Helix Semiconductors
MxC® 300 Product Brief

MxC® 300 65W AC-DC World-Wide Voltage Converter

The MxC® 300 chip-set consists of two devices and is targeted for use in Transformerless ("TL") AC-DC power supply modules, supporting up to 65W operation.

The chip-set enables the elimination of the traditional transformer, reducing losses, weight, and volume, using Helix's patented capacitive isolation barrier. Included in the design is the Company's patented high voltage MuxCapacitor® converter technology. AC-DC power supply solutions can now be realized with a power density improvement over transformer-based architectures. Peak load efficiency runs greater than 94%.

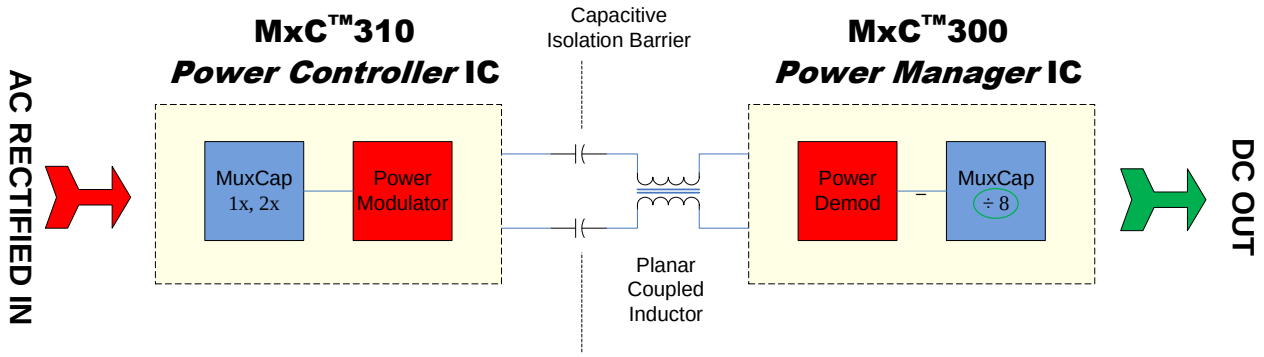
The MxC®300 chip-set also enables modules to be designed and implemented which meet or exceed low standby power standards (<50mW).

Target Applications

- USB-C Compatible Modules
- Smart Outlets
- IoT and IIoT Gateways
- Remote Sensors
- Smoke and CO Detectors

Features

- Two Device Chip-Set
  - Primary Side Power Control IC (MxC310)
  - Secondary Side Power Manager IC (MxC300)
- Capacitive Isolation Barrier Including Modulation and Demodulation in Each IC
- 85-264VAC Input Voltage
- UL Tested Capacitive Isolation Barrier
- Soft-Start
- USB-C PD Compatible Output Voltages
- Typical ±5% Output Voltage Regulation
- > 94% Peak Load Efficiency
- < 50mW Standby Power Mode
- Fault Detection
  - Output over-current
  - Thermal shut-down
- Chip Scale Package Technology
- Evaluation Boards and Reference Designs Will be Available Q3'2021



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Applications Overview

The MxC 300 family consists of ~~a~~ two-device chip-set solution targeted for use in Transformerless AC-DC power supply modules. The chip-set is targeted for 65W Transformerless AC-DC power supply modules supporting USB-C PD output voltages, with load currents of up to 3.25A at 20V.

The chip-set enables the replacement of the traditional transformer mains isolation with the transfer of power across a capacitive isolation barrier. As a result, AC-DC power supply solutions can be realized with a power density improvement over traditional transformer-based architectures, with peak load efficiencies greater than 94%.

Each chip-set consists of a primary-side Power Controller IC and a secondary-side MuxCapacitor IC. The primary side IC pre-conditions the rectified AC mains voltage for optimal power transfer across the capacitive isolation barrier. The secondary side IC performs voltage reduction of the voltage present on the secondary side of the capacitive isolation barrier. Both ICs use Helix's patented MuxCapacitor technology to achieve high efficiency switched-capacitor voltage conversion.

The MxC®300 chip-set also enables modules which meet or exceed a low standby power of < 50mW. Proprietary Helix technology is used to effectively manage the no-load power dissipation while still maintaining the output voltage at the specified value.

Evaluation Boards and Reference Designs

World Mains 65W Evaluation Board and Reference Design will be available in the third quarter of 2021.

Part and Package Descriptions

Part Number	Description	Package
3I 310 65A	Transformerless 65W World Mains Power Control IC	Bumped Die
3D 300 65A	Transformerless 65W Power Manager IC	Bumped Die