SURFACE MOUNT

Power Splitter/Combiner CDP2-751-2W+

50Ω (2 Way-0°) 5 to 750 MHz

KEY FEATURES

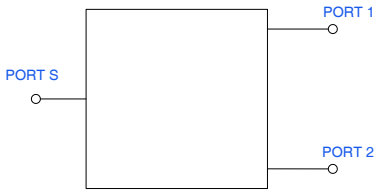
- Low Insertion Loss, 0.7 dB Typ.
- Good Return Loss, 22 dB Typ.
- Good Power Handling, 2W
- Good Isolation, 25 dB Typ.

Generic photo used for illustration purposes only

APPLICATIONS

- Cellular
- CATV
- Communication Systems

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' CDP2-751-2W+ is a 50Ω 2 Way 0° Surface Mount Power Splitter/Combiner covering 5 - 750 MHz frequency range. This model can handle 2W RF input power as a splitter and provides low Insertion Loss and good Return Loss and Amplitude Unbalance. The unit measures .0310" x 0.250" x 0.13" and easy to pick and place assembly.

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		5	—	750	MHz
Insertion Loss (above 3 dB)	5 - 225	—	0.75	1.0	dB
	225 - 750	—	0.7	0.95	
Isolation	5 - 225	12	15	—	dB
	225 - 750	20	25	—	
Phase Unbalance (±)	5 - 225	—	4.0	6.0	Degree
	225 - 750	—	1.1	3.0	
Amplitude Unbalance (±)	5 - 225	—	0.6	0.9	dB
	225 - 750	—	0.2	0.5	
Return Loss (Port S)	5 - 225	17	22	—	dB
	225 - 750	16	22	—	
Return Loss (Port 1 to Port 2)	5 - 225	8	11	—	dB
	225 - 750	17	24	—	

ABSOLUTE MAXIMUM RATINGS[1]

Operating Case Temperature		-40°C to +85°C
Storage Temperature		-55°C to +100°C
Input Power	**as splitter**	2 W
	as combiner per port	100 mW

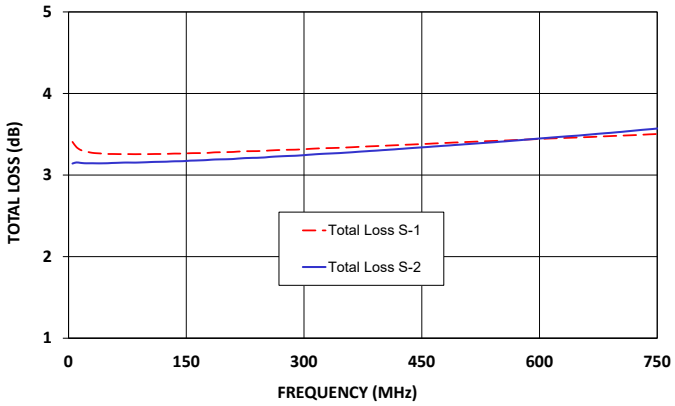
1. Permanent damage may occur if any of these limits are exceeded.

