

Coaxial

# Power Splitter/Combiner

ZFSC-16-12+

16 Way-0° 50Ω 0.1 to 200 MHz

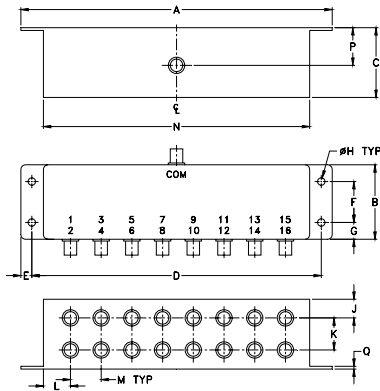
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -55°C to 100°C |
| Storage Temperature                                             | -55°C to 100°C |
| Power Input (as a splitter)                                     | 1W max.        |
| Internal Dissipation                                            | 0.87W max.     |
| Permanent damage may occur if any of these limits are exceeded. |                |

## Coaxial Connections

|                     |                |
|---------------------|----------------|
| SUM PORT            | S              |
| PORT 1,2,3,.....,16 | 1,2,3,.....,16 |

## Outline Drawing



## Outline Dimensions (inch/mm)

| A      | B     | C     | D      | E      | F     | G    | H     |
|--------|-------|-------|--------|--------|-------|------|-------|
| 6.69   | 1.60  | 1.50  | 6.22   | .24    | .88   | .36  | .160  |
| 169.93 | 40.64 | 38.10 | 157.99 | 6.10   | 22.35 | 9.14 | 4.06  |
| J      | K     | L     | M      | N      | P     | Q    | wt.   |
| .40    | .69   | .55   | .66    | 5.72   | .81   | .06  | grams |
| 10.16  | 17.53 | 13.97 | 16.76  | 145.29 | 20.57 | 1.52 | 320   |

## Features

- low insertion loss, 0.7 dB typ.
- high isolation, 27 dB typ.
- excellent amplitude unbalance, 0.2 dB typ.
- rugged shielded case

## Applications

- HF/VHF
- communication systems
- instrumentation



Generic photo used for illustration purposes only

BNC version shown

CASE STYLE: R30

Connectors Model

BNC ZFSC-16-12+

SMA ZFSC-16-12-S+

+RoHS Compliant

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

## Electrical Specifications

| FREQ.*<br>RANGE<br>(MHz)       | ISOLATION<br>(dB) |      |      |      |      |      | INSERTION LOSS (dB)<br>ABOVE 12 dB |      |      |      |      |      | PHASE<br>UNBALANCE<br>(Degrees) |      |      | AMPLITUDE<br>UNBALANCE<br>(dB) |      |      |
|--------------------------------|-------------------|------|------|------|------|------|------------------------------------|------|------|------|------|------|---------------------------------|------|------|--------------------------------|------|------|
|                                | 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>L</sub> -f <sub>U</sub> |                   |      |      |      |      |      |                                    |      |      |      |      |      |                                 |      |      |                                |      |      |
| 0.1-200                        | 33                | 20   | 27   | 20   | 26   | 20   | 0.6                                | 1.5  | 0.7  | 1.0  | 0.9  | 1.5  | 2                               | 6    | 9    | 0.4                            | 0.2  | 0.4  |

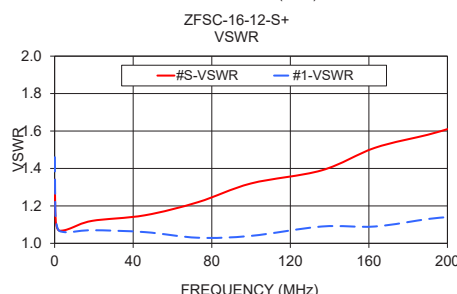
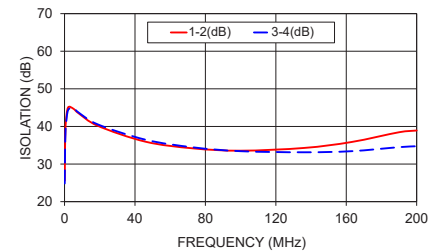
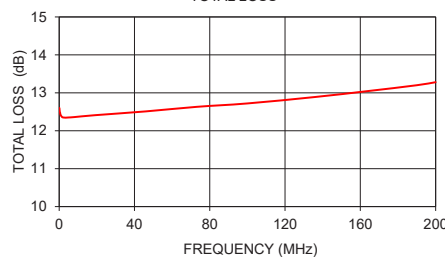
L = low range [f<sub>L</sub> to 10 f<sub>L</sub>] M = mid range [10 f<sub>L</sub> to f<sub>U</sub>/2] U = upper range [f<sub>U</sub>/2 to f<sub>U</sub>]\* At low range frequency band (f<sub>L</sub> to 10 f<sub>L</sub>), linearly derate maximum input power by 13 dB typ.

