

# Surface Mount Power Splitter/Combiner

## SYPS-3-152-75+

3 Way-0° 75Ω 5 to 1500 MHz



CASE STYLE: AH202

### The Big Deal

- Wideband, 5 to 1500 MHz
- Low insertion loss, 1.0 dB
- High isolation, 24 dB

#### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### Product Overview

Mini-Circuits' SYPS-3-152-75+ is a 75Ω 3-way 0° surface mount splitter/combiner covering the 5 to 1500 MHz frequency range, supporting bandwidth requirements for DOCSIS® 3.1 systems and equipment as well as other broadband applications. This model can handle up to 1W RF input power as a splitter and provides low insertion loss, high isolation, and low phase and amplitude unbalance. It comes housed in a miniature, 8-lead plastic package (0.38 x 0.50 x 0.25") with wrap-around terminations for excellent solderability and gold over nickel plate termination finish.

### Key Features

Feature	Advantages
Wideband, 5 to 1500 MHz	Suitable for many broadband applications including DOCSIS® 3.1 systems and equipment.
Low insertion loss, 1.0 dB	The combination of 1W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining signal power.
Low unbalance: <ul style="list-style-type: none"><li>• 0.2 dB amplitude unbalance</li><li>• 2.0° phase unbalance</li></ul>	SYPS-3-152-75+ produces nearly equal output signals, ideal for parallel path / multichannel systems.
Good isolation, 24 dB	Minimizes interference between input ports.
Good VSWR, 1.2:1 typ.	Provides excellent thru-path transmission with low signal reflection.

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### Features

- low insertion loss 1.0 dB typ.
- good isolation, 24 dB typ.
- wide frequency band, 5 to 1500 MHz
- low amplitude unbalance, 0.4 dB typ.
- low phase unbalance, 2.0 deg. typ.

### Applications

- CATV
- VHF/UHF
- cellular
- DOCSIS 3.1 system

### Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1500	MHz
Insertion Loss, above 4.8 dB	5-50	—	0.6	1.6	dB
	50-870	—	0.8	1.5	
	870-1500	—	1.9	3.6	
Isolation	5-50	22	30	—	dB
	50-870	18	24	—	
	870-1500	13	18	—	
Phase Unbalance	5-870	—	1.5	3.0	Degree
	870-1500	—	3.0	8.0	
Amplitude Unbalance	5-870	—	0.2	0.5	dB
	870-1500	—	0.5	1.2	
VSWR (Port S)	5-50	—	1.3	1.8	:1
	50-870	—	1.1	1.3	
	870-1500	—	1.25	1.8	
VSWR (Port 1 and Port 2)	5-50	—	1.3	1.6	:1
	50-870	—	1.2	1.4	
	870-1500	—	1.25	1.8	

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Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
13"	200

### Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1W max.
Internal Dissipation	0.15 W max.

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

### Pin Connections

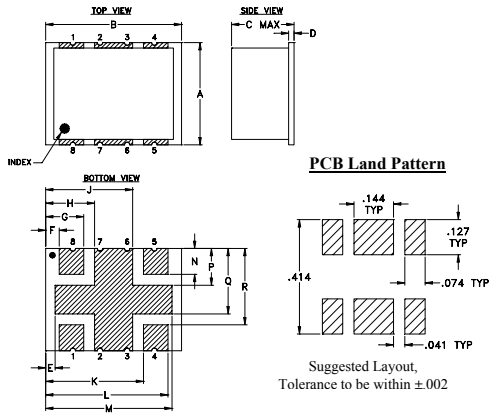
Function	Pin Number
SUM PORT	8
PORT 1	1
PORT 2	4
PORT 3	5
GROUND	2,3,6,7

### Electrical Schematic



# SYPS-3-152-75+

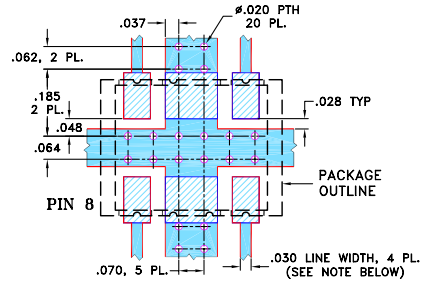
## Outline Drawing



## Outline Dimensions (inch mm)

A	B	C	D	E	F	G	H	
.38	.50	.25	.020	.035	.050	.140	.180	
9.65	12.70	6.35	0.51	0.89	1.27	3.56	4.57	
J	K	L	M	N	P	Q	R	wt
.320	.360	.450	.465	.095	.135	.240	.280	grams
8.13	9.14	11.43	11.81	2.41	3.43	6.10	7.11	0.80