Power Splitter/Combiner CDP2-751-2W+

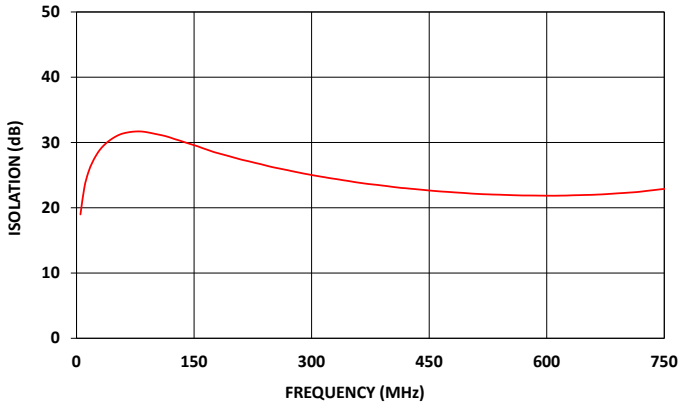
50Ω (2 Way-0°) 5 to 750 MHz

TYPICAL PERFORMANCE GRAPHS

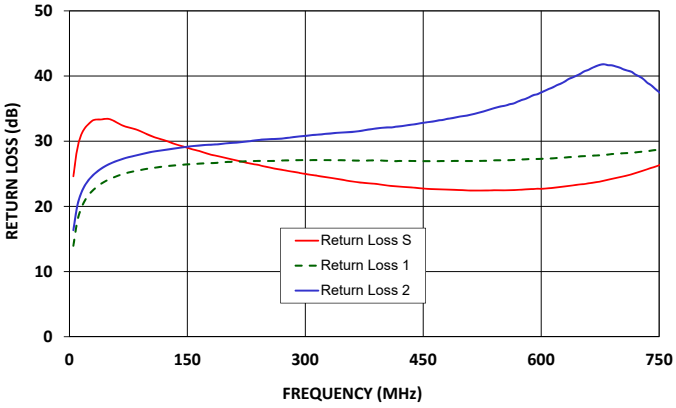
TOTAL LOSS



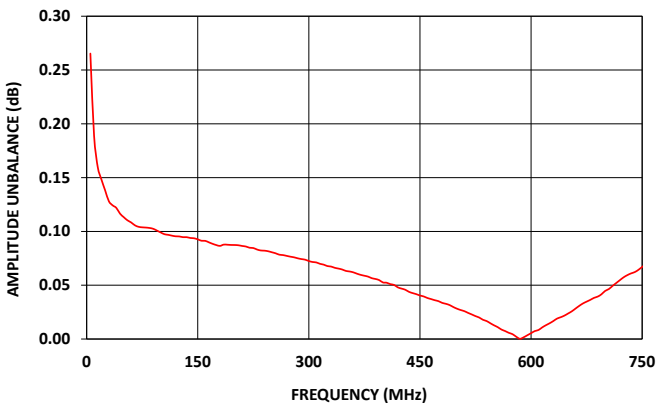
ISOLATION



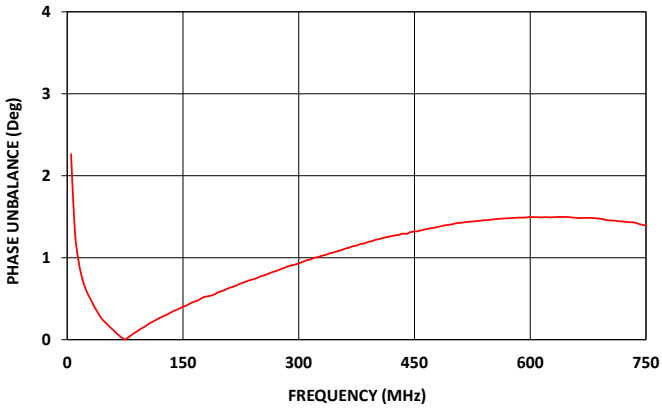
RETURN LOSS



AMPLITUDE UNBALANCE



PHASE UNBALANCE



SURFACE MOUNT

Power Splitter/Combiner CDP2-751-2W+

50Ω (2 Way-0°) 5 to 750 MHz

FUNCTIONAL DIAGRAM

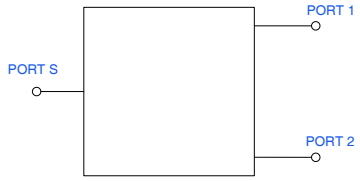
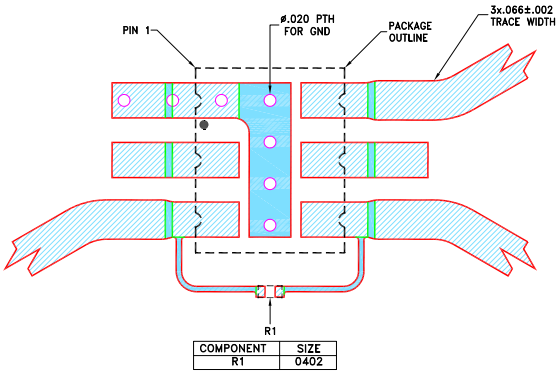


Figure 1. CDP2-751-2W+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
Sum Port	6	Connects to Sum Port
Port 1	3	Connects to 1 Port
Port 2	4	Connects to 2 Port
Ground	1	Connects to Ground
Not Used	2,5	—

SUGGESTED PCB LAYOUT (PL-845)



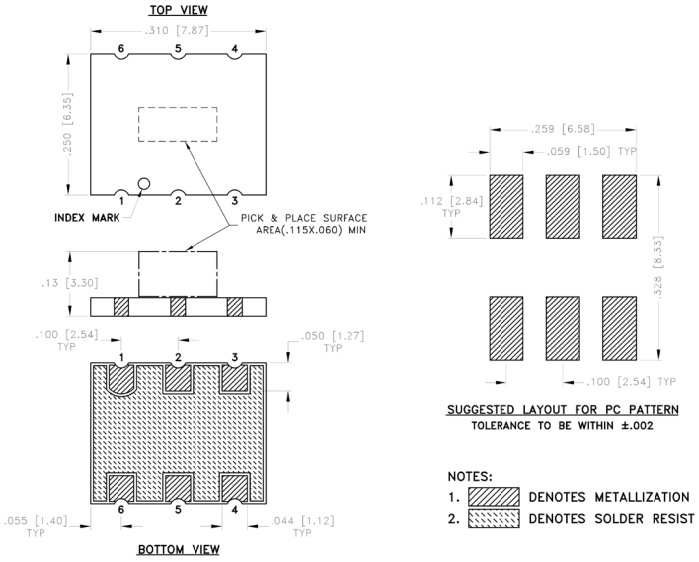
NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .030±.002 COPPER: 1/2 Oz ON EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-1319.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK.

