

Engineering Development Model

Power Splitter/Combiner

SCPSQJ-ED13503/1

4 Way-0°/90°/180°/270°

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 : HU1374

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C				
Parameter		Min.	Typ.	Max. Units
Frequency		1000		1900 MHz
Isolation	1000-1900 MHz		20	dB
Insertion Loss Above 6.0 dB	1000-1900 MHz		1.15	dB
Phase Unbalance* @ 90° Port	1000-1900 MHz		1	deg.
Phase Unbalance* @ 180° Port	1000-1900 MHz		1	deg.
Phase Unbalance* @ 270° Port	1000-1900 MHz		1	deg.
Amplitude Unbalance	1000-1900 MHz		0.45	dB
VSWR	SUM Port		1.09	(:1)
	OUT Ports		1.11	(:1)

*Phase Unbalance is referenced insertion phase @ 0° port

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

PIN CONNECTIONS	
SUM PORT	11
PORT 1 (0°)	9
PORT 2 (90°)	6
PORT 3 (180°)	2
PORT 4 (270°)	13
GROUND	1,3,4,5,7,8,10,12,14

electrical schematic



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The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

IF/RF MICROWAVE COMPONENTS



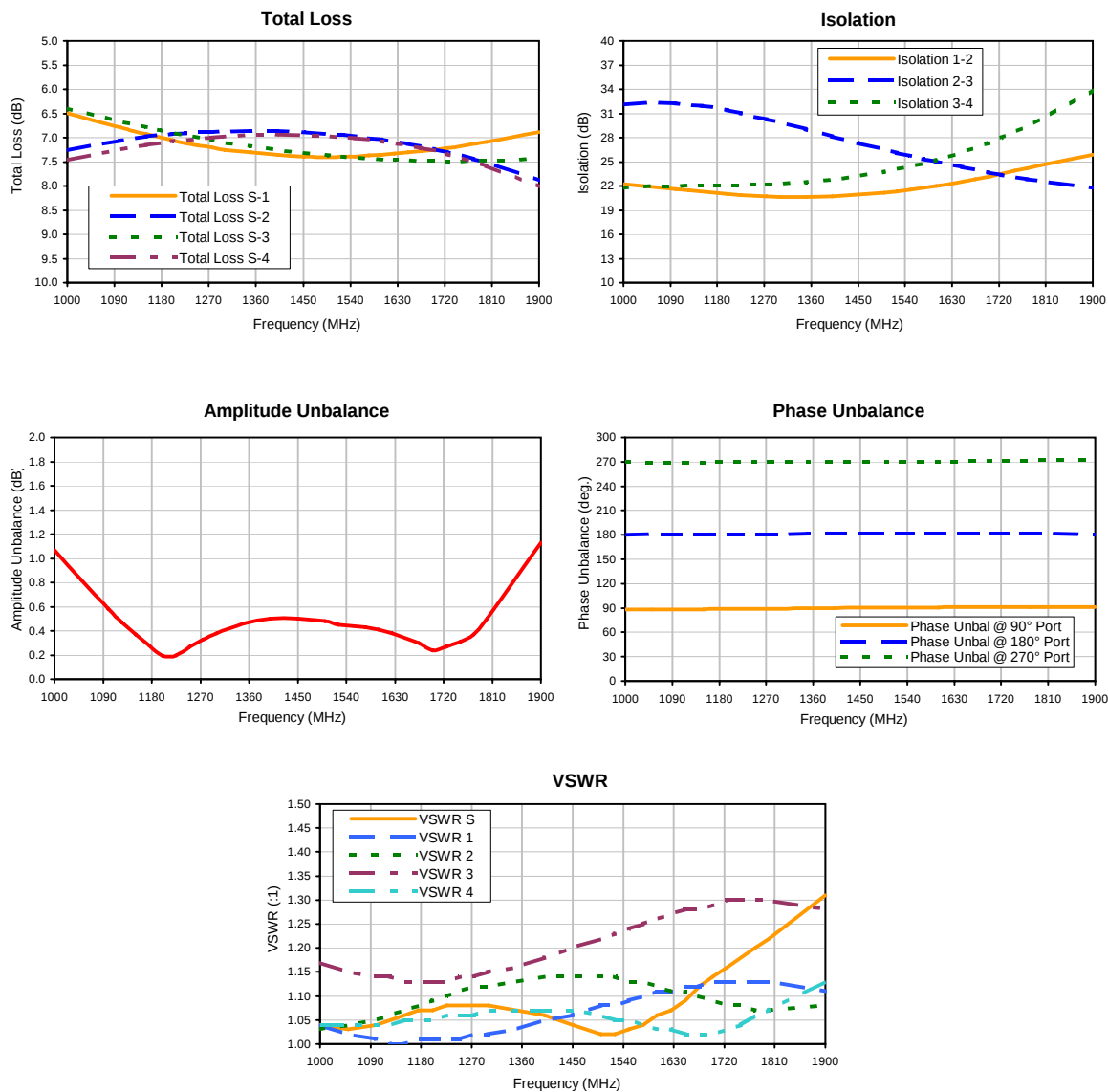
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12/16/2008
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Typical Performance Data

