

DC Pass, High Power Bi-Directional Coupler

SYBD-ED12713/4

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.



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

CASE STYLE : JB1233

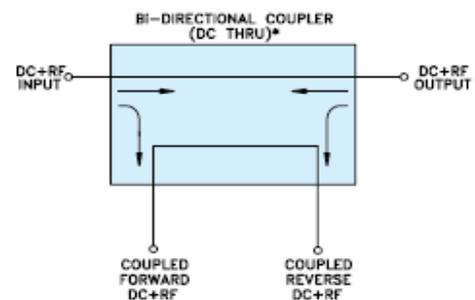
ELECTRICAL SPECIFICATIONS 50Ω @ +25°C				
Parameter	Min.	Typ.	Max.	Units
Frequency	960		1400	MHz
Coupling	Nominal	21±0.8		dB
	Flatness	±1.9		dB
Mainline Loss **	960-1400 MHz	0.09		dB
Directivity	960-1400 MHz	22		dB
VSWR	960-1400 MHz	1.15		(:1)
RF Power Input	960-1400 MHz		50	W

Note: ** Mainline loss includes theoretical coupled power loss of 0.0346dB at 21dB coupling.

MAXIMUM RATINGS	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
DC Current	2A

PIN CONNECTIONS	
INPUT	1
OUTPUT	2
COUPLED FORWARD	4
COUPLED REVERSE	3
GROUND	5

Electrical Schematic



* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITHOUT INTERNAL TRANSFORMERS AND RESISTORS.

Bi-Directional Coupler

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Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB) IN-OUT	COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
		IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
800.0	0.05	24.38	24.34	22.66	22.24	25.99	25.81	27.09	27.03
850.0	0.05	23.86	23.82	22.94	22.33	25.69	25.67	26.65	26.63
900.0	0.06	23.39	23.35	22.95	22.37	24.89	24.89	26.33	26.39
920.0	0.05	23.20	23.16	23.11	22.43	24.83	24.80	26.25	26.27
930.0	0.05	23.11	23.07	23.12	22.42	24.73	24.77	26.18	26.18
940.0	0.06	23.03	23.00	23.11	22.46	24.72	24.74	26.10	26.10
950.0	0.06	22.93	22.90	23.08	22.46	24.70	24.74	26.06	26.04
960.0	0.05	22.85	22.81	23.05	22.44	24.64	24.65	26.02	25.96
980.0	0.06	22.68	22.64	23.01	22.38	24.34	24.30	25.89	25.86
990.0	0.06	22.59	22.56	23.00	22.33	24.17	24.12	25.83	25.83
1000.0	0.06	22.51	22.48	23.01	22.33	24.04	23.97	25.82	25.84
1010.0	0.06	22.43	22.40	23.08	22.39	23.96	23.91	25.83	25.83
1020.0	0.06	22.35	22.32	23.20	22.40	23.91	23.87	25.82	25.82
1030.0	0.06	22.28	22.24	23.28	22.41	23.90	23.88	25.81	25.79
1040.0	0.06	22.20	22.16	23.45	22.42	23.95	23.92	25.77	25.74
1050.0	0.07	22.12	22.08	23.54	22.46	24.03	24.02	25.78	25.71
1060.0	0.07	22.04	22.00	23.69	22.45	24.10	24.05	25.75	25.67
1070.0	0.06	21.96	21.92	23.69	22.52	24.06	24.06	25.68	25.61
