



Mini-Circuits

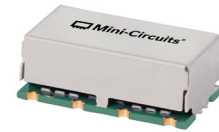
SURFACE MOUNT

Power Splitter/Combiner **SC4PS-751-3W+**

50Ω (4 Way-0°) 100 to 750 MHz

KEY FEATURES

- Low Insertion Loss, 0.65 dB Typ.
- Low Amplitude Unbalance, 0.1 dB Typ
- Good Power Handling
- Good Return Loss, 20 dB Min.

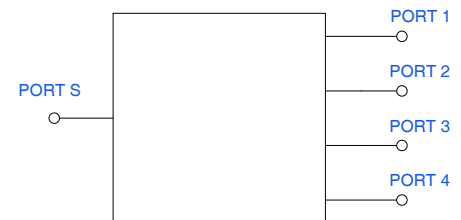


Generic photo used for illustration purposes only

APPLICATIONS

- Communication Systems
- VHF/UHF
- Cellular
- GPS
- PCs

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' SC4PS-751-3W+ is a 50Ω 4 Way 0° Surface Mount Power Splitter/Combiner covering 100 - 750 MHz frequency range. This model can handle 3W RF input power as a splitter and provides low Insertion Loss and good Return Loss and Amplitude Unbalance. The unit measures 0.740" x 0.440" x 0.27" and easy to pick and place assembly. This is a shielded case used to reduced interference from the surrounding components.

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		100	—	750	MHz
Insertion Loss (above 6 dB)	100 - 225	—	0.65	1.0	dB
	225 - 750	—	1.2	1.6	
Isolation	100 - 225	17	20	—	dB
	225 - 750	16	22	—	
Phase Unbalance (±)	100 - 225	—	0.7	2	Degree
	225 - 750	—	3	6	
Amplitude Unbalance (±)	100 - 225	—	0.1	0.2	dB
	225 - 750	—	0.25	0.5	
Return Loss (Port S)	100 - 225	11	14	—	dB
	225 - 750	10	13	—	
Return Loss (Port 1 to Port 2)	100 - 225	20	25	—	dB
	225 - 750	17	22	—	

ABSOLUTE MAXIMUM RATINGS¹

Operating Case Temperature		-40°C to +85°C
Storage Temperature		-55°C to +100°C
Input Power	as splitter	3 W
	as combiner per port	100 mW

