

Power Splitter/Combiner 4 Way-Quadrifilar

SCQA-ED16313/1

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 : CK1704

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C				
Parameter		Min.	Typ.	Max. Units
Frequency		1600		2500 MHz
Isolation	1600-2500 MHz		20	dB
Insertion Loss Above 6 dB	1600-2500 MHz		2.0	dB
Phase Unbalance	1600-2500 MHz		5.0	dB
Amplitude Unbalance	1600-2500 MHz		1.35	(:1)
	SUM PORT		1.30	(:1)
	OUTPUT PORTS		1.30	(:1)

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

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

Functional Diagram



Typical Performance Data

FREQ.	TOTAL LOSS ¹				AMP. UNBAL.	ISOLATION			PHASE UNBALANCE				FREQ.	VSWR				
(MHz)	(dB)				(dB)	(dB)			(Deg.)				(MHz)	(:1)				
	S-1	S-2	S-3	S-4		1-2	2-3	3-4	@ 0° Port	@ 90° Port	@ 180° Port	@ 270° Port		S	1	2	3	4
1500.0	8.97	7.43	8.70	7.21	1.76	17.67	16.01	18.18	0.00	91.70	180.13	270.49	1500.0	1.50	1.08	1.12	1.17	1.21
1550.0	8.72	7.37	8.42	7.06	1.66	18.81	16.38	18.70	0.00	91.29	180.62	271.02	1550.0	1.37	1.07	1.11	1.16	1.19
1600.0	8.53	7.34	8.20	6.96	1.57	20.16	16.71	19.48	0.00	91.50	180.84	271.24	1600.0	1.29	1.07	1.11	1.14	1.17
1650.0	8.37	7.33	8.03	6.90	1.47	21.68	17.04	20.45	0.00	91.70	180.86	271.33	1650.0	1.23	1.07	1.12	1.13	1.15
1700.0	8.25	7.33	7.89	6.86	1.39	23.36	17.36	21.66	0.00	91.94	180.76	271.29	1700.0	1.19	1.08	1.14	1.12	1.15
1750.0	8.15	7.35	7.76	6.83	1.32	25.14	17.69	23.15	0.00	92.16	180.55	271.18	1750.0	1.15	1.09	1.16	1.11	1.16
1800.0	8.07	7.37	7.67	6.81	1.27	26.75	18.07	24.93	0.00	92.39	180.27	270.98	1800.0	1.11	1.12	1.18	1.11	1.17
1850.0	8.02	7.40	7.59	6.80	1.22	27.77	18.48	26.95	0.00	92.64	179.90	290.71	1850.0	1.07	1.15	1.19	1.10	1.18
1900.0	7.99	7.44	7.53	6.80	1.19	27.90	18.82	29.08	0.00	92.87	179.49	270.41	1900.0	1.05	1.18	1.20	1.11	1.19
1950.0	7.98	7.48	7.49	6.80	1.17	27.48	19.05	31.18	0.00	93.08	179.02	270.05	1950.0	1.07	1.21	1.20	1.12	1.20
2000.0	7.99	7.52	7.47	6.81	1.18	27.00	19.13	33.28	0.00	93.29	178.51	269.41	2000.0	1.10	1.24	1.18	1.13	1.19
2050.0	8.02	7.56	7.47	6.82	1.19	26.77	19.03	35.75	0.00	93.52	177.93	269.05	2050.0	1.14	1.27	1.16	1.15	1.18
2100.0	8.06	7.60	7.48	6.84	1.22	26.84	18.82	39.30	0.00	93.75	177.29	268.38	2100.0	1.17	1.30	1.13	1.16	1.16
2120.0	8.08	7.61	7.49	6.84	1.23	26.96	18.69	41.17	0.00	93.84	177.01	268.12	2120.0	1.18	1.31	1.12	1.17	1.15
2140.0	8.10	7.62	7.50	6.84	1.25	27.13	18.58	42.66	0.00	93.93	176.71	267.82	2140.0	1.19	1.31	1.10	1.17	1.14
2160.0	8.12	7.63	7.51	6.85	1.27	27.33	18.46	42.23	0.00	94.01	176.44	267.49	2160.0	1.20	1.32	1.09	1.17	1.13
2180.0	8.14	7.64	7.53	6.85	1.29	27.54	18.36	39.91	0.00	94.08	176.15	267.17	2180.0	1.21	1.33	1.07	1.18	1.12
