

### FEATURES

- \*Operates 9-75V, Up To 5A Load Current per Channel
- \*Demo Board Features Two Independent LTC4358 Circuits Sharing a Common Ground
- \*0.093-inch Turret Holes Accommodate 12 AWG Wire

### APPLICATIONS

- \*Servers, Routers, Switches, Mass Storage
- \*Solar Panel Isolation
- \*Battery Charger Isolation
- \*Battery Isolation

- \*Droop Sharing
- \*N+1 Redundant Supplies

### DESCRIPTION

Demonstration Circuit 1204 showcases the LTC®4358 5A ideal diode. The board includes two independent LTC4358 ideal diode circuits with a common ground, operating over a 9-28V range.

LT, LTC, LTM, LT, Burst Mode, OPTI-LOOP, Over-The-Top and PolyPhase are registered trademarks of Linear Technology Corporation. Adaptive Power, C-Load, DirectSense, Easy Drive, FilterCAD, Hot Swap, LinearView, µModule, Micropower SwitcherCAD, Multimode Dimming, No Latency  $\Delta\Sigma$ , No Latency Delta-Sigma, No R<sub>SENSE</sub>, Operational Filter, PanelProtect, PowerPath, PowerSOT, SmartStart, SoftSpan, Stage Shedding, SwitcherCAD, ThinSOT, UltraFast and VLDO are trademarks of Linear Technology Corporation. Other product names may be trademarks of the companies that manufacture the products.

### PERFORMANCE SUMMARY

Specifications are at TA = 25°C

| SYMBOL           | PARAMETER             | CONDITIONS                    | MIN | TYP | MAX | UNITS |
|------------------|-----------------------|-------------------------------|-----|-----|-----|-------|
| V <sub>IN</sub>  | Input Operating Range |                               | 9   |     | 28  | V     |
| I <sub>OUT</sub> | Maximum Load Current  | Limited by MOSFET Dissipation | 5   |     |     | A     |
|                  |                       |                               |     |     |     |       |

### Board Layout

DC1204A is a 2-layer board. The inputs and outputs of the two ideal diode circuits are entirely independent, sharing only a common ground. Banana jacks are provided for input and output connections; turrets facilitate connection of voltmeters and scope probes.

### Modifying for More Current

You cannot modify DC1204A for higher current levels. If currents greater than 5A are needed, use the LTC4357 positive high voltage ideal diode controller featured on DC1203A.

### Thermals

The LTC4358CDE is designed and tested to handle up to 5A load current. DC1204A can safely carry 5A in each channel, simultaneously. Nevertheless, typical LTC4358s can handle 7A operating at room temperature with a dissipation of about 1W. Under these conditions the package temperature rise measures less than 40 degrees Celsius cooled only by convection currents, permitting operation of DC1204A up to about 75 degrees Celsius air ambient with no air flow. The forward drop at 7A in a 25 degree Celsius air ambient is typically less than 150mV.

### Locally Generated Spikes

When bench testing with input short circuits, it is possible to generate high voltage transients in excess of the LTC4358's 28V abs/max rating. A 47 microfarad electrolytic capacitor has been included on the output of each ideal diode to suppress these spikes.

Pads are included on the bottom of the board for use of an optional transient voltage suppressor (TVS or TransZorb) in lieu of a capacitor. The peak clamping voltage must be less than 28V.

In practical applications the output is most often bypassed by a large bulk reservoir capacitor. If the connections to this capacitor are short, no clamp or other bypassing is necessary to protect against output spikes when the input is short circuited.

### Basic Operation

Connect two 9-28V power supplies to the input as shown in Figure 1, and short VOUT A and VOUT B together. Connect a load to the combined output. By adjusting the supplies slightly above and below one another, the diode behavior is evident from observing the flow of current in each supply. The higher of the two supplies will carry the full load current.

