

# Power Splitter/Combiner

8 Way 75Ω 950 to 2200 MHz

ZB8PD-22-75+

## Maximum Ratings

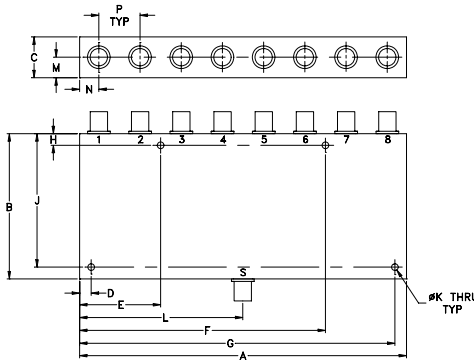
|                             |                            |
|-----------------------------|----------------------------|
| Operating Temperature       | -55°C to 100°C             |
| Storage Temperature         | -55°C to 100°C             |
| Power Input (as a splitter) | 10W max.                   |
| Internal Dissipation        | 0.875W max.                |
| DC Current                  | 1.0A (125mA for each port) |

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

## Coaxial Connections

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

## Outline Drawing



## Outline Dimensions (inch/mm)

| A      | B     | C     | D    | E     | F      | G      | H    |
|--------|-------|-------|------|-------|--------|--------|------|
| 7.06   | 3.13  | .88   | .250 | 1.750 | 5.310  | 6.810  | .250 |
| 179.32 | 79.50 | 22.35 | 6.35 | 44.45 | 134.87 | 172.97 | 6.35 |

| J     | K    | L     | M     | N     | P     | wt    |
|-------|------|-------|-------|-------|-------|-------|
| 2.875 | .144 | 3.53  | .44   | .415  | .89   | grams |
| 73.03 | 3.66 | 89.66 | 11.18 | 10.54 | 22.61 | 800   |

## Features

- wideband, 950 to 2200 MHz
- low insertion loss 0.7 dB typ.
- good isolation, 24 dB typ.
- up to 10W power input as splitter
- rugged shielded case

## Applications

- cellular
- CATV
- PCS/DCS
- instrumentation
- UMTS

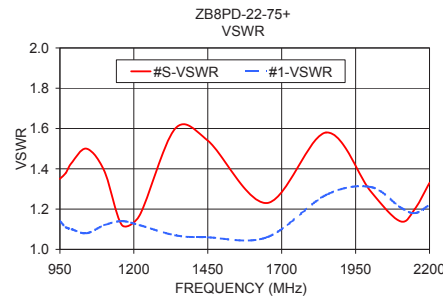
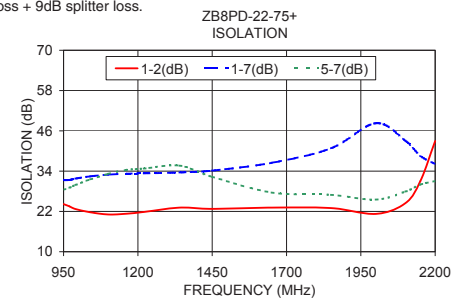
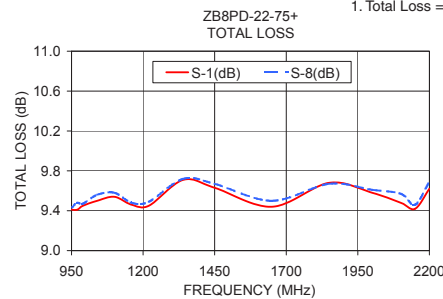
## Electrical Specifications

| FREQ. RANGE (MHz) | ISOLATION (dB) |      | INSERTION LOSS (dB) ABOVE 9.0 dB |      | AMPLITUDE UNBALANCE (dB) |
|-------------------|----------------|------|----------------------------------|------|--------------------------|
| $f_L$ - $f_U$     | Typ.           | Min. | Typ.                             | Max. | Max.                     |
| 950-2200          | 24             | 16   | 0.7                              | 1.6  | 0.7                      |