Figure 2. Suggested PCB Layout PL-845

CASE STYLE DRAWING



Weight: .12 grams
Dimensions are in inches (mm). Tolerances: 2Pl. ± .02 [.508]; 3Pl. ± .01 [.254]

PRODUCT MARKING*: N/A

*Marking may contain other features or characters for internal lot control.

Power Splitter/Combiner CDP2-751-2W+

50Ω (2 Way-0°) 5 to 750 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file) De-embedded to device pads
Case Style	TT1491-11 Lead Finish: Gold over Nickel Plate
RoHS Status	Compliant
Tape and Reel	F2
Suggested Layout for PCB Design	PL-845
Evaluation Board	TB-CDP2-751-2W+ Gerber File
Environmental Rating	ENV02T1

NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

2 Way-0° Power Splitter/Combiner CDP2-751-2W+

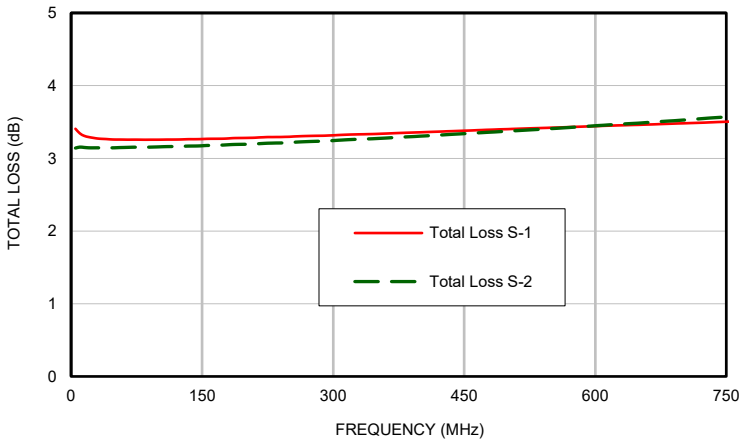
Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB)	PHASE UNBALANCE (deg.)	RETURN LOSS (dB)		
	S-1	S-2		1-2		S	1	2
5	3.41	3.14	0.27	18.98	2.26	24.62	13.97	16.36
10	3.34	3.15	0.19	23.11	1.31	28.88	17.73	20.10
20	3.29	3.15	0.15	26.89	0.73	32.07	20.98	23.29
30	3.27	3.14	0.13	28.91	0.50	33.21	22.48	24.79
40	3.27	3.14	0.12	30.11	0.33	33.33	23.45	25.76
50	3.26	3.15	0.11	30.91	0.21	33.42	24.13	26.46
60	3.26	3.15	0.11	31.40	0.11	32.89	24.63	26.96
70	3.26	3.15	0.10	31.63	0.03	32.29	25.04	27.37
80	3.26	3.15	0.10	31.70	0.03	31.96	25.33	27.68
90	3.26	3.15	0.10	31.57	0.10	31.56	25.57	27.97
100	3.26	3.16	0.10	31.33	0.16	30.99	25.79	28.25
110	3.26	3.16	0.10	31.08	0.21	30.54	25.96	28.47
120	3.26	3.16	0.10	30.74	0.27	30.17	26.12	28.64
130	3.26	3.17	0.09	30.36	0.31	29.75	26.25	28.82
140	3.26	3.17	0.09	29.96	0.36	29.34	26.35	28.99
150	3.27	3.17	0.09	29.59	0.40	29.00	26.45	29.15
160	3.27	3.18	0.09	29.17	0.45	28.65	26.51	29.29
170	3.27	3.18	0.09	28.76	0.48	28.30	26.59	29.39
180	3.27	3.19	0.09	28.38	0.53	27.93	26.64	29.46
190	3.28	3.19	0.09	28.06	0.55	27.68	26.71	29.53
200	3.28	3.19	0.09	27.72	0.59	27.40	26.82	29.68
210	3.28	3.20	0.09	27.39	0.63	27.11	26.87	29.77