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





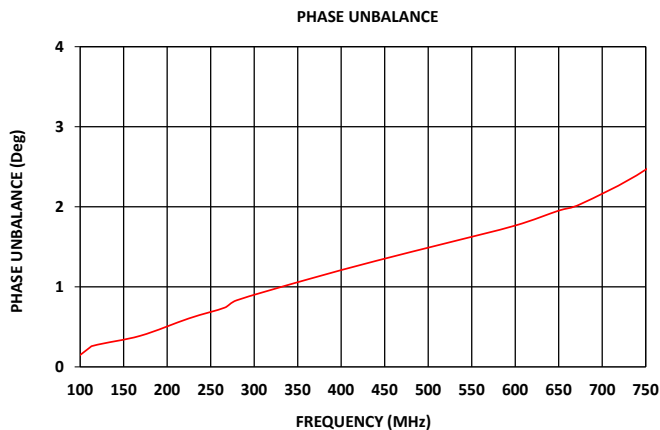
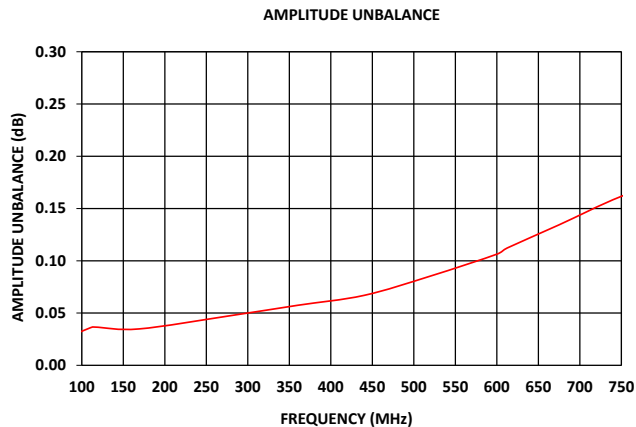
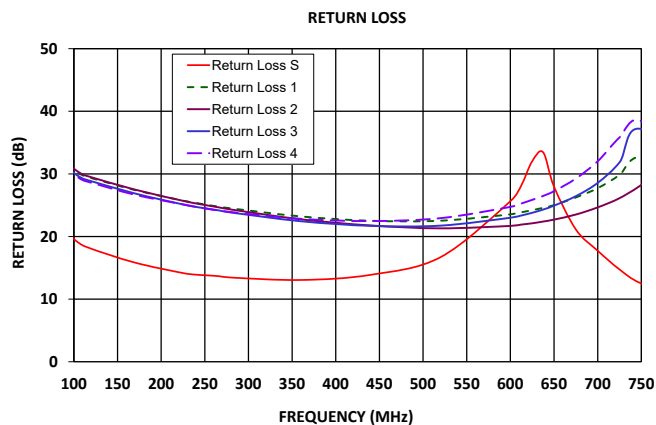
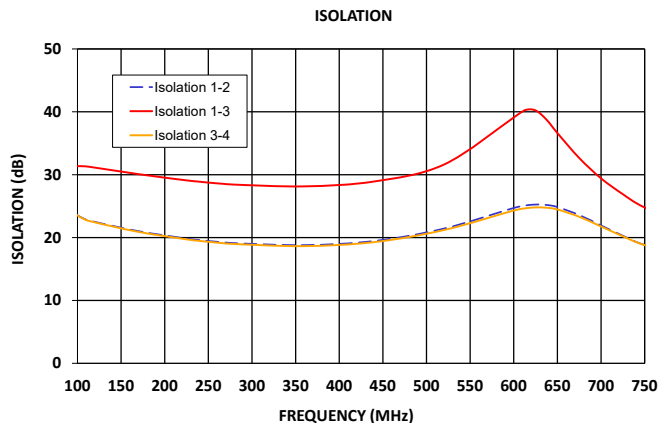
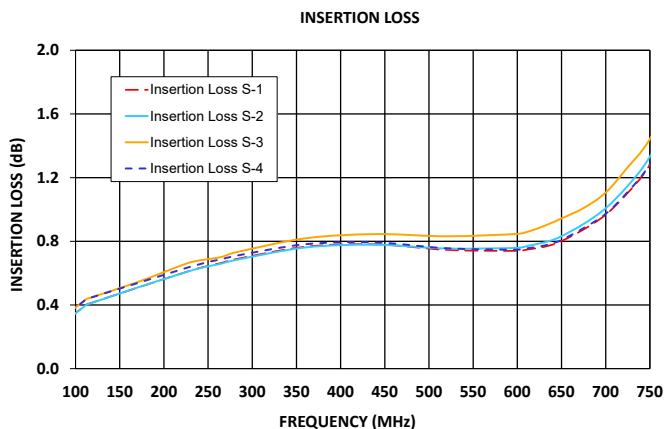
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SURFACE MOUNT

Power Splitter/Combiner **SC4PS-751-3W+**

50Ω (4 Way-0°) 100 to 750 MHz

TYPICAL PERFORMANCE GRAPHS





SURFACE MOUNT

Power Splitter/Combiner **SC4PS-751-3W+**

50Ω (4 Way-0°) 100 to 750 MHz

FUNCTIONAL DIAGRAM

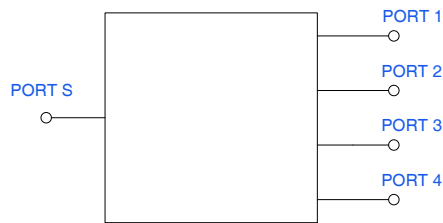
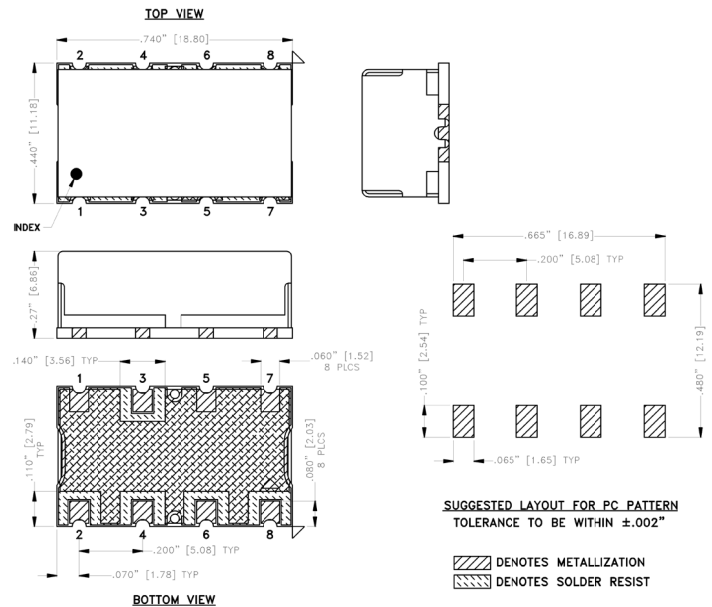