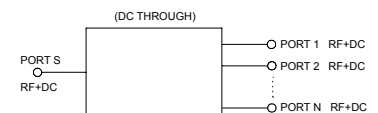
## Typical Performance Data

| Frequency<br>(MHz) | Total Loss <sup>1</sup><br>(dB) |      |       |      |      |      | Amplitude<br>Unbalance<br>(dB) | Isolation<br>(dB) |       |       |       | VSWR<br>S | VSWR<br>1 | VSWR<br>8 |
|--------------------|---------------------------------|------|-------|------|------|------|--------------------------------|-------------------|-------|-------|-------|-----------|-----------|-----------|
|                    | S-1                             | S-2  | S-3   | S-4  | S-6  | S-8  |                                | 1-2               | 1-7   | 3-4   | 5-7   |           |           |           |
| 950.00             | 9.41                            | 9.44 | 9.50  | 9.44 | 9.51 | 9.43 | 0.10                           | 24.17             | 31.28 | 24.18 | 28.46 | 1.35      | 1.14      | 1.10      |
| 970.00             | 9.41                            | 9.46 | 9.51  | 9.50 | 9.52 | 9.48 | 0.12                           | 23.51             | 31.37 | 23.67 | 29.07 | 1.38      | 1.11      | 1.07      |
| 990.00             | 9.45                            | 9.49 | 9.56  | 9.47 | 9.54 | 9.47 | 0.15                           | 22.72             | 31.78 | 23.24 | 29.87 | 1.43      | 1.10      | 1.06      |
| 1040.00            | 9.50                            | 9.60 | 9.54  | 9.51 | 9.64 | 9.56 | 0.14                           | 21.74             | 32.45 | 22.90 | 31.55 | 1.50      | 1.08      | 1.04      |
| 1100.00            | 9.54                            | 9.57 | 9.54  | 9.52 | 9.56 | 9.58 | 0.14                           | 21.10             | 32.95 | 23.49 | 33.17 | 1.39      | 1.12      | 1.06      |
| 1160.00            | 9.46                            | 9.50 | 9.44  | 9.45 | 9.47 | 9.48 | 0.14                           | 21.30             | 33.24 | 24.40 | 34.35 | 1.12      | 1.14      | 1.07      |
| 1220.00            | 9.45                            | 9.46 | 9.49  | 9.46 | 9.47 | 9.49 | 0.10                           | 21.84             | 33.32 | 24.96 | 34.76 | 1.17      | 1.12      | 1.08      |
| 1340.00            | 9.71                            | 9.70 | 9.73  | 9.75 | 9.75 | 9.72 | 0.11                           | 23.14             | 33.60 | 24.61 | 35.64 | 1.60      | 1.07      | 1.09      |
| 1450.00            | 9.63                            | 9.67 | 9.74  | 9.76 | 9.73 | 9.67 | 0.17                           | 22.76             | 34.17 | 24.78 | 32.32 | 1.54      | 1.06      | 1.10      |
| 1650.00            | 9.44                            | 9.48 | 9.63  | 9.61 | 9.59 | 9.50 | 0.20                           | 23.13             | 36.49 | 27.46 | 27.64 | 1.23      | 1.06      | 1.11      |
| 1850.00            | 9.68                            | 9.74 | 9.97  | 9.97 | 9.99 | 9.67 | 0.31                           | 22.99             | 40.80 | 28.80 | 26.93 | 1.58      | 1.27      | 1.20      |
| 2000.00            | 9.58                            | 9.61 | 9.99  | 9.87 | 9.98 | 9.61 | 0.41                           | 21.25             | 48.26 | 38.46 | 25.51 | 1.29      | 1.31      | 1.36      |
| 2100.00            | 9.48                            | 9.53 | 9.81  | 9.80 | 9.86 | 9.57 | 0.37                           | 24.48             | 43.03 | 24.02 | 27.90 | 1.14      | 1.21      | 1.29      |
| 2150.00            | 9.42                            | 9.48 | 9.82  | 9.75 | 9.76 | 9.46 | 0.40                           | 31.02             | 38.54 | 21.69 | 30.02 | 1.20      | 1.18      | 1.26      |
| 2200.00            | 9.62                            | 9.64 | 10.02 | 9.94 | 9.92 | 9.69 | 0.40                           | 42.97             | 36.12 | 20.98 | 31.06 | 1.33      | 1.22      | 1.32      |

