



AnDAPT™, Inc.

On-Demand Power Management Platform

Customer Overview

AnDAPT - Adaptive Analog



On-Demand Power Management Company

- On-Demand Power Management Platforms
- Displace expensive catalog power devices



A New Genre

- Power Proficiency with FPGA Flexibility
- FPGA aggregates to common silicon platform



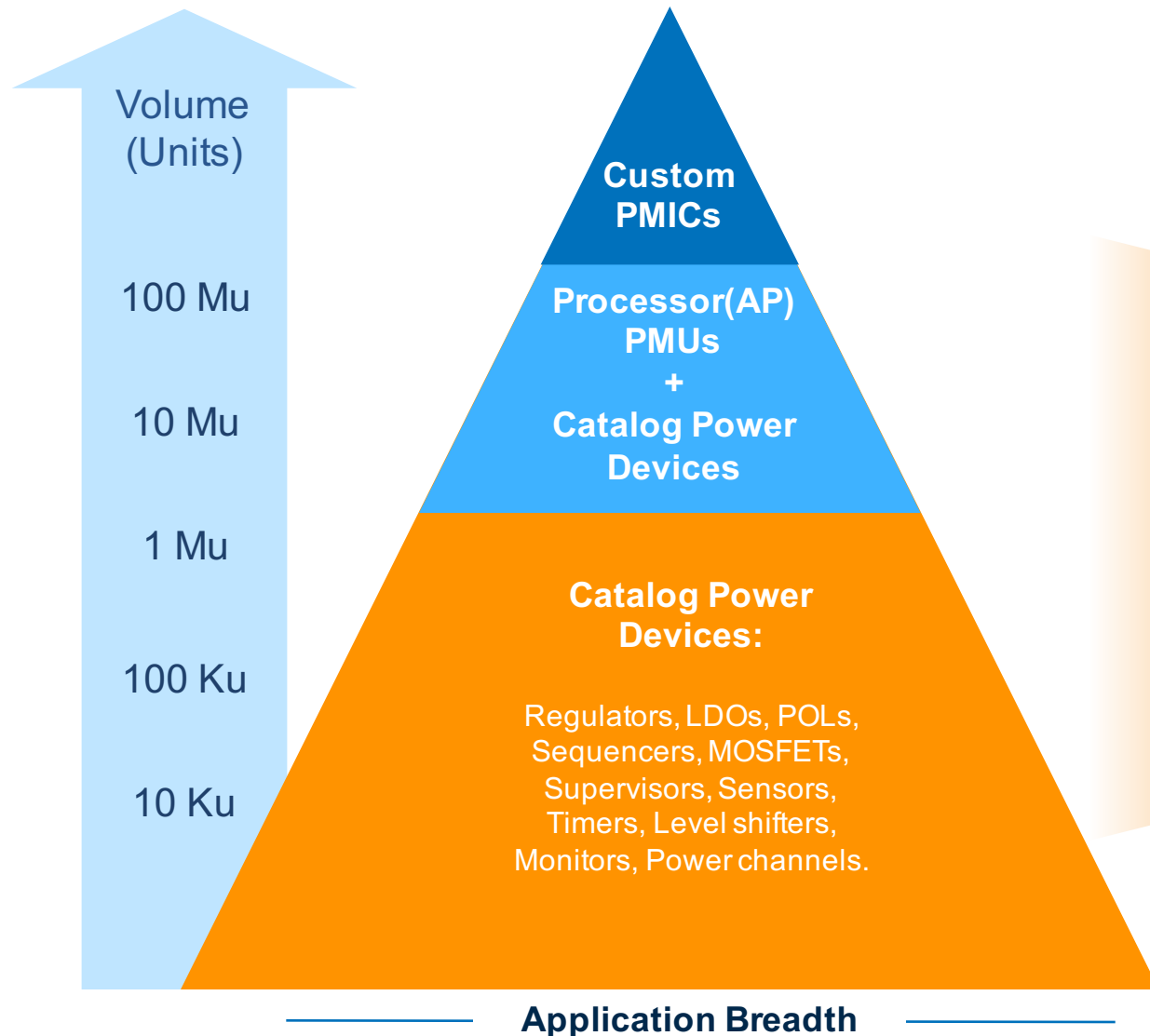
Broad applicability across power market



Strong Sales, Foundry and Assembly Partners

Opportunity: Catalog Power Devices

PMIC Benefits Unavailable - Lacking High Volume



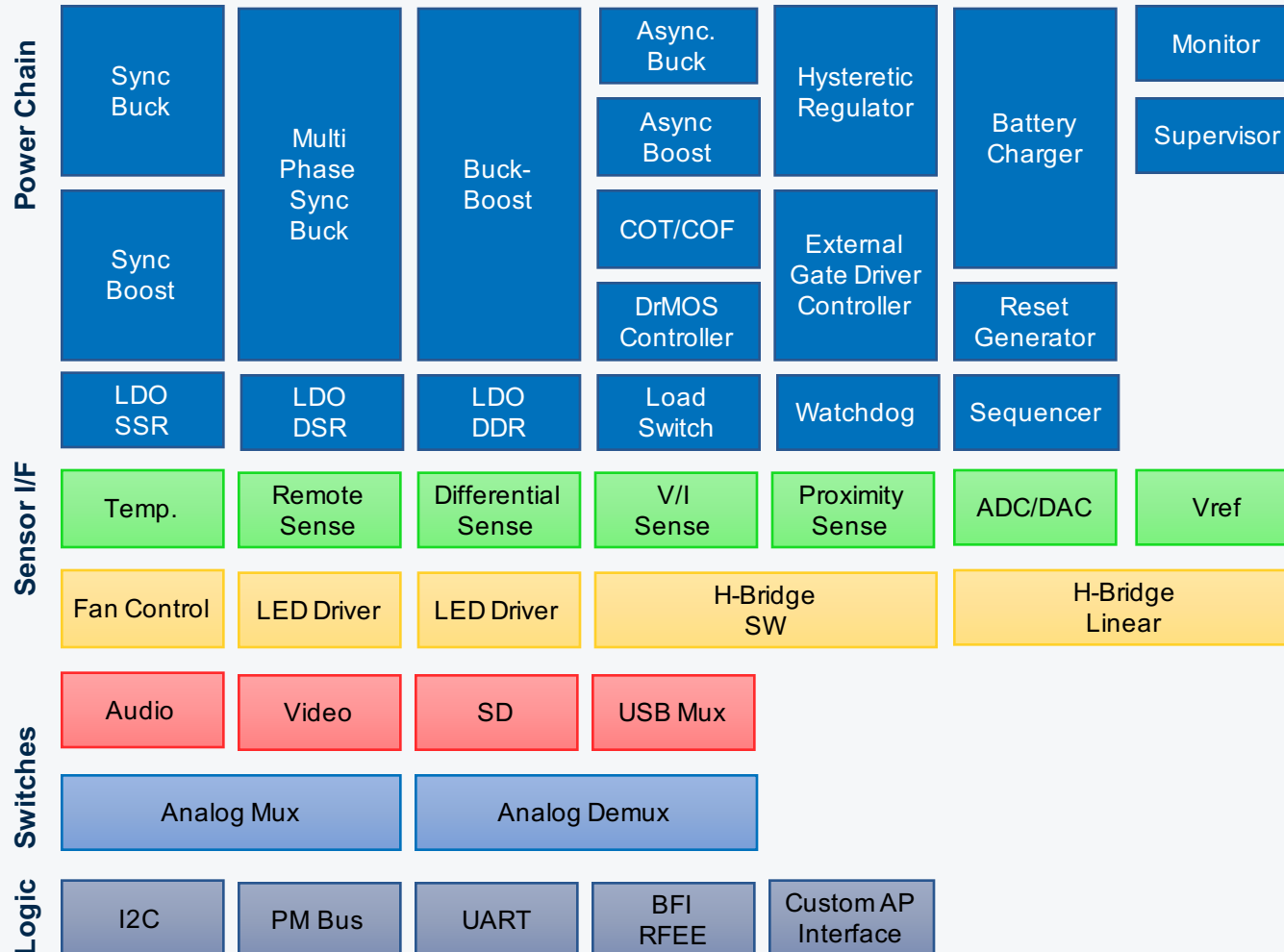
AnDAPT Enables
Custom PMIC Benefits at Any Volume