Figure 1. SC4PS-751-3W+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
Sum Port	3	Connects to Sum Port
Port 1	2	Connects to 1 Port
Port 2	4	Connects to 2 Port
Port 3	6	Connects to 3 Port
Port 4	8	Connects to 4 Port
Ground	1,5,7	Connects to Ground

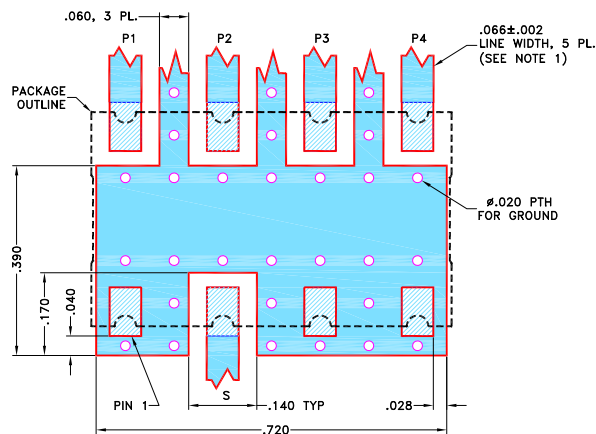
CASE STYLE DRAWING



Weight: 1.7 grams

Dimensions are in inches (mm). Tolerances: 2PI ± .015 [3.81]; 3PI ± .01 [2.54]

SUGGESTED PCB LAYOUT (PL-492)



NOTES:

1. LINE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030"±.002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

Figure 2. Suggested PCB Layout PL-492

PRODUCT MARKING*: SC4PS-751-3W

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



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SURFACE MOUNT

Power Splitter/Combiner **SC4PS-751-3W+**

50Ω (4 Way-0°) 100 to 750 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD

[CLICK HERE](#)

Performance Data & Graphs	Data Graphs S-Parameter (S5P Files) Data Set (.zip file) De-embedded to device pads
Case Style	HF1485-2 Lead Finish: Gold over Nickel Plate
RoHS Status	Compliant
Tape and Reel	F5
Suggested Layout for PCB Design	PL-492
Evaluation Board	TB-SC4PS-7513W+ Gerber File
Environmental Rating	ENV02T1

NOTES

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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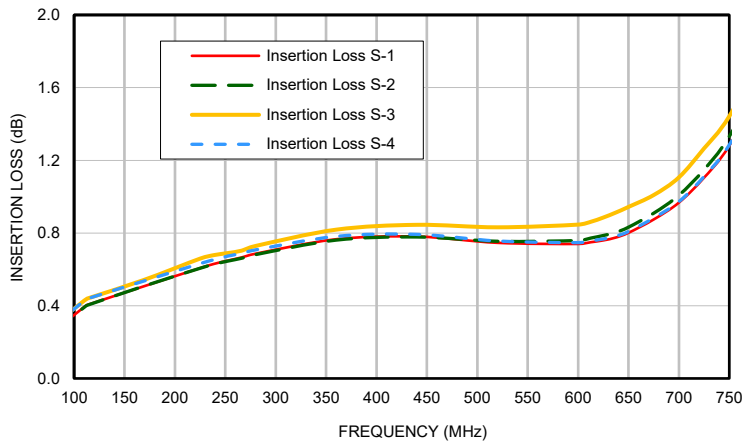
Typical Performance Data

