



DESIGNING SYSTEM-LEVEL POWER SOLUTIONS

ALLARD VAN DER HORST
SEN DIR, POWER SOLUTIONS GROUP

analog.com



Our Combined Strength in Power

20k
SKUs

2200
Patents

42
Years in power



System development
team

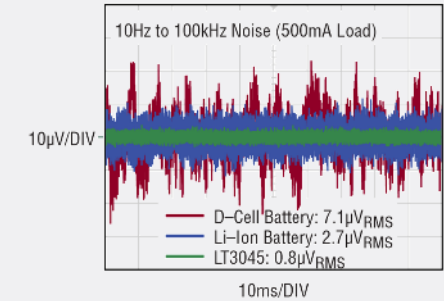
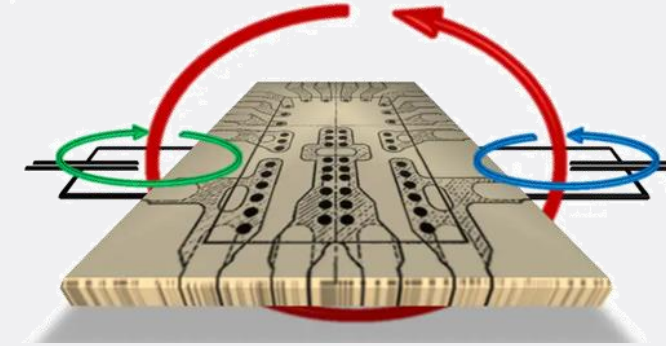


Design & simulation
tools

Advanced Power Technologies

Example technologies:

- SilentSwitcher
- μ Module
- DPSM



System Tree of All Devices

Configuration Settings for All Devices in System Tree

Real-Time Telemetry Data

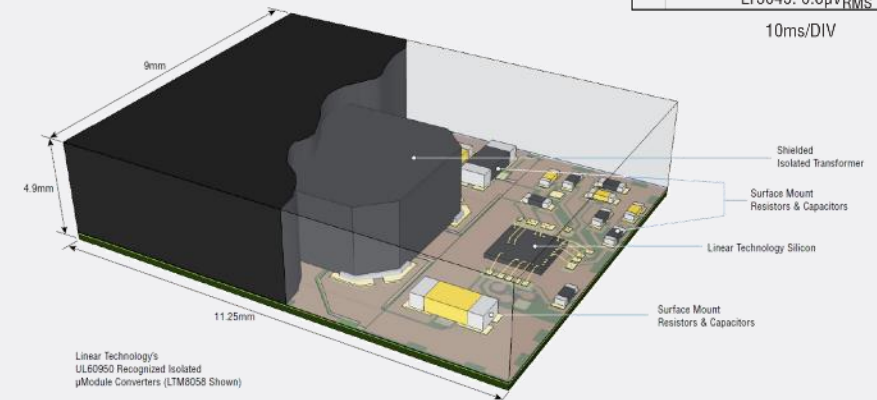
Display of Selected Parameter (Config/Telemetry) Across System

Chip Dashboard (Key Aspects of Selected Chip)

Idealized On/Off Supply Waveforms

Scope-Like Telemetry Window

U0:0



μ Module® Power Products Simplify Implementation, Verification and Manufacturing of Power Circuits by Integrating Power Functions in a Compact Package.

