

The Dorado HV is also available with an optional low profile heatsink for improved thermal performance.

- Suitable for Fan Motor Control
- Industry Standard Quarter Brick Pinout and Footprint
- Typical Efficiency: 87% at 3A, 34V
- Droop Feature Allows Current Sharing
- Very Low Common-mode Noise for a Commercial DC/DC Converter
- Two-stage Input Filter
- Constant Switching Frequency
- Remote Sense
- Single Board Design
- Optional Low Profile Heatsink for Improved Thermal Performance
- Header with M3 Metal Inserts for Mechanical Connection to PCB
- Two Year Warranty

## CONTROL FUNCTIONS

- Compatible with Fan Turn-on Requirements
- Designed to be Stable with High Capacitance Load
- Uses Innovative Control and Power Topology for Lower Parts Count
- Microprocessor Controlled
- Primary-side Enable, Choice of Logic

## PROTECTION FEATURES

- Over Temperature Protection
- Over Voltage Protection
- Over Current Protection
- Over/Under Input Voltage Protection

## TYPICAL CHARACTERISTICS

- Output Setpoint Accuracy:  $\pm 0.2\%$
- Load Regulation: +2% no load; -2% full load\*
- Line Regulation:  $\pm 0.2\%$
- Low Output Ripple
- Output Trim

\*Varies with setpoint and trim method.

## GENERAL SPECIFICATIONS

$V_{IN} = 48V_{DC}$ ,  $T_A@25^{\circ}C$ , 300 LFM Airflow,  $V_{OUT} = 34V$ ,  $I_{OUT} = 1.5A$ . 68 $\mu F$  electrolytic capacitor across output pins.  
Available output power depends on ambient temperature and good thermal management. (See application graphs for limits.)

| <b>Input Characteristics</b>                 |      |     |     |                   |
|--|------|-----|-----|-------------------|
| Parameter                                    | Min  | Typ | Max | Units             |
| Operating Input Voltage                      | 36   | 48  | 75  | $V_{DC}$          |
| Input Current                                |      |     | 4   | A                 |
| Input Capacitance                            |      | 2   |     | $\mu F$           |
| Input Hysteresis, Low Line                   |      | 2   |     | $V_{DC}$          |
| <b>Output Characteristics</b>                |      |     |     |                   |
| Output Voltage/Trim Range                    | 17   |     | 34  | $V_{DC}$          |
| Regulation Over Line, Load & Temperature     | 97   |     | 103 | % $V_{NOM}$       |
| Voltage Ripple                               |      |     | 30  | mV <sub>RMS</sub> |
| Current Range                                | 0    |     | 3   | A                 |
| Current Limit Inception*                     | 3.25 |     | 5.5 | A                 |
| Turn-on Time to 98% $V_{nom}$                |      |     | 400 | mS                |
| Output Overshoot at Turn-on                  |      |     | 1   | % $V_{OUT}$       |
| Overvoltage Protection                       | 37   |     | 39  | $V_{DC}$          |
| <b>Isolation</b>                             |      |     |     |                   |
| Isolation Test Voltage, Input/Output (Basic) | 2000 |     |     | $V_{DC}$          |
| Isolation Resistance                         | 10   |     |     | M $\Omega$        |
| <b>Features</b>                              |      |     |     |                   |
| Overtemperature Protection, Thermal Sensor** |      |     | 117 | $^{\circ}C$       |
| Switching Frequency, Fixed                   |      | 333 |     | kHz               |

\* Current limit inception is output voltage dependent. See Current Limit Graph on page 5.

\*\* PCB less than 130 $^{\circ}C$

### General Specifications

|                           |                                       |
|---------------------------|---------------------------------------|
| Operating Temperature     | -40 $^{\circ}C$ to +100 $^{\circ}C$   |
| Storage Temperature       | -55 $^{\circ}C$ to +125 $^{\circ}C$   |
| Relative Humidity         | 10% to 95% RH,<br>Non-condensing      |
| Vibration                 | 2 to 9Hz, 3mm disp.,<br>9 to 200Hz 1g |
| Material Flammability     | UL V-0                                |
| Weight                    | 35 grams                              |
| MTBF Telcordia (Bellcore) | 1,600,000 hours                       |

### Approvals and Standards

|   |
|---|
| UL and c-UL Recognized Component, TUV, UL60950, CSA 22.2 No. 950, IEC/EN 60950**  |
| EMC Characteristics:<br>Designed to meet emission and immunity requirements per EN55022, CISPR 22, Class B, and CISPR 24. |

\*\* An external fuse shall be used to comply with the requirements.

