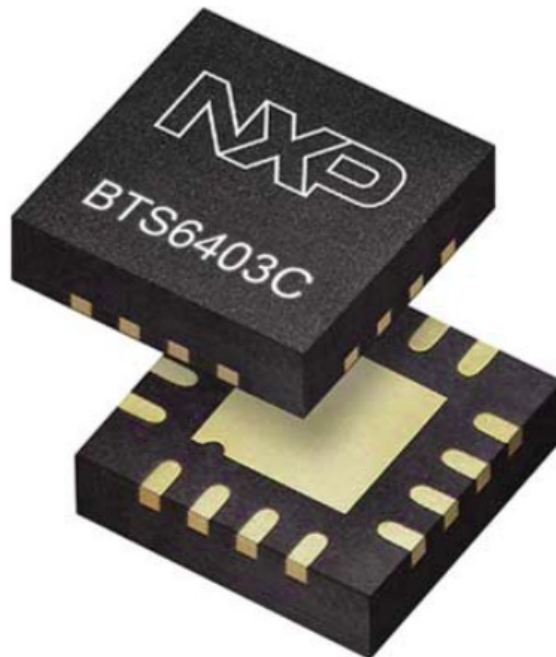


NXP BTS6403C Evaluation Board User Guide

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Introduction

This document describes the use, design, and test results of the BTS6403C.

BTS6403C product description

The BTS6403C is a wideband, high linearity, pre-driver amplifier for 5G massive MIMO infrastructure applications, with fast on-off switching to support TDD systems. The BTS6403C is designed to operate from 4.4 GHz to 5 GHz. The BTS6403C is housed in a 3 mm x 3 mm x 0.85 mm 16-terminal HVQFN package. The amplifier is ESD protected on all terminals.

BTS6403C key features and benefits

- High saturated output power $P_{o(sat)} = 28$ dBm
- High power-gain $G_p = 35.5$ dB
- High linearity performance $ACLR = -42$ dBc
- Unconditionally stable
- Fast switching to support TDD systems
- 5 V single supply, quiescent current 100 mA
- Small 16-terminal leadless package 3 mm x 3 mm x 0.85 mm
- ESD protection on all terminals
- Moisture sensitivity level 1