FREQ. (MHz)	TOTAL LOSS ¹ (dB)				AMP. UNBAL. (dB)	ISOLATION (dB)			PHASE UNBALANCE ² (Deg.)			FREQ. (MHz)	VSWR (:1)				
	S-1	S-2	S-3	S-4		1-2	2-3	3-4	@ 90° Port	@ 180° Port	@ 270° Port		S	1	2	3	4
1000.0	6.49	7.27	6.39	7.47	1.07	22.21	32.11	21.79	88.11	180.52	269.51	1000.0	1.04	1.04	1.03	1.17	1.04
1050.0	6.64	7.15	6.53	7.35	0.82	21.93	32.33	21.97	88.20	180.63	269.45	1050.0	1.03	1.02	1.04	1.15	1.04
1100.0	6.79	7.06	6.66	7.24	0.58	21.61	32.27	22.03	88.34	180.75	269.44	1100.0	1.04	1.01	1.05	1.14	1.04
1125.0	6.86	7.02	6.73	7.20	0.47	21.45	32.13	22.05	88.45	180.81	269.47	1125.0	1.05	1.00	1.06	1.14	1.04
1150.0	6.93	6.98	6.78	7.15	0.37	21.29	31.94	22.07	88.55	180.87	269.47	1150.0	1.06	1.00	1.07	1.13	1.05
1175.0	6.99	6.95	6.84	7.12	0.28	21.13	31.69	22.08	88.65	180.93	269.48	1175.0	1.07	1.01	1.08	1.13	1.05
1200.0	7.05	6.93	6.90	7.08	0.19	21.00	31.39	22.09	88.76	180.99	269.50	1200.0	1.07	1.01	1.09	1.13	1.05
1225.0	7.11	6.91	6.95	7.05	0.20	20.89	31.05	22.11	88.87	181.06	269.53	1225.0	1.08	1.01	1.10	1.13	1.06
1250.0	7.16	6.89	7.00	7.02	0.27	20.79	30.69	22.16	88.98	181.12	269.55	1250.0	1.08	1.01	1.11	1.14	1.06
1275.0	7.20	6.88	7.05	7.00	0.33	20.71	30.29	22.20	89.11	181.18	269.58	1275.0	1.08	1.02	1.12	1.14	1.06
1300.0	7.25	6.87	7.10	6.98	0.38	20.67	29.89	22.27	89.26	181.24	269.66	1300.0	1.08	1.02	1.12	1.15	1.07
1350.0	7.31	6.86	7.18	6.95	0.46	20.65	29.04	22.48	89.55	181.36	269.81	1350.0	1.07	1.03	1.13	1.16	1.07
1400.0	7.36	6.86	7.25	6.94	0.50	20.71	28.18	22.77	89.82	181.47	269.96	1400.0	1.06	1.05	1.14	1.18	1.07
1450.0	7.39	6.89	7.32	6.95	0.50	20.90	27.34	23.20	90.08	181.55	270.15	1450.0	1.04	1.06	1.14	1.20	1.07
1500.0	7.40	6.92	7.37	6.97	0.48	21.16	26.53	23.73	90.30	181.62	270.32	1500.0	1.02	1.08	1.14	1.22	1.06
1525.0	7.39	6.94	7.39	6.99	0.45	21.33	26.13	24.04	90.43	181.65	270.44	1525.0	1.02	1.08	1.14	1.23	1.05
1550.0	7.39	6.97	7.42	7.01	0.44	21.53	25.75	24.40	90.55	181.67	270.55	1550.0	1.03	1.09	1.13	1.24	1.05
1575.0	7.37	7.01	7.43	7.04	0.43	21.74	25.36	24.80	90.65	181.68	270.65	1575.0	1.04	1.10	1.13	1.25	1.04
1600.0	7.35	7.04	7.45	7.07	0.41	21.98	25.01	25.22	90.76	181.68	270.78	1600.0	1.06	1.11	1.12	1.26	1.03
1625.0	7.33	7.08	7.46	7.11	0.38	22.25	24.66	25.66	90.87	181.68	270.92	1625.0	1.07	1.11	1.11	1.27	1.03
1650.0	7.31	7.13	7.47	7.16	0.34	22.54	24.32	26.18	90.96	181.67	271.04	1650.0	1.09	1.12	1.11	1.28	1.02
1675.0	7.28	7.18	7.48	7.21	0.30	22.85	23.99	26.75	91.06	181.65	271.20	1675.0	1.12	1.12	1.10	1.28	1.02
1700.0	7.25	7.24	7.48	7.27	0.24	23.17	23.68	27.35	91.13	181.60	271.33	1700.0	1.14	1.13	1.09	1.29	1.02
1725.0	7.21	7.30	7.49	7.34	0.27	23.52	23.39	27.99	91.21	181.56	271.47	1725.0	1.16	1.13	1.08	1.30	1.03
1750.0	7.18	7.36	7.49	7.42	0.31	23.87	23.11	28.69	91.26	181.51	271.60	1750.0	1.18	1.13	1.08	1.30	1.04
1775.0	7.13	7.44	7.48	7.50	0.37	24.24	22.84	29.45	91.29	181.44	271.72	1775.0	1.20	1.13	1.07	1.30	1.06
1800.0	7.09	7.51	7.48	7.58	0.50	24.59	22.59	30.27	91.33	181.38	271.87	1800.0	1.22	1.13	1.07	1.30	1.07
1900.0	6.88	7.88	7.43	8.01	1.13	25.85	21.74	33.93	91.53	181.10	272.60	1900.0	1.31	1.11	1.08	1.28	1.13