## CoolConverter™

Galaxy's proprietary **CoolConverter™** provides:

- Patented single-stage power conversion architecture, control, and magnetic design allow unprecedented power density and efficiency in an isolated power supply.
- An advanced microcontroller reduces parts count while adding features, performance, and flexibility in the design.
- Low common-mode noise as a result of lower capacitance in the transformer compared to planar magnetics and metal baseplate designs.
- Higher reliability than planar transformer designs that can suffer from via fatigue from thermal cycling, and metal baseplate designs with board to board interconnects that are subject to mechanical stress on electrical connections.

## PROTECTION AND CONTROL

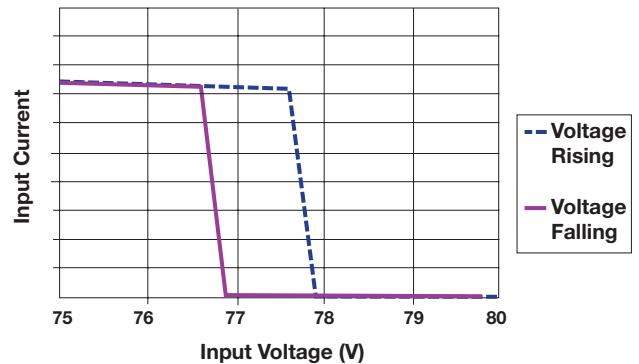
### Valid Input Voltage Range:

The converter measures the input voltage and will not allow operation outside of the input voltage specification. As shown by the graphs, hysteresis is added to both the high and low voltage to prevent the converter from turning on and off repeatedly when the voltage is held near either voltage extreme. At low line this assures the maximum input current is not exceeded; at high line this assures the semiconductor devices in the converter are not damaged by excessive voltage stress.

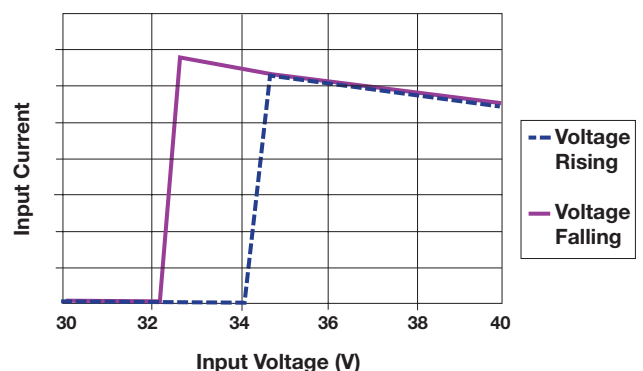
### ON/OFF Logic Option:

The ON/OFF control logic can be either Negative (standard) or Positive to enable the converter. For Negative logic, the ON/OFF pin is brought below 1.0 V with respect to the -INPUT pin to enable the converter. The pull-down must be able to sink 100 $\mu$ A. For Positive logic, the ON/OFF pin is brought to greater than 4.0 V with respect to the -INPUT and be limited to less than 10V. To request the Positive logic version, add the suffix (P) to the standard part number. The ON/OFF pin has a built-in pull up resistor of approximately 100 k $\Omega$  to +5V.

Overvoltage Lockout



Undervoltage Lockout



# APPLICATION NOTES

## Output Over Voltage Protection:

The output voltage is monitored by a redundant secondary-side circuit. If the output voltage exceeds the over-voltage specification, the microprocessor will restart every 2 seconds and limit voltage with a separate reference circuit. This advanced feature prevents the converter from damaging the load if there is a converter failure or application error.

Latching is available as an option.

## Over Current Protection:

If overcurrent lasts more than 3 seconds the converter will shut down and try to restart every 10 seconds until the fault is removed.

