



Low EMI



High Efficiency

Vehicle-mounted LED Advertising Display Reliable Solution at High Temperatures

The Customer's Challenge

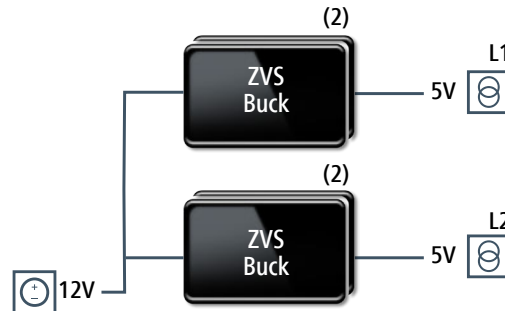
A manufacturer of advertising displays was developing an upgrade to a system to be mounted on vehicles in different parts of the world, which had to work reliably in extreme temperatures. Their existing system was experiencing reliability issues in these extreme temperatures. The design used off-the-shelf LED tiles that contained large power rail capacitors, requiring high charge currents during the startup sequence, putting a lot of stress on the power supply. In addition, meeting the stringent EMI requirements mandated by the regulatory authorities required an expensive and bulky additional filter.



The Solution

To convert the 12V car battery voltage into the two 5V voltage rails for the display, two pairs of ZVS Buck Regulators were used. These parts allow current sharing and interleaving operation and provided the necessary current of 25A. To reduce the high current peaks drawn by the load capacitors during start up, the soft start capacitor of the regulators was increased to slow down the ramp-up process.

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The Results

The high efficiency and high operating temperature of the ZVS Buck Regulators not only reduced the heat generated in the system itself, it allowed the operation at a higher ambient temperature. As lifetime and MTBF of electronic components is directly dependent on the operating temperature, this overall heat reduction increased the reliability of the display unit. Interleaving operation of the switching power trains resulted in lower noise compared to a multi-phase solution and the higher switching frequency of the ZVS Bucks reduced the size of the EMI filters, too.

Product Family Key Specifications

Cool-Power® ZVS Buck Regulator Module

Input Voltages	12V Nominal (8 – 18V _{IN}), 24V Nominal (8 – 36V _{IN}), 48V Nominal (8 – 60V _{IN}),
Output Voltage	Wide output range (1 – 16V)
Output Current	8A, 9A, 10A, and 15A versions
Efficiency	Up to 96.5% Light load and full load High efficiency performance
Dimensions	LGA SiP: 10 x 14 x 2.56mm