

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 Characteristic impedance Maximum input power | DC to 2.5GHz (Note) 50Ω 1W | Operating temperature Operating humidity | -10°C to +65°C 95% max. |
|---------|--|----------------------------------|---|----------------------------|

Note: DC to 600MHz for AT-2220.

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

The test method conforms to MIL-STD-202.

■ Materials

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

■ Ordering information

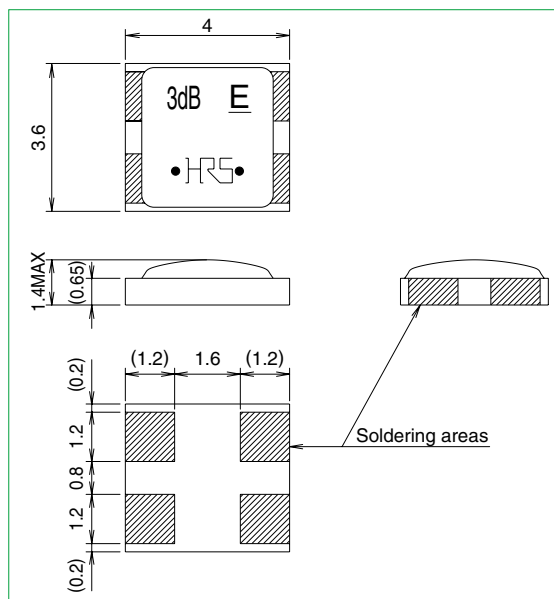
AT-22 01 (40)

① ② ③ ④

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

■ Dimensions

AT-2203 shown



AT-2200 Series SMT Stripline Mounting Fixed Attenuators

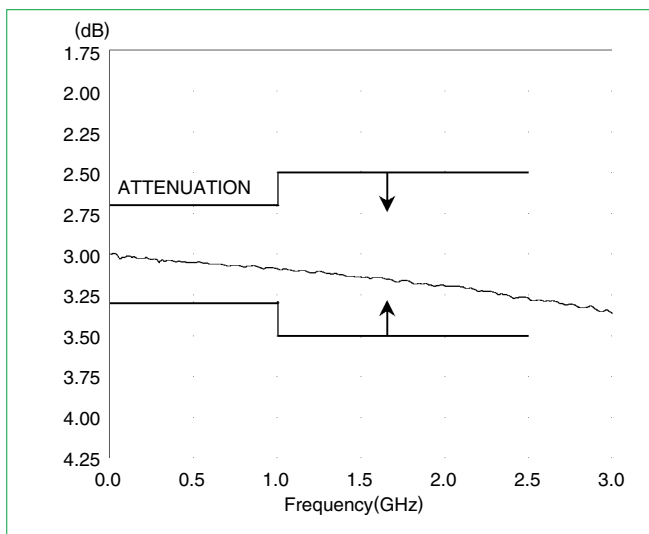
Specifications

| Part number | Attenuation (dB) | | | V.S.W.R (Max) | | Characteristic Impedance (Ω) | Power (W) | Mounting surface temperature ($^{\circ}\text{C}$ 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) | $0^{+0.3}$ | $0^{+0.5}$ | | 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 |

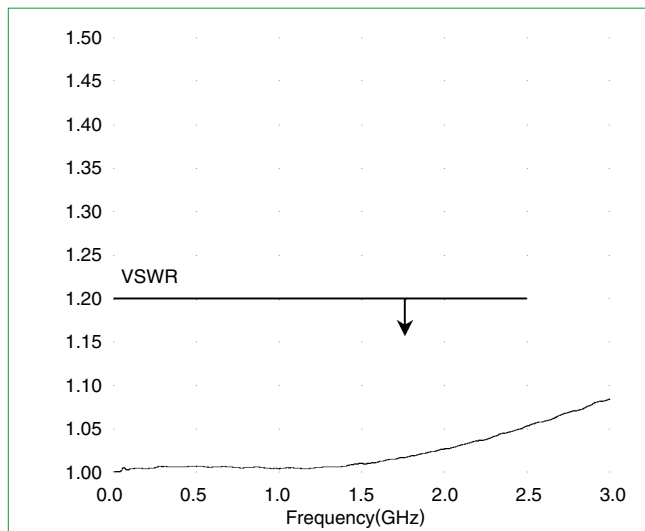
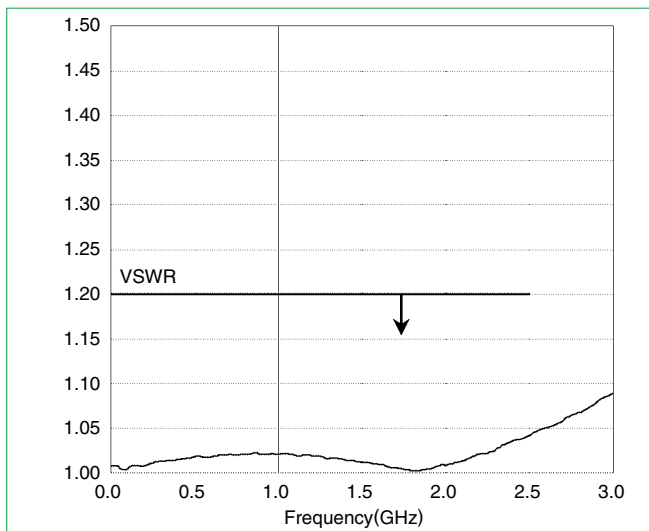
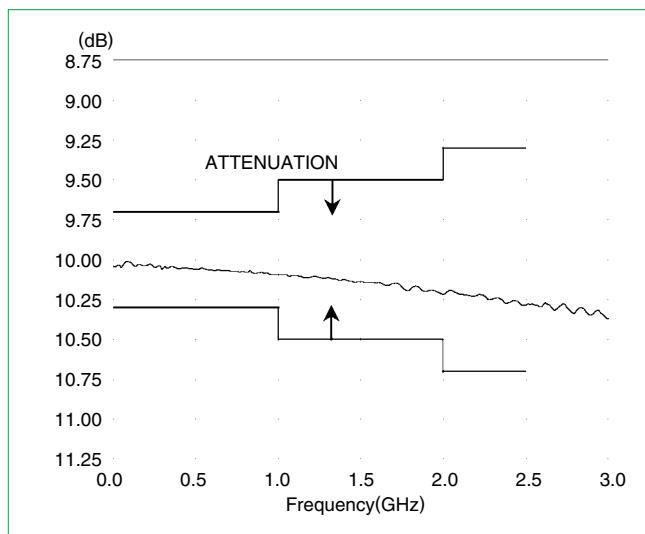
Note: When ordering packaged on tape and reel, add (06) after the end of the part number. One reel = 1,000 pieces

