



New Product Announcement

AP61402Q

5.5V, 4A, Low I_Q , Automotive-Compliant, Synchronous Buck Converters in the Tiny V-DFN1515-6/SWP (Type UX)

The AP61402Q is an automotive-compliant, 4A, synchronous buck converter with a wide input voltage range of 2.3V to 5.5V. It fully integrates a 75mΩ high-side power MOSFET and a 33mΩ low-side power MOSFET to provide high-efficiency step-down DC-DC conversion.

The device minimizes the external component count through its adoption of constant on-time (COT) control to achieve fast transient response, easy loop stabilization, and low output voltage ripple.

The AP61402Q features a small form factor and utilizes a 2MHz switching frequency, which enables the use of smaller, cheaper inductors.

Its proprietary gate driver resists switching-node ringing without sacrificing MOSFET turn-on and turn-off times. This reduces high-frequency radiated EMI noise caused by MOSFET switching.

The device is available in a V-DFN1515-6/SWP (Type UX) package.

A standard-compliance version, AP61402, is available and suitable for industrial and commercial applications.

Automotive-compliant - AEC qualified, manufactured in sites certified to IATF 16949 supporting PPAP documents.

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The DIODES Advantage

The AP61402Q provides a high-efficiency, small footprint, DC-DC buck converter solution for automotive point-of-load (POL).

- **High Operating Frequency of 2MHz**
Reduces external LC size & outside MW frequency band, easing EMI
- **4A Maximum Output Current in the Tiny Wettable DFN1515-6**
Provides high power density for high ambient temperatures in automotive POL applications
- **Wide 2.3V to 5.5V Input Voltage with LDO Mode**
Operates from 5V, 3.3V and core-voltage-to-core-voltage POL applications with brown-out support
- **Multi-Function EN Controls PFM/PWM Mode of Operation**
Provides flexibility for low I_Q high-light-load efficiency or equal ripple across load conditions in fixed PWM
- **Both High-Side and Low-Side Current Sense Protection**
Increases robustness in automotive POL applications

Applications

Automotive 5V and 3.3V Point of Load in:

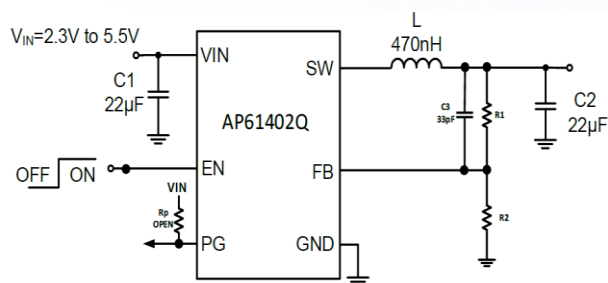
- Infotainment
- Instrument clusters
- Telematics
- Advanced driver assistance systems (ADAS)



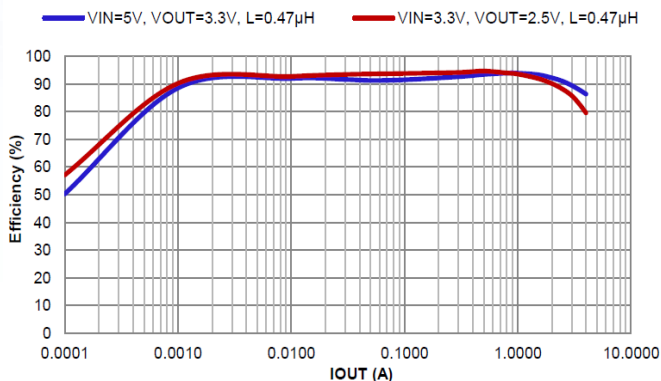
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Typical Application Schematic



Efficiency vs. Output Current



5.5V Automotive-Compliant DC-DC Buck Converter Portfolio

Part Number	VIN Range	VOUT Range	Output Current	HS/LS R _{DS(ON)}	Adj. PFM/ PWM	Switching Frequency	I _Q	Ambient Temperature	PG	Package
	V	V	A	mΩ		MHz	µA	°C		
AP61402Q	2.3 – 5.5	0.5 – 5.5	4	75 / 33	Yes	2	20	-40 to +125	Yes	V-DFN1515-6/SWP (Type UX)
AP61302Q	2.4 – 5.5	0.6 – VIN	3	70 / 50	Yes	2.2	19	-40 to +125	Yes	SOT563
AP61300Q	2.4 – 5.5	0.6 – VIN	3	70 / 50	Yes	2.2	19	-40 to +125	No	SOT563
AP61204Q	2.4 – 5.5	0.6 – VIN	2	70 / 50	Yes	2.4	19	-40 to +125	Yes	SOT563
AP61102Q	2.3 – 5.5	0.6 – 3.6	1	110 / 80	Yes	2.2	15	-40 to +125	Yes	SOT563
AP61100Q	2.3 – 5.5	0.6 – 3.6	1	110 / 80	Yes	2.2	15	-40 to +125	No	SOT563
AP61062Q	2.4 – 5.5	0.6 – 3.6	0.6	110 / 80	Yes	2.2	19	-40 to +125	Yes	SOT563

Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package	Package Code	Moisture Sensitivity	Packing	
					Quantity	Carrier
AP61402QFCAW6-7	Automotive	V-DFN1515-6/SWP (Type UX)	FCAW6	MSL-1	3,000	7" Tape & Reel