

Directional Coupler

ADC-20-4-75R+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +25°C

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING LOSS (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	OUT	CPL
10	0.56	20.70	21.41	19.24	19.29	20.38
20	0.55	20.77	23.52	22.91	23.20	23.37
30	0.54	20.81	24.20	24.78	25.27	24.92
40	0.52	20.83	24.50	26.16	26.78	26.06
50	0.51	20.85	24.56	27.31	28.06	26.98
75	0.50	20.90	24.44	29.62	30.74	28.86
100	0.49	20.92	24.31	31.13	32.57	30.31
150	0.50	20.93	23.45	31.30	32.46	32.48
175	0.50	20.94	22.78	30.61	31.28	33.42
200	0.51	20.94	22.31	29.69	30.06	34.17
250	0.52	20.92	21.29	27.89	27.79	35.14
275	0.52	20.90	20.77	27.01	26.90	35.41
300	0.53	20.88	20.35	26.24	26.11	35.52
325	0.54	20.86	20.12	25.59	25.40	35.44
350	0.55	20.85	19.51	25.03	24.77	35.11
375	0.55	20.82	19.17	24.52	24.26	34.44
400	0.56	20.79	18.80	24.05	23.78	33.55
450	0.58	20.72	17.98	23.36	23.07	31.86
475	0.59	20.69	17.72	23.11	22.75	31.22
500	0.60	20.65	17.29	22.89	22.52	30.69
550	0.62	20.58	16.71	22.54	22.16	29.54
575	0.63	20.53	16.65	22.43	22.04	28.88
600	0.64	20.50	16.18	22.36	21.97	28.20
650	0.67	20.41	15.78	22.38	21.97	27.17
700	0.69	20.32	15.51	22.61	22.10	26.50
750	0.71	20.20	15.38	23.05	22.44	25.73
800	0.72	20.10	15.26	23.57	22.89	24.98
850	0.73	19.98	15.06	24.32	23.46	24.43
900	0.75	19.86	15.10	25.31	24.32	24.04
950	0.76	19.74	14.99	26.56	25.20	23.60
975	0.76	19.67	15.20	27.20	25.77	23.45
1000	0.78	19.61	15.22	28.07	26.39	23.33
1025	0.78	19.59	14.76	28.83	26.92	23.25
1050	0.79	19.49	15.21	29.86	27.53	23.25
1100	0.80	19.38	15.04	31.97	28.86	23.23
1150	0.82	19.27	14.66	34.56	30.33	23.21
1200	0.83	19.14	14.01	37.01	31.61	23.22
1250	0.86	19.05	13.09	36.73	32.39	23.38
1300	0.89	18.93	12.40	34.61	32.77	23.77
1400	0.93	18.66	10.84	31.58	31.91	24.58
1500	0.97	18.40	9.75	29.27	30.76	26.18
1600	0.99	18.18	8.66	27.84	29.56	27.94
1700	1.04	18.03	8.25	26.99	27.91	31.31
1800	1.11	17.92	8.18	25.99	26.11	37.08
1900	1.21	17.81	8.59	25.13	24.14	43.88
2000	1.32	17.76	9.34	23.74	22.17	36.73
2200	1.35	17.83	9.18	20.79	18.44	27.04
2400	1.19	17.94	6.16	18.11	15.28	22.80
2500	1.16	17.84	4.46	17.38	14.29	21.88
2600	1.23	17.63	3.84	17.00	13.51	20.15
2800	1.95	17.22	3.75	16.39	12.08	18.14
3000	2.70	17.09	7.21	16.76	11.39	17.00
3250	2.45	16.23	10.40	19.48	12.11	16.51
3500	1.71	18.14	0.06	18.00	11.57	16.81

