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STMicroelectronics earns USB-IF certification for complete USB PD EPR solution; efficiently delivers up to 140W from a single adapter

Geneva, Switzerland, February 28, 2023 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has achieved USB-IF (USB Implementers Forum) certification of two ICs for use in adapter (source) and device (sink) sides of a USB Power Delivery (USB PD) EPR[1] power supply/charger product. The new ICs extend the range of a universal charger to 140W. Now, a single AC to DC adapter can charge equipment such as computers, smart-home actuators, power tools, and e-bikes, as well as traditional applications including smartphones, tablets, and smartwatches.

"*Leading the way among semiconductor manufacturers, ST is now able to deliver USB-IF-certified reference designs and chips to meet customers' demands for a high-power, industry-standard universal charger/adapter,"* said Matteo Lo Presti, Executive Vice President Analog Sub-Group, Analog, MEMS and Sensors Group, STMicroelectronics*. "By moving quickly to support USB PD EPR and achieve certification, we are accelerating the replacement of custom power plugs and DC barrels in numerous applications with a USB-C® connector. This allows charging with a universal AC or DC adapter, reducing cost and environmental impact."*

Certified by the USB-IF to deliver up to 140W (28V@5A), the REF_STUSB140W (sink) and the ST-ONEHP (source) represent two halves of the complete USB PD reference design for the solution. The sink reference design assures designers of an efficient, cost-effective working solution for seamless USB PD integration. The ST-ONEHP is supplied pre-loaded with certified USB PD 3.1 EPR firmware.

Together, the new USB solutions enable a larger universe of applications to adopt a USB-C connector and hence allow charging from a universal AC to DC adapter. This reduces the number of adapters the end user needs to carry and cuts e-waste, while also lowering transportation costs and CO_2 emissions.

"*The USB PD 3.1 specification represents a significant breakthrough to satisfy the charging demands of a wider range of applications beyond 100W*," said Jeff Ravencraft, USB-IF President and COO. "*As one of the first USB PD EPR reference designs to achieve USB-IF Certification, ST's latest ICs will accelerate the industry's transition from proprietary power connectors to USB Type-C®*."

An active contributor to the USB PD 3.1 specification which includes the Extended Power Range (EPR) definition, the ST solutions are among the first designs certified.

[1] Universal Serial Bus (USB) Power Delivery (PD) Extended Power Range (EPR)

Further Technical Information

ST's application (sink) side reference design is based on an STM32, an STUSB1602 analog front-end IC, high-voltage protection devices, and a dedicated software stack. The design supports protocol fine tuning and addresses a large range of applications.

The adapter (source) side design delivers up to 140W (28V@5A) output from an ST-ONEHP digital controller specifically designed for USB PD 3.1 EPR chargers. The controller integrates an Arm® Cortex® M0+ core, an offline programmable controller with synchronous rectification, and a USB PD PHY in a single package. It pairs with ST's MasterGaN1 power stage to create the world's highest power density chargers for any battery powered device, appliance or smart mobility application, exceeding 25W/in.^{3} with 140W output power and 94% peak efficiency.

Samples of the ST-ONEHP are already available in a SSOP36 leaded package, priced from $3.90 for orders of 1000 pieces.

Evaluation boards of the SINK and SOURCE solutions will be available on request in Q2'2023.

About STMicroelectronics

At ST, we are more than 50,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An integrated device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and connectivity. ST is committed to becoming carbon neutral by 2027. Further information can be found at www.st.com.

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