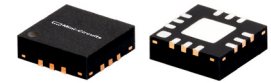


# Power Splitter/Combiner

## GP2S+

2 Way-0° 50Ω 800 to 2100 MHz



Generic photo used for illustration purposes only

CASE STYLE: DQ1225

**+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                      |
|-----------|-----------------------------------|
| 7"        | 20, 50, 100, 200, 500, 1000, 2000 |

### Maximum Ratings

|                             |                |
|-----------------------------|----------------|
| Operating Temperature       | -40°C to 85°C  |
| Storage Temperature         | -65°C to 150°C |
| Power Input (as a splitter) | 1.5W max.      |
| Internal Dissipation        | 0.75W max.     |

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

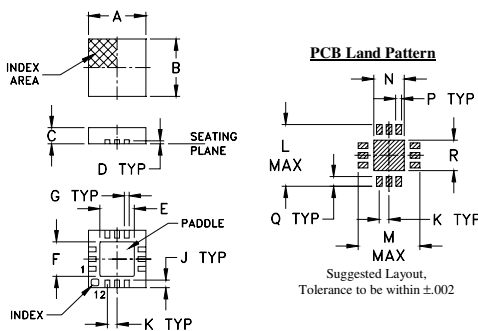
### Pad Connections

|          |                              |
|----------|------------------------------|
| SUM PORT | 2                            |
| PORT 1   | 7                            |
| PORT 2   | 9                            |
| GROUND   | 1,3,4,5,6,8,10,11,12, paddle |

### Product Marking



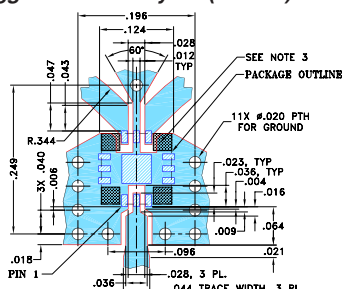
### Outline Drawing



### Outline Dimensions (inch/mm)

|      |      |      |      |      |      |      |     |       |
|------|------|------|------|------|------|------|-----|-------|
| A    | B    | C    | D    | E    | F    | G    | H   | J     |
| .118 | .118 | .035 | .008 | .057 | .057 | .009 | --- | .016  |
| 3.00 | 3.00 | 0.89 | 0.20 | 1.45 | 1.45 | 0.23 | --- | 0.41  |
| K    | L    | M    | N    | P    | Q    | R    |     | wt    |
| .020 | .127 | .127 | .049 | .010 | .020 | .049 |     | grams |
| 0.51 | 3.23 | 3.23 | 1.24 | 0.25 | 0.51 | 1.24 |     | 0.02  |

### Demo Board MCL P/N: TB-453-GP2S+ Suggested PCB Layout (PL-282)



- NOTES:
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
  - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
  - SIGNAL TRACES ARE NOT ALLOWED INSIDE HATCHED AREAS (APPROX. .030 X .030) AT 4 PLACES AS SHOWN.
- 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-Circuit's 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

- wide bandwidth, 800 to 2100 MHz
- excellent isolation, 24 dB typ.
- excellent amplitude unbalance, 0.02 dB typ.
- good phase unbalance, 0.8 deg. typ.
- small size, 0.118"x0.118"x0.035"
- high ESD level
- aqueous washable

