

## Features

- Frequency: DC~4GHz
- RMS of Attenuation Accuracy: 0.25dB
- Low Insertion Loss: 0.7dB
- Positive Voltage Control
- Die Size: 1.0mm×1.25mm×0.1mm

## Typical Applications

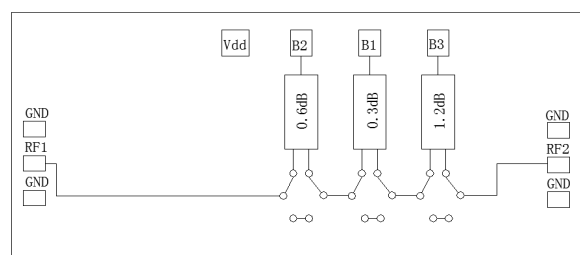
- EW
- Cellular Infrastructure
- SATCOM
- Beamforming Modules
- Test Equipment and Sensors

## General Description

XT3401 is a broadband 3-bit GaAs digital attenuator MMIC chip. Covering DC to 4 GHz, the insertion loss is less than 0.7 dB typically. The attenuator bit values are 0.3dB (LSB), 0.6dB, 1.2dB for a total attenuation of 2.1dB. Three TTL +5/-5V inputs are used to select each attenuation state.

The chip offers full passivation for increased reliability and moisture protection.

## Functional Diagram



## Electrical Performance ( $T_A = +25^{\circ}\text{C}$ , $V_D = +5\text{V}$ , Control Voltage = -5/+5V, $Z_0 = +50\Omega$ )

| Parameter                   | Min. | Typ. | Max. | Units |
|-----------------------------|------|------|------|-------|
| Frequency                   | DC~4 |      |      | GHz   |
| Input VSWR                  | —    | 1.15 | —    | :1    |
| Output VSWR                 | —    | 1.15 | —    | :1    |
| Insertion Loss              | —    | -0.7 | —    | dB    |
| $A_{TT}$ -Phase Error       | -3.8 | —    | 0.2  | °     |
| Attenuation Accuracy        | -0.2 | —    | 0.4  | dB    |
| RMS of Attenuation Accuracy | —    | 0.25 | —    | dB    |

## Truth Table ( 0 : -5V, 1 : +5V )

| Attenuation State | Bit1 | Bit2 | Bit3 |
|-------------------|------|------|------|
| REF               | 1    | 1    | 1    |
| 0.3dB             | 0    | 1    | 1    |
| 0.6dB             | 1    | 0    | 1    |
| 1.2dB             | 1    | 1    | 0    |
| 2.1dB             | 0    | 0    | 0    |

## Absolute Maximum Ratings

|                       |        |                       |                |
|-----------------------|--------|-----------------------|----------------|
| Maximum Input Power   | +23dBm | Operating Temperature | -55°C ~ +85°C  |
| Maximum Input Voltage | +8V    | Storage Temperature   | -65°C ~ +150°C |

