



Evaluation Board User Manual



EvalAg7300 Evaluation Board User Manual

Version 1.1 – November 2024

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1 Kit Contents

- EvalAg7300 Evaluation Board
- Ag7300 Soldered to Evaluation Board

2 Board Layout

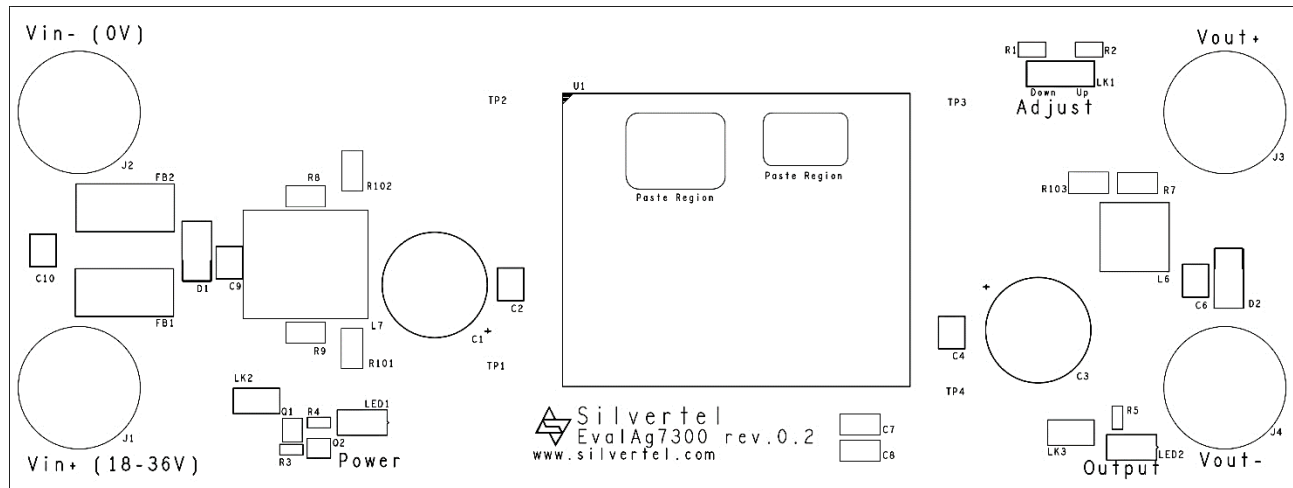


Figure 1: EvalAg7300 Board Layout

2.1 Link Settings

- LK1 – Output voltage Adjust
- LK2 – Input Power LED Enable
- LK3 – Output Power LED Enable

2.2 Input Output Connections

- J2 & J3 – Supply Binding Posts
- J3 & J4 – Load Output Binding Posts

3 Introduction

This Manual is a guide to using the EvalAg7300 evaluation board fitted with a Silvertel Ag7300 High Power Isolated Boost Converter module for use in a wide variety of point of load (PoL) and DC-DC converter applications, including IEEE802.3bt Power over Ethernet (PoE) Power Sourcing Equipment (PSE) applications.

While this evaluation board has been designed following Silvertel's recommendations, it should not be considered as a reference design as it features circuitry included solely for the purposes of evaluation that are not required for proper operation.

4 Input

4.1 Supply

The EvalAg7300 evaluation board should be powered by a DC Power supply connected to J1 and J2 binding posts using 4mm Banana connectors, bare wire, or fork connectors.

This supply should deliver between 18-36V. The Ag7300 can output up to 120W of continuous output power, at this output power the Ag7300 will dissipate up to 16W. Any power source should be suitably rated for the desired output power, the power dissipation of the Ag7300 and any transmission power losses. For example, a 24V supply should be capable of supplying up to 7A if the full output power is to be drawn.

4.2 Output Voltage Adjust

The output voltage of the Ag7300 module can be adjusted up or down by changing the location of the jumper LK1. The EvalAg7300 is fitted with two adjust resistors. The down adjust resistor R1, is fitted with a 510k Ω resistor. And the up adjust resistor R6, which is fitted with a 0 Ω resistor to allow for the maximum adjust change of the Ag7300LPB module.

