Surface Mount

Power Splitter/Combiner

SYPJ-2-33+

2 Way-180° 50Ω 500 to 3000 MHz

CASE STYLE:AH202-1

The Big Deal

- Low amplitude unbalance, 0.5 dB typ.
- Low phase unbalance, 2° typ.

Product Overview

Mini-Circuits SYPJ-2-33+ is a wideband, 2 way, 180° 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 500 to 3000 MHz supports many applications.
10 MHz signal pass at port 2	Provides 10 MHz control signal.
Low AU and PU	SYPJ-2-33+ produces nearly equal output signals.
Good insertion loss: •1.4 dB typ, 500 – 2000 MHz • 2.1 dB typ., 3000 – 3000 MHz	Well matched for 50Ω systems.
Good isolation •17 dB typ., 500 – 2000 MHz • 25 dB typ., 2000 – 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

Surface Mount

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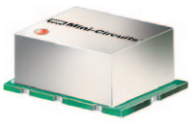
SYPJ-2-33+

2 Way-180° 50Ω 500 to 3000 MHz



CASE STYLE: AH202-1
PRICE: $14.95 ea. QTY (10-49)

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

Maximum Ratings

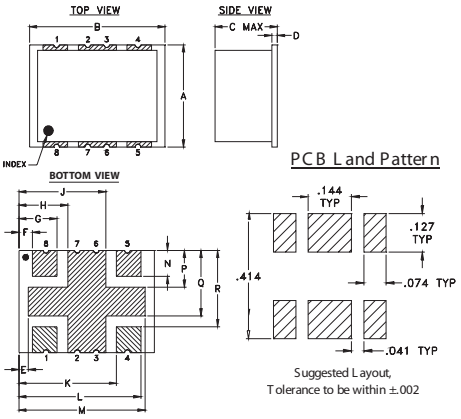
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.
Internal Dissipation	0.25W max.

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

Pin Connections

SUM PORT	8
PORT 1 (180°)	5
PORT 2 (0°)	4
GROUND	1,2,3,6,7

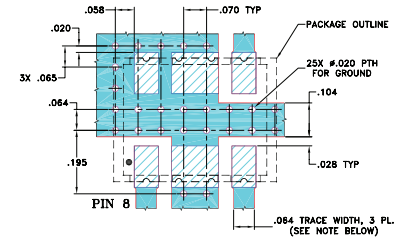
Outline Drawing



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-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.

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

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- wideband, 500 to 3000 MHz
- low amplitude unbalance, 0.5 dB typ.
- low phase unbalance, 2.0 deg. typ.
- 10 MHz signal pass@ port 2: with 1.5 dB/max IL

Applications

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

Electrical Specifications at 25°C

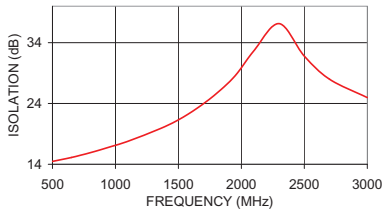
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		500		3000	MHz
Insertion Loss (above theoretical 3.0 dB)	500-2000	—	1.4	2.2	dB
	2000-3000	—	2.1	3.2	
Isolation	500-2000	11.0	17	—	dB
	2000-3000	19	25	—	
Phase Unbalance (out of 180°C)	500-2000	—	2.0	9.0	Degree
	2000-3000	—	5.0	14.0	
Amplitude Unbalance	500-2000	—	0.8	1.2	dB
	2000-3000	—	0.3	0.9	
VSWR (Port S)	500-3000	—	1.7	—	:1
VSWR (Port 1-2)	500-3000	—	1.7	—	:1

Typical Performance Data

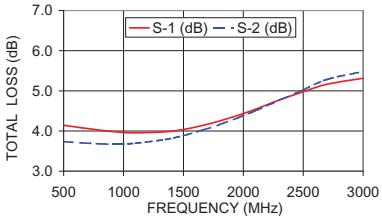
Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
500	4.14	3.74	0.81	14.47	0.29	1.88	1.30	1.38
650	4.08	3.70	0.75	15.12	0.76	1.75	1.30	1.38
800	4.02	3.68	0.68	15.90	1.12	1.61	1.29	1.36
950	3.97	3.67	0.61	16.82	1.42	1.46	1.28	1.31
1100	3.95	3.69	0.52	17.79	1.61	1.32	1.27	1.26
1350	3.98	3.79	0.38	19.82	1.81	1.14	1.29	1.17
1500	4.04	3.88	0.31	21.30	1.88	1.13	1.32	1.13
1650	4.13	4.01	0.24	23.25	1.89	1.21	1.37	1.15
1800	4.25	4.16	0.18	25.60	1.86	1.31	1.43	1.20
1950	4.39	4.32	0.12	28.54	1.80	1.43	1.50	1.28
2100	4.54	4.50	0.08	32.70	1.78	1.56	1.58	1.37
2300	4.77	4.76	0.02	37.13	1.76	1.69	1.66	1.48
2500	4.98	5.03	0.10	31.79	1.66	1.76	1.69	1.57
2700	5.17	5.29	0.24	27.99	1.83	1.79	1.65	1.63
3000	5.31	5.48	0.33	24.97	3.08	1.73	1.52	1.58

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

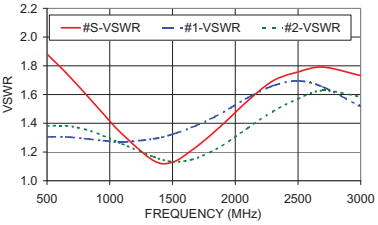
SYPJ-2-33+
ISOLATION



SYPJ-2-33+
TOTAL LOSS



SYPJ-2-33+
VSWR



Electrical Schematic

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

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