

Surface Mount Power Splitter/Combiner

BP4U1+

4 Way-0° 50Ω

1850 to 3000 MHz



Generic photo used for illustration purposes only

CASE STYLE: XX211

Maximum Ratings

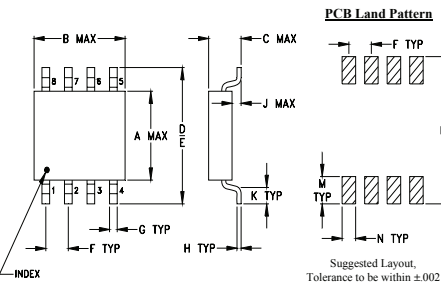
| | |
|-----------------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -65°C to 150°C |
| Power Input (as a splitter) | 1.5W max. |
| Internal Dissipation | 0.375W max. |

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

Pin Connections

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

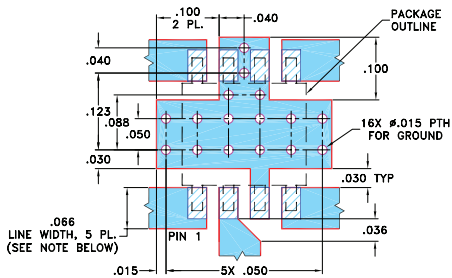
Outline Drawing



Outline Dimensions (inch/mm)

| | | | | | | |
|------|------|------|------|------|------|-------|
| A | B | C | D | E | F | G |
| .163 | .210 | .077 | .250 | .220 | .050 | .017 |
| 4.14 | 5.33 | 1.96 | 6.35 | 5.59 | 1.27 | 0.43 |
| H | J | K | M | N | P | wt |
| .009 | .025 | .030 | .050 | .030 | .270 | grams |
| 0.23 | 0.64 | 0.76 | 1.27 | 0.76 | 6.86 | 0.10 |

Demo Board MCL P/N: TB-231 Suggested PCB Layout (PL-113)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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

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

Features

- wide bandwidth, 1850-3000 MHz
- excellent output VSWR, 1.2:1 typ.
- excellent power handling, 1.5W
- aqueous washable

Applications

- blue tooth
- IEEE 802.11b, g

Electrical Specifications

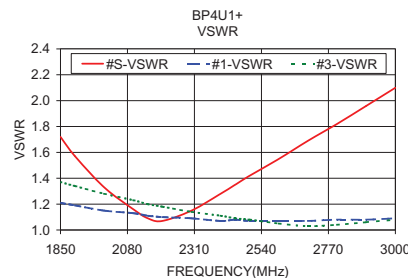
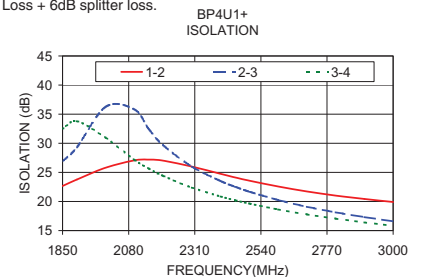
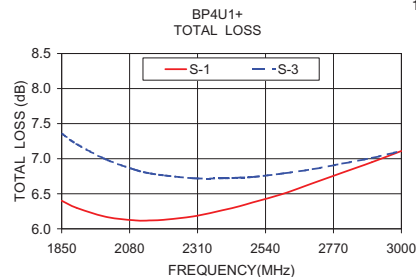
| FREQ. RANGE (MHz) | ISOLATION (dB) | | INSERTION LOSS (dB) ABOVE 6 dB | | PHASE UNBALANCE (Degrees) | AMPLITUDE UNBALANCE (dB) | VSWR (:1) Typ. | |
|-------------------|----------------|------|--------------------------------|------|---------------------------|--------------------------|----------------|---------------|
| | Typ. | Min. | Typ. | Max. | | | Port S | Ports 1,2,3,4 |
| $f_L - f_U$ | | | | | Max. | Max. | | |
| 1850-3000 | 23 | 15* | 0.7 | 1.7 | 28 | 1.3 | 1.5 | 1.2 |

*13 dB above 2600 MHz

Typical Performance Data

| Freq. (MHz) | Total Loss ¹ (dB) | | | | Amp. Unbal. (dB) | Isolation (dB) | | | Phase Unbal. (deg.) | VSWR S | VSWR 1 | VSWR 2 | VSWR 3 | VSWR 4 |
|-------------|------------------------------|------|------|------|------------------|----------------|-------|-------|---------------------|--------|--------|--------|--------|--------|
| | S-1 | S-2 | S-3 | S-4 | | 1-2 | 2-3 | 3-4 | | | | | | |
| 1850.00 | 6.40 | 7.28 | 7.36 | 7.25 | 0.96 | 22.67 | 26.87 | 32.49 | 3.18 | 1.72 | 1.21 | 1.37 | 1.37 | 1.43 |
| 1900.00 | 6.30 | 7.13 | 7.21 | 7.12 | 0.91 | 23.77 | 29.31 | 33.79 | 4.19 | 1.57 | 1.19 | 1.35 | 1.34 | 1.40 |
| 2000.00 | 6.17 | 6.92 | 6.99 | 6.93 | 0.82 | 25.80 | 36.26 | 30.96 | 6.17 | 1.33 | 1.15 | 1.29 | 1.28 | 1.34 |
| 2100.00 | 6.12 | 6.78 | 6.84 | 6.82 | 0.72 | 27.06 | 35.82 | 27.14 | 8.09 | 1.16 | 1.13 | 1.24 | 1.23 | 1.30 |
| 2150.00 | 6.12 | 6.73 | 6.79 | 6.79 | 0.68 | 27.19 | 32.42 | 25.65 | 9.00 | 1.09 | 1.11 | 1.22 | 1.20 | 1.28 |
| 2200.00 | 6.13 | 6.70 | 6.76 | 6.77 | 0.64 | 27.02 | 29.67 | 24.40 | 9.88 | 1.07 | 1.10 | 1.20 | 1.18 | 1.26 |
| 2300.00 | 6.18 | 6.67 | 6.72 | 6.76 | 0.58 | 26.00 | 26.00 | 22.39 | 11.73 | 1.15 | 1.09 | 1.16 | 1.14 | 1.23 |
| 2400.00 | 6.27 | 6.67 | 6.72 | 6.79 | 0.53 | 24.75 | 23.51 | 20.86 | 13.53 | 1.28 | 1.07 | 1.13 | 1.11 | 1.20 |
| 2450.00 | 6.32 | 6.69 | 6.73 | 6.82 | 0.50 | 24.13 | 22.54 | 20.22 | 14.49 | 1.35 | 1.08 | 1.11 | 1.09 | 1.19 |
| 2500.00 | 6.38 | 6.70 | 6.74 | 6.85 | 0.47 | 23.57 | 21.69 | 19.64 | 15.39 | 1.42 | 1.07 | 1.10 | 1.08 | 1.17 |
| 2600.00 | 6.50 | 6.75 | 6.79 | 6.93 | 0.42 | 22.58 | 20.26 | 18.63 | 17.09 | 1.55 | 1.07 | 1.08 | 1.05 | 1.15 |
| 2700.00 | 6.65 | 6.82 | 6.85 | 7.02 | 0.37 | 21.72 | 19.10 | 17.78 | 18.77 | 1.69 | 1.07 | 1.06 | 1.03 | 1.12 |
| 2800.00 | 6.80 | 6.89 | 6.93 | 7.12 | 0.33 | 21.01 | 18.14 | 17.05 | 20.44 | 1.82 | 1.08 | 1.06 | 1.04 | 1.11 |
| 2900.00 | 6.95 | 6.97 | 7.01 | 7.22 | 0.28 | 20.43 | 17.32 | 16.40 | 22.00 | 1.96 | 1.08 | 1.07 | 1.06 | 1.09 |
| 3000.00 | 7.11 | 7.07 | 7.11 | 7.35 | 0.28 | 19.91 | 16.58 | 15.83 | 23.61 | 2.10 | 1.09 | 1.09 | 1.08 | 1.07 |

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



electrical schematic



ESD Rating

Human Body Model (HBM): Class 1A (250 v to <500 v) in accordance with ANSI/ESD STM 5.1 - 2001
 Machine Model (MM): Class M1 (< 100 v) in accordance with ANSI/ESD STM 5.2 - 1999 (pass 50V)