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Figure 1. EVB

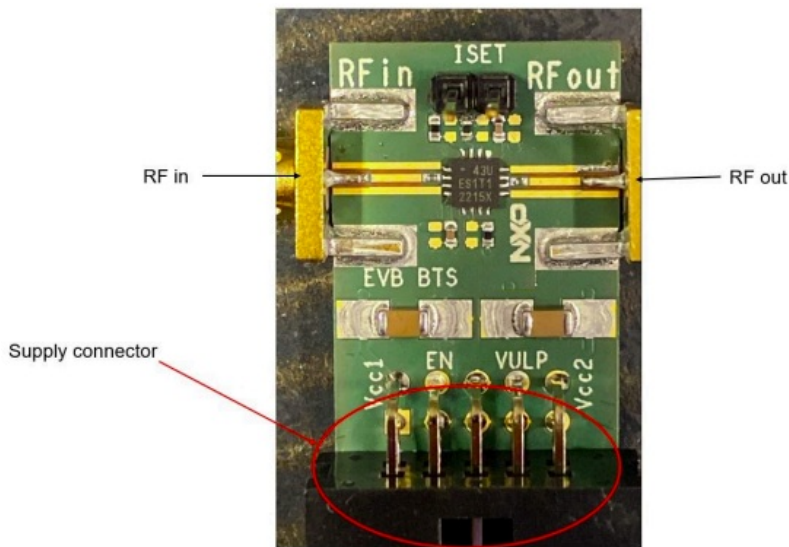


Figure 2. functional diagram

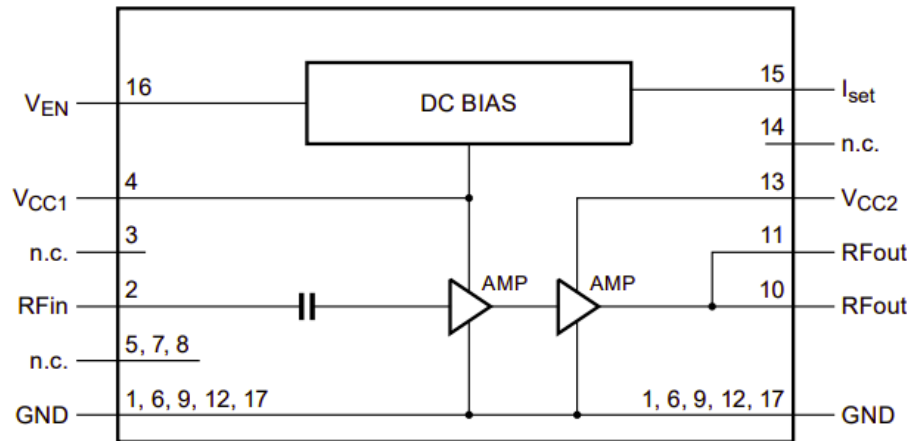


Figure 3. pin diagram

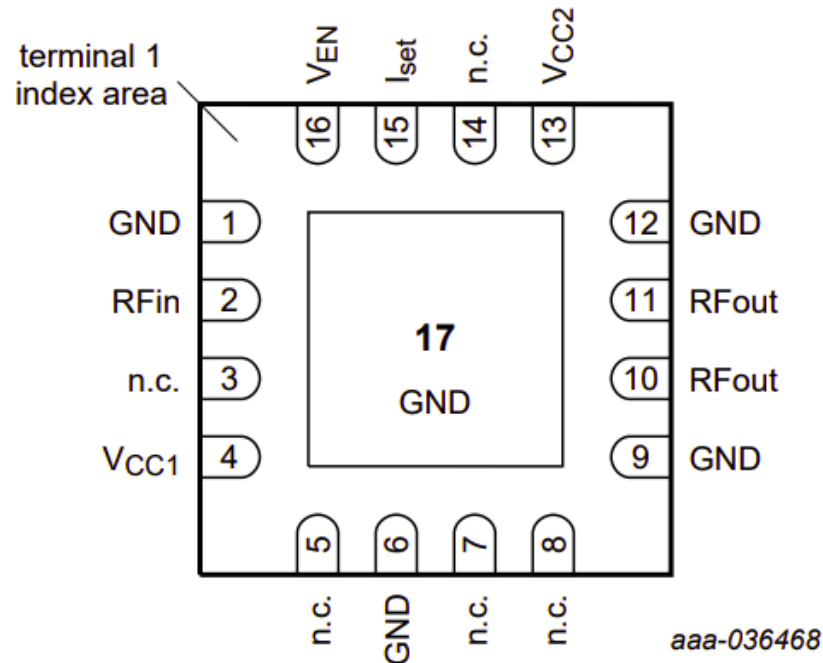
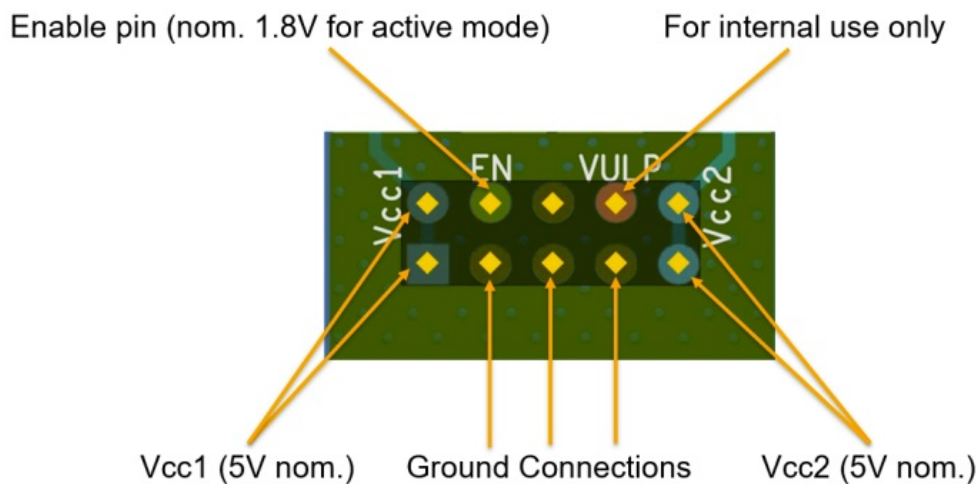
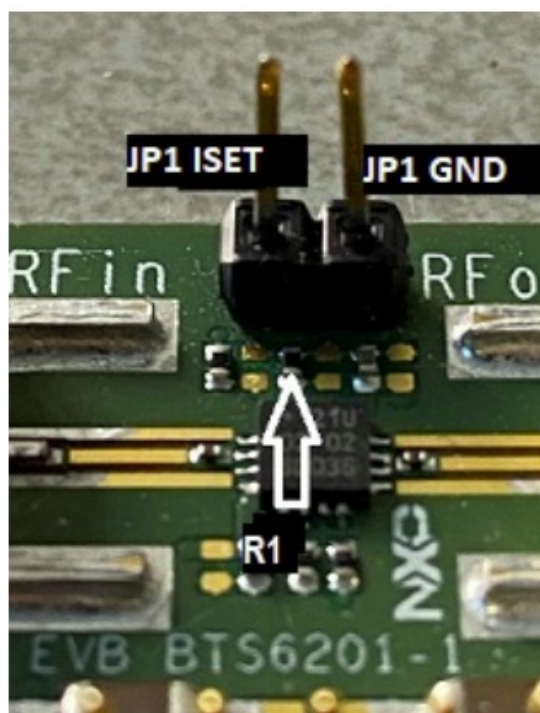


