

# DC Passing Attenuator

## SAT-3DC-3A+

50 $\Omega$  100 to 500 MHz

### The Big Deal

- High DC current handling
- Rugged unibody construction
- DC resistance (in/out) 0.1 $\Omega$  Typ.



CASE STYLE: FF99

### Product Overview

SAT-3DC-3A+ is a DC Passing fixed attenuator in 100 MHz to 500 MHz frequency range with excellent flatness of attenuation. These units support testing applications. Precise performance, excellent VSWR (1.1:1 typ.) and rugged construction make these models ideal solutions for systems requiring precise attenuation across very wide frequency range.

### Key Features

| Feature                  | Advantages                                                               |
|--------------------------|--------------------------------------------------------------------------|
| Excellent VSWR, 1.10 typ | Well-matched for 50 $\Omega$ systems; reduces effects of phase variation |
| Flat attenuation         | Accurate performance within $\pm 0.8$ dB over the full frequency range.  |
| Rugged construction      | Excellent durability for a long lifetime of use.                         |

#### 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)



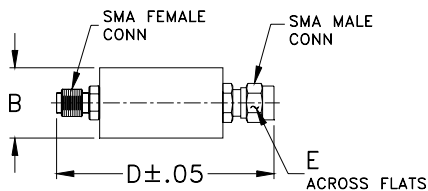
# DC Passing Attenuator

50Ω 100 to 500 MHz

## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -55°C to 100°C |
| Storage Temperature                                             | -55°C to 100°C |
| Permanent damage may occur if any of these limits are exceeded. |                |

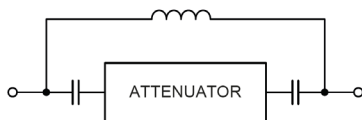
## Outline Drawing



## Outline Dimensions (inch/mm)

|       |       |      |       |
|-------|-------|------|-------|
| B     | D     | E    | wt    |
| .67   | 1.98  | .312 | grams |
| 17.02 | 50.29 | 7.92 | 42.0  |

## Electrical Schematic



## Features

- High DC Current handling
- Rugged unibody construction
- DC resistance (in/put) 0.1Ω typical

## Applications

- Power passing
- Instrumentation
- Test equipment
- Lab use

# SAT-3DC-3A+



CASE STYLE: FF99

Connectors SMA Model SAT-3DC-3A+

**+RoHS Compliant**

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

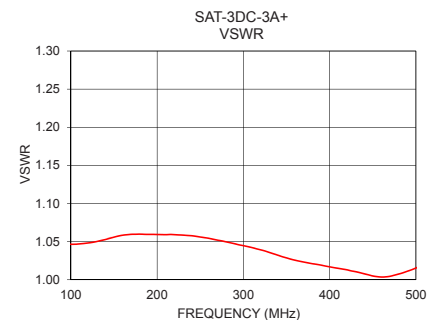
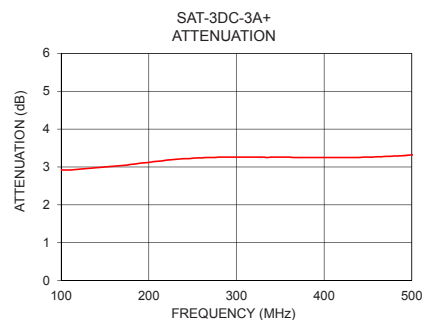
## Electrical Specifications at 25°C

| Parameter           | Condition (MHz) | Min. | Typ. | Max. | Unit |
|---------------------|-----------------|------|------|------|------|
| Frequency Range     |                 | 100  | —    | 500  | MHz  |
| Attenuation Nominal | 100-500         | 2.5  | 3    | 3.8  | dB   |
| VSWR                | 100-500         | —    | 1.1  | 1.4  | :1   |
| DC Current          | 100-500         | —    | —    | 3    | Amps |
| Input Power         | 100-500         | —    | —    | 10   | dBm  |

1. Flatness = variation over band divided by 2.

## Typical Performance Data

| Frequency (MHz) | Attenuation (dB) | VSWR (:1) |
|-----------------|------------------|-----------|
| 100             | 2.92             | 1.05      |
| 120             | 2.94             | 1.05      |
| 140             | 2.98             | 1.05      |
| 160             | 3.02             | 1.06      |
| 180             | 3.07             | 1.06      |
| 200             | 3.12             | 1.06      |
| 220             | 3.18             | 1.06      |
| 240             | 3.22             | 1.06      |
| 260             | 3.24             | 1.05      |
| 280             | 3.26             | 1.05      |
| 300             | 3.26             | 1.04      |
| 320             | 3.26             | 1.04      |
| 340             | 3.26             | 1.03      |
| 360             | 3.26             | 1.03      |
| 380             | 3.25             | 1.02      |
| 400             | 3.25             | 1.02      |
| 420             | 3.25             | 1.01      |
| 450             | 3.26             | 1.00      |
| 480             | 3.29             | 1.01      |
| 500             | 3.32             | 1.02      |



