

## The Big Deal

- Simple installation in a Satellite System
- Integrated 10 MHz diplexer and DC Bias-Tee
- Low RF Insertion Loss: 0.4 dB Typ 950-2150 MHz



CASE STYLE: CC51

## Product Overview

The ZABT-2R15G+ is a combination bias tee and diplexer designed specifically for satellite communications and wireless infrastructure applications. The ZABT-2R15G+ combines solid Mini-Circuits bias tee performance with additional functionality to inject 10 MHz reference clock without additional components. Built in a rugged shielded case, the ZABT-2R15G+ is equipped with SMA connectors for the L-Band ports and BNC connectors for DC and 10 MHz.

The ZABT-2R15G+ is ideally suited for powering Satellite up converters and LNBs where IF, DC and 10 MHz clock reference are all injected on a single coax cable.

## Key Features

| Feature                  | Advantages                                                                                                                                                  |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filtered 10 MHz Port     | Allows easy coupling of 10 MHz signals to coax for PLL reference clocks reducing cable runs.<br>Blocks 10MHz from RF port reducing unwanted 10 MHz leakage. |
| DC Feed                  | Capable of handling up to 3 Amps and 25V, the ZABT-2R15G+ can power a wide range of remote amplifiers and converters.                                       |
| Connectors               | RF: SMA Female<br>RF+REF+DC: SMA Female<br>REF: BNC Female<br>DC: BNC Female                                                                                |
| Bi-Directional Operation | Can be used at both ends of a feed to inject DC and 10 MHz or to strip them at the other end.                                                               |

### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Bias-Tee / Diplexer

50Ω 10 to 2150MHz (10MHz, 950-2150MHz)

## ZABT-2R15G+



CASE STYLE: CC51

| Connectors     | Model       |
|----------------|-------------|
| BNC-SMA FEMALE | ZABT-2R15G+ |

**+RoHS Compliant**

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

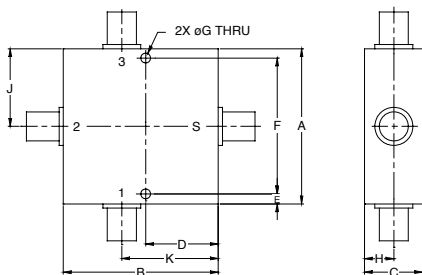
### Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -55°C to 100°C |
| Storage Temperature                                             | -55°C to 100°C |
| RF Power                                                        | 30 dBm Max.    |
| Voltage at DC port                                              | 25 V Max.      |
| Input Current                                                   | 3A             |
| DC resistance from DC to RF&REF&DC port                         | 0.5 Ohm Typ.   |
| Permanent damage may occur if any of these limits are exceeded. |                |

### Coaxial Connections

|           |                |
|-----------|----------------|
| RF        | 1 (SMA female) |
| RF&REF&DC | 2 (SMA female) |
| REF       | 3 (BNC female) |
| DC        | S (BNC female) |

### Outline Drawing



### Outline Dimensions (inch/mm)

| A     | B    | C   | D    | E    | F     | G     | H     | J     | K     | wt.   |
|-------|------|-----|------|------|-------|-------|-------|-------|-------|-------|
| 2.00  | 2.00 | .75 | .938 | .13  | 50.80 | 50.80 | 19.05 | 23.83 | 3.30  |       |
| 1.750 | .125 | .38 | 1.00 | 1.25 | 44.45 | 3.17  | 9.65  | 25.40 | 31.75 | grams |
|       |      |     |      |      |       |       |       |       |       | 200   |

### Features

- Low insertion loss, 0.5dB Typ.
- Good Isolation, 50dB Typ.