- Lower device/board costs
- Monitor, optimize power
- Control, manage power
- Lower power
- Lower inventory costs

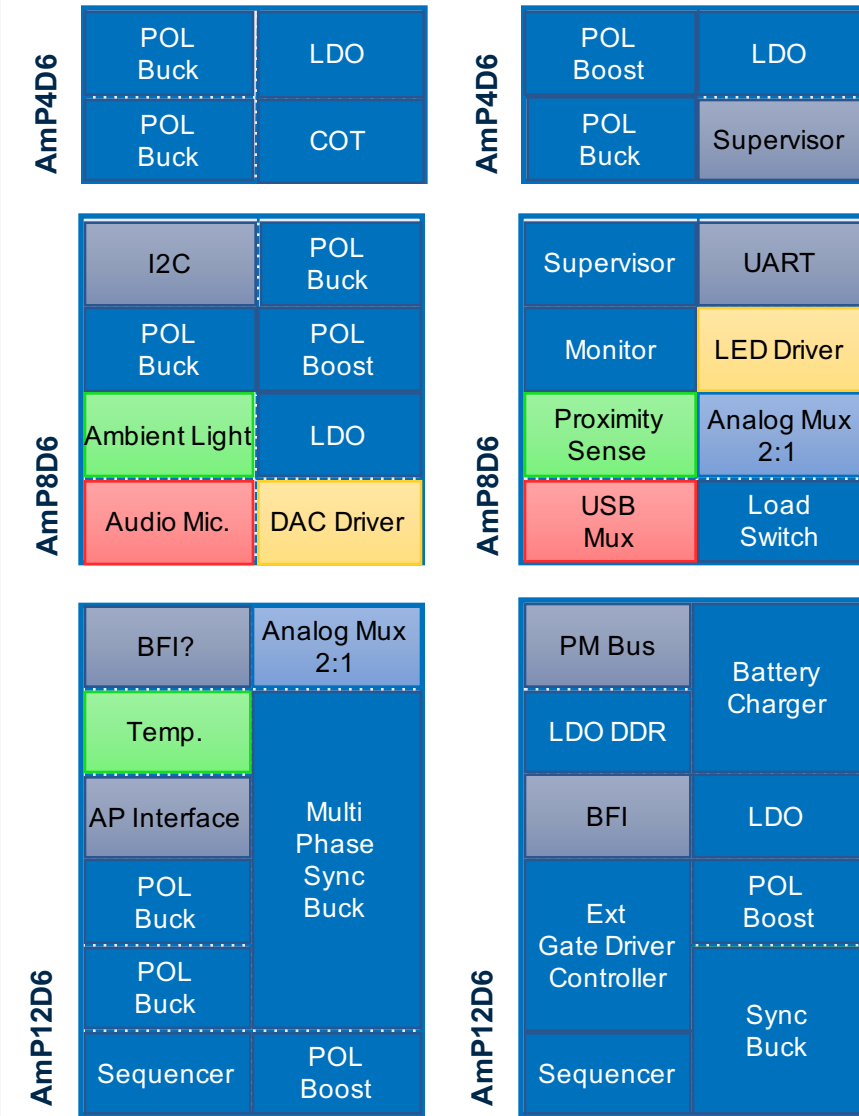
On-Demand Power Management

A New Paradigm

Power Components - Software



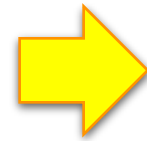
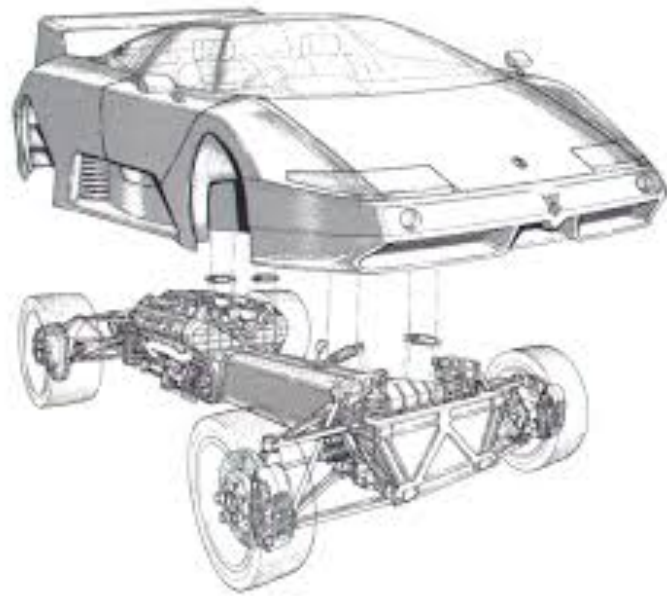
AnDAPT Multi-rail Power (AmP) Platform ICs



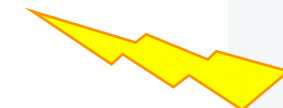
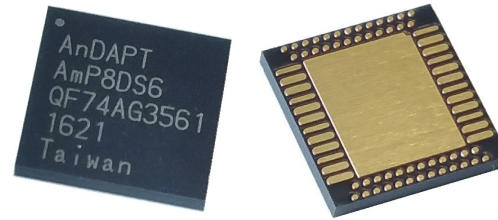
AnDAPT