1. Total Loss = Insertion Loss + 9dB splitter loss.



## 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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# 8 Way Power Splitter/Combiner

ZB8PD-22-75+

## Typical Performance Data

| FREQ.<br>(MHz) | TOTAL LOSS <sup>1</sup><br>(dB) |      |       |       |       |      | AMP.<br>UNBAL.<br>(dB) | ISOLATION<br>(dB) |       |       |       | PHASE<br>UNBAL.<br>(deg.) | FREQ.<br>(MHz) | VSWR<br>(:1) |      |      |
|----------------|---------------------------------|------|-------|-------|-------|------|------------------------|-------------------|-------|-------|-------|---------------------------|----------------|--------------|------|------|
|                | S-1                             | S-2  | S-3   | S-4   | S-6   | S-8  |                        | 1-2               | 1-7   | 3-4   | 5-7   |                           |                | S            | 1    | 8    |
| 950.0          | 9.41                            | 9.44 | 9.50  | 9.44  | 9.51  | 9.43 | 0.10                   | 24.17             | 31.28 | 24.18 | 28.46 | 51.01                     | 950.0          | 1.35         | 1.14 | 1.10 |
| 960.0          | 9.44                            | 9.43 | 9.49  | 9.46  | 9.50  | 9.44 | 0.07                   | 23.76             | 31.21 | 23.96 | 28.66 | 51.42                     | 960.0          | 1.36         | 1.13 | 1.09 |
| 970.0          | 9.41                            | 9.46 | 9.51  | 9.50  | 9.52  | 9.48 | 0.12                   | 23.51             | 31.37 | 23.67 | 29.07 | 51.73                     | 970.0          | 1.38         | 1.11 | 1.07 |
| 980.0          | 9.42                            | 9.48 | 9.55  | 9.51  | 9.54  | 9.46 | 0.16                   | 23.07             | 31.57 | 23.46 | 29.47 | 52.03                     | 980.0          | 1.40         | 1.11 | 1.07 |
| 990.0          | 9.45                            | 9.49 | 9.56  | 9.47  | 9.54  | 9.47 | 0.15                   | 22.72             | 31.78 | 23.24 | 29.87 | 52.67                     | 990.0          | 1.43         | 1.10 | 1.06 |
| 1000.0         | 9.45                            | 9.55 | 9.58  | 9.53  | 9.54  | 9.53 | 0.15                   | 22.39             | 32.05 | 23.05 | 30.52 | 52.86                     | 1000.0         | 1.46         | 1.10 | 1.06 |
| 1020.0         | 9.49                            | 9.61 | 9.57  | 9.52  | 9.57  | 9.55 | 0.13                   | 22.05             | 32.13 | 23.00 | 30.73 | 53.78                     | 1020.0         | 1.49         | 1.09 | 1.04 |
| 1040.0         | 9.50                            | 9.60 | 9.54  | 9.51  | 9.64  | 9.56 | 0.14                   | 21.74             | 32.45 | 22.90 | 31.55 | 55.09                     | 1040.0         | 1.50         | 1.08 | 1.04 |
| 1060.0         | 9.52                            | 9.62 | 9.61  | 9.54  | 9.58  | 9.60 | 0.16                   | 21.49             | 32.68 | 22.97 | 32.17 | 56.06                     | 1060.0         | 1.49         | 1.09 | 1.04 |
| 1080.0         | 9.55                            | 9.63 | 9.59  | 9.57  | 9.64  | 9.60 | 0.15                   | 21.33             | 32.83 | 23.18 | 32.75 | 57.08                     | 1080.0         | 1.46         | 1.11 | 1.05 |
| 1100.0         | 9.54                            | 9.57 | 9.54  | 9.52  | 9.56  | 9.58 | 0.14                   | 21.10             | 32.95 | 23.49 | 33.17 | 58.30                     | 1100.0         | 1.39         | 1.12 | 1.06 |