### Applications

- Satellite IF band
- Satellite Receivers / Transmitters
- Test accessory

### Electrical Specifications (T<sub>AMB</sub> = 25°C)

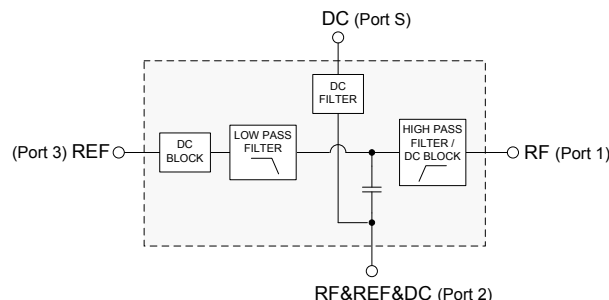
| INSERTION LOSS* (dB) |      |                  |      | ISOLATION* (dB)  |      |                  |      |                                                          |      |             |      | VSWR (:1)       |      |                 |      |
|----------------------|------|------------------|------|------------------|------|------------------|------|----------------------------------------------------------|------|-------------|------|-----------------|------|-----------------|------|
| Port 3 to Port 2     |      | Port 1 to Port 2 |      | Port 3 to Port 1 |      | Port 1 to Port 3 |      | Port 1 to Port S<br>Port 2 to Port S<br>Port 3 to Port S |      |             |      | Port 2 & Port 3 |      | Port 1 & Port 2 |      |
| 10MHz                |      | 950-2150MHz      |      | 10MHz            |      | 950-2150MHz      |      | 10MHz                                                    |      | 950-2150MHz |      | 10MHz           |      | 950-2150MHz     |      |
| Typ.                 | Max. | Typ.             | Max. | Typ.             | Min. | Typ.             | Min. | Typ.                                                     | Min. | Typ.        | Min. | Typ.            | Max. | Typ.            | Max. |
| 0.5                  | 0.8  | 0.4              | 1.5  | 90               | 70   | 65               | 35   | 40                                                       | 27   | 50          | 30   | 1.4             | 1.8  | 1.2             | 1.6  |

\* Insertion Loss and Isolation are guaranteed up to 24dBm RF power and 2A DC current.

### Typical Performance Data

| FREQ.<br>(MHz) | INSERTION LOSS (dB)<br>(P <sub>in</sub> = 0dBm) with Current |       |       |       | ISOLATION (dB)<br>(P <sub>in</sub> = 0dBm) with Current |       |        |       | VSWR<br>(:1)<br>Port 2 |
|----------------|--------------------------------------------------------------|-------|-------|-------|---------------------------------------------------------|-------|--------|-------|------------------------|
|                | Port 1 to Port 2                                             |       |       |       | Port 1 to Port S                                        |       |        |       |                        |
|                | 0.1A                                                         | 0.5A  | 1A    | 2A    | 0.1A                                                    | 0.5A  | 1A     | 2A    |                        |
| 2              | 86.95                                                        | 84.64 | 82.68 | 81.32 | 85.68                                                   | 90.10 | 83.56  | 79.73 | 1.37                   |
| 5              | 91.38                                                        | 86.70 | 91.88 | 86.01 | 86.74                                                   | 94.04 | 87.43  | 85.23 | 1.18                   |
| 10             | 82.34                                                        | 84.06 | 86.00 | 88.08 | 99.69                                                   | 90.41 | 102.84 | 87.90 | 1.15                   |
| 25             | 85.21                                                        | 88.30 | 81.14 | 84.82 | 81.77                                                   | 85.93 | 88.44  | 86.66 | 1.26                   |
| 50             | 71.95                                                        | 71.34 | 71.13 | 75.94 | 92.18                                                   | 81.98 | 77.94  | 85.73 | 1.72                   |
| 100            | 48.89                                                        | 49.05 | 48.87 | 49.07 | 80.26                                                   | 82.35 | 84.53  | 82.73 | 5.26                   |
| 500            | 1.28                                                         | 1.27  | 1.27  | 1.29  | 55.22                                                   | 55.53 | 55.58  | 55.65 | 2.24                   |
| 900            | 0.30                                                         | 0.29  | 0.29  | 0.30  | 63.80                                                   | 64.06 | 63.66  | 63.90 | 1.11                   |
| 950            | 0.28                                                         | 0.28  | 0.27  | 0.28  | 62.39                                                   | 63.41 | 65.26  | 67.45 | 1.12                   |
| 1000           | 0.30                                                         | 0.30  | 0.30  | 0.30  | 61.29                                                   | 62.63 | 63.10  | 65.87 | 1.15                   |
| 1100           | 0.30                                                         | 0.29  | 0.30  | 0.30  | 63.07                                                   | 64.61 | 62.95  | 61.13 | 1.20                   |
| 1250           | 0.34                                                         | 0.34  | 0.34  | 0.34  | 58.61                                                   | 58.80 | 58.99  | 59.10 | 1.27                   |
| 1400           | 0.37                                                         | 0.38  | 0.38  | 0.38  | 52.47                                                   | 52.25 | 51.95  | 51.98 | 1.31                   |
| 1500           | 0.40                                                         | 0.39  | 0.40  | 0.40  | 49.52                                                   | 49.43 | 49.61  | 49.65 | 1.32                   |
| 1700           | 0.41                                                         | 0.41  | 0.41  | 0.41  | 44.39                                                   | 44.64 | 44.61  | 44.68 | 1.29                   |
| 1800           | 0.44                                                         | 0.44  | 0.42  | 0.43  | 42.46                                                   | 42.53 | 42.45  | 42.39 | 1.25                   |
| 2000           | 0.46                                                         | 0.47  | 0.46  | 0.47  | 38.42                                                   | 38.36 | 38.40  | 38.44 | 1.16                   |
| 2100           | 0.51                                                         | 0.51  | 0.51  | 0.52  | 36.33                                                   | 36.36 | 36.37  | 36.37 | 1.14                   |
| 2150           | 0.54                                                         | 0.54  | 0.54  | 0.55  | 35.32                                                   | 35.32 | 35.34  | 35.34 | 1.15                   |
| 2200           | 0.58                                                         | 0.58  | 0.59  | 0.58  | 34.28                                                   | 34.26 | 34.30  | 34.26 | 1.18                   |