## Typical Performance Data

| Freq.<br>(MHz) | Total Loss <sup>1</sup><br>(dB) | Amplitude<br>Unbalance<br>(dB) | Isolation<br>(dB) |       | Phase<br>Unbalance<br>(deg.) | VSWR<br>S | VSWR<br>OUTPUT |
|----------------|---------------------------------|--------------------------------|-------------------|-------|------------------------------|-----------|----------------|
|                | S-1                             |                                | 1-2               | 3-4   |                              |           |                |
| 0.10           | 12.60                           | 0.04                           | 25.58             | 24.82 | 0.62                         | 1.34      | 1.46           |
| 0.30           | 12.50                           | 0.02                           | 34.87             | 33.94 | 0.19                         | 1.17      | 1.19           |
| 0.50           | 12.47                           | 0.02                           | 38.86             | 37.80 | 0.17                         | 1.13      | 1.14           |
| 0.80           | 12.41                           | 0.02                           | 41.54             | 40.38 | 0.13                         | 1.10      | 1.11           |
| 2.00           | 12.35                           | 0.01                           | 45.05             | 44.32 | 0.10                         | 1.07      | 1.07           |
| 5.00           | 12.35                           | 0.01                           | 44.72             | 44.92 | 0.09                         | 1.07      | 1.06           |
| 8.00           | 12.36                           | 0.01                           | 43.49             | 43.69 | 0.11                         | 1.08      | 1.06           |
| 19.00          | 12.41                           | 0.01                           | 40.14             | 40.52 | 0.28                         | 1.12      | 1.07           |
| 46.00          | 12.51                           | 0.01                           | 35.94             | 36.47 | 0.56                         | 1.15      | 1.06           |
| 73.00          | 12.63                           | 0.03                           | 34.17             | 34.44 | 0.93                         | 1.22      | 1.03           |
| 100.00         | 12.72                           | 0.03                           | 33.55             | 33.42 | 1.34                         | 1.32      | 1.04           |
| 136.00         | 12.89                           | 0.05                           | 34.28             | 33.13 | 1.93                         | 1.39      | 1.09           |
| 163.00         | 13.04                           | 0.06                           | 35.86             | 33.42 | 2.51                         | 1.51      | 1.09           |
| 190.00         | 13.20                           | 0.09                           | 38.46             | 34.49 | 2.95                         | 1.58      | 1.13           |
| 200.00         | 13.28                           | 0.11                           | 38.92             | 34.74 | 3.23                         | 1.61      | 1.14           |

ZFSC-16-12-S+  
TOTAL LOSS

1. Total Loss = Insertion Loss + 12dB splitter loss.

ZFSC-16-12-S+  
ISOLATION

## 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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 REV. E  
 M151107  
 ZFSC-16-12  
 HY/TD/CP/AM  
 200828

