

Inverter ultra low voltage





Overview

What is a simple inverter?

As we can see in Figure 1, a simple inverter is equivalent to a differential amplifier with the non-inverting input permanently connected to the constant voltage V_{inv} ($1 + 1/A_{inv}$). The voltage V_{inv} represents the inverter switching voltage, i.e., the input value which produces $V_{out} = V_{in} = V_{inv}$; A_{inv} is the magnitude of the amplifier gain.

What is ultra-low voltage (ULV) design?

Values such as these are usually close to the threshold voltage of regular MOSFETs: The use of particular sizing and topologies becomes mandatory in ultra-low voltage (ULV) design. A very popular approach to ULV design is the use of inverter-like amplifiers .

Are ultra-low supply voltages prone to PVT variations?

With ultra-low supply voltages, circuits are more prone to suffer from PVT variations. Therefore, we verified the robustness of our proposed amplifier by means of temperature sweep and corner analysis.

Is a pseudo-differential inverter-based amplifier suitable for ULV applications?

In this work, we present a pseudo-differential, single-stage, inverter-based amplifier for ULV applications with a novel common-mode stabilization loop (CMSL). The proposed circuit has been designed with the UMC 0.18 μm CMOS process and its effectiveness has been verified by means of electrical simulations.



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This work presents a single-stage, inverter-based, pseudo-differential amplifier that can work with ultra-low supply voltages.

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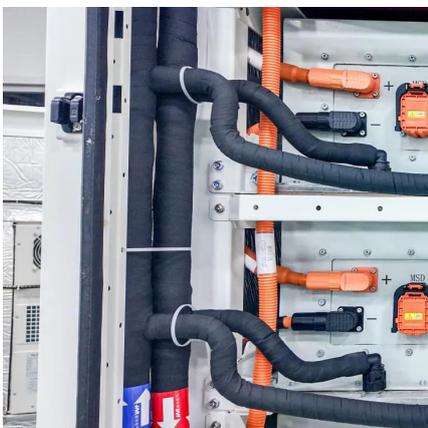
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Ultra-Low-Voltage Inverter-Based Amplifier with Novel Common-Mode Stabilization Loop
Giuseppe Manfredini 1,* , Alessandro Catania 1, Lorenzo Benvenuti 1, ...

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