1080.0	0.07	21.89	21.85	23.63	22.46	23.98	23.93	25.65	25.55
1090.0	0.06	21.80	21.76	23.60	22.48	23.86	23.80	25.61	25.52
1100.0	0.06	21.73	21.69	23.53	22.49	23.74	23.69	25.63	25.55
1110.0	0.06	21.65	21.61	23.55	22.50	23.68	23.61	25.68	25.62
1120.0	0.06	21.58	21.54	23.49	22.54	23.56	23.53	25.75	25.66
1130.0	0.07	21.52	21.47	23.52	22.56	23.54	23.51	25.79	25.71
1140.0	0.07	21.44	21.40	23.61	22.59	23.55	23.54	25.86	25.75
1150.0	0.07	21.37	21.33	23.71	22.61	23.62	23.60	25.88	25.80
1160.0	0.07	21.30	21.26	23.86	22.62	23.72	23.68	25.90	25.79
1170.0	0.07	21.22	21.19	23.90	22.59	23.76	23.72	25.88	25.80
1180.0	0.07	21.15	21.11	24.04	22.59	23.80	23.75	25.89	25.78
1190.0	0.07	21.08	21.04	24.08	22.58	23.78	23.72	25.92	25.77
1200.0	0.07	21.02	20.98	24.12	22.58	23.73	23.65	25.94	25.82
1210.0	0.07	20.95	20.91	24.12	22.60	23.65	23.56	25.97	25.89
1220.0	0.08	20.89	20.85	24.11	22.62	23.54	23.50	26.05	25.98
1230.0	0.07	20.82	20.78	24.12	22.62	23.47	23.43	26.10	26.01
1240.0	0.08	20.76	20.72	24.10	22.63	23.47	23.43	26.18	26.07
1250.0	0.08	20.69	20.66	24.16	22.69	23.53	23.53	26.25	26.15
1260.0	0.08	20.63	20.59	24.26	22.76	23.65	23.66	26.30	26.20
1270.0	0.09	20.57	20.53	24.39	22.77	23.78	23.81	26.35	26.20
1280.0	0.08	20.51	20.46	24.50	22.82	23.91	23.94	26.41	26.25
1290.0	0.07	20.44	20.39	24.54	22.85	24.03	24.04	26.46	26.32
1300.0	0.08	20.38	20.34	24.65	22.87	24.09	24.08	26.54	26.37
1310.0	0.08	20.31	20.27	24.60	22.93	24.05	24.03	26.66	26.47
1320.0	0.08	20.26	20.21	24.54	22.88	24.01	23.93	26.77	26.57
1330.0	0.08	20.20	20.16	24.48	22.89	23.95	23.83	26.86	26.64
1340.0	0.08	20.14	20.09	24.43	22.96	23.90	23.77	26.97	26.73
1350.00	0.08	20.08	20.04	24.43	22.93	23.93	23.79	27.10	26.81
1360.00	0.08	20.02	19.98	24.59	23.02	24.03	23.92	27.19	26.92
1370.00	0.08	19.96	19.92	24.77	23.06	24.20	24.10	27.25	27.02
1380.00	0.07	19.90	19.85	24.90	23.10	24.36	24.32	27.34	27.12
1390.00	0.09	19.85	19.80	25.08	23.12	24.57	24.53	27.46	27.22
1400.00	0.09	19.79	19.75	25.22	23.16	24.72	24.70	27.60	27.36
1450.00	0.09	19.51	19.46	25.09	23.14	24.87	24.74	28.30	28.03
1500.00	0.09	19.25	19.21	25.42	23.31	25.91	25.86	29.14	29.00
1550.00	0.10	19.01	18.97	25.92	23.51	26.55	26.41	30.31	30.13
1600.00	0.10	18.76	18.71	25.99	23.52	27.81	27.72	31.88	31.57