4 Way-0° Power Splitter/Combiner

BP4U1+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +25°C

| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | | | | AMP. UNBAL. (dB) | PHASE UNBAL. (deg.) | ISOLATION (dB) | | | VSWR (:1) | | | | |
|----------------|---------------------------------|-------|-------|-------|------------------------|---------------------------|-------------------|-------|-------|--------------|------|------|------|------|
| | S-1 | S-2 | S-3 | S-4 | | | 1-2 | 2-3 | 3-4 | S | 1 | 2 | 3 | 4 |
| 1000 | 13.92 | 15.76 | 15.83 | 15.15 | 1.91 | 22.41 | 12.61 | 13.86 | 15.08 | 13.66 | 1.53 | 1.78 | 1.83 | 1.91 |
| 1100 | 12.41 | 14.11 | 14.19 | 13.54 | 1.79 | 18.45 | 13.00 | 14.23 | 15.59 | 10.58 | 1.50 | 1.75 | 1.79 | 1.87 |
| 1150 | 11.71 | 13.36 | 13.44 | 12.79 | 1.73 | 16.62 | 13.24 | 14.45 | 15.89 | 9.29 | 1.48 | 1.72 | 1.77 | 1.84 |
| 1200 | 11.06 | 12.65 | 12.74 | 12.10 | 1.68 | 14.89 | 13.51 | 14.72 | 16.26 | 8.13 | 1.46 | 1.70 | 1.75 | 1.81 |
| 1250 | 10.45 | 11.99 | 12.07 | 11.45 | 1.63 | 13.21 | 13.82 | 15.03 | 16.66 | 7.12 | 1.44 | 1.68 | 1.72 | 1.78 |
| 1300 | 9.88 | 11.37 | 11.45 | 10.85 | 1.57 | 11.61 | 14.17 | 15.38 | 17.14 | 6.23 | 1.42 | 1.65 | 1.69 | 1.75 |
| 1350 | 9.35 | 10.79 | 10.88 | 10.29 | 1.52 | 10.01 | 14.56 | 15.79 | 17.68 | 5.46 | 1.39 | 1.62 | 1.66 | 1.71 |
| 1400 | 8.86 | 10.25 | 10.34 | 9.77 | 1.47 | 8.51 | 15.01 | 16.25 | 18.30 | 4.78 | 1.36 | 1.59 | 1.63 | 1.67 |
| 1450 | 8.42 | 9.76 | 9.85 | 9.30 | 1.43 | 7.21 | 15.52 | 16.78 | 19.03 | 4.19 | 1.34 | 1.55 | 1.59 | 1.63 |
| 1500 | 8.02 | 9.32 | 9.40 | 8.88 | 1.38 | 5.90 | 16.08 | 17.40 | 19.86 | 3.69 | 1.31 | 1.52 | 1.55 | 1.59 |
| 1550 | 7.66 | 8.92 | 9.00 | 8.50 | 1.33 | 4.63 | 16.71 | 18.10 | 20.82 | 3.26 | 1.28 | 1.48 | 1.51 | 1.54 |
| 1600 | 7.34 | 8.55 | 8.63 | 8.16 | 1.29 | 3.42 | 17.41 | 18.88 | 21.92 | 2.88 | 1.25 | 1.44 | 1.46 | 1.50 |
| 1650 | 7.06 | 8.23 | 8.31 | 7.86 | 1.24 | 2.19 | 18.18 | 19.79 | 23.20 | 2.56 | 1.22 | 1.40 | 1.42 | 1.45 |
| 1700 | 6.83 | 7.95 | 8.03 | 7.60 | 1.20 | 1.37 | 19.05 | 20.83 | 24.72 | 2.28 | 1.19 | 1.36 | 1.37 | 1.41 |
| 1750 | 6.62 | 7.71 | 7.78 | 7.38 | 1.16 | 0.99 | 19.99 | 22.00 | 26.48 | 2.04 | 1.16 | 1.32 | 1.33 | 1.37 |
| 1800 | 6.46 | 7.50 | 7.57 | 7.20 | 1.11 | 2.00 | 21.03 | 23.37 | 28.55 | 1.83 | 1.13 | 1.28 | 1.29 | 1.32 |
| 1850 | 6.32 | 7.33 | 7.39 | 7.04 | 1.08 | 3.26 | 22.15 | 24.95 | 30.69 | 1.65 | 1.10 | 1.24 | 1.25 | 1.29 |
| 1890 | 6.23 | 7.21 | 7.28 | 6.95 | 1.05 | 4.22 | 23.12 | 26.37 | 32.15 | 1.53 | 1.08 | 1.22 | 1.21 | 1.26 |
| 1900 | 6.21 | 7.18 | 7.25 | 6.92 | 1.04 | 4.43 | 23.37 | 26.75 | 32.41 | 1.50 | 1.08 | 1.21 | 1.21 | 1.25 |
| 1950 | 6.13 | 7.06 | 7.13 | 6.83 | 1.00 | 3.74 | 24.67 | 28.84 | 32.52 | 1.36 | 1.06 | 1.18 | 1.17 | 1.21 |
| 2000 | 6.07 | 6.97 | 7.04 | 6.76 | 0.97 | 6.74 | 26.00 | 30.93 | 31.00 | 1.25 | 1.04 | 1.15 | 1.14 | 1.18 |
| 2050 | 6.04 | 6.91 | 6.97 | 6.72 | 0.93 | 7.92 | 27.29 | 32.39 | 29.09 | 1.15 | 1.03 | 1.13 | 1.10 | 1.15 |
| 2100 | 6.02 | 6.86 | 6.93 | 6.69 | 0.91 | 8.95 | 28.36 | 32.31 | 27.27 | 1.08 | 1.04 | 1.12 | 1.08 | 1.12 |
| 2150 | 6.02 | 6.83 | 6.90 | 6.68 | 0.88 | 10.03 | 29.07 | 30.76 | 25.67 | 1.07 | 1.05 | 1.11 | 1.07 | 1.10 |
| 2180 | 6.03 | 6.82 | 6.88 | 6.69 | 0.85 | 10.71 | 29.22 | 29.64 | 24.87 | 1.11 | 1.07 | 1.11 | 1.07 | 1.08 |
| 2200 | 6.03 | 6.81 | 6.88 | 6.69 | 0.85 | 11.15 | 29.21 | 28.90 | 24.38 | 1.14 | 1.07 | 1.11 | 1.07 | 1.07 |
| 2250 | 6.06 | 6.82 | 6.89 | 6.72 | 0.83 | 12.24 | 28.88 | 27.18 | 23.25 | 1.21 | 1.09 | 1.11 | 1.08 | 1.06 |
| 2280 | 6.08 | 6.83 | 6.90 | 6.74 | 0.82 | 12.84 | 28.49 | 26.23 | 22.68 | 1.26 | 1.10 | 1.12 | 1.10 | 1.05 |
| 2300 | 6.10 | 6.83 | 6.90 | 6.75 | 0.81 | 13.20 | 28.20 | 25.62 | 22.30 | 1.30 | 1.11 | 1.13 | 1.10 | 1.05 |
| 2350 | 6.14 | 6.86 | 6.93 | 6.80 | 0.79 | 14.13 | 27.40 | 24.38 | 21.47 | 1.38 | 1.13 | 1.14 | 1.13 | 1.04 |
| 2400 | 6.20 | 6.89 | 6.96 | 6.85 | 0.76 | 15.10 | 26.55 | 23.25 | 20.70 | 1.47 | 1.15 | 1.16 | 1.16 | 1.05 |
| 2450 | 6.26 | 6.93 | 7.00 | 6.91 | 0.75 | 16.07 | 25.73 | 22.28 | 20.04 | 1.56 | 1.16 | 1.18 | 1.19 | 1.06 |
| 2480 | 6.30 | 6.96 | 7.03 | 6.95 | 0.74 | 16.60 | 25.26 | 21.77 | 19.67 | 1.61 | 1.17 | 1.20 | 1.20 | 1.07 |
| 2490 | 6.31 | 6.97 | 7.04 | 6.97 | 0.73 | 16.77 | 25.12 | 21.60 | 19.55 | 1.63 | 1.18 | 1.20 | 1.21 | 1.07 |
| 2500 | 6.32 | 6.98 | 7.05 | 6.98 | 0.73 | 16.94 | 24.97 | 21.43 | 19.44 | 1.65 | 1.18 | 1.21 | 1.21 | 1.08 |
| 2550 | 6.39 | 7.03 | 7.10 | 7.04 | 0.71 | 17.79 | 24.26 | 20.63 | 18.88 | 1.74 | 1.20 | 1.23 | 1.24 | 1.09 |
| 2580 | 6.44 | 7.06 | 7.14 | 7.09 | 0.70 | 18.32 | 23.86 | 20.18 | 18.58 | 1.79 | 1.21 | 1.25 | 1.26 | 1.10 |
| 2600 | 6.46 | 7.08 | 7.16 | 7.11 | 0.70 | 18.67 | 23.59 | 19.90 | 18.38 | 1.83 | 1.21 | 1.26 | 1.27 | 1.11 |
| 2650 | 6.54 | 7.14 | 7.22 | 7.19 | 0.68 | 19.52 | 22.95 | 19.26 | 17.90 | 1.92 | 1.23 | 1.28 | 1.30 | 1.13 |
| 2680 | 6.58 | 7.18 | 7.26 | 7.24 | 0.68 | 20.01 | 22.62 | 18.90 | 17.63 | 1.97 | 1.24 | 1.29 | 1.32 | 1.14 |
| 2700 | 6.62 | 7.20 | 7.28 | 7.27 | 0.66 | 20.33 | 22.38 | 18.67 | 17.46 | 2.01 | 1.25 | 1.31 | 1.33 | 1.15 |
| 2750 | 6.69 | 7.26 | 7.35 | 7.34 | 0.65 | 21.11 | 21.85 | 18.15 | 17.06 | 2.10 | 1.27 | 1.33 | 1.36 | 1.16 |
| 2780 | 6.74 | 7.29 | 7.39 | 7.40 | 0.65 | 21.55 | 21.54 | 17.84 | 16.83 | 2.15 | 1.27 | 1.34 | 1.38 | 1.17 |
| 2800 | 6.78 | 7.31 | 7.41 | 7.42 | 0.65 | 21.86 | 21.35 | 17.65 | 16.68 | 2.18 | 1.28 | 1.35 | 1.39 | 1.18 |
| 2850 | 6.85 | 7.38 | 7.47 | 7.50 | 0.64 | 22.55 | 20.87 | 17.19 | 16.33 | 2.27 | 1.30 | 1.38 | 1.41 | 1.20 |
| 2880 | 6.91 | 7.42 | 7.51 | 7.55 | 0.64 | 22.94 | 20.62 | 16.93 | 16.14 | 2.32 | 1.31 | 1.39 | 1.42 | 1.21 |
| 2900 | 6.94 | 7.44 | 7.53 | 7.58 | 0.64 | 23.22 | 20.46 | 16.76 | 16.02 | 2.36 | 1.31 | 1.40 | 1.44 | 1.22 |
| 2950 | 7.02 | 7.50 | 7.60 | 7.65 | 0.63 | 24.03 | 20.05 | 16.35 | 15.70 | 2.44 | 1.33 | 1.42 | 1.46 | 1.23 |
| 2980 | 7.07 | 7.53 | 7.63 | 7.70 | 0.63 | 24.29 | 19.82 | 16.12 | 15.53 | 2.48 | 1.34 | 1.43 | 1.47 | 1.24 |
| 3000 | 7.10 | 7.55 | 7.65 | 7.73 | 0.62 | 24.56 | 19.66 | 15.97 | 15.41 | 2.51 | 1.34 | 1.44 | 1.48 | 1.25 |
| 3050 | 7.19 | 7.60 | 7.71 | 7.80 | 0.60 | 25.19 | 19.31 | 15.61 | 15.13 | 2.60 | 1.35 | 1.46 | 1.50 | 1.26 |
| 3100 | 7.28 | 7.66 | 7.76 | 7.87 | 0.59 | 25.86 | 18.97 | 15.26 | 14.86 | 2.68 | 1.36 | 1.48 | 1.53 | 1.28 |
| 3150 | 7.36 | 7.71 | 7.82 | 7.95 | 0.58 | 26.44 | 18.65 | 14.94 | 14.61 | 2.75 | 1.38 | 1.49 | 1.54 | 1.29 |