2190.0	8.15	7.64	7.53	6.86	1.30	27.63	18.31	38.53	0.00	94.13	176.00	267.01	2190.0	1.21	1.33	1.07	1.18	1.12
2200.0	8.17	7.65	7.54	6.86	1.31	27.73	18.26	37.19	0.00	94.17	175.86	266.84	2200.0	1.22	1.33	1.06	1.18	1.11
2201.0	8.17	7.65	7.54	6.86	1.31	27.74	18.25	37.04	0.00	94.18	175.85	266.82	2201.0	1.22	1.33	1.06	1.18	1.11
2205.0	8.17	7.65	7.54	6.86	1.31	27.77	18.23	36.55	0.00	94.18	175.79	266.76	2205.0	1.22	1.33	1.05	1.18	1.11
2210.0	8.18	7.65	7.55	6.86	1.32	27.81	18.21	35.91	0.00	94.21	175.71	266.66	2210.0	1.22	1.33	1.05	1.18	1.11
2220.0	8.19	7.65	7.56	6.86	1.33	27.87	18.16	34.72	0.00	94.26	175.54	266.48	2220.0	1.22	1.33	1.04	1.18	1.11
2240.0	8.21	7.65	7.58	6.86	1.35	27.95	18.08	32.59	0.00	94.33	175.22	266.12	2240.0	1.23	1.33	1.03	1.18	1.10
2260.0	8.24	7.65	7.60	6.86	1.37	27.91	18.01	30.74	0.00	94.40	174.93	265.75	2260.0	1.23	1.33	1.02	1.18	1.10
2280.0	8.26	7.65	7.63	6.86	1.40	27.71	17.97	29.13	0.00	94.49	174.62	265.37	2280.0	1.23	1.33	1.02	1.18	1.10
2300.0	8.29	7.65	7.65	6.86	1.43	27.36	17.94	27.69	0.00	94.54	174.30	264.99	2300.0	1.23	1.33	1.04	1.18	1.11
2350.0	8.37	7.63	7.73	6.87	1.50	25.91	17.91	24.77	0.00	94.70	173.46	263.99	2350.0	1.24	1.32	1.08	1.18	1.13
2400.0	8.44	7.60	7.83	6.86	1.58	24.10	18.03	22.47	0.00	94.82	172.64	262.90	2400.0	1.25	1.30	1.12	1.18	1.16
2450.0	8.53	7.57	7.94	6.85	1.68	22.28	18.17	20.68	0.00	94.93	171.85	261.82	2450.0	1.27	1.29	1.16	1.19	1.18
2500.0	8.63	7.52	8.07	6.85	1.78	20.64	18.39	19.24	0.00	95.05	171.06	260.65	2500.0	1.29	1.28	1.20	1.21	1.21
2550.0	8.74	7.47	8.21	6.83	1.91	19.25	18.57	18.11	0.00	95.16	170.28	259.46	2550.0	1.30	1.28	1.23	1.23	1.22
2600.0	8.85	7.40	8.37	6.82	2.03	18.07	18.74	17.20	0.00	95.26	169.54	258.15	2600.0	1.32	1.28	1.25	1.27	1.23
2650.0	8.97	7.33	8.53	6.79	2.18	17.13	18.78	16.55	0.00	95.34	168.80	246.83	2650.0	1.33	1.30	1.27	1.31	1.23
2700.0	9.10	7.26	8.71	6.77	2.33	16.34	18.73	16.02	0.00	95.47	168.09	245.62	2700.0	1.34	1.32	1.26	1.35	1.22
2750.0	9.25	7.17	8.88	6.74	2.51	15.73	18.58	15.68	0.00	95.55	167.40	243.97	2750.0	1.33	1.35	1.26	1.39	1.19
2800.0	9.40	7.09	9.08	6.71	2.70	15.24	18.38	15.41	0.00	95.66	166.63	242.39	2800.0	1.33	1.39	1.23	1.43	1.17
2850.0	9.57	7.00	9.26	6.68	2.89	14.88	18.16	15.25	0.00	95.77	165.91	240.78	2850.0	1.32	1.42	1.20	1.47	1.14
2900.0	9.76	6.91	9.47	6.65	3.10	14.63	17.95	15.11	0.00	95.87	165.08	239.01	2900.0	1.30	1.45	1.16	1.50	1.13
2950.0	9.96	6.81	9.68	6.63	3.33	14.47	17.78	14.97	0.00	95.99	164.20	237.22	2950.0	1.29	1.48	1.12	1.52	1.13
3000.0	10.19	6.72	9.91	6.62	3.57	14.43	17.61	14.82	0.00	96.10	163.23	235.39	3000.0	1.26	1.51	1.09	1.54	1.14

