

DESIGNCORE™

START/STOP BOOST CONVERTER REFERENCE DESIGN



Reference Design only

Digital power control: 3-phase voltage boost with bypass circuitry

Fast Proof of Concept, Faster to Market

D3 and Texas Instruments developed this Reference Design for automotive engine start/stop applications. The voltage boost converter supplies a steady voltage to vehicle electronics by boosting during voltage droop events such as engine crank.

Based on the C2000 real-time microcontroller, the converter provides up to 400 watts of power from a 12V automotive battery. It supports continuous operational input voltage of 6V–16V with protection against 36V load dump to provide a stable 12V output supply with reverse battery protection.

D3 developed hardware for testing and performance validation. As implemented, the design features voltage mode control. The hardware is also capable of supporting average current mode control and peak current mode control with dead band.

This Reference Design is available from Texas Instruments at TI.com/tool/TIDA-00282

The fully assembled board is not available for sale. D3 leverages this and our other DesignCore™ Reference Designs to create custom solutions for performance-critical applications. Contact us to learn more.

FEATURES

Digitally controlled 3-phase boost power topology—up to 400W output

Digitally controlled bypass circuitry—bypass boost converter during normal operation

N-Channel MOSFET-based reverse battery protection—lower power dissipation than diode implementation

6V to 16V operational input with protection against 36V load dump

CAN connectivity

Texas Instruments C2000 microcontroller

APPLICATIONS

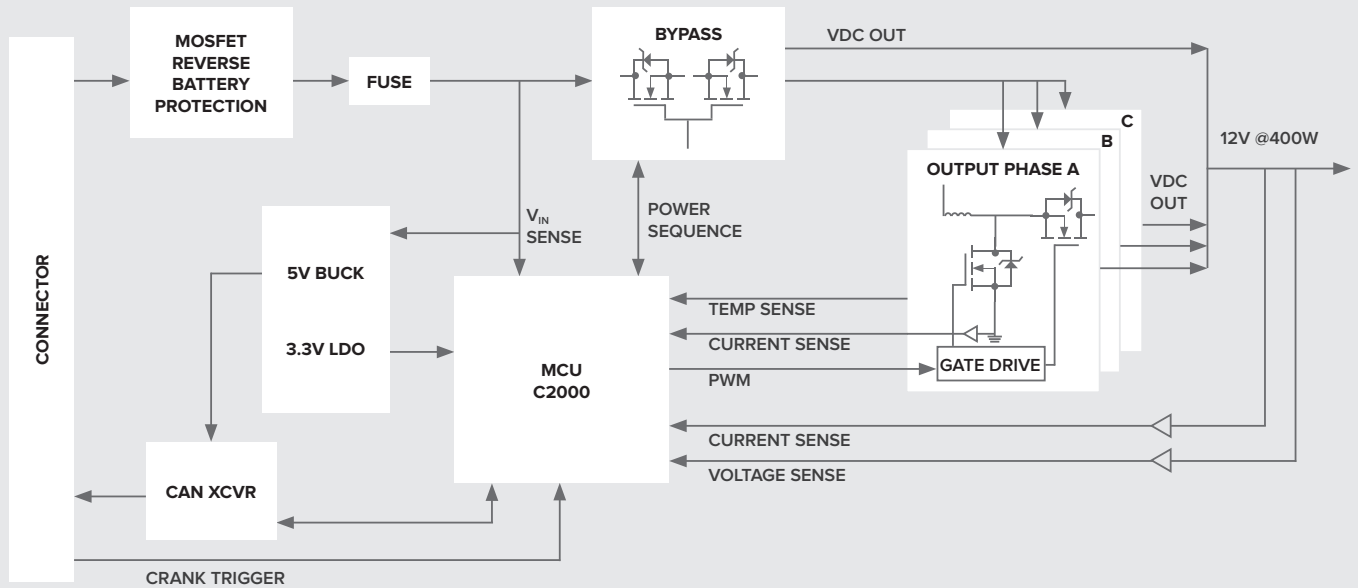
Voltage boost

Engine start/stop



D3 Engineering is a platinum partner in the TI Design Network and a Premier Ecosystem Partner for automotive systems development.

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ACCELERATE TIME TO MARKET

D3 Engineering leverages our industry-proven DesignCore™ Platforms to meet your product goals, while minimizing technical and schedule risk for your development program. The DesignCore™ foundation allows you to easily integrate your IP and get your product to market fast. Contact us today about custom embedded product development for digital power control.

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