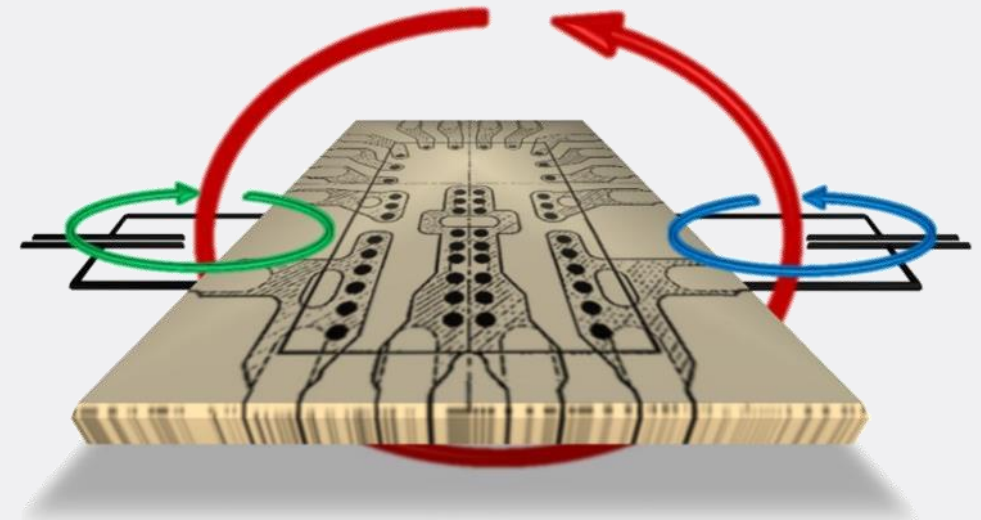


Summary of Silent Switcher Regulator Family

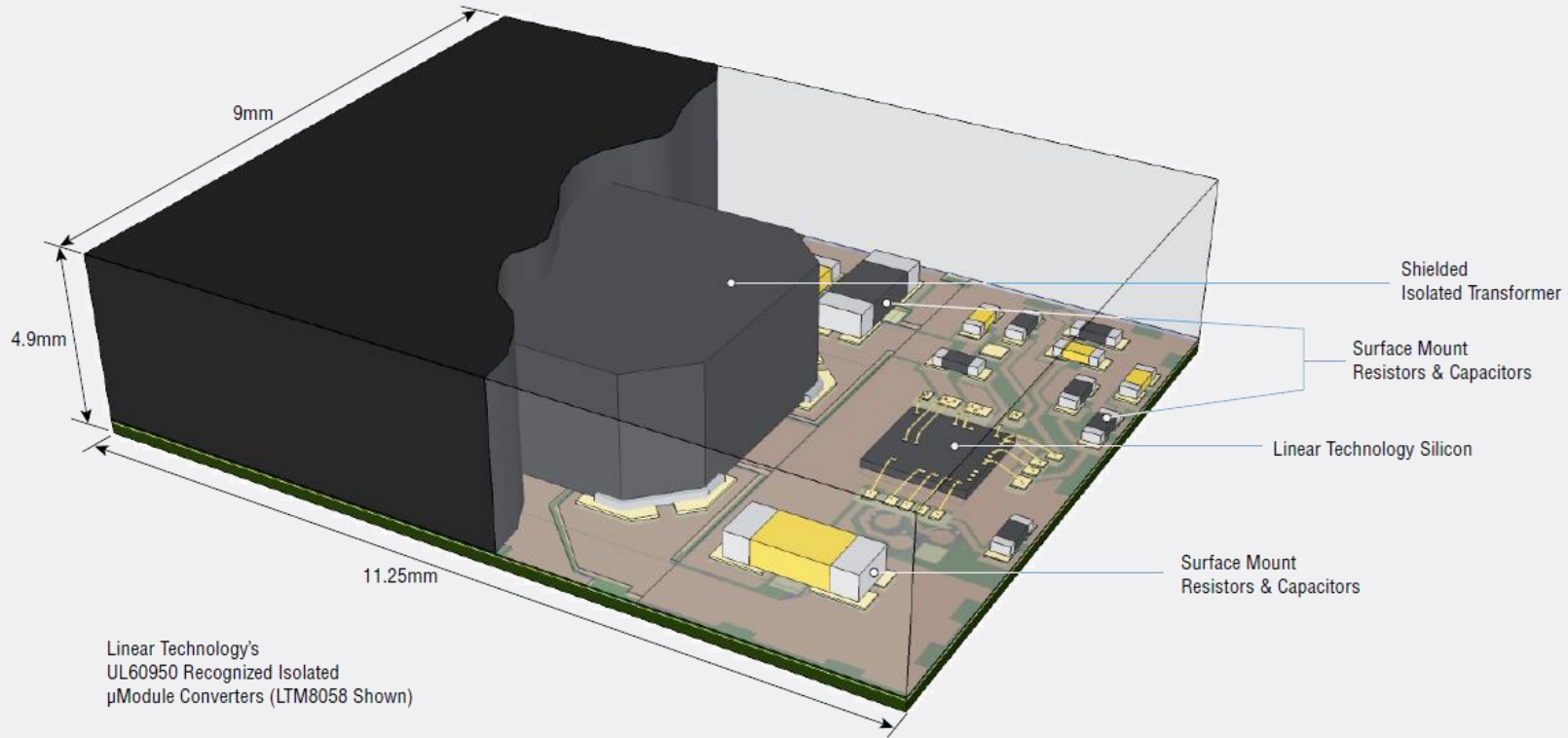
	Input Voltage Range	Current Range
Low Iq, Silent Switcher	5 V _{IN} to 65 V _{IN}	1.5 A to 16 A
Ultra Low Noise, SS3	20 V _{IN} to 42 V _{IN}	2 A to 16 A
Silent Switcher with Telemetry	5 V _{IN} to 20 V _{IN}	6 A to 35 A

