System Integration with the Boost Converter

General Description

Rantec Boost Converters allow the use of standard 48V DC-DC converters in 28 volt prime power applications. They withstand the requirements of MIL-STD 704 and MIL-STD 1275. When used with external capacitance, the boost converters can maintain hold-up for critical applications during loss of input power.

In addition to these advantages, Rantec boost converters provide a bias output, shutdown control, output good monitor, and a load enable control. Refer to Figure 1 for a typical implementation.

Bias

The Bias output voltage is +8.5 VDC, referenced to the bias return (common to -OUT). It is provided to power external control logic. Up to 10 mA is available from this output.

Shutdown

Pulling this input low with respect to the bias return will inhibit boost operation. During this condition, the boost converter's output voltage will follow it's input voltage. Releasing the low condition of the shutdown input will allow the boost converter to soft-start and resume boosting operation. Since there is an internal pull-up on this input, it may be left unconnected.

Output Good Monitor

Output good is an open collector output, referenced to bias return. The output is low whenever the boost converter's output voltage is within 10% of it's rated output. Note that Output Good will function even if the boost converter is in shutdown mode. The maximum recommended voltage on this pin is 20 VDC, and the maximum recommended current is 20 ma.

Load Enable

Load Enable is an open collector output, referenced to bias return. The output is low upon boost converter power up, until the boost converter's output reaches 90% of it's rated value. The Load Enable output will then "open" and remain "open" unless the boost converter's output exceeds ~72 VDC, or falls below ~36 VDC.

This is provided as a protection to downstream DC-DC converters, and allows them to start and run only when the input voltage to the DC-DC converters is within this range. This also protects the downstream converters from operating during a high voltage line transient above 72 volts.

Rantec Power Systems Inc. • • www.rantec.com
1173 Los Olivos Ave. • Los Osos, CA 93402 • Telephone 805-596-6000 • FAX: 805-596-6006

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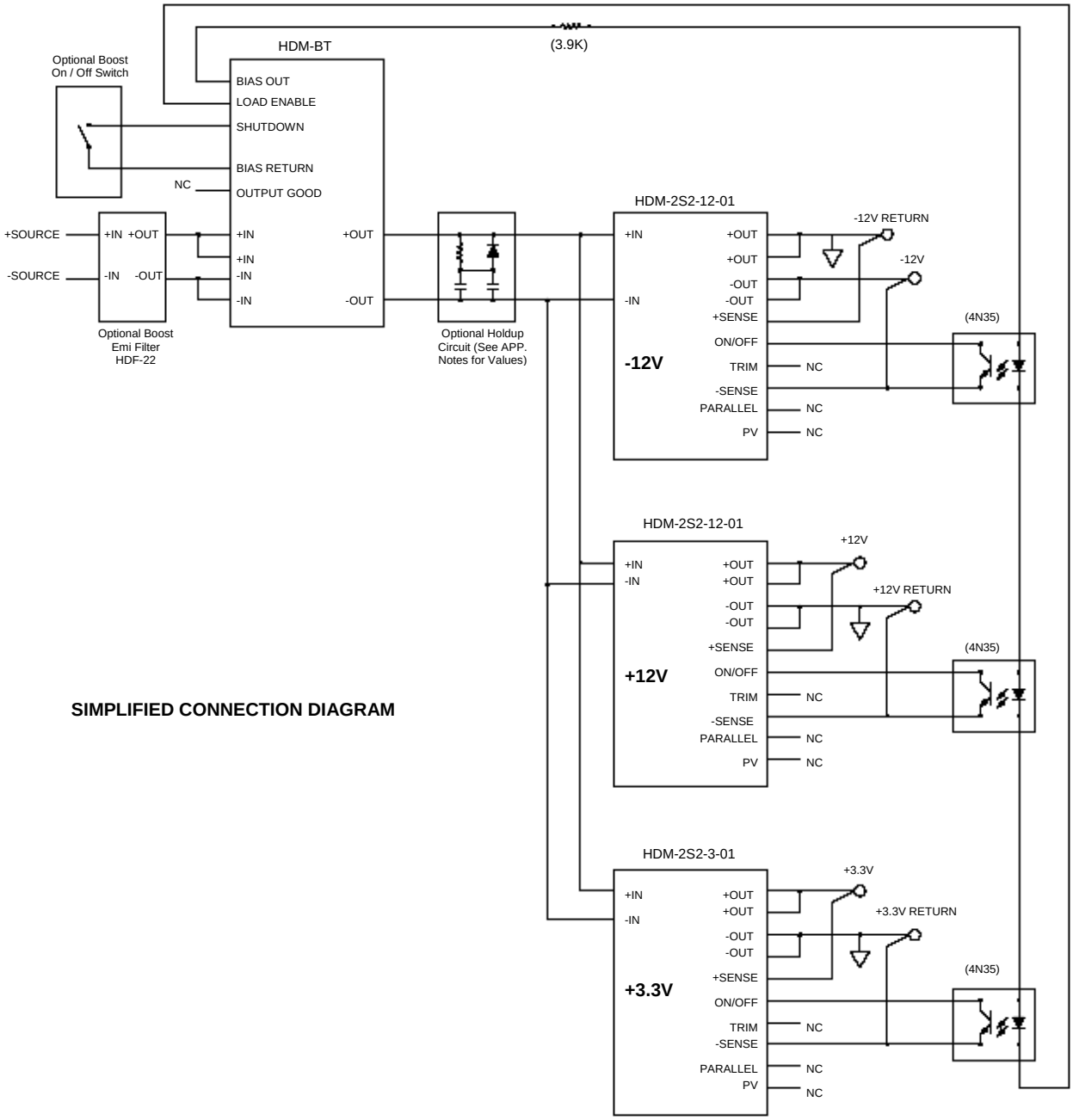

SIMPLIFIED CONNECTION DIAGRAM

Figure 1: Typical Implementation of Boost Converter with DC-DC Modules

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