A New Genre

On-Demand PMIC Platform



AmP Platform for Power Management



Applications

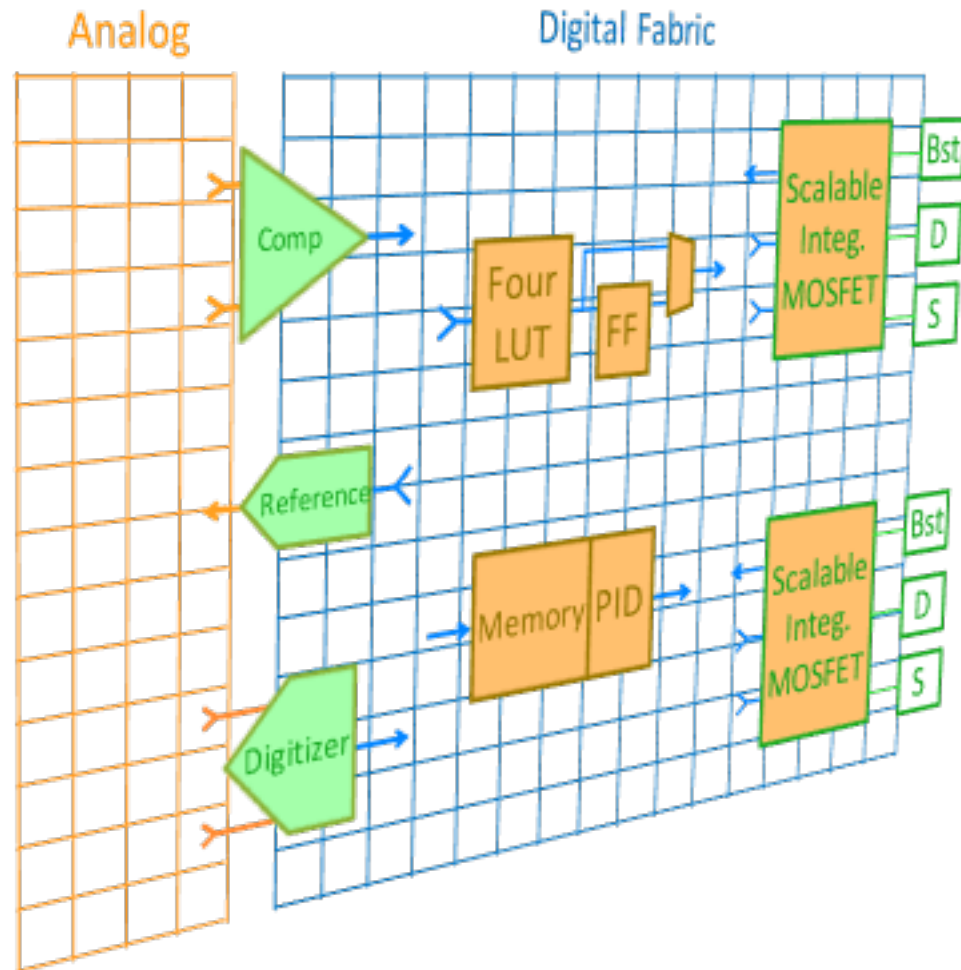
- Data Center
- Enterprise
- Networking
- Storage
- Wireless
- IoT
- EVs
- Drones
- Automotive
- Robotics
- Industrial
- Medical

Proven Technologies

- Body: Analog Power Elements
- Chassis: FPGA

Technology

μAnalog Elements on FPGA Fabric



Building Blocks

Power Blocks

- Scalable Integrated MOSFETs (SIM)