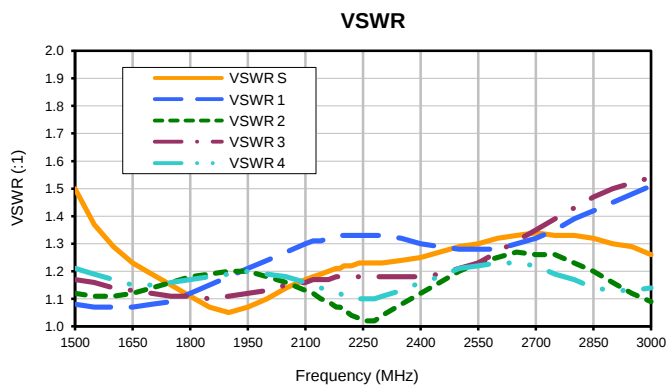
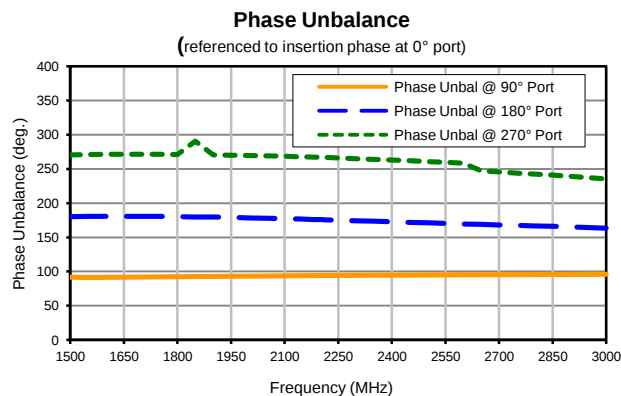
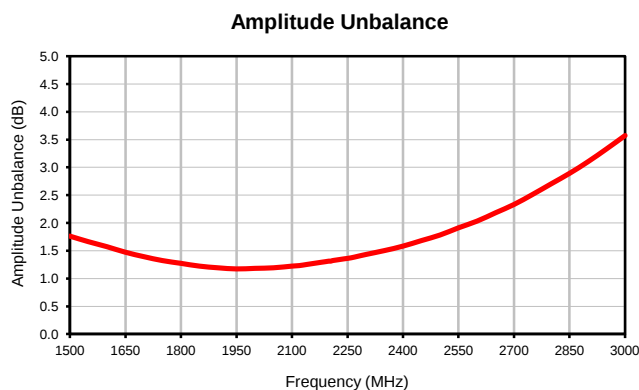
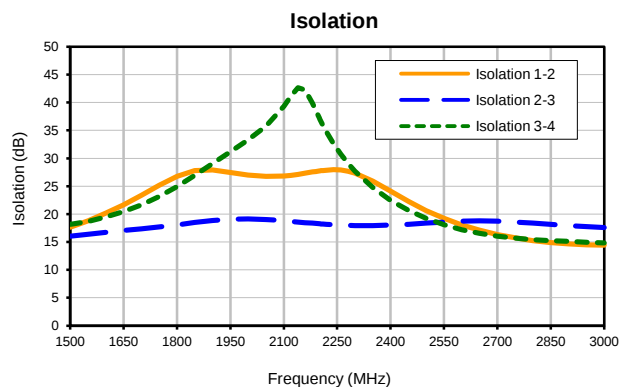
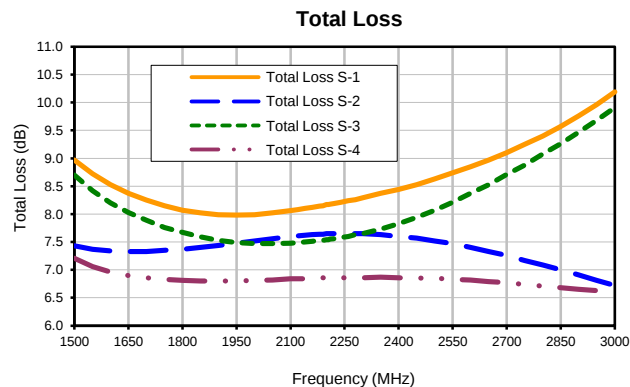
¹Total Loss = Insertion Loss + 6dB Splitter Loss

