



Mini-Circuits

SURFACE MOUNT Power Splitter/Combiner **SYPS-4-182-75X+**

4-Way 0° 75Ω 5 to 1800 MHz

KEY FEATURES

- Wideband, 5 to 1800 MHz
- Low Insertion Loss, 2.5 dB typ.
- Low Amplitude Unbalance, 0.5 dB typ.



Generic photo used for illustration purposes only

APPLICATIONS

- CATV
- VHF/UHF
- DOCSIS® 3.1/4.0

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' SYPS-4-182-75X+ is a 75Ω 4-way 0° surface mount splitter/combiner covering the 5 to 1800 MHz frequency range, supporting bandwidth requirements for DOCSIS®3.1/4.0 systems and equipment as well as other broadband applications. This model can handle up to 0.5W RF input power as a splitter and provides low insertion loss, high isolation, and low phase and amplitude unbalance. It comes on a 16-lead printed laminate base (0.50 x 0.50 x 0.14") with Top-Hat® and wrap-around terminations for excellent solderability and gold over nickel-plated termination finish.

ELECTRICAL SPECIFICATIONS¹ AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1800	MHz
Insertion Loss (above 6 dB)	5 - 40	—	1.2	1.6	dB
	40 - 1220	—	2.2	2.6	
	1220 - 1800	—	3.0	3.9	
Isolation	5 - 40	24	27	—	dB
	40 - 1220	15	20	—	
	1220 - 1800	12	16	—	
Phase Unbalance (±)	5 - 870	—	5		Degrees
	870 - 1800	—	15		
Amplitude Unbalance	5 - 40	—	0.1	0.3	dB
	40 - 1220	—	0.25	0.6	
	1220 - 1800	—	0.55	1.2	
Return Loss (Port S)	5 - 40	19	23	—	dB
	40 - 1220	14	18	—	
	1220 - 1800	13	18	—	
Return Loss (Port 1 to Port 4)	5 - 40	13	16	—	dB
	40 - 1220	15	20	—	
	1220 - 1800	14	20	—	

1. Bi-directional can function as a splitter or as a combiner. Refer to S-Parameters for actual performance.

ABSOLUTE MAXIMUM RATINGS²

Operating Case Temperature		-40° C to +85° C
Storage Temperature		-55° C to +100° C
Input Power	as splitter	0.5 W
	combiner per port	0.13

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



www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

REV. OR
ECO-025965
SYPS-4-182-75X+
MCL NY
250623

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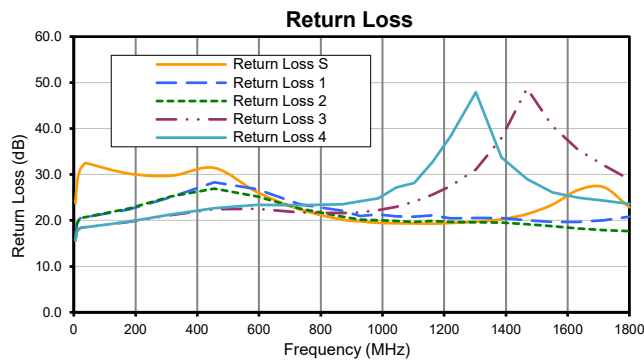
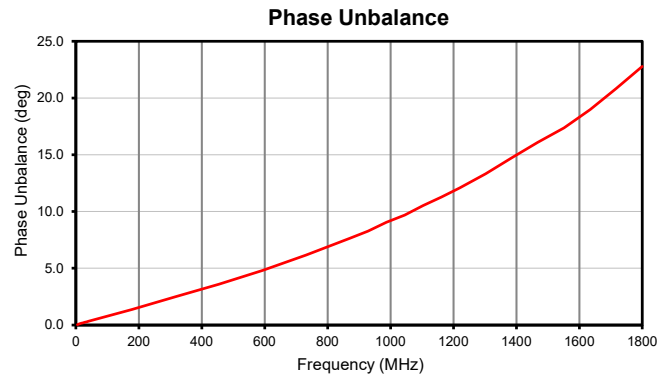
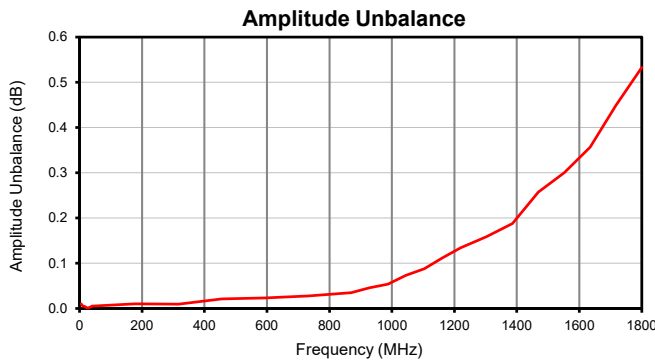
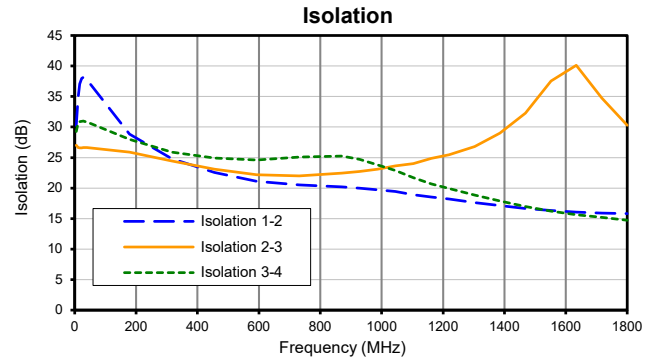
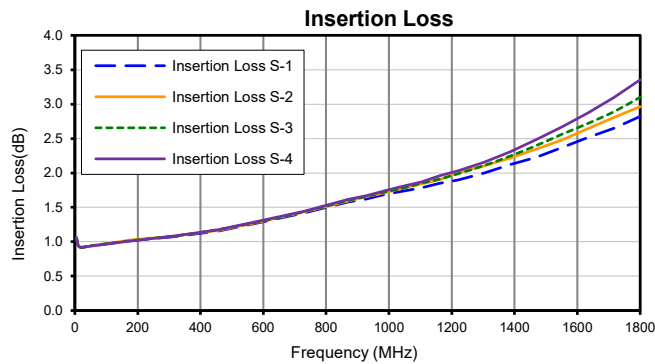
SURFACE MOUNT



