

Quick Power Solutions 5W to 150W Systems TDK μ POL™ Power Modules

μ POL Technology State of the Art DC/DC Converters

PRODUCT HIGHLIGHTS

- μ POL Technology Includes Inductor, DC-DC regulator with FETs and Driver.
- Plug & Play (No Compensation Required)
- I2C Serial Bus
- Scalable Output, same footprint (3A – 6A)
- Adjustable Vout ± 5 mV
- Output Voltage, $\pm 0.5\%$ Initial accuracy
- -40°C to 125°C Operating Temperature

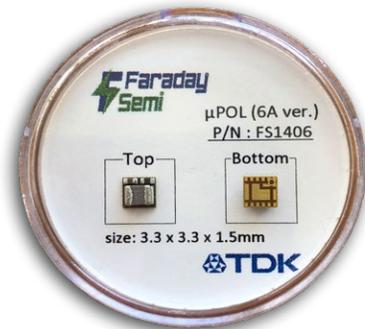
TECHNOLOGY & PERFORMANCE ADVANTAGES

- Chip Embedded Power IC in Thermal Enhanced Packaging
SESUB = Semiconductor Embedded in SUBstrate
- FS1406 6A Power Module Benchmarks:
 - 1 Watt per cubic millimeter
 - 15 Watts in 3.3mm x 3.3mm

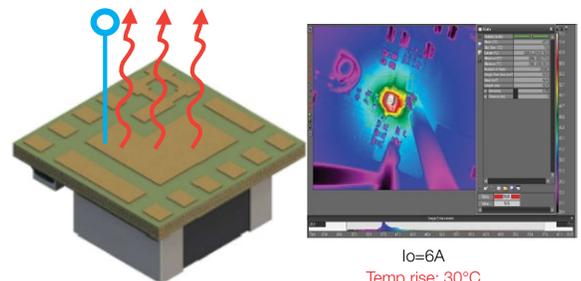
SYSTEM LEVEL PRODUCT ADVANTAGES

- Small footprint, reduces system size and allows for tight PCB density
- Very high power density, improves performance in smaller size
- Reduced PCB size, cuts overall system cost
- Ease of design, speeds time to market
- Minimum external components: add caps! Done

Chip Embedded Power Modules 3.3mm x 3.3mm with a height of 1.5mm



Thermal Path

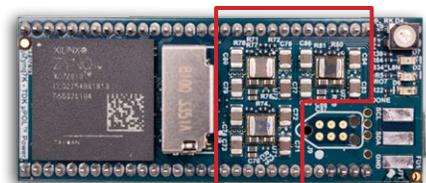


Bottom-side view FS1406
Chip Embedded IC into
SESUB = Semiconductor Embedded in SUBstrate

High Density Power Solution

FPGA System on Module

TDK μ POL: (2) FS1406-6A and (1) FS1403-3A

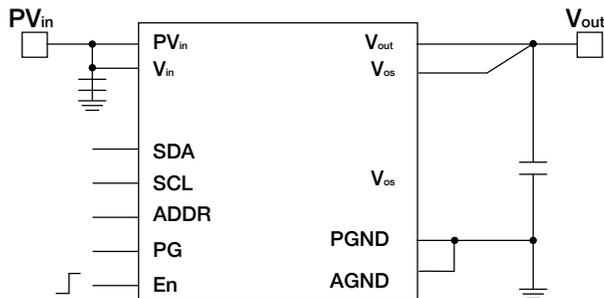


Zynq 7 SoM: 45mm x 15mm

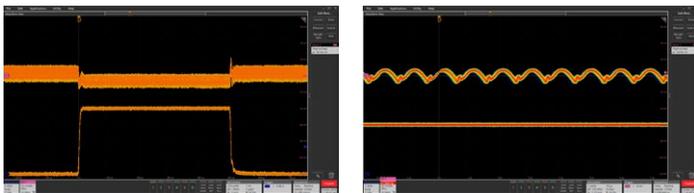
PRODUCT ADVANTAGES

Excellent for tight board space or high power density designs

- Small Space for Tight PCB Density and small size BOM
- Performance without compromise using TDK Thin Film Inductors
- Fixed Vout options. Add your output caps - Design Done
- 15W in 3.3mm x 3.3mm, 1 Watt per cubic millimeter



