

Differential Amplifier

1 Introduction

The TBCS101-DA is a differential amplifier with a flat response from DC – 250 MHz, a 3 dB bandwidth of 310 MHz, an attenuation of 1:50 and an output impedance of 50Ω.

Application:

Differential amplifier for CS101 test setups.

General-purpose differential amplifier



2 Specification

General specification

Frequency range: DC – 310 MHz, 3 dB bandwidth, typical

Gain: 1:50

Rise time: ≤ 2.3 ns (200mV step)

RF-connectors: BNC-female

Input specification

Input impedance: 1 MΩ // 10pF

Maximum input level: max. ± 50 V for linear operation (100V differential mode)

Maximum ratings: max. ± 100 V common mode / 200 V differential mode for damage

Output specification

Output impedance: 50 Ω

Output return loss: > 20 dB, typ.

Common Mode Rejection: DC – 1 MHz > 70 dB; 1 MHz – 100 MHz ≥ 80 dB; 100 MHz – 310 MHz ≥ 50 dB

Differential Amplifier

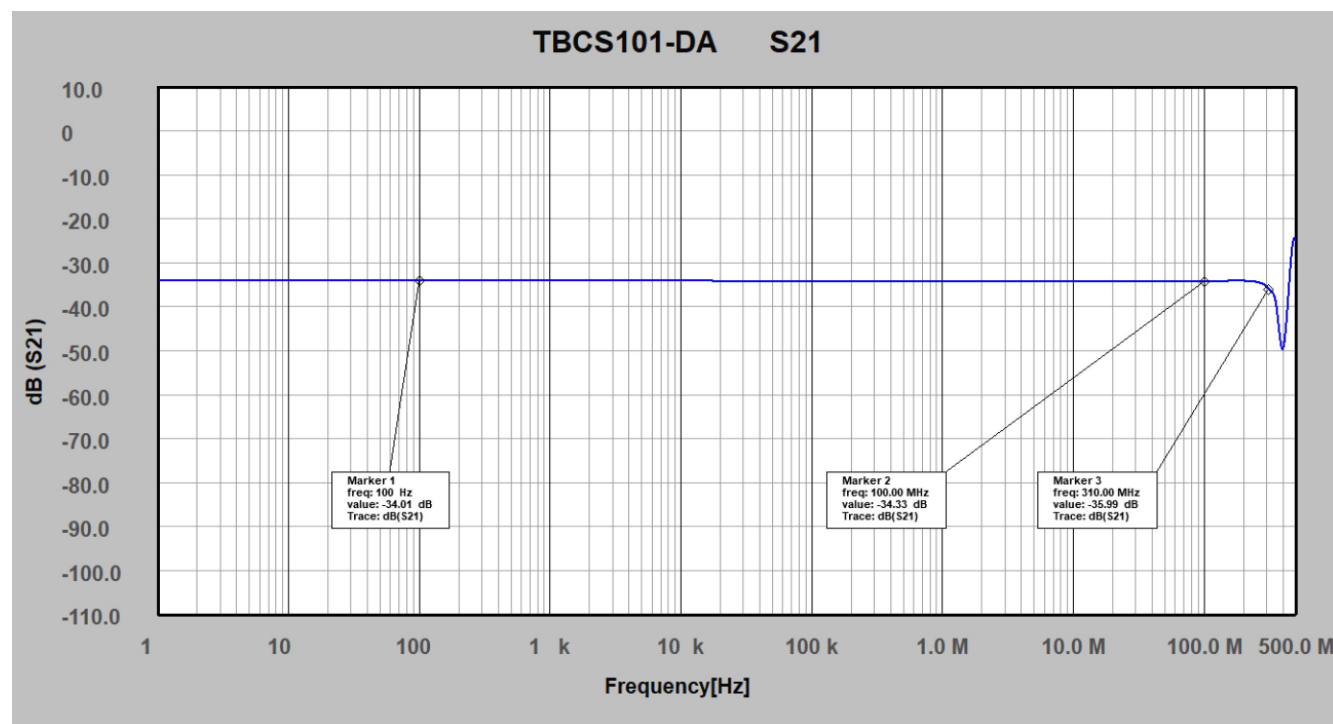
Max. output voltage: 2 V_{pp}
 DC offset: < 10mV at output
 Noise: < 1.4 mV_{RMS}

Supply specification

Power-connector: USB-C
 Indicator LEDs: Power ON,
 Operating voltage: 5 V DC
 Current consumption: 90 mA
 Operating temperature range: -20°C to +50°C
 Dimensions: W 82 mm x H 33 mm x L 80 mm;
 Weight: 100 g

