New Product Announcement

AP3306, APR340, AP43771V

Complete Ultra-High-Power Density Charger Solution Delivers Improved Efficiency and Reduced Size for USB Chargers

The AP3306, APR340, and AP43771V combination provides a high-efficiency, small footprint solution for USB PD3.0 chargers.

The AP3306 Active Clamp Flyback (ACF) controller uses a non-complimentary high- and low-side control mechanism to achieve leakage energy recycling and zero voltage switching (ZVS) for supreme-efficiency performance. The device can meet <30mW standby loss.

The APR340 is a secondary-side synchronous-rectification MOSFET driver optimized to work with the AP3306.

The AP43771V is a USB Type-C® Power Delivery (PD) 3.0 PPS decoder. It is compliant with both USB PD specification Rev 3.0 V1.1 (TID – 4305) and QC4/4+/QC5 (certification by GRL).

The AP43771V (QFN-24) maximizes power usage by using its I2C interface and GPIO pins to facilitate operation in multi-port independent-output voltages where built-in smart-power-sharing firmware is implemented.

Based on quick-charger designs to shorten design-to-production cycle time, the AP43771V has 45W and 65W single-C and dual-C reference designs for USB PD3.0 PPS.

The Diodes Advantage

The AP43771V, AP3306, and APR340 combination delivers highly efficient, cost-effective, USB PD/QC4+/QC5 solutions for portable and consumer applications.

AP3306 ACF controller
Supports high-side switcher driver without level-shift circuitry, and non-complimentary high- and low-side control mechanisms to reduce BOM cost and simplify system design.

AP43771V decoder

- **Supports a cost-effective and flexible program mode:**
  - One-time programmable ROM is provided for main firmware.
  - Multi-time-programmable ROM is provided for user-configuration data.
- **Uses an I2C interface and a built-in smart-power sharing scheme:**
  - Supports multiple USB Type-C port-independent voltage-output charging applications (QFN-24) for power-usage optimization.

APR340 secondary-side synchronous-rectification driver
Optimized for operation with AP3306 and supports system output voltage, which can go as low as 2V—a significant benefit in PPS applications.

Applications

- Smartphone quick chargers
- Notebook computer adapters
- High-power density adapters/chargers

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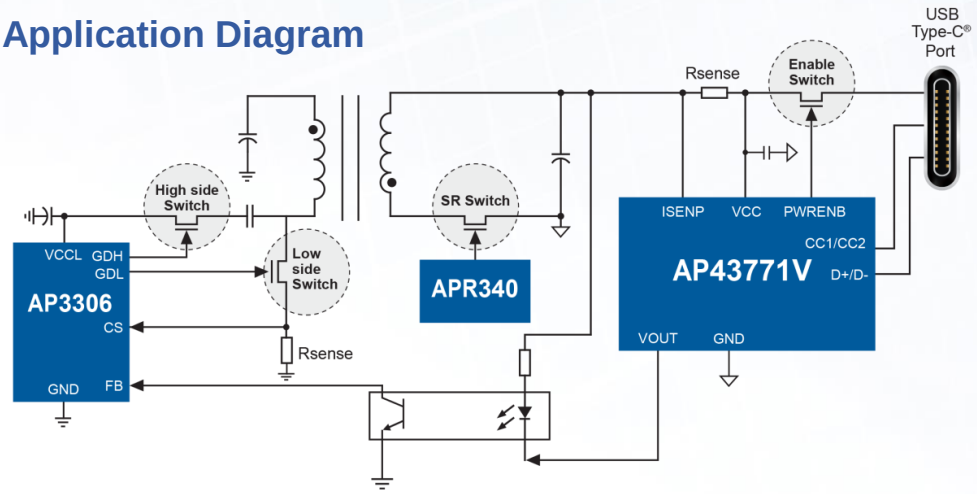
Typical Application Diagram



65W Dual-Port ACF PD3.0 PPS Chargers
AP3306 + APR340 + AP43771V (QFN4040-24)

Ultra-High-Power-Density Charger Designs:

- EVB1 - 65W ACF PD3.0 PPS Charger Design with Super Junction MOSs
- EVB2 - 65W ACF PD3.0 PPS Charger Design with Super GaN FETs

Active Clamp Flyback PWM Controller

Part Number	HV Start-Up Circuit	Startup Current (μA)	UVLO Threshold on/off (V)	Gate Output Current (mA)	Maximum Frequency (kHz)	Package
AP3306	Yes	1	15.8/6.5	+300/-800	125(Max)	SO-10

Synchronous Rectification Controller

Part Number	VCC MAX (V)	Operating Current (μA)	Drain Rating (V)	MOSFET R_{dson} (mΩ)	Package
APR340	22	150	External	External	SOT26

PD Controller

Part Number	VCC MAX (v)	Operating Current (μA)	Typical Deep Sleep Current (μA)	Protocol Compatible	Typical UVLO voltage(V)	Package
AP43771VFBZ-13	24	3300	550	USB PD3.0 PPS/QC4/4+/5	2.7	W-DFN3030-14
AP43771VDKZ-13	24	3300	550	USB PD3.0 PPS/QC4/4+/5	2.7	W-QFN4040-24

Ordering Information

Device	Package	Packing	
		Qty.	Carrier
AP3306S10-13	SO-10	2500	Reel
APR340W6-7	SOT26	3000	Reel
AP43771VFBZ-13/AP43771VDKZ-13	W-DFN3030-14/W-QFN4040-24	3000/3000	Reel