| 1120.0         | 9.48                            | 9.57 | 9.50  | 9.49  | 9.50  | 9.53 | 0.15                   | 21.22             | 33.01 | 23.81 | 33.56 | 59.50                     | 1120.0         | 1.31         | 1.13 | 1.07 |
| 1140.0         | 9.51                            | 9.57 | 9.52  | 9.49  | 9.52  | 9.55 | 0.09                   | 21.11             | 33.13 | 24.10 | 34.04 | 60.60                     | 1140.0         | 1.21         | 1.13 | 1.07 |
| 1160.0         | 9.46                            | 9.50 | 9.44  | 9.45  | 9.47  | 9.48 | 0.14                   | 21.30             | 33.24 | 24.40 | 34.35 | 61.59                     | 1160.0         | 1.12         | 1.14 | 1.07 |
| 1180.0         | 9.44                            | 9.43 | 9.45  | 9.45  | 9.42  | 9.45 | 0.08                   | 21.54             | 33.32 | 24.64 | 34.51 | 62.47                     | 1180.0         | 1.04         | 1.14 | 1.07 |
| 1200.0         | 9.43                            | 9.50 | 9.48  | 9.48  | 9.43  | 9.47 | 0.14                   | 21.69             | 33.29 | 24.83 | 34.51 | 63.36                     | 1200.0         | 1.07         | 1.13 | 1.08 |
| 1220.0         | 9.45                            | 9.46 | 9.49  | 9.46  | 9.47  | 9.49 | 0.10                   | 21.84             | 33.32 | 24.96 | 34.76 | 64.70                     | 1220.0         | 1.17         | 1.12 | 1.08 |
| 1240.0         | 9.48                            | 9.51 | 9.50  | 9.52  | 9.47  | 9.50 | 0.12                   | 21.97             | 33.38 | 25.04 | 35.00 | 66.12                     | 1240.0         | 1.27         | 1.12 | 1.09 |
| 1260.0         | 9.54                            | 9.54 | 9.53  | 9.55  | 9.51  | 9.56 | 0.08                   | 22.14             | 33.27 | 25.04 | 35.25 | 66.83                     | 1260.0         | 1.36         | 1.11 | 1.09 |
| 1280.0         | 9.56                            | 9.60 | 9.58  | 9.62  | 9.62  | 9.61 | 0.12                   | 22.47             | 33.17 | 24.96 | 35.40 | 68.16                     | 1280.0         | 1.44         | 1.09 | 1.09 |
| 1300.0         | 9.59                            | 9.63 | 9.67  | 9.66  | 9.68  | 9.66 | 0.11                   | 22.61             | 33.17 | 24.84 | 35.53 | 69.11                     | 1300.0         | 1.51         | 1.09 | 1.09 |
| 1320.0         | 9.65                            | 9.68 | 9.69  | 9.71  | 9.73  | 9.68 | 0.10                   | 22.92             | 33.37 | 24.75 | 35.84 | 70.38                     | 1320.0         | 1.57         | 1.08 | 1.09 |
| 1340.0         | 9.71                            | 9.70 | 9.73  | 9.75  | 9.75  | 9.72 | 0.11                   | 23.14             | 33.60 | 24.61 | 35.64 | 71.21                     | 1340.0         | 1.60         | 1.07 | 1.09 |
| 1360.0         | 9.68                            | 9.67 | 9.74  | 9.77  | 9.73  | 9.70 | 0.11                   | 23.22             | 33.72 | 24.44 | 34.67 | 71.99                     | 1360.0         | 1.62         | 1.06 | 1.09 |
| 1400.0         | 9.72                            | 9.71 | 9.80  | 9.84  | 9.77  | 9.72 | 0.13                   | 23.08             | 33.67 | 24.47 | 34.08 | 74.31                     | 1400.0         | 1.61         | 1.05 | 1.09 |
| 1450.0         | 9.63                            | 9.67 | 9.74  | 9.76  | 9.73  | 9.67 | 0.17                   | 22.76             | 34.17 | 24.78 | 32.32 | 76.91                     | 1450.0         | 1.54         | 1.06 | 1.10 |