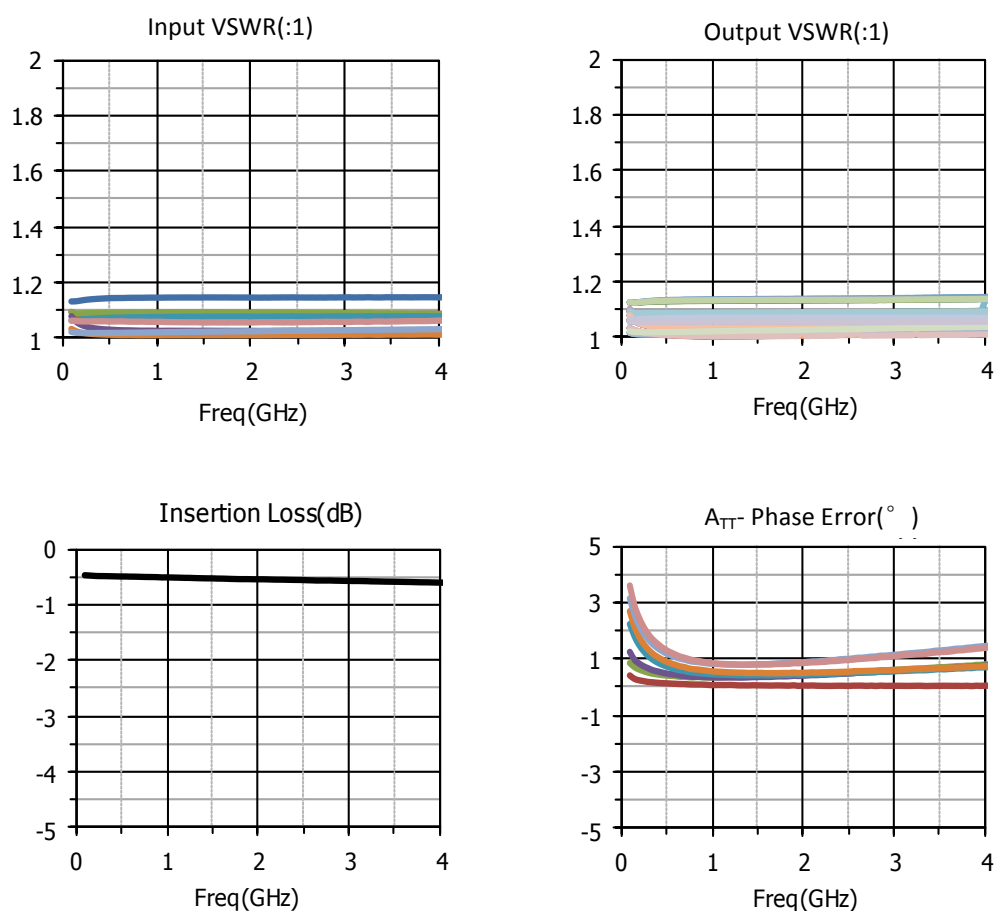
## Control Voltage

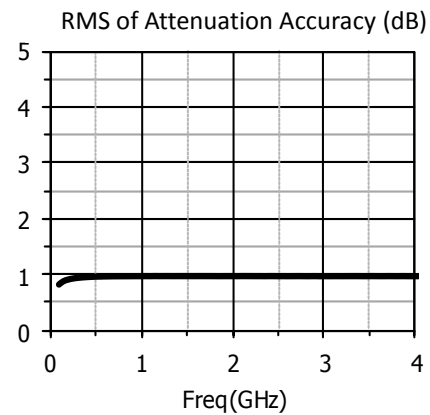
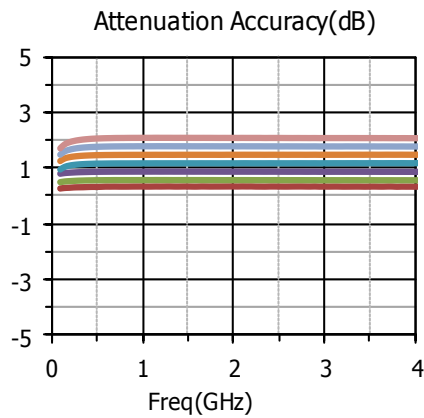
| State | Bias          |
|-------|---------------|
| Low   | -5.5V ~ -4.5V |
| High  | 4.5V ~ 5.5V   |

## Power Supply

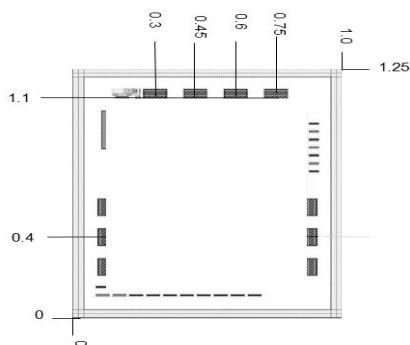
| V <sub>D</sub> | I <sub>D</sub> |
|----------------|----------------|
| 5V             | 2mA            |

## Typical Performance Curve

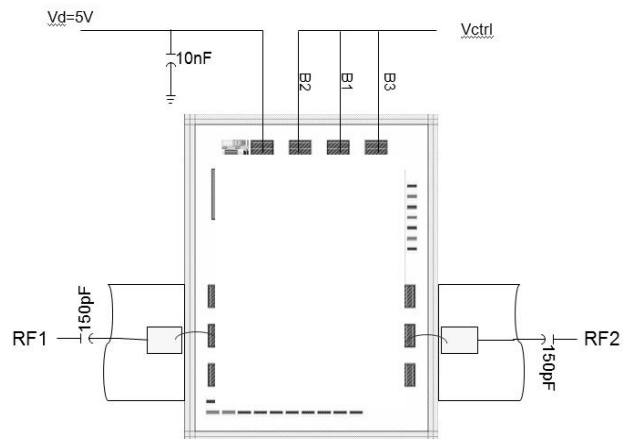




**Die Outline**  
(all dimensions in mm)



**Assembly Diagram**



**Attention:**

GaAs MMIC devices are susceptible to damage from electrostatic discharge. Proper precautions should be observed during handling, assembly and test.