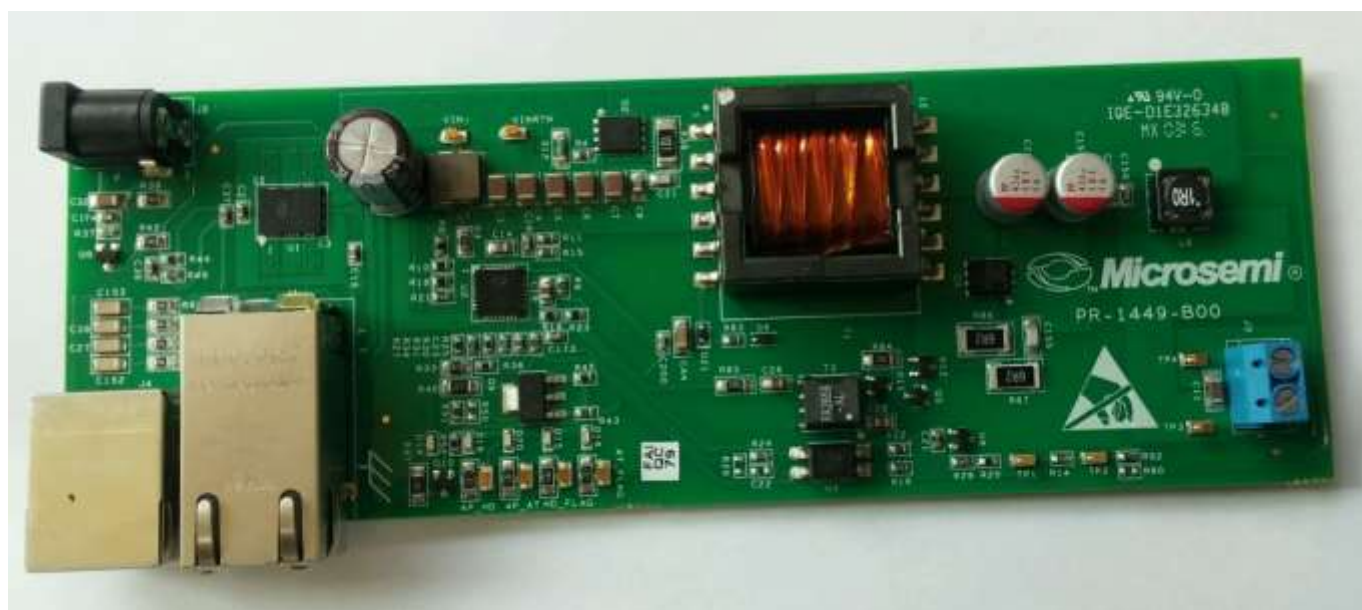


**PD70211EVB51F-12**  
**12V/50W Isolated Flyback Converter PD**  
**Evaluation Board User Guide**  
Revision 1.2



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## 1 About this Guide

This user guide provides both description and operation procedures for Microsemi's PD70211EVB51F evaluating board. This board is used for evaluating the performance of PD70211A PD controller with integrated switching regulator, and PD70224 Dual Mosfet – Based Bridge Rectifier.

PD70211ILQ device supports both the standard IEEE802.3at PD application interface, and a PWM controller that is used to provide the PD operational voltage.

The evaluation board supports a 50 Watt, 12V output in its existing configuration, with no heat sink, at room temperature.

### 1.1 Audience

This user guide is intended for qualified personnel, meaning operators and technicians who have a background in basic concepts of electronics.

### 1.2 Organization

This guide is divided into several sections as follows:

|             |                                                                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| • Chapter 1 | <b>About this Guide:</b> Describes the objectives, audience, and organization.                                                                  |
| • Chapter 2 | <b>Introduction:</b> Provides an overview about evaluation board's main functions, features, physical characteristics and ordering information. |
| • Chapter 3 | <b>Physical Description:</b> Provides explanation related to the physical description (switches, jumpers, connectors).                          |
| • Chapter 4 | <b>Electrical Characteristics:</b> Provides electrical characteristics of the evaluation board.                                                 |
| • Chapter 5 | <b>Installation:</b> Provides description of the installation process.                                                                          |
| • Chapter 6 | <b>Test Data:</b> Provides board test data information                                                                                          |
| • Chapter 7 | <b>Schematic:</b> Provides board schematic diagram                                                                                              |
| • Chapter 8 | <b>List of Material:</b> Provides board's list of materials.                                                                                    |
| • Chapter 9 | <b>Board Layout:</b> Provides board Gerber files description for all layers..                                                                   |

### 1.3 Reference Documents

PD70211 datasheet, catalogue number DS\_PD70211

PD70224 datasheet, catalogue number DS\_PD70224

## 2 Introduction

Microsemi's PD70211ILQ device is part of a family of devices which are targeted for realizing the 802.3at standard PD interface.

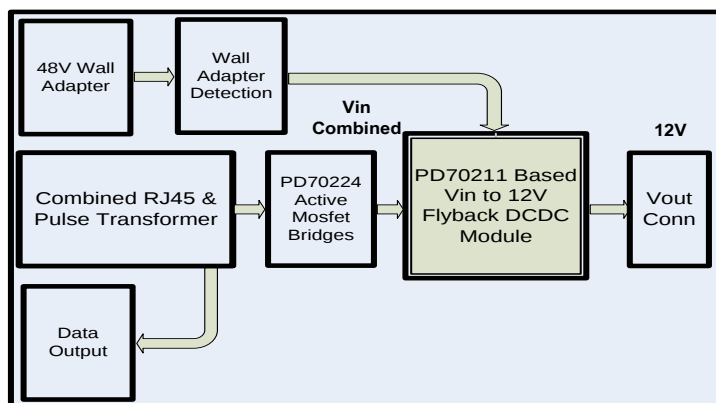
The PD interface family of devices includes the following:

| Device type | Power capability                                 | Integrates PWM controller |
|-------------|--------------------------------------------------|---------------------------|
| PD70100     | IEEE802.3at Type 1<br>(IEEE802.3 af level)       | No                        |
| PD70101     | IEEE802.3at Type 1<br>(IEEE802.3 af level)       | Yes                       |
| PD70200     | IEEE802.3at Type 2                               | No                        |
| PD70201     | IEEE802.3at Type 2                               | Yes                       |
| PD70210     | 2 x IEEE802.3at Type 2 (4 pair)<br>HDBaseT (95W) | No                        |
| PD70211     | 2 x IEEE802.3at Type 2 (4 pair)<br>HDBaseT (95W) | Yes                       |

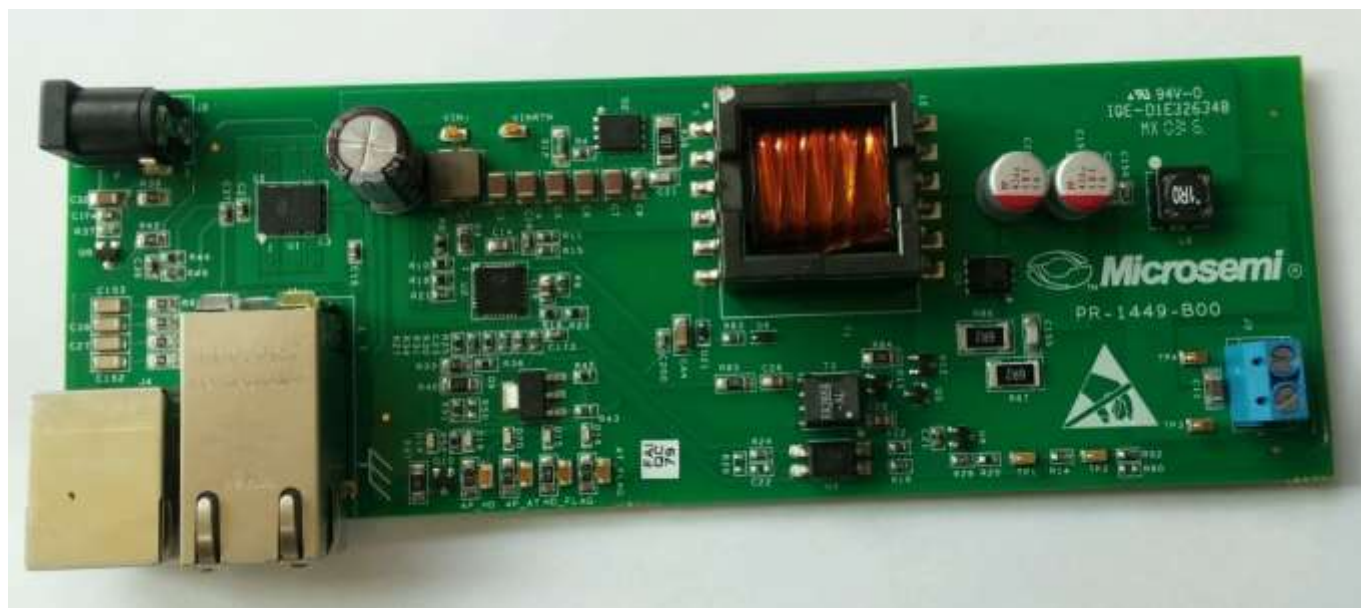
Microsemi's PD70211EVB51F Evaluation Board (see Figure 2) provides designers with an environment needed for evaluating the performance and implementation of PD applications based on PD70211 controller.

The board is using a single PD controller, PD70211ILQ, to support the Detection, Class, and Power Supplying phases on the 4 Pairs of the Cat5 cable. The board supports sync detection of the 4 pairs. PD70211ILQ supports the current of the HDBaseT over 4 Pairs, which is more than twice the power of a standard IEEE802.3AT Type 2 interface.

All necessary steps and connection instructions required to install and operate this board are provided within this document.



**Figure 1: PD70211EVB51F-12 Block Diagram**



**Figure 2: PD70211EVB51F Evaluation Board – General View**

## Evaluation Boards Ordering Information

Microsemi supplies the following Evaluation Board as shown below:

| Ordering Number  | Description                                                                                                                                                              |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PD70211EVB51F-12 | 2 x IEEE802.3at Type 2 (4 pair) PD based on PD70211 device having 4 pair supply, controlling an <b>isolated flyback converter</b> , having a <b>12V 4.17 Amp</b> output. |

## 2.1 Evaluation Board Features

- Designed to support Data and Spare current by a single PD70211A device
- Power is supplied through the 4-pairs of the Cat5 cable
- Wall Adapter input – Standard Barrel Jack available for connecting to an external 48V Wall Adapter.
- Data pass-through connector
- On board PSE class type LED indicators
- On board AT detected LED indicator
- On board 4P\_AT detected LED indicator
- On board HD detected LED indicator
- On board 4P\_HD detected LED indicator
- On board Power Good LED indicator which may be configured to monitor PD Front End or VPP UVLO.
- Ta: 0° to +70°C (with derating curve)
- RoHS compliant

## 2.2 Physical Characteristics

Table 1 lists evaluation board's physical characteristics.

**Table 1: Physical Characteristics**

| Parameter                   | Value                        |
|-----------------------------|------------------------------|
| Mechanical dimensions in mm | 147 x 51 x 15 mm (L x W x H) |

## 3 Physical Description

### 3.1 Package Contents

Upon opening the Evaluation Board package, verify the following part is included.

