Small Size, Low Profile | Reduced Time to Market | High Efficiency | High Temp Operation

Medical Diagnostics

Re-architecting the Power Solution to Reduce System Size and Cost

The Customer's Challenge

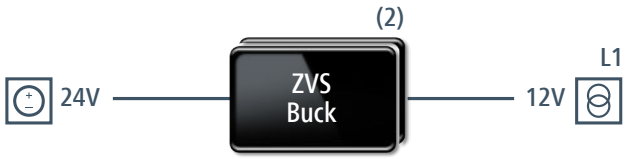
A leading provider of medical diagnostic equipment was looking for ways to enable additional system functionality in the same small space, reducing the size of all existing elements to facilitate the upgrade. To further increase competitiveness they needed to reduce the overall system cost.

They were struggling to increase performance of the power supply at the same time as reducing size and cost. Especially as the density of the electronics in the space available, high operating temperatures, and limited cooling available meant high efficiencies and a high derating temperature were needed. Various options had been designed and tested without success, significantly extending the original project schedule. By the time they approached Vicor it had become imperative that they develop and test a new solution fast to enable them to get to market as quickly as possible to regain market share.

The Solution

Working with our technical support team on a review of the existing design and the needs of the system, it become clear that the isolation being provided by the existing power solution wasn't needed. This enabled the use of an array of two SiP-packaged ZVS Buck regulators to provide a tightly regulated 12V rail for the CPU board.

Link to Whiteboard »



The Results

The use of low profile and small ZVS Buck regulators (10 x 14 x 2.56mm) reduced the size of the power solution significantly, taking just 15% of the space of the previous supply. This was facilitated by the regulators' high efficiency (up to 96.5%) and derating temperature, which removed the need for heat sinking.

The high level of integration of the SiP package reduced the number of additional external components required, significantly reducing development time to less than two months. In addition, the new solution provided significant cost savings (60% of the previous solution).

Product Family Key Specifications

Cool-Power® ZVS Buck Regulator Module

Input Voltages	12V, 24V, 48V (Nominal)
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 LGA SiP: 10 x 10 x 2.56mm