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TYPICAL PERFORMANCE GRAPHS





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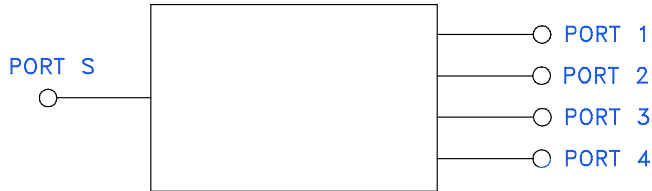
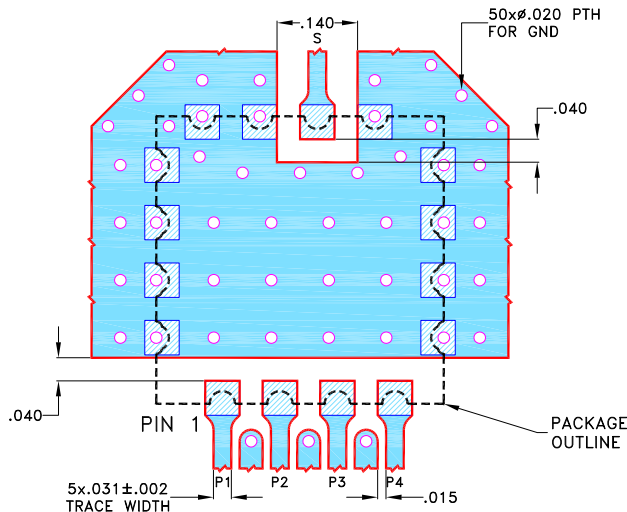


Figure 1. SYPS-4-182-75+ Functional Diagram

PIN CONNECTIONS

Function	Pad Number	Description
Sum Port	10	Connects to Sum Port
Port 1	1	Connects to 1 Port
Port 2	2	Connects to 2 Port
Port 3	3	Connects to 3 Port
Port 4	4	Connects to 4 Port
GND	All Others	Connects to GND

SUGGESTED PCB LAYOUT (PL-827)



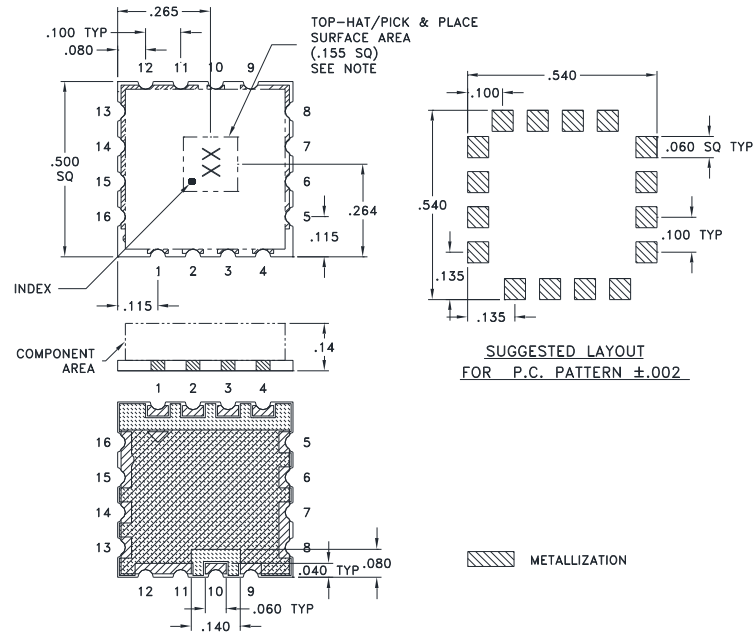
NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS .030±.002
COPPER: 1/2 Oz ON EACH SIDE.
FOR OTHER MATERIALS THESE PARAMETERS MAY NEED TO BE MODIFIED.
- 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.

Figure 2. Suggested PCB Layout PL-827

OUTLINE DRAWING



Weight: .5 grams
Dimensions are in inches. Tolerances: 2 Pl. ±.03; 3 Pl. ±.015

Note: Top-Hat thickness: .013 inches MAX.

PRODUCT MARKING*: BP

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





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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	CK1704-4 Lead Finish: Gold over Nickel plate
RoHS Status	Compliant
Tape and Reel	TR-F37
Suggested Layout for PCB Design	PL-827
Evaluation Board	TB-SYPS418275X+ 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

