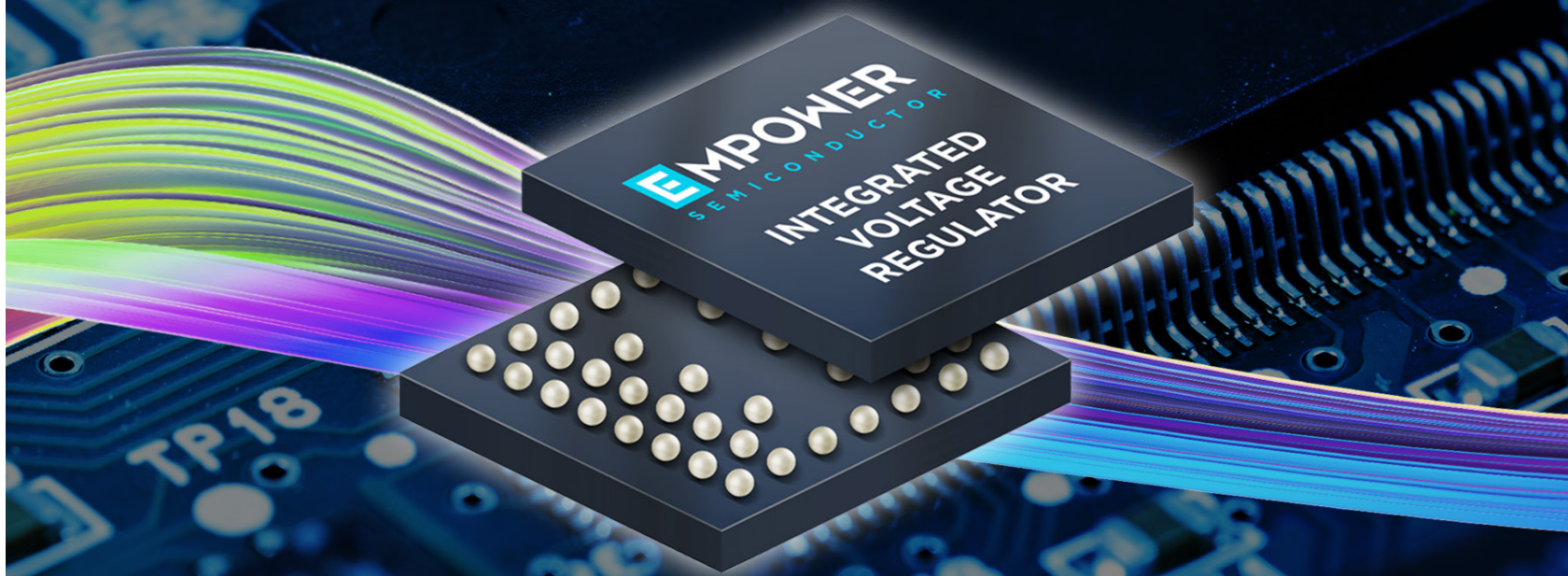
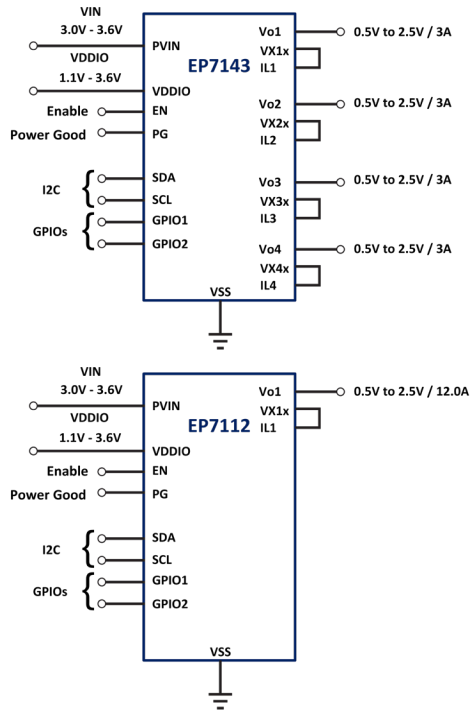


High Performance and Flexible Solutions for FPGAs, ASICs and SoCs



We Minimize the Energy Footprint
of the Digital Economy

EMPOWER
SEMICONDUCTOR



EP71xx IVR™ Series

- 12A total current from 3.3V_{IN}
- Up to 4 outputs (0.5V to 2.5V_{OUT} range)
- Integrated input and output capacitors
- World's fastest transient response (<30mV droop for 12A/2μs step)
- Ultra-fast Dynamic Voltage Scaling (DVS) (up to 1mV/ns)
- Integrated programmable power sequencing
- Wide IO signaling range for digital interface (1.1 - 3.6V)
- 5 x 7 x 0.7mm FcCSP package