FREQ. (MHz)	INSERTION LOSS ¹ (dB)				AMP. UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (deg.)	FREQ. (MHz)	RETURN LOSS (dB)				
	S-1	S-2	S-3	S-4		1-2	1-3	3-4			S	1	2	3	4
113.00	0.40	0.40	0.44	0.44	0.04	22.72	31.27	22.66	0.26	113.00	18.40	29.61	29.76	29.11	28.86
169.00	0.51	0.51	0.54	0.54	0.03	21.04	30.10	20.93	0.39	169.00	15.87	27.46	27.52	26.91	26.70
225.00	0.61	0.61	0.66	0.63	0.05	19.84	29.09	19.72	0.61	225.00	14.16	25.72	25.70	25.12	25.13
238.75	0.63	0.63	0.68	0.65	0.05	19.63	28.90	19.49	0.60	238.75	13.92	25.39	25.31	24.76	24.76
252.50	0.65	0.65	0.69	0.67	0.04	19.42	28.71	19.29	0.66	252.50	13.80	25.05	24.97	24.45	24.44
266.25	0.67	0.66	0.70	0.69	0.04	19.26	28.56	19.11	0.74	266.25	13.66	24.76	24.65	24.17	24.14
280.00	0.69	0.68	0.73	0.71	0.05	19.11	28.42	18.97	0.83	280.00	13.44	24.49	24.31	23.83	23.90
360.00	0.77	0.76	0.82	0.78	0.06	18.80	28.14	18.64	1.09	360.00	13.06	23.21	22.74	22.44	22.82
440.00	0.78	0.78	0.85	0.79	0.07	19.46	28.92	19.28	1.32	440.00	13.88	22.52	21.76	21.70	22.47
520.00	0.75	0.75	0.83	0.76	0.09	21.43	31.61	21.20	1.54	520.00	16.70	22.53	21.31	21.74	22.93
600.00	0.74	0.76	0.85	0.75	0.11	24.71	39.10	24.31	1.77	600.00	25.65	23.54	21.69	23.00	24.73
612.50	0.75	0.77	0.86	0.76	0.11	25.09	40.25	24.64	1.86	612.50	28.16	23.87	21.91	23.36	25.27
625.00	0.76	0.79	0.89	0.77	0.13	25.25	40.22	24.80	1.92	625.00	32.03	24.20	22.11	23.79	25.86
637.50	0.78	0.80	0.91	0.78	0.14	25.19	38.75	24.74	1.95	637.50	33.45	24.59	22.39	24.31	26.48
650.00	0.80	0.83	0.94	0.81	0.14	24.86	36.63	24.47	1.95	650.00	27.95	25.01	22.70	24.93	27.24
675.00	0.87	0.91	1.01	0.88	0.13	23.58	32.65	23.31	2.03	675.00	21.12	26.24	23.51	26.44	29.26
700.00	0.97	1.01	1.11	0.97	0.14	21.93	29.42	21.77	2.27	700.00	17.73	27.73	24.65	28.57	32.01
725.00	1.10	1.15	1.27	1.11	0.16	20.29	26.90	20.20	2.41	725.00	14.74	29.84	26.12	31.84	35.82
750.00	1.28	1.33	1.44	1.28	0.16	18.82	24.78	18.80	2.46	750.00	12.49	32.80	28.24	37.16	38.40

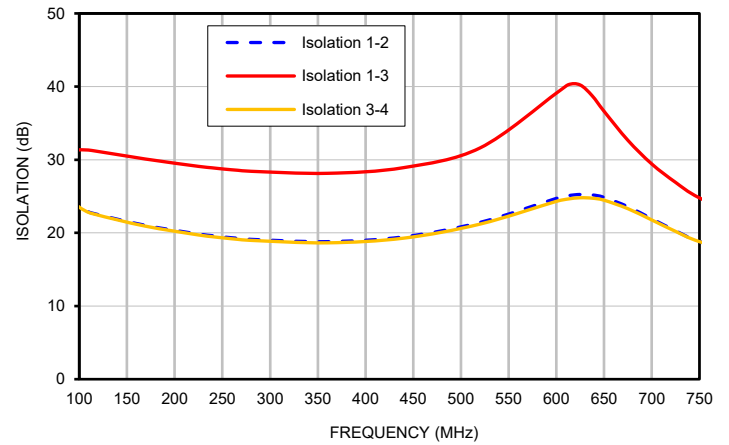
¹Insertion loss is loss above theoretical loss (6dB)

