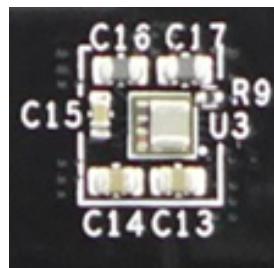


μPOL™ DC-DC Power Modules for Lattice FPGA/SoCs

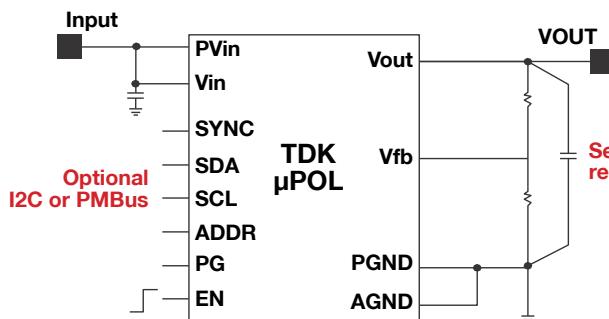
TDK's μPOL technology provides endless opportunities to save space and design time without compromising performance. These power modules, containing matching MOSFET, Driver, Inductor, Cap and thermally enhanced package make it possible to provide the optimal power solution while reducing the number of external components and overall system cost. Plug and Play concept saves design time and allows a system designer to work on a system solution versus fine tuning individual components.

Below is a summary of TDK μPOL for Lattice FPGA/SoC families

		ice40	CrossLink	Certus
TDK μPOL Power Modules	FS1412			6A - 12A 0.6V - 1.8V
	FS1406	1A - 6A 1.0V, 1.2V	1A - 6A 0.6V - 1.8V	1A - 6A 1.0V, 1.2V, 1.5V, 1.8V, 0.6V - 1.8V
	FS1404	3.3V, 2.5V	3.3V, 2.5V	3.3V, 2.5V
	FS1403 / FS1703	3.3V, 5.0V	3.3V, 5.0V	3.3V, 5.0V



- μPOL typical solution FS1406, FS1403
- Minimum BOM and few external components
- 7mm x 7mm complete solution including input/output caps
- Up to 15W without airflow
- Ideal for small form factor applications with Lattice



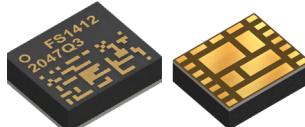
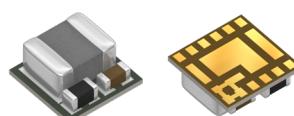
FS1525-0600 FS1515-0600 FS1412-0600 FS1406-0600	0.82V +/-3% 3A to 25A
FS1406-0600 FS1406-1800	1.8V / <6A
FS1406-0600 FS1406-1200 FS1406-1800 FS1404-2500 FS1403-3300	1.2V, 1.8V, 2.5V, 3.3V
FS1406-0600 FS1406-0900 FS1406-1000 FS1406-1100 FS1406-1200 FS1406-1800 FS1404-2500	0.9V, 1.0V, 1.1V, 1.2V, 1.35V, 1.5V, 1.8V

Avant-E FPGA Family

VCC, VCCCLK
VCCHP
VCCA_PLX
VCCAUXA
VCCIO

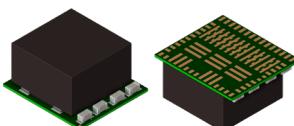
FS1406, FS1404, FS1403, FS1703

- Vin: 4.5V to 16V single supply
- Vout: 0.6V to 5V (see options)
- 6A - 3A / 15W in 3.3mm x 3.3mm x 1.5mm
- Analog, I2C



FS1412

- Vin: 4.5V to 16V
- Vout: 0.6V to 1.8V
- 12A / 20W+ in 4.9mm x 5.8mm x 1.6mm
- Analog, I2C / PMBUS plus telemetry



FS1525 (sampling soon)

- Vin: 4.5V to 16V
- Vout: 0.5V to 1.8V
- 25A shareable n=8 phase to 200A
- 6.8mm x 7.6mm x 3.8mm height
- Analog, I2C / PMBUS plus telemetry

Highlights

- μPOL technology includes Inductor, Controller, Cap, Power MOSFET, Driver, & Digital Engine
- Chip embedded Power IC in thermal enhanced package
- Total solution: 25% to 50% smaller than competitors
- Analog DC-DC or Digital DC-DC design (I2C / PMBUS Serial BUS)
- -40°C to 125°C operating temperature