Digital Interface

Controls & Programmability

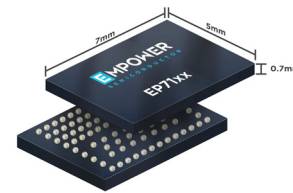
- ✓ Enable
- ✓ Output voltage
- ✓ Slow rates (start-up, DVS)
- ✓ GPIO programming

Monitoring and Diagnostics

- ✓ System fault & protection status
- ✓ Voltage, temperature telemetry
- ✓ VR operating status

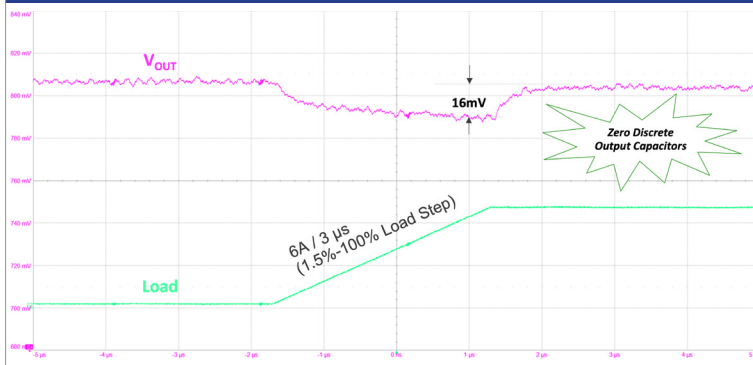
Multi-Time Programmable Memory

- ✓ Default output voltages
- ✓ Power up/down sequencing
- ✓ Slow rates
- ✓ Selectable PG, DVS, EN GPIO functions

