



# New Product Announcement

## AP3304A AP43671

### Highly Integrated, Cost-Effective, USB PD3.0 Charger Solution for Portable and Consumer Applications

The DIODES™ AP3304A and DIODES™ AP43671 combination provides a high-efficiency, highly-integrated solution for USB PD3.0 chargers.

The AP3304A is a peak-current control, multi-mode (QR+CCM), PWM controller optimized for high performance, low standby power, and cost-effective offline flyback converters. At light load, the IC will enter burst mode with 23kHz switching frequency to minimize consumption of standby power. The minimum switching frequency is set to avoid audible noise. When the load increases, the IC will enter QR mode with frequency foldback to improve system efficiency and EMI performance.

The AP43671 is highly integrated, combining an intelligent USB Type-C® power delivery (PD) controller with an embedded synchronous rectification (SR) controller. The device ideally targets cost-performance-sensitive USB Type-C adaptors and charger applications.

The AP43671 supports USB PD3.0 V1.2 and programmable power supply (PPS), as well as Qualcomm® QC4/QC4+ protocols. Leveraging its embedded MCU and supporting circuitry, popular quick-charging protocols for firmware are stored in one-time-programmable (OTP) memory. To enable optimal system BOM and performance implementation of quick chargers, the AP43671 embeds a multiple-mode adaptive SR controller where its key performance and safety parameters can be fine-tuned by its built-in MCU.

The AP3304A is available in the SOT26 package, and the AP43671 is available in the W-QFN4040-20 package.

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#### The DIODES™ Advantage

The AP3304A and AP43671 deliver a highly integrated USB PD/QC4+ solution with embedded SR controller for portable and consumer applications.

##### AP3304A

- **60V Process of Vcc Pin**  
Simplifies system design for USB PD applications
- **Multi-Mode of Operations**  
QR/CCM mode to improve efficiency at all load conditions

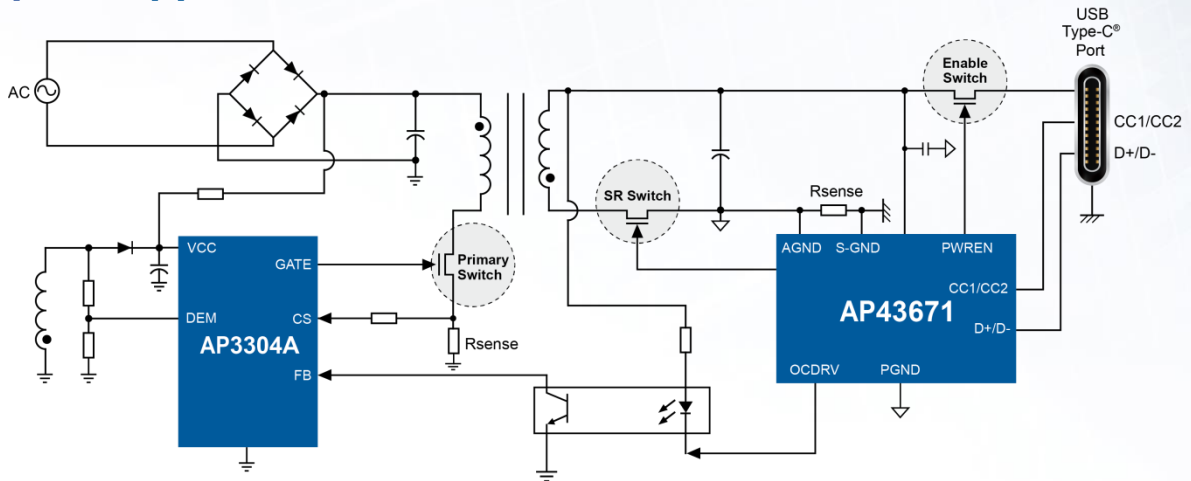
##### AP43671 Decoder

- **Cost-Effective and Flexible Program Mode**  
Provides one-time-programmable ROM for main firmware, and multi-time-programmable ROM for user-configuration data
- **Highly Integrated Protocol Decoder with SR Controller**  
Embedded synchronous rectification (SR) controller supports adaptive quasi-resonant (QR) and continuous conduction mode (CCM) for matching PWM controllers

#### Applications

- USB PD3.0:
  - Smartphone fast chargers
  - Notebook computer adaptors

### Typical Application



### QR/CCM PWM Controller

Part Number	HV Start-Up Circuit	Startup Current ( $\mu\text{A}$ )	UVLO Threshold on/off (V)	Gate Output Current (mA)	Maximum Frequency (kHz)	Package
<a href="#">AP3304A</a>	No	1	15.8/6.5	+300/-800	80 (CCM mode)	SOT26

### PD Decoder

Part Number	VCC MAX (V)	Operating Current ( $\mu\text{A}$ )	Deep Sleep Current ( $\mu\text{A}$ )	Protocol Compatible	UVLO Voltage (V)	Package
<a href="#">AP43671</a>	24	4500	750	USB PD3.0 PPS/QC4+/4+	2.7	W-QFN4040-20

### Ordering Information

Orderable Part Number	Package	Moisture Sensitivity	Packing	
			Qty.	Carrier
<a href="#">AP43671ZDZ20-13</a>	W-QFN4040-20/SWP (Type A1)	MSL-	3000	13" Tape and Reel
<a href="#">AP3304AW6-7</a>	SOT26	MSL-1	3000	7" Tape and Reel