Senser Blocks

- Comparators
- References
- Digitizers

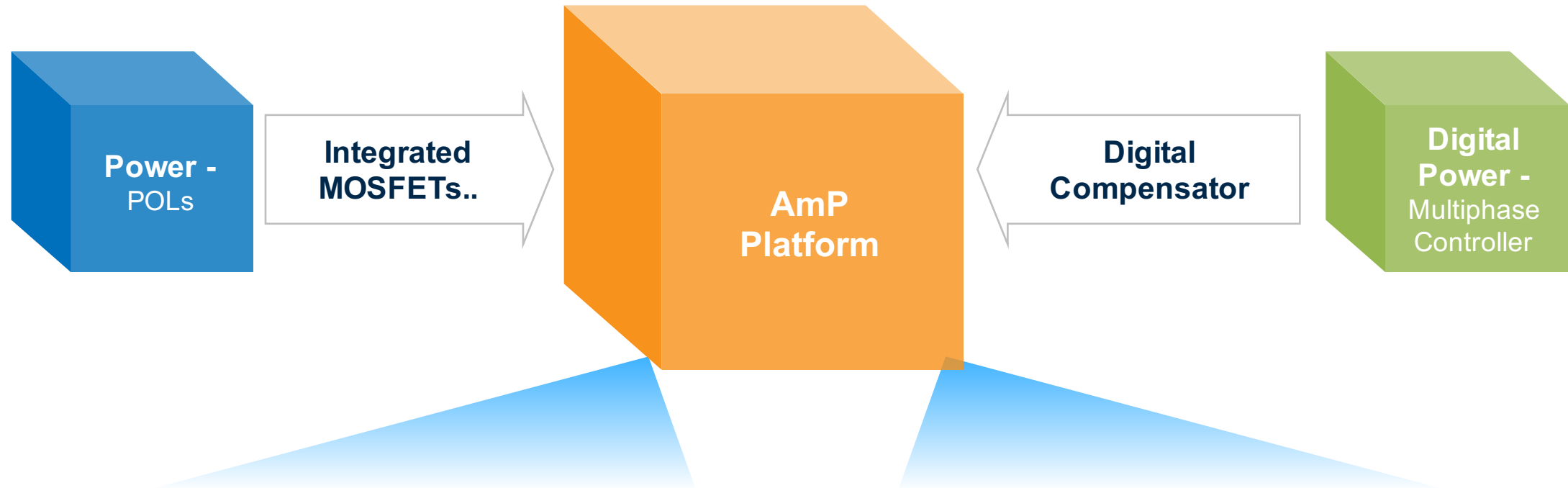
FPGA: Digital, Analog Fabric

- LUTs
- Memory - PID

Telemetry I2C, DVS

Best of Analog and Digital

Power Proficiency – FPGA Flexibility



Power Proficiency – Skills/Experience

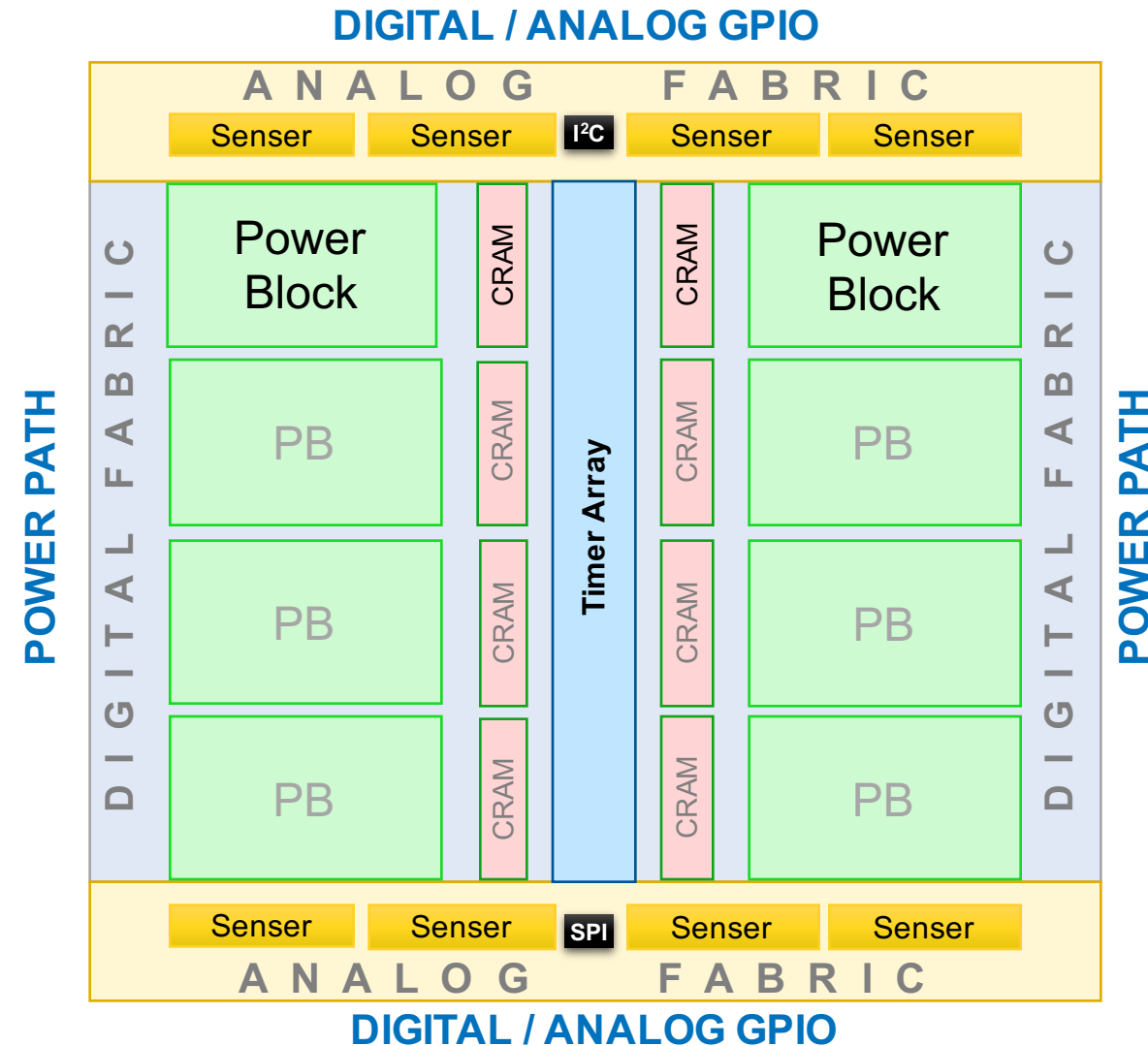
- Sophisticated POLs/Multi-phase
- Low bias current, high efficiency, high performance
- Loss-less current mode, current share

FPGA Flexibility – TTM

- Select, Integrate heterogeneous rails
- Telemetry - monitor/optimize/control to lower power
- High bandwidth flexible compensators

AmP Platform

Architecture



Product Offering

AmP™ Platform ICs

- μ Analog elements w/digital wrappers on interconnect fabric



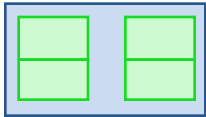
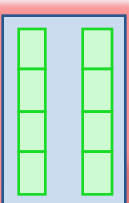
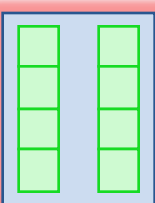
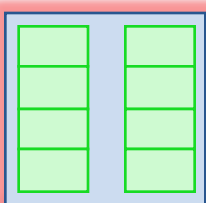
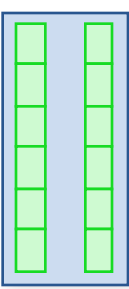
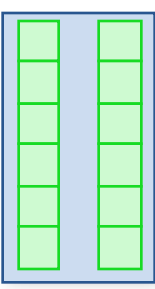
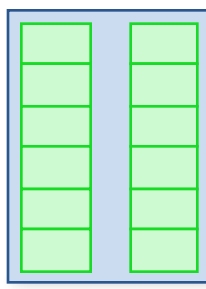
WebAmP™ Tool Suite


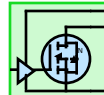
- Drag & drop power components
- Per customer's application need

Power Components – software based

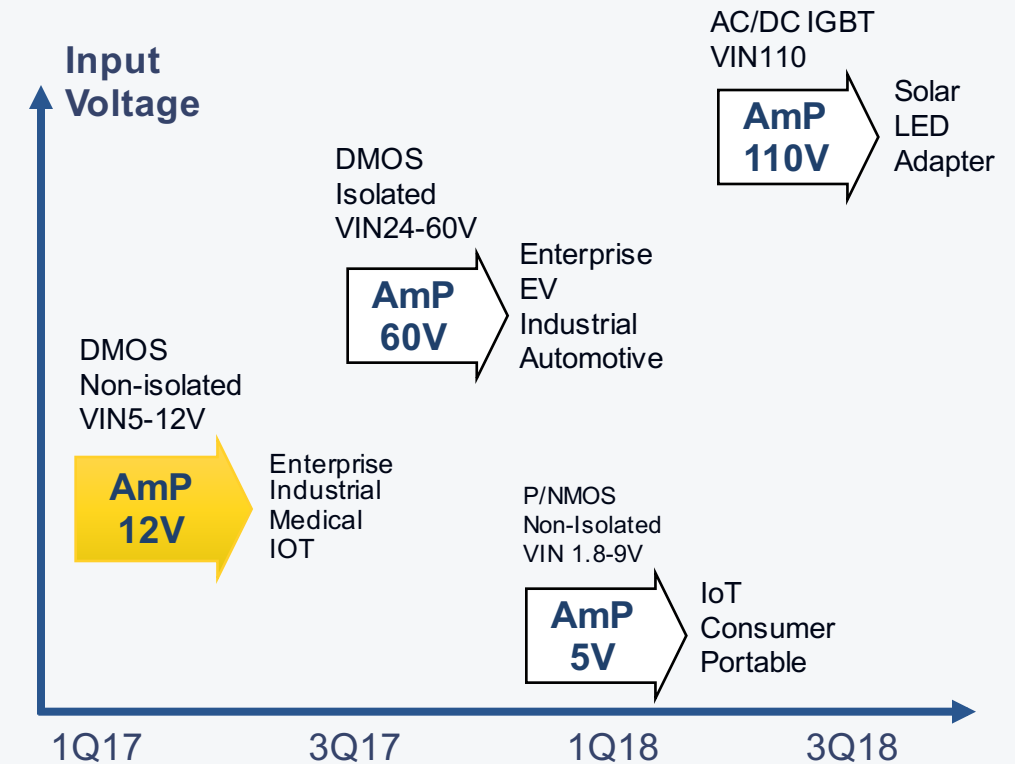
- Pre-built, proven using μ Analog elements

