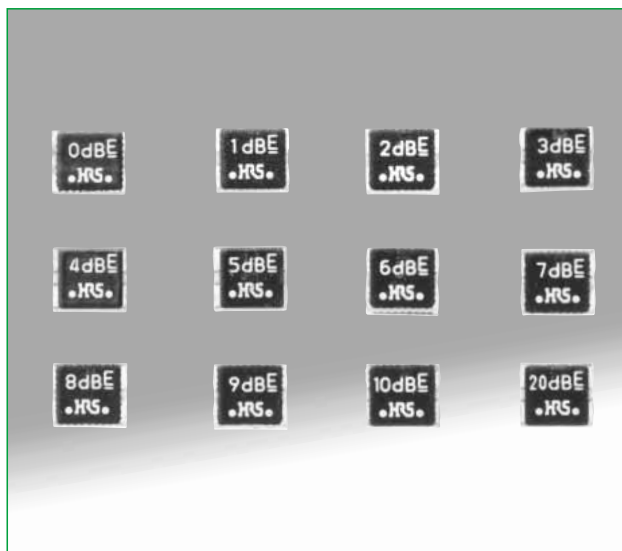


# SMT Stripline Mounting Fixed Attenuators

## AT-2200 Series



### ■Features

#### 1. Small Size and Lightweight

4mm x 3.6 mm x 1.4 mm max height and weighting only 0.1g.

#### 2. Wide Range of Variations for Each Type of Attenuator

Attenuation levels available in 1 dB steps from 0 to 10 dB, and 20 dB for a total of 12 types of variations.

#### 3. Automatic placement

Supplied in embossed packaging to allow placement with automatic equipment.

Individual piece packaging is also available.

### ■Product Specifications

| Ratings | Frequency range<br>Characteristic impedance<br>Maximum input power | DC to 2.5GHz (Note)<br>50Ω<br>1W | Operating temperature<br>Operating humidity | -10℃ to +65℃<br>95% max. |
|---------|--------------------------------------------------------------------|----------------------------------|---------------------------------------------|--------------------------|
|---------|--------------------------------------------------------------------|----------------------------------|---------------------------------------------|--------------------------|

Note: DC to 600MHz for AT-2220.

| Item                | Characteristic requirement                                                              | Conditions                                                                                                                        |
|---------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1.Vibration         | No electrical discontinuity of 1μs or more.<br>No damage, cracks, or parts dislocation. | Frequency of 10 to 2000 Hz, overall amplitude of 1.5mm, acceleration of 98m/s <sup>2</sup> , 2 hours in each of the 3 directions. |
| 2.Shock             |                                                                                         | Acceleration of 490m/s <sup>2</sup> , sine half-wave waveform, 3 cycles in each of the 3 axis.                                    |
| 3.Temperature cycle |                                                                                         | Temperature : -55℃ → +15℃ to +35℃ → +85℃ → +15℃ to +35℃<br>Time : 30 → 2 to 3 → 30 → 2 to 3 (Minutes)<br>5 cycles                 |

The test method conforms to MIL-STD-202.

### ■Materials

| Component           | Material   | Finish          |
|---------------------|------------|-----------------|
| Attenuation element | Metal film | Tin-lead plated |

### ■Ordering information

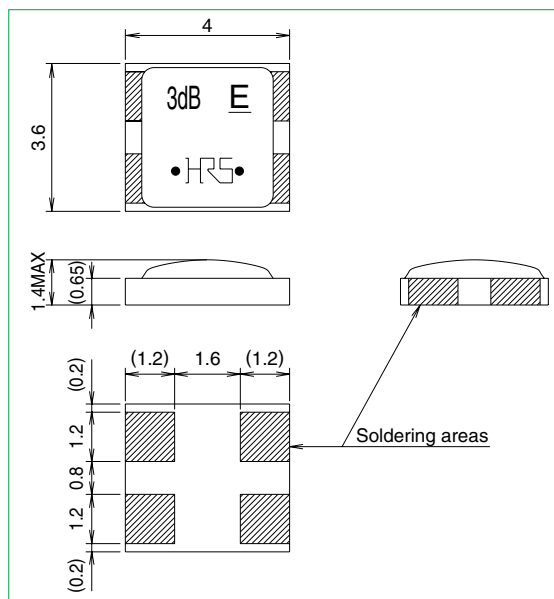
**AT-22 01 (40)**

① ② ③ ④

|                                                                  |
|------------------------------------------------------------------|
| ① AX:Fixed attenuator                                            |
| ② Series name :2200 Series                                       |
| ③ Attenuation<br>00-(0) : 0 dB (Through)<br>01 : 1dB<br>06 : 6dB |
| ④ (40): RoHS Compliant                                           |

