New Product Announcement

AP43776

Dual-Port USB PD3.1 Protocol Decoder for Fast-Charging Applications

The DIODES™ AP43776 is a dual-port USB Type-C® power delivery PD/PPS decoder dedicated to power source applications with legacy capability.

It is compliant with USB Type-C specification Rev1.2 and USB power delivery (PD) specification Rev 3.1 (TID – 6206). The device is also compliant with Quick Charge™ QC4/4+/QC5 compliance certification (QC20211008263).

Targeted for DC-based quick charging, the AP43776 has I2C interface pins and UART pins to support inter-chip communication. This can be enabled by I2C-equipped DC-DC converters, controllers, or with another AP43776 for a total of four USB Type-C port charging applications.

With embedded MCU and OTP (one-time programmable) memory, the built-in firmware of the AP43776 supports smart power sharing, low-battery/thermal detection, power-derating, and charging stage LED indication.

The AP43776 is available in the small footprint W-QFN4040-20 (Type A1) package.

The DIODES™ Advantage

The AP43776 is a high-performance USB PD/QC4+/QC5 decoder for multiple ports and fast-charging applications.

- **Supports Two Independent USB Type-C PD Ports with Full-Range of USB PD3.1 PPS (3.3V~21V) Voltages**
  Multiple USB Type-C ports with independent charging output voltages for power optimization
- **Enables USB Type-C PD with DisplayPort™ Alternate Mode**
  Supports DisplayPort Alternate Modes Discovery, Enter, and Exit included by decoding out the control signals from CC pin handshaking, and delivering to the SS data switches via I2C interface
- **CC1/CC2 Short-Protection to V_{BUS}**
  Protection of CC1/CC2 (low-voltage pins) from short to V_{BUS} (up to 24V)
- **Aides E-Marker Cable Detection with Built-In V_{CONN} Switch and OCP Protection**
  Supports USB Type-C cable authentication
- **I2C/UART Interface Enables Inter-Chip Communication**
  Maintains I2C-equipped buck-boost controllers or converters for DC-based charging applications, with UART bus for inter-AP43776 communication for a total of four USB Type-C PD channels for smart-power sharing

Applications

- After-market car chargers with USB PD/PPS
- DC-input, multi-port, USB Type-C PD charging

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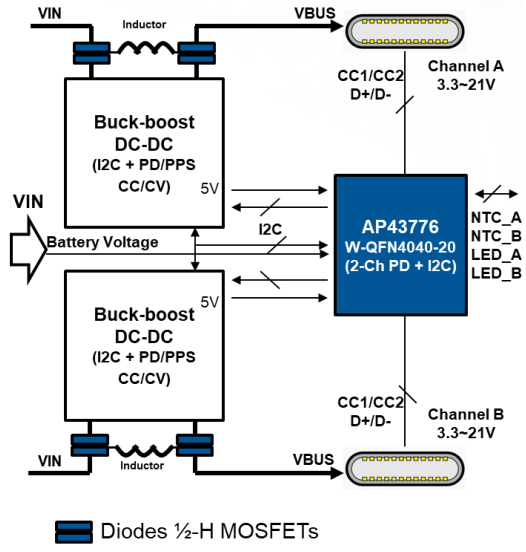
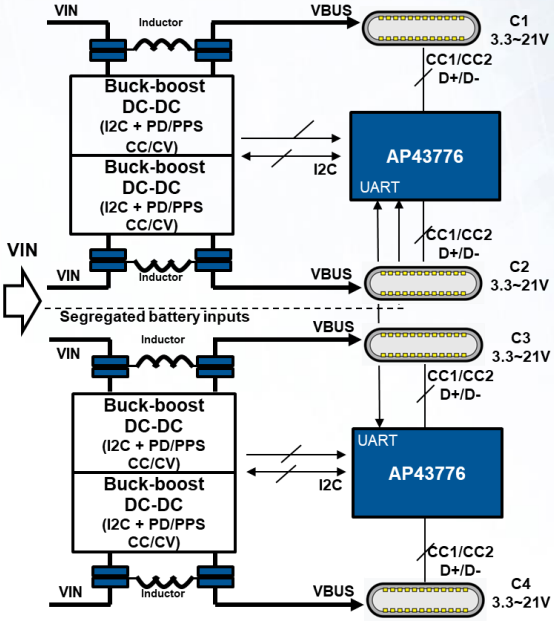
Smart Two/Four-Port USB Type-C PD Charger Module





Dual-Channel USB Type-C PD3.1/PPS/QC5 Protocol Decoder

Part Number	VCC Max	Typical Operating Current	Max Sleep Mode Current	Compatible Protocols	CC1/CC2 OVP Level	Package
	(V)	(mA)	(µA)		(V)	
AP43776ZDZ20-13	6	1.5	1,200	USB PD3.1 PPS QC4/4+/5	6.2	W-QFN4040-20 (Type A1)

Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package	Moisture Sensitivity	Packing	
				Quantity	Carrier
AP43776ZDZ20-13	Standard	W-QFN4040-24 (Type A1)	MSL-1	3,000	13” Tape & Reel