Latching is available as an option.

## Thermal Shutdown:

The printed circuit board temperature is measured using a semiconductor sensor. If the maximum rated temperature is exceeded, the converter is turned off. It will then restart every 2 seconds.

Latching is available as an option.

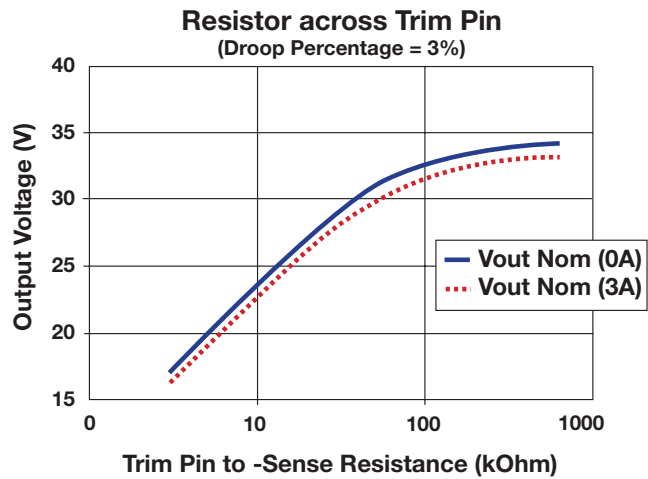
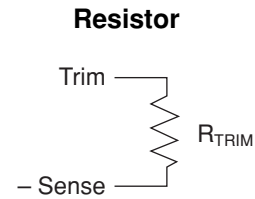
## Remote Sense:

The output voltage is regulated at the point where the sense pins connect to the power output pins. Total sense compensation should not exceed 1V. A negative sense lead is connected internally.

