

3A Low I_Q Synchronous Buck Converter with Best-In-Class EMI Performance

The AP63300 and AP63301 are 3A, synchronous buck converters with a wide input voltage range of 3.8V to 32V supporting 5V, 12V and 24V power supplies. Integrated 75m Ω high-side and a 40m Ω low-side power MOSFETs provide high efficiency step-down DC-DC conversion.

The AP63300 utilizes Pulse Frequency Modulation (PFM) with a low quiescent current of 22 μ A, which provides efficiencies up to 88% at 5mA light load. The AP63301 operates in Pulse Width Modulation (PWM) where the switching frequency is fixed regardless of output load for lower output voltage ripple.

Both products are optimized for Electromagnetic Interference (EMI) reduction with a proprietary gate driver scheme to resist switching node ringing without sacrificing MOSFET turn-on and turn-off times. This controlled switching reduces high-frequency radiated EMI noise.

The AP63300 also features Frequency Spread Spectrum (FSS) with a switching frequency jitter of $\pm 6\%$, which reduces EMI by not allowing emitted energy to stay at any one frequency for a significant period of time.

The devices are available in a low-profile TSOT26 package with the same pin out as the 2-A versions.



The Diodes Advantage

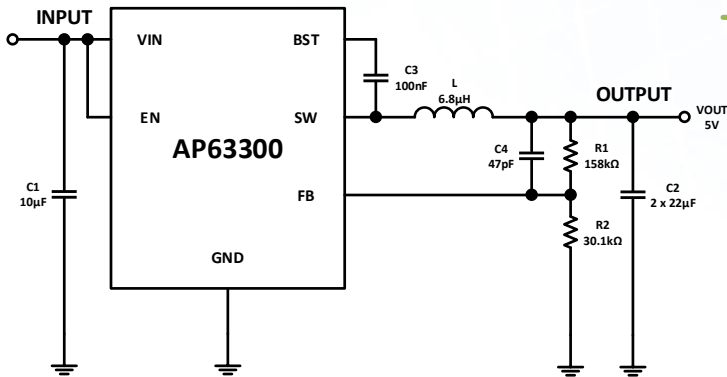
AP63300/AP63301 provides high efficiency DC-DC conversion for POL applications

- **Wide 3.8V to 32V VIN – withstanding 40V, 400ms Input Surges**
 - Works across the full voltage range of consumer electronics, industrial, and appliance applications
- **Wide Output Voltage range: 0.8V to near 100% of VIN (LDO Mode)**
 - Duty cycle extends to 100% essentially supporting LDO-like functionality
- **AP63300 (PFM) with Low 22 μ A Quiescent Current**
 - Supports standby operation in permanently-on systems with high light-load efficiency
- **Designed for Best-In-Class EMI Performance**
 - Ringing-resistant SW node at 4ns rise time
 - Frequency Spread Spectrum (AP63300)
- **Simple PCB Layout Design – Supports Single-Layer PCBs**
 - Minimal number of external components
 - Short current loops on PCB further ease EMI issues

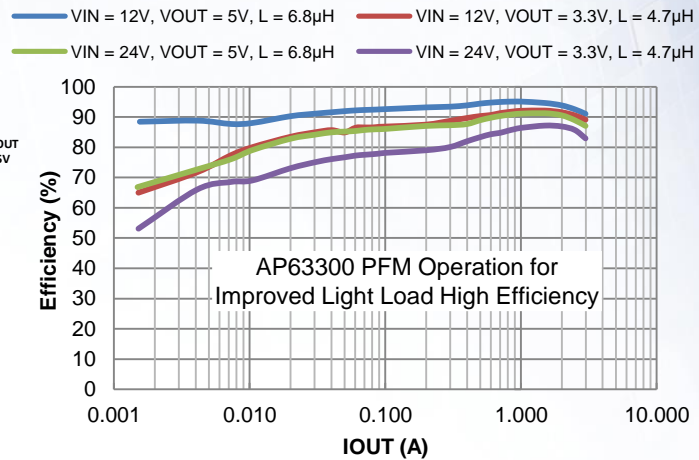
Applications

- White Goods and Small Home Appliances
- Power Tools
- Gaming Consoles
- Flat Screen TV Sets and Monitors
- Set Top Boxes
- Home Audio Systems
- Network Systems
- Laser Printers

Typical Application Circuit



Efficiency vs. Output Current



32V DC-DC Buck Converter Portfolio

Part Number	VIN Range (V)	VOUT Range (V)	IOUT (A)	HS / LS R _{DS(ON)} (mΩ)	Operation Mode	I _Q (µA)	f _{sw} (kHz)	FSS	Ambient Temperature (°C)	Package
AP63300	3.8 to 32	0.8 to VIN	3	75 / 40	PFM/PWM	22	500	Yes	-40 to +85	TSOT26
AP63301					PWM Only	280		No		
AP63200	3.8 to 32	0.8 to VIN	2	125 / 68	PFM/PWM	22	500	Yes	-40 to +85	TSOT26
AP63201					PWM Only	258		No		
AP63203		3.3			PFM/PWM	22	1100	Yes		
AP63205		5.0			PFM/PWM	22		Yes		

To find out more information:

<https://www.diodes.com/part/AP63300>

<https://www.diodes.com/part/AP63301>

Ordering Information

Orderable Device	Package Code	Package	Identification Code	Reel Size	Tape Width	Quantity
AP63300WU-7	WU	TSOT26	T6	7 inches	8 millimeters	3000
AP63301WU-7	WU	TSOT26	T7	7 inches	8 millimeters	3000