

Surface Mount

# Power Splitter/Combiner

4 Way-0° 50Ω 1 to 500 MHz

AD4PS-1+



CASE STYLE: CJ725

**+RoHS Compliant**

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

## Maximum Ratings

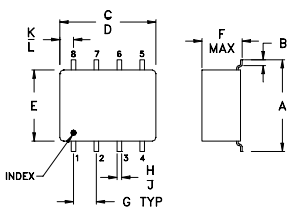
|                             |                |
|-----------------------------|----------------|
| Operating Temperature       | -40°C to 85°C  |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 0.5W max.      |
| Internal Dissipation        | 0.25W max.     |

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

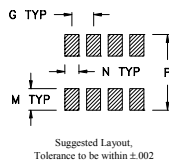
## Pin Connections

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

## Outline Drawing



### PCB Land Pattern

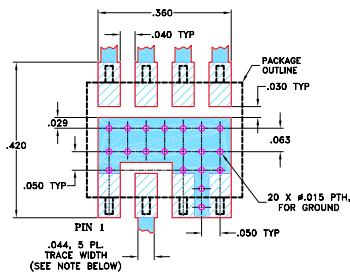


Suggested Layout  
Tolerance to be within ±.002

## Outline Dimensions (inch/mm)

| A     | B    | C    | D     | E    | F    | G     |       |
|-------|------|------|-------|------|------|-------|-------|
| .397  | .032 | .385 | .435  | .310 | .215 | .100  |       |
| 10.08 | 0.81 | 9.78 | 11.05 | 7.87 | 5.46 | 2.54  |       |
| H     | J    | K    | L     | M    | N    | P     | wt    |
| .015  | .025 | .035 | .075  | .120 | .060 | .420  | grams |
| 0.38  | 0.64 | 0.89 | 1.91  | 3.05 | 1.52 | 10.67 | 0.45  |

## Demo Board MCL P/N: TB-81 Suggested PCB Layout (PL-072)



- NOTES:
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; 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

### 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-Circuits' applicable established test performance criteria and measurement instructions.
- 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](http://www.minicircuits.com/MCLStore/terms.jsp)

## Features

- wideband, 1-500 MHz
- high isolation, 30 dB typ.
- good input port matching VSWR, 1.12 typ.
- good output port matching VSWR, 1.10 typ.
- small surface mount package

## Applications

- VHF-TV
- aircraft communications

## Electrical Specifications

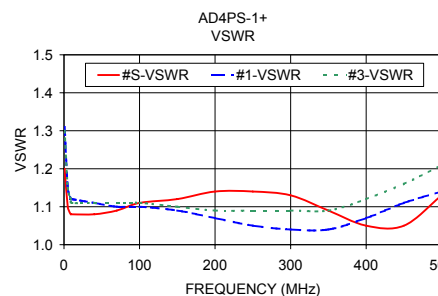
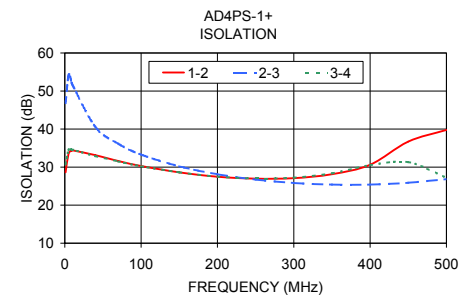
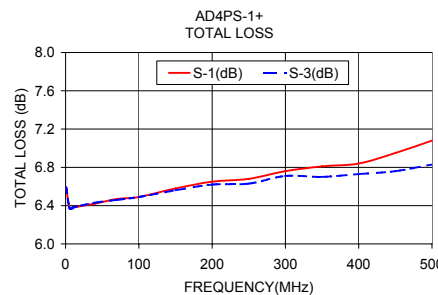
| FREQ. RANGE (MHz)              | ISOLATION (dB) |      |      |      |      |      | INSERTION LOSS (dB) ABOVE 6.0 dB |      |      |      |      |      | PHASE UNBALANCE (Degrees) |      |      | AMPLITUDE UNBALANCE (dB) |      |      |
|--------------------------------|----------------|------|------|------|------|------|----------------------------------|------|------|------|------|------|---------------------------|------|------|--------------------------|------|------|
|                                | L              |      | M    |      | U    |      | L                                |      | M    |      | U    |      | L                         | M    | U    | L                        | M    | U    |
|                                | Typ.           | Min. | Typ. | Min. | Typ. | Min. | Typ.                             | Max. | Typ. | Max. | Typ. | Max. | Max.                      | Max. | Max. | Max.                     | Max. | Max. |
| f <sub>c</sub> -f <sub>u</sub> |                |      |      |      |      |      |                                  |      |      |      |      |      |                           |      |      |                          |      |      |
| 1-500                          | 32             | 18   | 30   | 20   | 25   | 18   | 0.4                              | 1.2  | 0.5  | 1.2  | 0.8  | 1.8  | 2                         | 5    | 7    | 0.4                      | 0.5  | 0.8  |

