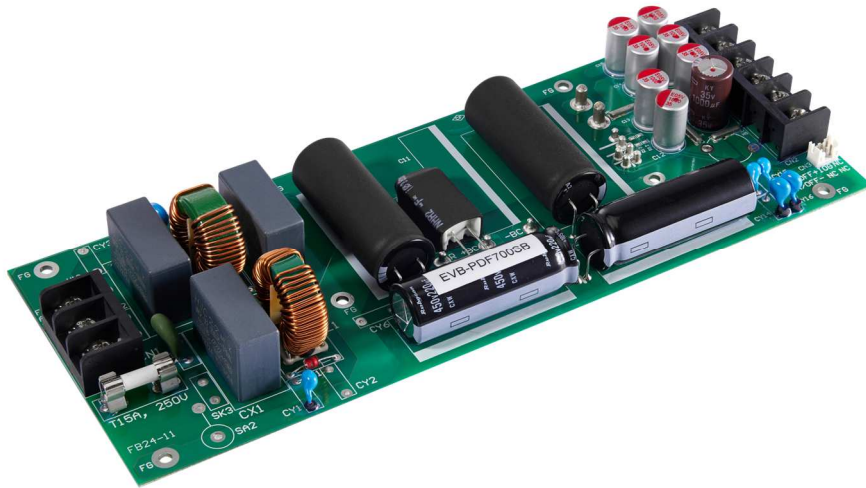




# EVB-PDF700S Series Application Note V10

## Evaluation Board for PDF700S Series APPLICATION NOTE



**Approved By:**

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Design Quality Department	Benny	JoJo	



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## 1. Introduction

The EVB-PDF700S series is the evaluation board for testing the PDF700S series. The input voltage range is 90-264 V<sub>ac</sub>. For help in testing the performance of the PDF700S series, please refer to the [PDF700S Application Note](#).

### High Voltage Warning:

High voltage is present at certain areas of the evaluation board. Be careful to avoid contact with these voltages. After disconnecting input power, the evaluation board may temporarily carry high voltage. Use caution when handling.

### Application of Input Power:

The evaluation board **prohibits hot plugging**, so **don't use** a knife switch or circuit breaker to connect input power. This type of action applies the input voltage at an uncontrolled very high rate of rise (dV/dt), which can damage the converter and external components before the converter. The input voltage should be applied at a controlled rate of rise (10V/uS is recommended). Also, make sure that the input voltage is turned off before inserting or removing the converter module from the evaluation board.

### Thermal Considerations:

When testing the converter on the evaluation board, provide adequate cooling. Use a fan to blow cooling air so that the fan blows through the converter or the cooler connected to the converter. Ensure that the converter temperature does not exceed the maximum rated temperature specified in the data sheet.

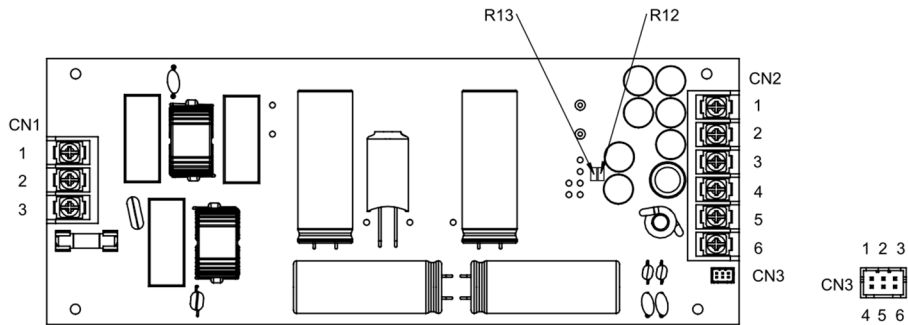
### Converter Sockets:

The evaluation board uses sockets to provide options for testing different converters. These sockets are not suitable for continuous high current. Short-term testing is possible, but be aware of this limitation for long-term testing. The socket adds resistance to the power loop, causing a voltage drop at higher currents, which can cause significant errors in regulation and efficiency measurements. These sockets also do not provide a thermal cooling path from the module pins to the PCB wiring, which can result in higher converter temperatures and errors when performing thermal evaluations. For long-term testing, thermal testing and permanent installation, solder connections are recommended.