### Functional Block Diagram

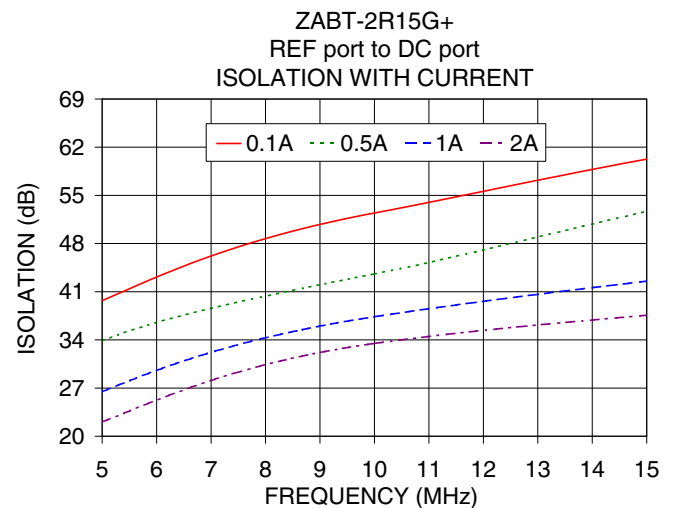
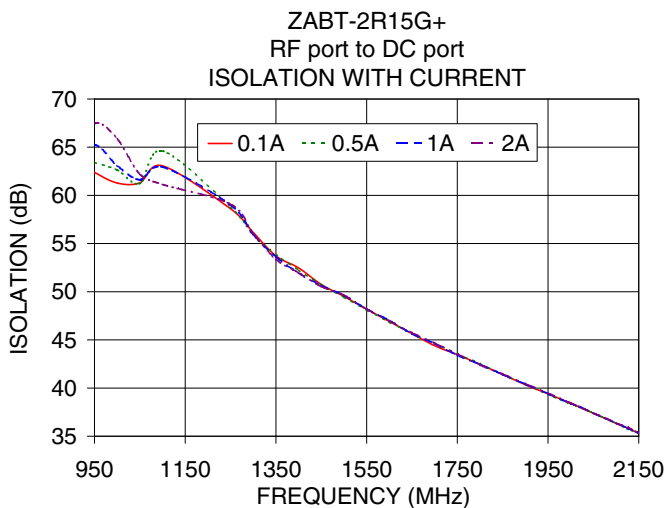
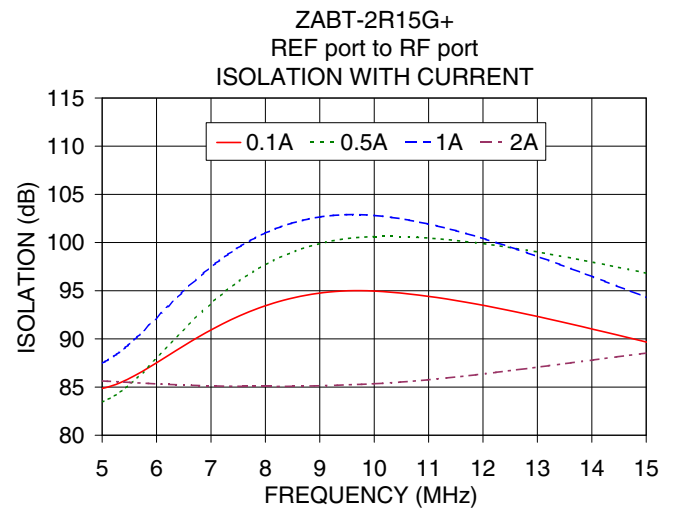
