

μPOL™ DC-DC Power Modules for Intel FPGA

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.

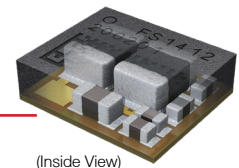
Below is a summary of TDK μPOL for Intel (Altera) families.

		Max 10	Cyclone	Arria	Stratix	Agilex
TDK μPOL Power Modules	FS1525 (coming soon)			12A - 80A 0.9V, 0.95V	25A - 150A 0.80V, 0.9V, 0.95V	50A - 200A 0.70V - 0.9V SmartVID option
	FS1412			6A - 12A 0.6V - 1.8V	6A - 12A 0.6V - 1.8V	6A - 12A 0.6V - 1.8V
	FS1406	1A - 6A 1.0V, 1.2V	1A - 6A 0.6V - 1.8V	1A - 6A 0.6V - 1.8V	1A - 6A 0.6V - 1.8V	1A - 6A 0.6V - 1.8V
	FS1404	3.3V, 2.5V	3.3V, 2.5V	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	3.3V, 5.0V	3.3V, 5.0V

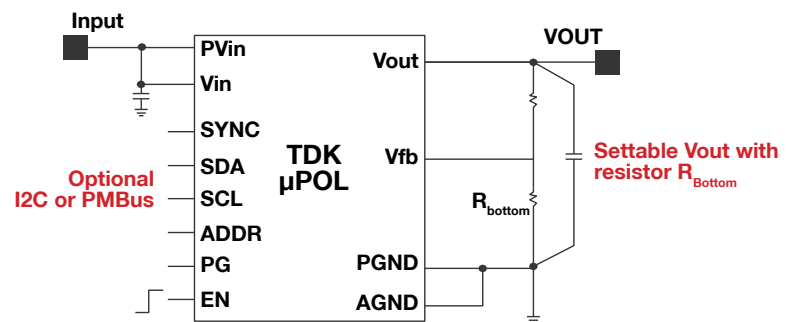
FS1406-0600	0.9, 1.0, 1.1, 1.15, 1.2V	VCC, VCCP, VCCINT VCCERAM
FS1406-0600 FS1404-2500 FS1404-3300	1.8, 1.5, 1.35, 1.25, 1.2 2.5, 3.0, 3.3V	VCCIO
FS1406-0600 FS1404-2500	2.5, 1.8, 1.2, 1.0V	VCCAF_PLL / VCCA_PLL VCCD_PLL, VCCA
FS1406-0600 FS1404-2500 FS1404-3300	1.2, 1.5, 1.8, 2.5, 3.0, 3.3V	VCCPGM (Cyclone V, 10GX)
FS1404-2500	2.5V	VCCA, VCCAUX (Cyclone V, 10LP)
FS1404-2500 FS1404-3300	2.5, 3.0, 3.3V	VCCPD(Cyclone V only)
FS1406-0600	0.95, 1.03, 1.1, 1.2V	VCCE_GXBL, VCCL_GXBL (Cyclone V, 10GX)
FS1406-0600 FS1406-1800 FS1404-2500	1.8, 2.5V	VCCH_GXB (Cyclone V, 10GX)

Intel Cyclone

3D Chip Embedded Power Modules



(Inside View)



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

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