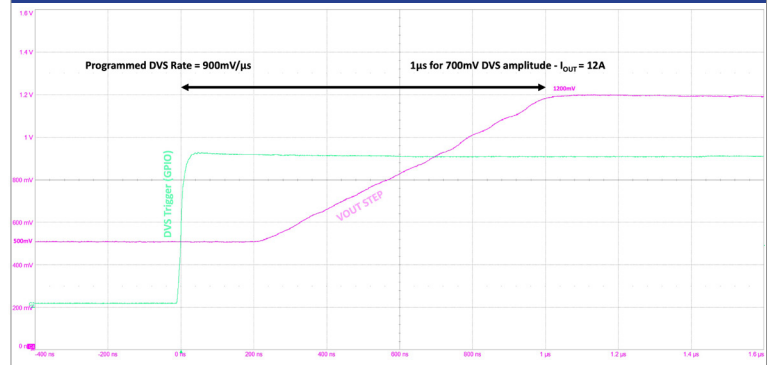


World's Fastest Switching IVR™

World's Fastest Transient Response

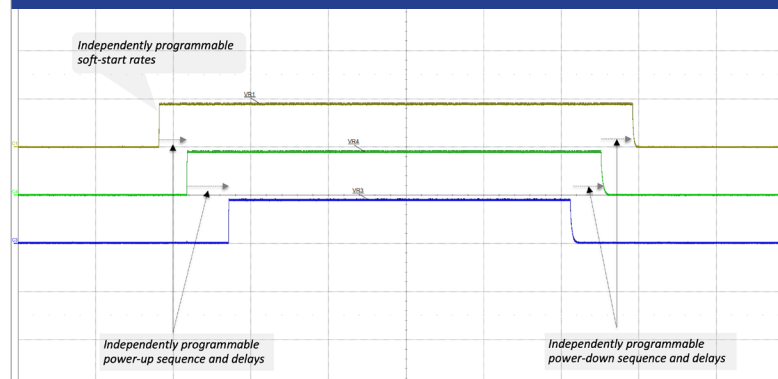


Ultra-Fast Voltage Scaling



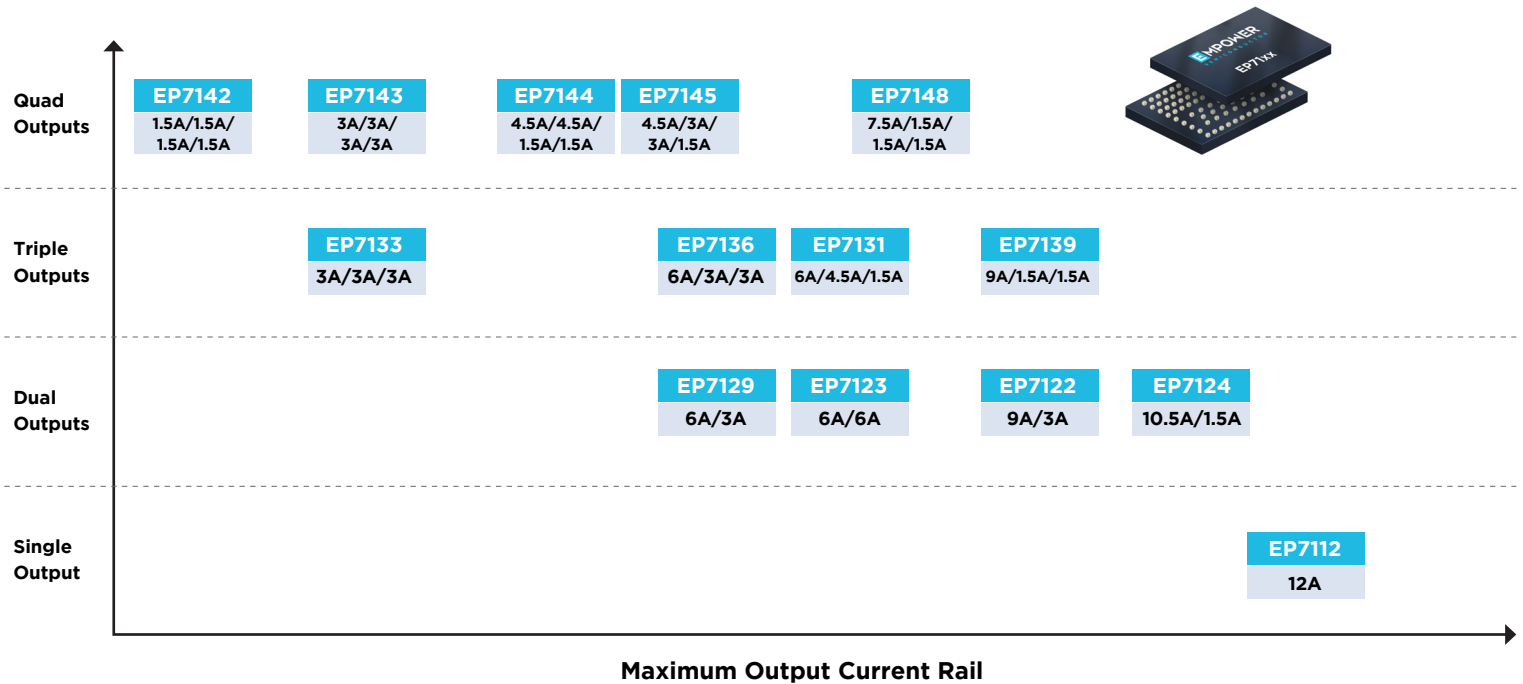
Built-in Programmability for Simple System Design