With no jumper present on LK1, the module will default to its nominal 55.5V output.

To increase the output voltage, insert the jumper to LK1 in the left position, so that the link is between the middle and rightmost pin.

To reduce the output voltage, insert a jumper to LK1 in the right position, so that the link is between the middle and leftmost pin.

If the output voltage needs to be set to a different value (within the adjustment range) then connect different value resistors in place of R1 (510k Ω) or R2 (0 Ω) and connect the jumper into the corresponding link setting.

Note: ensure that the down adjust resistor is not shorted when connecting a module that has a higher stated resistance in the datasheet, as this could cause damage to the module.

5 Output

The Ag7300 will output 48V-58V and can deliver a continuous output current of 2.2A, for up to 120W of continuous power, the peak output power may be reduced as a result of the power source or operating conditions the module is operating in.

5.1 Output Power LED

LED2 illuminates when the module is outputting. This can be disabled by removing the jumper link LK3, removing this link does not affect the power being supplied by the Ag7300LPB.

6 Test Setup

Figures 2 and 3 show typical test setups using the EvalAg7300 evaluation board.

The equipment required: -

- EvalAg7300 fitted with Silvertel's Ag7300LPB Module
- 18-36V bench power supply Optional Equipment capable of greater than 140W

Optional Equipment

- EvalAg6800 or other IEEE802.3 compliant PSE
- EvalAg5800 or other IEEE802.3 compliant PD
- Data source e.g. PC
- CAT5e or greater cables

