



New Product Announcement

AP64500Q
AP64501Q
AP64502Q

Automotive-Compliant, 40V, 5A, Synchronous Buck Converters Deliver High Efficiency

The automotive-compliant AP64500Q/1Q/2Q are 40V, 5A, high-efficiency, synchronous DC-DC buck converters qualified to AEC-Q100 grade 1 with an enhanced feature-set.

Their special gate drive/bootstrap design enables them to operate in LDO mode, with near 100% duty cycle.

As the load current approaches zero, all AP6450xQ enter Pulse Frequency Modulation (PFM), automatically enhancing efficiency.

To reduce EMI, the AP6450xQ uses frequency spread spectrum (FSS), which prevents the emitted energy to stay at any one frequency for any significant period of time.

The AP64500Q and AP64502Q have programmable switching frequency, up to 2.2MHz, that can also be synchronized to an external clock. The AP64501Q has a nominal 570kHz switching frequency.

Both the AP64501Q and AP64502Q have programmable soft-start that reduces inrush currents, while the AP64500Q and AP64501Q have external compensation to optimize the loop response.

All devices are available in the SO-8EP package.



The Diodes Advantage

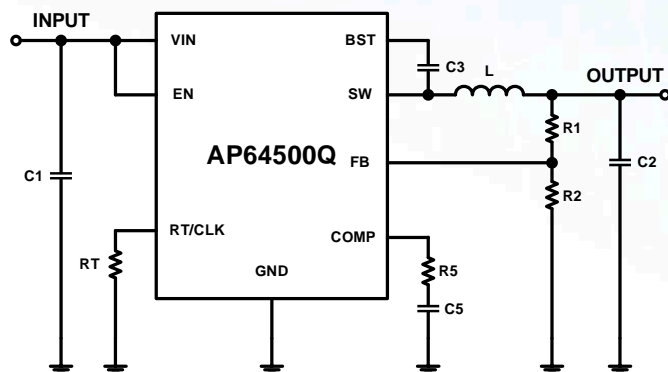
Automotive-compliant AP64500Q/AP64501Q/AP64502Q supports ambient temperatures up to +125°C

- **V_{IN} 3.8V to 40V**
Works across the wide automotive battery range including load dump
- **Wide Output Voltage Range: to near 100% of V_{IN} (LDO Mode)**
Maintains regulation even as V_{IN} approaches V_{OUT}
- **Low (25µA) Quiescent Current (I_Q) and 1µA Shutdown Current**
Enables the system to meet <100µA standby requirements of some automotive applications
- **Programmable and Synchronizable f_{sw} (AP64500Q/AP64502Q)**
Low frequency from 100kHz – high-efficiency solution
High frequency up to 2.2MHz – small-form factor solution
- **External Compensation (AP64500Q/AP64501Q)**
Enables optimization of loop response
- **Programmable Soft-Start Time (AP64501Q/AP64502Q)**
Reduces inrush current at power-up or enable of device

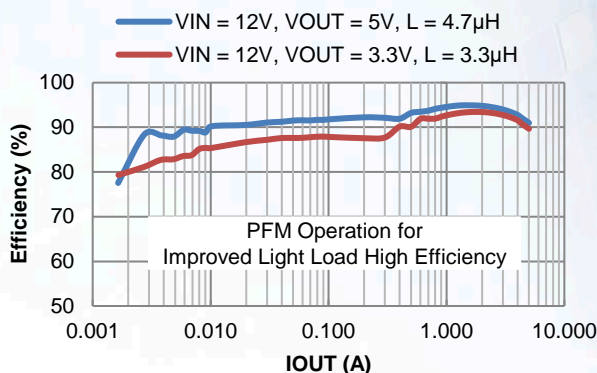
Application(s)

- Automotive Infotainment Power Supplies
- Automotive Forward Lighting POLs

Typical Application Circuit



Efficiency Chart (5A)



40V Automotive-Compliant DC-DC Buck Converter Portfolio

Part Number	V _{IN} Range (V)	V _{OUT} Range (V)	Output Current (A)	R _{DS(ON)} (mΩ)	Switching Frequency (kHz)	I _Q (µA)	Key Features					Ambient Temperature (°C)	Package
							Prog. f _{SW}	Ext. Sync	Ext. Comp	LLHE	Prog. SS		
AP64500Q	3.8 – 40	0.8 - V _{IN}	5.0	45/20	100 - 2200	25	Y	Y	Y	Y	-	-40 to +125	SO-8EP
AP64501Q					570		-	-	Y	Y	Y		
AP64502Q					100 - 2200		Y	Y	-	Y	Y		
AP64350Q	3.8 – 40	0.8 - V _{IN}	3.5	75/45	100 - 2200	22	Y	Y	Y	Y	-	-40 to +125	SO-8EP
AP64351Q					570		-	-	Y	Y	Y		
AP64352Q					100 - 2200		Y	Y	-	Y	Y		

To find out more information:

Product Pages:

<https://www.diodes.com/part/AP64500Q>

<https://www.diodes.com/part/AP64501Q>

<https://www.diodes.com/part/AP64502Q>

Ordering Information

Orderable Device	Package Code	Package	Reel Size	Tape Width	Quantity
AP64500QSP-13	SP	SO-8EP	13 inches	12 millimeters	4000
AP64501QSP-13	SP	SO-8EP	13 inches	12 millimeters	4000
AP64502QSP-13	SP	SO-8EP	13 inches	12 millimeters	4000