If it seems damaged, contact local representative or Microsemi's headquarters.

Package content for standard shipments is:

- PD70211EVB51F Evaluation Board.
- Wall Adapter Input Cable

### 3.2 Connectors

The following sections provide both general and detailed information regarding unit's connectors.

#### 3.2.1 Connectors Table

Table 2 lists the Evaluation Board's connectors.

**Table 2: Connectors List**

| # | Connector                 | Name                          | Description                                                                                                                                                       |
|---|---------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | J1                        | RJ45 Connector                | RJ45 port for Data + Power In for PSE connection                                                                                                                  |
| 2 | J2                        | Wall Adapter Input            | Standard Barrel Jack used for 48V Wall Adapter. Wall adapter connection will be automatically sensed and will override the PSE power connected to J1.             |
| 3 | J3, TP16 (-) and TP17 (+) | Converter Output              | Terminal pins for connecting a load to 12V output. J3 provides screw terminals for easy connection; TP16 and TP17 provides through-holes for soldered connection. |
| 4 | J4                        | RJ45 Connector                | RJ45 port for Data pass – through output                                                                                                                          |
| 5 | VIN+, VINRTN              | Converter Input Monitor       | Converter Input Rail Monitor – Used as a monitor for DC-DC primary rail voltage.                                                                                  |
| 6 | TP12 and TP13             | Frequency Analyzer Connection | Used to connect to an external frequency response analyzer for measuring loop stability.                                                                          |

#### 3.2.2 Connectors Detailed Explanation

(The numbering is in reference to the numbers listed in Table 2.)

##### 1. RJ45 Connectors.

See Figure 3.

**Table 3: RJ45 Connectors**

| J1 & J4 Pin No | Signal Name       | Description                                                            |
|----------------|-------------------|------------------------------------------------------------------------|
| J1 - 1, 2      | Data and Power In | Data and power input to powered device (PoE Master Negative data port) |
| J1 - 3, 6      | Data and Power In | Data and power input to powered device (PoE Master Positive data port) |
| J1 - 4, 5      | Data and Power In | Data and power input to powered device (PoE Master Positive data port) |

| J1 & J4 Pin No | Signal Name       | Description                                                            |
|----------------|-------------------|------------------------------------------------------------------------|
| J1 - 7, 8      | Data and Power In | Data and power input to powered device (PoE Master Negative data port) |
| J4 - 1, 2      | Data Output       | Isolated data pass-through to external monitoring device.              |
| J4 - 3, 6      | Data Output       | Isolated data pass-through to external monitoring device.              |
| J4 - 4, 5      | Data Output       | Isolated data pass-through to external monitoring device.              |
| J4 - 7, 8      | Data Output       | Isolated data pass-through to external monitoring device.              |