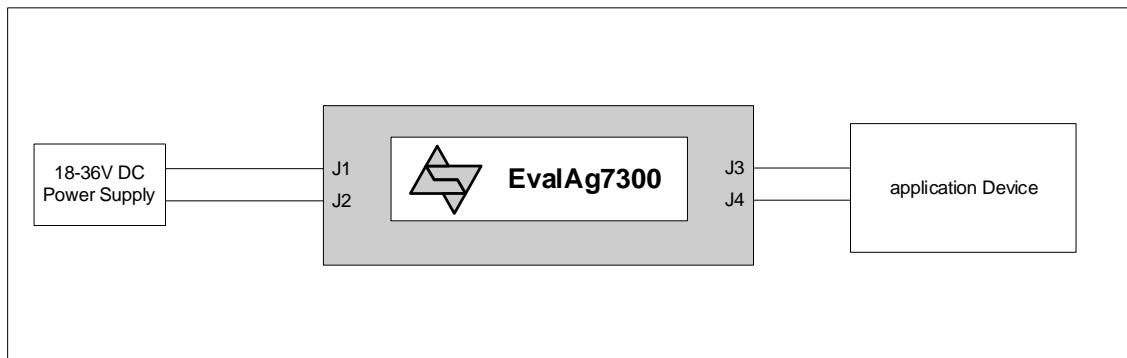


Figure 2: Basic Test Setup

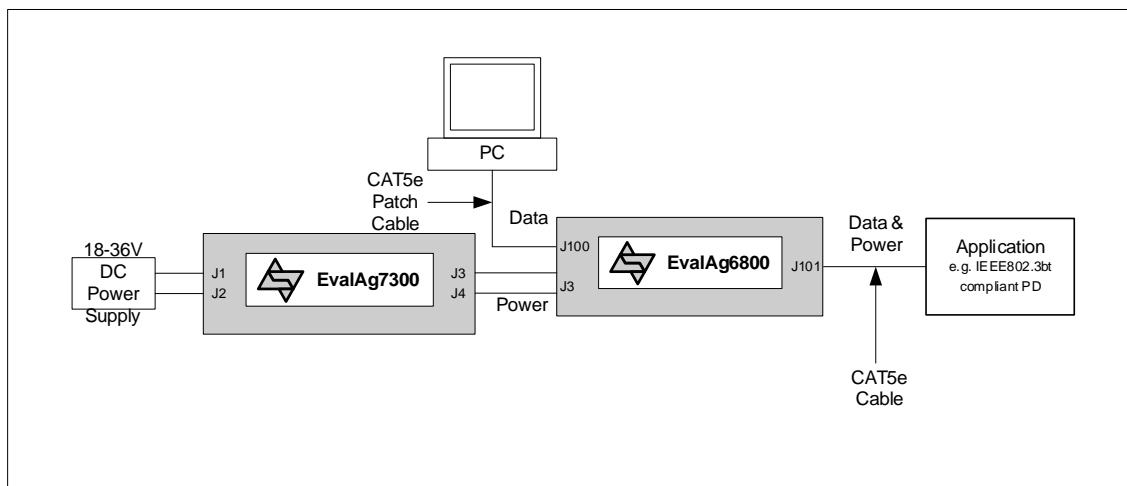


Figure 3: IEEE802.3bt PSE Test Setup

7 Additional information

Full operating conditions and feature set can be found in the Ag7300 product datasheet, available from www.silvertel.com.