Figure 4. Location of the components



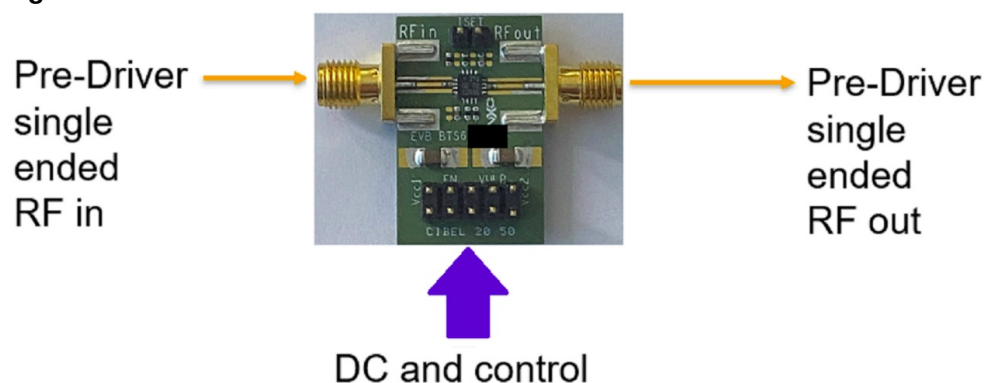
shows the DC and enable connection, at the main header (J1). The connector can be straight or 90 degrees. The text is also on the EVB. **Figure 8**



shows connections JP1 GND, and JP1 ISET. JP1 (ISET) on the EVB can be applied to adjust the quiescent current in the final stage of the amplifier. R1 should be removed in case JP1 is applied to adjust the bias current. **Note:** NXP recommends that, using the setup as is shown in **Figure 8** is R1 (10 KΩ). **Note:** Connector may be straight or 90 degrees angled.

Operations

Figure 9



shows the connections in a single ended to single ended operation. If differential to single ended operation is also

needed, NXP refers to UM11918 of the BTS6305U.

Measurements results

In the below graphics, the Spar measurements are shown. Measured at nominal conditions $V_{CC} = 5\text{ V}$, $T_{case} = 25\text{ }^{\circ}\text{C}$, $R_{set} = 10\text{ K}\Omega$.

