



Avionics Computer Triple Redundancy



Redundancy /
Power Sharing



Small Size,
Low Profile



High
Efficiency



Low
Weight

The Customer's Challenge

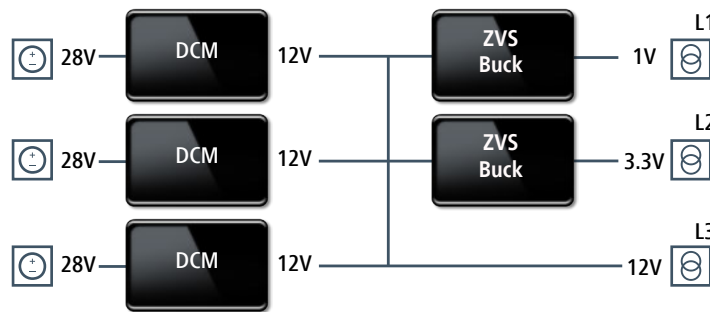
Avionics equipment that helps pilots navigate and control their airplane safely must continue to operate even under worst-case conditions. In order to provide the extra redundancy required, this customer's avionics computer needed to operate simultaneously from three different power sources. The power supply for the equipment also had to operate at high temperatures without using cooling fans, needed to be lightweight and physically small.



The Solution

Three MIL-COTS DCM DC-DC Converters were used in parallel to provide a common 12V internal redundant bus. Each converter could be operated from a different input power source, yet the converters were still able to provide power sharing between themselves to power the internal 12V bus. ZVS Buck Regulators were used to provide the lower power, lower voltage 1.0V and 3.3V rails from the 12V bus.

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The Results

The configuration of the power supply was very straightforward and the parallel redundant bus was simple to implement. The low profile (7.26 mm) and small footprint of the DCM Converters and ZVS Buck Regulators facilitated a compact solution that utilized both conduction and convection cooling to meet the required high operation requirement of the supply. The MIL-COTS DCM converters were compliant with MIL-STD-810 shock and vibration and this facilitated the subsequent testing required to show system compliance with this standard.

Product Family Key Specifications

DCM™ DC-DC Converter Module

Input Voltages	9 – 50V _{DC} , 16 – 50V _{DC} , 18 – 36V _{DC} , 36 – 75V _{DC} , 120 – 420V _{DC} , 160 – 420V _{DC} , 200 – 420V _{DC}
Output Voltages	5V, 12V, 13.8V, 15V, 24V, 28V, 36V, 48V
Output Power	4623 ChiP: Up to 600W 3623 ChiP: Up to 320W 3714 VIA: Up to 600W 3414 VIA: Up to 320W
Efficiency	Up to 93%
Dimensions	4623 ChiP: 47.91 x 22.8 x 7.26 mm 3623 ChiP: 38.72 x 22.8 x 7.26 mm 3714 VIA: 95.3 x 35.6 x 9.4 mm 3414 VIA: 85.9 x 35.6 x 9.4 mm

Cool-Power® ZVS Buck Regulator Module

Input Voltages	12V, 24V, 48V (Nominal)
Output Voltage	Wide output range (1 – 16 V)
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 2.56 mm LGA SiP: 10 x 10 x 2.56 mm