Adaptive Multi-Rail Power (AmP) Platforms

| 12V Power Blocks | 1A | 3A | 6A |
|------------------|---|---|---|
| Four | AmP4D1  | AmP4D3  | AmP4D6  |
| Eight | AmP8D1  | AmP8D3  | AmP8D6  |
| Twelve | AmP12D1  | AmP12D3  | AmP12D6  |

 =  = Power Block

Standard BCD 110nm



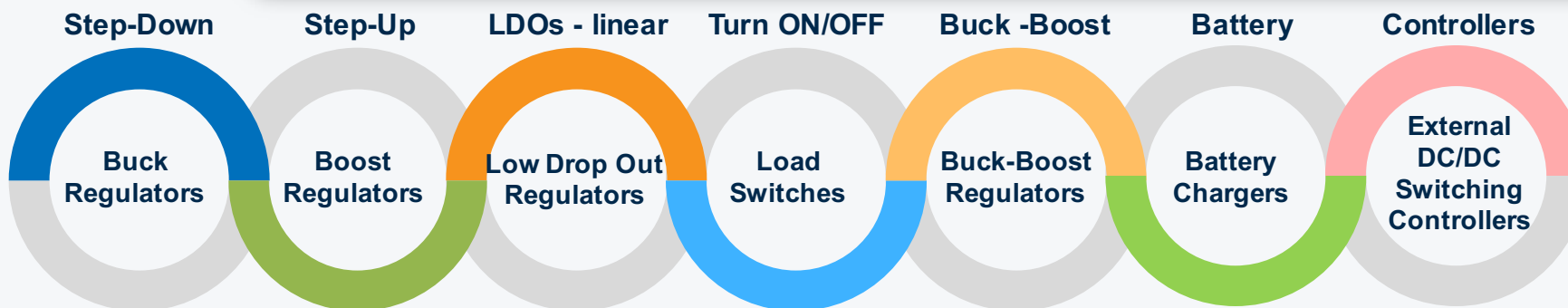
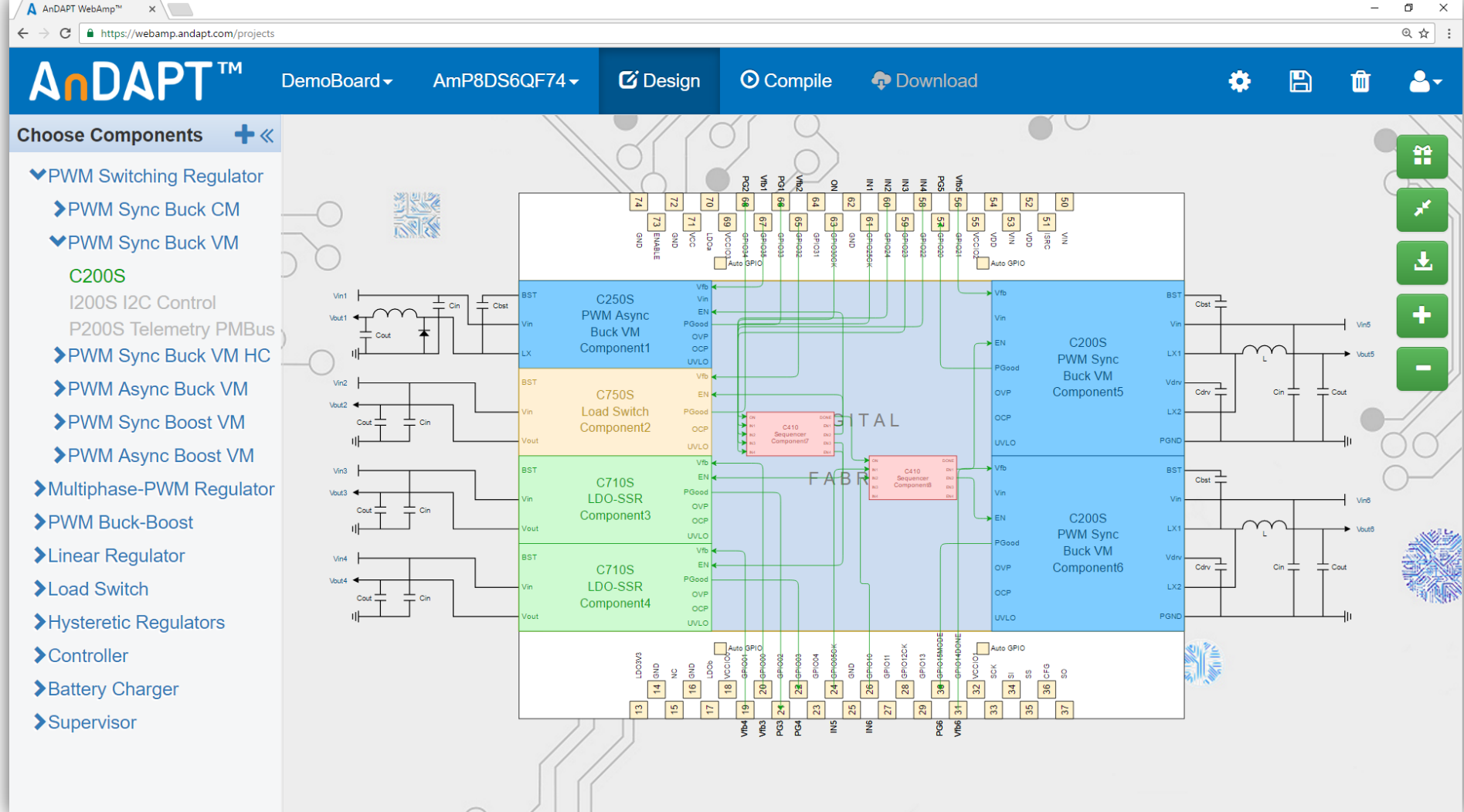
The background features a complex, abstract geometric pattern. It consists of a network of thin, light gray lines that intersect at various points, creating a series of interconnected triangles and polygons of different sizes. Some of these intersection points are marked with small, solid gray dots. The overall effect is a sense of a dynamic, interconnected system, possibly representing a network or a complex structure. The pattern is more dense on the left side of the image and becomes sparser towards the right.