Figure 10. Gain at nominal conditions

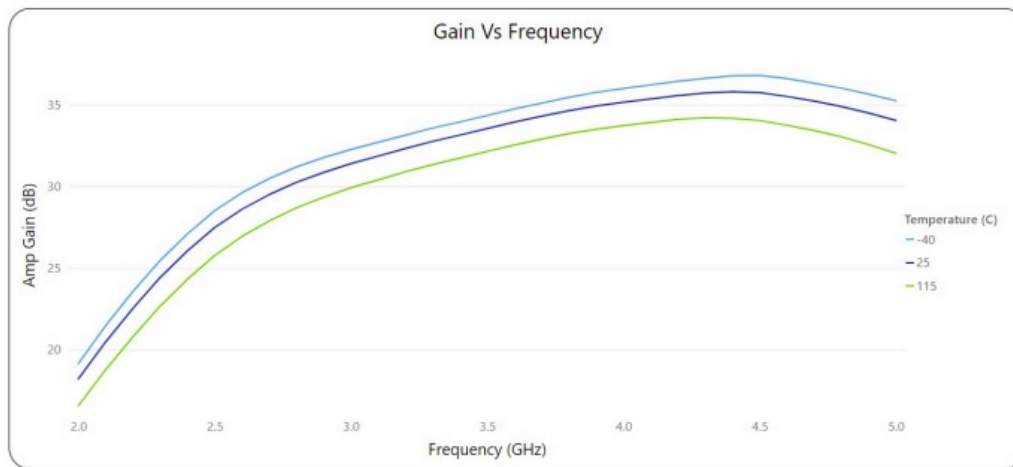


Figure 11. RLi at nominal conditions

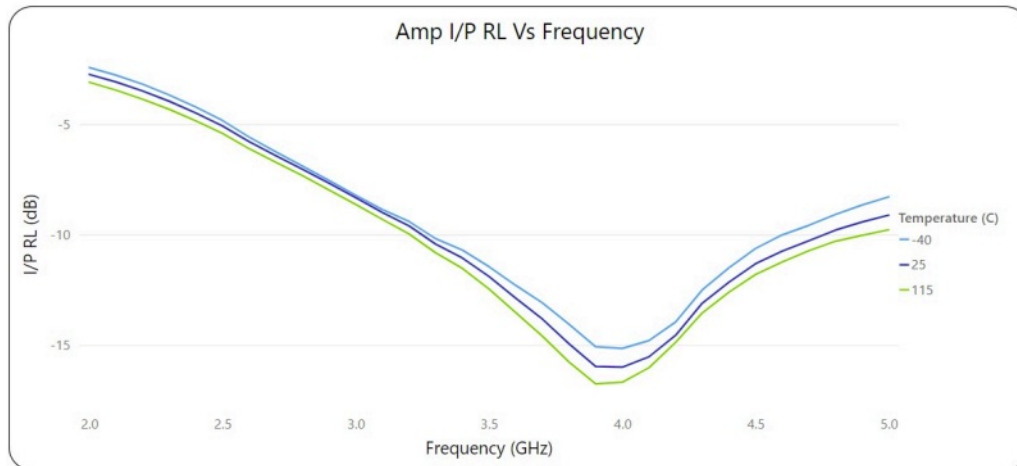


Figure 12. RLo at nominal conditions

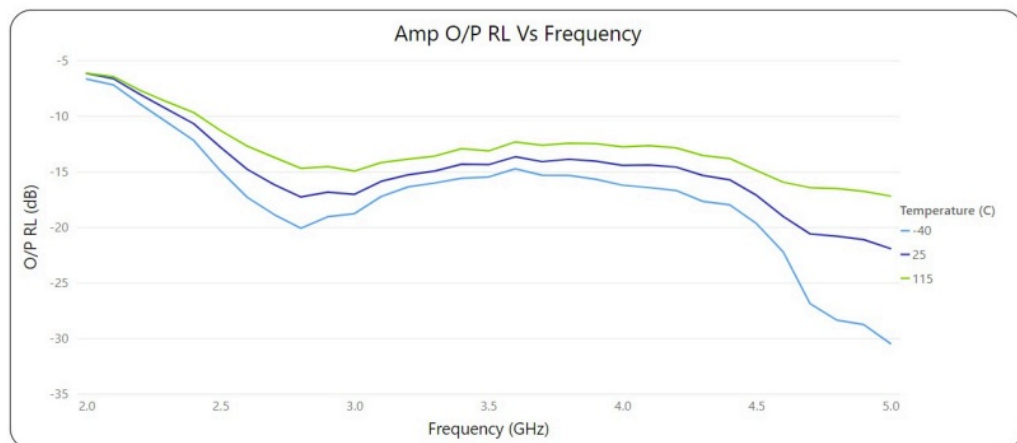


Figure 13. ISLr (Gain mode) at nominal conditions

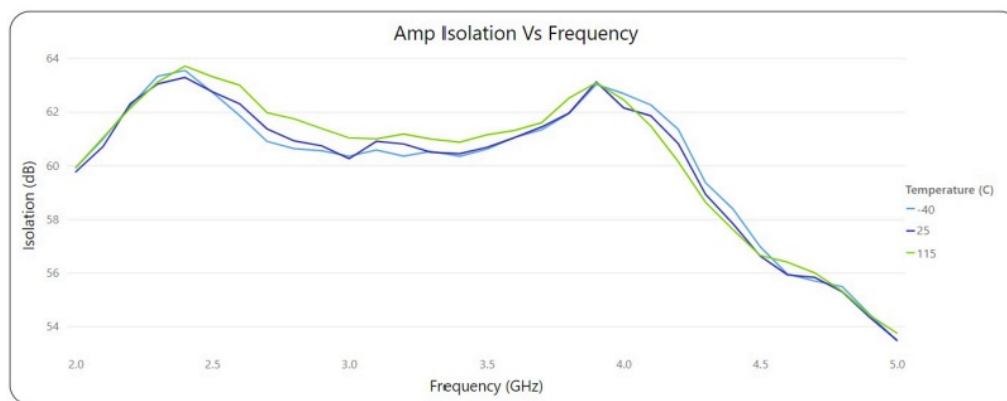


Figure 14. ISLr (off mode) at nominal conditions

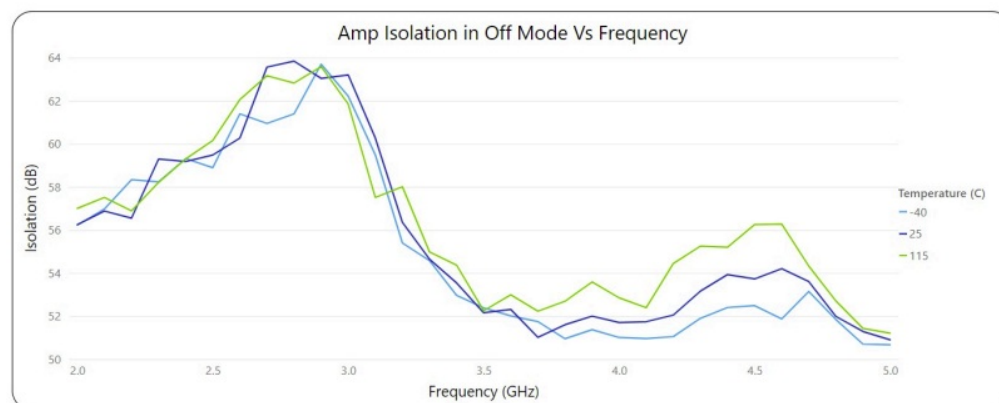
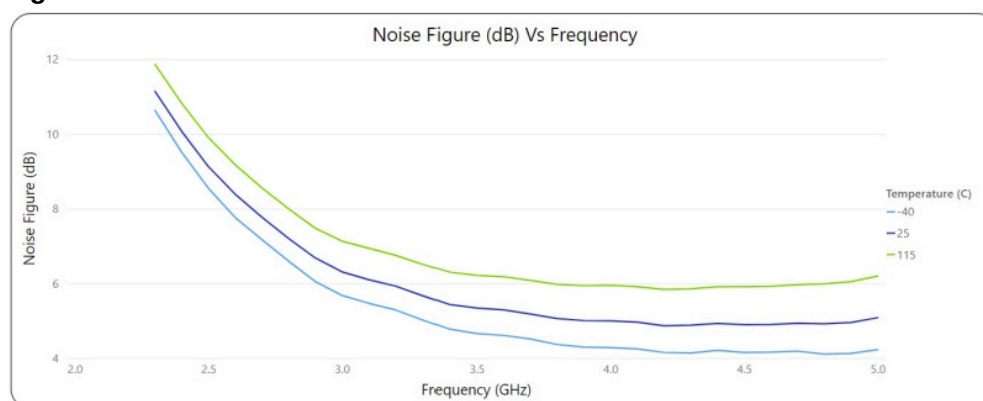


Figure 15. NF at nominal conditions



Abbreviations

Acronym	Description
ACLR	adjacent channel leakage ratio
ESD	electrostatic discharge
EVB	evaluation board
MIMO	massive multiple-input multiple-output
RF	radio frequency
TDD	time-division duplexing

EMC information



CAUTION

This product has not undergone formal EMC assessment. It is the responsibility of the user to ensure that any finished assembly complies with applicable regulations on EMC interference. EMC testing, and other testing requirements for CE is the responsibility of the user.

Revision history

Document ID	Release date	Description
UM11927 Rev. 1.1	15 April 2024	<ul style="list-style-type: none">Updated Legal information and brought to current standard
UM11927 Rev. 1	23 May 2023	<ul style="list-style-type: none">Initial release of user manual

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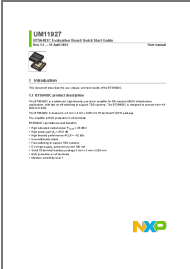
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References

- [User Manual](#)

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