# 16 Way-0° Power Splitter/Combiner

ZFSC-16-12+

## Typical Performance Data

| FREQ.<br>(MHz) | TOTAL<br>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) |         |
|----------------|------------------------------------|------------------------|-------------------|----------|---------------------------|----------------|--------------|---------|
|                |                                    |                        | Adjacent          | Opposite |                           |                | S            | OUTPUTS |
| 0.1            | 12.60                              | 0.04                   | 25.58             | 24.82    | 0.62                      | 0.1            | 1.34         | 1.46    |
| 0.2            | 12.52                              | 0.02                   | 31.43             | 30.53    | 0.28                      | 0.2            | 1.21         | 1.26    |
| 0.3            | 12.50                              | 0.02                   | 34.87             | 33.94    | 0.19                      | 0.3            | 1.17         | 1.19    |
| 0.4            | 12.49                              | 0.02                   | 37.25             | 36.23    | 0.15                      | 0.4            | 1.14         | 1.16    |
| 0.5            | 12.47                              | 0.02                   | 38.86             | 37.80    | 0.17                      | 0.5            | 1.13         | 1.14    |
| 0.6            | 12.45                              | 0.02                   | 40.04             | 38.90    | 0.14                      | 0.6            | 1.11         | 1.12    |
| 0.7            | 12.44                              | 0.02                   | 40.87             | 39.78    | 0.12                      | 0.7            | 1.11         | 1.11    |
| 0.8            | 12.41                              | 0.02                   | 41.54             | 40.38    | 0.13                      | 0.8            | 1.10         | 1.11    |
| 0.9            | 12.41                              | 0.01                   | 42.13             | 40.95    | 0.11                      | 0.9            | 1.09         | 1.10    |
| 1.0            | 12.40                              | 0.01                   | 42.62             | 41.51    | 0.12                      | 1.0            | 1.09         | 1.09    |
| 2.0            | 12.35                              | 0.01                   | 45.05             | 44.32    | 0.10                      | 2.0            | 1.07         | 1.07    |
| 3.0            | 12.35                              | 0.01                   | 45.40             | 45.13    | 0.09                      | 3.0            | 1.06         | 1.06    |
| 4.0            | 12.34                              | 0.01                   | 45.14             | 45.13    | 0.10                      | 4.0            | 1.06         | 1.06    |
| 5.0            | 12.35                              | 0.01                   | 44.72             | 44.92    | 0.09                      | 5.0            | 1.07         | 1.06    |
| 6.0            | 12.35                              | 0.01                   | 44.22             | 44.42    | 0.08                      | 6.0            | 1.07         | 1.06    |
| 7.0            | 12.35                              | 0.01                   | 43.79             | 44.10    | 0.11                      | 7.0            | 1.07         | 1.06    |
| 8.0            | 12.36                              | 0.01                   | 43.49             | 43.69    | 0.11                      | 8.0            | 1.08         | 1.06    |
| 9.0            | 12.36                              | 0.01                   | 42.98             | 43.44    | 0.14                      | 9.0            | 1.08         | 1.06    |
| 10.0           | 12.36                              | 0.01                   | 42.57             | 42.96    | 0.14                      | 10.0           | 1.09         | 1.06    |
| 19.0           | 12.41                              | 0.01                   | 40.14             | 40.52    | 0.28                      | 19.0           | 1.12         | 1.07    |
| 28.0           | 12.44                              | 0.01                   | 38.26             | 38.72    | 0.35                      | 28.0           | 1.14         | 1.07    |
| 37.0           | 12.48                              | 0.01                   | 36.96             | 37.46    | 0.48                      | 37.0           | 1.15         | 1.07    |
| 46.0           | 12.51                              | 0.01                   | 35.94             | 36.47    | 0.56                      | 46.0           | 1.15         | 1.06    |
| 55.0           | 12.54                              | 0.01                   | 35.21             | 35.61    | 0.70                      | 55.0           | 1.16         | 1.05    |
| 64.0           | 12.57                              | 0.02                   | 34.53             | 35.00    | 0.81                      | 64.0           | 1.19         | 1.04    |
| 73.0           | 12.63                              | 0.03                   | 34.17             | 34.44    | 0.93                      | 73.0           | 1.22         | 1.03    |
| 82.0           | 12.66                              | 0.02                   | 33.81             | 33.97    | 1.11                      | 82.0           | 1.26         | 1.02    |
| 91.0           | 12.68                              | 0.02                   | 33.62             | 33.65    | 1.23                      | 91.0           | 1.29         | 1.03    |
| 100.0          | 12.72                              | 0.03                   | 33.55             | 33.42    | 1.34                      | 100.0          | 1.32         | 1.04    |
| 109.0          | 12.75                              | 0.04                   | 33.61             | 33.37    | 1.49                      | 109.0          | 1.33         | 1.06    |
| 118.0          | 12.80                              | 0.04                   | 33.71             | 33.20    | 1.60                      | 118.0          | 1.34         | 1.08    |
| 127.0          | 12.84                              | 0.05                   | 33.95             | 33.13    | 1.76                      | 127.0          | 1.36         | 1.09    |
| 136.0          | 12.89                              | 0.05                   | 34.28             | 33.13    | 1.93                      | 136.0          | 1.39         | 1.09    |
| 145.0          | 12.96                              | 0.06                   | 34.70             | 33.18    | 2.12                      | 145.0          | 1.43         | 1.09    |
| 154.0          | 13.01                              | 0.06                   | 35.16             | 33.28    | 2.30                      | 154.0          | 1.47         | 1.08    |
| 163.0          | 13.04                              | 0.06                   | 35.86             | 33.42    | 2.51                      | 163.0          | 1.51         | 1.09    |
| 172.0          | 13.07                              | 0.07                   | 36.61             | 33.65    | 2.65                      | 172.0          | 1.54         | 1.10    |
| 181.0          | 13.14                              | 0.08                   | 37.59             | 34.02    | 2.77                      | 181.0          | 1.56         | 1.12    |
| 190.0          | 13.20                              | 0.09                   | 38.46             | 34.49    | 2.95                      | 190.0          | 1.58         | 1.13    |
| 195.0          | 13.23                              | 0.10                   | 38.89             | 34.60    | 3.09                      | 195.0          | 1.59         | 1.13    |
| 200.0          | 13.28                              | 0.11                   | 38.92             | 34.74    | 3.23                      | 200.0          | 1.61         | 1.14    |

