

APPLICATIONS INFORMATION

Using the Allegro A8499 Evaluation Board

INTRODUCTION

The A8499 evaluation board provides a quick vehicle for evaluating the A8499 step-down regulator. The board is laid out to accept a variety of external components, allowing flexibility to modify the board for a specific design.

The evaluation board can be ordered from your local Allegro® MicroSystems representative or by using the Allegro Web site at www.allegromicro.com, and following the links to the Online Store.

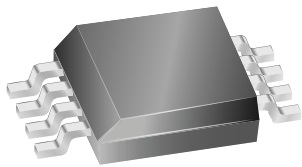


Figure 1. The Allegro A8499 is provided in a robust, lead (Pb) free 8-pin SOIC package with 100% matte tin leadframe plating. An exposed pad for thermal dissipation is available on the bottom surface of the package.

This application note provides information on the electrical characteristics of the evaluation board. A schematic diagram of the circuit is shown in figure 2. In addition, the layouts of the copper traces and the silkscreen markings are provided in figures 3 and 4. A table of recommended external components is also provided.

For information on the electrical characteristics of the A8499 itself, refer to the datasheet for the device, also available on the Allegro Web site.

ELECTRICAL CHARACTERISTICS

As described in the following sections, the evaluation board is provided already populated with external components for certain range of input and output voltages.

Input Voltage Range

The evaluation board is populated for an 8 to 22 V input range. If a higher input voltage is desired, input capacitors C2 and C1.1 must be substituted with appropriately rated components.

The board is designed to parallel the C2, C1.1, C1.2 and C1.3 input capacitors. C1.2 and C1.3 are not populated and provide space to use electrolyt-

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ic capacitors in place of C1.1. Please refer to the A8499 datasheet for inductor and output capacitor selection for different input voltage ranges.

Output Voltage

The evaluation board is populated for 5 V output. Please refer to the A8499 datasheet for information on selecting the inductor (L1), the output capacitors (C4.1, C4.2, and C4.3), and the feedback resistors (R1 and R2) for different output voltages.

The A8499 can operate using its internal bias regulator or the bias supply input, V_{BIAS} , can be provided externally for output $< 3.3\text{ V}$ or $> 5\text{ V}$. The A8499 starts up with internal bias regulator.

On the evaluation board, R5 (0 Ohms) con-

nects the A8499 output pin (LX) to the VBIAS pin. For the output voltage range of 3.3 to 5 V, connecting output to VBIAS allows the regulator to derive the bias supply from output and eliminate losses in the internal bias regulator. For output $< 3.3\text{ V}$ or $> 5\text{ V}$, R5 must be removed.

Output Current

The evaluation board is designed to provide 1.5 A continuous current. For lower output currents, the inductor (L1), Schottky diode (D1) and output capacitors (C4.1, C4.2, and C4.3) can be optimized to reduce cost and save space. The A8499 datasheet provides component selection criteria.

