



# New Product Announcement

AP33510

APR349

AP43771V

## Quasi-Resonant Flyback Controller with Optimized E-GaN Driving Delivers High-Efficiency USB PD Solution

The DIODES™ AP33510, APR349, and AP43771V chipset provides a high-integration, high-efficiency, and cost-effective solution for USB PD3.0 chargers with enhancement GaN (E-GaN) switch.

The AP33510 is a quasi-resonant (QR) flyback E-GaN FET controller specially designed for offline flyback power supplies which require high-power density, low-standby power, and comprehensive protection.

The AP33510 operates in QR mode at full load. This ensures that switching events always occur in the drain-source valley and minimizes switching loss. The maximum switching frequency is internally limited to 150kHz, with a 25kHz minimum to avoid audio noise.

The APR349 is a secondary-side synchronous-rectification MOSFET driver optimized to co-work with the AP33510 for E-GaN systems.

The AP43771V is a USB Type-C® Power Delivery (PD) 3.0 PPS decoder. It is compliant with both USB PD specifications of Rev 3.0 V1.1 (TID = 4305) and QC4+/QC5 (certification by Granite River Labs (GRL)).

There are 65W, 1C, 52CC PD3.0 PPS charger and 65W, 2C, 70CC PD3.0PPS charger reference designs available upon request.

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### The DIODES™ Advantage

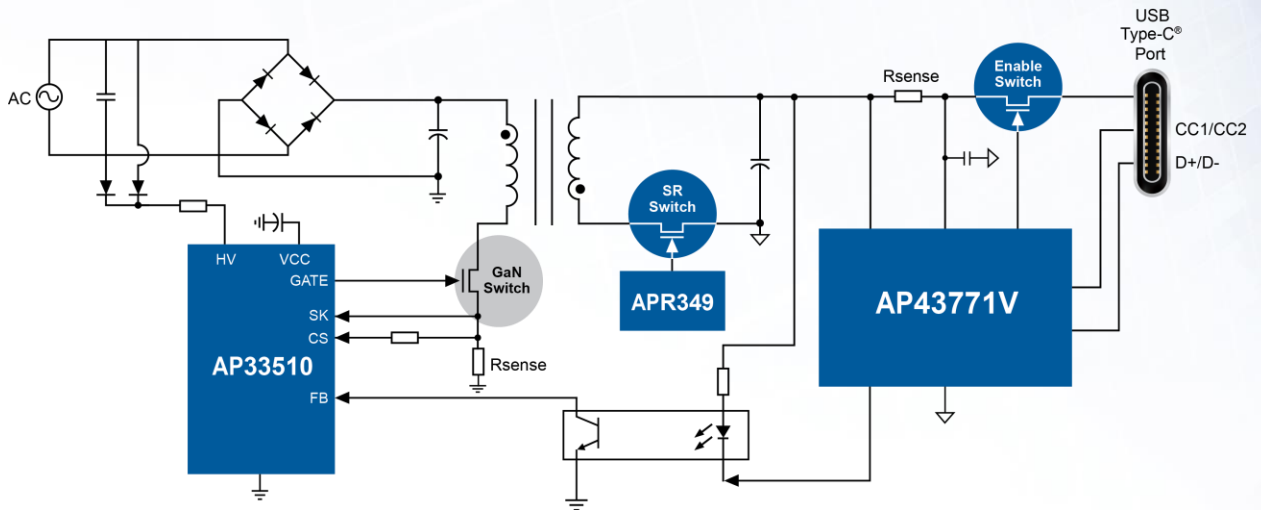
**The AP33510, APR349, and AP43771V chip set delivers a highly efficient, highly integrated, and cost-effective solution with low standby power for USB PD/QC4+/QC5 protocol compliant charging applications.**

- **AP33510: High Reliability Gate Driver for E-GaN FET**  
Simplifies system BOM with improved reliability in E-GaN switch applications
- **AP33510: QR-Mode of Operation**  
Improved efficiency across all loading conditions
- **AP33510: High-Voltage Startup/ X-Cap Discharge Function**  
Achieves ultra-low standby power
- **AP33510: Internal 120V Capable LDO Regulates Vcc**  
Supports whole PD3.0/PPS output voltage range with reduced overall system bill of materials (BOM)
- **APR349: Secondary-Side Synchronous-Rectification Driver**  
Optimized for operation with AP33510 for a flyback system with E-GaN primary switch
- **AP43771V: USB PD3.0 PPS Controller with I2C**  
Supports full range of USB PD3.0/PPS (3.3V~21V) and QC3.0/4/4+/5protocols
- **AP43771VDKZ (QFN4040-24) with I2C**  
Supports multiple-port smart power sharing

### Applications

- Programmable switching AC-DC adapters or quick chargers
- High-power-density industrial and consumer power supplies

### Typical Application



### Primary-Side Controller

Part Number	Operation Mode	HV Start-Up Circuit	VCC_IN_MAX (V)	UVLO Threshold On/Off (V)	Gate Output Current (mA)	Package
<a href="#">AP33510</a>	QR	Yes	150	18/6.7	+350/-500	SSOP-9 (Type CJ)

### Secondary-Side Decoder

Orderable Part Number	Protocols Supported	Power Role	I2C Support	VCC Max	Package
<a href="#">AP43771VFBZ-13</a>	USB PD3.0/PPS/QC3.0/4/4+/5	DFP	No	24V	W-DFN3030-14
<a href="#">AP43771VDKZ-13</a>	USB PD3.0/PPS/QC3.0/4/4+/5	DFP	Yes	24V	W-QFN4040-24

### Synchronous Rectification Controller

Part Number	VCC MAX (V)	Operating Current ( $\mu$ A)	Drain Rating (V)	MOSFET $R_{dson}$ (m $\Omega$ )	Package
<a href="#">APR349</a>	28	215	External	External	SOT26

### Ordering Information

Orderable Part Number	Compliance	Package	Moisture Sensitivity	Carrier	Quantity
<a href="#">AP33510S9-13</a>	<a href="#">Standard</a>	SSOP-9 (Type CJ)	MSL-3	13" Tape & Reel	4,000
<a href="#">APR349W6-7</a>	<a href="#">Standard</a>	SOT26	MSL-1	7" Tape & Reel	3,000
<a href="#">AP43771VFBZ-13</a>	<a href="#">Standard</a>	W-DFN3030-14	MSL-1	13" Tape & Reel	3,000
<a href="#">AP43771VDKZ-13</a>	<a href="#">Standard</a>	W-QFN4040-24	MSL-1	13" Tape & Reel	3,000