## Demo Board MCL P/N: TB-361+ Suggested PCB Layout (PL-229)



### NOTE:

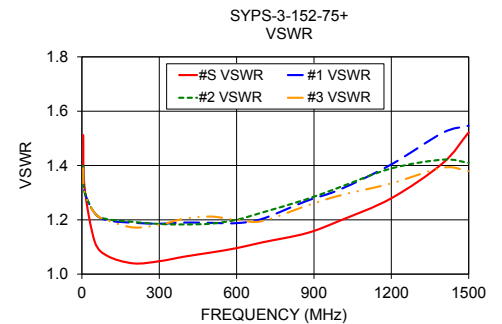
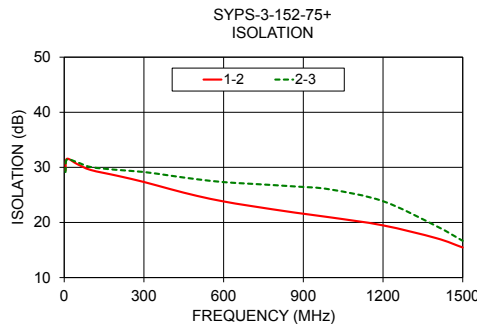
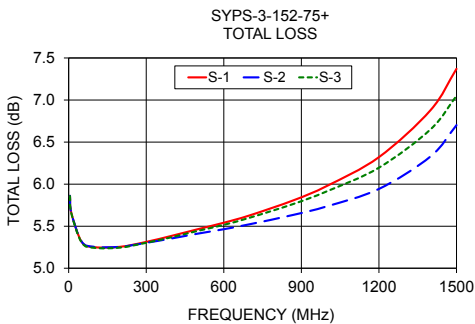
- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Typical Performance Data

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (dB)	Isolation (dB)		Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3
	S-1	S-2	S-3		1-2	2-3					
	5.00	5.86	5.86		5.86	0.00					
10.00	5.66	5.66	5.66	0.01	31.55	31.39	0.07	1.32	1.30	1.31	1.30
50.00	5.32	5.32	5.31	0.01	30.57	30.91	0.14	1.12	1.22	1.22	1.22
100.00	5.25	5.26	5.24	0.01	29.53	30.06	0.23	1.07	1.20	1.20	1.20
200.00	5.26	5.26	5.25	0.01	28.48	29.54	0.40	1.04	1.19	1.19	1.17
300.00	5.31	5.30	5.30	0.01	27.35	29.16	0.58	1.05	1.19	1.18	1.18
400.00	5.39	5.36	5.37	0.03	26.04	28.50	0.74	1.06	1.19	1.18	1.20
500.00	5.46	5.41	5.44	0.05	24.82	27.84	0.90	1.08	1.19	1.19	1.21
600.00	5.54	5.46	5.52	0.08	23.82	27.32	1.00	1.10	1.19	1.20	1.20
700.00	5.63	5.52	5.60	0.11	23.01	27.03	1.01	1.12	1.20	1.23	1.20
870.00	5.81	5.64	5.77	0.17	21.78	26.53	0.99	1.15	1.27	1.28	1.25
1000.00	5.98	5.74	5.92	0.24	20.94	26.00	0.90	1.20	1.31	1.32	1.29
1200.00	6.32	5.94	6.20	0.38	19.47	23.86	0.59	1.28	1.40	1.39	1.33
1400.00	6.88	6.33	6.65	0.55	17.16	19.36	1.30	1.41	1.52	1.42	1.39
1500.00	7.37	6.70	7.05	0.67	15.46	16.67	2.48	1.52	1.55	1.41	1.38

1. Total Loss = Insertion Loss + 4dB splitter loss.



## Additional 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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