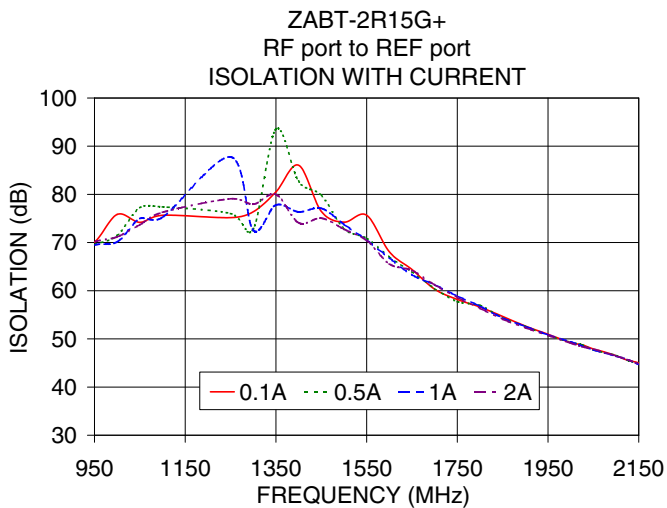
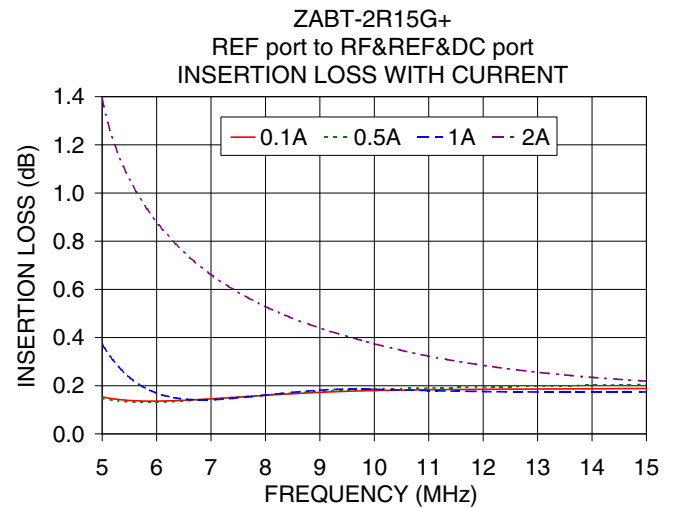
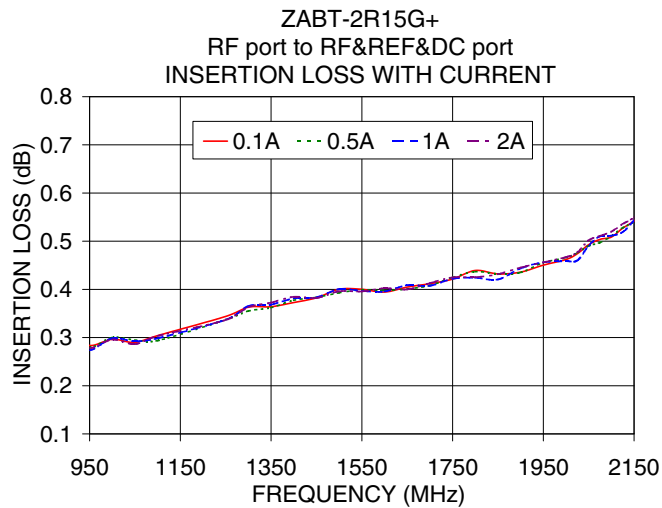