225	3.29	3.21	0.08	26.96	0.69	26.69	26.93	29.96
230	3.29	3.21	0.08	26.82	0.70	26.58	26.95	30.01
240	3.29	3.21	0.08	26.53	0.73	26.38	26.98	30.16
250	3.30	3.22	0.08	26.23	0.77	26.09	26.97	30.28
260	3.30	3.22	0.08	25.98	0.80	25.82	26.98	30.33
270	3.31	3.23	0.08	25.74	0.84	25.62	27.03	30.40
280	3.31	3.23	0.08	25.48	0.87	25.39	27.06	30.54
290	3.31	3.24	0.07	25.24	0.91	25.21	27.10	30.71
300	3.32	3.24	0.07	25.02	0.93	24.99	27.11	30.81
310	3.32	3.25	0.07	24.81	0.97	24.79	27.11	30.96
320	3.33	3.26	0.07	24.61	1.00	24.59	27.10	31.05
330	3.33	3.26	0.07	24.42	1.02	24.41	27.10	31.16
340	3.33	3.27	0.07	24.22	1.05	24.24	27.08	31.29
350	3.34	3.27	0.06	24.04	1.08	24.02	27.08	31.36
360	3.34	3.28	0.06	23.85	1.11	23.83	27.04	31.43
370	3.35	3.29	0.06	23.68	1.14	23.65	27.02	31.57
380	3.35	3.29	0.06	23.55	1.17	23.56	27.04	31.78
390	3.35	3.30	0.06	23.40	1.19	23.45	27.05	31.95
400	3.36	3.31	0.05	23.25	1.22	23.28	27.01	32.09
410	3.36	3.31	0.05	23.10	1.24	23.12	26.96	32.12
420	3.37	3.32	0.05	22.99	1.26	23.03	26.97	32.28
430	3.37	3.33	0.05	22.88	1.28	22.94	26.97	32.46
440	3.38	3.33	0.04	22.76	1.29	22.86	26.96	32.61
450	3.38	3.34	0.04	22.65	1.32	22.75	26.94	32.81
460	3.38	3.35	0.04	22.54	1.34	22.66	26.94	32.98
470	3.39	3.35	0.04	22.46	1.36	22.61	26.95	33.21
480	3.39	3.36	0.03	22.38	1.38	22.59	26.96	33.42
490	3.40	3.37	0.03	22.30	1.40	22.54	26.98	33.61
500	3.40	3.37	0.03	22.21	1.41	22.49	26.97	33.84
510	3.41	3.38	0.03	22.13	1.43	22.44	26.95	34.06
520	3.41	3.39	0.02	22.07	1.44	22.44	26.97	34.36
530	3.41	3.39	0.02	22.03	1.45	22.45	26.99	34.70
550	3.42	3.41	0.01	21.96	1.46	22.46	27.08	35.37
600	3.44	3.45	0.01	21.84	1.50	22.70	27.30	37.49
650	3.46	3.48	0.02	21.96	1.50	23.38	27.68	40.37
700	3.48	3.53	0.04	22.28	1.46	24.49	28.12	41.29
710	3.49	3.53	0.05	22.36	1.45	24.78	28.19	40.83
720	3.49	3.54	0.05	22.47	1.44	25.10	28.29	40.22
730	3.49	3.55	0.06	22.62	1.43	25.50	28.41	39.53
750	3.50	3.57	0.07	22.89	1.39	26.32	28.67	37.53