### Applications

- cellular • GPS • DCS
- WCDMA • GSM • Korea PCS

### Electrical Specifications

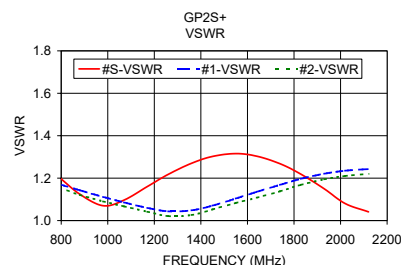
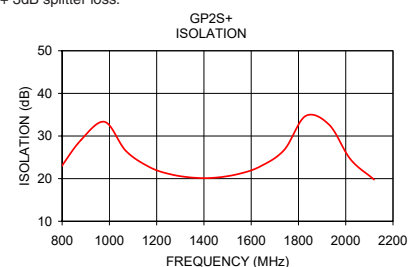
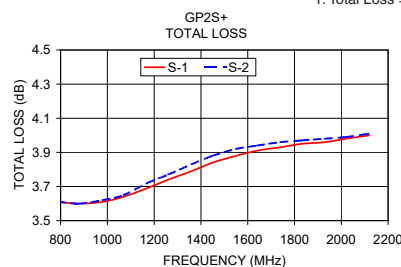
| FREQ. RANGE (MHz)              | ISOLATION (dB) |      | INSERTION LOSS* (dB) ABOVE 3.0 dB |      | PHASE UNBALANCE (Degrees) | AMPLITUDE UNBALANCE (dB) | VSWR (:1) Typ. |           |
|--------------------------------|----------------|------|-----------------------------------|------|---------------------------|--------------------------|----------------|-----------|
|                                | Typ.           | Min. | Typ.                              | Max. |                           |                          | Port S         | Ports 1,2 |
| f <sub>L</sub> -f <sub>U</sub> |                |      |                                   |      | Max.                      | Max.                     |                |           |
| 800-2100                       | 24             | 17   | 0.8                               | 1.4  | 4.0                       | 0.2                      | 1.2            | 1.2       |

\* De-embedded from demo board loss.

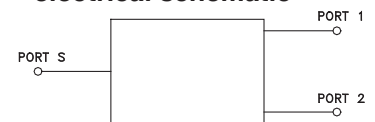
### Typical Performance Data

| Frequency (MHz) | Total Loss <sup>1</sup> (dB) |      | Amplitude Unbalance (dB) | Isolation (dB) | Phase Unbalance (deg.) | VSWR S | VSWR 1 | VSWR 2 |
|-----------------|------------------------------|------|--------------------------|----------------|------------------------|--------|--------|--------|
|                 | S-1                          | S-2  |                          |                |                        |        |        |        |
| 790.00          | 3.61                         | 3.61 | 0.00                     | 22.30          | 0.49                   | 1.21   | 1.17   | 1.16   |
| 880.00          | 3.60                         | 3.60 | 0.00                     | 29.08          | 0.52                   | 1.12   | 1.14   | 1.12   |
| 980.00          | 3.61                         | 3.62 | 0.01                     | 33.32          | 0.57                   | 1.07   | 1.11   | 1.09   |
| 1070.00         | 3.64                         | 3.65 | 0.01                     | 26.49          | 0.66                   | 1.10   | 1.09   | 1.07   |
| 1170.00         | 3.69                         | 3.72 | 0.02                     | 22.70          | 0.72                   | 1.16   | 1.06   | 1.04   |
| 1260.00         | 3.74                         | 3.77 | 0.04                     | 21.01          | 0.78                   | 1.22   | 1.04   | 1.02   |
| 1360.00         | 3.79                         | 3.83 | 0.04                     | 20.20          | 0.83                   | 1.27   | 1.05   | 1.03   |
| 1450.00         | 3.84                         | 3.88 | 0.04                     | 20.24          | 0.87                   | 1.30   | 1.07   | 1.05   |
| 1550.00         | 3.88                         | 3.92 | 0.04                     | 21.14          | 0.91                   | 1.32   | 1.10   | 1.08   |
| 1640.00         | 3.91                         | 3.94 | 0.03                     | 22.91          | 0.97                   | 1.30   | 1.14   | 1.11   |
| 1740.00         | 3.93                         | 3.96 | 0.03                     | 26.76          | 1.05                   | 1.27   | 1.17   | 1.14   |
| 1830.00         | 3.95                         | 3.97 | 0.02                     | 34.69          | 1.16                   | 1.22   | 1.20   | 1.17   |
| 1930.00         | 3.96                         | 3.98 | 0.02                     | 32.63          | 1.28                   | 1.15   | 1.22   | 1.19   |
| 2020.00         | 3.98                         | 3.99 | 0.01                     | 24.55          | 1.41                   | 1.08   | 1.24   | 1.21   |
| 2120.00         | 4.00                         | 4.01 | 0.01                     | 19.78          | 1.57                   | 1.04   | 1.24   | 1.22   |

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



### electrical schematic



### ESD Rating

Human Body Model (HBM): Class 1A (250 to < 500V) in accordance with ANSI/ESD STM 5.1 - 2001  
Machine Model (MM): Class M2 (100V to < 250V) in accordance with ANSI/ESD STM 5.2 - 1999