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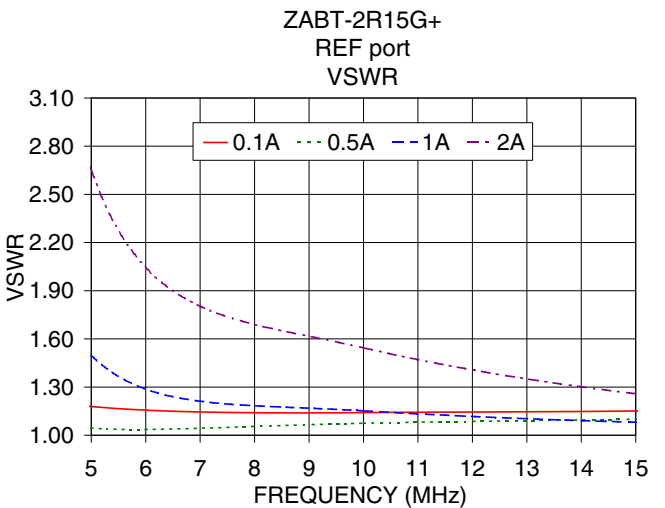
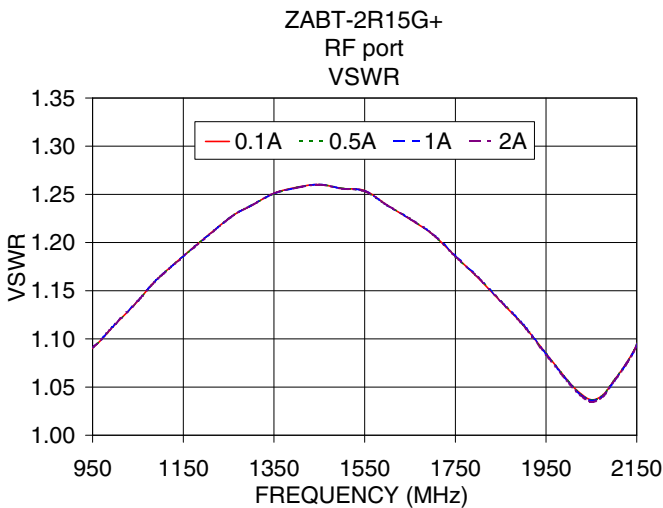
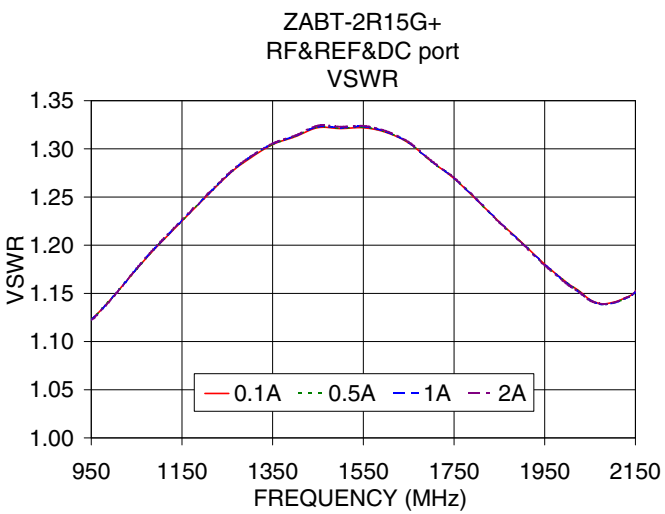
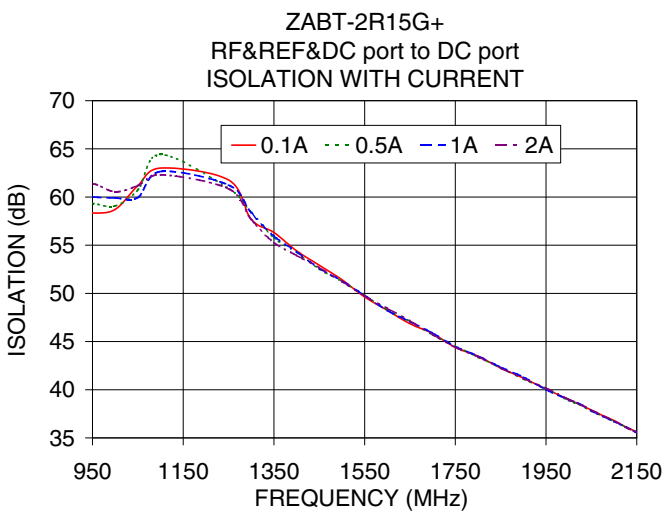
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# Surface Mount Diplexer

