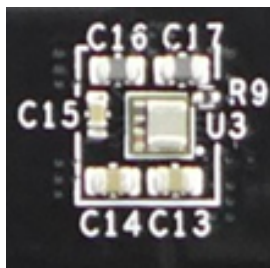


# μPOL™ DC-DC Power Modules for Lattice FPGA/SoCs

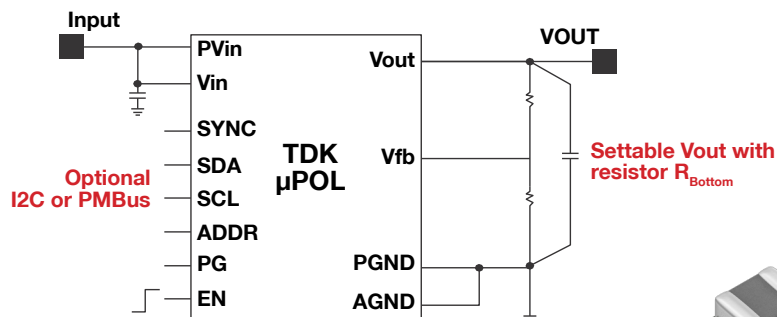
TDK's μPOL technology provides endless opportunities to save space and design time without compromising performance. These power modules, containing matching MOSFET, Driver, Inductor, Cap and thermally enhanced package make it possible to provide the optimal power solution while reducing the number of 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

VCCIO  
high speed

## 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