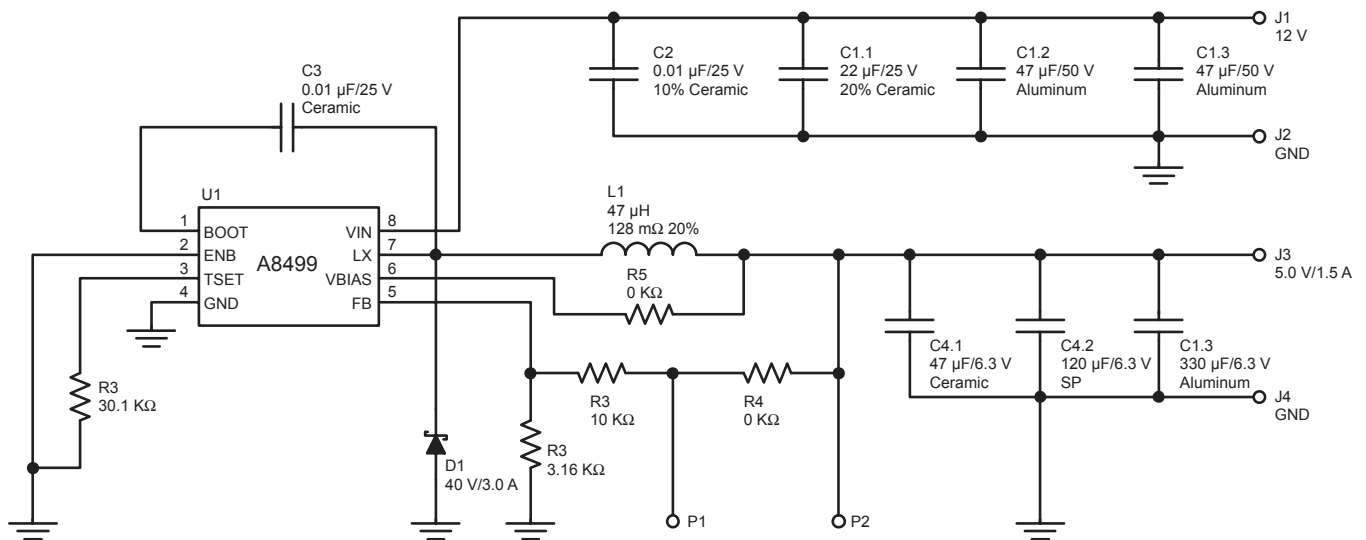


Figure 2. A8499 Evaluation Board Schematic. Values indicated are those of the external components populated at shipment.

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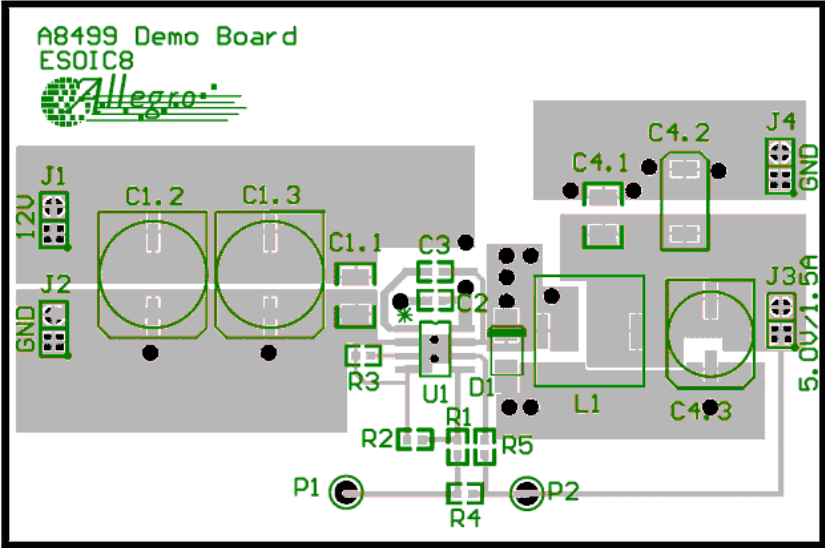


Figure 3. Traces Layout for A8499 Evaluation Board

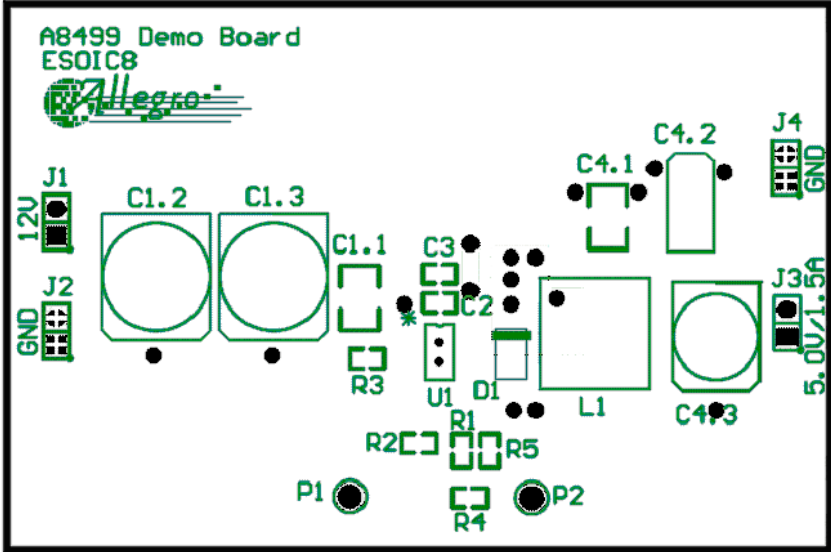


Figure 4. Silkscreen Layout for A8499 Evaluation Board

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