Typical Performance Curves

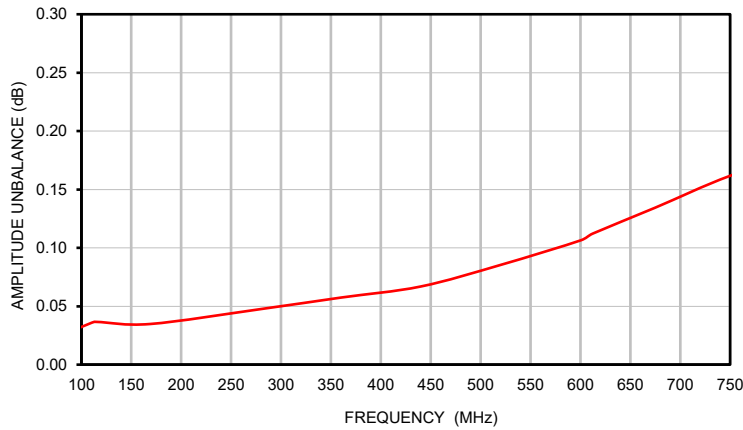
INSERTION LOSS



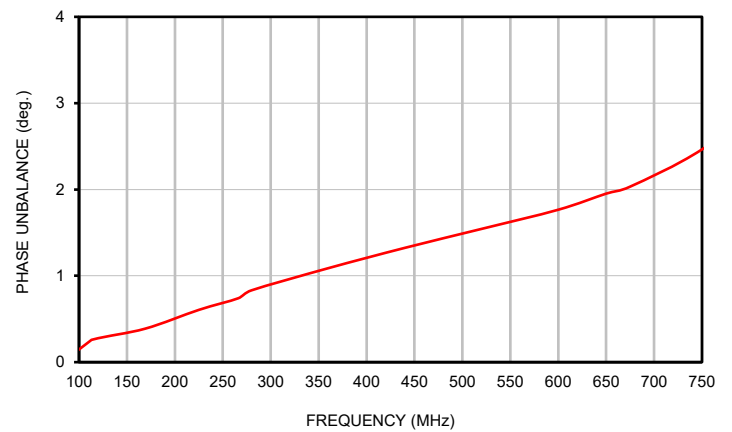
ISOLATION



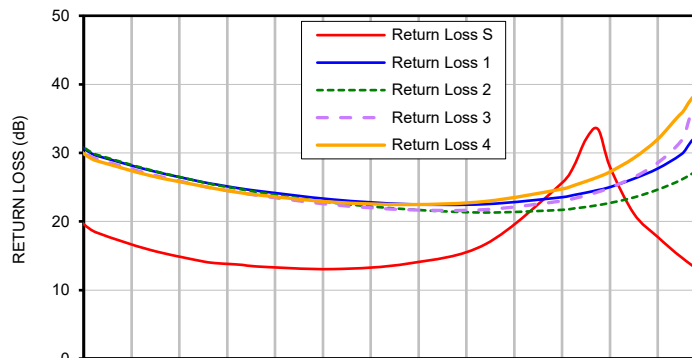
AMPLITUDE UNBALANCE



PHASE UNBALANCE



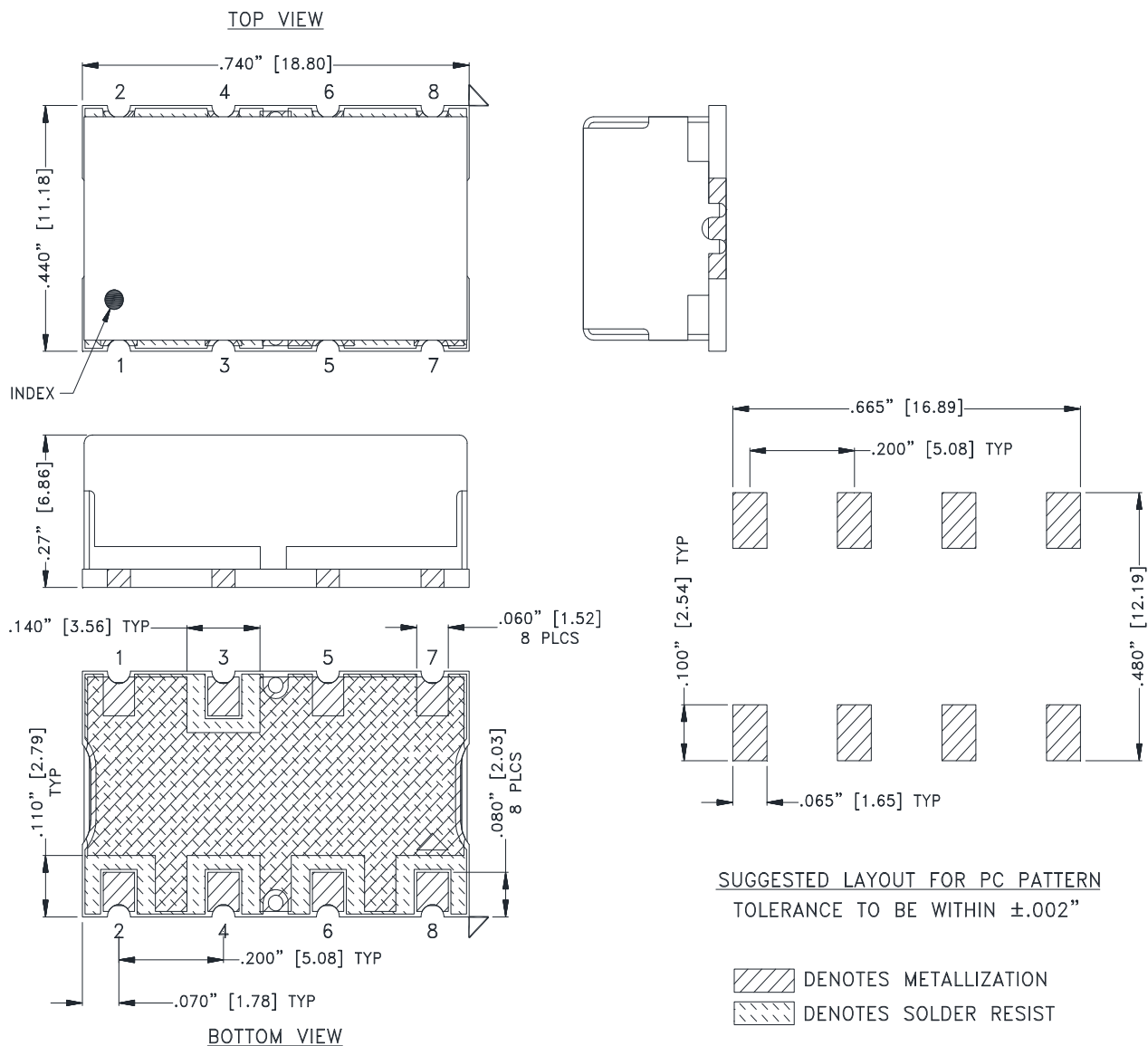
RETURN LOSS



Case Style

HF

Outline Dimension

HF1485-2**Weight: 1.7 grams****Dimensions are in inches [mm]. Tolerances: 2 Pl $\pm .015$ [.381]; 3 Pl $\pm .01$ [.254]****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.
