

# Fixed Attenuators (SMA Type)

AT-100, AT-200, and AT-300 Series



## ■ Features

### 1. Abundant Variations of Attenuators

Attenuation amounts are available in abundant variations from 0 to 4 dB in 0.5 dB steps, from 4 to 10 dB in 1 dB steps, and in 12, 13, 15, 20, 26 and 30 dB so that levels can be finely adjusted.

### 2. SMA Type

The coupling portions are available in all types of plug and jack combinations and stainless steel is used for the external cladding to form a small and durable structure.

### 3. High Degree of Matching and High Reliability

The design of the attenuation element uses a distributed constant circuit and metal film resistor. A high degree of matching is achieved as indicated in the VSWR of the appended tables. Furthermore, these attenuators show stable characteristics for environments of varying temperature, humidity, and gases.

## ■ Product Specifications

|         |   |                                  |  |                            |
|---------|---|----------------------------------|--|----------------------------|
| Ratings | Rated frequency range (Note)<br>Characteristic impedance<br>Maximum Input Power | DC to 18.0 GHz<br>50 ohms<br>1 W | Operating temperature range<br>Operating relative humidity | -10°C to +65°C<br>95% Max. |
|---------|---|----------------------------------|--|----------------------------|

Note: The frequency range will differ depending on the model.

| Item                 | Standard  | Conditions  |
|----------------------|---|---|
| 1. Vibration         | No electrical discontinuity of 1 $\mu$ s or more<br>No damage, cracks, or parts dislocation | Frequency of 10 to 2000 Hz, overall amplitude of 1.52 mm, acceleration of 98 m/s <sup>2</sup> for 2 hours in each of 3 directions |
| 2. Shock             |   | Acceleration of 490 m/s <sup>2</sup> , sine half-wave waveform, 3 cycles in each of the 3 axis                                    |
| 3. Temperature cycle | No damage, cracks, or parts dislocation   | Temperature: -55°C → +5°C → +35°C → +85°C → +5°C → +35°C<br>Time: 30 → 15 max. → 30 → 15 max. (Minutes)<br>200 cycles             |

● The test method conforms to MIL-STD-202.

## ■ Materials

| Part                | Material         | Finish       |
|---------------------|------------------|--------------|
| Connector Body      | Stainless steel  | Passivated   |
| Insulator           | PTFE             | -----        |
| Male contacts       | Beryllium copper | Gold plating |
| Female contacts     | Beryllium copper | Gold plating |
| Attenuation element | Metal film       | -----        |

## ■ Ordering Information

**AT** - **1** **00-(0)**

①                      ②                      ③

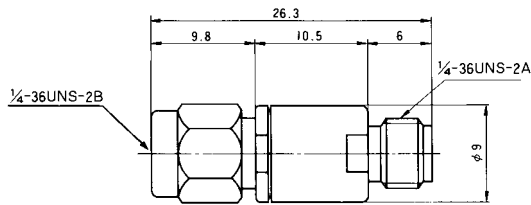
|  |  |
|--|--|
| ① AT: Indicates a fixed attenuator   | ③ Attenuation<br>01 : 1dB<br>06 : 6dB<br>00-(0) : 0dB<br>(Through) |
| ② Indicates the Series Name (Coupling Portion)<br>1: SMA plug - jack<br>2: SMA plug - plug<br>3: SMA jack - jack | 00-(0.5) : 0.5dB<br>00-(3.5) : 3.5dB                               |