Typical data

AT-2203(40)



AT-2210(40)

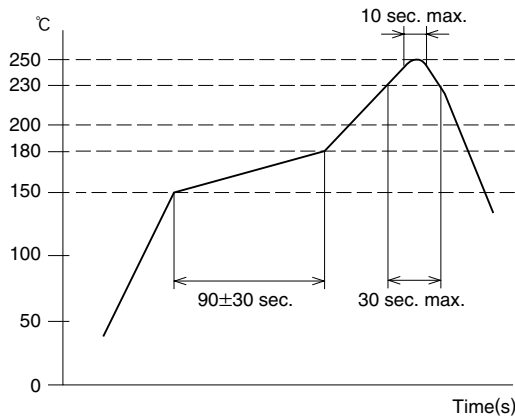


■ Mounting and Soldering Recommendations

The attenuators can be placed using reflow or manual soldering

◆ Recommended Solder temperature profile

● Reflow Soldering (Temperature Profile Recommendations)

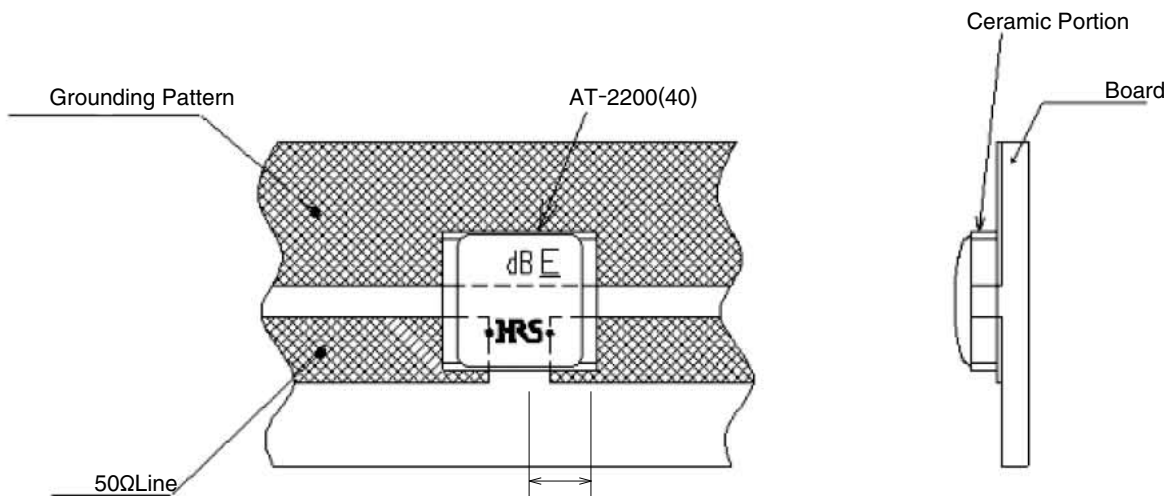


Manual Soldering

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.

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[AT-2207\(46\)](#) [AT-2208\(40\)](#) [AT-2208\(46\)](#) [AT-2209\(40\)](#) [AT-2210\(40\)](#) [AT-2210\(46\)](#) [AT-2220\(46\)](#) [AT-2209\(46\)](#) [AT-2200-\(0\)\(46\)](#) [AT-2203\(46\)](#) [AT-2206\(40\)](#) [AT-2202\(46\)](#) [AT-2204\(46\)](#) [AT-2204\(40\)](#) [AT-2220\(40\)](#) [AT-2207\(40\)](#)