¹Total Loss = Insertion Loss + 6dB Splitter Loss

REV. X2
BP4U1+
100705

Page 1 of 3



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4 Way-0° Power Splitter/Combiner

BP4U1+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = -40°C

| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | | | | AMP. UNBAL. (dB) | PHASE UNBAL. (deg.) | ISOLATION (dB) | | | VSWR (:1) | | | | |
|----------------|---------------------------------|-------|-------|-------|------------------------|---------------------------|-------------------|-------|-------|--------------|------|------|------|------|
| | S-1 | S-2 | S-3 | S-4 | | | 1-2 | 2-3 | 3-4 | S | 1 | 2 | 3 | 4 |
| 1000 | 13.90 | 15.70 | 15.78 | 15.12 | 1.87 | 22.38 | 12.47 | 13.71 | 14.92 | 15.74 | 1.53 | 1.79 | 1.83 | 1.92 |
| 1100 | 12.38 | 14.05 | 14.13 | 13.49 | 1.75 | 18.34 | 12.85 | 14.05 | 15.41 | 11.92 | 1.50 | 1.75 | 1.80 | 1.87 |
| 1150 | 11.68 | 13.29 | 13.38 | 12.75 | 1.70 | 16.53 | 13.07 | 14.27 | 15.69 | 10.38 | 1.48 | 1.73 | 1.77 | 1.84 |
| 1200 | 11.03 | 12.59 | 12.67 | 12.06 | 1.65 | 14.65 | 13.33 | 14.51 | 16.04 | 9.06 | 1.45 | 1.71 | 1.75 | 1.81 |
| 1250 | 10.40 | 11.92 | 12.00 | 11.39 | 1.60 | 12.93 | 13.64 | 14.82 | 16.45 | 7.84 | 1.44 | 1.69 | 1.73 | 1.78 |
| 1300 | 9.81 | 11.27 | 11.36 | 10.77 | 1.55 | 11.31 | 13.99 | 15.17 | 16.92 | 6.78 | 1.42 | 1.66 | 1.70 | 1.75 |
| 1350 | 9.28 | 10.69 | 10.78 | 10.21 | 1.50 | 9.64 | 14.38 | 15.56 | 17.45 | 5.91 | 1.39 | 1.63 | 1.67 | 1.71 |
| 1400 | 8.79 | 10.15 | 10.24 | 9.68 | 1.46 | 8.12 | 14.81 | 16.02 | 18.05 | 5.15 | 1.37 | 1.60 | 1.64 | 1.67 |
| 1450 | 8.33 | 9.65 | 9.74 | 9.21 | 1.41 | 6.66 | 15.31 | 16.54 | 18.76 | 4.47 | 1.34 | 1.57 | 1.61 | 1.64 |
| 1500 | 7.92 | 9.20 | 9.29 | 8.78 | 1.36 | 5.28 | 15.88 | 17.14 | 19.59 | 3.92 | 1.32 | 1.54 | 1.57 | 1.60 |
| 1550 | 7.55 | 8.79 | 8.88 | 8.39 | 1.32 | 3.91 | 16.49 | 17.83 | 20.52 | 3.43 | 1.30 | 1.50 | 1.53 | 1.56 |
| 1600 | 7.22 | 8.41 | 8.50 | 8.03 | 1.27 | 3.19 | 17.17 | 18.59 | 21.59 | 3.01 | 1.26 | 1.45 | 1.49 | 1.52 |
| 1650 | 6.94 | 8.09 | 8.18 | 7.73 | 1.24 | 2.63 | 17.93 | 19.46 | 22.82 | 2.67 | 1.23 | 1.41 | 1.44 | 1.47 |
| 1700 | 6.70 | 7.82 | 7.90 | 7.47 | 1.19 | 2.12 | 18.78 | 20.45 | 24.29 | 2.38 | 1.20 | 1.38 | 1.40 | 1.42 |
| 1750 | 6.49 | 7.56 | 7.64 | 7.24 | 1.15 | 2.82 | 19.71 | 21.60 | 25.99 | 2.11 | 1.17 | 1.34 | 1.35 | 1.38 |
| 1800 | 6.32 | 7.34 | 7.42 | 7.05 | 1.10 | 3.50 | 20.69 | 22.94 | 27.89 | 1.89 | 1.14 | 1.29 | 1.30 | 1.34 |
| 1850 | 6.17 | 7.15 | 7.23 | 6.89 | 1.06 | 4.22 | 21.82 | 24.44 | 30.02 | 1.70 | 1.11 | 1.25 | 1.25 | 1.29 |
| 1890 | 6.08 | 7.03 | 7.11 | 6.79 | 1.03 | 4.86 | 22.79 | 25.78 | 31.53 | 1.56 | 1.09 | 1.23 | 1.22 | 1.27 |
| 1900 | 6.05 | 7.00 | 7.08 | 6.76 | 1.03 | 5.11 | 23.02 | 26.18 | 31.85 | 1.53 | 1.09 | 1.22 | 1.21 | 1.26 |
| 1950 | 5.97 | 6.89 | 6.97 | 6.66 | 1.00 | 6.25 | 24.37 | 28.11 | 32.16 | 1.39 | 1.06 | 1.18 | 1.18 | 1.22 |
| 2000 | 5.91 | 6.79 | 6.88 | 6.59 | 0.97 | 7.39 | 25.68 | 30.06 | 30.96 | 1.27 | 1.04 | 1.16 | 1.14 | 1.19 |
| 2050 | 5.87 | 6.71 | 6.79 | 6.54 | 0.92 | 8.57 | 27.00 | 31.52 | 29.00 | 1.16 | 1.04 | 1.14 | 1.10 | 1.15 |
| 2100 | 5.85 | 6.66 | 6.74 | 6.51 | 0.89 | 9.79 | 28.19 | 31.74 | 27.21 | 1.08 | 1.05 | 1.11 | 1.08 | 1.12 |
| 2150 | 5.84 | 6.63 | 6.72 | 6.50 | 0.87 | 10.93 | 28.93 | 30.46 | 25.78 | 1.05 | 1.06 | 1.11 | 1.05 | 1.09 |