### ■Dimensions

AT-2203 shown



## AT-2200 Series SMT Surface Mounting Fixed Attenuators

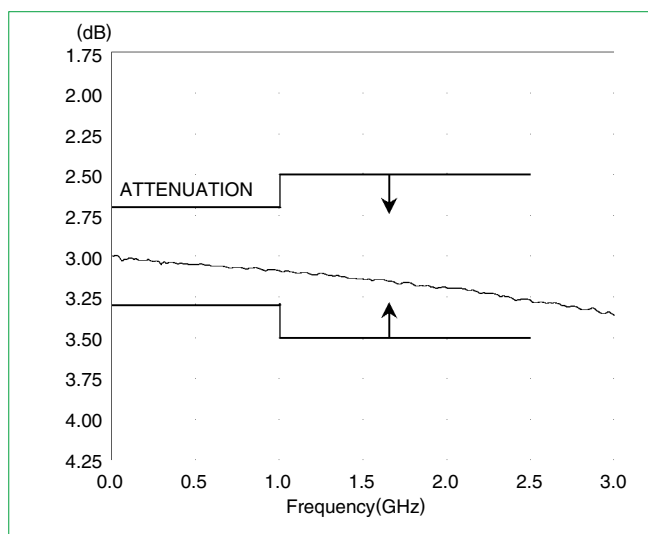
### Specifications

| Part number     | Attenuation (dB)                  |                                   |                | V.S.W.R (Max)     |      | Characteristic Impedance (Ω) | Power (W) | Mounting surface temperature (℃ Max.) at time of maximum input power | Weight (g) |
|-----------------|-----------------------------------|-----------------------------------|----------------|-------------------|------|------------------------------|-----------|----------------------------------------------------------------------|------------|
|                 | DC~1,000MHz                       | 1,000~2,000MHz                    | 2,000~2,500MHz | DC~2,500MHz       |      |                              |           |                                                                      |            |
| AT-2200-(0)(40) | 0 <sup>+0.3</sup> <sub>-0.5</sub> | 0 <sup>+0.5</sup> <sub>-0.5</sub> |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2201(40)     | 1±0.3                             | 1±0.5                             |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2202(40)     | 2±0.3                             | 2±0.5                             |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2203(40)     | 3±0.3                             | 3±0.5                             |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2204(40)     | 4±0.3                             | 4±0.5                             |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2205(40)     | 5±0.3                             | 5±0.5                             |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2206(40)     | 6±0.3                             | 6±0.5                             |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2207(40)     | 7±0.3                             | 7±0.5                             |                | 1.2               |      | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2208(40)     | 8±0.3                             | 8±0.5                             |                | 1.2               | 1.25 | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2209(40)     | 9±0.3                             | 9±0.5                             |                | 1.2               | 1.25 | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2210(40)     | 10±0.3                            | 10±0.5                            | 10±0.7         | 1.2               | 1.25 | 50                           | 1         | +85                                                                  | 0.1        |
| AT-2220(40)     | 20±1.5(DC to 600MHz)              |                                   |                | 1.2(DC to 600MHz) |      | 50                           | 1         | +85                                                                  | 0.1        |

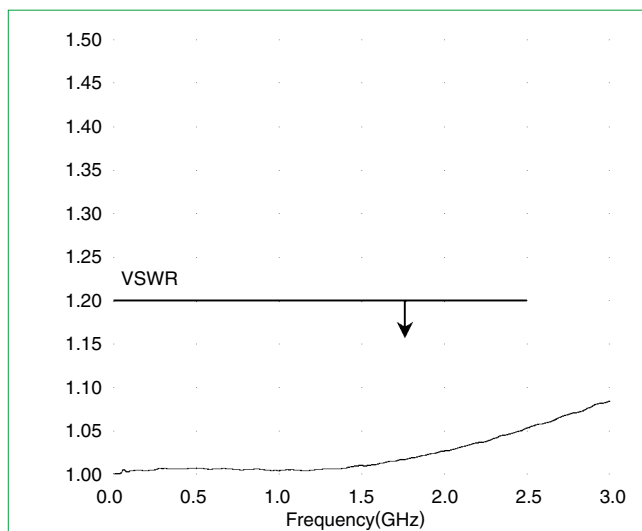
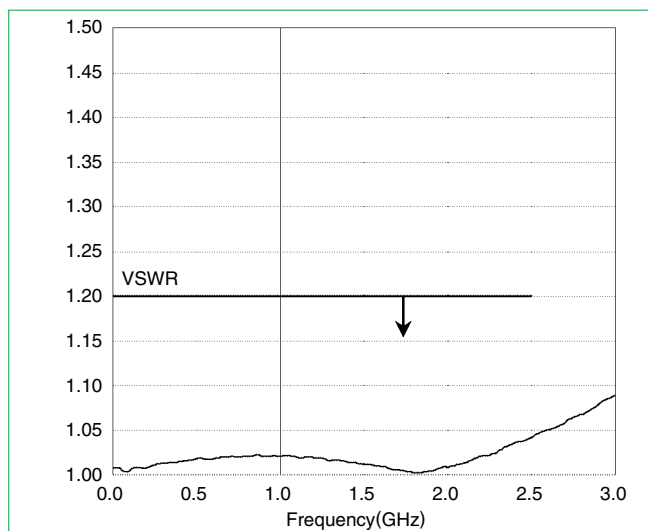
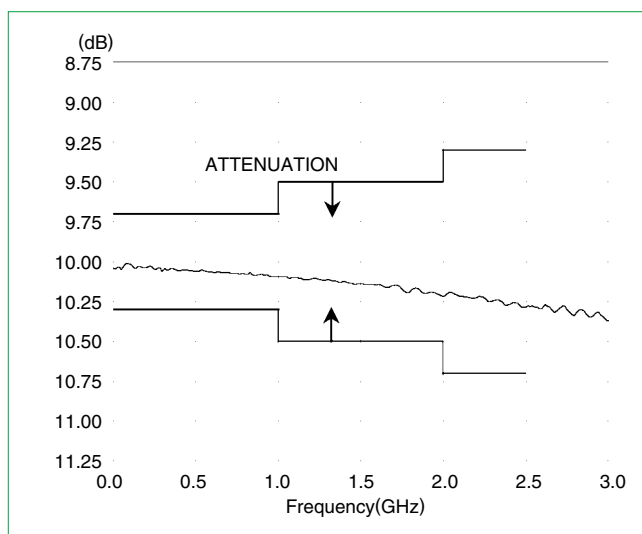
Note: When ordering packaged on tape and reel, add (06) after the end of the part number. One reel = 1,000 pieces