# ZABT-2R15G+

## Typical Performance Data

| FREQ.<br>(MHz) | INSERTION LOSS (PIN= 0dBm) with current<br>( Port 1 to Port 2 )<br>(dB) |       |       |       | ISOLATION (PIN= 0dBm) with current<br>( Port 1 to Port S )<br>(dB) |       |        |       | VSWR<br>(Port 2)<br>(:1) |
|----------------|-------------------------------------------------------------------------|-------|-------|-------|--------------------------------------------------------------------|-------|--------|-------|--------------------------|
|                | 0.1A                                                                    | 0.5A  | 1A    | 2A    | 0.1A                                                               | 0.5A  | 1A     | 2A    |                          |
| 2              | 86.95                                                                   | 84.64 | 82.68 | 81.32 | 85.68                                                              | 90.09 | 83.56  | 79.73 | 1.37                     |
| 5              | 91.38                                                                   | 86.70 | 91.88 | 86.01 | 86.74                                                              | 94.04 | 87.43  | 85.23 | 1.18                     |
| 10             | 82.34                                                                   | 84.06 | 86.00 | 88.08 | 99.69                                                              | 90.41 | 102.84 | 87.90 | 1.15                     |
| 25             | 85.21                                                                   | 88.30 | 81.14 | 84.82 | 81.77                                                              | 85.93 | 88.44  | 86.66 | 1.26                     |
| 50             | 71.95                                                                   | 71.34 | 71.13 | 75.94 | 92.18                                                              | 81.98 | 77.94  | 85.73 | 1.72                     |
| 100            | 48.89                                                                   | 49.05 | 48.87 | 49.07 | 80.26                                                              | 82.35 | 84.53  | 82.73 | 5.26                     |
| 500            | 1.28                                                                    | 1.27  | 1.27  | 1.29  | 55.22                                                              | 55.53 | 55.57  | 55.65 | 2.24                     |
| 900            | 0.30                                                                    | 0.29  | 0.29  | 0.30  | 63.80                                                              | 64.06 | 63.66  | 63.90 | 1.11                     |
| 950            | 0.28                                                                    | 0.28  | 0.27  | 0.28  | 62.39                                                              | 63.41 | 65.26  | 67.45 | 1.12                     |
| 1000           | 0.30                                                                    | 0.30  | 0.30  | 0.30  | 61.29                                                              | 62.63 | 63.10  | 65.87 | 1.15                     |
| 1100           | 0.30                                                                    | 0.29  | 0.30  | 0.30  | 63.07                                                              | 64.61 | 62.95  | 61.13 | 1.20                     |
| 1250           | 0.34                                                                    | 0.34  | 0.34  | 0.34  | 58.61                                                              | 58.80 | 58.99  | 59.10 | 1.27                     |
| 1400           | 0.37                                                                    | 0.38  | 0.38  | 0.38  | 52.47                                                              | 52.25 | 51.95  | 51.98 | 1.31                     |
| 1500           | 0.40                                                                    | 0.39  | 0.40  | 0.40  | 49.52                                                              | 49.43 | 49.61  | 49.65 | 1.32                     |
| 1700           | 0.41                                                                    | 0.41  | 0.41  | 0.41  | 44.39                                                              | 44.64 | 44.61  | 44.68 | 1.29                     |
| 1800           | 0.44                                                                    | 0.44  | 0.42  | 0.43  | 42.46                                                              | 42.53 | 42.45  | 42.39 | 1.25                     |
| 2000           | 0.46                                                                    | 0.47  | 0.46  | 0.47  | 38.42                                                              | 38.36 | 38.40  | 38.44 | 1.16                     |
| 2100           | 0.51                                                                    | 0.51  | 0.51  | 0.52  | 36.33                                                              | 36.36 | 36.37  | 36.37 | 1.14                     |
| 2150           | 0.54                                                                    | 0.54  | 0.54  | 0.55  | 35.32                                                              | 35.32 | 35.34  | 35.34 | 1.15                     |
| 2200           | 0.58                                                                    | 0.58  | 0.59  | 0.58  | 34.28                                                              | 34.26 | 34.30  | 34.26 | 1.18                     |