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REV. X1

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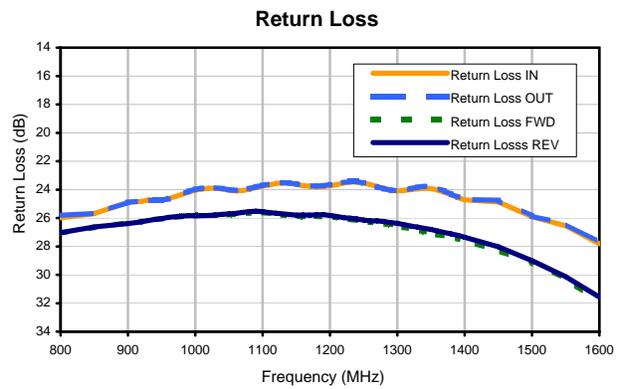
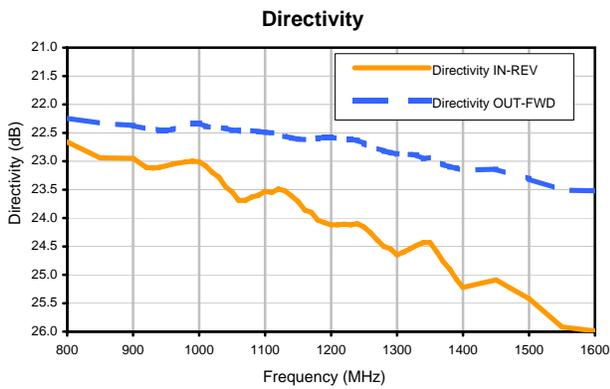
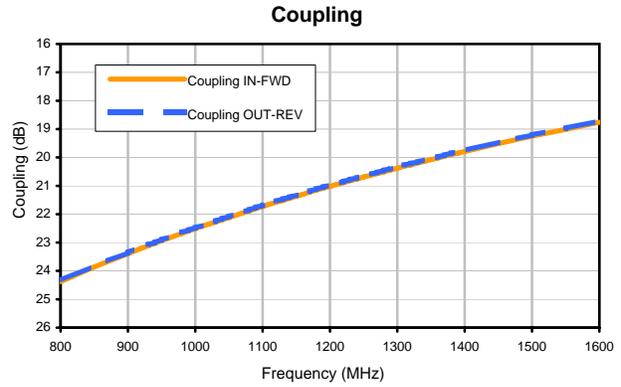
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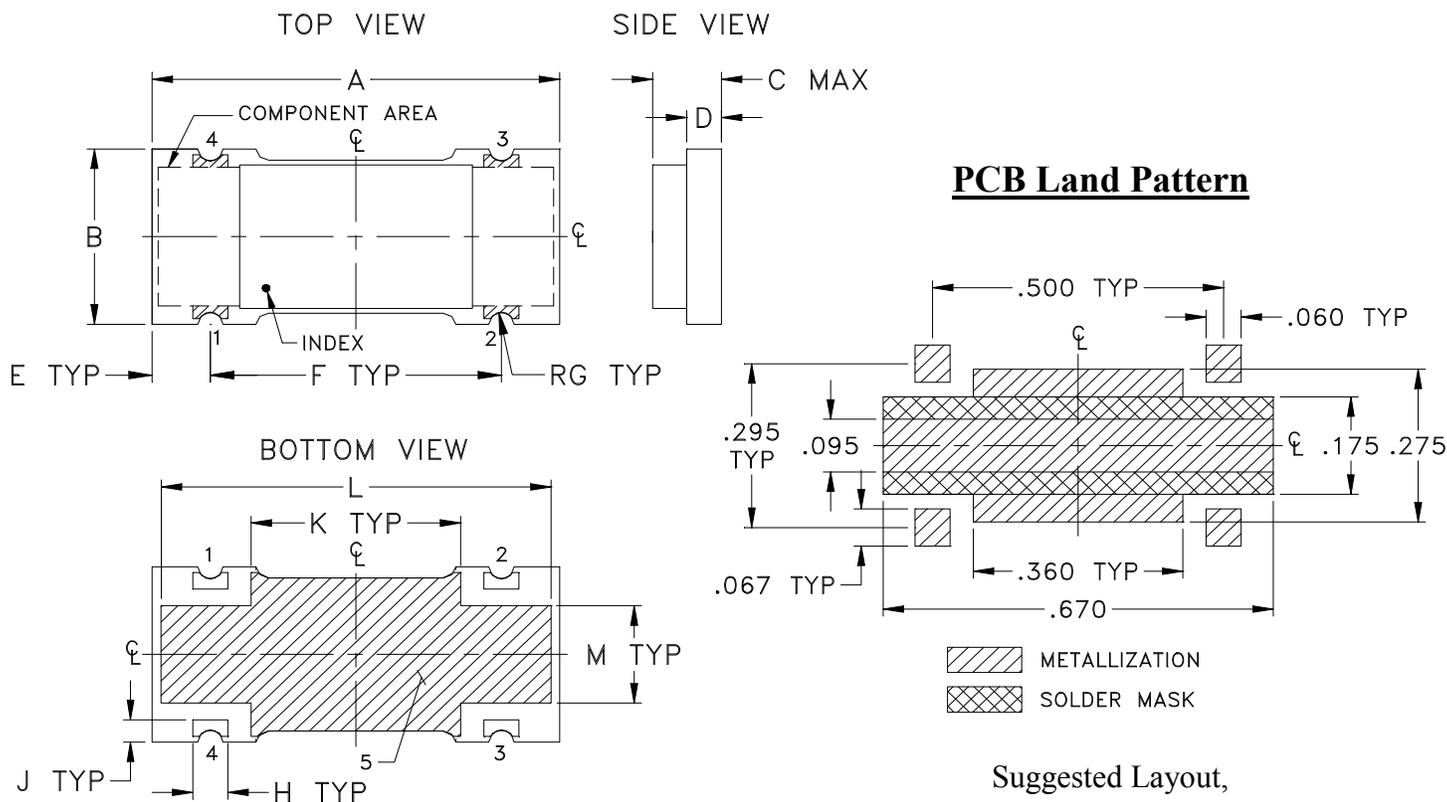
Bi-Directional Coupler