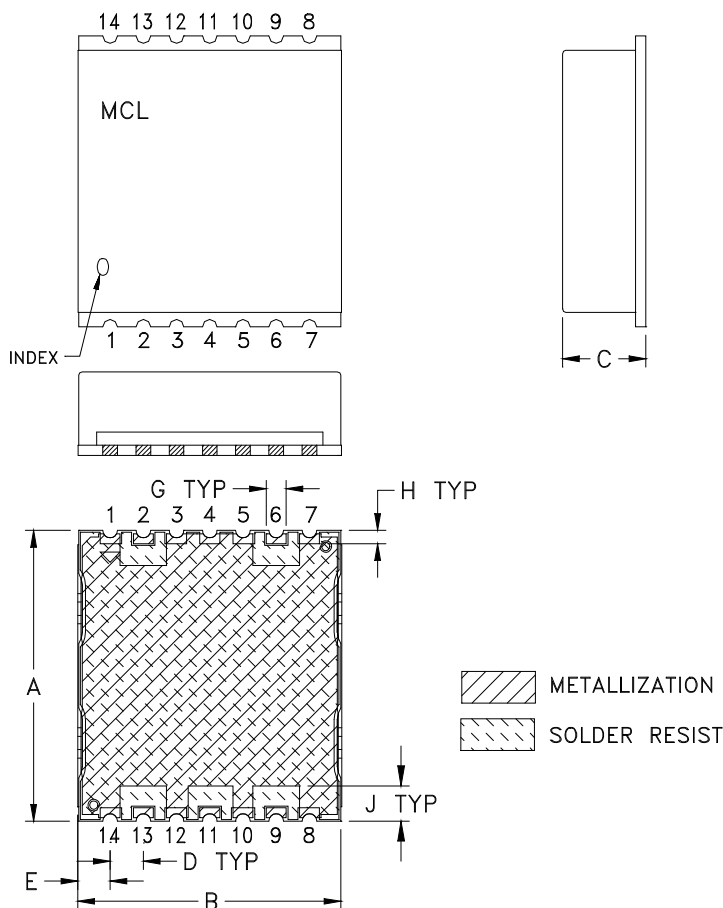
¹Total Loss = Insertion Loss + 6dB Splitter Loss²Phase Unbalance is referenced insertion phase at 0° port

