

Surface Mount

Power Splitter/Combiner

SYPS-2-33+

2 Way-0° 50Ω 400 to 3000 MHz



CASE STYLE: AH202

The Big Deal

- Low amplitude unbalance, 0.1 dB typ.
- Low phase unbalance, 1° typ.
- Low insertion loss, 0.7 dB typ.

Product Overview

Mini-Circuits SYPS-2-33+ is a wideband, 2 way, 0° surface mount splitter/combiner. This model provides very low amplitude and phase unbalance with good isolation and insertion loss over the full frequency range. It handles up to 0.5W of input power and comes in a small plastic case with excellent thermal performance (- 40°C to 85°C operating).

Key Features

Feature	Advantages
Wideband	Wide frequency coverage from 400 to 3000 MHz supports many applications.
Low AU and PU	SYPS-2-33+ produces nearly equal output signals.
Good insertion loss: • 0.6 dB typ, 700 – 2700 MHz • 1.0 dB typ., 400 – 3000 MHz	Well matched for 50Ω systems.
Good isolation • 21 dB typ., 400 – 3000 MHz	Good isolation over the entire band minimizes effect of load changes at one output port on another output port.
0.5W max. input power	High power handling accommodates a wide range of system power requirements.
Small size, 0.38 x 0.50 x 0.25 in.	Accommodates dense PCB layouts.

*Does not include coupling loss

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/MCLStore/terms.jsp



2 Way-0° 50Ω 400 to 3000 MHz

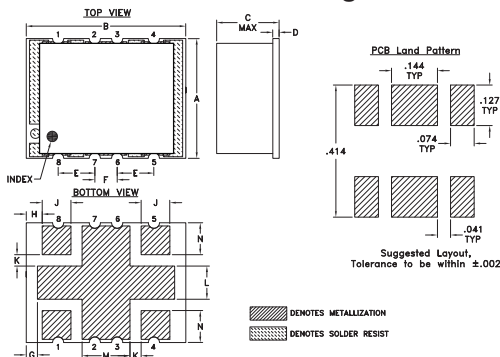
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.
Internal Dissipation	0.05W max.
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

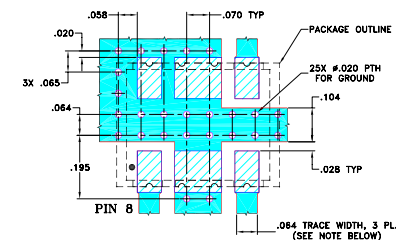
SUM PORT	8
PORT 1	5
PORT 2	4
GROUND	1,2,3,6,7

Outline Drawing



Outline Dimensions (inch)

A	B	C	D	E	F	G	H
.38	.50	.25	.020	.115	.070	.035	.050
9.65	12.70	6.35	0.51	2.92	1.78	0.89	1.27
J	K	L	M	N	wt		
.090	.040	.105	.140	.095	grams		
2.29	1.02	2.67	3.56	2.41	0.80		

Demo Board MCL P/N: TB-427
Suggested PCB Layout (PL-274)

- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B 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.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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Features

- wideband, 400 to 3000 MHz
- low amplitude unbalance, 0.1 dB typ.
- low phase unbalance, 1.0 deg. typ.
- low insertion loss, 0.7dB typ.

Applications

- VHF/UHF
- cellular, GPS, PCS
- communication systems
- receivers & transmitters
- instrumentation
- CATV



Generic photo used for illustration purposes only

CASE STYLE: AH202

+RoHS Compliant

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



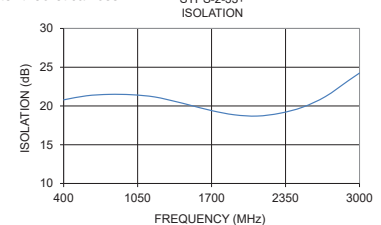
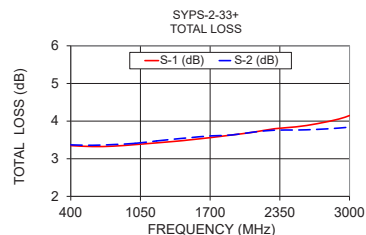
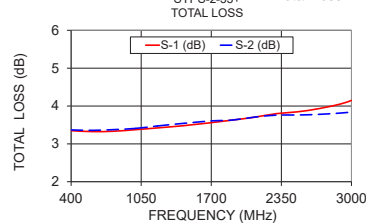
Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		400		3000	MHz
Insertion Loss (above theoretical 3.0 dB)	700-2700 400-3000	— —	0.6 1.0	1.6 2.1	dB
Isolation	400-3000	14	21	—	dB
Phase Unbalance	700-2700 400-3000	— —	1.0 2.0	6 7	Degree
Amplitude Unbalance	700-2700 400-3000	— —	0.1 0.3	0.6 0.9	dB
VSWR (Port S)	700-2700 400-3000	— —	1.4 1.4	1.75 1.85	:1
VSWR (Port 1-2)	700-2700 400-3000	— —	1.2 1.25	1.5 1.6	:1

Typical Performance Data

Frequency (MHz)	Total Loss ¹ (dB)	Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1 S-2						
400	3.35 3.37	0.02	20.79	0.32	1.43	1.35	1.34
600	3.32 3.36	0.03	21.31	0.46	1.31	1.25	1.25
800	3.33 3.38	0.04	21.49	0.67	1.25	1.21	1.19
1000	3.38 3.41	0.03	21.45	0.45	1.24	1.18	1.17
1200	3.42 3.47	0.05	21.16	0.46	1.25	1.15	1.15
1400	3.47 3.53	0.06	20.51	0.32	1.27	1.13	1.13
1500	3.50 3.56	0.06	20.14	0.26	1.29	1.11	1.12
1700	3.56 3.61	0.05	19.40	0.18	1.32	1.10	1.09
1900	3.63 3.63	0.00	18.86	0.20	1.37	1.10	1.10
2100	3.70 3.71	0.00	18.70	0.65	1.38	1.11	1.10
2300	3.80 3.76	0.04	19.06	0.74	1.35	1.12	1.07
2500	3.85 3.76	0.08	19.84	1.00	1.30	1.11	1.04
2700	3.93 3.78	0.15	21.21	1.25	1.19	1.09	1.03
2900	4.05 3.81	0.24	23.24	1.39	1.05	1.08	1.10
3000	4.15 3.84	0.31	24.25	1.46	1.04	1.09	1.15

1. Total Loss = Insertion Loss + 3dB splitter theoretical loss.



Electrical Schematic



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