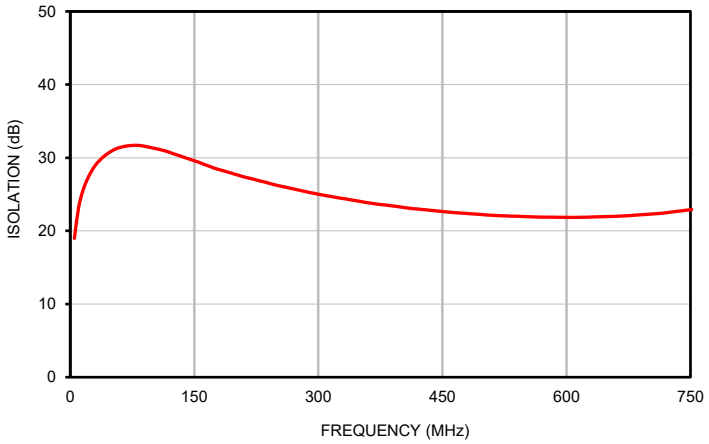
[1]Total Loss = Insertion Loss + 3dB Splitter Loss

Typical Performance Curves

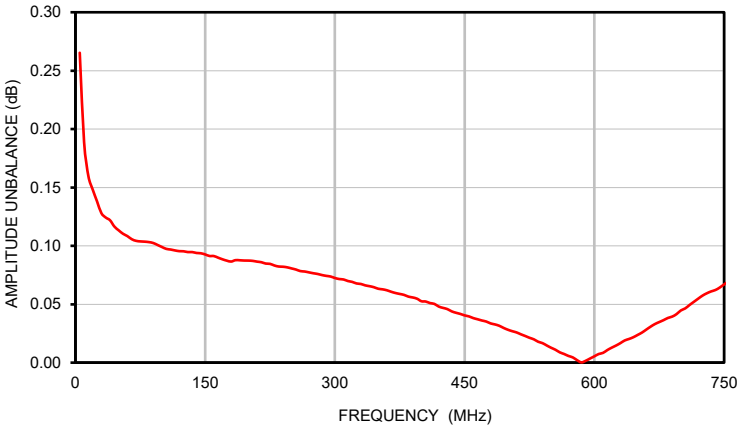
TOTAL LOSS



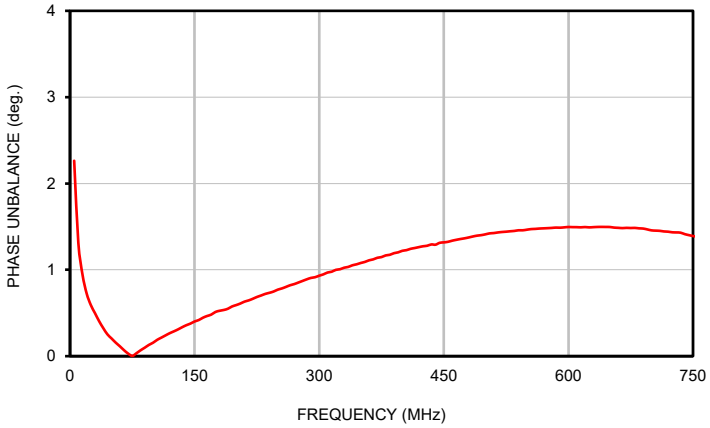
ISOLATION



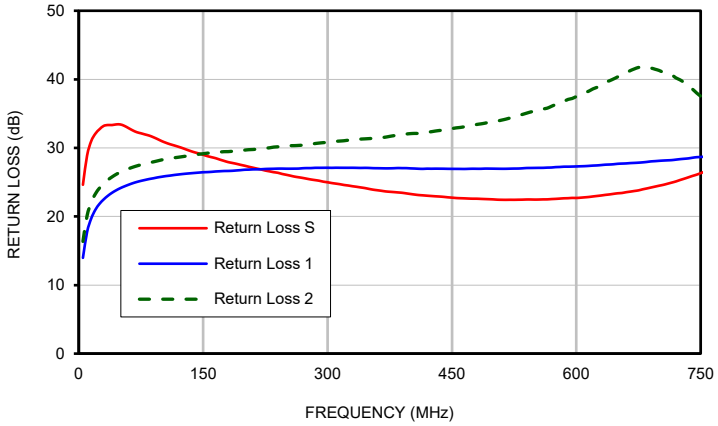
