

# 09/19

## Editorial Preview

elektronik industrie in September 2019:

- Active components
- Power electronics
- Measuring technology
- EDA tools

Hüthig Electronic Media Group

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## Active components Power electronics

### Medical technology control module

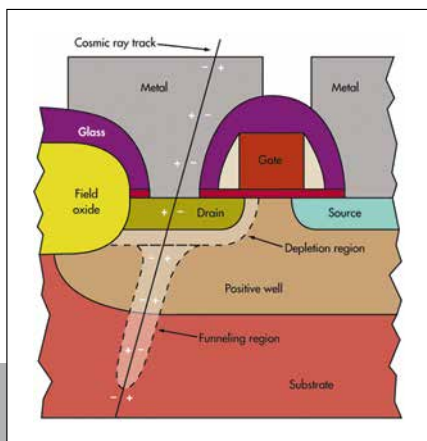
A development team created a powerful controller module to manage the application's actual devices for controlling diagnostic medical imaging and safety-critical processes as well as to handle all necessary interfaces to peripheral devices and a GUI PC. The article outlines the project and the experience gained during the design process.

### Critical aerospace travel systems remain radiation-resistant

While commercial aerospace continues to use a mixture of COTS/Hi-Rel components and the new space market uses radiation-tolerant plastic components, high-cost mission profiles will continue to rely heavily on low dose-rate testing. System performance for long-term missions requires radiation resistance at component level, as well as thorough characterization and acceptance testing.

### More functions with SiP

Embedded systems are currently reaching a new level of complexity and functionality. Even with systems that are generally considered relatively simple, more sophisticated control is now required.



### Wide-bandgap ecosystem

Wide-bandgap materials enable a leap in performance compared to silicon-based semiconductor technologies. Their large bandgap results in a higher breakdown voltage and a lower specific forward resistance. Higher electron saturation speeds enable RF designs and RF operation. Lower leakage currents and better thermal conductivity facilitate operation at high temperatures.

### Four-channel low-side switch

The focus here is on a four-channel low-side intelligent power switch specifically designed to reduce overall power consumption. Particular features are the low RDS(on) per channel, programmable output current limitation and programmable switch-off delay.

### Precise temperature control by means of a Peltier module

As a semiconductor device, the Peltier module is smaller, lighter and more energy-efficient than a conventional heat control system with compressor and heat dissipation. They also result in a lower level of electrical and acoustic disruption. In addition, the system can be operated in any position.

### Parasitic switch-on behavior of SiC-MOSFETs

The article describes a simple approach to characterizing the susceptibility of a power semiconductor switch to parasitic switching via the Miller capacitance. Tests with discrete Cool-SiC-MOSFETs have shown that even with fast, two-stage converters, a shutdown voltage of 0 V is possible.



## Measuring technology

### High-frequency probing

The article presents solutions available for contacting semiconductors and modules made of ceramics or softboard. These include probes and connectors (RF cables and waveguides).

### Can self-programmed test software keep pace?

PathWave is a design and test platform that provides integrated diagnostic tools, links up with design and simulation software, and is integrated into the design and test flow.

## EDA tools

### Simulation of analog tests

Based on examples, the challenges are explained in connection with the testability of analog designs and advances in the simulation methodology of analog tests. A new flow allows analog developers to evaluate test programs and the testability of designs early in the design process.

### Physical verification

The introduction of a DRC interface test sequence allows early validation of chip designs while minimizing invalid errors. It avoids reworking the workflows of multiple DRC applications.

# EDITORIAL PREVIEW



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