Features found in this portfolio

- ▶ **Parallelable** For Higher Currents
- ▶ **95%** Peak Efficiency
- ▶ **4 μVrms** Integrated Noise from 10Hz to 100 kHz (SS3)
- ▶ Operating Temperature Range **-40°C to 150°C**
- ▶ **AECQ100 Qualified Options based on Grade 0 Standard**



μModule Power Products



μModule® Power Products Simplify Implementation, Verification and Manufacturing of Power Circuits by Integrating Power Functions in a Compact Package.



Component Selection



Performance

Efficiency
Noise/ Ripple
Transient Response
EMI



Cost

Component cost
BOM cost
Development cost



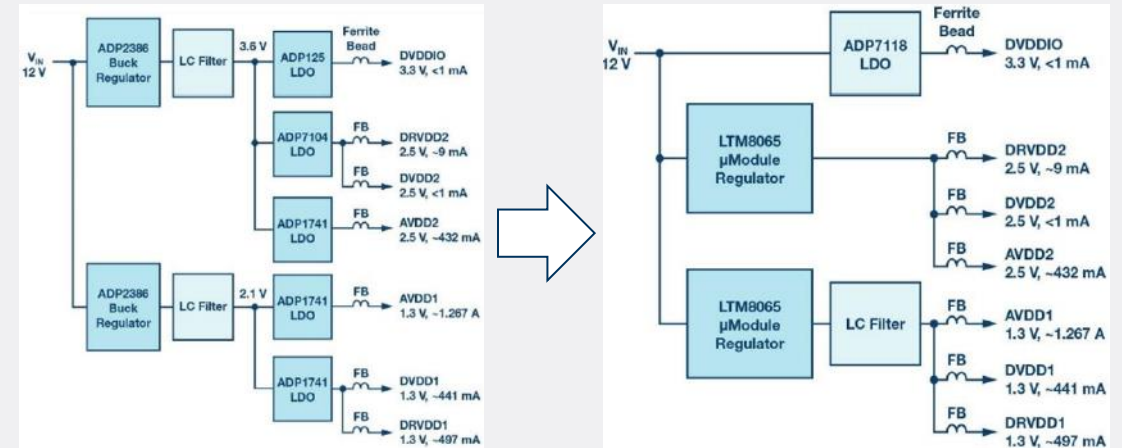
Size

Component size
BOM size
PCB Place & Route

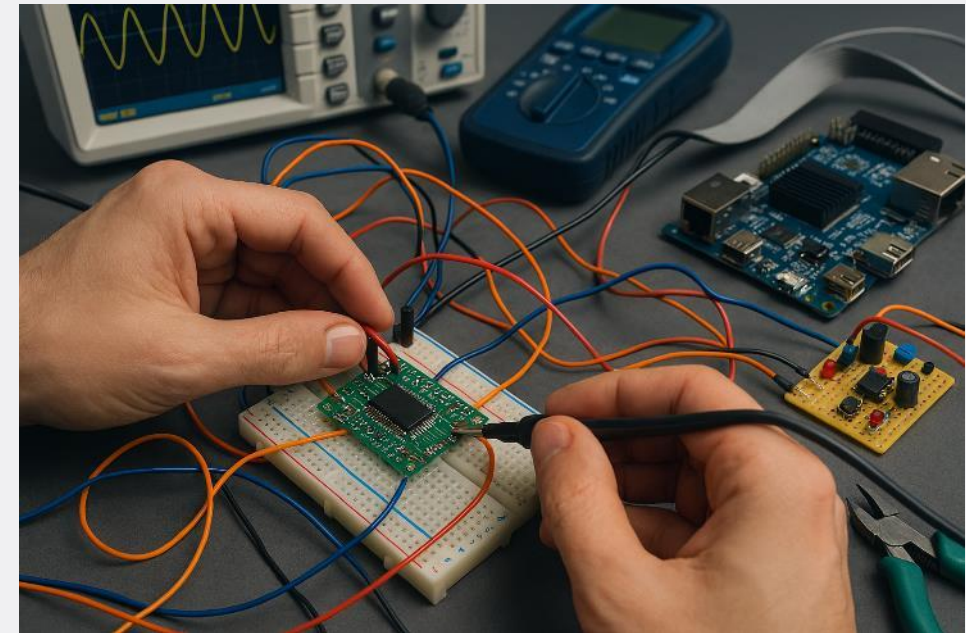
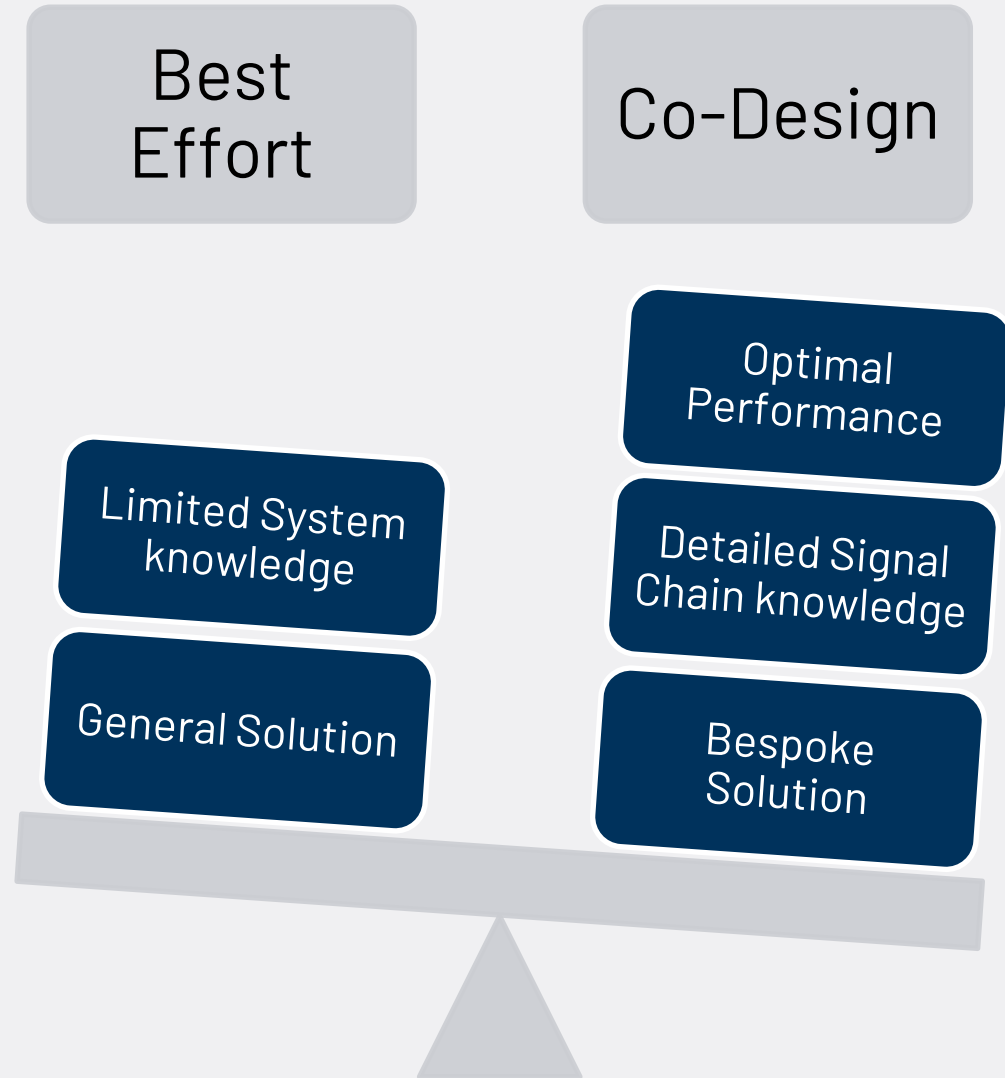


