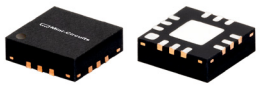
*MMIC Surface Mount*

# 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 |

### Features

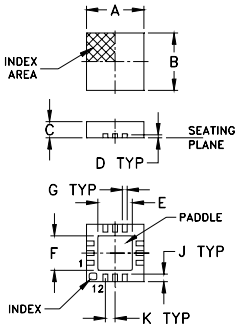
- wide bandwidth, 800 to 2100 MHz
- excellent isolation, 24 dB typ.
- excellent amplitude unbalance, 0.02 dB typ.
- good phase unbalance, 0.8 deg. typ.
- small size, 0.118"x0.118"x0.035"
- high ESD level
- aqueous washable

### Applications

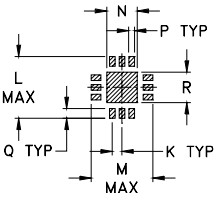
- cellular • GPS • DCS
- WCDMA • GSM • Korea PCS

### Product Marking


### Outline Drawing




**PCB Land Pattern**



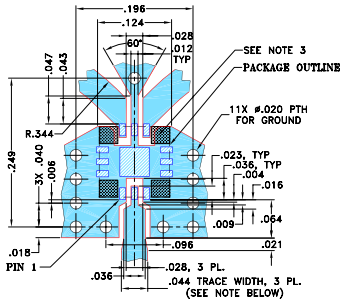

Suggested Layout,
Tolerance to be within ±.002

### 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:
1. 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.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. 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

### Electrical Specifications

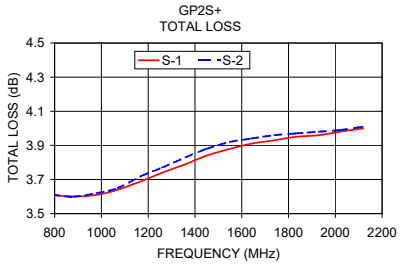
| FREQ. RANGE (MHz) | ISOLATION (dB) | | INSERTION LOSS* (dB) ABOVE 3.0 dB | | PHASE UNBALANCE (Degrees) | AMPLITUDE UNBALANCE (dB) | VSWR (:1) Typ. | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Port S | Ports 1,2 |
| $f_L$-$f_U$ | Typ. | Min. | Typ. | Max. | Max. | Max. | | |
| 800-2100 | 24 | 17 | 0.8 | 1.4 | 4.0 | 0.2 | 1.2 | 1.2 |

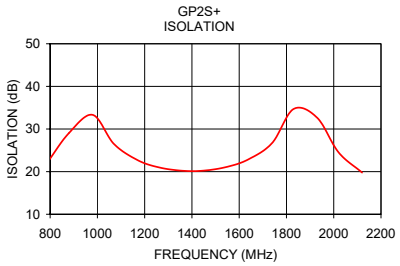
* De-embedded from demo board loss.

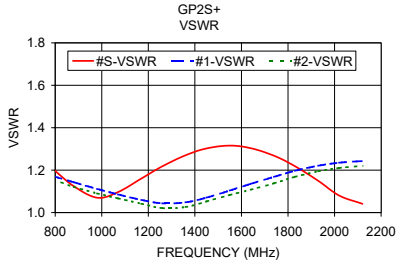
### Typical Performance Data

| Frequency (MHz) | Total Loss[1] (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 |

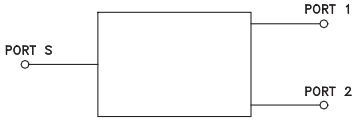
1. Total Loss = Insertion Loss + 3dB splitter loss.




### 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

**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.
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