| 1500.0         | 9.64                            | 9.61 | 9.74  | 9.75  | 9.65  | 9.64 | 0.14                   | 22.29             | 34.67 | 25.61 | 30.59 | 79.38                     | 1500.0         | 1.43         | 1.06 | 1.11 |
| 1550.0         | 9.53                            | 9.57 | 9.67  | 9.68  | 9.63  | 9.61 | 0.16                   | 22.10             | 35.20 | 26.60 | 29.12 | 82.22                     | 1550.0         | 1.33         | 1.05 | 1.13 |
| 1600.0         | 9.54                            | 9.52 | 9.65  | 9.64  | 9.63  | 9.57 | 0.13                   | 22.69             | 35.74 | 27.32 | 28.12 | 85.21                     | 1600.0         | 1.24         | 1.05 | 1.13 |
| 1650.0         | 9.44                            | 9.48 | 9.63  | 9.61  | 9.59  | 9.50 | 0.20                   | 23.13             | 36.49 | 27.46 | 27.64 | 88.27                     | 1650.0         | 1.23         | 1.06 | 1.11 |
| 1700.0         | 9.56                            | 9.57 | 9.70  | 9.68  | 9.71  | 9.59 | 0.17                   | 23.62             | 37.17 | 27.40 | 27.51 | 91.38                     | 1700.0         | 1.34         | 1.10 | 1.11 |
| 1750.0         | 9.58                            | 9.64 | 9.78  | 9.75  | 9.76  | 9.60 | 0.26                   | 23.97             | 38.01 | 27.46 | 27.65 | 94.21                     | 1750.0         | 1.48         | 1.14 | 1.09 |
| 1800.0         | 9.68                            | 9.75 | 9.90  | 9.92  | 9.92  | 9.71 | 0.29                   | 23.75             | 39.20 | 27.71 | 27.54 | 97.60                     | 1800.0         | 1.56         | 1.21 | 1.13 |
| 1850.0         | 9.68                            | 9.74 | 9.97  | 9.97  | 9.99  | 9.67 | 0.31                   | 22.99             | 40.80 | 28.80 | 26.93 | 101.04                    | 1850.0         | 1.58         | 1.27 | 1.20 |
| 1900.0         | 9.73                            | 9.75 | 10.08 | 10.02 | 10.01 | 9.76 | 0.35                   | 22.09             | 42.62 | 31.68 | 26.17 | 103.97                    | 1900.0         | 1.51         | 1.31 | 1.27 |
| 1950.0         | 9.62                            | 9.65 | 10.04 | 10.01 | 10.03 | 9.66 | 0.42                   | 21.42             | 45.26 | 38.86 | 25.62 | 106.61                    | 1950.0         | 1.39         | 1.33 | 1.34 |
| 2000.0         | 9.58                            | 9.61 | 9.99  | 9.87  | 9.98  | 9.61 | 0.41                   | 21.25             | 48.26 | 38.46 | 25.51 | 109.33                    | 2000.0         | 1.29         | 1.31 | 1.36 |
| 2050.0         | 9.48                            | 9.51 | 9.90  | 9.76  | 9.83  | 9.52 | 0.41                   | 22.08             | 47.28 | 29.73 | 26.18 | 112.02                    | 2050.0         | 1.19         | 1.27 | 1.35 |
| 2100.0         | 9.48                            | 9.53 | 9.81  | 9.80  | 9.86  | 9.57 | 0.37                   | 24.48             | 43.03 | 24.02 | 27.90 | 115.03                    | 2100.0         | 1.14         | 1.21 | 1.29 |
| 2150.0         | 9.42                            | 9.48 | 9.82  | 9.75  | 9.76  | 9.46 | 0.40                   | 31.02             | 38.54 | 21.69 | 30.02 | 117.43                    | 2150.0         | 1.20         | 1.18 | 1.26 |
| 2200.0         | 9.62                            | 9.64 | 10.02 | 9.94  | 9.92  | 9.69 | 0.40                   | 42.97             | 36.12 | 20.98 | 31.06 | 119.99                    | 2200.0         | 1.33         | 1.22 | 1.32 |