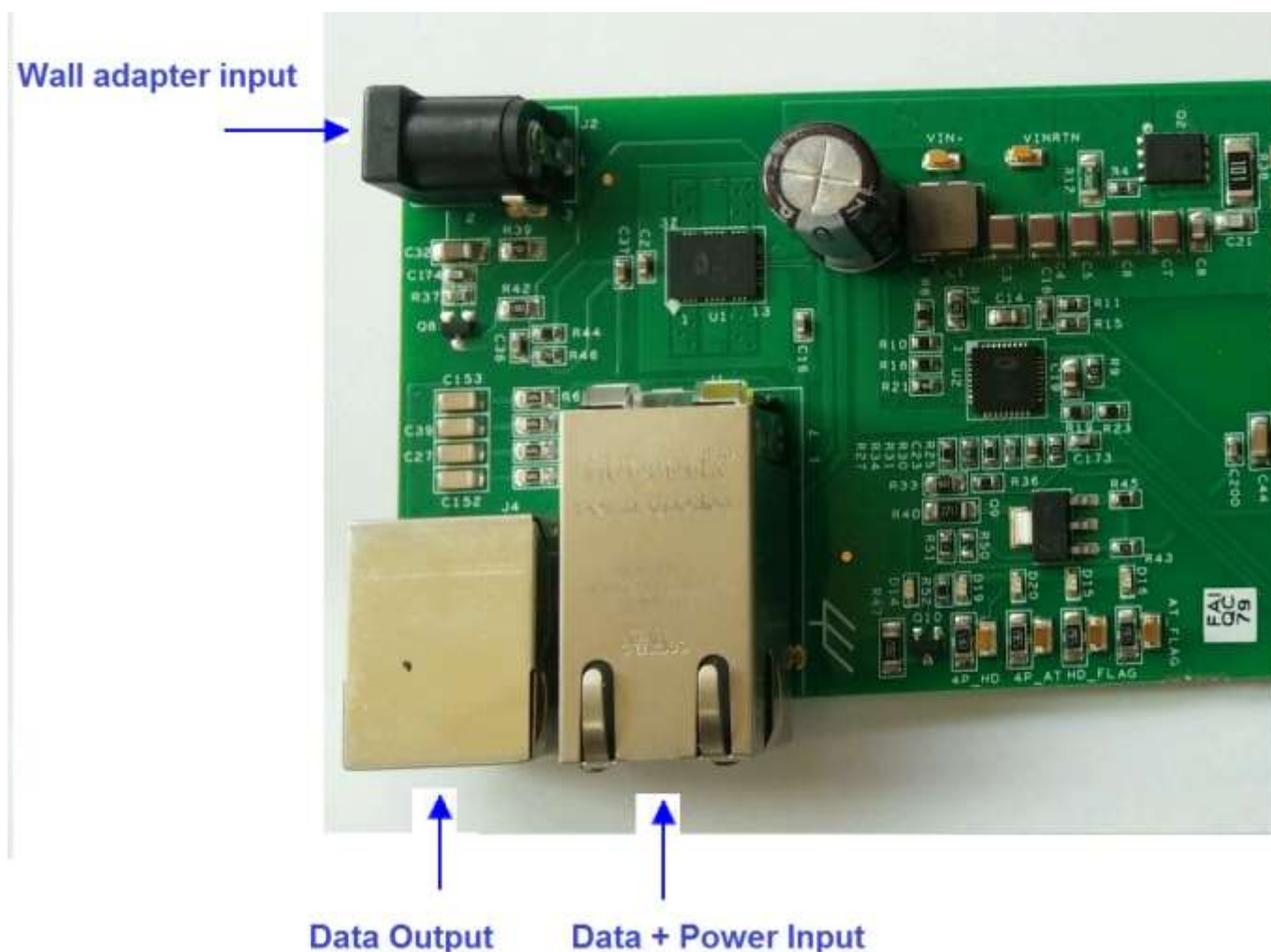


Figure 3: Front RJ45 and Auxiliary 48V Wall Adapter Connectors

## 2. Wall Adapter Connections

See Figure 3.

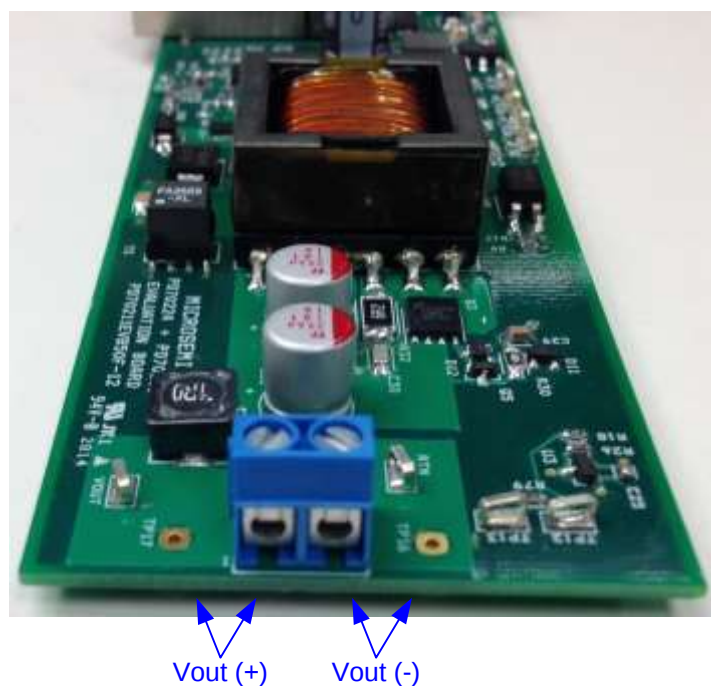
| J2 Pin No    | Signal Name | Description                         |
|--------------|-------------|-------------------------------------|
| Center Pin   | VIN (+)     | 42V to 57V input from wall adapter. |
| Outer Barrel | VIN (-)     | Wall Adapter Return                 |

### 3. V<sub>out</sub> Connections

See Figure 4.

**Table 4: Output Load Connections**

| Pin No. | Signal Name | Description                   |
|---------|-------------|-------------------------------|
| J3 - 2  | Vout (-)    | Return of DCDC output voltage |
| J3 - 1  | Vout (+)    | Positive DCDC output voltage  |
| TP16    | Vout (-)    | Return of DCDC output voltage |
| TP17    | Vout (+)    | Positive DCDC output voltage  |



**Figure 4: V<sub>out</sub> Connections**

### 3.3 Indications

The following sections provide general information regarding unit's indications.

#### 1. LED Indication

See Figure 5.

##### 3.3.1.1 LED Indication

See Figure 5.

D16 is the AT\_FLAG indication LED, a PD70211 device output signal indicating the device has detected a 2 finger class event from the PSE side in the class stage. The flag will be operative at 3, 4, and 6 fingers detection as well.

D10 is the 4P\_AT indication LED, a PD70211 device output signal indicating the device has detected a 4 finger class event from the PSE side in the class stage, or a 2 finger class event from the PSE side in the class stage, and SUPP\_Sa and SUPP\_Sb are both High.

The flag will be operative at 6 fingers detection as well.

D15 is the HD\_FLAG indication LED, a PD70211 device output signal indicating the device has detected a 3 finger class event from the PSE side in the class stage.

The flag will be operative at 6 fingers detection as well.

D9 is the 4P\_HD indication LED, a PD70211 device output signal indicating the device has detected a 6 finger class event from the PSE side in the class stage.

D18 is the Power Good indication. This LED indicates the presence of power. This indicator may be configured to monitor PD Front End VAUX (Asserts when VPP = 36V min.; de-asserts when VPP = 31V min.), or it may be configured to monitor the VPP UVLO, which is user selectable by the resistor values at VINS and HYST pins (R13, R19, and R25). See the PD70211 datasheet for further details regarding setting VPP UVLO limits. EVB default for Power Good EVB is monitoring VPP UVLO, and will track the operation of the DC-DC converter. To change Power Good to monitor PD Front End VAUX:

- 1) Remove R40, 100 Ohm Resistor (located on PCB bottom under D18).
- 2) Add R39 Zero Ohm Jumper (Also located on PCB bottom under D18).
- 3) Insure that only R39 or R40 are installed; do not operate with both resistors installed.