For RoHS-5 Case Styles: Tin-Lead plate.
All models, (+) suffix.

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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F5



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	16	13	500

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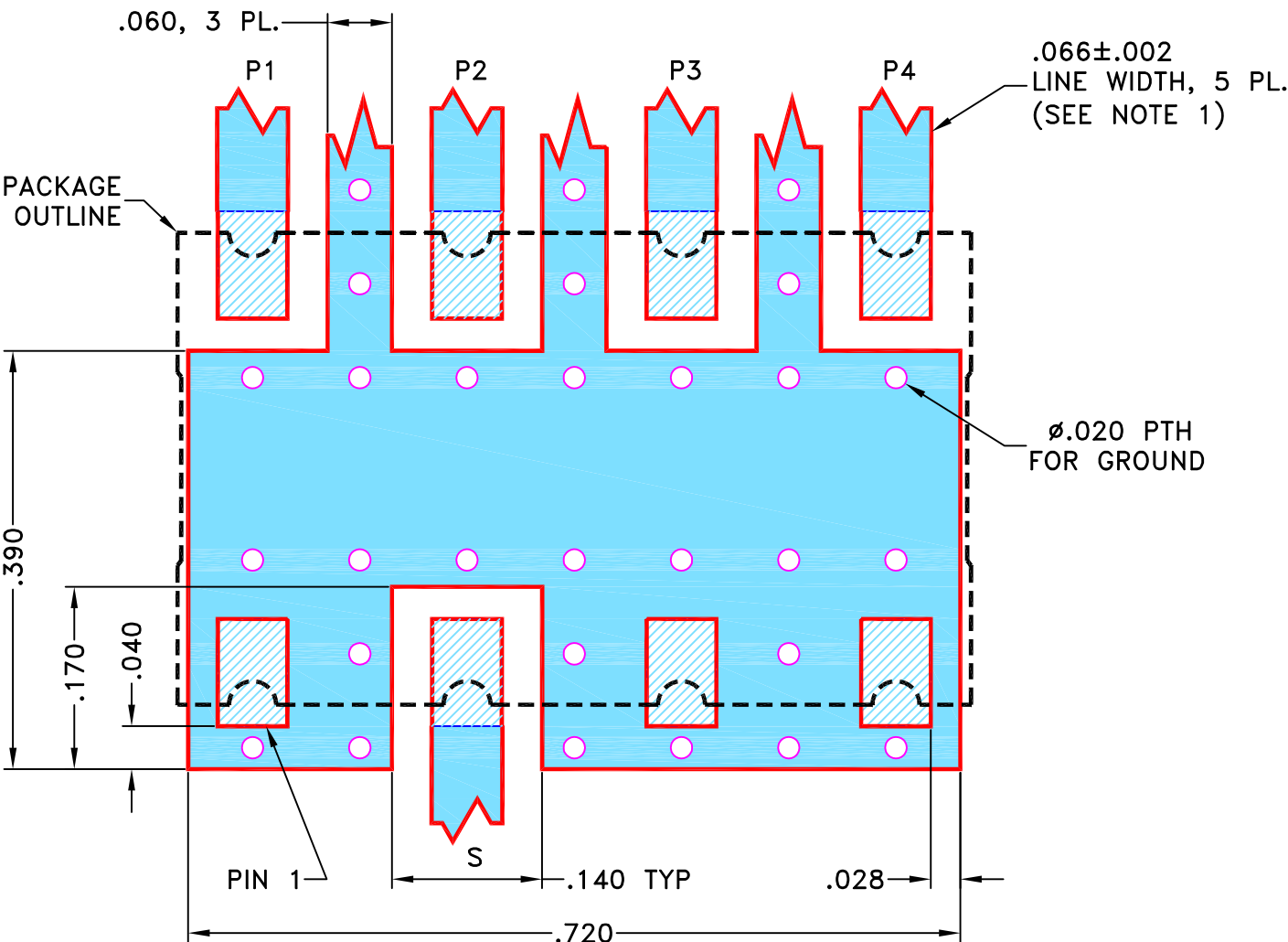
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THIRD ANGLE PROJECTION		REVISIONS				
		REV	ECN No.	DESCRIPTION	DATE	DR AUTH
		OR	M157861	NEW RELEASE	01/03/17	ITG PW