### Typical data

AT-2203(40)



AT-2210(40)

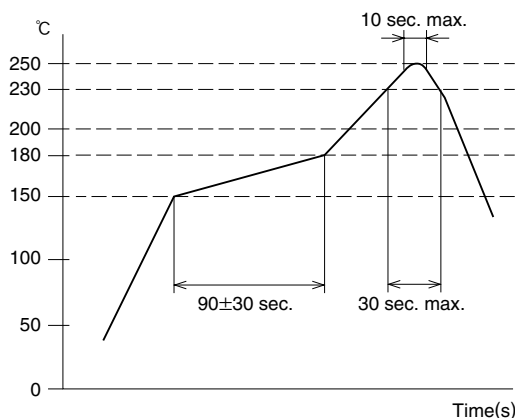


## ■ Mounting and Soldering Recommendations

The attenuators can be placed using reflow or manual soldering

### ◆ Recommended Solder temperature profile

#### ● Reflow Soldering (Temperature Profile Recommendations)

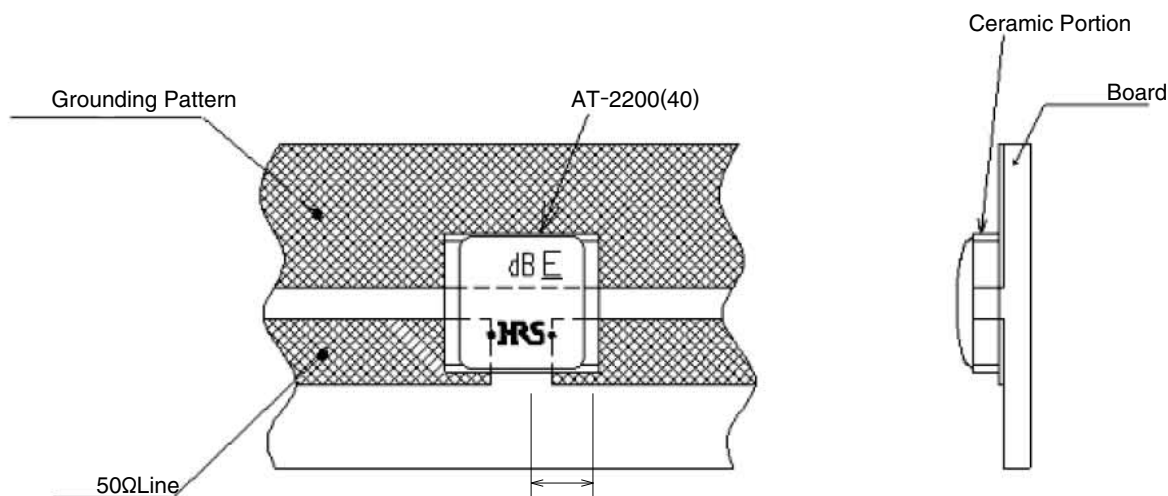


#### Manual Soldering

Tip temperature: 350°C max. for 3 sec. max.

Note 1: Do not touch the ceramic portion with the soldering iron tip.

### ◆ Recommended Mounting Example



※The dotted line portion indicates the position of the pattern.

Note: This attenuator is intended for a one-time use. Do not re-solder or re-use.