## Safety:

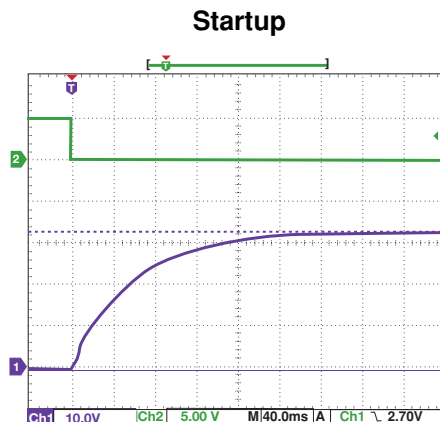
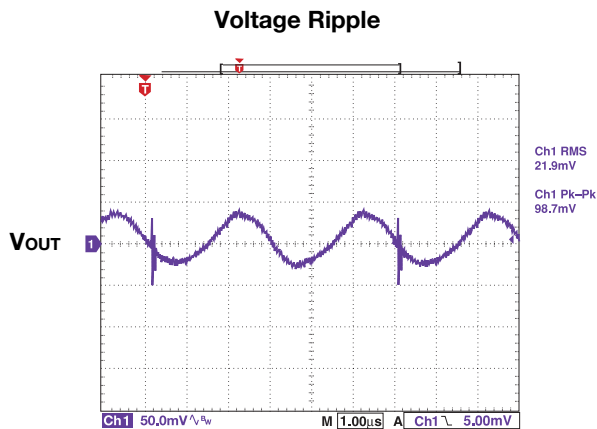
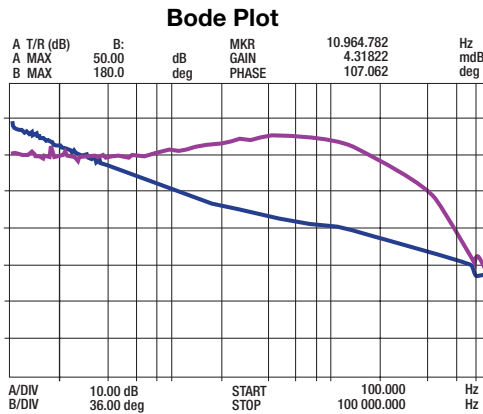
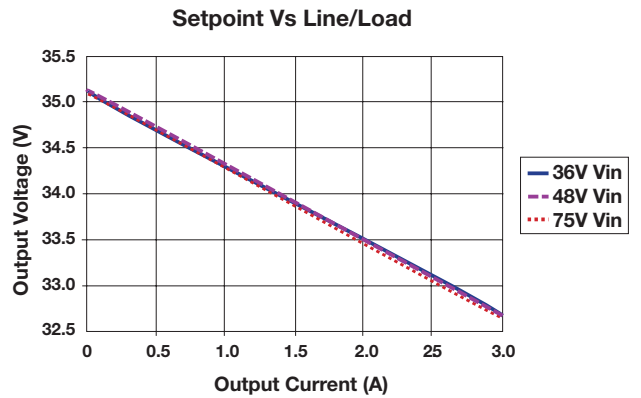
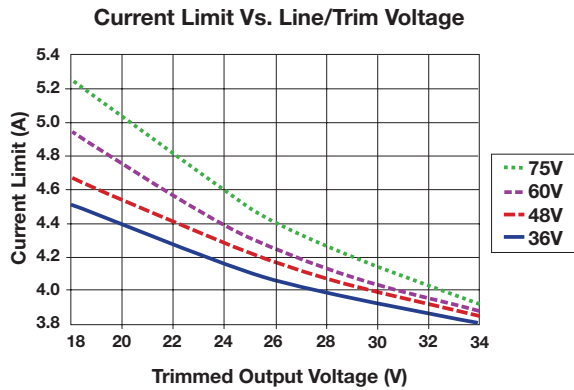
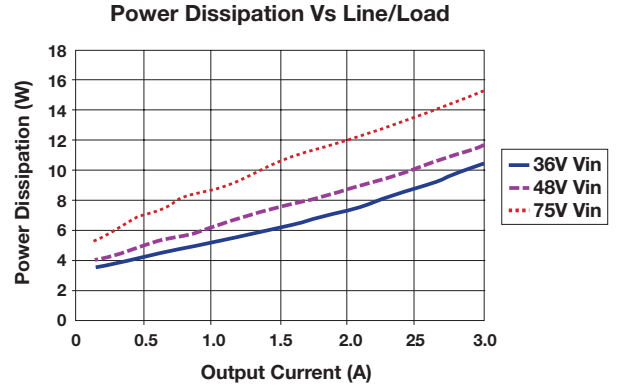
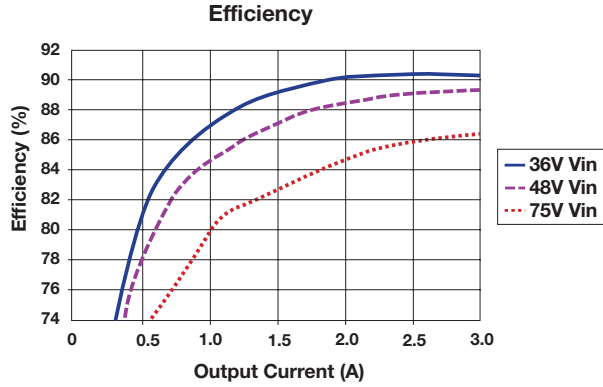
An external input fuse must always be used to meet these safety requirements.