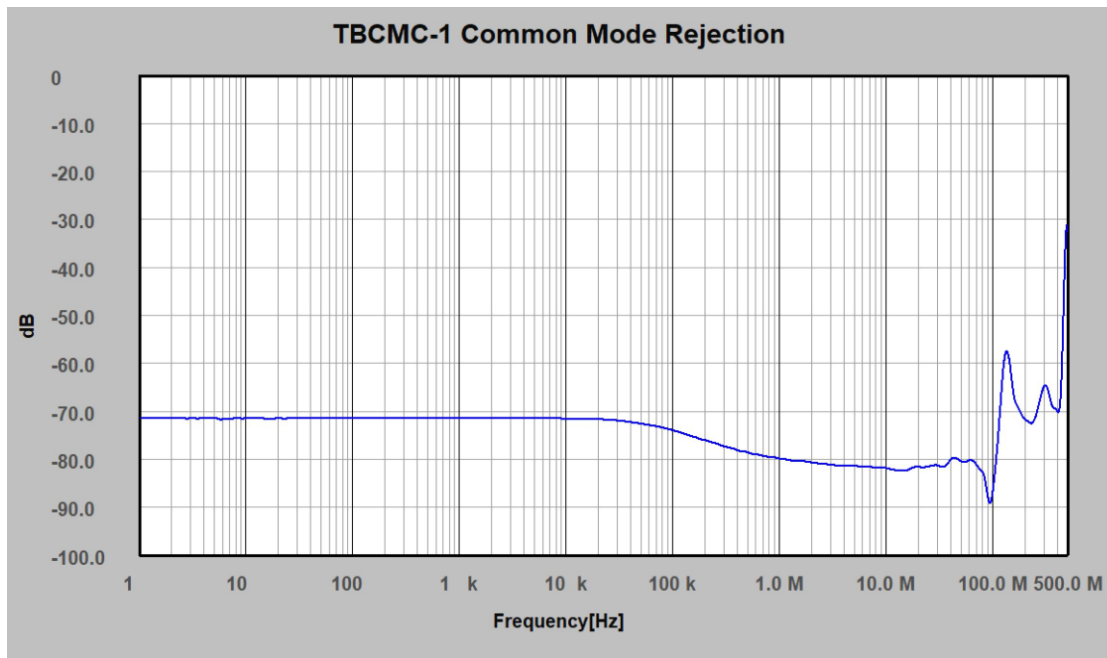
3 Measurement Plots

3.1 Gain



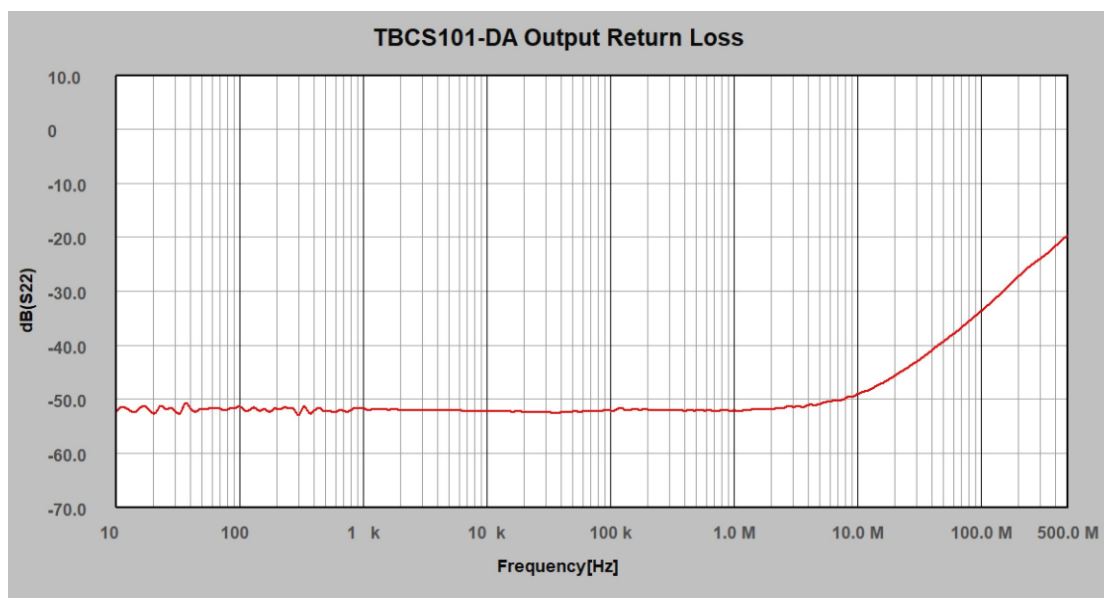
TBCS101-DA, Gain, DC – 500 MHz, typ.

3.2 Common Mode Rejection



TBCS101-DA, Common Mode Rejection, DC – 500 MHz, typ.

3.3 Output return loss



TBCS101-TGA, S22, 10 Hz – 500 MHz, typ.

Differential Amplifier

4 Ordering Information

Part Number	Description
TBCS101-DA	Differential amplifier, USB-C cable

5 History

Version	Date	Author	Changes
V1.0	2. 3.2025	Mayerhofer	Creation of the document