8 Schematic

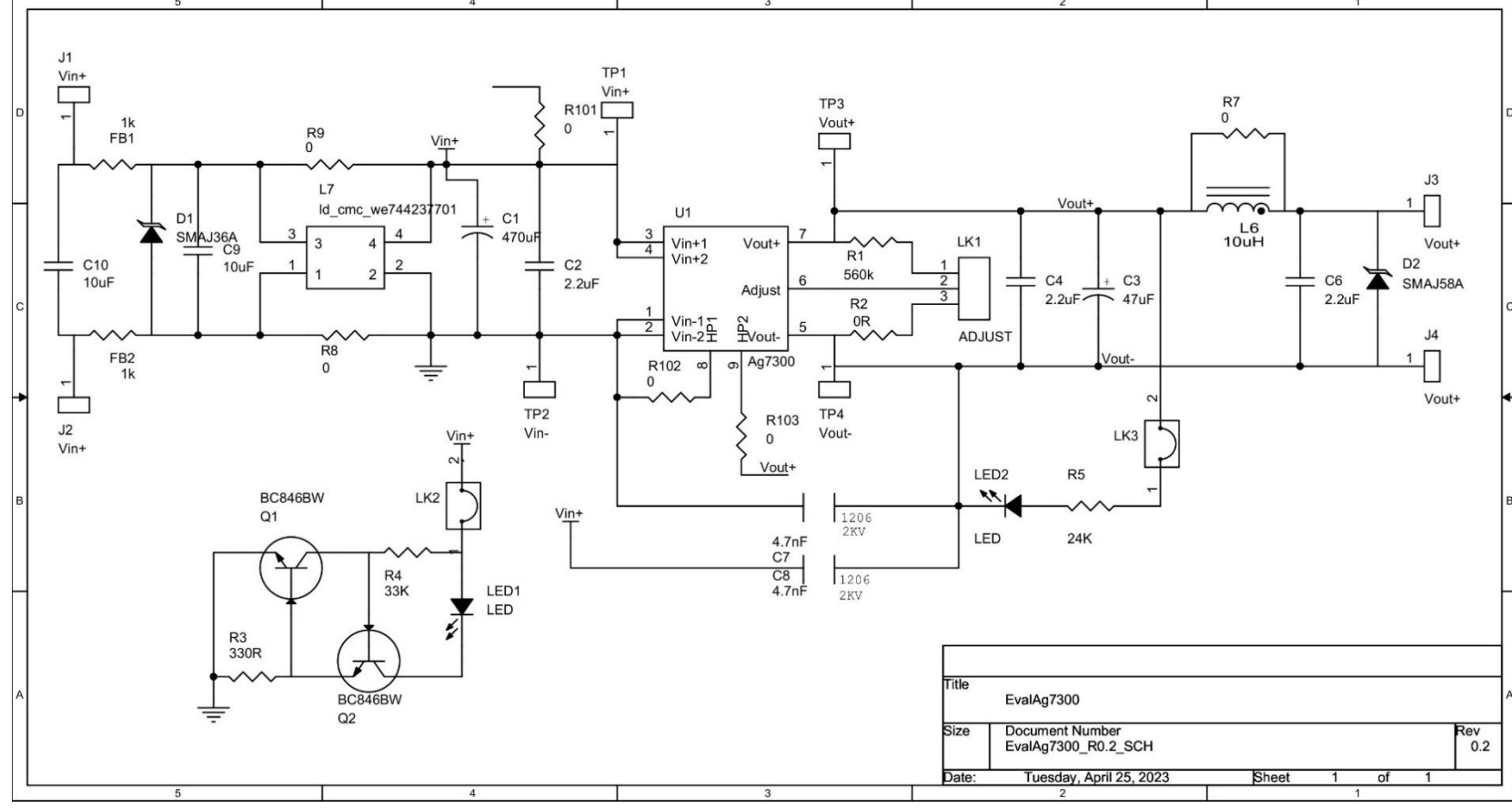


Figure 4: Schematic

9 Bill of Materials

EvalAg7300 Eval Board - Rev.1							Date: 7th November, 2024		
Strictly Private and Company Confidential									
Silver Part No.	Description	Value	Location:	Qty:	Package:	Rating:	Tol:	Supplier Pt NO:	Comments:
	PD Module	Ag7300	U1	1	Custom	-	-	Silver Telecom Part	
	Transistor NPN 60v Single	BC846BW	Q1,Q2	2	SOT323	-	-	Infineon or NXP Only	
	Protection Diode	SMAJ36A	D1,	1	SMA	-	-		
	Protection Diode	SMAJ58A	D2	1	SMA	-	-	Würth- 824 500 581,Vishay, ST Micro, Diodes Inc	
	SM LED	RED LED	LED1, LED2	2	SMT	-	-	Würth - 150 141 RS7 310 0	
	Inductor	8.2µH	L6	1	SMT	>2.5A		Bourns SDR0805-8R2ML	
	Common Mode Choke	9µH	L7	1	SMT	≥ 7A		Würth: 744237701	
	Ferrite Chip	≥115Ω@100MHz	FB1, FB2	2	0805	≥ 7A	25%	Laird: 28F0181-1SR-10	
	Capacitor Electolytic	470uF	C1	1	Through Hole	50V	20%	Panasonic, Samsung, NIC, TDK, Kemet, AVX, Würth:860020778021	Pitch: 5mm
	Capacitor Electolytic	47uF	C3	1	Through Hole	100V	20%	Panasonic, Samsung, NIC, TDK, Kemet, AVX, Würth:860130875009	Pitch: 5mm
	Ceramic multi-layer	4.7nF	C7, C8	2	1206	2000V	20%	Samsung, NIC, TDK, Murata, Kemet, AVX, Würth	
	Ceramic multi-layer	2.2uF	C2, C4, C6	3	1210	50V	20%	Samsung, NIC, TDK, Murata, Kemet, AVX, Würth: 885012209071	
	Ceramic multi-layer	10uf	C9, C10	2	1210	50V	20%	Samsung, NIC, TDK, Murata, Kemet, AVX, Würth: 885012209073	
	Resistor - 0805	510K	R1	1	0805	125mW	1%	Royal Ohm, Eurohm & Yageo	
	Resistor - 0805	0R	R2	1	0805	125mW	1%	Royal Ohm, Eurohm & Yageo	
	Resistor - 0603	330R	R3	1	0603	125mW	1%	Royal Ohm, Eurohm & Yageo	
	Resistor - 0603	33K	R4	1	0603	125mW	1%	Royal Ohm, Eurohm & Yageo	
	Resistor - 0603	24K	R5	1	0603	125mW	1%	Royal Ohm, Eurohm & Yageo	
	Resistor - 1206	0R	R7-9, R101-103	0	1206	250mW	1%	-	
	Red Connecor	Binding Post	J1, J3	1	Screw Mount	-	-	Switch Electronics 354147	
	Black Connector	Binding Post	J2, J4	1	Screw Mount	-	-	Switch Electronics 354146	
	Link	3 Way	LK1	1	Through Hole	-	-	Toby LHCS-03S-R-060-034, Würth 61300311121	
	Link	2 Way	LK2, LK3	2	Through Hole	-	-	Valcon LHCS-02S-R-060-034, Würth 61300211121	
	Test point	1 Way	TP1-4	0	Through Hole	-	-	Valcon, Keystone, Multicomp TEST-1(R)	
	PCB	Rev.1 - 154.3mm x 58.42mm							
	Jumper Links	Links	LK1 - LK3	3		-	-		
	Feet	GRF24006A	-	4	-	-	-	Essentra	
			Total	37					