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IF/RF MICROWAVE COMPONENTS

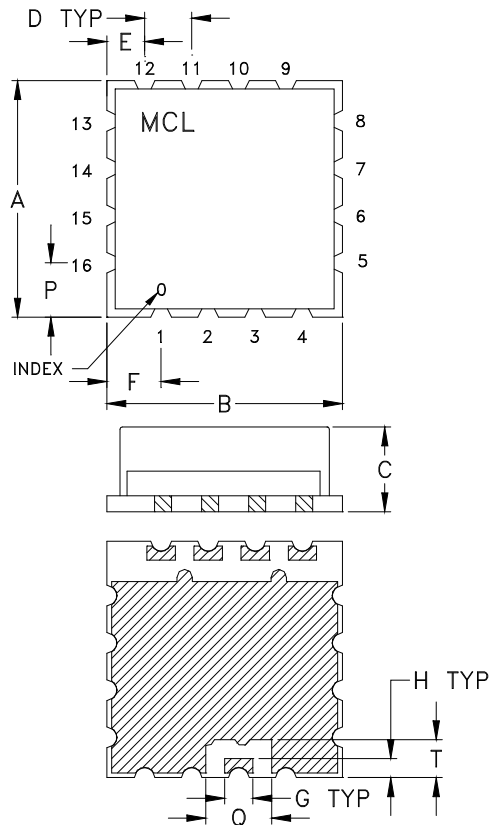
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Typical Performance Curves

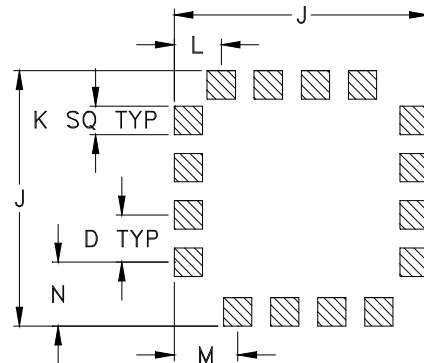


Outline Dimensions

CK1704



PCB Land Pattern



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

CASE #	A	B	C	D	E	F	G	H	J	K
CK1704	.500 (12.70)	.500 (12.70)	.180 (4.57)	.100 (2.54)	.080 (2.03)	.115 (2.92)	.060 (1.52)	.040 (1.02)	.540 (13.72)	.060 (1.52)

CASE #	L	M	N	P	Q	R	S	T	WT. GRAM
CK1704	.100 (2.54)	.135 (3.43)	.135 (3.43)	.115 (2.92)	.140 (3.56)	-	-	.080 (2.03)	1.0

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3Pl. $\pm .015$

Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- 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.



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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F37



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
24	16	7	Small quantity standards (see note)	10
				20
				50
				100
		13	Standard	200
				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.