On-Demand Power: A New Paradigm

WebAmP,™

Power Components

Application Targeted



On-Demand Power

A New Paradigm

Benefits

Flexibility

- Integrate variety of Power Components
- Adapt to your application needs
- Integrate digital functions

Accelerate Time to Market

- Fast designs cycles and change

Lower Cost

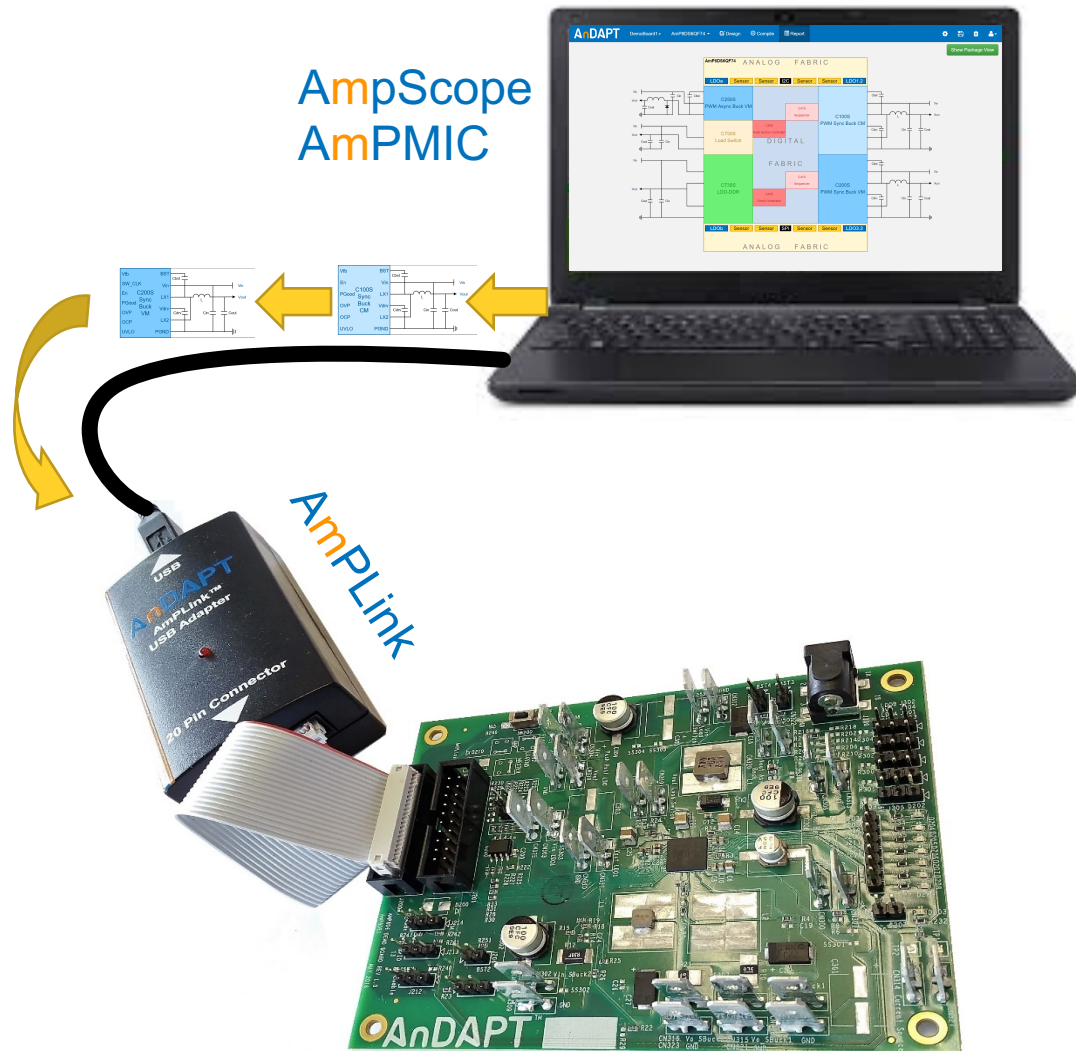
- Lower cost, BOM, board space, Inventory

Lower Power

- Monitor, optimize, control, manage power
- Best performance and figures of merit

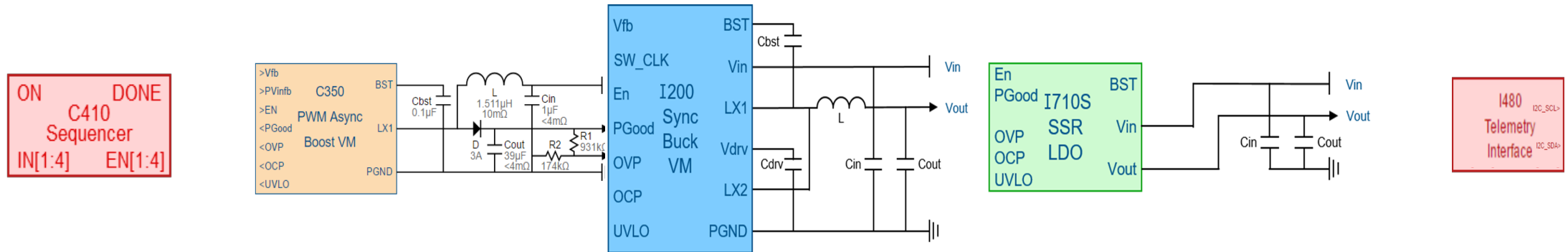
Custom Power Management

- Cost effective at any volume



Power Components

Available Now!



C410

- Sequence Power Rails
- Provides order of power up/down
- GPIOs control ON, IN[1:4], DONE
- Variable delays range 0 to 20 ms
- Cascadable for expansion

C350S

- 0.5-1.0% Load Reg
- Peak Efficiency up to 96% @ PVin 12 V, Vout 12 V
- PVin 4.5-20 V, Vout 2.5-15 V
- 6A, 40mΩ MOSFETs
- Adjustable Switching Freq.
- PID w/Prog. Gain/Phase Margin
- Voltage Mode Ctrl
- Synch high-low side integrated MOSFETs

I200S/P

- I2C Telemetry
- 0.5-1.0% Load Reg
- Peak Efficiency up to 95% @ PVin 5 V, Vout 3.3 V
- PVin 3.3-20V, Vout 0.6-5.5V
- 6A, 40mΩ MOSFETs
- Adjustable Switching Freq.
- PID w/Prog. Gain/Phase Margin
- Voltage Mode Cntrl
- Synch high-low side integrated MOSFETs