| 2180 | 5.85 | 6.63 | 6.71 | 6.50 | 0.87 | 11.74 | 29.24 | 29.44 | 25.01 | 1.09 | 1.07 | 1.11 | 1.05 | 1.08 |
| 2200 | 5.85 | 6.63 | 6.71 | 6.51 | 0.86 | 12.06 | 29.36 | 28.80 | 24.44 | 1.12 | 1.08 | 1.11 | 1.05 | 1.07 |
| 2250 | 5.87 | 6.62 | 6.70 | 6.53 | 0.83 | 13.10 | 29.06 | 27.16 | 23.22 | 1.20 | 1.10 | 1.11 | 1.08 | 1.06 |
| 2280 | 5.89 | 6.63 | 6.70 | 6.55 | 0.81 | 13.70 | 28.70 | 26.26 | 22.59 | 1.26 | 1.11 | 1.12 | 1.10 | 1.06 |
| 2300 | 5.91 | 6.63 | 6.72 | 6.57 | 0.80 | 14.23 | 28.40 | 25.66 | 22.22 | 1.29 | 1.12 | 1.14 | 1.11 | 1.05 |
| 2350 | 5.95 | 6.65 | 6.73 | 6.61 | 0.79 | 15.15 | 27.53 | 24.35 | 21.34 | 1.37 | 1.14 | 1.15 | 1.14 | 1.06 |
| 2400 | 6.00 | 6.69 | 6.77 | 6.65 | 0.77 | 16.07 | 26.63 | 23.25 | 20.58 | 1.47 | 1.16 | 1.17 | 1.18 | 1.07 |
| 2450 | 6.05 | 6.73 | 6.81 | 6.71 | 0.76 | 17.10 | 25.75 | 22.09 | 19.94 | 1.55 | 1.18 | 1.21 | 1.21 | 1.08 |
| 2480 | 6.09 | 6.76 | 6.84 | 6.75 | 0.76 | 17.57 | 25.33 | 21.68 | 19.61 | 1.61 | 1.19 | 1.22 | 1.23 | 1.09 |
| 2490 | 6.10 | 6.77 | 6.84 | 6.76 | 0.74 | 17.75 | 25.18 | 21.55 | 19.51 | 1.63 | 1.19 | 1.23 | 1.23 | 1.09 |
| 2500 | 6.11 | 6.78 | 6.86 | 6.78 | 0.75 | 18.02 | 24.99 | 21.36 | 19.37 | 1.65 | 1.20 | 1.23 | 1.24 | 1.10 |
| 2550 | 6.18 | 6.82 | 6.91 | 6.84 | 0.73 | 18.85 | 24.23 | 20.56 | 18.76 | 1.74 | 1.22 | 1.25 | 1.27 | 1.11 |
| 2580 | 6.23 | 6.86 | 6.95 | 6.90 | 0.72 | 19.37 | 23.83 | 20.16 | 18.42 | 1.80 | 1.23 | 1.27 | 1.30 | 1.12 |
| 2600 | 6.26 | 6.88 | 6.97 | 6.93 | 0.71 | 19.78 | 23.56 | 19.87 | 18.25 | 1.84 | 1.24 | 1.28 | 1.32 | 1.13 |
| 2650 | 6.33 | 6.94 | 7.03 | 7.00 | 0.71 | 20.70 | 22.99 | 19.17 | 17.80 | 1.93 | 1.26 | 1.31 | 1.35 | 1.15 |
| 2680 | 6.37 | 6.98 | 7.08 | 7.05 | 0.71 | 21.22 | 22.56 | 18.82 | 17.52 | 1.99 | 1.26 | 1.32 | 1.38 | 1.16 |
| 2700 | 6.39 | 7.00 | 7.11 | 7.06 | 0.72 | 21.49 | 22.30 | 18.59 | 17.34 | 2.02 | 1.27 | 1.34 | 1.38 | 1.17 |
| 2750 | 6.47 | 7.06 | 7.16 | 7.14 | 0.69 | 22.13 | 21.77 | 18.05 | 16.93 | 2.12 | 1.29 | 1.37 | 1.41 | 1.19 |
| 2780 | 6.53 | 7.10 | 7.21 | 7.20 | 0.68 | 22.73 | 21.48 | 17.75 | 16.71 | 2.17 | 1.31 | 1.39 | 1.44 | 1.20 |
| 2800 | 6.55 | 7.12 | 7.23 | 7.22 | 0.68 | 23.02 | 21.25 | 17.54 | 16.54 | 2.21 | 1.32 | 1.40 | 1.45 | 1.21 |
| 2850 | 6.63 | 7.19 | 7.29 | 7.29 | 0.66 | 23.62 | 20.74 | 17.07 | 16.17 | 2.30 | 1.33 | 1.42 | 1.48 | 1.23 |
| 2880 | 6.69 | 7.23 | 7.33 | 7.35 | 0.67 | 24.01 | 20.48 | 16.80 | 16.01 | 2.35 | 1.33 | 1.43 | 1.49 | 1.24 |
| 2900 | 6.72 | 7.25 | 7.35 | 7.37 | 0.65 | 24.32 | 20.31 | 16.64 | 15.87 | 2.40 | 1.34 | 1.44 | 1.50 | 1.25 |
| 2950 | 6.81 | 7.31 | 7.43 | 7.46 | 0.65 | 25.02 | 19.87 | 16.22 | 15.56 | 2.50 | 1.35 | 1.46 | 1.52 | 1.26 |
| 2980 | 6.87 | 7.35 | 7.47 | 7.50 | 0.63 | 25.38 | 19.68 | 15.99 | 15.36 | 2.54 | 1.37 | 1.46 | 1.52 | 1.27 |
| 3000 | 6.90 | 7.37 | 7.49 | 7.53 | 0.64 | 25.66 | 19.54 | 15.82 | 15.26 | 2.58 | 1.37 | 1.47 | 1.54 | 1.27 |
| 3050 | 6.98 | 7.41 | 7.54 | 7.60 | 0.62 | 26.29 | 19.13 | 15.48 | 14.97 | 2.66 | 1.38 | 1.49 | 1.56 | 1.29 |
| 3100 | 7.07 | 7.45 | 7.59 | 7.69 | 0.62 | 26.75 | 18.76 | 15.11 | 14.67 | 2.74 | 1.38 | 1.50 | 1.57 | 1.30 |
| 3150 | 7.16 | 7.50 | 7.65 | 7.77 | 0.61 | 27.47 | 18.41 | 14.77 | 14.43 | 2.83 | 1.39 | 1.50 | 1.58 | 1.30 |

¹Total Loss = Insertion Loss + 6dB Splitter Loss

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Page 2 of 3



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4 Way-0° Power Splitter/Combiner

