



## Digital Video Recorder

# Single-BOM Solution for Multiple Input Voltage Requirements



Wide Input Voltage



Low EMI



High Efficiency



High Temp Operation

### The Customer's Challenge

Automotive digital video recorders (DVRs) are becoming pretty much ubiquitous on roads around the world. Whether for safety or security concerns, or to access reductions in insurance premiums, consumers and business users alike are demanding more functionality in smaller packages.

A manufacturer upgrading the functionality of one of their automotive DVR systems was also looking for a way to accommodate a variety of different vehicle voltages with one standard solution. For simplified installation the upgraded device needed to fit into the original DVR 'box'. The design team was concerned that the resultant very restricted space, especially when operating at 60°C, would complicate the ability to remove waste heat.

Finding the right power solution was identified as a critical design element, with its electrical noise needing to be low to remove interference with on-board radios and other noise-sensitive electronics.



### The Solution

With its very wide input voltage range of 8 – 60V the designers were able to utilize the PI3740 ZVS buck-boost regulator's ability to automatically and seamlessly transition between buck and boost modes to deliver a regulated 12V output. This ability enabled the customer's design team to simplify their BOM and use a single DC-DC regulator to support both 12V and 24V battery systems.

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### The Results

In addition to providing a single-BOM solution for multiple platforms, the ZVS buck-boost regulator at just 10 x 14 x 2.5mm delivered a simple-to-implement power solution with a footprint 60% smaller than the previous design. With an efficiency at low and high input voltages that was 5-7% higher than the previous solution, heat management was not the complex task the design team had feared. The buck-boost regulator's ZVS switching topology only needed a straightforward EMI filter design.

#### Product Family Key Specifications

Cool-Power® ZVS Buck-Boost PI3740 Switching Regulator	
Input Voltages	8 – 60V
Output Voltages	10 – 50V
Output Power	140W
Efficiency	Over 96% efficiency
Dimensions	10 x 14 x 2.5mm