Typical Performance Curves

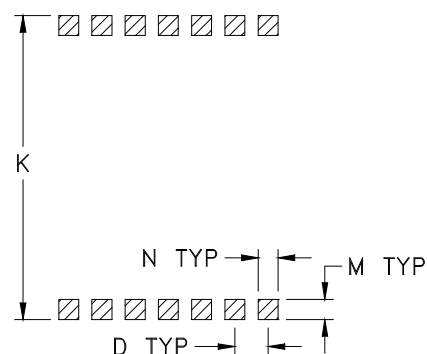


Outline Dimensions

HU1374



PCB Land Pattern



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

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P	WT, GRAM
HU1374	.870 (22.10)	.800 (20.32)	.25 (6.35)	.100 (2.54)	.097 (2.46)	-	.060 (1.52)	.040 (1.02)	.105 (2.67)	.910 (23.11)	-	.060 (1.52)	.060 (1.52)	-	2.85

Dimensions are in inches (mm). Tolerances: 2PL. +/- .03; 3PL. +/- .015

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Termination finish:

For RoHS Case Styles: 2-5 μ inch (.05-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate. All models (+) suffix.

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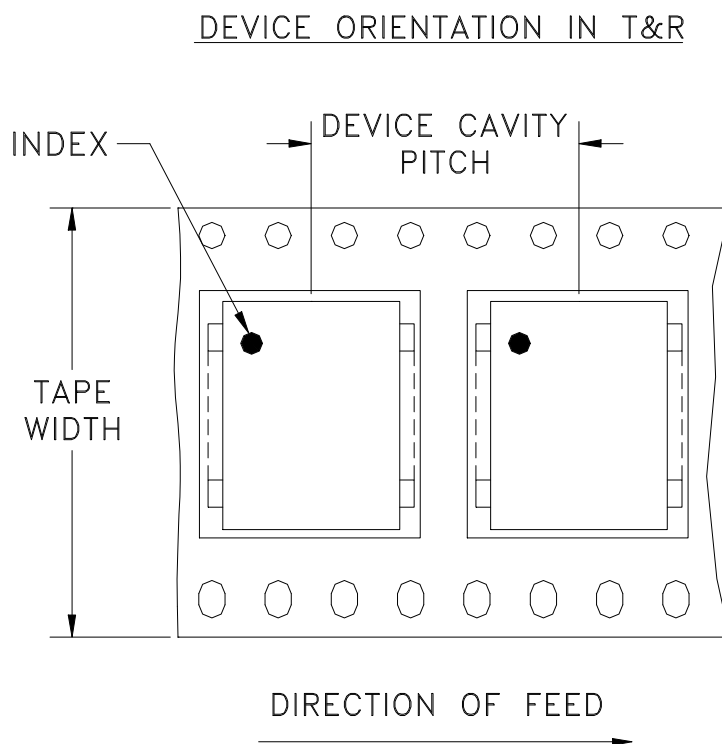
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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F21