BP4U1+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +85°C

| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | | | | AMP. UNBAL. (dB) | PHASE UNBAL. (deg.) | ISOLATION (dB) | | | VSWR (:1) | | | | |
|----------------|---------------------------------|-------|-------|-------|------------------------|---------------------------|-------------------|-------|-------|--------------|------|------|------|------|
| | S-1 | S-2 | S-3 | S-4 | | | 1-2 | 2-3 | 3-4 | S | 1 | 2 | 3 | 4 |
| 1000 | 13.92 | 15.78 | 15.85 | 15.16 | 1.94 | 22.56 | 12.72 | 14.00 | 15.22 | 12.32 | 1.54 | 1.78 | 1.84 | 1.91 |
| 1100 | 12.42 | 14.14 | 14.22 | 13.55 | 1.80 | 18.70 | 13.11 | 14.36 | 15.72 | 9.66 | 1.50 | 1.74 | 1.80 | 1.86 |
| 1150 | 11.73 | 13.39 | 13.47 | 12.82 | 1.74 | 16.89 | 13.35 | 14.59 | 16.02 | 8.52 | 1.48 | 1.71 | 1.77 | 1.84 |
| 1200 | 11.08 | 12.69 | 12.76 | 12.12 | 1.68 | 15.14 | 13.61 | 14.84 | 16.39 | 7.51 | 1.46 | 1.69 | 1.75 | 1.80 |
| 1250 | 10.47 | 12.03 | 12.10 | 11.48 | 1.63 | 13.52 | 13.92 | 15.15 | 16.80 | 6.61 | 1.43 | 1.66 | 1.71 | 1.77 |
| 1300 | 9.91 | 11.41 | 11.48 | 10.89 | 1.57 | 12.15 | 14.27 | 15.50 | 17.27 | 5.81 | 1.41 | 1.63 | 1.68 | 1.73 |
| 1350 | 9.39 | 10.83 | 10.92 | 10.33 | 1.53 | 10.75 | 14.67 | 15.91 | 17.82 | 5.11 | 1.38 | 1.60 | 1.65 | 1.69 |
| 1400 | 8.90 | 10.31 | 10.38 | 9.82 | 1.48 | 9.40 | 15.12 | 16.38 | 18.45 | 4.51 | 1.35 | 1.57 | 1.61 | 1.65 |
| 1450 | 8.47 | 9.82 | 9.90 | 9.36 | 1.43 | 8.17 | 15.63 | 16.92 | 19.18 | 3.97 | 1.32 | 1.53 | 1.57 | 1.61 |
| 1500 | 8.07 | 9.38 | 9.46 | 8.94 | 1.38 | 6.90 | 16.20 | 17.54 | 20.03 | 3.51 | 1.29 | 1.49 | 1.52 | 1.57 |
| 1550 | 7.72 | 8.99 | 9.06 | 8.56 | 1.34 | 5.69 | 16.84 | 18.25 | 21.00 | 3.11 | 1.26 | 1.45 | 1.48 | 1.52 |
| 1600 | 7.41 | 8.63 | 8.70 | 8.22 | 1.29 | 4.53 | 17.55 | 19.05 | 22.14 | 2.76 | 1.23 | 1.41 | 1.43 | 1.48 |
| 1650 | 7.14 | 8.32 | 8.39 | 7.93 | 1.25 | 3.67 | 18.35 | 19.98 | 23.47 | 2.46 | 1.20 | 1.38 | 1.38 | 1.43 |
| 1700 | 6.90 | 8.06 | 8.12 | 7.68 | 1.21 | 3.21 | 19.24 | 21.03 | 25.02 | 2.20 | 1.17 | 1.34 | 1.34 | 1.39 |
| 1750 | 6.70 | 7.82 | 7.87 | 7.46 | 1.17 | 2.78 | 20.22 | 22.26 | 26.85 | 1.98 | 1.14 | 1.30 | 1.30 | 1.35 |
| 1800 | 6.55 | 7.62 | 7.67 | 7.28 | 1.13 | 2.36 | 21.25 | 23.70 | 28.93 | 1.79 | 1.11 | 1.27 | 1.26 | 1.31 |
| 1850 | 6.42 | 7.46 | 7.50 | 7.14 | 1.09 | 2.93 | 22.45 | 25.29 | 31.19 | 1.62 | 1.09 | 1.24 | 1.22 | 1.27 |
| 1890 | 6.33 | 7.34 | 7.39 | 7.05 | 1.06 | 3.66 | 23.46 | 26.83 | 32.51 | 1.50 | 1.07 | 1.21 | 1.19 | 1.24 |
| 1900 | 6.31 | 7.32 | 7.37 | 7.02 | 1.06 | 3.86 | 23.73 | 27.27 | 32.79 | 1.48 | 1.06 | 1.21 | 1.18 | 1.23 |
| 1950 | 6.24 | 7.21 | 7.26 | 6.93 | 1.03 | 4.93 | 25.10 | 29.33 | 32.34 | 1.35 | 1.04 | 1.19 | 1.15 | 1.20 |
| 2000 | 6.18 | 7.13 | 7.18 | 6.86 | 1.00 | 5.99 | 26.47 | 31.45 | 30.60 | 1.25 | 1.02 | 1.16 | 1.13 | 1.17 |
| 2050 | 6.16 | 7.05 | 7.10 | 6.82 | 0.94 | 5.46 | 27.73 | 32.65 | 28.64 | 1.16 | 1.02 | 1.15 | 1.11 | 1.14 |
| 2100 | 6.14 | 7.01 | 7.05 | 6.80 | 0.91 | 8.18 | 28.75 | 32.18 | 26.87 | 1.11 | 1.03 | 1.14 | 1.10 | 1.11 |
| 2150 | 6.15 | 6.98 | 7.03 | 6.80 | 0.89 | 9.27 | 29.29 | 30.40 | 25.50 | 1.11 | 1.05 | 1.13 | 1.10 | 1.09 |
| 2180 | 6.15 | 6.98 | 7.03 | 6.80 | 0.88 | 9.95 | 29.30 | 29.19 | 24.80 | 1.13 | 1.06 | 1.13 | 1.10 | 1.08 |
| 2200 | 6.16 | 6.98 | 7.03 | 6.81 | 0.87 | 10.28 | 29.37 | 28.63 | 24.25 | 1.16 | 1.07 | 1.13 | 1.10 | 1.06 |
| 2250 | 6.19 | 6.97 | 7.02 | 6.84 | 0.83 | 11.24 | 28.81 | 27.00 | 23.09 | 1.22 | 1.09 | 1.13 | 1.11 | 1.05 |
| 2280 | 6.22 | 6.99 | 7.03 | 6.86 | 0.81 | 11.82 | 28.35 | 26.11 | 22.53 | 1.27 | 1.10 | 1.13 | 1.13 | 1.04 |
| 2300 | 6.24 | 6.98 | 7.05 | 6.89 | 0.81 | 12.31 | 28.06 | 25.53 | 22.18 | 1.30 | 1.10 | 1.14 | 1.13 | 1.04 |
| 2350 | 6.29 | 7.01 | 7.06 | 6.93 | 0.77 | 13.18 | 27.15 | 24.27 | 21.32 | 1.38 | 1.12 | 1.14 | 1.15 | 1.03 |
| 2400 | 6.34 | 7.04 | 7.10 | 6.98 | 0.75 | 14.03 | 26.28 | 23.19 | 20.60 | 1.47 | 1.14 | 1.15 | 1.16 | 1.03 |
| 2450 | 6.41 | 7.08 | 7.13 | 7.04 | 0.73 | 15.02 | 25.46 | 22.05 | 20.04 | 1.55 | 1.15 | 1.17 | 1.18 | 1.05 |
| 2480 | 6.45 | 7.11 | 7.17 | 7.09 | 0.72 | 15.52 | 25.09 | 21.68 | 19.68 | 1.60 | 1.16 | 1.17 | 1.19 | 1.06 |
| 2490 | 6.46 | 7.11 | 7.18 | 7.10 | 0.72 | 15.68 | 24.99 | 21.56 | 19.59 | 1.62 | 1.16 | 1.18 | 1.20 | 1.06 |
| 2500 | 6.47 | 7.12 | 7.19 | 7.12 | 0.72 | 15.84 | 24.76 | 21.36 | 19.45 | 1.63 | 1.17 | 1.18 | 1.20 | 1.06 |
| 2550 | 6.55 | 7.16 | 7.23 | 7.18 | 0.68 | 16.68 | 24.08 | 20.61 | 18.86 | 1.72 | 1.18 | 1.20 | 1.22 | 1.08 |
| 2580 | 6.60 | 7.20 | 7.26 | 7.24 | 0.66 | 17.20 | 23.67 | 20.19 | 18.54 | 1.77 | 1.18 | 1.22 | 1.23 | 1.08 |
| 2600 | 6.63 | 7.22 | 7.29 | 7.27 | 0.66 | 17.57 | 23.47 | 19.93 | 18.36 | 1.81 | 1.19 | 1.23 | 1.24 | 1.09 |
| 2650 | 6.71 | 7.28 | 7.35 | 7.36 | 0.64 | 18.44 | 22.96 | 19.27 | 17.94 | 1.90 | 1.20 | 1.24 | 1.26 | 1.10 |
| 2680 | 6.76 | 7.31 | 7.39 | 7.39 | 0.64 | 18.91 | 22.52 | 18.91 | 17.66 | 1.95 | 1.21 | 1.26 | 1.27 | 1.12 |
| 2700 | 6.79 | 7.33 | 7.41 | 7.42 | 0.63 | 19.20 | 22.27 | 18.69 | 17.48 | 1.98 | 1.21 | 1.27 | 1.28 | 1.12 |
| 2750 | 6.87 | 7.39 | 7.47 | 7.49 | 0.62 | 19.95 | 21.80 | 18.16 | 17.10 | 2.07 | 1.23 | 1.29 | 1.29 | 1.13 |
| 2780 | 6.93 | 7.43 | 7.50 | 7.56 | 0.63 | 20.49 | 21.53 | 17.87 | 16.87 | 2.12 | 1.23 | 1.30 | 1.30 | 1.15 |
| 2800 | 6.96 | 7.45 | 7.53 | 7.57 | 0.61 | 20.85 | 21.33 | 17.67 | 16.73 | 2.15 | 1.24 | 1.31 | 1.31 | 1.15 |
| 2850 | 7.03 | 7.51 | 7.58 | 7.65 | 0.62 | 21.46 | 20.89 | 17.19 | 16.38 | 2.24 | 1.25 | 1.33 | 1.33 | 1.17 |
| 2880 | 7.09 | 7.55 | 7.62 | 7.70 | 0.61 | 21.87 | 20.63 | 16.96 | 16.20 | 2.28 | 1.26 | 1.34 | 1.33 | 1.18 |
| 2900 | 7.13 | 7.58 | 7.64 | 7.73 | 0.60 | 22.22 | 20.48 | 16.80 | 16.09 | 2.32 | 1.26 | 1.35 | 1.35 | 1.18 |
| 2950 | 7.21 | 7.64 | 7.71 | 7.80 | 0.58 | 22.91 | 20.07 | 16.39 | 15.78 | 2.40 | 1.27 | 1.37 | 1.36 | 1.20 |
| 2980 | 7.26 | 7.68 | 7.75 | 7.84 | 0.58 | 23.36 | 19.91 | 16.17 | 15.59 | 2.44 | 1.29 | 1.38 | 1.37 | 1.21 |
| 3000 | 7.29 | 7.71 | 7.77 | 7.87 | 0.58 | 23.60 | 19.79 | 16.00 | 15.49 | 2.48 | 1.29 | 1.39 | 1.38 | 1.21 |
| 3050 | 7.38 | 7.76 | 7.82 | 7.95 | 0.57 | 24.29 | 19.42 | 15.68 | 15.21 | 2.56 | 1.30 | 1.41 | 1.40 | 1.23 |
| 3100 | 7.47 | 7.81 | 7.87 | 8.02 | 0.55 | 24.81 | 19.09 | 15.34 | 14.95 | 2.64 | 1.32 | 1.43 | 1.43 | 1.25 |
| 3150 | 7.56 | 7.87 | 7.93 | 8.09 | 0.53 | 25.53 | 18.81 | 15.02 | 14.71 | 2.71 | 1.33 | 1.46 | 1.45 | 1.26 |