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Directional Coupler

ADC-20-4-75R+

Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = -40°C

FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING LOSS (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	(dB) OUT	CPL
10	0.36	20.59	20.04	18.80	18.52	19.38
20	0.43	20.71	23.90	24.38	23.76	24.52
30	0.44	20.75	24.76	27.62	26.45	27.14
40	0.44	20.79	25.04	30.13	28.40	29.14
50	0.43	20.81	25.04	32.03	30.14	30.46
75	0.43	20.84	25.10	33.24	34.71	30.65
100	0.42	20.86	24.85	33.26	40.71	30.13
150	0.42	20.88	23.99	35.73	41.89	35.01
175	0.42	20.88	23.30	36.58	38.91	39.16
200	0.43	20.88	22.91	36.88	36.66	38.01
250	0.44	20.86	21.81	31.04	32.53	36.54
275	0.44	20.84	21.32	28.84	30.63	38.22
300	0.45	20.83	20.90	27.87	29.00	40.83
325	0.45	20.79	20.63	27.40	27.56	42.58
350	0.46	20.78	20.06	26.39	26.35	40.27
375	0.46	20.75	19.71	25.06	25.32	36.91
400	0.47	20.71	19.33	24.00	24.42	34.52
450	0.49	20.65	18.56	23.04	23.17	32.65
475	0.50	20.61	18.35	22.49	22.66	31.71
500	0.50	20.58	17.86	21.86	22.26	30.29
550	0.52	20.49	17.29	21.09	21.64	27.99
575	0.53	20.45	17.42	20.93	21.38	27.31
600	0.54	20.41	16.86	20.71	21.17	26.51
650	0.57	20.32	16.61	20.41	20.86	24.82
700	0.58	20.21	16.36	20.61	20.76	24.04
750	0.60	20.11	16.36	20.88	20.90	23.02
800	0.61	20.00	16.43	21.75	21.36	21.88
850	0.62	19.88	16.42	22.89	22.05	21.42
900	0.63	19.76	16.57	24.35	23.13	20.80
950	0.64	19.63	16.59	27.26	24.44	20.31
975	0.64	19.56	17.00	29.00	25.21	20.27
1000	0.65	19.50	17.16	30.97	26.09	20.26
1025	0.65	19.46	16.82	33.03	26.90	20.31
1050	0.65	19.40	17.35	36.36	27.97	20.47
1100	0.66	19.28	17.34	42.69	30.05	20.86
1150	0.68	19.17	16.96	33.73	31.99	21.21
1200	0.69	19.04	16.11	28.62	32.58	21.97
1250	0.72	18.93	14.88	26.30	32.15	23.01
1300	0.74	18.82	14.08	25.09	31.73	24.31
1400	0.77	18.56	12.01	23.34	31.83	28.88
1500	0.79	18.31	10.73	23.24	31.81	40.14
1600	0.78	18.11	9.58	23.17	28.24	32.21
1700	0.82	17.95	9.23	24.65	24.12	26.10
1800	0.89	17.88	9.44	24.88	21.33	23.07
1900	0.97	17.76	10.15	25.18	19.75	20.97
2000	1.08	17.69	11.36	29.71	19.12	21.02
2200	1.01	17.77	10.47	26.30	19.14	22.68
2400	0.78	17.92	6.14	15.88	17.82	23.11
2500	0.76	17.87	4.19	13.56	16.20	19.63
2600	0.77	17.63	3.42	12.12	14.62	16.54
2800	1.35	17.21	3.65	10.19	11.31	12.09
3000	2.26	16.91	8.40	11.68	9.36	9.87
3250	1.91	15.95	9.05	22.68	10.75	10.25
3500	0.95	18.34	1.82	11.45	13.16	15.85

