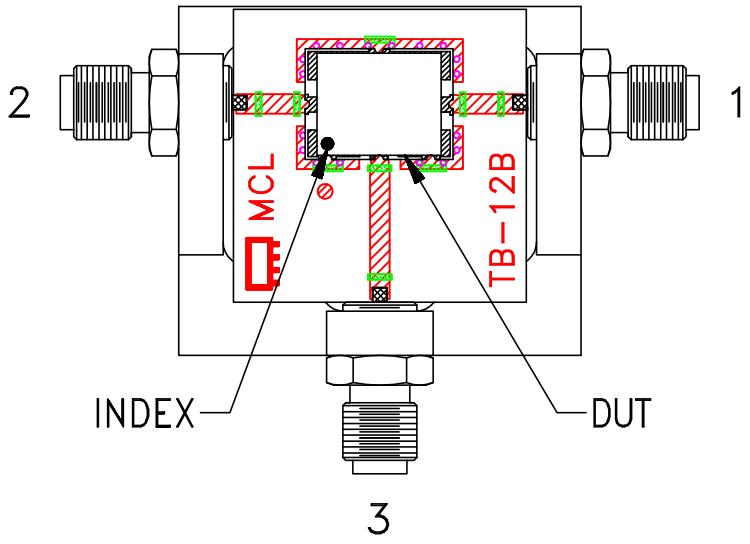
PL, hk/lp/lq/x/ck/ec, TTT166/167, SYM/HJK/SYAS/SYPD, TB-12

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-079	D

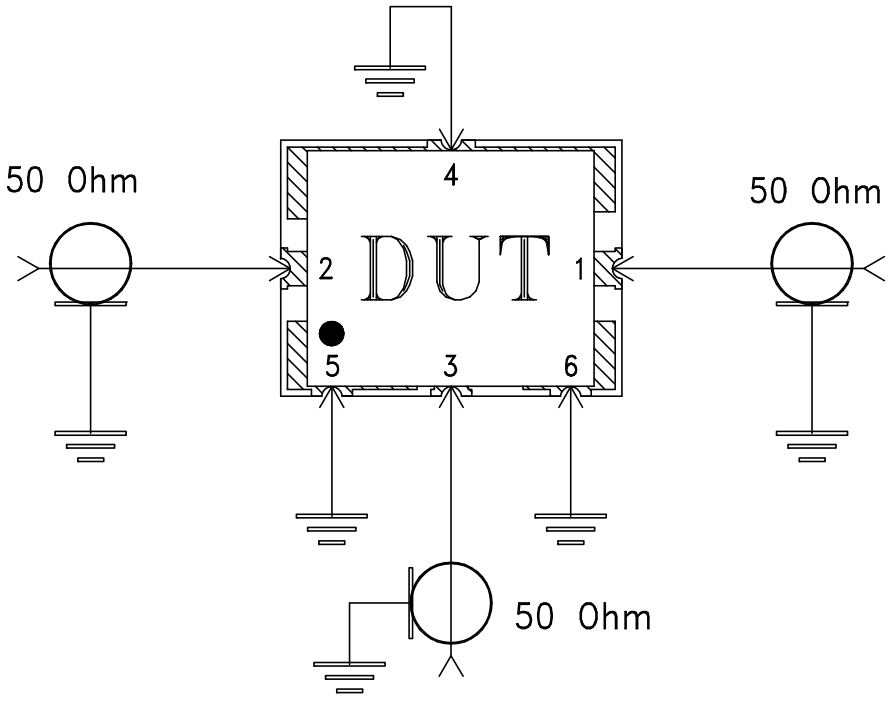
FILE:	SCALE:	SHEET:
98PL079	5:1	1 OF 1

Evaluation Board and Circuit

For Pin Connections Refer to Data Sheet of the DUT



TB-12



Schematic Diagram

Notes:

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

Mini-Circuits®

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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