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USB-C Controller Eases Transition Away From Barrel Connectors

Infineon Technologies' EZ-PD BCR (Barrel Connector Replacement) is a highly integrated USB-C controller. Together with the USB-C connector, it replaces barrel connectors, custom connectors or legacy USB connectors in electronic devices. The EZ-PD BCR solution supports the USB Power Delivery (PD) standard that interoperates with all USB-C power adapters without the need for firmware development (see the figure).

The recently published Revised Radio Equipment Directive from the European Commission proposes to standardize charging ports for most electronic devices with an aim to reduce e-waste from retired, incompatible chargers. The proposal calls for USB-C as the common charging port and it allows consumers to charge their devices with the same USB-C charger, regardless of the device brand. A common charging standard harmonizes fast charging technology and prevents product producers unjustifiably limiting the charging speed when using a charger from a different brand.

Changing to a USB-C charging port using the EZ-PD BCR USB controller at the power-sink holds numerous benefits for consumers as well as manufacturers. It offers higher levels of convenience to consumers by being agnostic to connector types or product manufacturers when selecting a charger. Manufacturers can benefit from the consolidation of large variants of chargers to a standard USB-C charger. The EZ-PD BCR minimizes bill of materials cost for the USB-C power-sink system and it guarantees USB-C specification compliance and interoperability through USB-IF certification.

The common charger proposal also unbundles the sale of a charger from the sale of the electronic device such that consumers will be able to purchase a new electronic device without a new charger. This will greatly limit the number of unwanted chargers purchased or left unused, and ultimately reduce e-waste.

"Infineon is committed to provide its customers with solutions that enable them to leapfrog ahead of their competition in performance while contributing to a greener future," says Adam White, executive vice president and chief marketing officer in the Power & Sensor Systems Division at Infineon. "Our end-to-end solution in the USB-C charging domain provides the best performance, the highest system reliability and also meets contemporary ecological requirements: it is energy efficient and aims to reduce e-waste. The disposal of retired chargers is responsible for eleven thousand tons of e-waste every single year. This has to change and we at Infineon are ready to support this change. Our power semiconductor portfolio includes discrete and integrated state-of-the-art silicon and next-generation gallium nitride products which can cover any design requirements our customers may have."

At the power-source, in the charger, the latest CoolGaN Integrated Power Stage (IPS) 600 V leverages GaN and driver technologies, uniting ultimate efficiency and reliability with ease-of-use, according to the vendor. GaN technology allows for higher switching frequency and more output power in the same size or a smaller charger with the same power level.

Besides the positive environmental impact, consolidation through standardization and resultant manufacturing cost savings also make the shift a favorable option to manufacturers. More information about the controller is available on the EZ-PD Barrel Connector Replacement (BCR) page. For more about Infineon's broad portfolio of USB-PD Type-C solutions, see the USB-C power delivery (PD) – Power adapter, charger page.

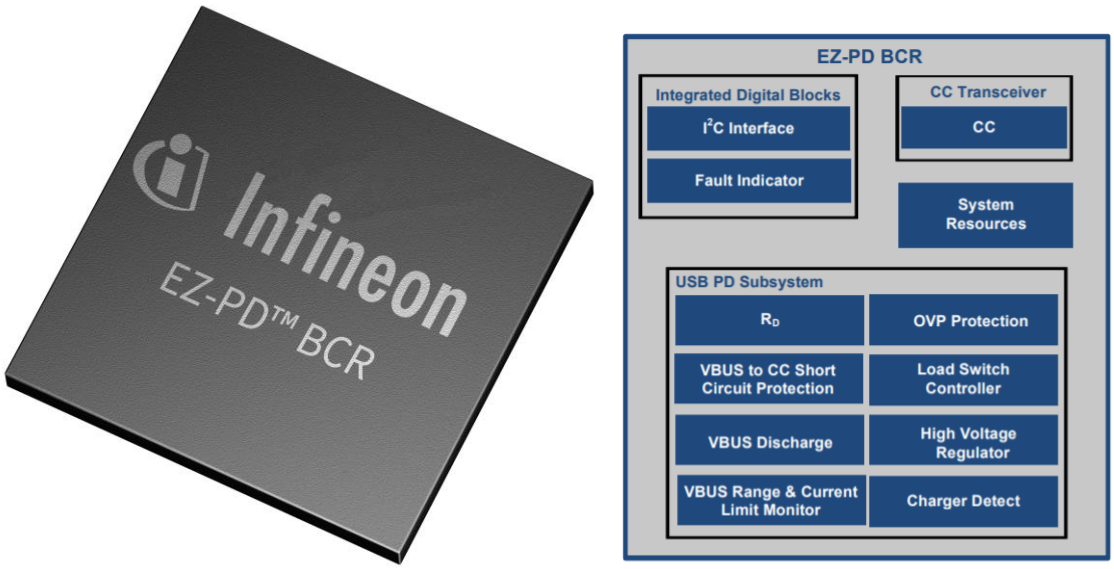

Figure. The EZ-PD Barrel Connector Replacement (BCR) is a highly-integrated USB Type-C port controller targeting electronic devices that have legacy barrel connectors (up to 100 W) or USB micro-B connectors for power such as drones, smart speakers, power tools, and other rechargeable devices. EZ-PD BCR complies with the latest USB Type-C and USB Power Delivery (PD) standards and enables users to quickly convert their devices from being powered through a barrel connector to being powered via the USB-C connector with few external components and no firmware development required. A photo of the EZ-PD BCR's 24-pin QFN package is shown on left while a block diagram of the controller is shown on the right.