



# New Product Announcement

## AP43771H AP3306 APR3401

### High-Power-Density Solution for 140W USB PD3.1 EPR Chargers and Adapters

The AP43771H, AP3306, and APR3401 product combination provides a high-efficiency, small-footprint solution for USB PD 3.1 EPR chargers and adapters.

The AP43771H is a USB Type-C® Power Delivery (PD) 3.1 decoder, compliant with USB PD specification Rev. 3.1 V1.6 Extended Power Range (EPR) 28V. This includes AVS capability of 100mV/Step support (TID – 9275). The device contains on-board MTP memory that supports system configuration customization.

The AP3306 is an Active-Clamp Flyback (ACF) controller which drives a high-side PMOS and a low-side NMOS. This achieves transformer leakage energy recycling and zero voltage switching (ZVS) for high-efficiency performance. In addition, the AP3306 still achieves <30mW standby loss at high powers.

The APR3401 is a secondary-side synchronous-rectification MOSFET driver optimized to work with the AP3306 in USB PD 3.1 EPR applications.

The AP43771H is available in the W-DFN3030-14 (Type A1) package, the AP3306 is available in the SO-10 (Type A1) package, and the APR3401 is available in the SOT26 package.



#### The DIODES Advantage

The AP43771H, AP3306, and APR3401 combination delivers highly efficient, cost-effective, USB PD 3.1 EPR (28V) solutions for charger and adapter applications.

- **AP3306 ACF Controller Supports High-Side Switcher Drive Without Level-Shift Circuitry, and Non-Complimentary High- and Low-Side Control Mechanisms**  
Reduces Bill-of-Materials (BOM) cost and simplifies system design
- **AP43771H USB PD 3.1 EPR Decoder with 34V  $V_{CC}$  Supports USB PD 3.1 EPR (28V) Applications and Different Forms of NVM:**
  - a) One-Time Programmable ROM for Main Firmware
  - b) Multi-Time-Programmable ROM for User-Configuration
 Enables customization of system USB PD 3.1 EPR configurations
- **APR3401 Secondary-Side Synchronous-Rectification Driver Optimized for Operation with AP3306 with 45V Supply and 175V  $V_{DET}$  (Max)**  
Reduces BOM cost and simplifies system design

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#### Applications

- USB Type-C USB PD3.1 (EPR) 28V chargers and adapters



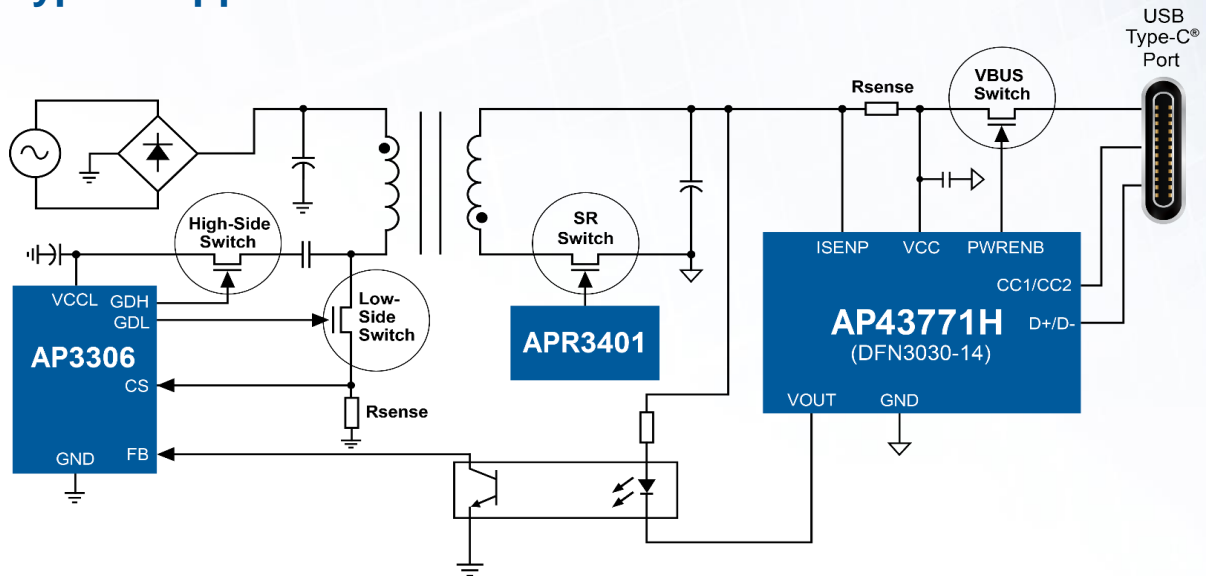
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## AP43771H

### AP3306

### APR3401

## Typical Application



## Secondary-Side Decoder

Part Number	Protocols Supported	Power Role	I2C Support	SR Controller Embedded	V <sub>BUS</sub> MOS Embedded	V <sub>CC</sub> Maximum Rating	Package
<a href="#">AP43771H</a>	USB PD3.1 EPR (MCU + OTP + Hardwired)	DFP (Downstream -Facing Port)	No	No	No	34	W-DFN3030-14 (Type A1)

## ACF Controller

Part Number	HV Start-Up Circuit	Startup Current μA	High-Side MOSFET	Low-Side MOSFET	UVLO Threshold On/Off	Gate Output Current	Maximum Frequency	Package
					V	mA	kHz	
<a href="#">AP3306</a>	Yes	1	Ext PMOS	Ext NMOS	15.8/6.5	-800 to +300	125	SO-10 (Type A1)

## Synchronous Rectification Solution

Part Number	V <sub>CC</sub> (Max)	Operating Current	V <sub>DET</sub> (Max)	Drain Rating	MOSFET R <sub>ds(on)</sub>	Package
	V	μA	V	V	mΩ	
<a href="#">APR3401</a>	45	190	175	External	External	SOT26

## Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Packages	Moisture Sensitivity	Packing	
				Quantity	Carrier
<a href="#">AP43771HFBZ-13</a>	<a href="#">Standard</a>	W-DFN3030-14 (Type A1)	MSL-3	3,000	13" Tape & Reel
<a href="#">AP3306S10-13</a>	<a href="#">Standard</a>	SO-10 (Type A1)	MSL-3	2,500	13" Tape & Reel
<a href="#">APR3401W6-7</a>	<a href="#">Standard</a>	SOT26	MSL-3	3,000	7" Tape & Reel