¹Total Loss = Insertion Loss + 6dB Splitter Loss

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Page 3 of 3



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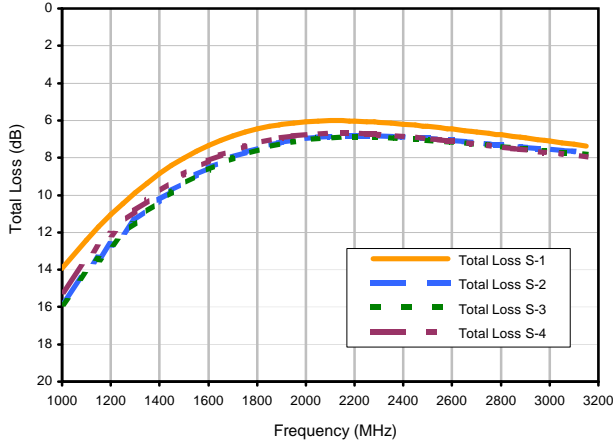


4 Way-0° Power Splitter/Combiner

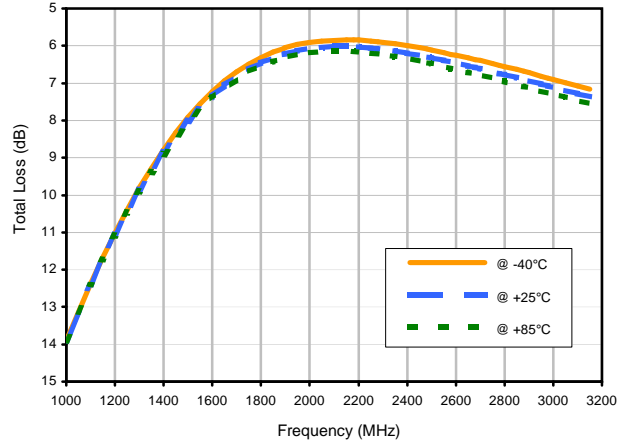
BP4U1+

Typical Performance Curves

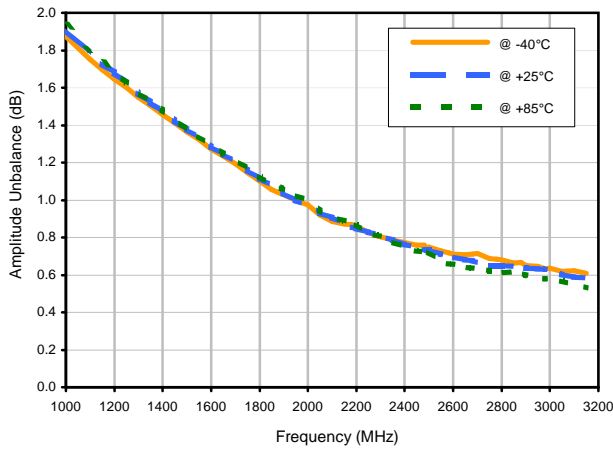
Total Loss



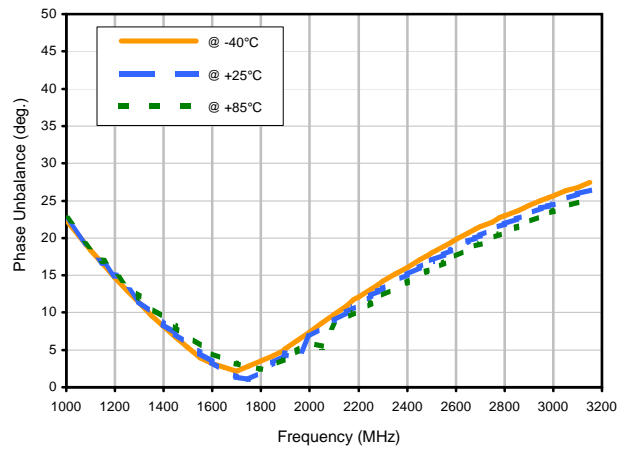
Total Loss S-1 vs. TEMPERATURE



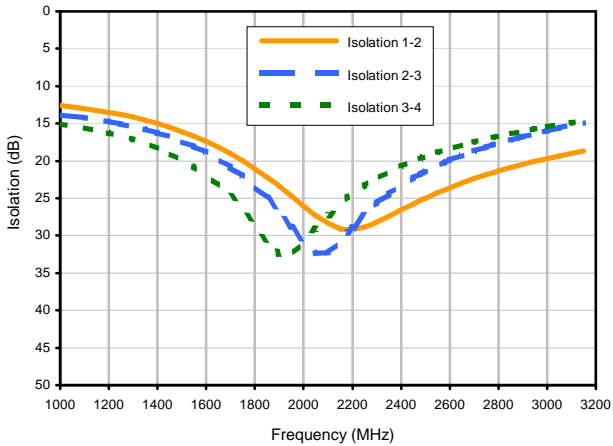
Amplitude Unbalance vs. TEMPERATURE



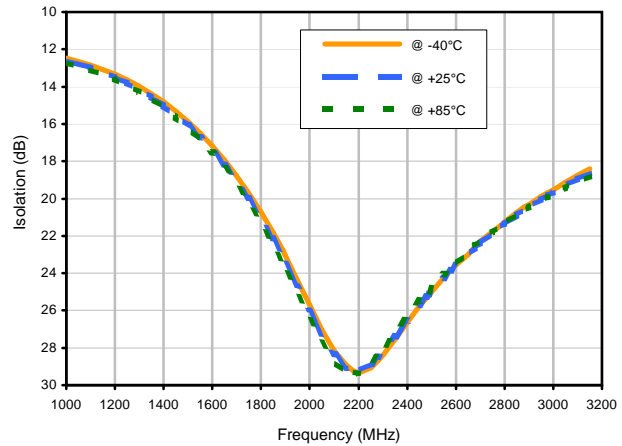
Phase Unbalance vs. TEMPERATURE



Isolation



Isolation 1-2 vs. TEMPERATURE



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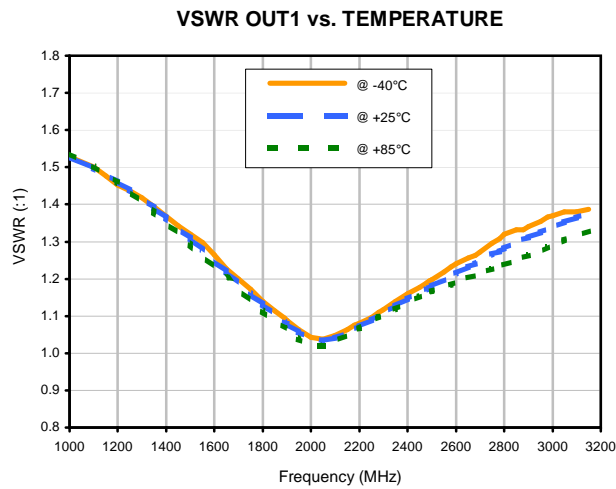
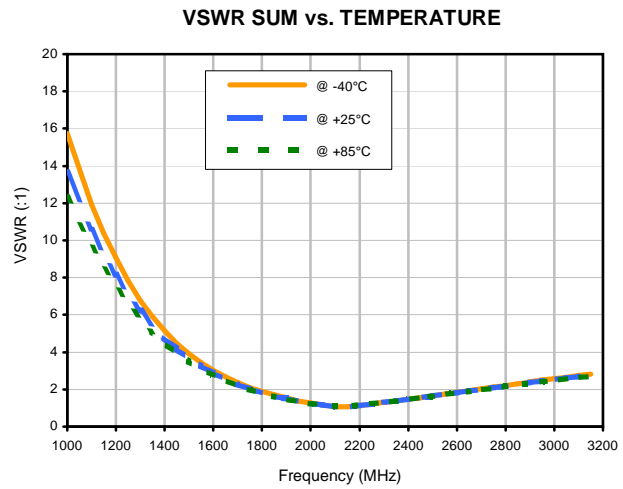
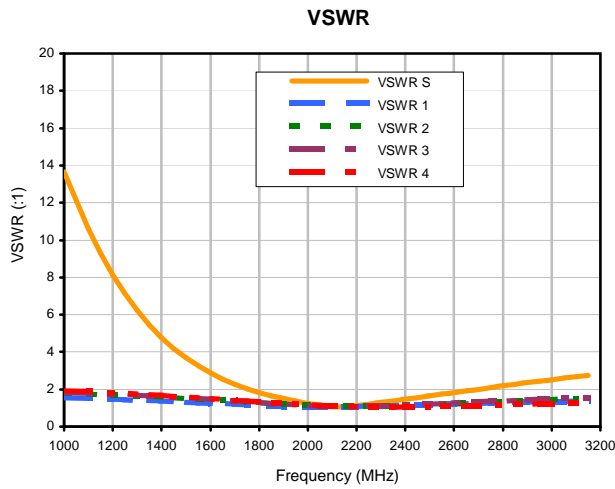
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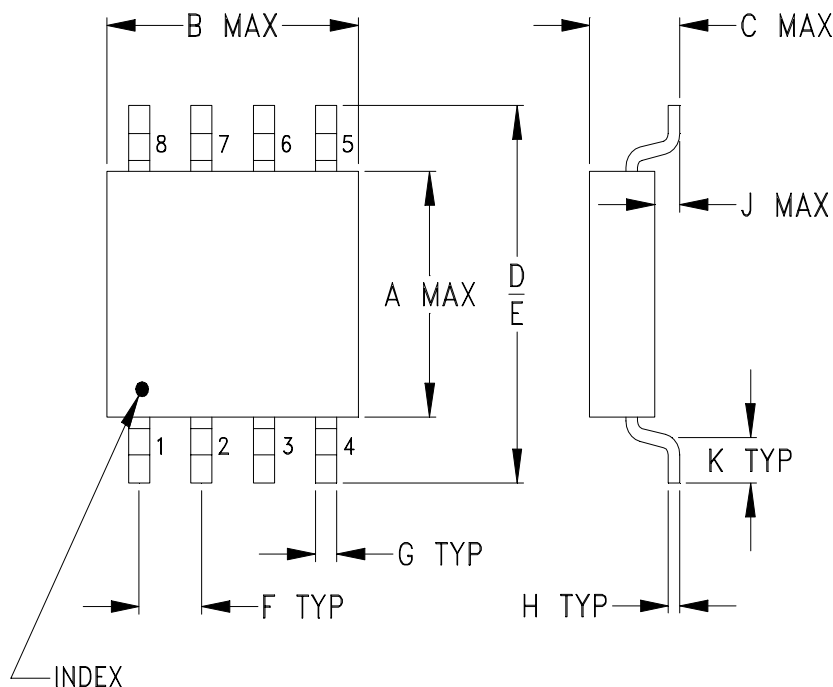
Typical Performance Curves



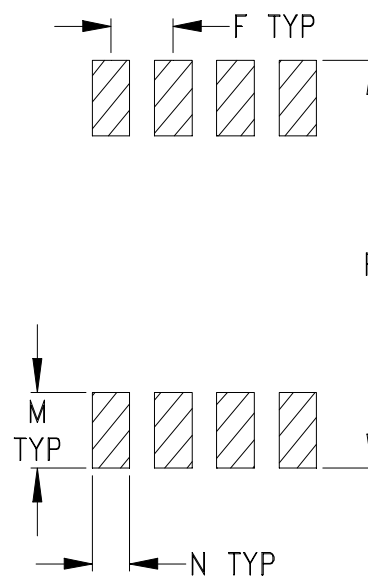
REV. X2
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Page 2 of 2



Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

| CASE # | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----------------|----------------|----------------|