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Typical Performance Data

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FREQUENCY (MHz)	INSERTION LOSS (dB)	COUPLING LOSS (dB)	DIRECTIVITY (dB)	RETURN LOSS		
				IN	OUT	CPL
10	0.75	20.77	20.95	18.39	18.65	19.95
20	0.68	20.84	22.72	21.19	22.01	22.27
30	0.65	20.86	23.29	22.44	23.83	23.27
40	0.63	20.88	23.53	23.21	25.14	23.82
50	0.61	20.90	23.65	23.79	26.13	24.21
75	0.60	20.94	23.60	25.15	27.82	25.43
100	0.59	20.96	23.39	26.77	28.56	27.39
150	0.60	20.98	22.72	28.82	28.35	30.73
175	0.60	21.00	22.03	28.02	27.88	30.28
200	0.61	21.00	21.60	26.85	27.15	29.93
250	0.62	20.99	20.66	26.17	25.79	32.12
275	0.62	20.97	20.21	26.32	25.28	34.16
300	0.63	20.95	19.84	26.21	24.86	35.57
325	0.64	20.95	19.44	25.66	24.47	35.44
350	0.64	20.92	18.99	24.94	24.12	34.48
375	0.65	20.91	18.51	24.54	23.86	33.80
400	0.66	20.88	18.16	24.50	23.65	33.48
450	0.68	20.82	17.31	24.78	23.43	33.49
475	0.69	20.78	17.05	24.55	23.31	33.34
500	0.70	20.76	16.61	24.23	23.25	32.91
550	0.72	20.68	15.97	24.12	23.18	31.86
575	0.73	20.64	15.92	24.33	23.20	31.37
600	0.74	20.61	15.39	24.40	23.20	31.03
650	0.77	20.52	14.94	24.30	23.29	30.70
700	0.79	20.43	14.52	24.26	23.38	30.27
750	0.81	20.34	14.29	24.30	23.52	29.27
800	0.82	20.22	14.12	24.36	23.69	28.81
850	0.84	20.12	13.94	24.45	23.94	28.03
900	0.86	20.00	13.72	24.57	24.30	26.98
950	0.87	19.89	13.51	24.99	24.67	26.34
975	0.87	19.82	13.63	25.24	24.90	25.95
1000	0.89	19.75	13.57	25.56	25.15	25.42
1025	0.89	19.74	13.07	25.86	25.40	25.02
1050	0.90	19.65	13.43	26.23	25.65	24.75
1100	0.91	19.55	13.19	27.36	26.35	24.32
1150	0.93	19.44	12.78	29.14	27.19	23.49
1200	0.95	19.31	12.20	31.36	27.98	22.84
1250	0.97	19.21	11.40	34.71	28.79	22.55
1300	1.00	19.08	10.89	41.08	29.60	22.55
1400	1.06	18.79	9.55	37.29	29.95	22.44
1500	1.10	18.52	8.60	29.53	30.56	23.77
1600	1.15	18.27	7.61	25.72	31.74	25.37
1700	1.21	18.09	7.23	23.59	33.52	29.35
1800	1.30	17.96	7.11	21.94	32.53	31.72
1900	1.39	17.81	7.40	20.76	27.51	29.12
2000	1.50	17.74	7.99	19.64	23.27	23.69
2200	1.55	17.80	7.93	18.16	17.87	19.58
2400	1.46	17.85	5.62	18.51	15.04	18.81
2500	1.48	17.66	4.21	19.52	14.47	19.76
2600	1.60	17.44	3.72	20.94	14.10	20.53
2800	2.38	17.00	3.63	20.40	13.11	23.15
3000	3.03	16.96	6.51	17.39	12.25	21.18
3250	2.74	16.33	10.74	16.88	12.57	16.82
3500	2.15	18.15	1.03	18.95	11.91	15.82

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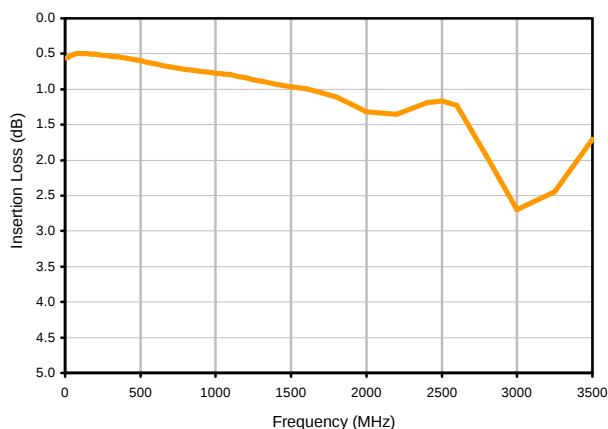


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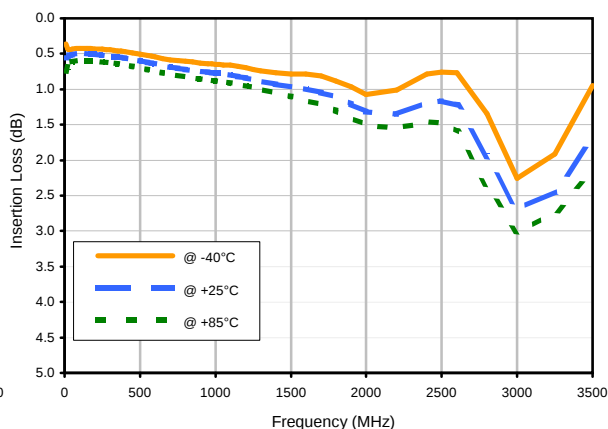
Typical Performance Curves