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## 2. Pin Function Description Input and Output Connections



No	CN1	Function	Description
1	FG	Connected to Baseplate	Connected to baseplate (FG)
2	AC1	AC Input	AC supply input
3	AC2	AC Input	

No	CN2	Function	Description
1-3	-Vo	-V Output	Negative power output
4-6	+Vo	+V Output	Positive power output

No	CN3	Function	Description
1	ON/OFF+	Remote On/Off+	Connect current source between ON/OFF+ and ON/OFF- to remote on/off the module
2	IOG	Monitor Operating Signal	Monitor normal and abnormal operation of the converter
3	NC		NC
4	ON/OFF-	Remote On/Off-	Connect current source between ON/OFF+ and ON/OFF- to remote <b>on/off</b> the module
5	NC		NC
6	NC		NC

## 3. Trim Resistors

### 3.1 Output Voltage Adjustment

The output voltage of EVB-PDF700S can be adjusted by R12 or R13 resistor (refer to the [PDF700S-CMFC\(D/D-P\) Application Note](#)).

#### Note: Description of Trim Resistors

The trim resistors R12 and R13 are not populated in this evaluation board. This is to allow the user to determine and install the needed trim resistance values based on the range of desired output voltage adjustment of the module being evaluated.



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## 4. Schematic

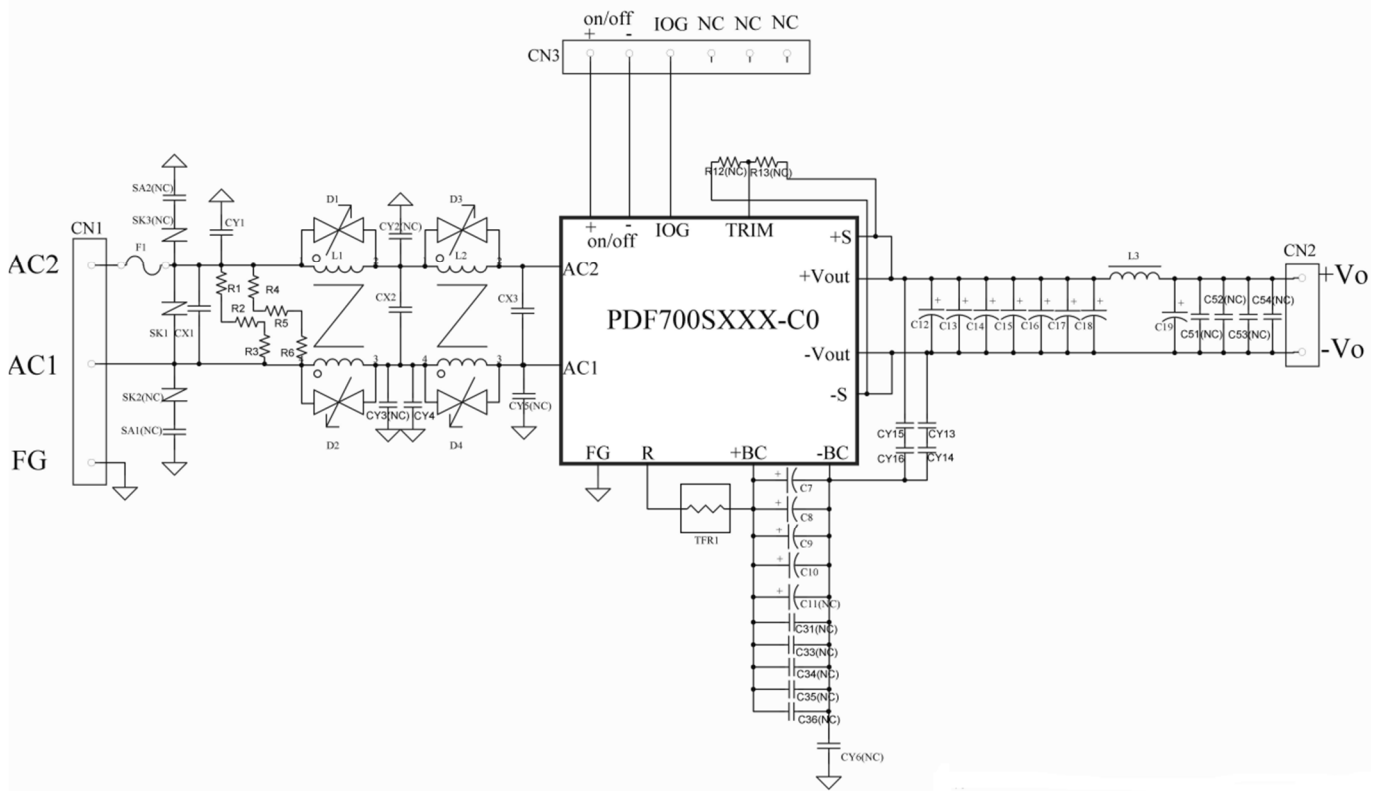


Figure1 Schematic

## 5. Component Placement

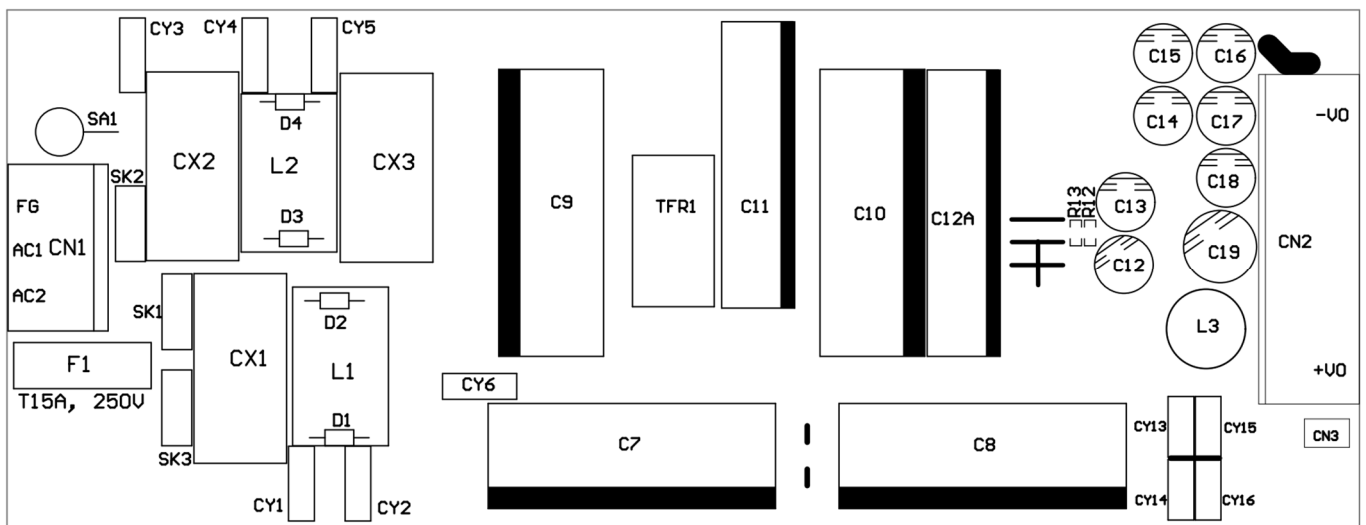


Figure2 Component Placement



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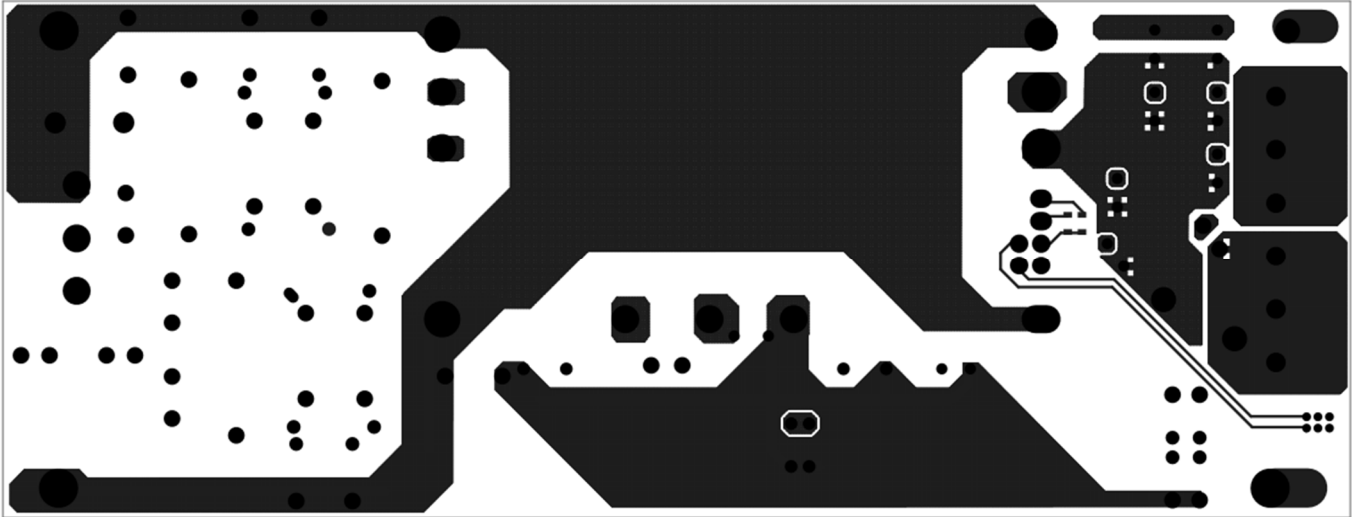


Figure3 PCB Layout Top View

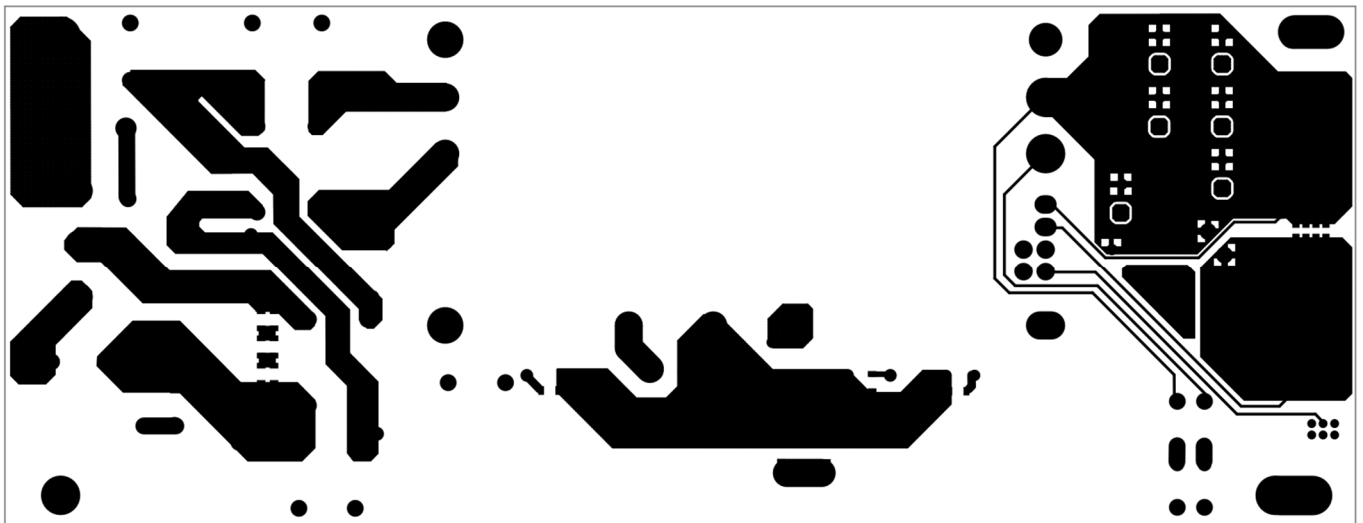


Figure4 PCB Layout Bottom View



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## 6. Bill of Materials (BOM)