## External Output Trimming

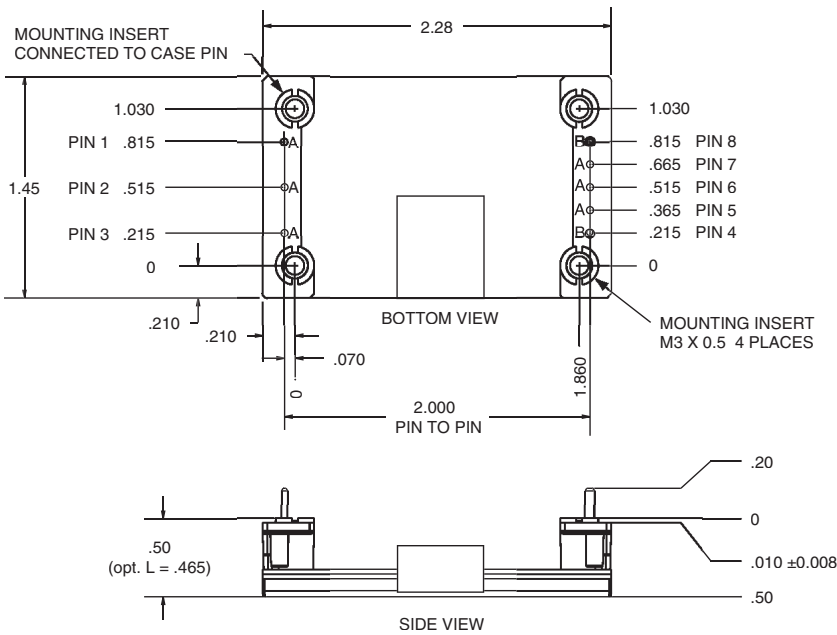


# DORADO HV OPERATION

Note: 68 $\mu$ F electrolytic capacitor across output pins for all graphs.



# PACKAGE DETAIL



| Pin | Function | Pin Dia. (in.) |
|-----|----------|----------------|
| 1   | - Input  | 0.040          |
| 2   | On/Off   | 0.040          |
| 3   | + Input  | 0.040          |
| 4   | + Output | 0.060          |
| 5   | + Sense  | 0.040          |
| 6   | Trim     | 0.040          |
| 7   | - Sense  | 0.040*         |
| 8   | - Output | 0.060          |

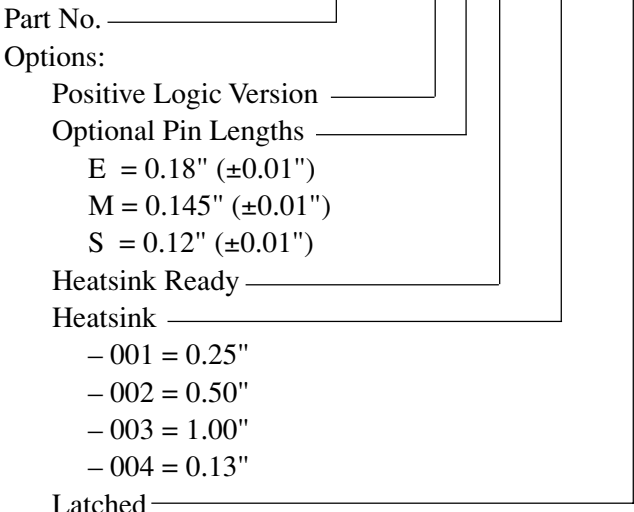
\* Connected to -Output internally.

- Notes:**
- Mechanical tolerances  
 x.xxx in. = ±0.005 in.  
 x.xx in. = ±0.01 in.
  - Pin material: brass with tin/lead plating over nickel
  - Workmanship: Meets or exceeds IPC-A-610B Class II
  - "A" = 0.040" dia. Pins
  - "B" = 0.060" dia. Pins

## Ordering Information

| Standard Model Number | Output  | Max     | Efficiency |           |
|-----------------------|---------|---------|------------|-----------|
|                       | Voltage | Current | Half Load  | Full Load |
| GLDW34V03             | 34V     | 3A      | 87%        | 89%       |

**Option Codes:** GLDW34V03 P S R -00X -123



OVP and OTP latch immediately,  
 OCP latches after 3 seconds

## Heatsink Part Numbers

| Part Number | Height | Typical Thermal Performance           |  |
|-------------|--------|---------------------------------------|--|
|             |        | Natural Convection Power Dissipation* | Forced Convection Thermal Resistance** |
| 001         | 0.25"  | 5W                                    | 5.8°C/W                                |
| 002         | 0.50"  | 7W                                    | 3.2°C/W                                |
| 003         | 1.00"  | 11W                                   | 2.0°C/W                                |
| 004         | 0.13"  | TBD                                   | TBD                                    |

\*@ 60°C rise heatsink to ambient      \*\* @ 300'l/min.

**Example Part No:**  
**GLDW34V03ER-123**

- 48V Input
- 34V@3A Output
- Negative Logic
- 0.18" Pin Length
- Heatsink Ready
- Latched OVP, OTP and OCP.

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