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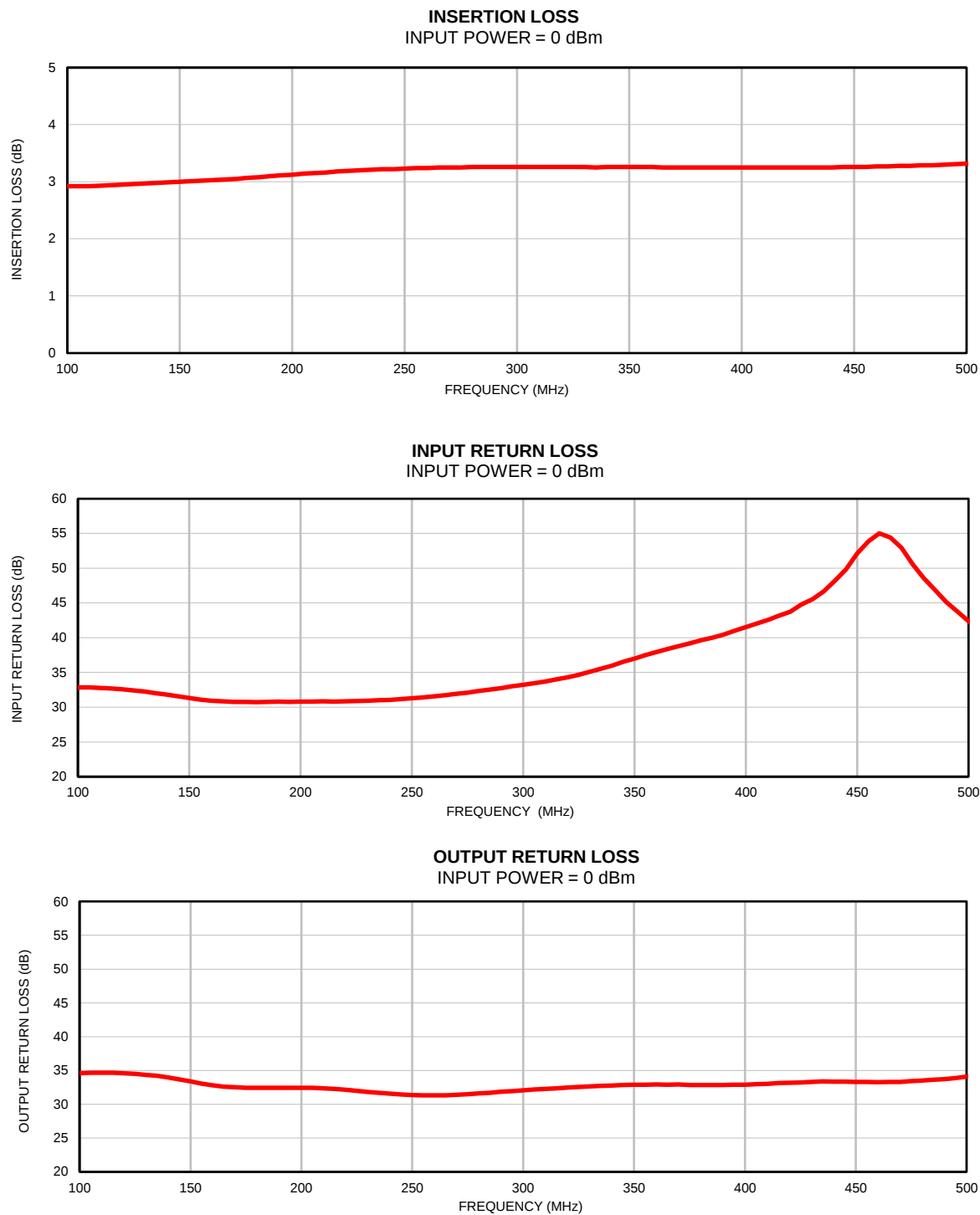


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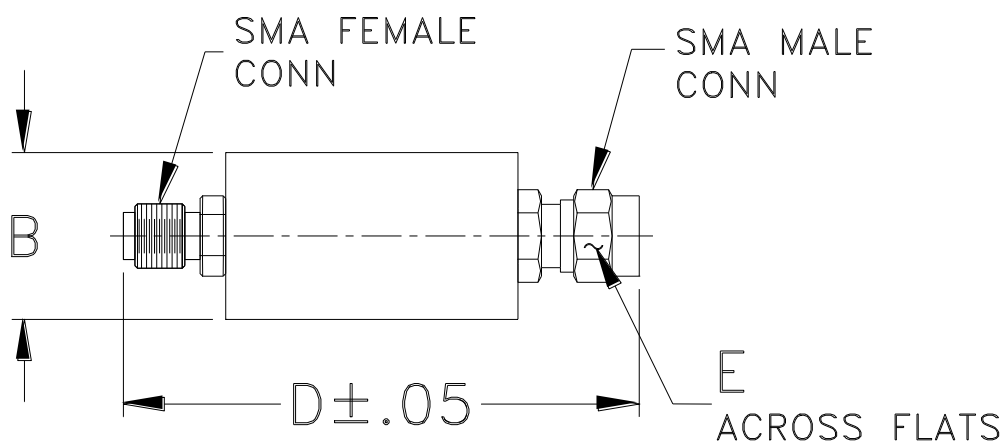
Typical Performance Data