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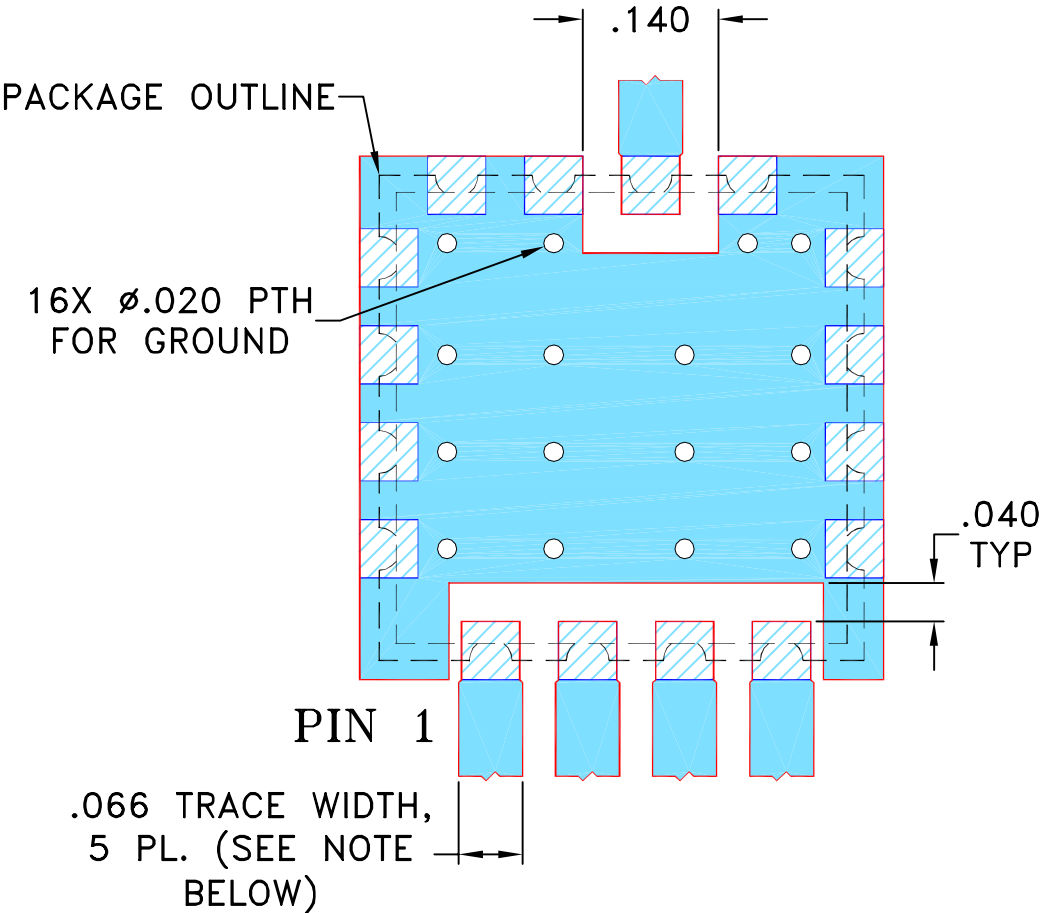
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THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M136731	NEW RELEASE	05/14/12	AV	ABD
A	M145165	UPDATED PCB PATTERN	02/28/14	AV	JC

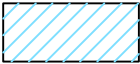
SUGGESTED MOUNTING CONFIGURATION FOR
CK1704 CASE STYLE, "16SP01" PIN CONNECTION



- 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	AV	04/17/12
	CHECKED	IL	05/14/12
	APPROVED	ABD	05/14/12