| XX211 | .163 (4.14) | .210 (5.33) | .077 (1.96) | .250 (6.35) | .220 (5.59) | .050 (1.27) | .017 (0.43) | .009 (0.23) | .025 (0.64) | .030 (0.76) | -- | .050 (1.27) | .030 (0.76) | .270 (6.86) |

| CASE # | Q | R | S | WT. GRAM |
|--------|----|----|----|----------|
| XX211 | -- | -- | -- | .10 |

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Case material: Plastic.
 - Termination finish:
For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier. All models, (+) suffix. \otimes
For RoHS-5 Case Styles: Tin-Lead plate. All models, No (+) suffix.
 - Special Tolerances: Termination width $\pm .005$ inch, termination thickness $\pm .003$ inch.
- \otimes Model BP4C+ will be supplied with either Tin finish or Tin-Silver-Nickel finish until Tin finish inventory is depleted.



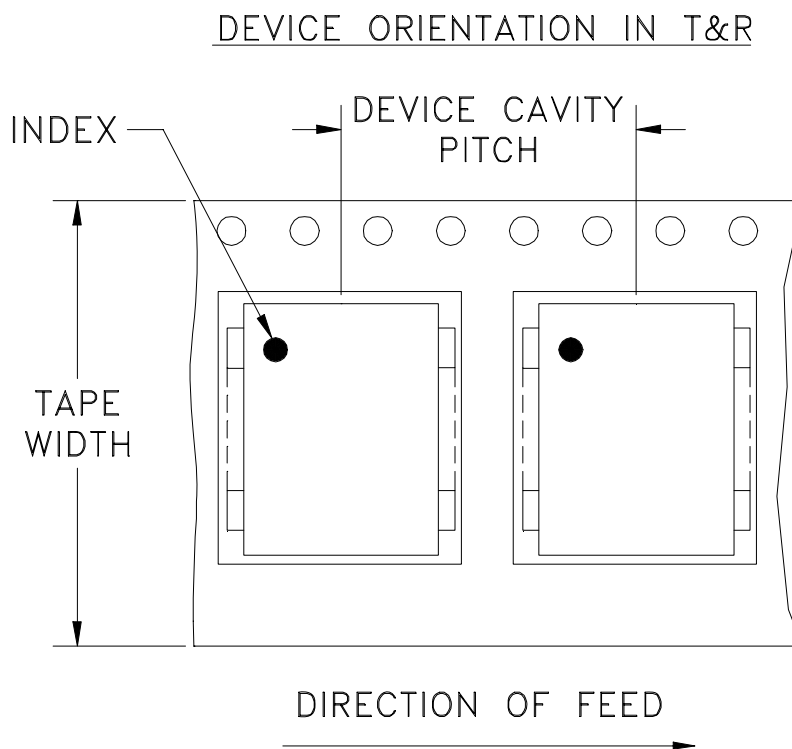
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Tape & Reel Packaging TR-F16



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel | |
|----------------|-------------------------|-------------------|-------------------------------------|-----|
| 12 | 8 | 7 | Small quantity standards (see note) | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | | | 500 |
| | | Standard | 1000* | |
| 13 | Standard | 2000** | | |

Note : Please Consult individual model data sheet to determine device per reel availability