AMPLITUDE UNBALANCE



PHASE UNBALANCE



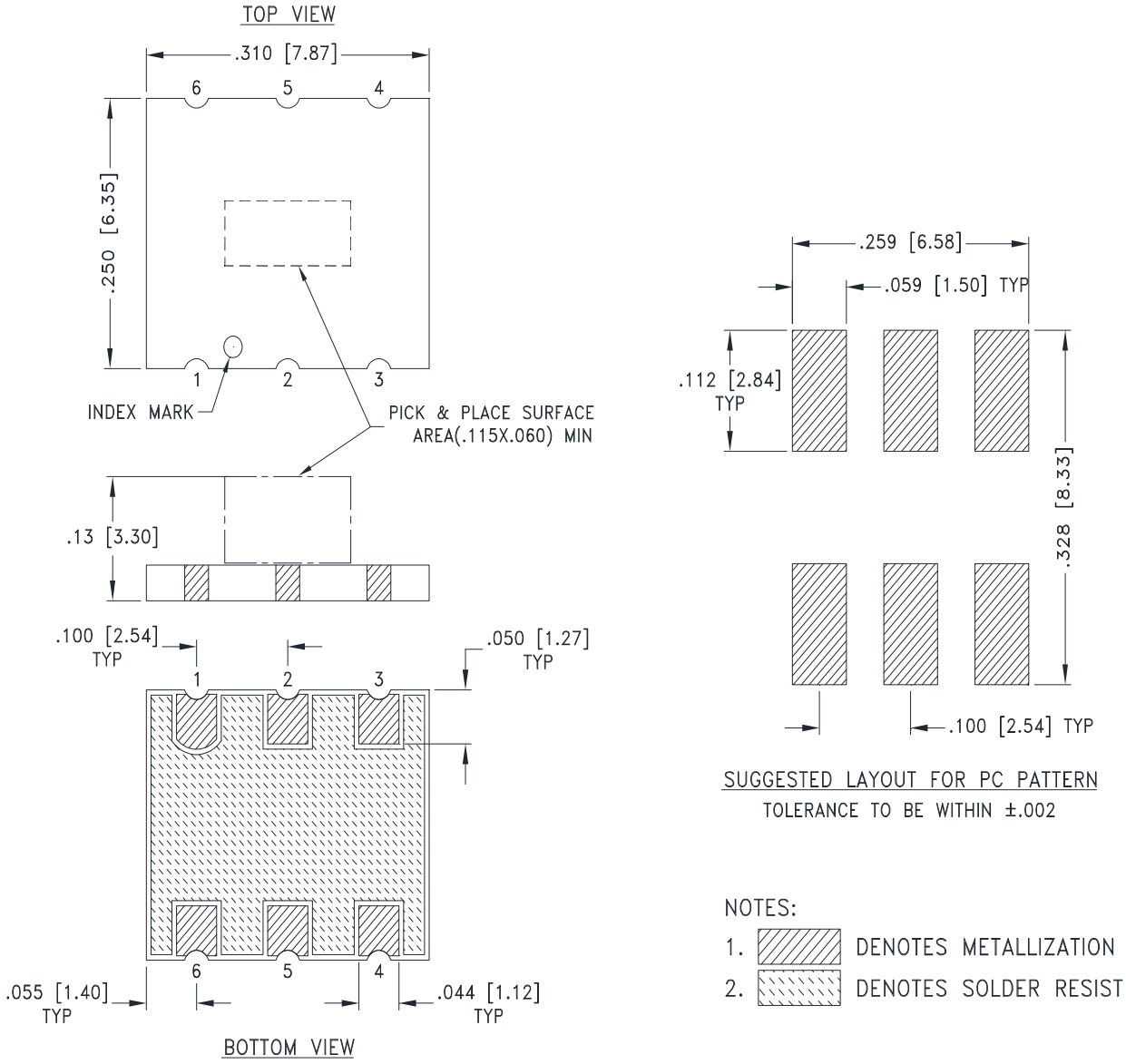
RETURN LOSS



Case Style TT

Outline Dimension

TT1491-11



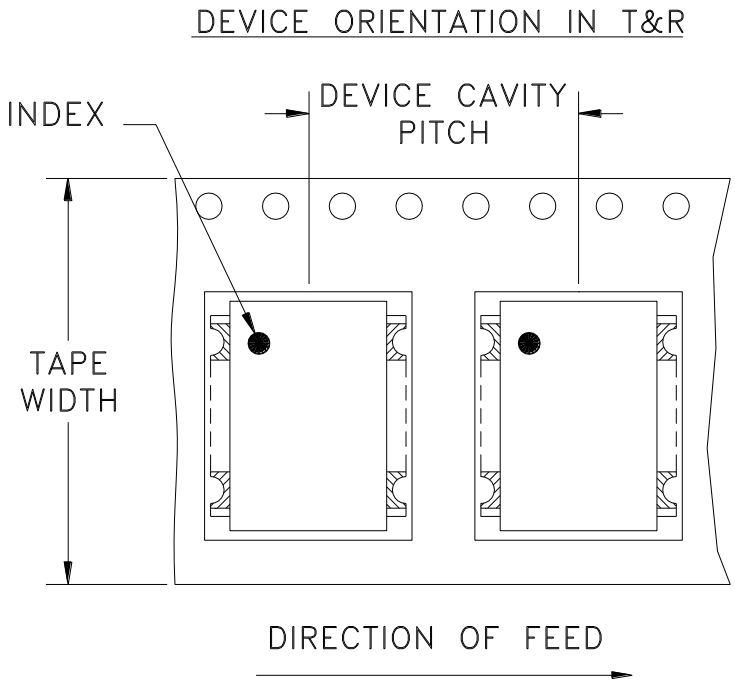
Weight: .12 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl ± .02 [.508]; 3 Pl ± .01 [.254]

Notes:

1. Open style, Base material: Printed wiring laminate
2. 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-F2



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note
16	12	7	10
			20
			50
			100
			200
		13	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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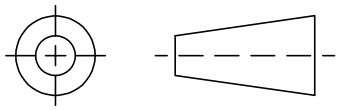
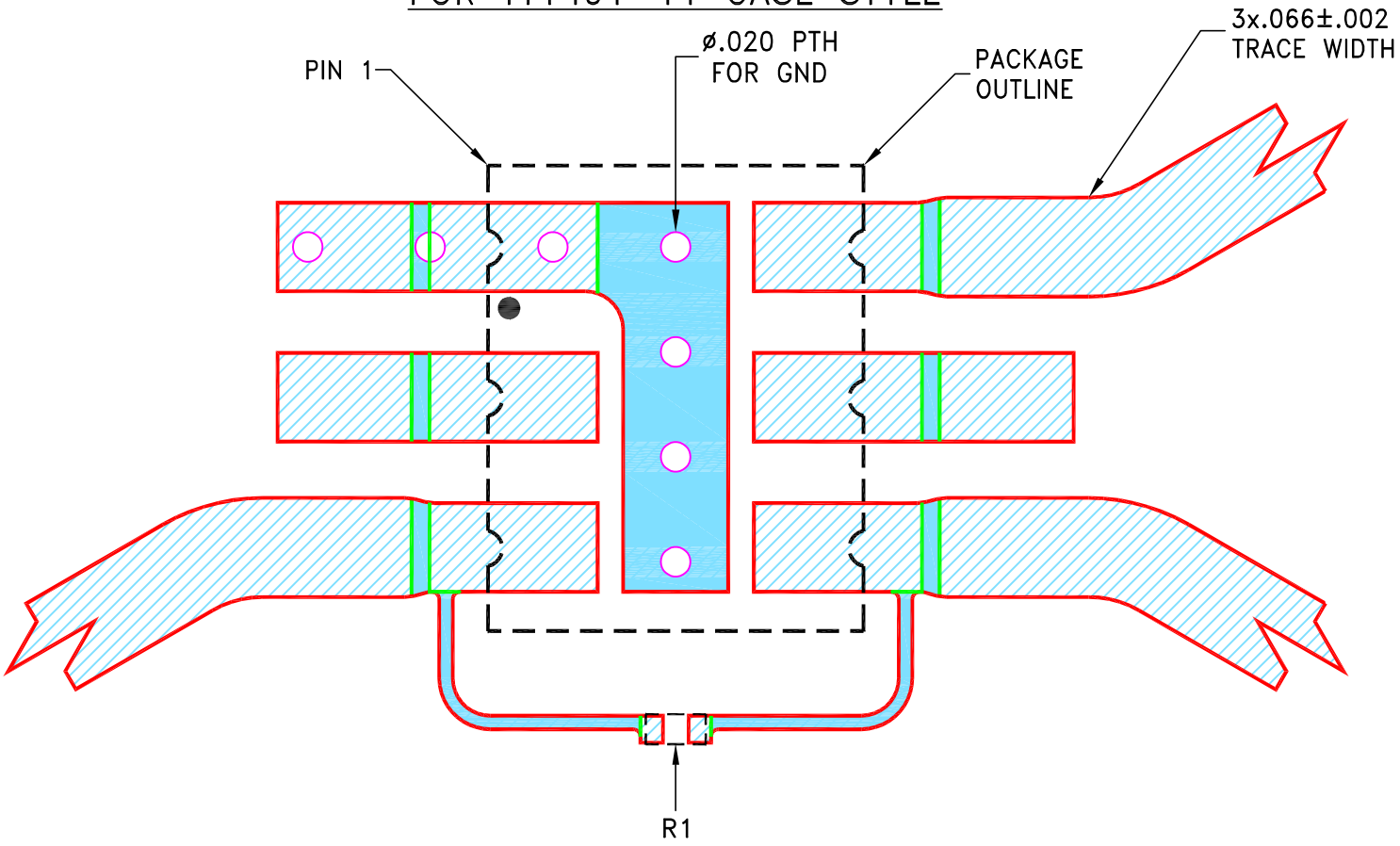
THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	NPO-005785	NEW RELEASE	NOV 25	SKH	VR
A	ECO-027851	TYPO UPADTED	DEC 25	SKH	VR

SUGGESTED MOUNTING CONFIGURATION FOR TT1491-11 CASE STYLE



COMPONENT	SIZE
R1	0402

NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .030±.002 COPPER: 1/2 Oz ON EACH SIDE.
   FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-1319.
3. 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 SOLDERMASK.

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	SKH	18 NOV 25
TOLERANCES ON:	CHECKED	MD	18 NOV 25
2 PL DECIMALS ±	APPROVED	PV	18 NOV 25
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