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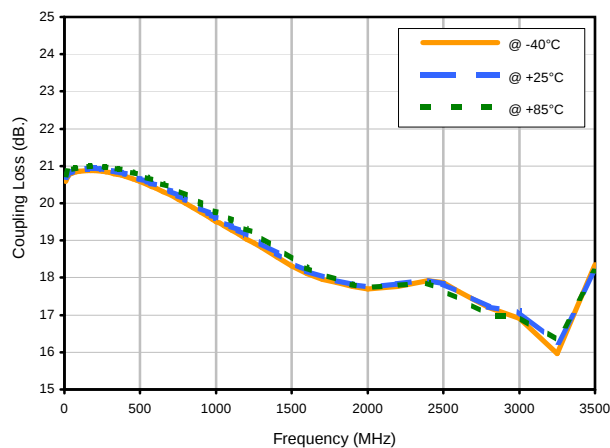
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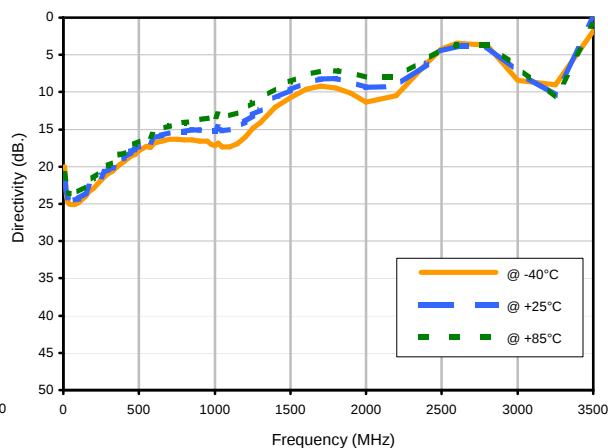
Insertion Loss vs. TEMPERATURE



Coupling Loss vs. TEMPERATURE



Directivity vs. TEMPERATURE



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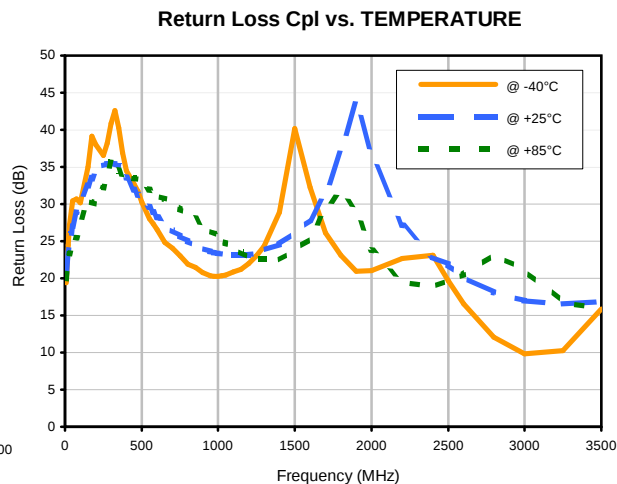
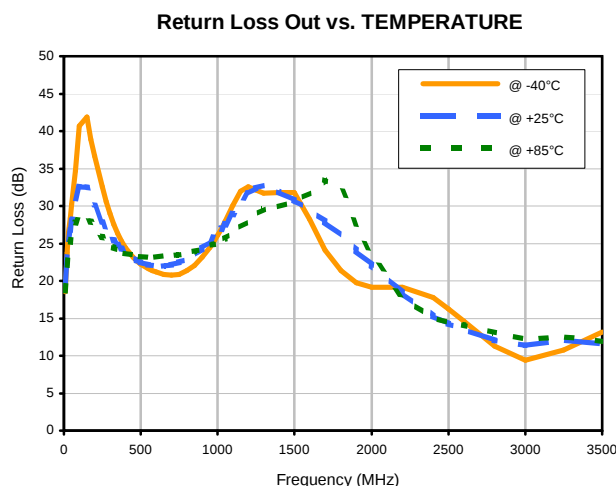
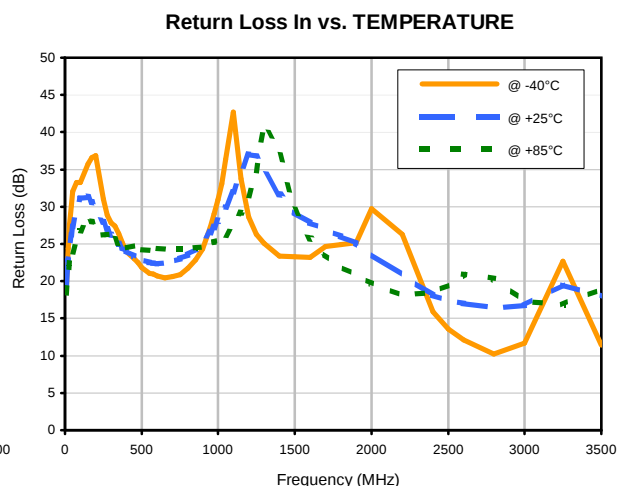
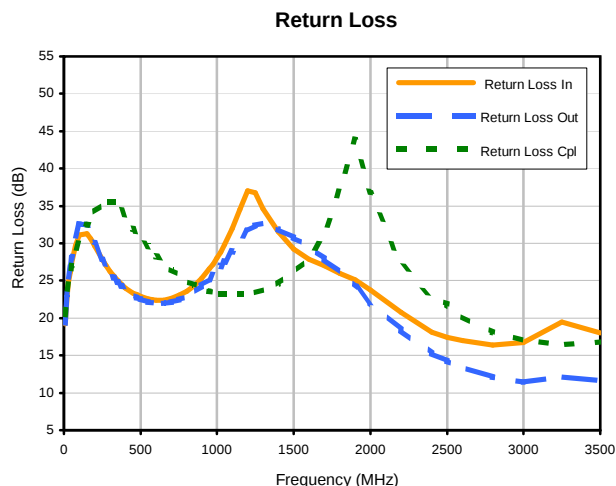
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Typical Performance Curves