<sup>1</sup> Total Loss = Insertion Loss + 12dB Splitter Loss

REV. X2  
ZFSC-16-12+  
100721  
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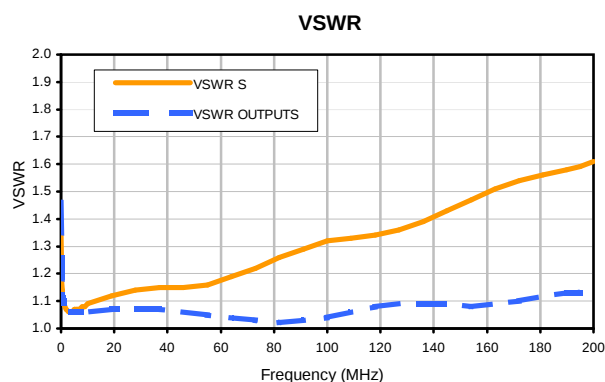
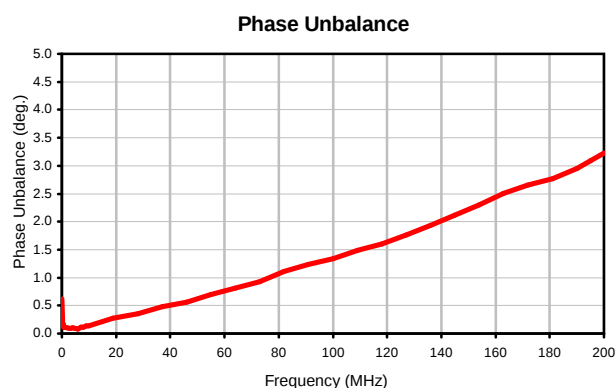
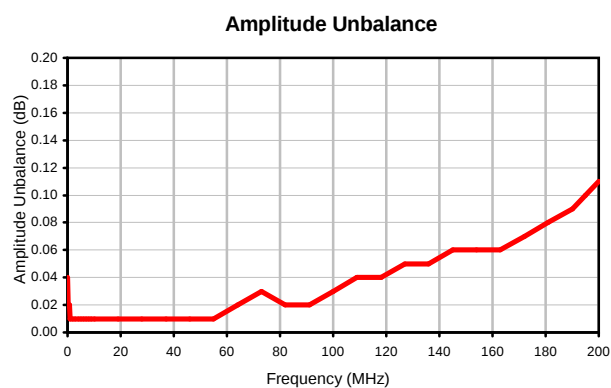
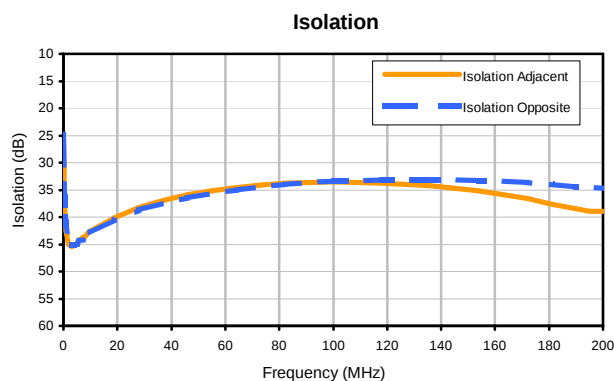
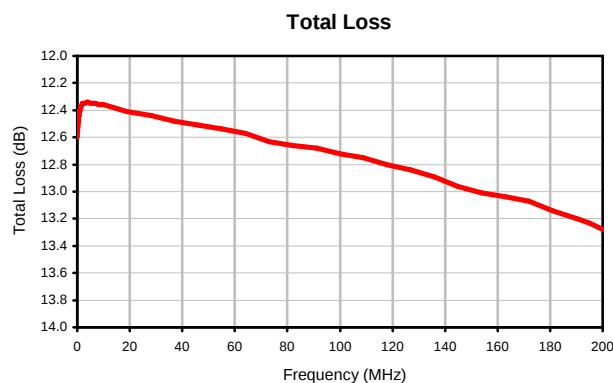
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# 16 Way-0° Power Splitter/Combiner