* BP models only

** MSW and MSWA models

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



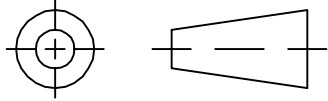
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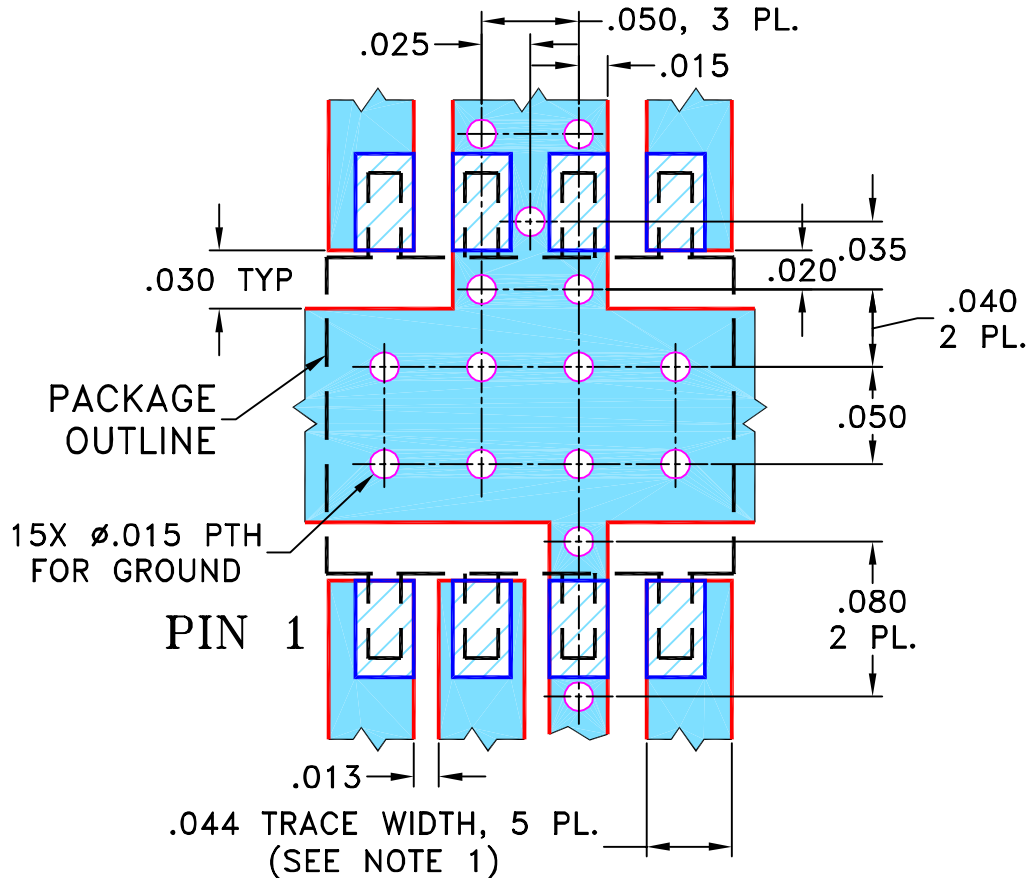
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|---------|--------------------------------------|----------|-----|------|
| OR | M83023 | NEW RELEASE | 01/28/03 | MMG | HY |
| A | M102713 | ADDED "...WITH SMOBC" | 01/14/06 | GF | IL |
| B | M104061 | UPDATED DWG. PER B14-TB-231 (REV. A) | 04/20/06 | MMG | YB |

SUGGESTED MOUNTING CONFIGURATION FOR
XX211 CASE STYLE, "js" PIN CONNECTION



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; 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

| UNLESS OTHERWISE SPECIFIED | INITIALS | DATE |
|----------------------------|-------------|----------|
| DIMENSIONS ARE IN INCHES | DRAWN MMG | 01/23/03 |
| TOLERANCES ON: | CHECKED AV | 01/28/03 |
| 2 PL DECIMALS ± | APPROVED HY | 01/28/03 |
| 3 PL DECIMALS ± .005 | | |
| ANGLES ± | | |
| FRACTIONS ± | | |



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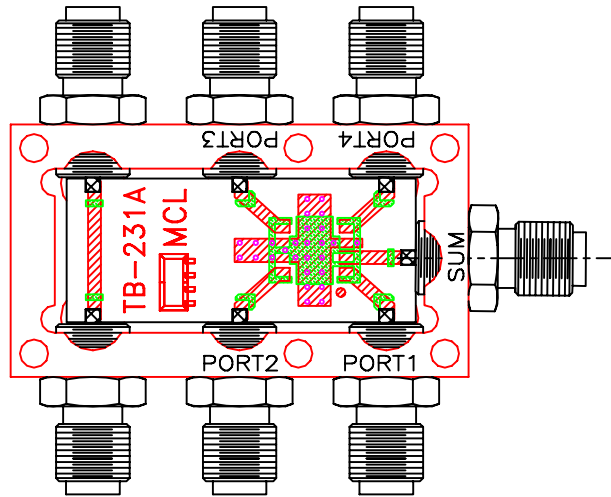
13 Neptune Avenue
Brooklyn NY 11235

PL, js, XX211, BP4P/BP4C, TB-231

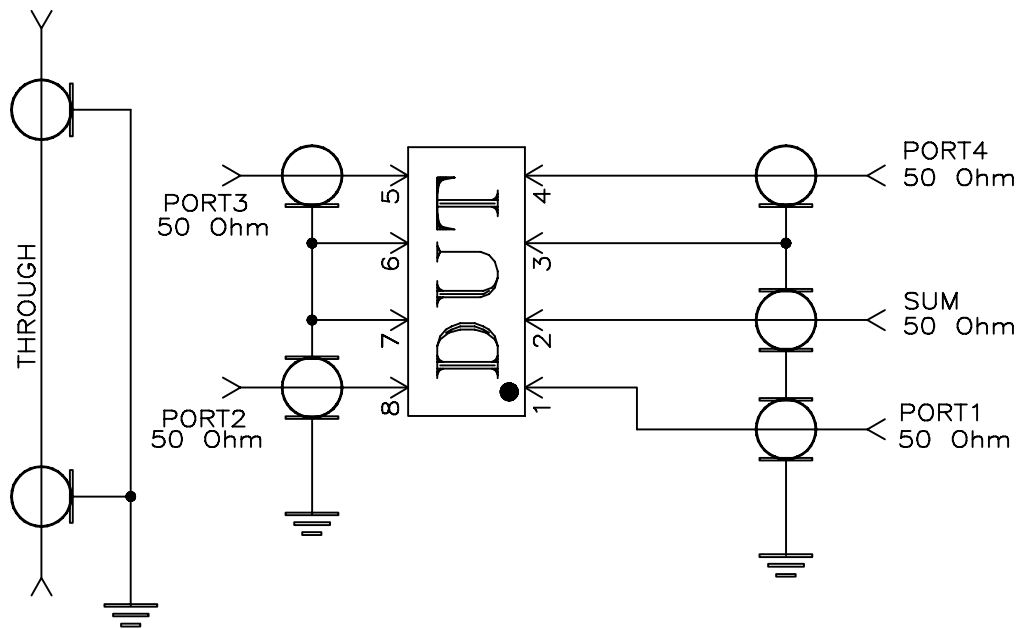
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| SIZE | CODE IDENT | DRAWING NO: | REV: |
|-------|------------|-------------|--------|
| A | 15542 | 98-PL-113 | B |
| FILE: | 98PL113 | SCALE: | 10:1 |
| | | SHEET: | 1 OF 1 |

Evaluation Board and Circuit



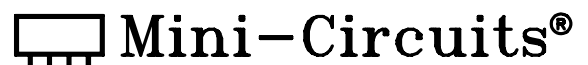
TB-231



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification | Test/Inspection Condition | Reference/Spec |
|-------------------------------|---|---|
| Operating Temperature | -40° to 85° C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -65° to 150° C Ambient Environment | Individual Model Data Sheet |
| Autoclave | 15 psig, 100% RH, 121°C, 96 hours | JESD22-A102-C, Condition C |
| Temperature Cycling | -65° to 150°C, 100 cycles | JESD22-A104 |
| Temperature Humidity | 85°C/ 85% RH, 168 hours | JESD22-113 |
| Solder Reflow Heat | Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak | J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1 |
| Moisture Sensitivity: Level 1 | Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 240°C peak (Non-RoHS) or 260°C (RoHS) | J-STD-020 |
| Solderability | 10X magnification, 95% coverage | JESD22-B102, Method 1: Dip and Look Test |
| Mechanical Shock | 50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes | MIL-STD-202, Method 213, Condition A |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) | MIL-STD-202, Method 204, Condition D |