**Figure 5: LED Indications**

## 4 Electrical Characteristics

Evaluation board's electrical characteristics are described below:

**Table 5: Electrical Characteristics**

| Parameter                              |  | Min | Max  |       |
|----------------------------------------|--|-----|------|-------|
| Main DC Supply – J1, VIN+, VINRTN      |  | 42  | 57   | V     |
| Wall Adapter Supply – J2, VIN+, VINRTN |  | 42  | 57   | V     |
| Maximum Available Current              |  |     | 4.25 | A     |
| Port Isolation to Chassis              |  | -   | 1.5  | kVrms |

## 5 Installation

### 5.1 Preliminary Considerations and Safety Precautions

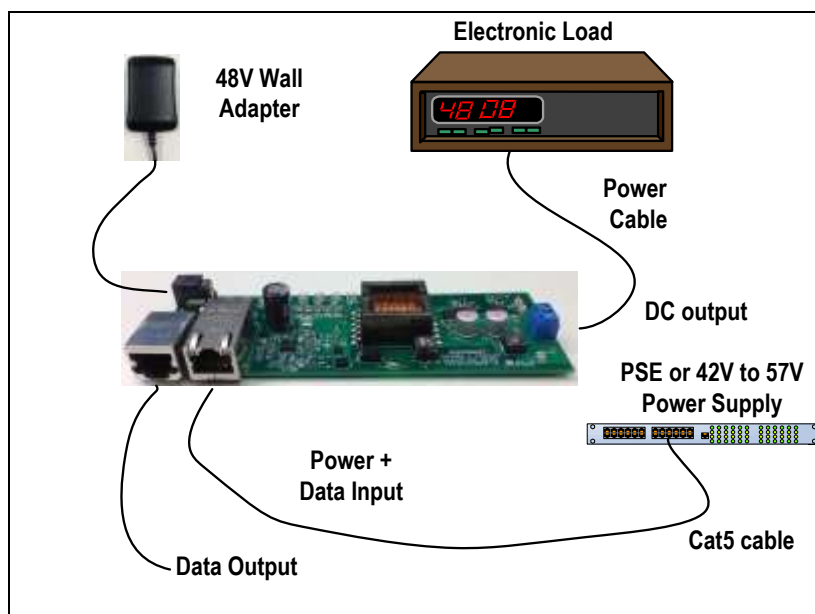
- If using an external supply in place of a PSE, verify the external power supply is turned “off” before all peripheral devices are connected. Insure the external supply is connected to the RJ45 input (J1) per Table 3.

### 5.2 Initial Configuration

**Note:** It is important to verify evaluation board is setup as shown in Figure 6 prior to starting any operation.

1. Connect load to evaluation board (J3 -1 (+) & J3 – 2 (-), or TP17 (+) & TP16 (-)).
2. Connect a Cat5 cable from PSE to Evaluation Board (J1), or a 48V Wall Adapter to Evaluation Board (J2).

Note: Wall Adapter will override power from PSE.



**Figure 6: Test Setup**

## 6 Test Data

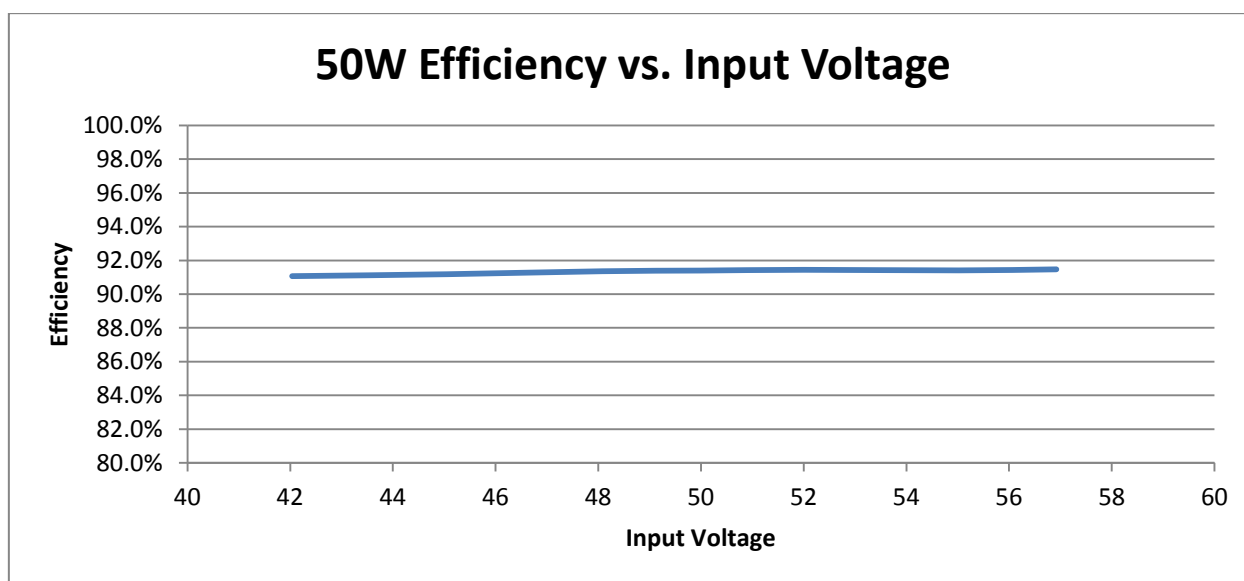
This chapter describes EVB test data under various loads and POE input voltage levels.

The efficiency is indicated up to 50W output power.