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	32	13	200

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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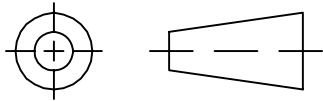
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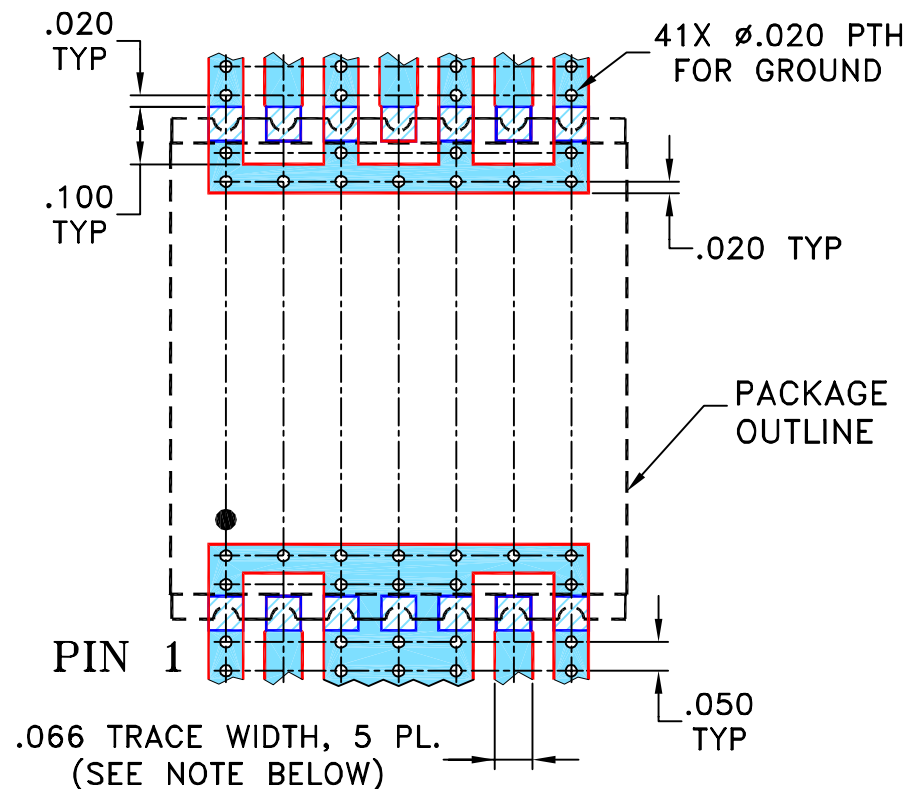
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M119547	NEW RELEASE	09/17/08	AV	HY

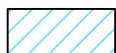
SUGGESTED MOUNTING CONFIGURATION FOR HU1374 CASE STYLE, "14SQ05" PIN CODE



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" $\pm$.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 $\pm$
3 PL DECIMALS $\pm$.005
ANGLES $\pm$
FRACTIONS $\pm$

DRAWN

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09/12/08

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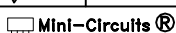
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PL, 14SQ05, HU1374, SCPSQJ-4+, TB-490+