## ■ Specifications

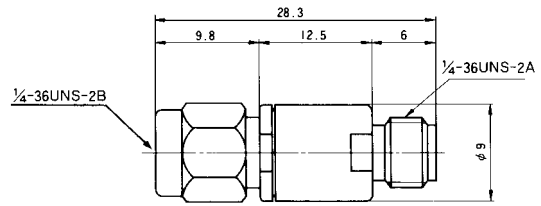
| Part Number  | Attenuation (dB)               |                                     | V.S.W.R.(Max) |           |           | Power (W) | Connectors | Weight (g) |
|--------------|--------------------------------|-------------------------------------|---------------|-----------|-----------|-----------|------------|------------|
|              | DC~12.4GHz                     | 12.4~18GHz                          | DC~4GHz       | 4~12.4GHz | 2.4~18GHz |           |            |            |
| AT-100-(0)   | 0 <sup>+0.5</sup> <sub>0</sub> | 0 <sup>+1.0</sup> <sub>0</sub>      | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-100-(0.5) | 0.5±0.5                        | 0.5 <sup>+1.0</sup> <sub>-0.5</sub> | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-101       | 1±0.5                          | 1±1.0                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-100-(1.5) | 1.5±0.5                        | 1.5±1.0                             | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-102       | 2±0.5                          | 2±1.0                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-100-(2.5) | 2.5±0.5                        | 2.5±1.0                             | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-103       | 3±0.5                          | 3±1.0                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-100-(3.5) | 3.5±0.5                        | 3.5±1.0                             | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-104       | 4±0.5                          | 4±1.0                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-105       | 5±0.7                          | 5±1.2                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-106       | 6±0.7                          | 6±1.2                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-107       | 7±0.7                          | 7±1.2                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-108       | 8±0.7                          | 8±1.2                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-109       | 9±1.0                          | 9±1.25                              | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-110       | 10±1.0                         | 10±1.25                             | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-112       | 12±1.0                         | 12±1.25                             | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-113       | 13±1.0                         | 13±1.25                             | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-114       | 14±1.2                         | 14±1.3                              | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-115       | 15±1.2                         | 15±1.3                              | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-120       | 20±1.2                         | 20±1.3                              | 1.15          | 1.20      | 1.30      | 1         | HRM-J · P  | 8          |
| AT-203       | 3±0.5                          | 3±1.0                               | 1.15          | 1.20      | 1.30      | 1         | HRM-P · P  | 9          |
| AT-206       | 6±0.7                          | 6±1.2                               | 1.15          | 1.20      | 1.30      | 1         | HRM-P · P  | 9          |
| AT-210       | 10±1.0                         | 10±1.25                             | 1.15          | 1.20      | 1.30      | 1         | HRM-P · P  | 9          |
| AT-220       | 20±1.2                         | 20±1.3                              | 1.15          | 1.20      | 1.30      | 1         | HRM-P · P  | 9          |
| AT-303       | 3±0.5                          | 3±1.0                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · J  | 7          |
| AT-306       | 6±0.7                          | 6±1.2                               | 1.15          | 1.20      | 1.30      | 1         | HRM-J · J  | 7          |
| AT-310       | 10±1.0                         | 10±1.25                             | 1.15          | 1.20      | 1.30      | 1         | HRM-J · J  | 7          |
| AT-320       | 20±1.2                         | 20±1.3                              | 1.15          | 1.20      | 1.30      | 1         | HRM-J · J  | 7          |

| Part Number | Attenuation (dB) | V.S.W.R.(Max) |        | Power (W) | Connectors | Weight (g) |
|-------------|------------------|---------------|--------|-----------|------------|------------|
|             | DC~8GHz          | DC~4GHz       | 4~8GHz |           |            |            |
| AT-126      | 26±1.0           | 1.15          | 1.20   | 1         | HRM-J · P  | 8          |
| AT-130      | 30±1.2           | 1.15          | 1.20   | 1         | HRM-J · P  | 8          |

