



New Product Announcement

AR30N60PPA

Active/Synchronous Rectifier Integrates Controller and MOSFET for a Complete Solution

AR30N60PPA is a high-performance Active/Synchronous Rectifier optimized for secondary-side synchronous rectification, providing an output voltage from 3.5V-6V.

AR30N60PPA integrates the MOSFET and controller which emulates the characteristics of a near-ideal diode rectifier. This reduces secondary-side energy consumption as well as improves primary-side power dissipation.

The smart SYNC pin, when connected to a suitable primary-side control signal, and under continuous conduction mode (CCM), allows the embedded MOSFET to work synchronously with the primary-side switch, thus avoiding the unfavorable shoot-through condition.

Other intelligent features which improve conversion efficiency and system integrity are: light-load detection to reduce standby power consumption, TON and TOFF/EN pins to prevent run-away ON-time due to the open-circuit or short-circuit conditions, SFB pin to provide overtemperature protection (OTP) and undervoltage lock-out (UVLO) to ensure system reliability.

AR30N60PPA is ideally suited for high-efficiency AC/DC power converters which support fast charging. In addition, the device supports either Flyback or LLC-resonant topology and operates under Discontinuous Conduction (DC), Continuous Conduction (CC), or Quasi-Resonant (QR) modes.

AR30N60PPA is housed in the small form-factor DFN6040 package, which is both halogen-free and RoHS-compliant. (See diodes.com for further details).



The Diodes Advantage

- **Very low turn-OFF threshold, Very small MOSFET Propagation Delay, and Very low Drain Source ON Resistance**

When operating in DC mode, the embedded AR30N60PPA MOSFET offers very low turn-OFF threshold ($V_{THOFF} = -4mV$ typical). Once this threshold is reached, the embedded MOSFET only takes $T_{D_OFF} = 30ns$ Typ. to shutoff. Additionally, the drain source ON resistance is $R_{DS(ON)} = 15m\Omega$ typical.

- **Smart Synchronization Feature**

With the AR30N60PPA operating in CC mode, the smart SYNC pin synchronizes with the primary-side controller to avoid shoot-through from occurring. As a result, unfavorable reverse condition of the embedded MOSFET is prevented.

- **Multiple Modes of Operation**

AR30N60PPA is ideally suited for the fast-charging capable AC/DC power converters implemented in either the Flyback or the LLC-resonant topology, supporting many modes of operation such as DC, CC, and QR.

- **Fault Detection and System Protection**

To protect the integrity of the system, the UVLO and OTP features of the AR30N60PPA guard against undervoltage and overtemperature, respectively.

Applications

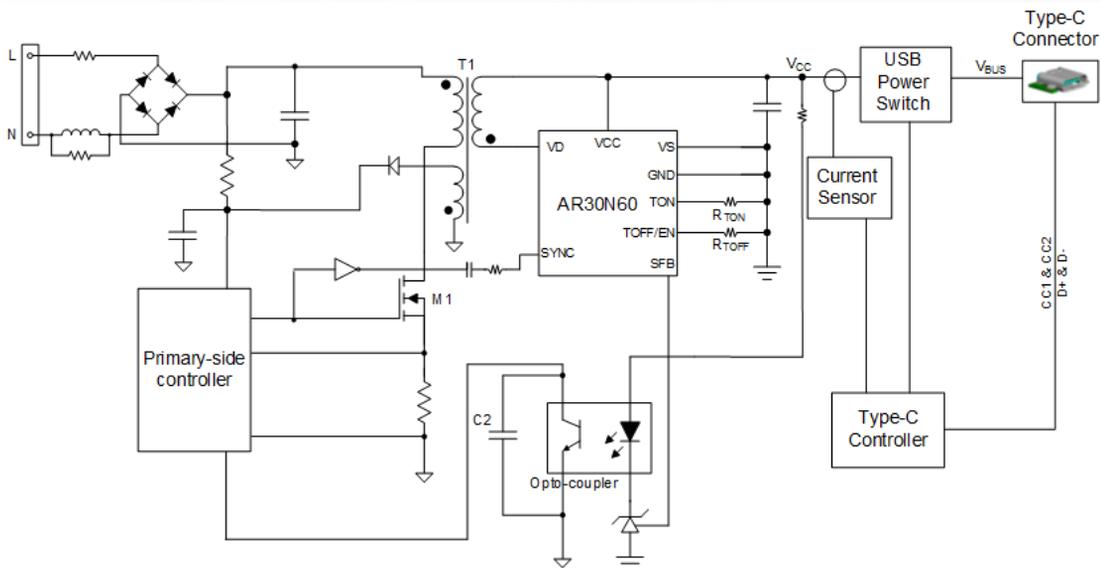
- USB Type-C charger
- Flyback Conversion
- PC Power Supply
- AC/DC Battery Charger
- Fast Charging
- Switch-Mode Power Supply (SMPS)



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Typical Application Circuit



Product Portfolio

Part Number	Supply Voltage V_{CC} (V)	Max Quiescent Current $I_{CC,ON}$ (mA)	Drain Voltage V_D (V)	Mode of Operation	Switching Frequency F_{SW} (KHz)	Turn-ON/Turn-OFF Delay Time (ns)		Gate Turn-OFF Threshold Voltage V_{THOFF} (mV)	Typ Drain Source ON Resistance R_{DSON} (m Ω)	Package
						$T_{D,ON}$	$T_{D,OFF}$			
AR30N60PPA-13	3.5 – 6	2.9	60	CCM DCM QR	600	30	30	-4	15	DFN6040-22

Ordering Information

Product	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
AR30N60PPA-13	AR30N60	13	12	3,000