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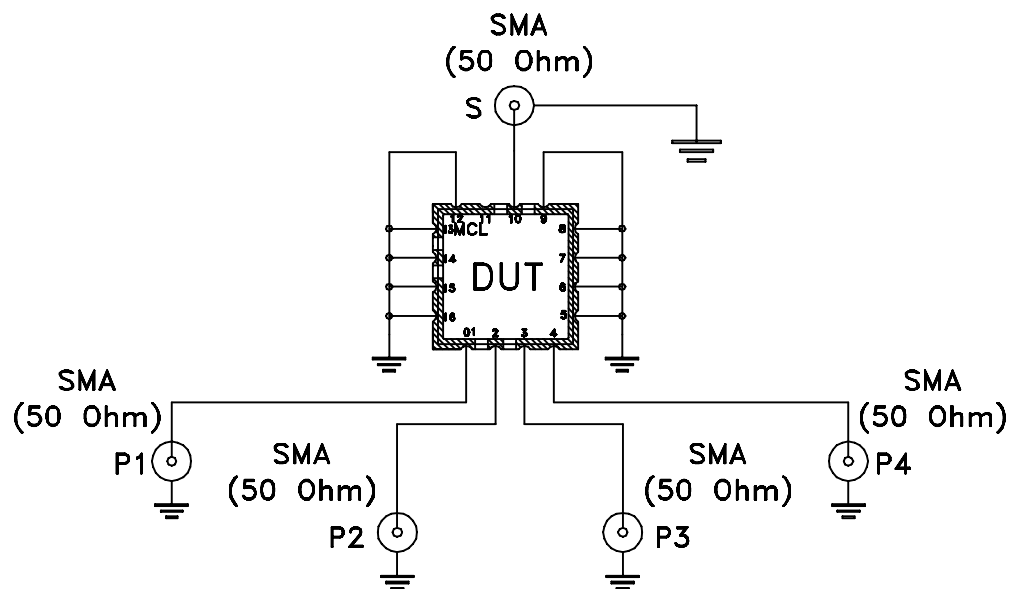
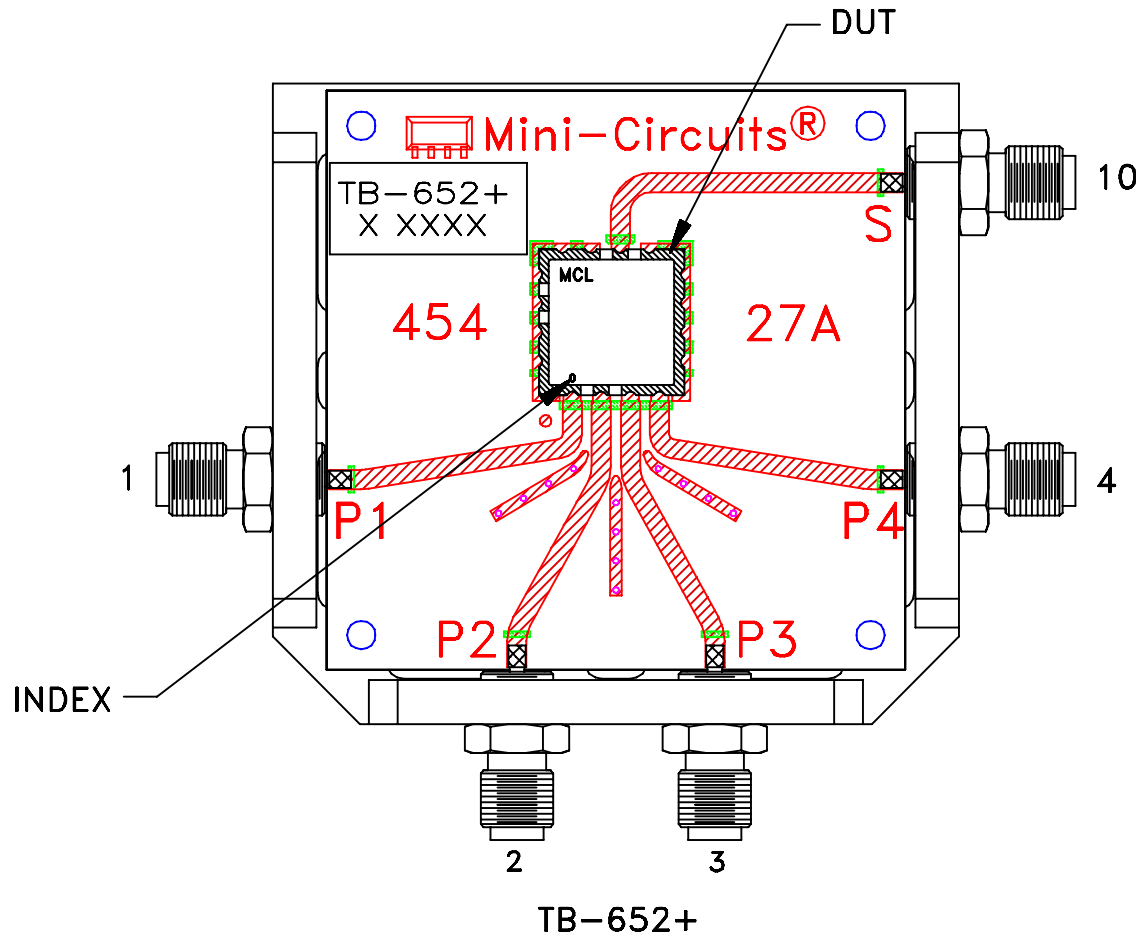
PL, 16SP01, CK1704, TB-652+

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

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-368	A
FILE:	98PL368	SCALE:	SHEET:
		5:1	1 OF 1

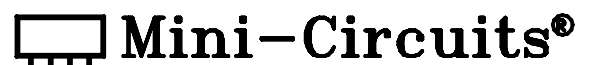
Evaluation Board and Circuit



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent.
Dielectric Constant=3.5, Thickness=.030 inch.





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