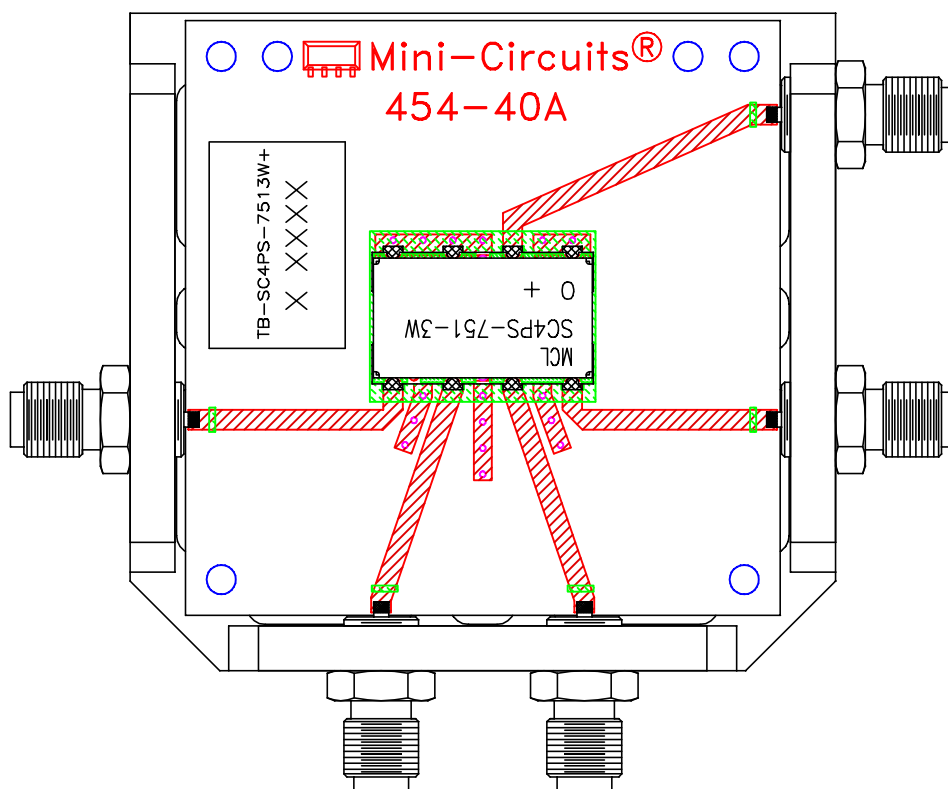
SUGGESTED MOUNTING CONFIGURATION
FOR HF1485-1 CASE STYLE, "08SP09" PIN CODE



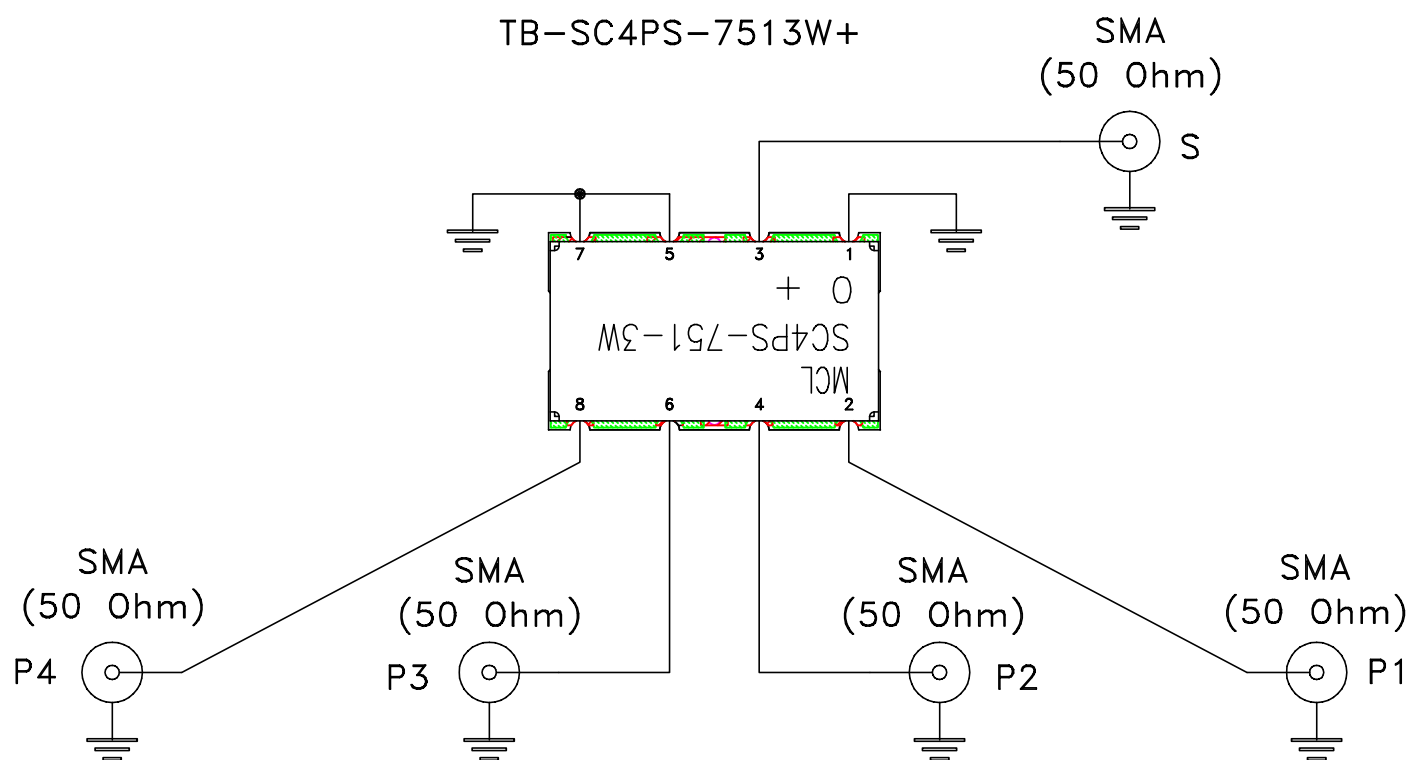
- NOTES:**
1. LINE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030"±.002". COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
 3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

UNLESS OTHERWISE SPECIFIED		INITIALS		DATE		Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235			
DIMENSIONS ARE IN INCHES		DRAWN	ITG	12/28/16					
TOLERANCES ON:		CHECKED	GF	01/03/17					
2 PL DECIMALS ±		APPROVED	PW	01/03/17					
3 PL DECIMALS ± .005									
ANGLES ±						PL, 08SP09, HF1485-1, TB-925+			
FRACTIONS ±									
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ASHEETA1.DWG REV:A DATE:01/12/95									
SIZE A		CODE IDENT 15542		DRAWING NO: 98-PL-492		REV: OR			
FILE: 98PL492		SCALE: 6:1		SHEET: 1 OF 1					

Evaluation Board and Circuit



TB-SC4PS-7513W+



Schematic Diagram

Notes:

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

Mini-Circuits®



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