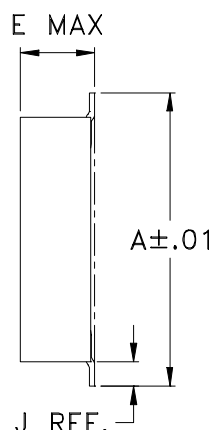
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CD541
CD542
CD636
CD637

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

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

Notes:

- Case material: Plastic.
- 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.

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OR	M100739	NEW RELEASE	02/14/06	MMG	DY

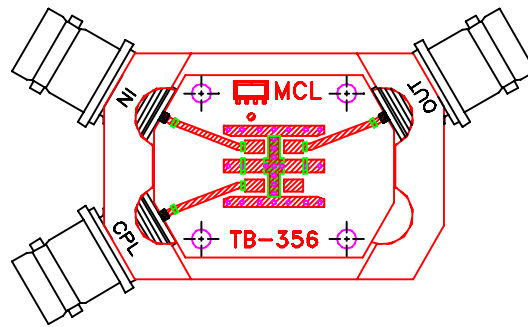
Top view of a microstrip circuit board. The board is light blue with a red outline. It features a central horizontal strip with six circular through-holes. Dimensions include: .047 TYP (width of the central strip), .125/2 PL. (width of the top and bottom pads), .040/2 PL. (width of the side pads), .025 TYP (width of the bottom pad), .050 (width of the bottom pad), .030 TRACE WIDTH, 3 PL. (SEE NOTE BELOW) (width of the bottom pad), and 11X Ø.020 PTH FOR GROUND (11 circular through-holes for ground). The package outline is indicated by a dashed line. PIN 1 is labeled on the left side.

 DENOTES PCB COPPER LAYOUT WITH SMOBS (SOLDER MASK OVER BARE COPPER)

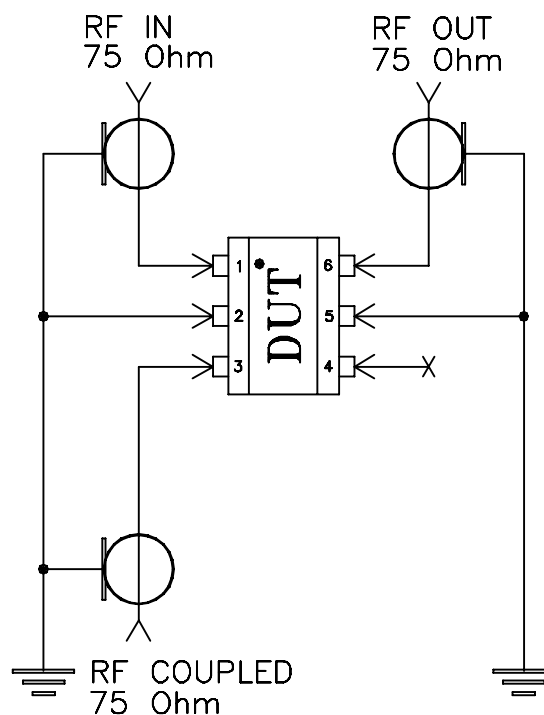
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

SHEET: 1 OF 1

Evaluation Board and Circuit



TB-356



Schematic Diagram

Notes:

1. 75 Ohm BNC Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.030 inch.

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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