REV. X1  
ZABT-2R15G+  
081019  
Page 1 of 1



IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



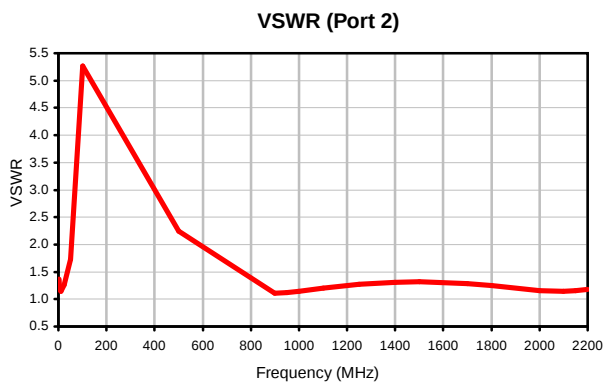
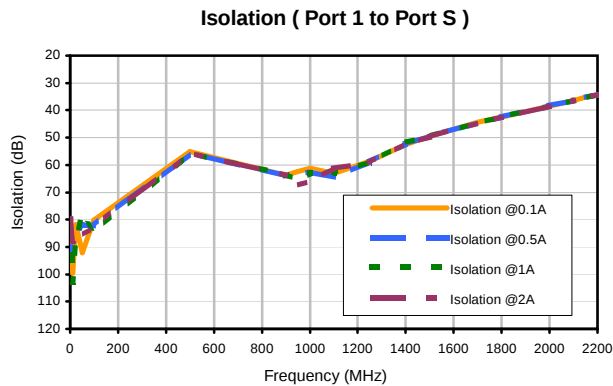
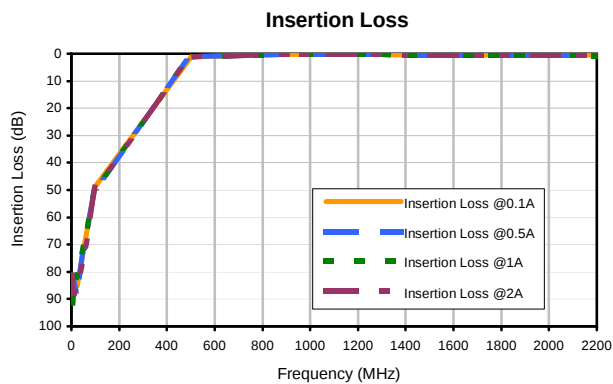
The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see