Signal Chain Impact

Noise Sensitivity
Noise Generation
Transient Requirements



Effective Integration



Analog Devices Software Solutions

LTpowerPlanner

System Level Power Tree

LTpowerCAD

Search/Select a Solution

Circuit Parameter Design

LTspice

Simulation



Prototyping

Start early with Power

- Power design impacts system performance down the line

Prototype with observability

- Enable proper measurement of the Power Solution

Use LTpowerAnalyser:

- Low-cost, high performance, laboratory tool kit for evaluating power
- With the ADALM2000 gives excellent observability at low cost

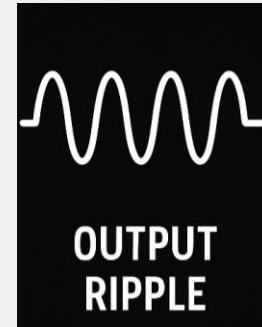
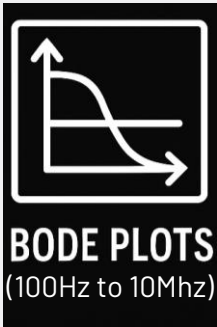
Use your Analog Devices FAE for help with Review and Advice

- Internal teams with detailed product and applications expertise are there to help you*

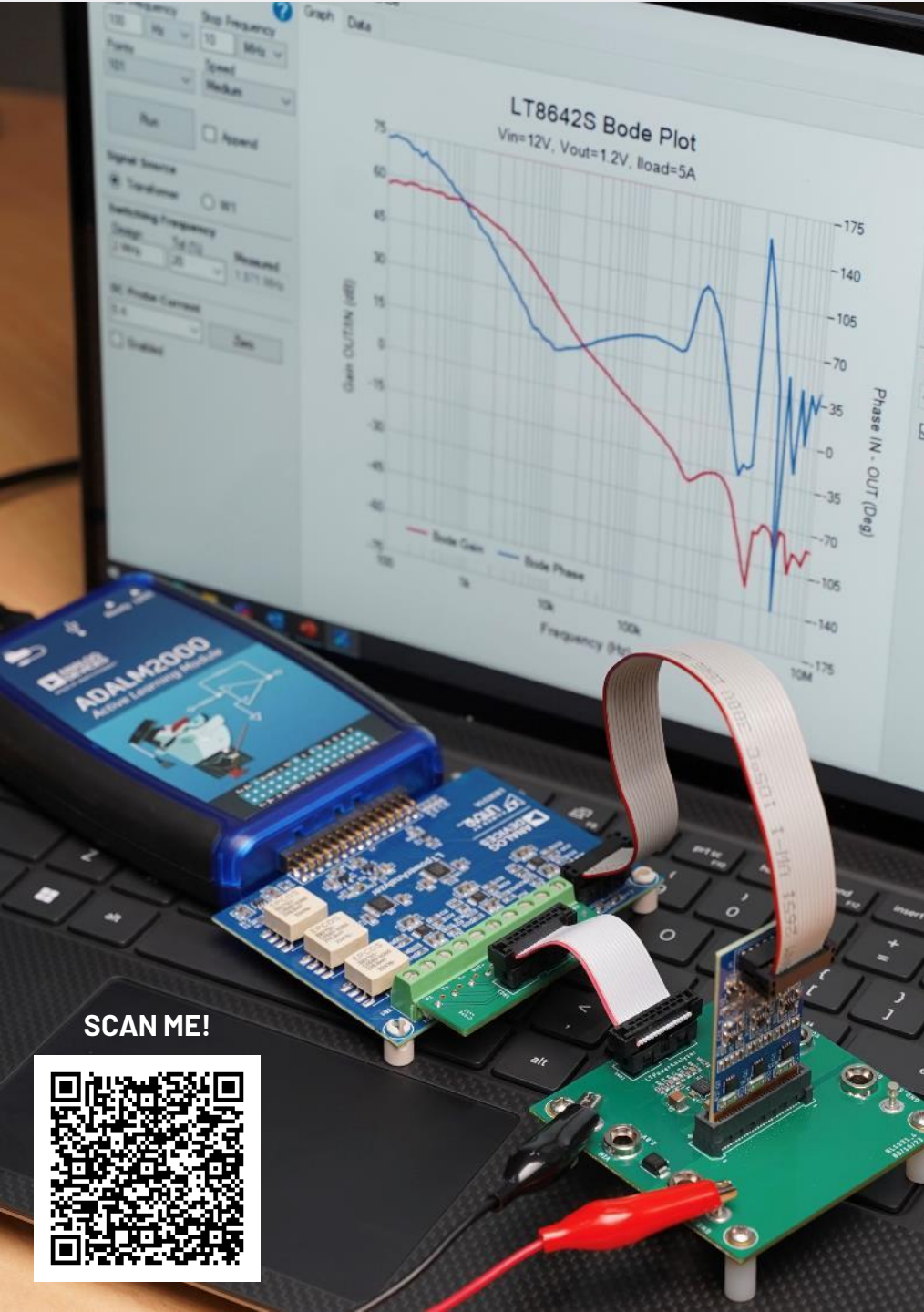


LTpowerAnalyzer

A VERSATILE PSU DESIGN ANALYSIS TOOL



LTpowerAnalyzer System – Experience lab-grade power analysis in a compact, affordable package. Powered by high performance ADI solutions, it delivers pro-level performance for signal insights—right on your bench.



SCAN ME!



(*Pricing is only the LTpowerAnalyzer Kit .ADALM2000 bought separately)

