Scalable | Small Size, Low Profile | Low Weight | Low EMI

## Unmanned Autonomous Vehicle (UAV)

# Scalable Solutions for Maximum Functionality

### The Customer's Challenge

There are few applications where the trade-off between range, speed, functionality and endurance is as acute as for UAVs, relying on new technology to reduce the size and weight of equipment, and to maximize battery power, even as new functionality is added. For UAV applications adaptability is important because different payloads are required for different types of mission, with different power requirements for each.



One UAV manufacturer we worked with was looking for creative ways of upgrading the functionality of one of their drone designs, enabling additional autonomous operation with extended range. The power supply design was targeted as a critical component to facilitate the addition of extra functionality, reducing the impact of the extra weight of the control systems.

Additional requirements included the minimization of the EMI signature to meet "stealth" requirements and ensuring the reliability needed when operating in extreme ambient temperatures.

### The Solution

A MIL-COTS DC-DC converter provides wide 16 – 50V input and regulates on-board 28V battery system. The very low weight (24g) and size (38.8 x 22.8 x 7.26 mm) of the DCM offset the increased size and weight of control electronics.

Link to Whiteboard »




### The Results

DCMs have a unique design, allowing the devices to be connected in parallel simply, acting like a single high output current DCM – and with no need to derate the outputs – enabling the power scalability and adaptability the manufacturer required.

With its high frequency zero-voltage switching (ZVS) topology, the DCM converter consistently delivers high efficiency across the input line range, improving duration of battery discharge. In addition, the high frequency switching minimized the filtering challenges for compliance to EMI requirements.

| Product Family Key Specifications | |
|---|---|
| **DCM™ DC-DC Converter Module** | |
| **Input Voltages** | 9 – 50$V_{DC}$, 16 – 50$V_{DC}$, 18 – 36$V_{DC}$, 36 – 75$V_{DC}$, 120 – 420$V_{DC}$, 160 – 420$V_{DC}$, 200 – 420$V_{DC}$ |
| **Output Voltages** | 5V, 12V, 13.8V, 15V, 24V, 28V, 36V, 48V |
| **Output Power** | 4623 ChiP: Up to 600W<br>3623 ChiP: Up to 320W<br>3714 VIA: Up to 600W<br>3414 VIA: Up to 320W |
| **Efficiency** | Up to 93% |
| **Dimensions** | 4623 ChiP: 47.91 x 22.8 x 7.26 mm<br>3623 ChiP: 38.72 x 22.8 x 7.26 mm<br>3714 VIA: 95.3 x 35.6 x 9.4 mm<br>3414 VIA: 85.9 x 35.6 x 9.4 mm |


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