| FREQUENCY<br>(MHz) | ATTENUATION<br>(dB) | FEMALE<br>RETURN LOSS<br>(dB) | MALE<br>RETURN LOSS<br>(dB) |
|--------------------|---------------------|-------------------------------|-----------------------------|
| 100                | 2.92                | 32.87                         | 34.57                       |
| 110                | 2.92                | 32.78                         | 34.66                       |
| 120                | 2.94                | 32.56                         | 34.57                       |
| 130                | 2.96                | 32.23                         | 34.33                       |
| 140                | 2.98                | 31.80                         | 33.94                       |
| 150                | 3.00                | 31.31                         | 33.37                       |
| 160                | 3.02                | 30.94                         | 32.80                       |
| 170                | 3.04                | 30.77                         | 32.49                       |
| 180                | 3.07                | 30.74                         | 32.42                       |
| 190                | 3.10                | 30.79                         | 32.44                       |
| 200                | 3.12                | 30.81                         | 32.44                       |
| 210                | 3.15                | 30.84                         | 32.33                       |
| 220                | 3.18                | 30.83                         | 32.12                       |
| 230                | 3.20                | 30.92                         | 31.81                       |
| 240                | 3.22                | 31.04                         | 31.56                       |
| 250                | 3.23                | 31.29                         | 31.36                       |
| 260                | 3.24                | 31.55                         | 31.32                       |
| 270                | 3.25                | 31.93                         | 31.38                       |
| 280                | 3.26                | 32.31                         | 31.60                       |
| 290                | 3.26                | 32.74                         | 31.84                       |
| 300                | 3.26                | 33.20                         | 32.04                       |
| 305                | 3.26                | 33.44                         | 32.19                       |
| 310                | 3.26                | 33.69                         | 32.27                       |
| 315                | 3.26                | 34.01                         | 32.36                       |
| 320                | 3.26                | 34.31                         | 32.45                       |
| 325                | 3.26                | 34.65                         | 32.54                       |
| 330                | 3.26                | 35.08                         | 32.64                       |
| 335                | 3.25                | 35.53                         | 32.73                       |
| 340                | 3.26                | 36.00                         | 32.77                       |
| 345                | 3.26                | 36.53                         | 32.82                       |
| 350                | 3.26                | 36.99                         | 32.87                       |
| 355                | 3.26                | 37.51                         | 32.90                       |
| 360                | 3.26                | 37.96                         | 32.91                       |
| 365                | 3.25                | 38.40                         | 32.89                       |
| 370                | 3.25                | 38.80                         | 32.91                       |
| 375                | 3.25                | 39.21                         | 32.84                       |
| 380                | 3.25                | 39.65                         | 32.85                       |
| 385                | 3.25                | 40.00                         | 32.82                       |
| 390                | 3.25                | 40.44                         | 32.82                       |
| 395                | 3.25                | 41.00                         | 32.86                       |
| 400                | 3.25                | 41.51                         | 32.90                       |
| 405                | 3.25                | 42.06                         | 32.95                       |
| 410                | 3.25                | 42.58                         | 33.01                       |
| 415                | 3.25                | 43.15                         | 33.12                       |
| 420                | 3.25                | 43.74                         | 33.18                       |
| 425                | 3.25                | 44.75                         | 33.23                       |
| 430                | 3.25                | 45.53                         | 33.29                       |
| 435                | 3.25                | 46.67                         | 33.36                       |
| 440                | 3.25                | 48.18                         | 33.35                       |
| 445                | 3.26                | 49.83                         | 33.33                       |
| 450                | 3.26                | 52.13                         | 33.31                       |
| 455                | 3.26                | 53.83                         | 33.29                       |
| 460                | 3.27                | 55.01                         | 33.26                       |
| 465                | 3.27                | 54.41                         | 33.28                       |
| 470                | 3.28                | 52.92                         | 33.31                       |
| 475                | 3.28                | 50.53                         | 33.40                       |
| 480                | 3.29                | 48.56                         | 33.49                       |
| 485                | 3.29                | 46.87                         | 33.61                       |
| 490                | 3.30                | 45.12                         | 33.71                       |
| 500                | 3.32                | 42.35                         | 34.07                       |



**FF56**  
**FF99**

## Outline Dimensions



| CASE #. | A  | B              | C  | D               | E              | WT GRAMS |
|---------|----|----------------|----|-----------------|----------------|----------|
| FF56    | -- | .46<br>(11.68) | -- | 1.70<br>(43.18) | .312<br>(7.92) | 18.0     |
| FF99    | -- | .70<br>(17.78) | -- | 1.98<br>(50.29) |                | 42.0     |

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

### Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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 |