Figure 5: Bill of Materials

10 Layer Routing

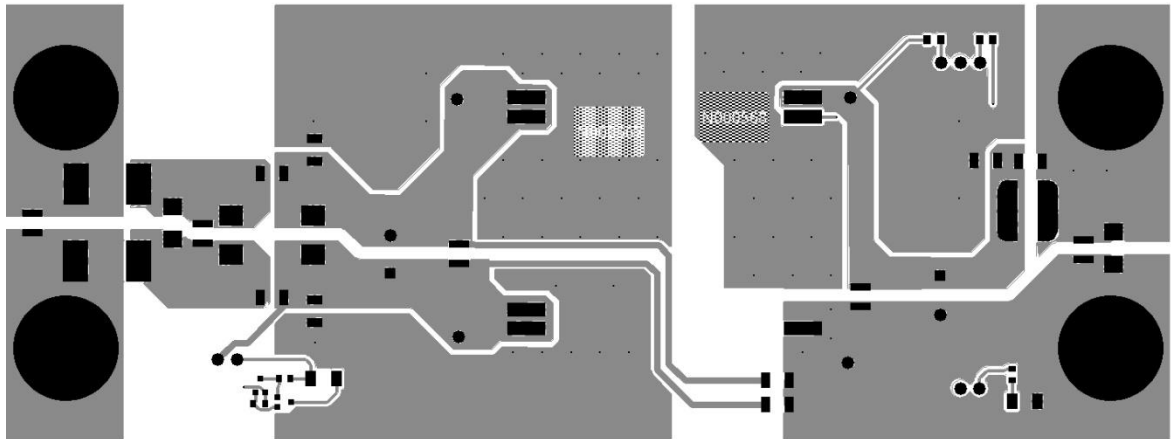


Figure 6: Top Layer Routing

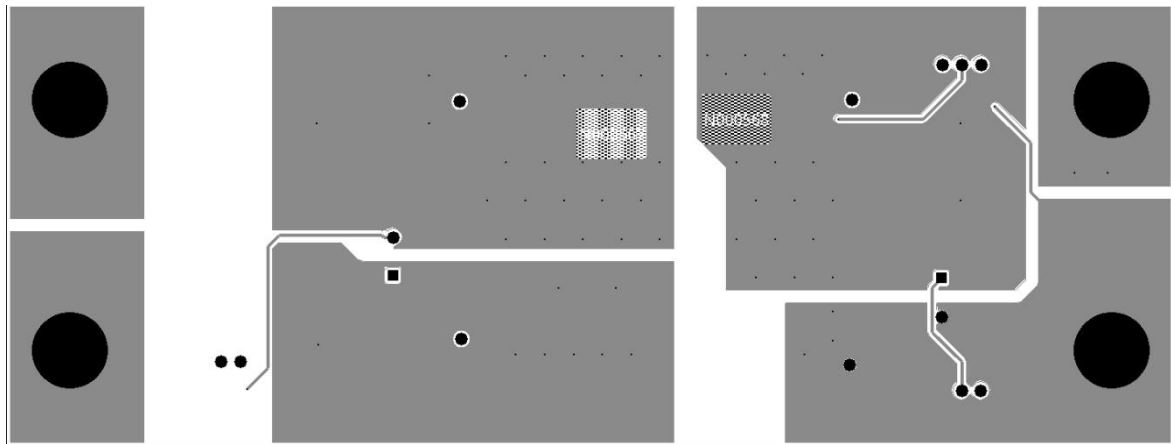


Figure 7: Bottom Layer Routing