



# New Product Announcement

## AP61040 AP61041

### Tiny, Ultra-Low IQ, 400mA COT, Synchronous Buck Converters Increase Operating Battery Life in Portable Devices

The AP61040 and AP61041 are low-current, synchronous buck converters providing high efficiency, excellent transient responses, and high output accuracy.

Their ultra-low IQ make them ideal for portable consumer applications such as fitness wearables, health monitors, and other handheld devices.

The AP61040 and AP61041 are optimized to operate with a 2.2 $\mu$ H inductor and 10 $\mu$ F input and output capacitors. The buck converters provide a 400mA output current across an input voltage range of 2.15V to 5.5V.

The constant on-time (COT) control scheme handles wide input/output voltage ratios and provides a low external component count with an outstanding performance in line and load transient responses. It also has seamless transitions between buck and 100% duty cycle modes.

The AP61040 provides three programmable output voltages between 0.6V to 3.3V, selectable by one selection pin. The AP61041 provides two VSEL pins for programmable feedback voltages from 0.6V to 3.3V. The devices also feature UVLO, OCP, and OTP to protect the circuit.

The AP61040 and AP61041 are available in the tiny, 1.17mm x 0.77mm, 6-ball X1-WLB1208-6 package.

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### The DIODES Advantage

The AP61040 and AP61041 provide high-efficiency DC-DC solutions to extend the battery life of portable consumer applications.

- **Low 930nA Quiescent Current,  $I_Q$**   
Maximizes light-load efficiency
- **Selectable Output Voltages**
  - AP61040 has a VSEL1 pin for programmable  $V_{OUT}$  (0.6V to 3.3V) with  $\pm 1\%$
  - AP61041 has two VSEL1 and VSEL2 pins for programmable  $V_{OUT}$  (0.6V to 1.8V) with  $\pm 1\%$
- **Protection Functions**  
Provides overcurrent, short-circuit, overtemperature, and undervoltage lockout protections
- **High 1.1MHz Operating Frequency**  
Reduces the size and value of passive components

### Applications

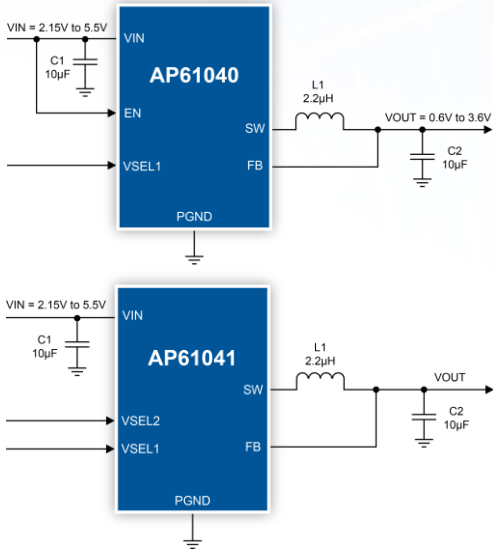
- Wearables
- Fitness trackers
- Action cameras
- Smart glasses
- Smart watches
- Bluetooth low-energy devices



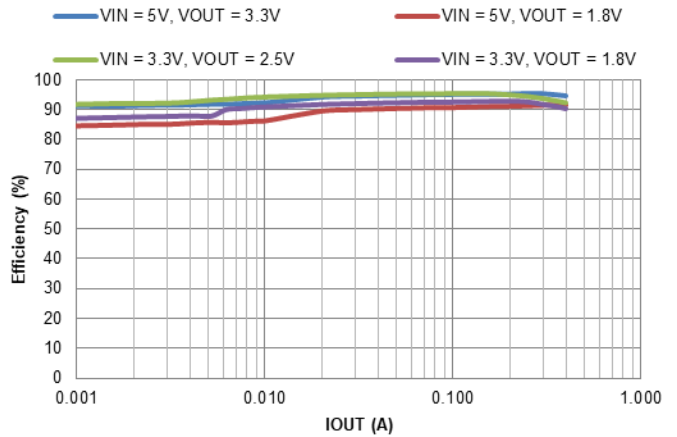
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### Typical Application Schematics



### Efficiency vs. Output Current



### 5.5V DC-DC Buck Converter Portfolio

Part Number	V <sub>IN</sub> Range	V <sub>out</sub> Range	Output Current	R <sub>DS(ON)</sub> HS / LS	Mode	Power Good	Switching Frequency	I <sub>q</sub>	Junction Temp.	Package
	V	V					MHz	µA	°C	
<a href="#">AP61040</a>	2.15 to 5.5	0.6 to 5.5	0.4	321 / 150	PFM or PWM	-	1.1	0.93	-40 to +125	X1-WLB1208-6
<a href="#">AP61041</a>	2.15 to 5.5	0.6 to 5.5	0.4	321 / 150	PFM	-	1.1	1.2	-40 to +125	X1-WLB1208-6
<a href="#">AP61100</a>	2.3 to 5.5	0.6 to 3.6	1	110 / 80	PFM or PWM	-	2.2	15	-40 to +125	SOT563
<a href="#">AP61102</a>	2.3 to 5.5	0.6 to 3.6	1	110 / 80	PFM or PWM	Yes	2.2	15	-40 to +125	SOT563
<a href="#">AP61200</a>	2.3 to 5.5	0.6 to 3.6	2	110 / 80	PFM	-	1.3	19	-40 to +125	SOT563
<a href="#">AP61201</a>	2.3 to 5.5	0.6 to 3.6	2	110 / 80	PWM	-	1.3	19	-40 to +125	SOT563
<a href="#">AP61202</a>	2.3 to 5.5	0.6 to 3.6	2	110 / 80	PFM	Yes	1.3	19	-40 to +125	SOT563
<a href="#">AP61203</a>	2.3 to 5.5	0.6 to 3.6	2	110 / 80	PWM	Yes	1.3	19	-40 to +125	SOT563
<a href="#">AP61300</a>	2.4 to 5.5	0.6 to 3.6	3	70 / 50	PFM or PWM	-	2.2	19	-40 to +125	SOT563
<a href="#">AP61302</a>	2.4 to 5.5	0.6 to 3.6	3	70 / 50	PFM or PWM	Yes	2.2	19	-40 to +125	SOT563

### Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package	Package Code	Moisture Sensitivity	Packing	
					Quantity	Carrier
<a href="#">AP61040CP6-7</a>	<a href="#">Standard</a>	X1-WLB1208-6	CP6	MSL-1	3,000	7" Tape & Reel
<a href="#">AP61041CP6-7</a>	<a href="#">Standard</a>	X1-WLB1208-6	CP6	MSL-1	3,000	7" Tape & Reel