# Surface Mount Diplexer

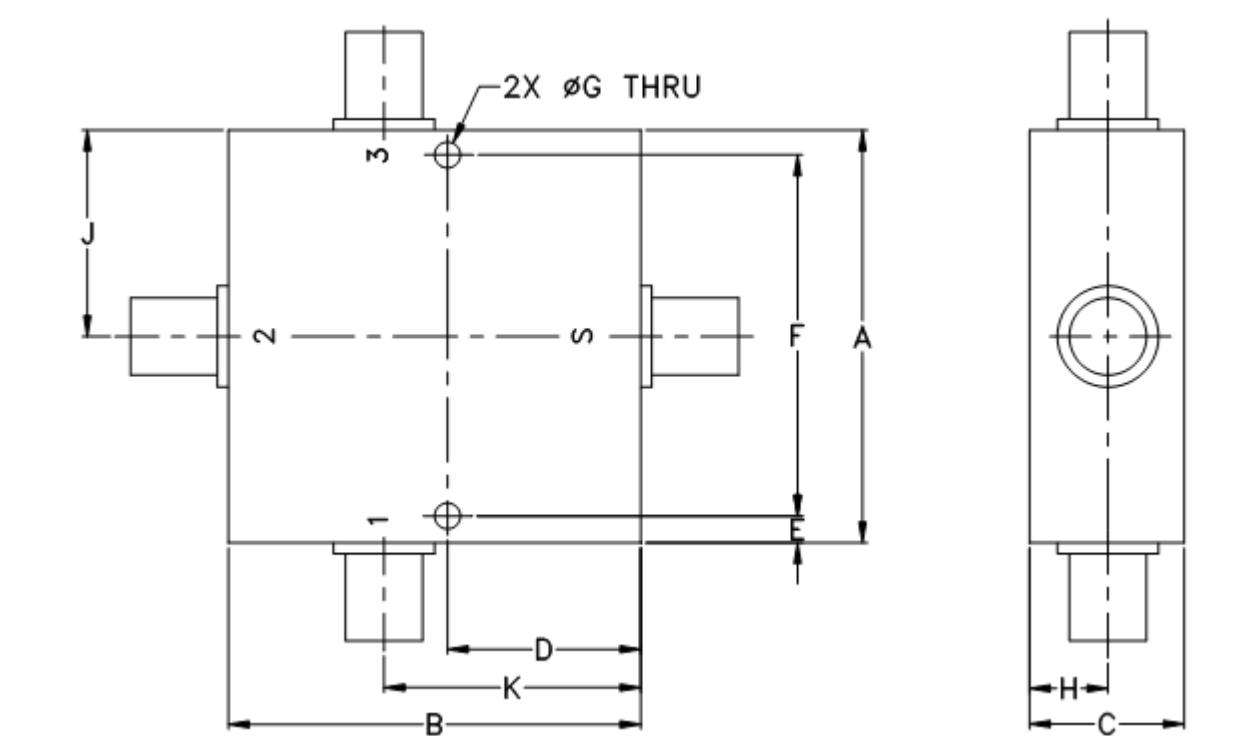
## Typical Performance Curves

ZABT-2R15G+



## Outline Dimensions

CC51



| CASE# | A               | B               | C              | D               | E             | F                | G              | H             | J               | K               | WT. GRAMS |
|-------|-----------------|-----------------|----------------|-----------------|---------------|------------------|----------------|---------------|-----------------|-----------------|-----------|
| CC51  | 2.00<br>(50.80) | 2.00<br>(50.80) | .75<br>(19.05) | .938<br>(23.83) | .13<br>(3.30) | 1.750<br>(44.45) | .125<br>(3.17) | .38<br>(9.65) | 1.00<br>(25.40) | 1.25<br>(31.75) | 200       |

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.
- Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



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RF/IF MICROWAVE COMPONENTS



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 |
| 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 |