Fully Integrated Programmable Power Sequencing





Configurable Family Covers Wide System Requirements



Implementations to Suit Varying Constraints

Smallest BOM / Lowest Cost Solution

Trace L (Inner Layers) PCB

0.7mm

EP71xx + PCB Inductors

- <5 components BOM
- 40mm² top side area
- 0.7mm solution height

Fastest Design Cycle / Easiest Deployment

Trace L in Interposer

Application PCB

2.35mm

EP71xx on PCB Interposer

- Single component solution
- 155mm² solution area
- 2.35mm solution height

Most Flexible PCB Design

Discrete L

Application PCB

0.8mm

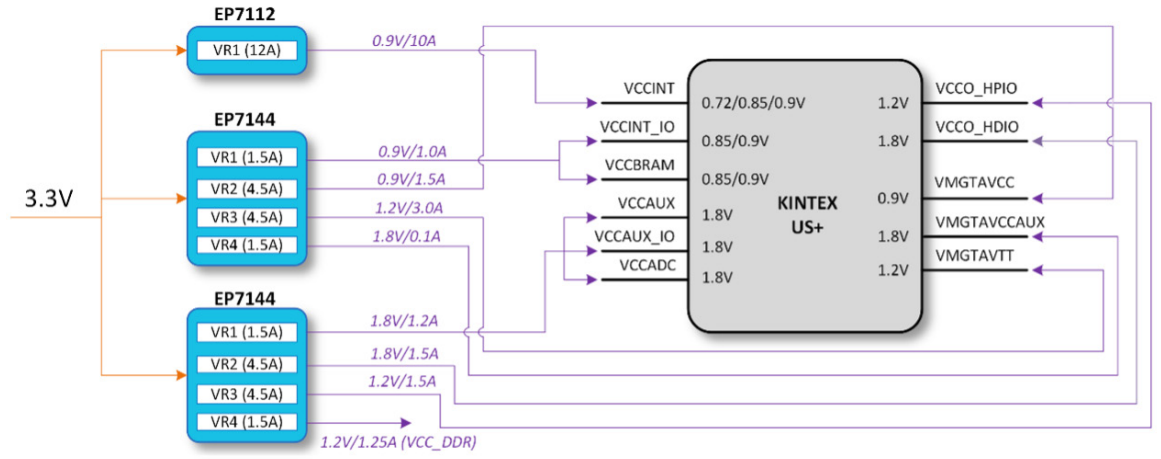
EP71xx + Magnetic Inductors

- 9-14 components BOM
- 135mm² solution area
- 0.8mm solution height

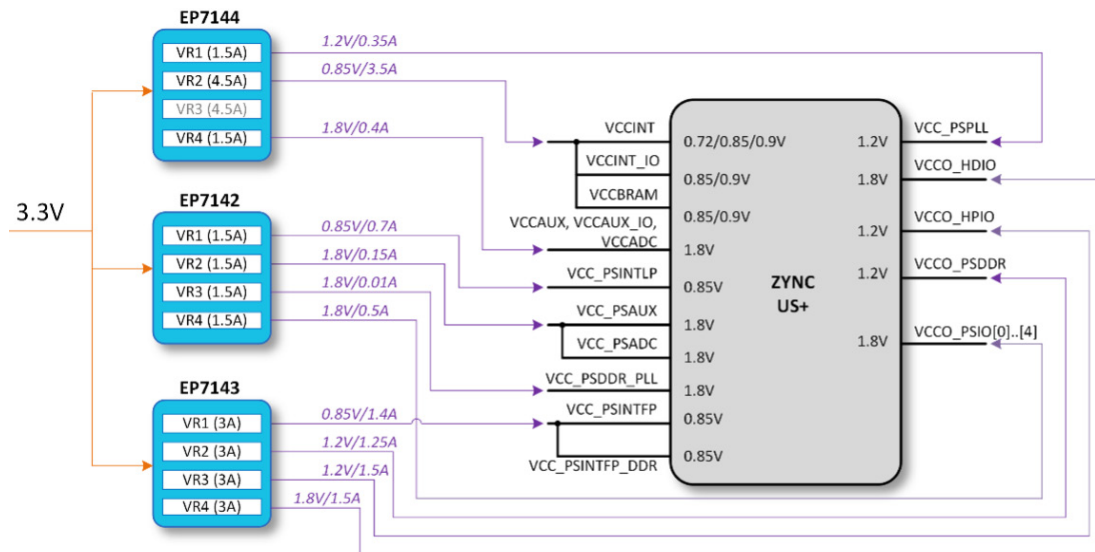


Simplify Xilinx FPGA Designs with the EP71xx Family

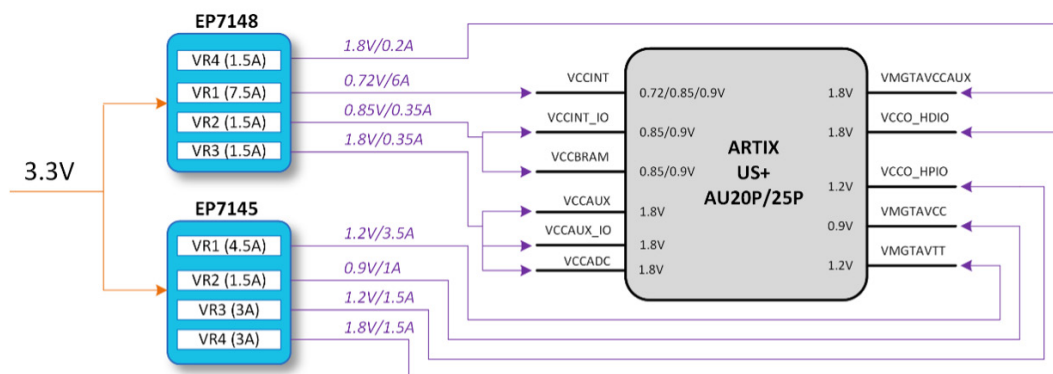
Reference Design for Xilinx Kintex Ultrascale+