- Efficiency is measured at the input to the PD70224. It does not contain the RJ45 Connector or Magnetics

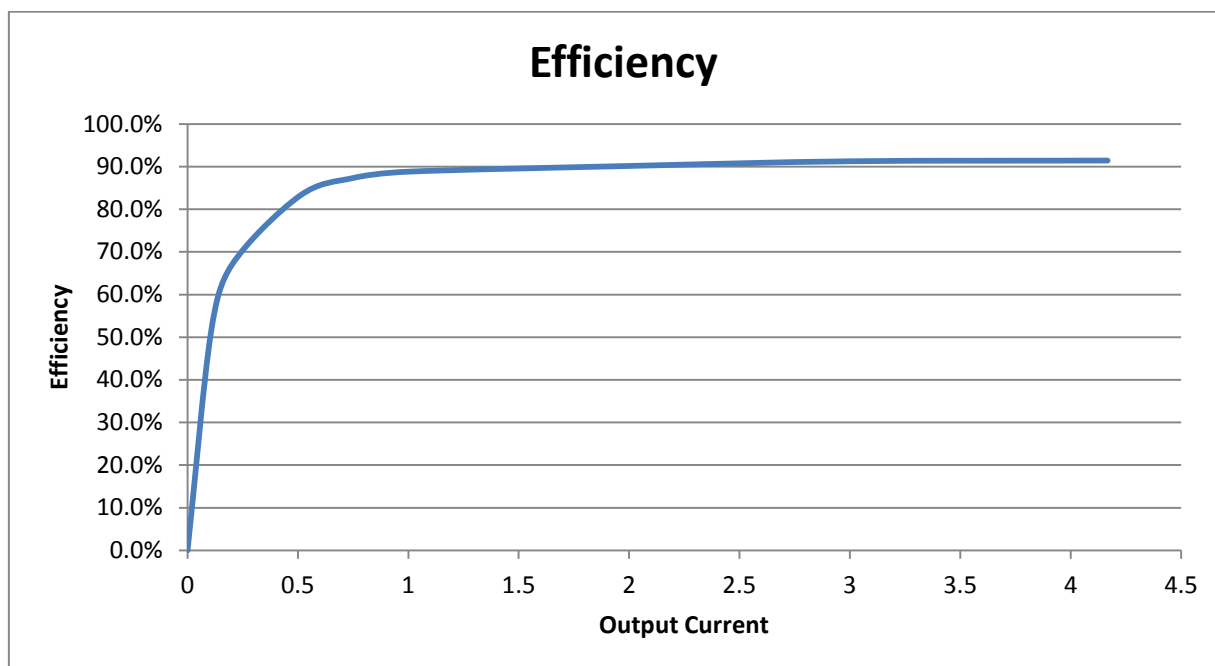
$$Total\ Eff = \frac{V_{out} * I_{out}}{V_{in} * I_{in}}$$

### 6.1 50W Efficiency vs Input Voltage to the PD70224



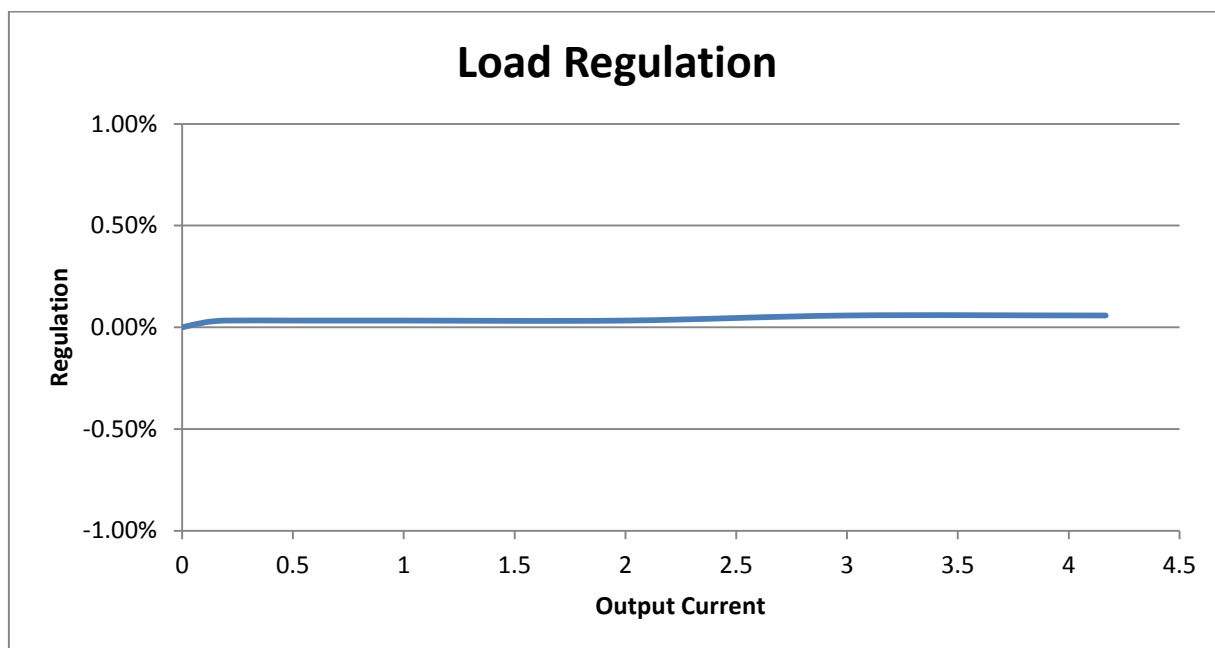
**Figure 7: Efficiency vs Input Voltage**