Typical Performance Curves

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Outline Dimensions



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

CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	WT, GRAM
JB1233	.70 (17.78)	.32 (8.13)	.13 (3.30)	.060 (1.52)	.100 (2.54)	.500 (12.70)	.022 (0.56)	.060 (1.52)	.040 (1.02)	.360 (9.14)	.670 (17.02)	.175 (4.45)	0.68

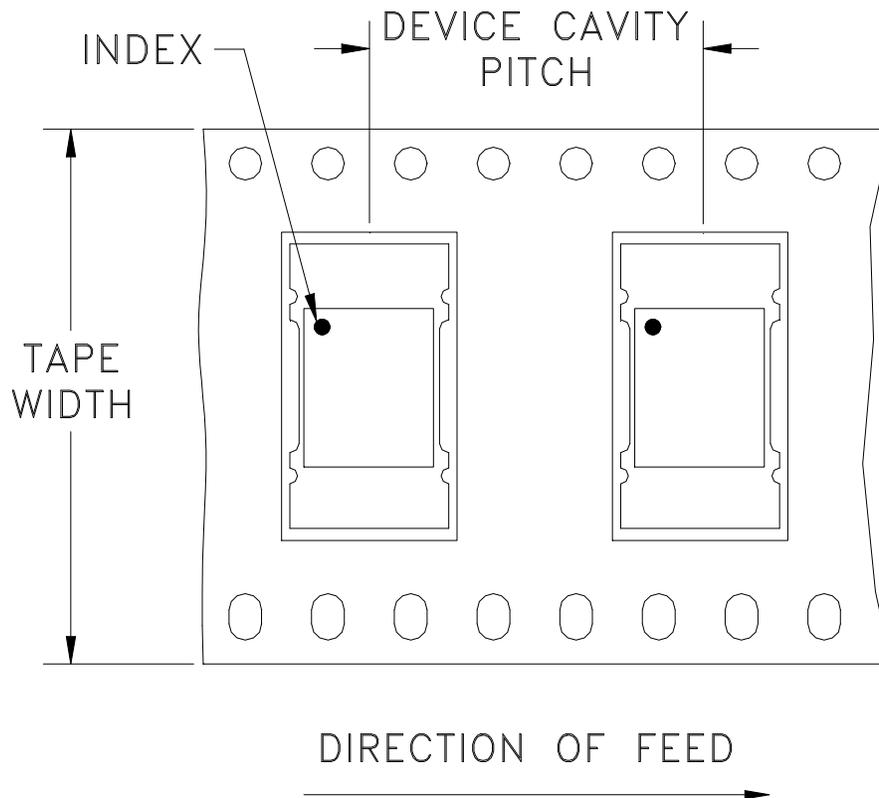
Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .01$; 3 Pl. $\pm .005$

Notes:

- Open style, Base material: Printed wiring laminate.
- Termination finish: 3-5 μ inch (.08-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.
All models, (+) suffix.

Tape & Reel Packaging TR-F84

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	12	13	500

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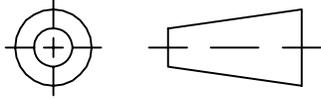
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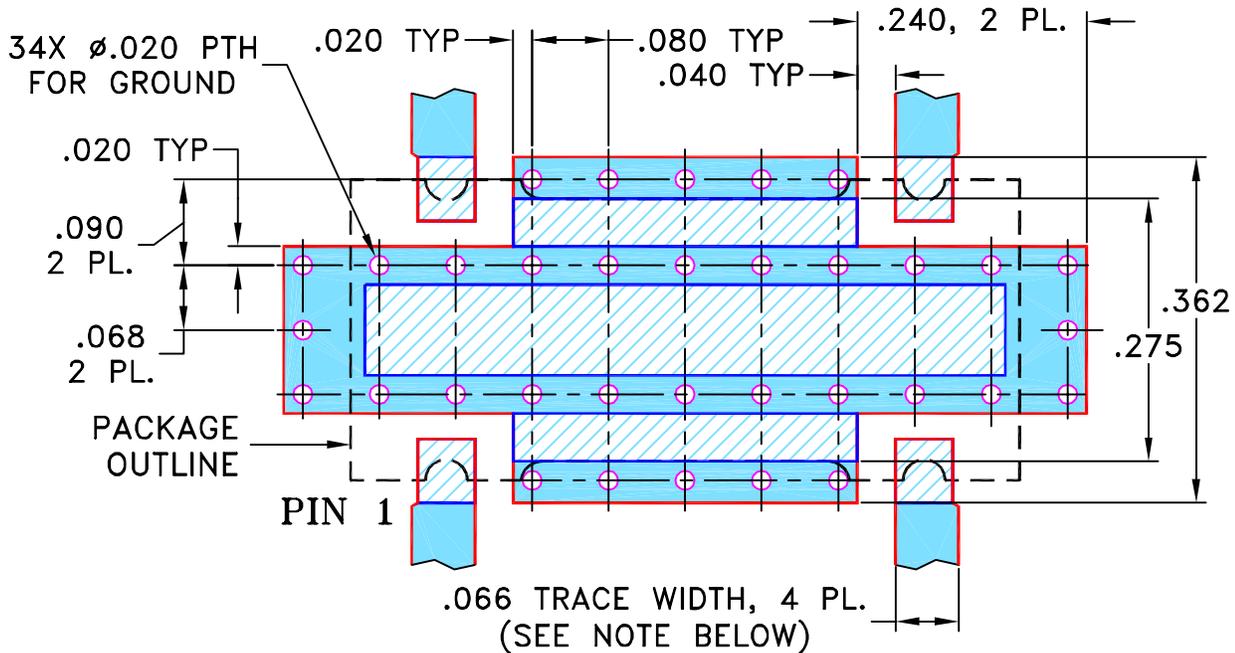
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M109017	NEW RELEASE	12/29/06	MMG	WP