Reference Design for Xilinx Zync Ultrascale+



Reference Design for Xilinx Artix Ultrascale+ AU20P/25P

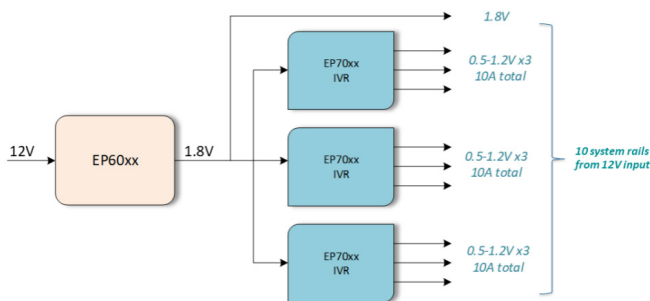




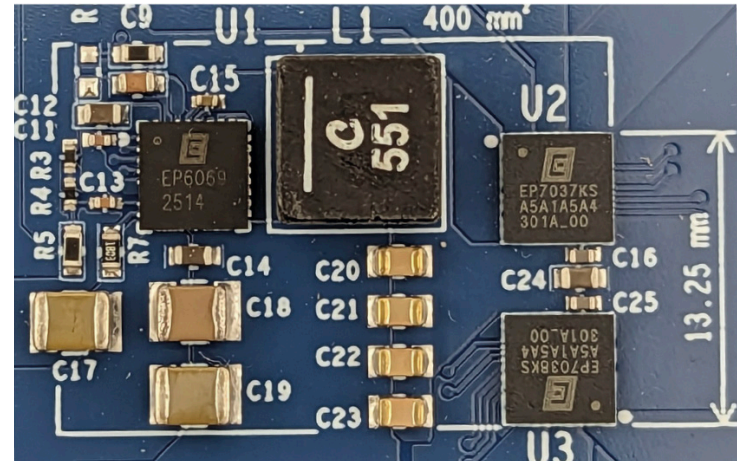
Simplified 12V Solutions Through Two-Stage Approach

EP60xx Buck Series

- 15A/30A total current from single output
- High efficiency (94% peak)
- 12V_{IN} optimized (5-24V range)
- 5 x 5 x 0.9mm FcCSP Package
- Optimal first stage for 12V applications



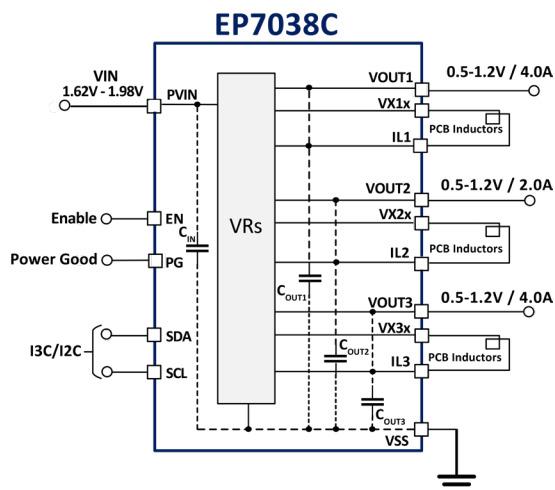
7 Rails From 12V Input in 400mm² / 27 Components



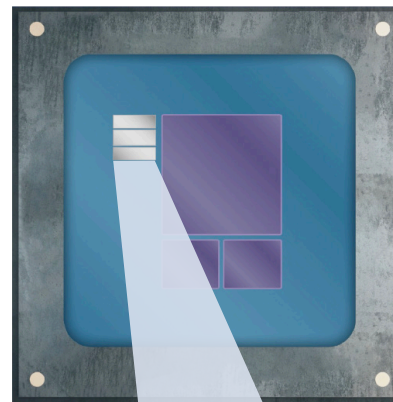
SoC In-Package/Substrate Integration

EP70xx IVR™ Series

- 10A total current from 1.8V_{IN}
- Up to 3 outputs (0.5V to 1.2V_{OUT} range)
- World's fastest transient response (<20mV droop for 10A/500ns step)
- Ultra-fast Dynamic Voltage Scaling (DVS) (up to 5mV/ns)
- 5 x 5 x 0.8mm FcCSP Package



Integrate and Consolidate Power Management Through IVR Integration



Optimal Package Integration Through Ultra Small Die Solution



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