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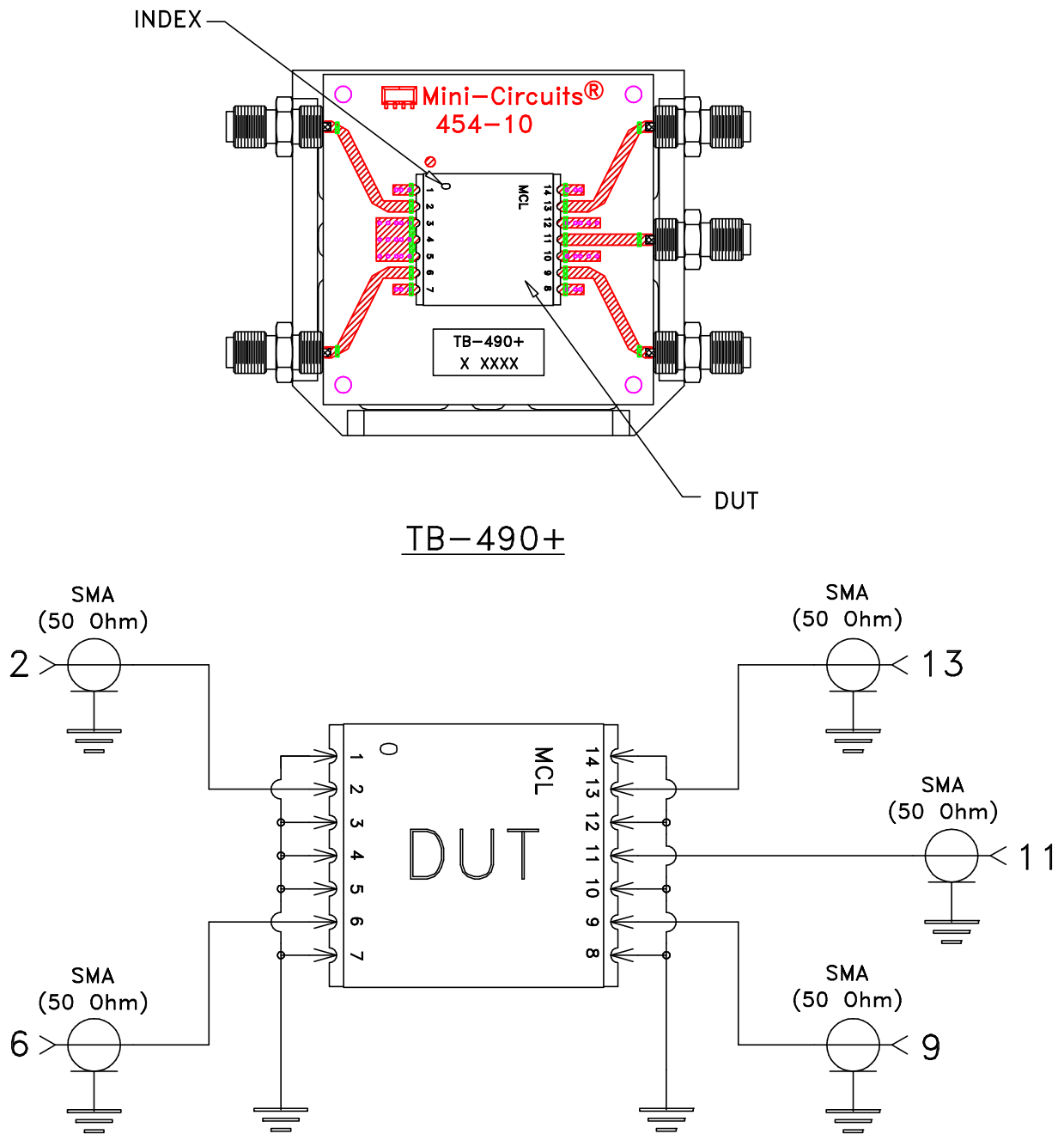
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SCALE: 6:1

SHEET: 1 OF 1

Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT



Schematic Diagram

Notes:

1. 50 Ohm 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