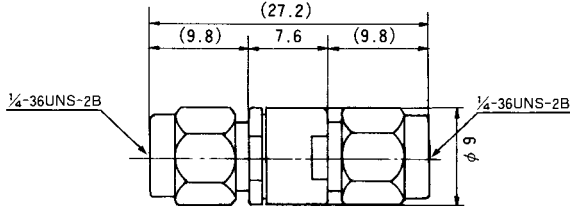
## External Dimensions



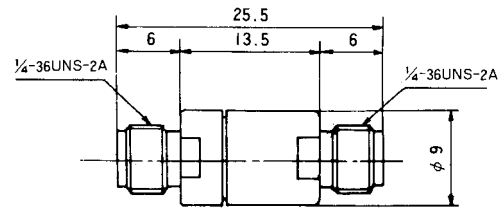
AT-100 Type



AT-126,130 Type

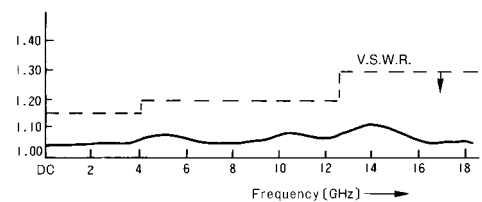
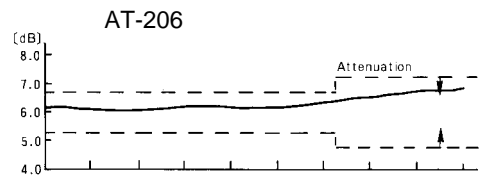
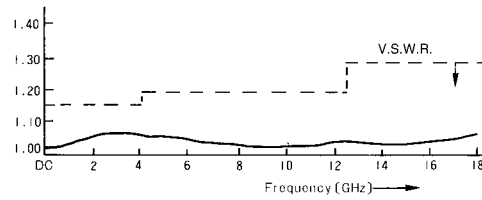
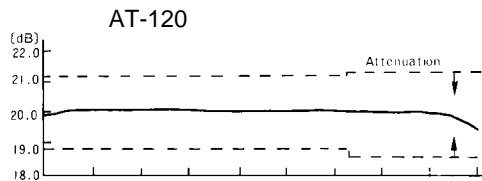
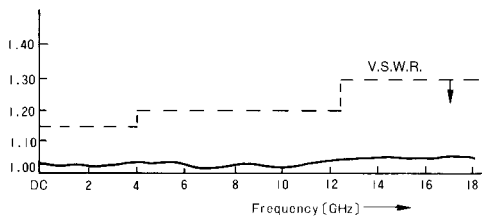
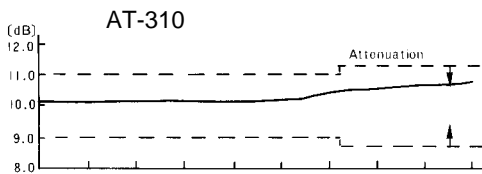
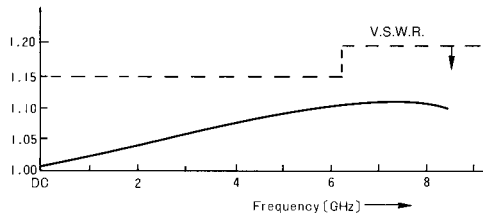
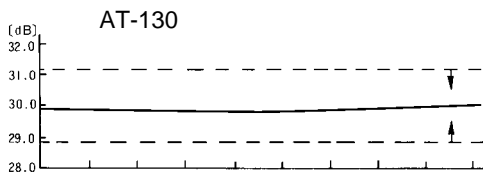
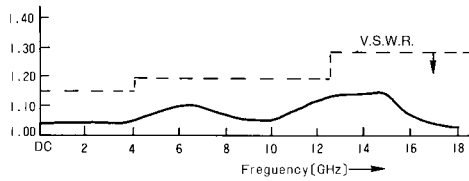
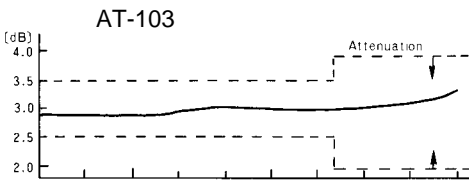


AT-200 Type



AT-300 Type

## Typical Data



### Input Power Characteristics

