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Editorial Preview

elektronik industrie in April 2020:

- Power electronics
- Analog/mixed-signal ICs
- Industry 4.0
- Sensors

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Power electronics

Active electronics cooling

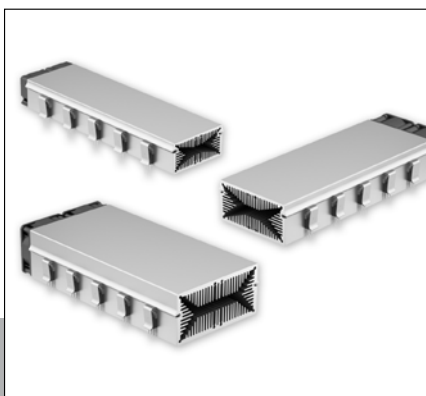
The forced cooling of electronic components and the elimination of large quantities of heat offers a wide range of very efficient solution options. However, cooling concepts using air units can only operate to maximum efficiency if the geometry and surface of the heat exchange areas are matched with the fan motor used and its performance in terms of the air volume and the dynamic pressure produced.

Practical guide to GaN

Gallium nitride (GaN) opens up the prospect of power supplies and motor controls with significantly improved efficiency as well as powerful RF amplifiers, and it is used in lidar technology. However, many developers are not yet familiar with the practical handling of GaN components since the technology is still relatively new. In this article, developers can find out everything about circuit technology, control and thermal behavior, including questions relating to the economic design of systems with GaN components.

The workhorse among the 1Ph battery inverters

A special inverter with 6 kW continuous operation or 8.4 kW short-term operation is used in mobile on-board voltage supplies, capable of handling



the on-board voltages 24/36/72/110 VDC. Due to the anticipated extreme input current of over 350 A, the input strings were divided into 2×175 A and operate in 90 degree interleaving so as to reduce the effective current load.

Analog/ mixed-signal ICs

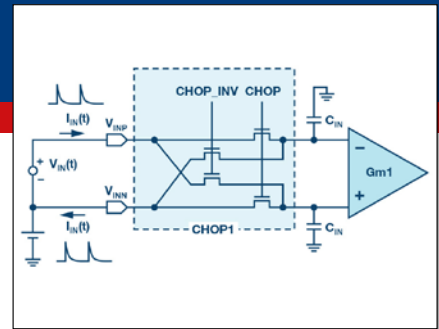
Analysis of input current noise

This article describes a theoretical analysis and measurement of the input current noise of a chopper operational amplifier with an input capacity of 10 pF, a power density (PSD) of the voltage noise of 5.6 nV/ $\sqrt{\text{Hz}}$ and a bandwidth of 4 MHz with a gain factor of 1. In addition, this theoretical analysis identifies other sources of input current noise resulting from the voltage noise of the amplifier when sampling the dynamic conductivity of the input chopper.

Industry 4.0

Control and design optimization for industrial robots

Robotics in factory automation enables manufacturing efficiency to be increased while at the same time reducing costs. The article provides an introduction to the subject of industrial robots before going on to examine the control units for these robots. The developer is given a basic understanding of how the architectures of robot controllers are designed. In addition, the article presents a number of important applications and system technologies.



10BASE-T1S Ethernet

Ethernet simplifies the design, configuration and control of many applications. 10BASE-T1S enables expansion to applications such as multi-drop physical layer, collision avoidance, efficient bandwidth usage, deterministic and short latency periods and security mechanisms.

Sensors

Sensors and relays as eyes and ears

Using sensors as the basis for intelligent buildings and building automation enables energy consumption to be reduced and optimized. Furthermore, intelligent building systems can be extended to include additional functions. This article provides an overview of the state of the art.

Rethinking PCB current measurement

Current measurement is one of the most critical tasks in electronic devices and systems, as it always requires current for operation, which is a product of electric current and voltage. Traditional current measurements in PCBs are usually limited to about 100A due to thermal limitations within the PCB. In order to go beyond this, a solution is required that usually results in a larger size and higher cost.

EDITORIAL PREVIEW



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