<sup>1</sup>Total Loss = Insertion Loss + 9dB Splitter Loss



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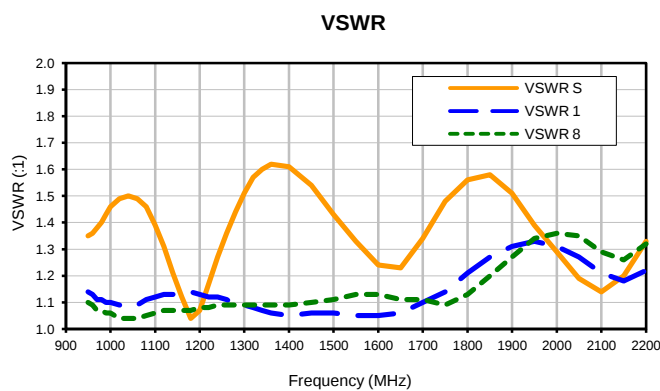
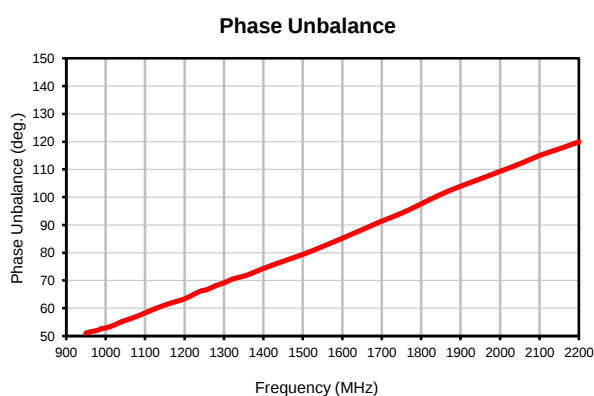
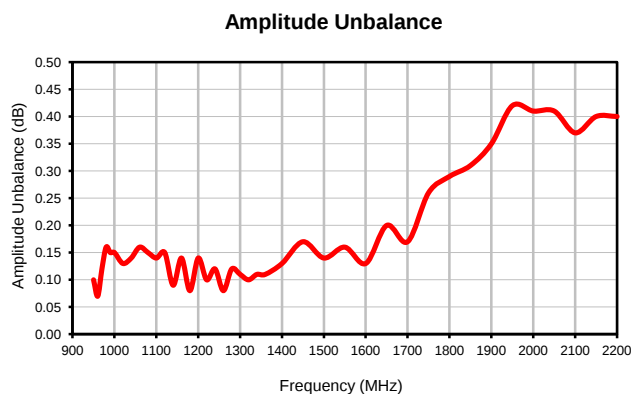
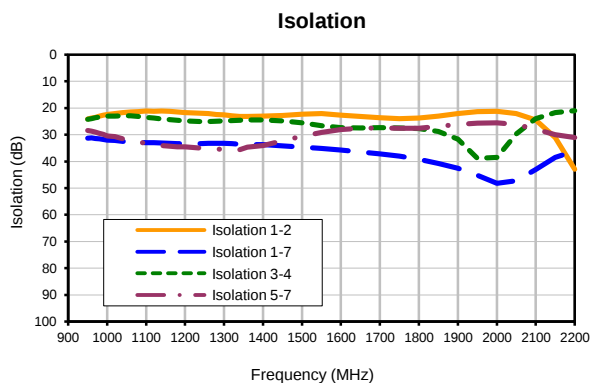
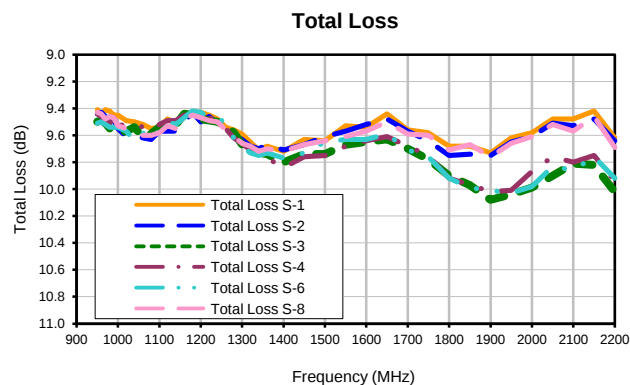
IF/RF MICROWAVE COMPONENTS