## 6.2 Efficiency vs Load Current at 50V Input to the PD70224



**Figure 8: Efficiency at 50V Input**

## 6.3 Load Regulation



**Figure 9: Load Regulation at 50V Input**

## 6.4 Output Ripple

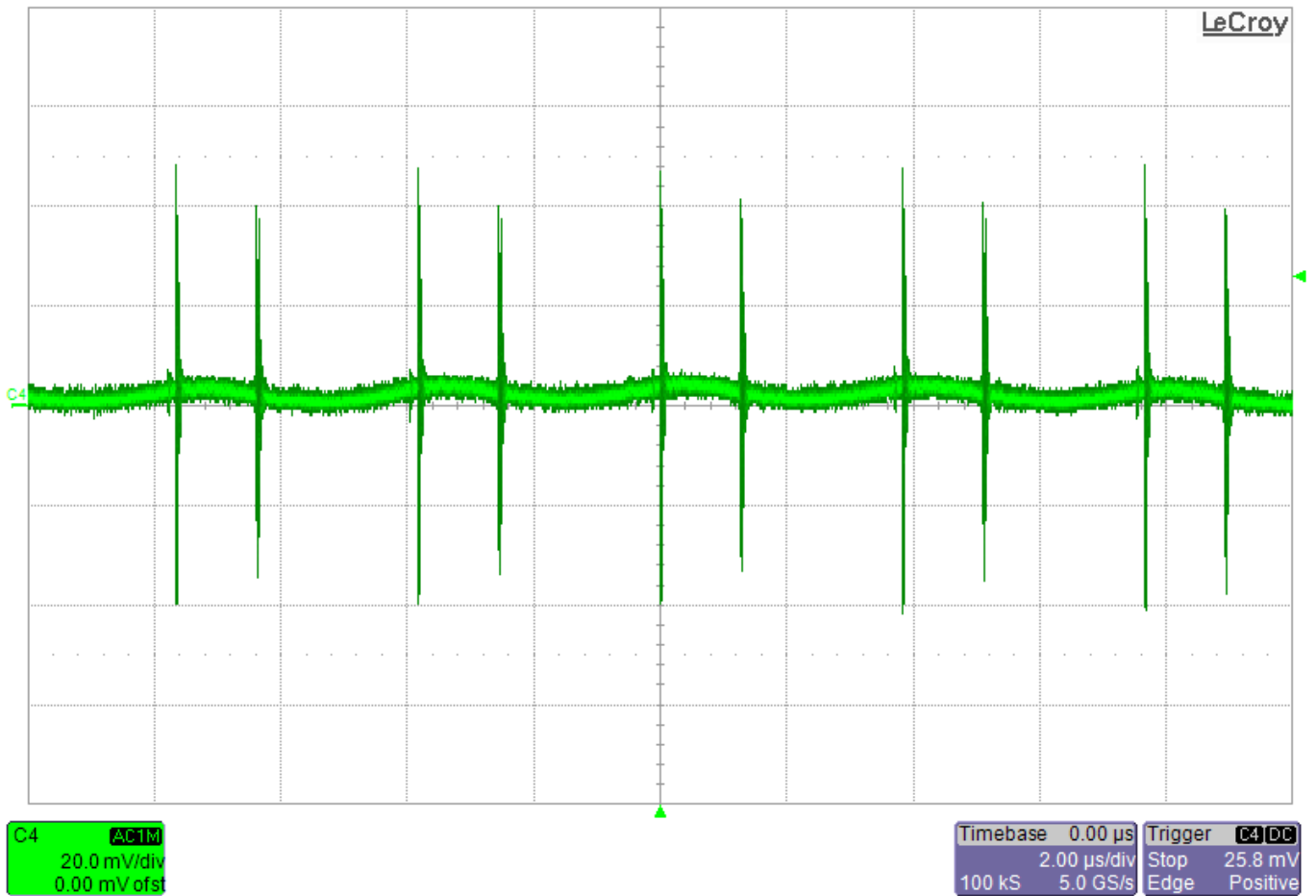


Figure 10: Full Load Voltage Ripple and Noise (with optional LC Filter)