Components value:

	Model Number		
	EVB-PDF700SA	EVB-PDF700SB	EVB-PDF700SC
F1	15A 250V	15A 250V	15A 250V
D1~D4	200V 3000A	200V 3000A	200V 3000A
SK1	φ10 470V	φ10 470V	φ10 470V
CX1~CX3	2.2uF/310V	2.2uF/310V	2.2uF/310V
C12~C18	1200uF/16V×7 parallel	1000uF/35V×7 parallel	470uF/63V×5 parallel
C19	2200uF/16V	1000uF/35V	470uF/63V
C7~C10	220uF/450V×4 parallel	220uF/450V×4 parallel	220uF/450V×4 parallel
CY1	220pF/400VAC	220pF/400VAC	220pF/400VAC
CY4	2200pF/400VAC	2200pF/400VAC	2200pF/400VAC
CY13 CY15	100pF/300VAC	100pF/300VAC	100pF/300VAC
CY14 CY16	1000pF/250VAC	1000pF/250VAC	1000pF/250VAC
TFR1	10R	10R	10R
L1	23mH min	23mH min	23mH min
L2	2mH min	2mH min	2mH min
L3	0.06uH MIN	Short	Short
CY1 (GND)	BEAD CORE	BEAD CORE	BEAD CORE
CY4			
CY14 (-BC)			
CY16 (-BC)			

Note :

CX1~CX3 : X2 capacitors

C12~C18: aluminum polymer capacitors

C7~C10, C19 : aluminum capacitors

CY1, CY4 : Y1 ceramic capacitors

CY13~CY16 : Y2 ceramic capacitors

D1~D4 : surge absorber

F1 :

Fuse 15A/250V

SK1, SK2, SK3 :

VARISTOR/470V (TKS TVR10471KSV) or equivalent

CX1, CX2, CX3 :

2.2uF/310V (HJC MKP series) or equivalent

C12~C18 :

1200uF/16V (GEMCON GPH series) or equivalent

1000uF/35V (AISHI PV series) or equivalent

470uF/63V (AISHI PV series) or equivalent

C19 :

2200uF/16V (RUBYCON ZLH series) or equivalent

1000uF/35V (NCC KY series) or equivalent

470uF/63V (RUBYCON ZLH series) or equivalent

C7~C10 :

220uF/450V (RUBYCON CXW series) or equivalent



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D1~D4 :

200V/3000A (BRIGHTKING BK1 series) or equivalent

L1 :

COMMON CHOKE T25\*16\*8C/NANOCRYSTAL/  $\varphi$  1.0mm/26T

L2 :

COMMON CHOKE T25\*15\*10C/R7K/  $\varphi$  1.0mm/20T

L3 :

INDUCTOR DIP R6\*20/  $\varphi$  2.5mm/0.06uH MIN.

TFR1 :

CEMENT RESISTOR 10R (SET FUSE TPR5 series) or equivalent (Life time of TFR1 is affected by watt of TFR1 and capacitance value of Cbc).

CY1 : 220pF/400VAC (TDK CD series) or equivalent

CY4 : 2200pF/400VAC (TDK CD series) or equivalent

CY13, CY15 :

100pF/300VAC (TDK CS series) or equivalent

CY14, CY16 :

1000pF/250VAC (TDK CS series) or equivalent

CY4、CY14 (-BC)、CY16 (-BC) :

BEAD CORE/A6B T 3.5\*3\*1.2mm KING CORE

CY1 (GND) :

BEAD CORE/N4L T 3.0\*1.2\*1.62 ATC

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