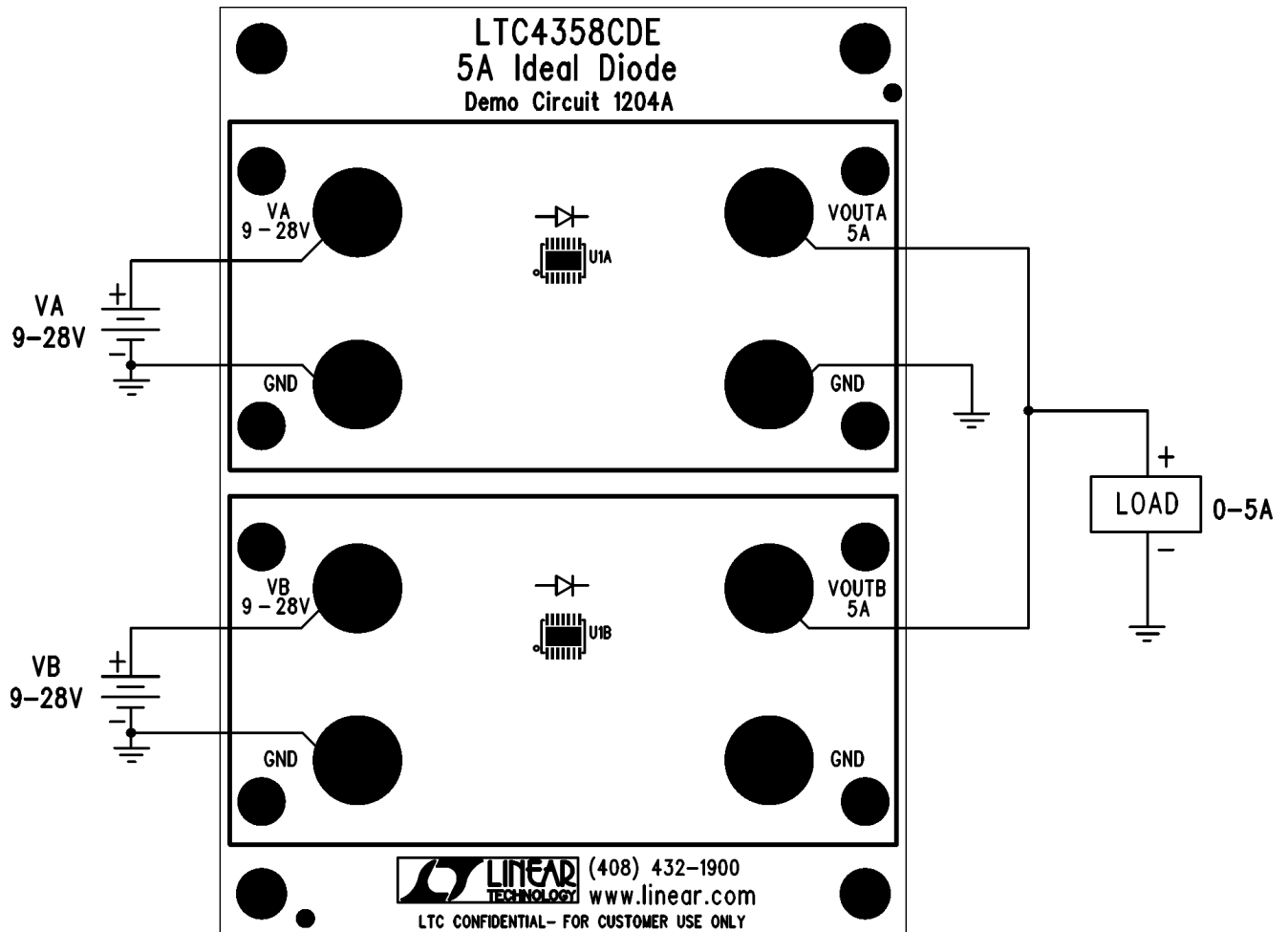


Figure 1. Proper Measurement Equipment Setup

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1204A POSITIVE HIGH VOLTAGE IDEAL DIODE-OR

LTC4358