PERFORMANCE DATA



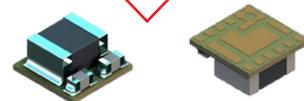
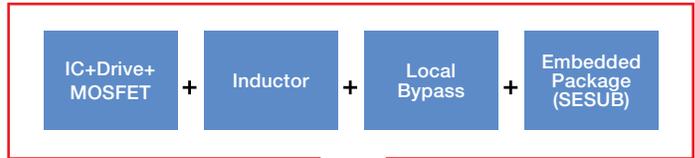
Load Transient 0A to 6A
V_o peak-peak 19mV (±1.2%)

V_o ripple = 8mV @ 6A
(±0.51%)

ORDERING INFORMATION

TDK μPOL™ POWER MODULES	VOLTAGE	CURRENT RANGE
FS1406-0600	0.6V to 2.5V	up to 6A
FS1406-0700	0.7V	up to 6A
FS1406-0750	0.75V	up to 6A
FS1406-0800	0.8V	up to 6A
FS1406-0900	0.9V	up to 6A
FS1406-1000	1.0V	up to 6A
FS1406-1050	1.05V	up to 6A
FS1406-1100	1.1V	up to 6A
FS1406-1200	1.2V	up to 6A
FS1406-1800	1.8V	up to 6A
FS1406-2500	2.5V	up to 6A
FS1404-2500	2.5V	up to 4A
FS1404-3300	3.3V	up to 4A
FS1403-3300	3.3V	up to 3A
FS1403-5000	5.0V	up to 3A

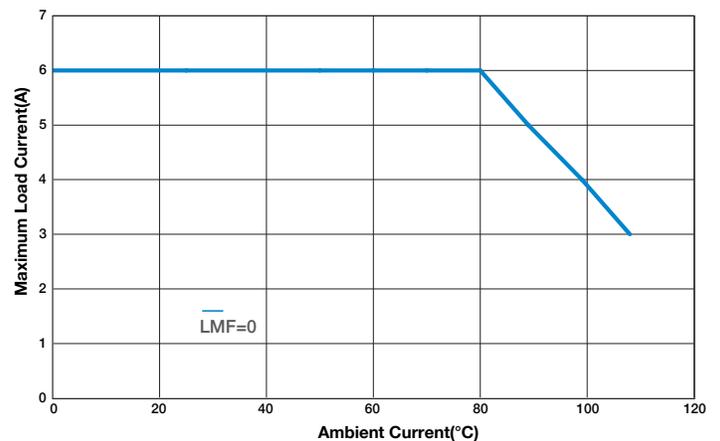
TDK μPOL is best performance & current size/density



- μPOL Technology Includes Inductor in a Thermally Enhanced Package
- Small Size 3.3mm x 3.3mm with a height of 1.5mm
- Plug & Play (No External Compensation Required)
- Digital Communication, I2C Serial Bus
- Scalable Output Current, same footprint (3A – 6A)
- Wide Input Voltage Range (2.5-16V)
- Adjustable Output Voltage, ±0.5% Initial accuracy
- -40°C to 125°C Operating Temperature

Load Current Derating Curve

FS1406 Vin = 12V, Vout = 1V



OTHER DESIGN COLLATERAL

- Example Power Designs
- Various Power Macros & Reference Designs for FPGAs, SoC, and multi-core ARM processors
- Layout PCB stencil guidelines

TDK μPOL, Tony Ochoa
Director of Marketing,
tony.ochoa@us.tdk.com