SUGGESTED MOUNTING CONFIGURATION FOR
JB1233 CASE STYLE, "rw" PIN CONNECTION



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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 TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± .005 ANGLES ± FRACTIONS ±	DRAWN	MMG 12/21/06
	CHECKED	AV 12/29/06
	APPROVED	WP 12/29/06

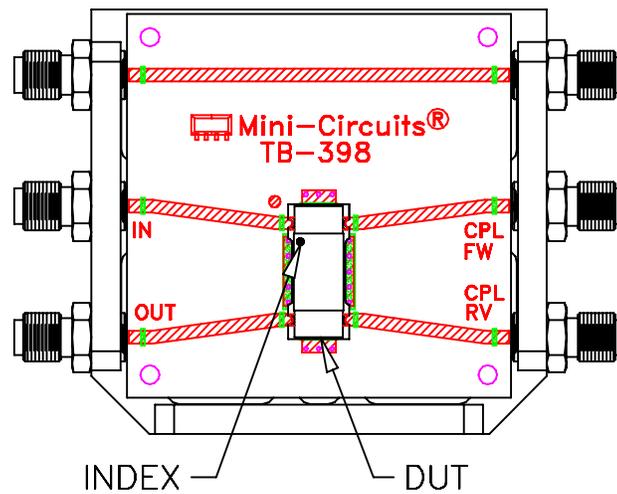
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PL, rw, JB1233, SYBD, TB-398

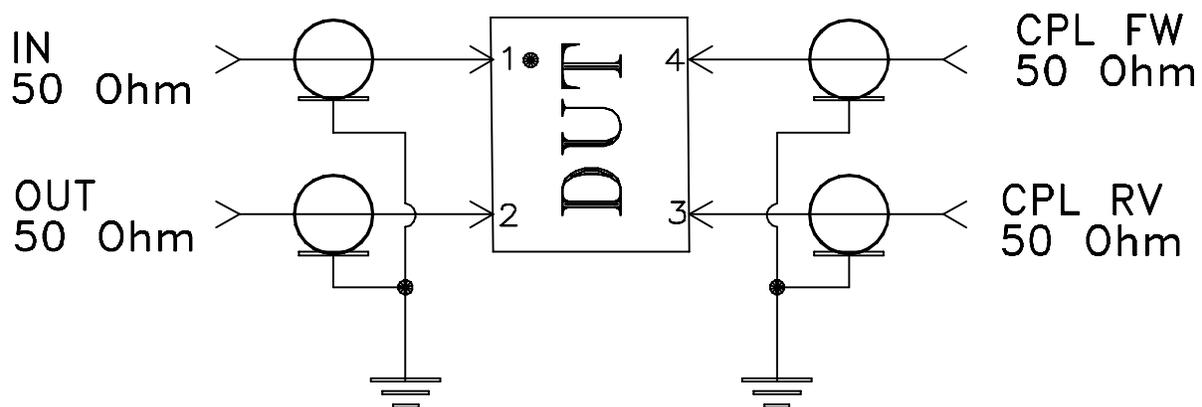
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SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-260	REV: OR
FILE: 98PL260	SCALE: 5:1	SHEET: 1 OF 1	

Evaluation Board and Circuit



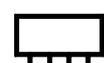
TB-398



Schematic Diagram

Notes:

1. SMA 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