I710S

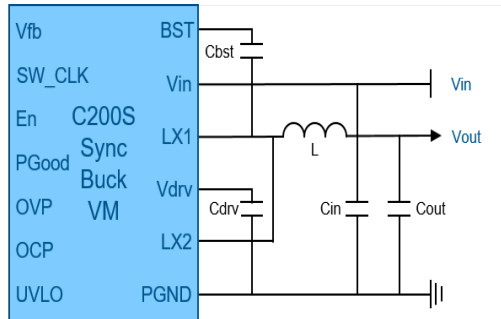
- I2C Telemetry
- 0.5-1.0% Line/Load Regulation
- PVin 0.8-20V, Vout 0.6-3.3V
- 6A MOSFET
- Integrated current sense
- En and Pg with prog. Delays
- Over current protection

I480

- I2C Telemetry
- Controls up to four Power Components
- Reads Pgood, status, Vout, Load current
- Writes Enable, Vout

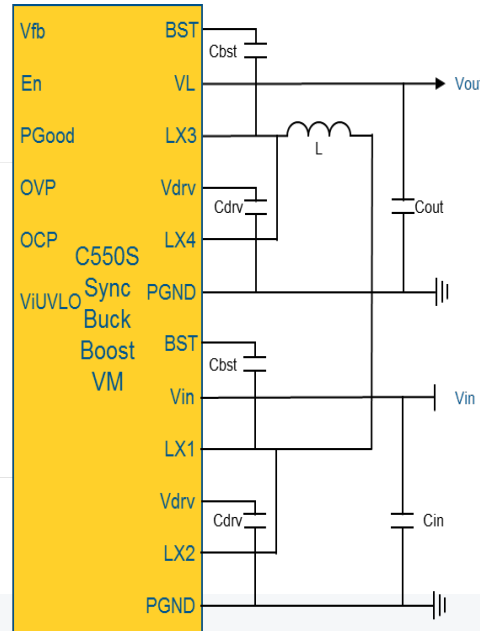
Power Components

Available Now!



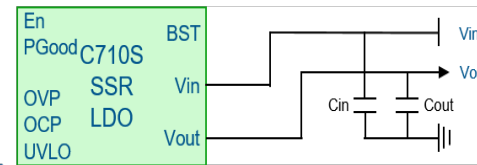
C200S/P

- 0.5-1.0% Load Reg
- Peak Efficiency up to 95% @ P_{Vin} 5 V, V_{out} 3.3 V
- P_{Vin} 3.3-20V, V_{out} 0.6-5.5V
- 6A, 40mΩ MOSFETs
- Adjustable Switching Freq.
- PID w/Prog. Gain/Phase Margin
- Voltage Mode Cntrl
- Synch high-low side integrated MOSFETs



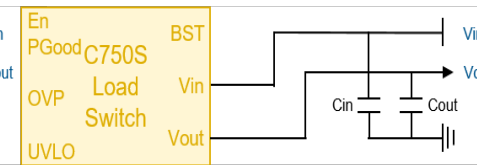
C550S/P

- 0.5-1.0% Load Reg
- Peak Efficiency up to 96% @ P_{Vin} 12 V, V_{out} 12 V
- P_{Vin} 4.5-20 V, V_{out} 1-15 V
- 6A, 40mΩ MOSFETs
- Adjustable Switching Freq.
- PID w/Prog. Gain/Phase Margin
- Voltage Mode Cntrl
- Synch high-low side integrated MOSFETs



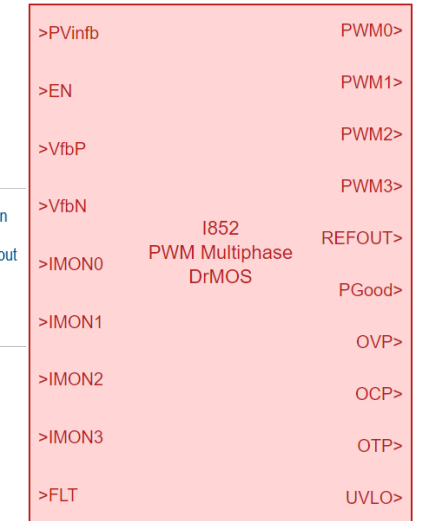
C710S

- 0.5-1.0% Line/Load Regulation
- P_{Vin} 0.8-20V, V_{out} 0.6-3.3V
- 6A MOSFET
- Integrated current sense
- En and Pg with prog. Delays
- Over current protection



C750S

- Input Voltage Range up to 3.3V
- Low R_{ds(on)} of 40mΩ for low loss
- 6A Continuous Switch Current
- Internal Adjustable Soft Start/Stop
- Slew Rate control for Inrush Current
- En and Pg w/prog. delay
- Integrated OVP and UVLO