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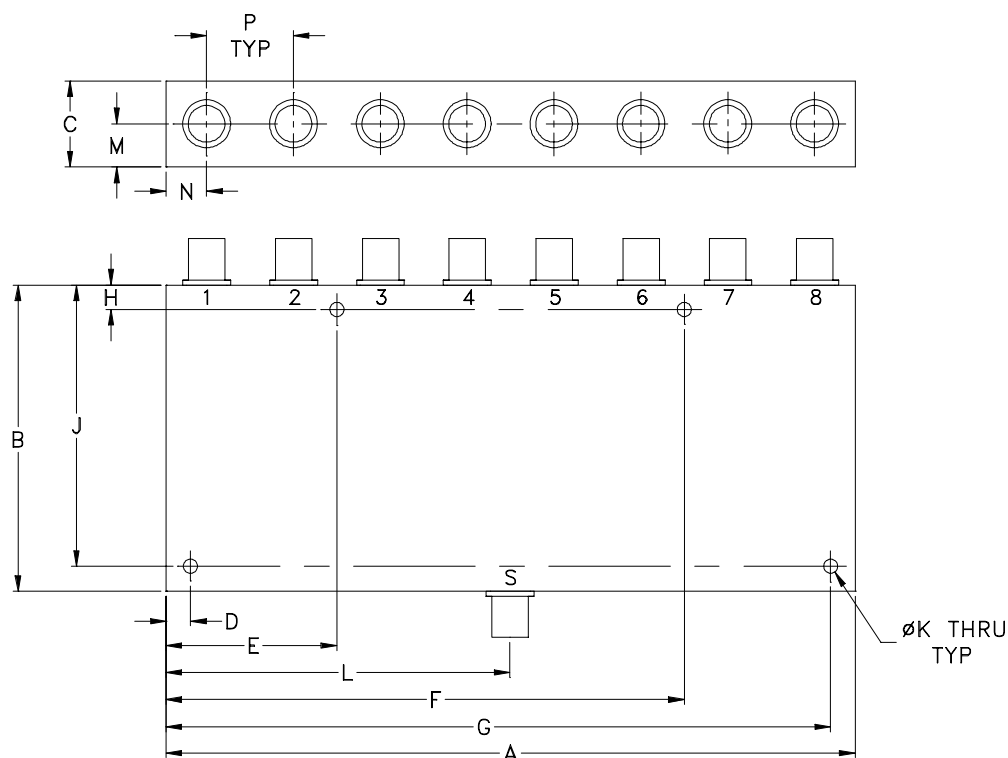
# 8 Way Power Splitter/Combiner

ZB8PD-22-75+

## Typical Performance Curves



### Outline Dimensions



| CASE# | A                | B               | C              | D              | E                | F                 | G                 | H              | J                | K              | L               | M              | N               |
|-------|------------------|-----------------|----------------|----------------|------------------|-------------------|-------------------|----------------|------------------|----------------|-----------------|----------------|-----------------|
| Z41   | 7.06<br>(179.32) | 3.13<br>(79.50) | .88<br>(22.35) | .250<br>(6.35) | 1.750<br>(44.45) | 5.310<br>(134.87) | 6.810<br>(172.97) | .250<br>(6.35) | 2.875<br>(73.03) | .144<br>(3.66) | 3.53<br>(89.66) | .44<br>(11.18) | .415<br>(10.54) |

| CASE# | P              | WT.GRAMS |
|-------|----------------|----------|
| Z41   | .89<br>(22.61) | 800      |

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

#### Notes:

- Case material: Aluminum alloy.
- Case finish:

For RoHS Case Styles:

Clear chemical conversion coating, non-chrome or trivalent chrome based.



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 | -55° to 100°C<br>Ambient Environment                                                   | Individual Model Data Sheet          |
| Storage Temperature   | -55° to 100° C<br>Ambient Environment                                                  | Individual Model Data Sheet          |
| Barometric Pressure   | 100,000 Feet                                                                           | MIL-STD-202, Method 105, Condition D |
| Humidity              | 90% RH, 65°C<br>Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103              |
| Thermal Shock         | -65° to 125°C, 5 cycles                                                                | MIL-STD-202, Method 107, Condition B |