Surface Mount

Power Splitter/Combiner SYPS-2-22HP+

2 Way-0° 50Ω 2 to 200 MHz 5 Watt

The Big Deal

- High power handling, 5W as a splitter
- High IP2 (+80 dB) and IP3 (+60 dB) at 1W input
- Low insertion loss, 0.5 dB
- Low unbalance, 0.1 dB / 1°
- Good isolation, 22 dB

CASE STYLE: AH202-1

Product Overview

Mini-Circuits' SYPS-2-22HP+ is a surface-mount 2-way 0˚ splitter/combiner covering the 2 to 200 MHz frequency range, supporting bandwidth requirements for a wide range of RF/microwave systems. This model can handle up to 5W RF input power as a splitter and provides low insertion loss, high isolation, low amplitude unbalance, and low phase unbalance. The unit comes housed in a miniature, shielded, 8-lead package (0.38 x 0.50 x 0.25") with wrap-around terminations for excellent solderability.

Key Features

Feature	Advantages
High power handling, 5W	Supports a wide range of power requirements in a miniature package, minimizing space requirements.
High IP2, +80 dBm High IP3, +60 dBm	Minimizes second harmonic and third order intermodulation where multiple carriers may be present.
Low insertion loss, 0.5 dB (above 3 dB theoretical loss)	The combination of 5W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power.
High isolation, 22 dB	Minimizes interference between ports.
Low unbalance, 0.1 dB / 1°	Low unbalance provides nearly equal output signals, ideal for parallel path/multichannel systems.
Small size, 0.38 x 0.50 x 0.25"	Saves space in dense PCB layouts.

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Power Splitter/Combiner

SYPS-2-22HP+

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Generic photo used for illustration purposes only

CASE STYLE: AH202-1

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
13"	200

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	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	5
PORT 2	4
GROUND	1,2,3,6,7

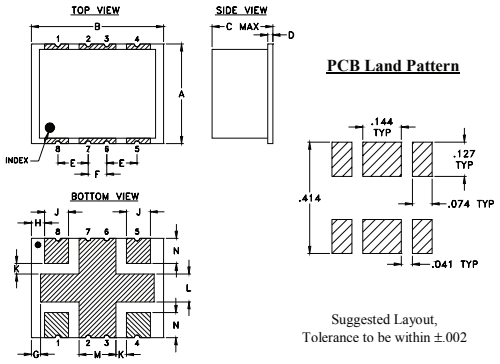
Features

- high IP2, +80 dBm typ., IP3, +60 dBm at 1watt input
- low amplitude unbalance, 0.1 dB typ.
- low phase unbalance, 1.0 deg. typ.
- low insertion loss, 0.5 dB typ.

Applications

- VHF/UHF
- cellular, GPS, PCS
- communication systems
- instrumentation

Outline Drawing



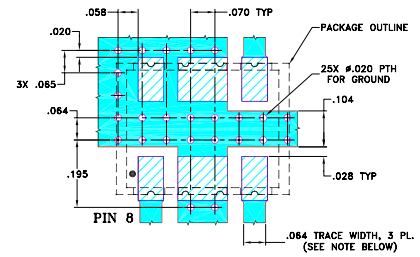
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.38	.50	.25	.020	.115	.070	.035
9.65	12.70	6.35	0.51	2.92	1.78	0.89

H	J	K	L	M	N	wt
.050	.090	.040	.105	.140	.095	grams
1.27	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.

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

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Specifications at 25°C

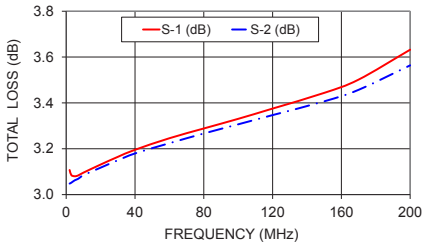
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		2		200	MHz
Insertion Loss (above theoretical 3.0 dB)	5-150	—	0.4	0.6	dB
	2-200	—	0.6	0.9	
Isolation	2-200	18	22	—	dB
Phase Unbalance	5-150	—	0.1	1.5	Degree
	2-200	—	1.5	4	
Amplitude Unbalance	2-200	—	0.1	0.25	dB
VSWR (Port S)	5-150	—	1.15	1.35	:1
	2-200	—	1.25	1.45	
VSWR (Port 1-2)	5-150	—	1.00	1.25	:1
	2-200	—	1.20	1.45	

Typical Performance Data

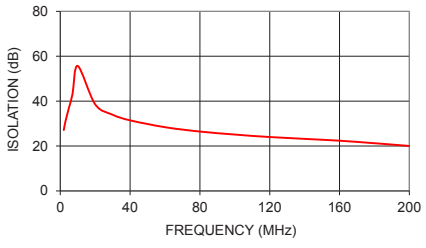
Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
2	3.11	3.05	0.06	27.13	1.91	1.16	1.31	1.23
3	3.08	3.05	0.03	31.11	1.29	1.11	1.20	1.15
5	3.08	3.06	0.02	37.15	0.78	1.08	1.12	1.09
7	3.08	3.07	0.01	43.15	0.56	1.07	1.09	1.07
10	3.10	3.08	0.01	55.69	0.37	1.07	1.06	1.05
20	3.13	3.12	0.01	38.59	0.14	1.07	1.04	1.03
30	3.16	3.15	0.01	33.95	0.06	1.09	1.03	1.03
40	3.20	3.18	0.02	31.44	0.01	1.10	1.03	1.03
60	3.25	3.22	0.02	28.39	0.02	1.14	1.04	1.03
80	3.29	3.27	0.02	26.45	0.03	1.17	1.04	1.04
100	3.33	3.31	0.02	25.12	0.04	1.20	1.04	1.03
120	3.38	3.35	0.03	24.00	0.02	1.22	1.03	1.03
150	3.44	3.41	0.04	22.79	0.14	1.26	1.02	1.02
170	3.50	3.46	0.04	21.84	0.28	1.29	1.02	1.03
200	3.63	3.56	0.07	20.03	0.60	1.37	1.05	1.08

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

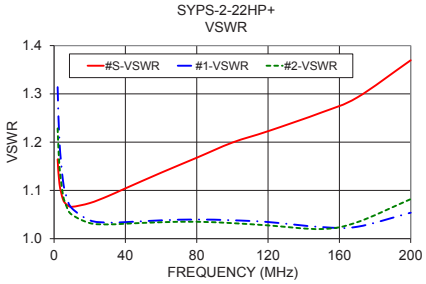
SYPS-2-22HP+
TOTAL LOSS



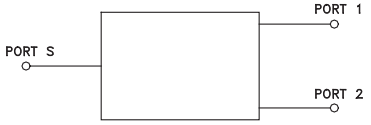
SYPS-2-22HP+
ISOLATION



SYPS-2-22HP+
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.
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