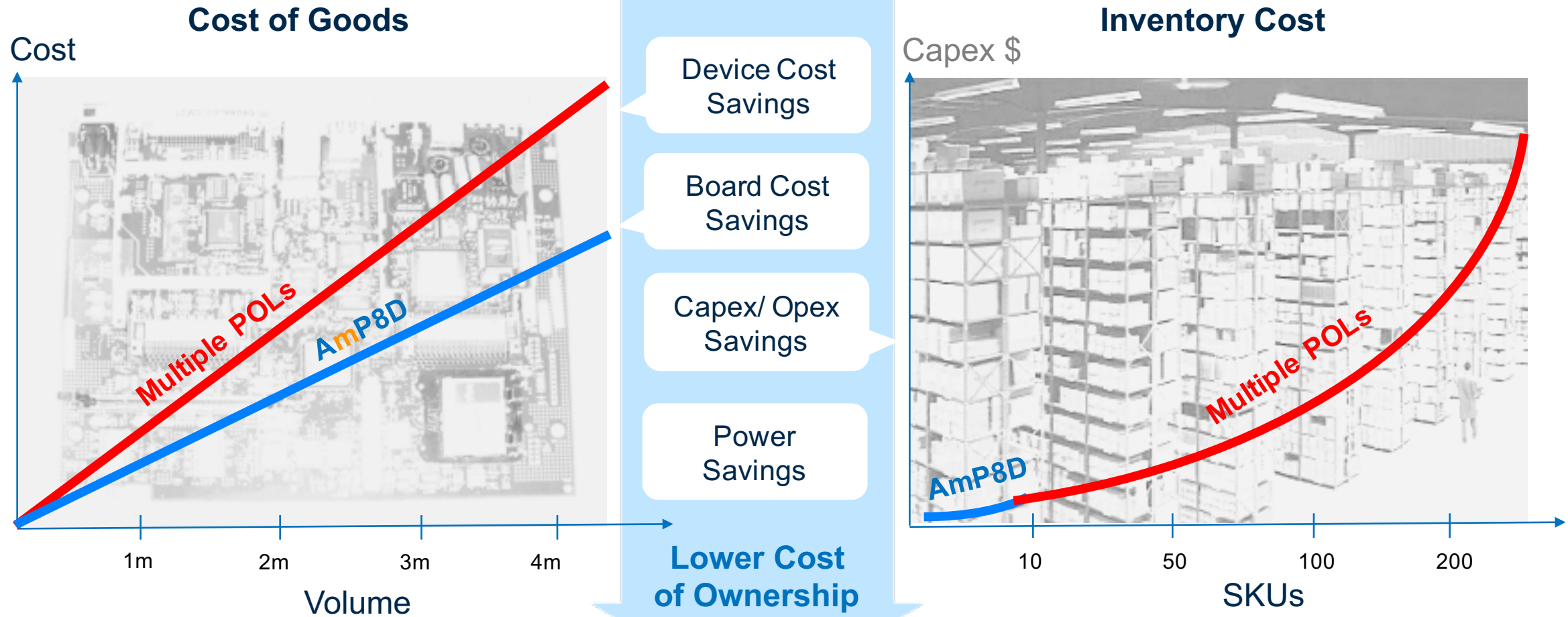
I852

- DrMOS Controller, CM POL reg
- 0.5-1.0% Load Reg
- PWM & IMON interface to DrMOS
- Selectable phases: 2, 3, or 4
- Automatic current balancing
- Reduced output ripple currents
- Efficiency up to 95%
- Multiple DrMOS Vendor Support
- I2C Telemetry: Set V_{out}, Read I_{out}, PG, UVLO, OCP, OTP

The background features a complex, abstract geometric pattern. It consists of a network of thin, light gray lines that intersect at various points, creating a series of interconnected triangles and polygons of different sizes. Some of these intersection points are marked with small, solid gray dots. The overall effect is a sense of a dynamic, interconnected system, possibly representing a network or a data structure. The pattern is more dense on the left side of the image and becomes sparser towards the right.

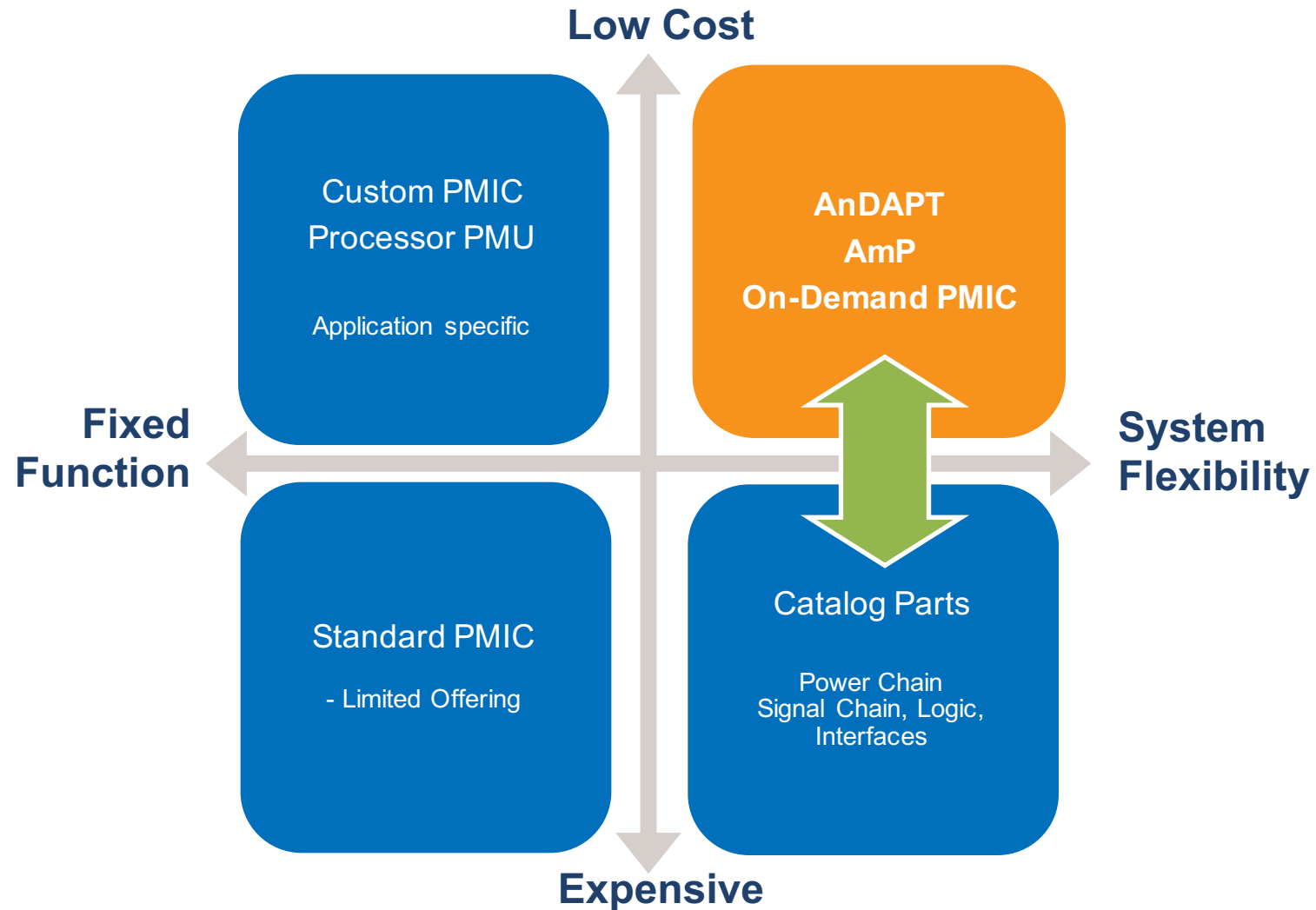
On-Demand Power Benefits

Cost Savings with AmP



Competition

On-Demand PMIC



Traditional Power vs Platform Solution

Design Win Paradigm – Catalog Users

| Solution | Competitor - Catalog Devices | AmP On-Demand PMIC |
|------------------|---|---|
| Target Designs | New or Existing | New |
| Replacement | 1:1 | N to 1 |
| Implementation | User | User - Webtools |
| Reason to choose | Better individual cost or performance | Integrate app-specific power rails and management on single chip |
| Benefits | <ul style="list-style-type: none">• Incrementally lower cost or performance | <ul style="list-style-type: none">• Lower cost and board space• Power savings• Performance - Higher efficiency, best transients• Supervision - sequencer, fault manager• Telemetry - monitoring and control• Custom power architectures• Flexibility of design and fast to market |

Summary

An Unprecedented Disruption



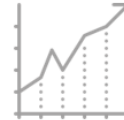
Unique power technology

- Lower device, board, inventory cost
- Power savings
- Flexibility for power architecture
- Ability to monitor, voltage scale



On-Demand Power Management IC

- Available now, tools on the web



Sustained Transformative Benefits

- Application targeted dissimilar rail integration
- Cost competitive vs catalog devices



A New Genre – Broad Applicability

- Power for different segments/topologies