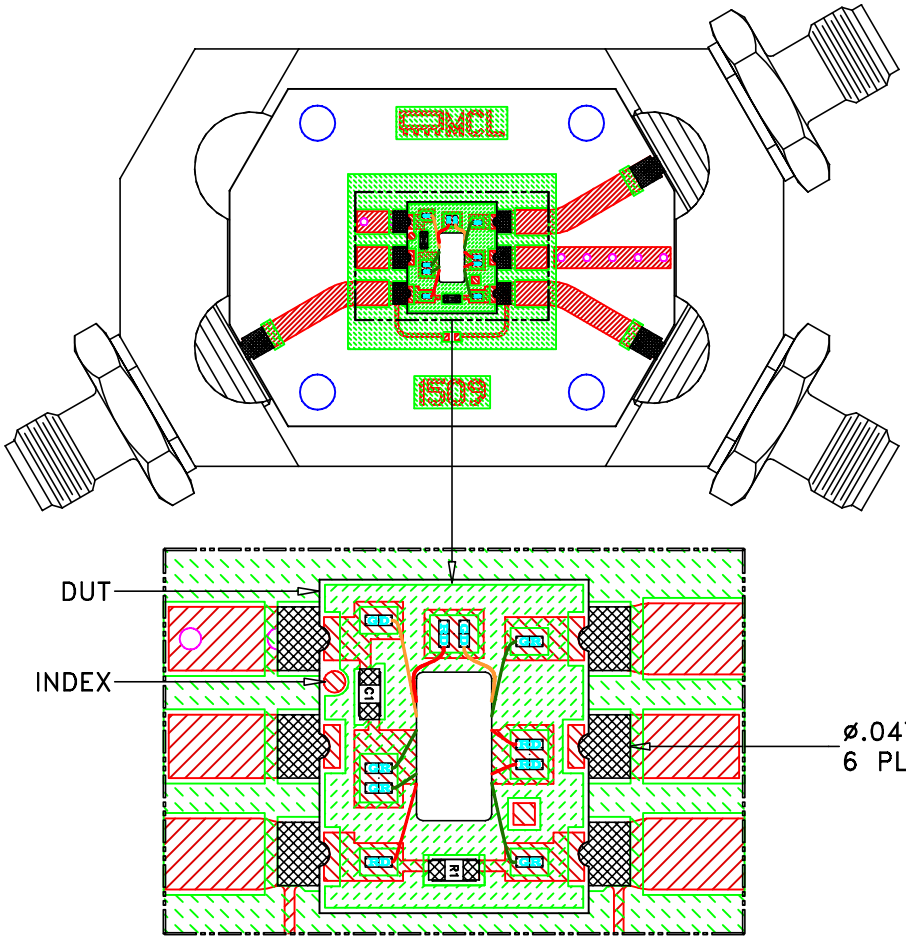
PL, 50, TT1491-11, TB-1319

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-845	A

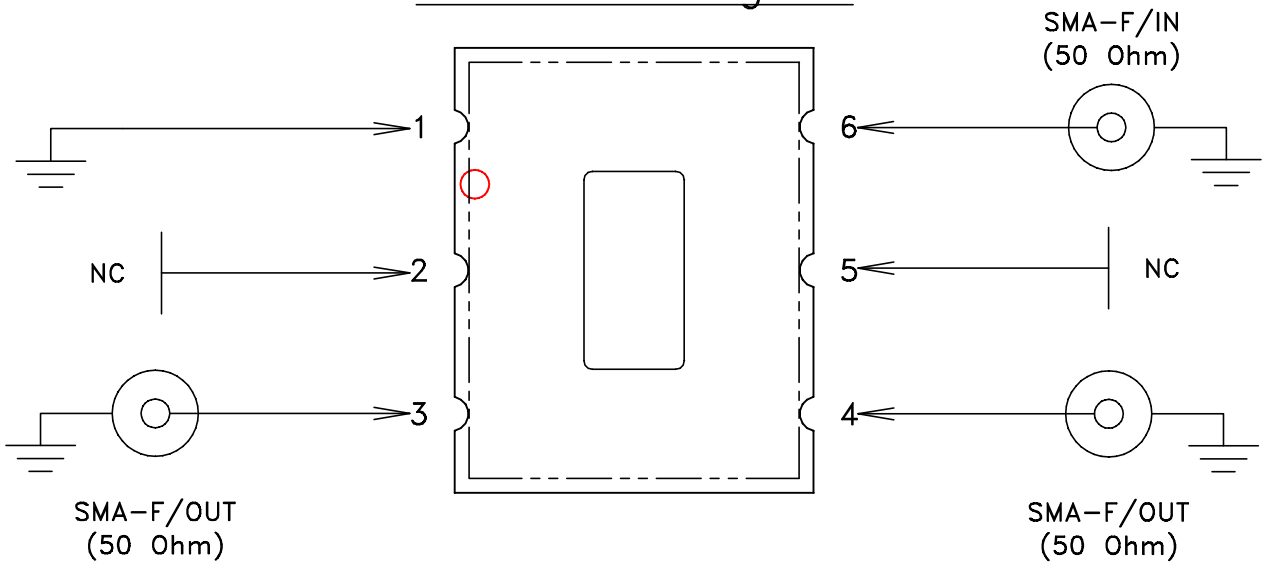
FILE:	SCALE:	SHEET:
98-PL-845	8:1	1 OF 1

Evaluation Board and Circuit

TB-CDP2-751-2W+



Schematic diagram



Notes:

1. PCB Material: ROGERS (RO4350B) OR Equivalent, Dielectric Constant=3.48
   Thickness=.030±.002 inch
2. 50 Ohm N Female Connectors.

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