ZFSC-16-12+

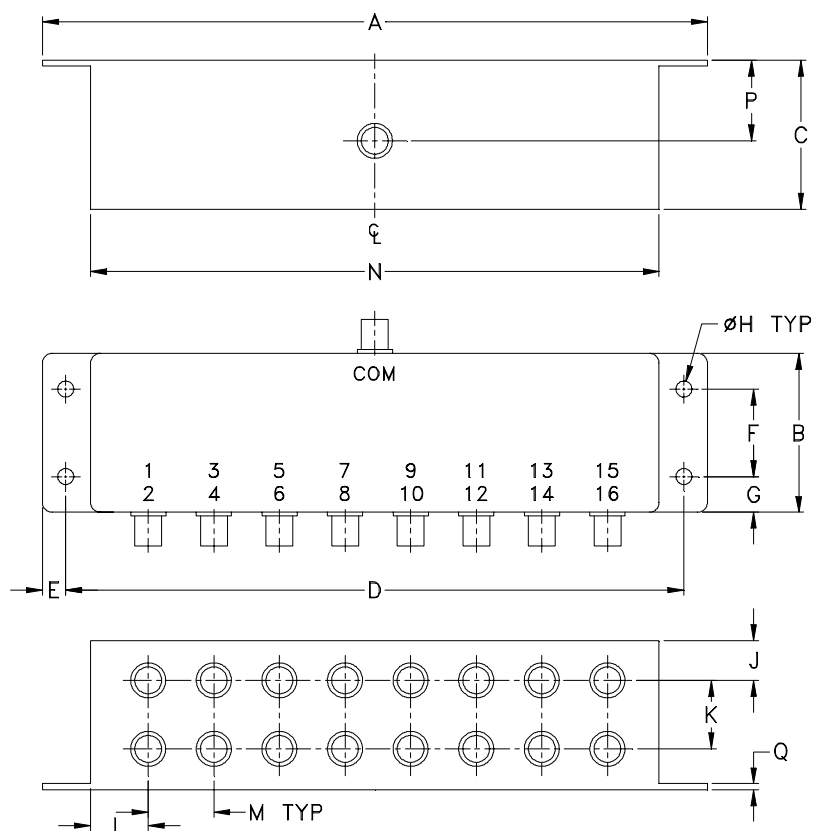
## Typical Performance Curves



REV. X2  
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100721  
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### Outline Dimensions



| CASE# | A                | B               | C               | D                | E             | F              | G             | H              | J              | K              | L              | M              | N                |
|-------|------------------|-----------------|-----------------|------------------|---------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|------------------|
| R30   | 6.69<br>(169.93) | 1.60<br>(40.64) | 1.50<br>(38.10) | 6.22<br>(157.99) | .24<br>(6.10) | .88<br>(22.35) | .36<br>(9.14) | .160<br>(4.06) | .40<br>(10.16) | .69<br>(17.53) | .55<br>(13.97) | .66<br>(16.76) | 5.72<br>(145.29) |

| CASE# | P              | Q             | WT. GRAMS |
|-------|----------------|---------------|-----------|
| R30   | .81<br>(20.57) | .06<br>(1.53) | 320.0     |

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.



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| 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 |
| 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 |
| Mechanical Shock           | 100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)                          | MIL-STD-202, Method 213, Condition I |