

## Power Management Products

### World's smallest\* Point-Of-Load DC-DC converter

- New series of  $\mu$ POL™ power solutions, ushers in 'a new era of power management solutions' with increased performance, smallest available size, ease of use and simplified integration
- Scalable and highly configurable with multi-time programmable memory, offering a wide range of flexibility
- Suitable for applications such as big data, machine learning, artificial intelligence (AI), 5G cells, IoT and computing enterprise
- World premiere at APEC 2019 in Anaheim, CA, March 18 to 20 at the TDK booth 811

March 18, 2019

TDK Corporation (TSE:6762) announces the new series of  $\mu$ POL™ DC-DC converters, the industry's most compact and highest power density point-of-load solutions for applications such as big data, machine learning, artificial intelligence (AI), 5G cells, IoT and computing enterprise.

Rather than using side by side discrete integrated circuit (IC) and discrete inductor (L) the new FS series integrates the IC and inductor in a compact configuration which offers a high-density solution for space-constrained applications requiring a low-profile power source. At 3.3 x 3.3 x 1.5 mm, they minimize the required external components, retaining the highest possible performance while offering a simplified design for ease of integration. This family can deliver a high density solution of 1 watt per mm<sup>3</sup>, while offering 50% less solution size than the other products available in its class. As a result, this minimizes system solution cost, reduces board size and assembly costs, as well as BOM and PCB costs. It operates at a broad junction temperature range, from -40 °C to 125 °C. Mass production of FS1406 is expected to begin in Q3 2019.

TDK has been developing patents related to these innovations (US 9,729,059 and US 10,193,442) over several years.  $\mu$ POL™ were developed by TDK's group company Faraday Semi. These new solutions incorporate high-performance semiconductors in advanced packaging technologies such as semiconductor embedded in substrate (SESUB) and advanced electronic components to achieve unique system integration in a smaller size and lower profile by 3D integration. This integration allows TDK to deliver higher efficiency and ease of use at a lower total system cost to what is currently available today.

$\mu$ POL™ technology includes a DC-DC converter placed in the vicinity of complex chipsets such as ASICs, FPGAs and others. By minimizing the distance between the converter and the chipset, the resistance and the inductance components are minimized, allowing fast response and accurate regulation with dynamic load currents.

The product family is rated for industrial application, is lead free and has ROHS compliance.

TDK will be showcasing its  $\mu$ POL™ technology at [APEC 2019](#) from March 18 to 20 at the Anaheim Convention Center in Anaheim, CA at booth 811.

\* As of March 2019, according to TDK research

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## Glossary

- $\mu$ POL™ and nPOL™ are integrated DC-DC converters placed in the vicinity of complex ICs such as ASICs, FPGAs, and others.

## Main applications

- Network Storage: Enterprise SSD / Storage Area Network
- Servers: Main Stream Server, Rack and Blade Server, Micro Server
- Netcoms and Telecoms: Ethernet Switch and Router and 5G Small Cells and 5G Base Stations
- Automotive (Future)

## Main features and benefits

- Footprint of 3.3 x 3.3 x 1.5 mm
- Output of 1 watt per mm<sup>3</sup>, with 50% less required capacitance than existing products
- Suitable for a junction temperature range from -40°C to 125°C

$\mu$ POL™, nPOL™ and The Future of Integrated Technology™ are registered trademarks of Faraday Semi.

## Key data

Type	Dimensions [mm]	Rated current [A]
FS1406	3.3 x 3.3 x 1.5	6
FS1404	3.3 x 3.3 x 1.5	4
FS1403	3.3 x 3.3 x 1.5	3

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## About TDK Corporation

TDK Corporation is a leading electronics company based in Tokyo, Japan. It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK's comprehensive portfolio features passive components such as ceramic, aluminum electrolytic and film capacitors, as well as magnetics, high-frequency, and piezo and protection devices. The product spectrum also includes sensors and sensor systems such as temperature and pressure, magnetic, and MEMS sensors. In addition, TDK provides power supplies and energy devices, magnetic heads and more. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK focuses on demanding markets in the areas of information and communication technology and automotive, industrial and consumer electronics. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2018, TDK posted total sales of USD 12 billion and employed about 103,000 people worldwide.

## About Faraday Semi Inc.

Faraday Semi Inc. (FS) is a leading designer and manufacturer of power management products for growing industrial, data center and automotive markets. The FS objective is to develop, manufacture and market the highest quality integration power management products with the lowest total system cost solution for customers. The TDK group company is fully committed to quality products, integrity in

business management, fully committed to corporate social responsibility and a keen focus on customer needs.

With its extensive technical expertise in power management IC, its cell library, proprietary package technology and systems expertise, FS aims to become an industry leader in this growing market by offering a full array of power solution products for the 21<sup>st</sup> century.

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