LTpowerPlay

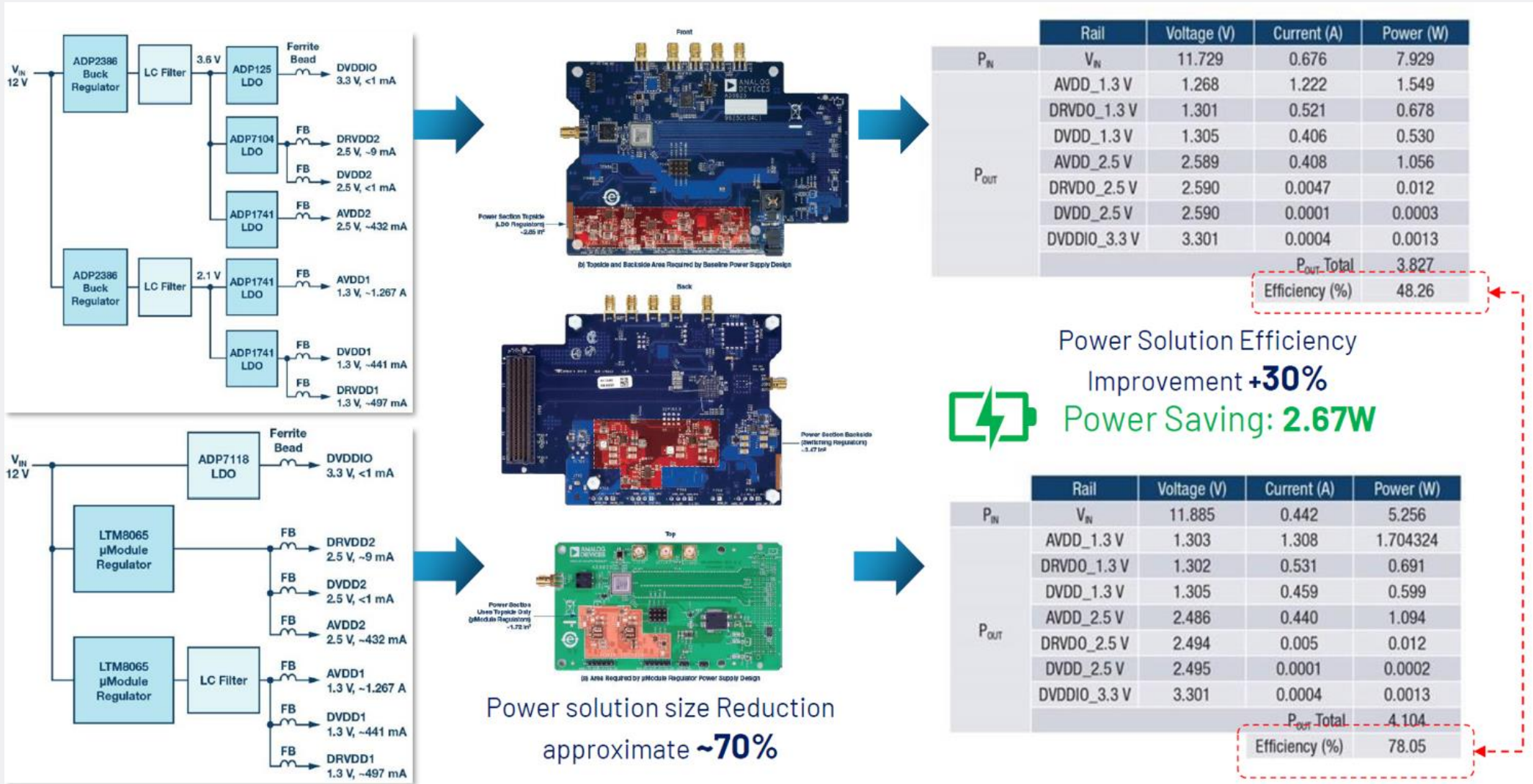


- ▶ Autonomous operation—no software coding required
- ▶ Coordinate sequencing and fault management across DPSM devices
- ▶ Reduced BOM cost and validation effort

The screenshot displays the LTpowerPlay software interface with several key windows highlighted:

- System Tree of All Devices:** A hierarchical tree view on the left showing the system structure, including devices like U0 (LTC3880), U1 (LTC2974), and U2 (LTC2977).
- Configuration Settings for All Devices in System Tree:** A central window showing detailed configuration registers for a selected device (U0:0), including sections for General Configuration Registers, On/Off Control and Margining, PWM Related Configuration, Fault Responses, Output Voltage, and Input Current Calibration.
- Real-Time Telemetry Data:** A window on the right displaying real-time telemetry for U0:0, including parameters like Read Frequency, Input Voltage, Output Voltage, Current, Temperature, and Power.
- Display of Selected Parameter (Config/Telemetry) Across System:** A window showing a table of selected parameters (e.g., READ_VOLT) across all devices in the system.
- Chip Dashboard (Key Aspects of Selected Chip):** A window providing a visual overview of the selected chip's status, including a status summary and a plot of the selected parameter.
- Idealized On/Off Supply Waveforms:** A window at the bottom showing idealized waveforms for the supply rails (U0:0).
- Scope-Like Telemetry Window:** A window at the bottom right showing a scope-like plot of the selected parameter (READ_VOLT) over time.

Signal Chain Power Optimization





Start Early, Understand the System, Use Simulation Tools, Prototype with Observability

Start Early

Initiate planning and design phases early to identify challenges and allocate resources effectively.

Understand the System

Analyze system architecture and dependencies to optimize performance and anticipate integration issues.

Use Simulation Tools

Model system behavior under various conditions to test and validate designs before implementation.

Prototype with Observability

Build prototypes with monitoring to track performance, detect anomalies, and gather feedback.

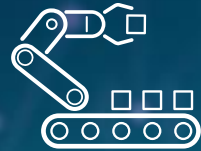
AHEAD OF WHAT'S POSSIBLE

analog.com





POWERING AN INTELLIGENT AND SUSTAINABLE WORLD



Robotics and Digital Factories



Test and Scientific Instrumentation



Renewable Energy and EVs



High Density Computing and Storage