L = 1-10MHz M = 10-250MHz U = 250-500MHz

## Typical Performance Data

| Freq. (MHz) | Total Loss <sup>1</sup> (dB) |      |      |      | Amp. Unbal. (dB) | Isolation (dB) |       |       | Phase Unbal. (deg.) | VSWR | VSWR | VSWR | VSWR | VSWR |
|-------------|------------------------------|------|------|------|------------------|----------------|-------|-------|---------------------|------|------|------|------|------|
|             | S-1                          | S-2  | S-3  | S-4  |                  | 1-2            | 2-3   | 3-4   |                     | S    | 1    | 2    | 3    | 4    |
| 1.00        | 6.59                         | 6.59 | 6.59 | 6.59 | 0.01             | 28.61          | 46.82 | 30.70 | 0.02                | 1.20 | 1.31 | 1.31 | 1.30 | 1.28 |
| 5.00        | 6.38                         | 6.42 | 6.38 | 6.38 | 0.04             | 33.63          | 54.15 | 34.52 | 0.05                | 1.10 | 1.15 | 1.15 | 1.15 | 1.13 |
| 9.00        | 6.37                         | 6.42 | 6.37 | 6.37 | 0.05             | 34.35          | 52.09 | 34.63 | 0.08                | 1.08 | 1.12 | 1.12 | 1.12 | 1.10 |
| 10.00       | 6.38                         | 6.42 | 6.38 | 6.38 | 0.04             | 34.41          | 51.62 | 34.60 | 0.09                | 1.08 | 1.12 | 1.12 | 1.11 | 1.10 |
| 40.00       | 6.42                         | 6.47 | 6.43 | 6.43 | 0.04             | 33.14          | 40.57 | 32.89 | 0.28                | 1.08 | 1.11 | 1.11 | 1.11 | 1.09 |
| 70.00       | 6.47                         | 6.50 | 6.46 | 6.46 | 0.04             | 31.60          | 36.15 | 31.47 | 0.52                | 1.09 | 1.10 | 1.11 | 1.11 | 1.09 |
| 100.00      | 6.49                         | 6.53 | 6.49 | 6.49 | 0.04             | 30.28          | 33.28 | 30.23 | 0.71                | 1.11 | 1.10 | 1.10 | 1.11 | 1.09 |
| 150.00      | 6.58                         | 6.61 | 6.56 | 6.56 | 0.05             | 28.63          | 30.21 | 28.64 | 1.04                | 1.12 | 1.09 | 1.10 | 1.10 | 1.08 |
| 200.00      | 6.65                         | 6.68 | 6.62 | 6.62 | 0.05             | 27.48          | 28.12 | 27.52 | 1.47                | 1.14 | 1.07 | 1.08 | 1.09 | 1.07 |
| 250.00      | 6.68                         | 6.71 | 6.63 | 6.62 | 0.09             | 26.98          | 26.73 | 27.02 | 1.66                | 1.14 | 1.05 | 1.07 | 1.09 | 1.06 |
| 300.00      | 6.76                         | 6.80 | 6.71 | 6.70 | 0.10             | 27.10          | 25.83 | 27.23 | 1.99                | 1.13 | 1.04 | 1.06 | 1.09 | 1.06 |
| 350.00      | 6.81                         | 6.83 | 6.70 | 6.68 | 0.15             | 28.13          | 25.41 | 28.36 | 2.08                | 1.09 | 1.04 | 1.06 | 1.09 | 1.06 |
| 400.00      | 6.84                         | 6.90 | 6.73 | 6.68 | 0.21             | 30.62          | 25.41 | 30.49 | 2.21                | 1.05 | 1.07 | 1.08 | 1.12 | 1.09 |
| 450.00      | 6.95                         | 6.98 | 6.76 | 6.73 | 0.26             | 36.71          | 25.89 | 31.30 | 2.54                | 1.05 | 1.11 | 1.11 | 1.16 | 1.12 |
| 500.00      | 7.08                         | 7.15 | 6.83 | 6.77 | 0.38             | 39.78          | 26.85 | 27.20 | 3.34                | 1.13 | 1.14 | 1.15 | 1.21 | 1.17 |

1. Total Loss = Insertion Loss + 6dB splitter loss.



## electrical schematic