## 6.5 Step Load Response

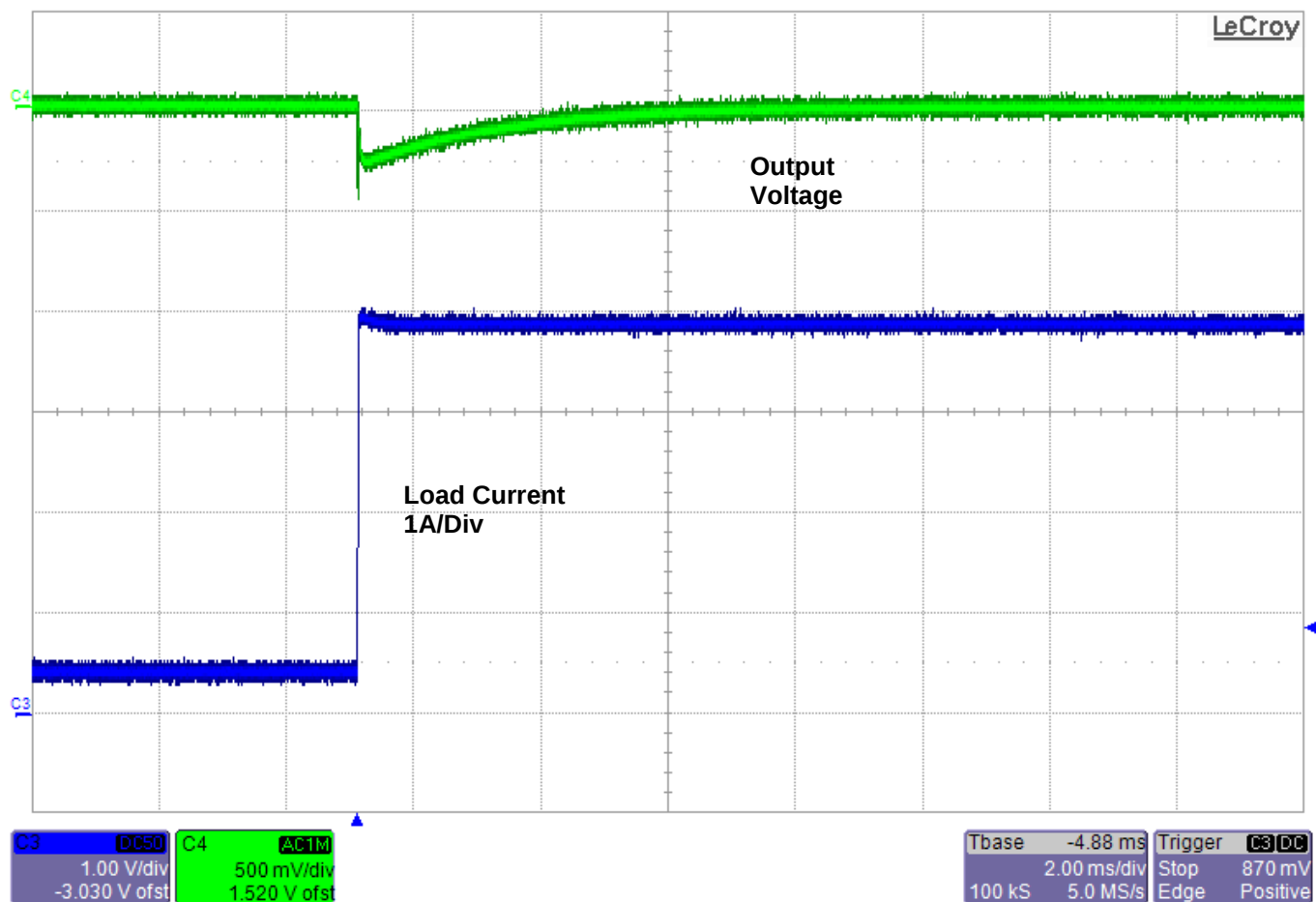


Figure 11: Load Step Response

## 7 Schematic

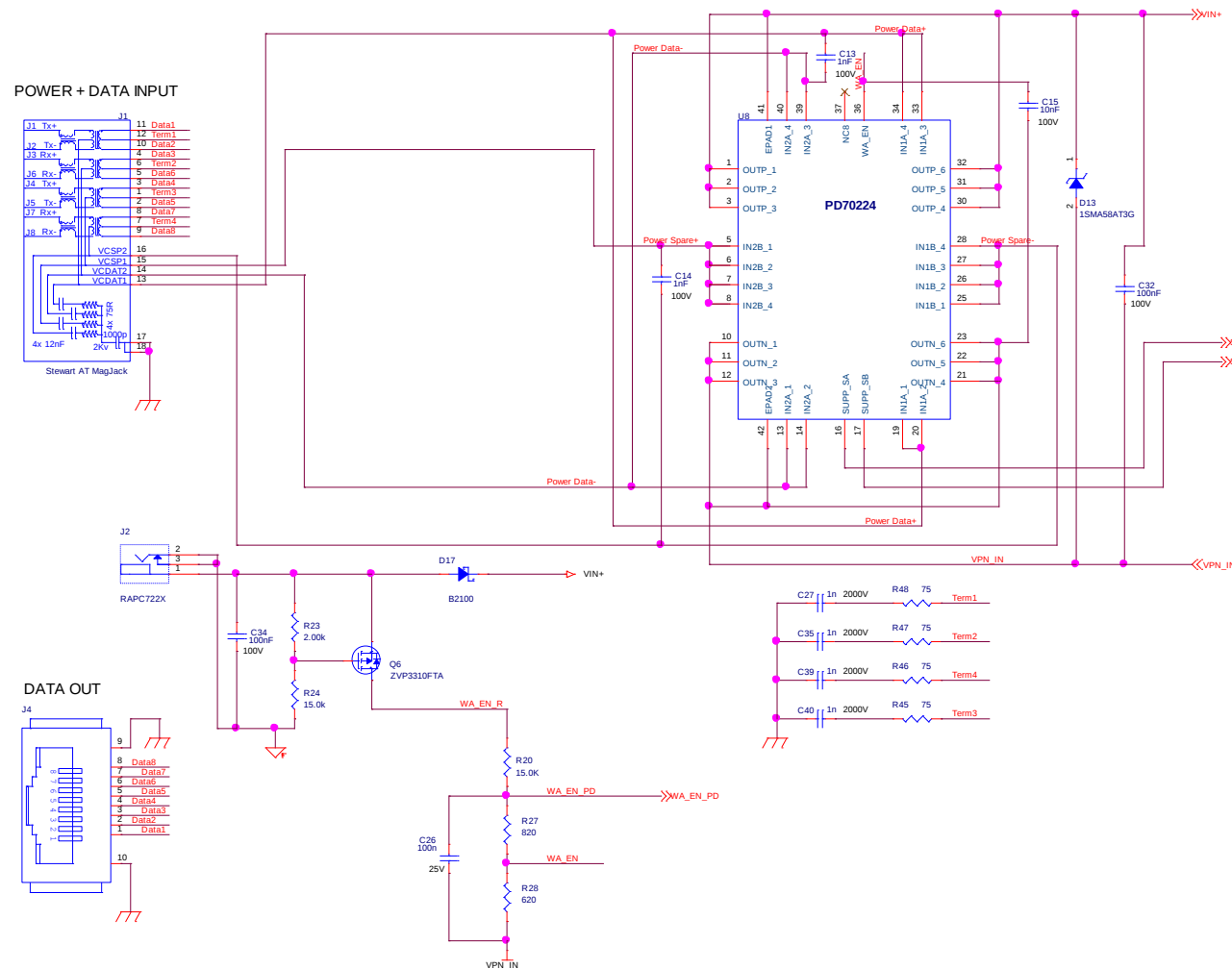


Figure 12: Evaluation Board Schematic (1 of 2)



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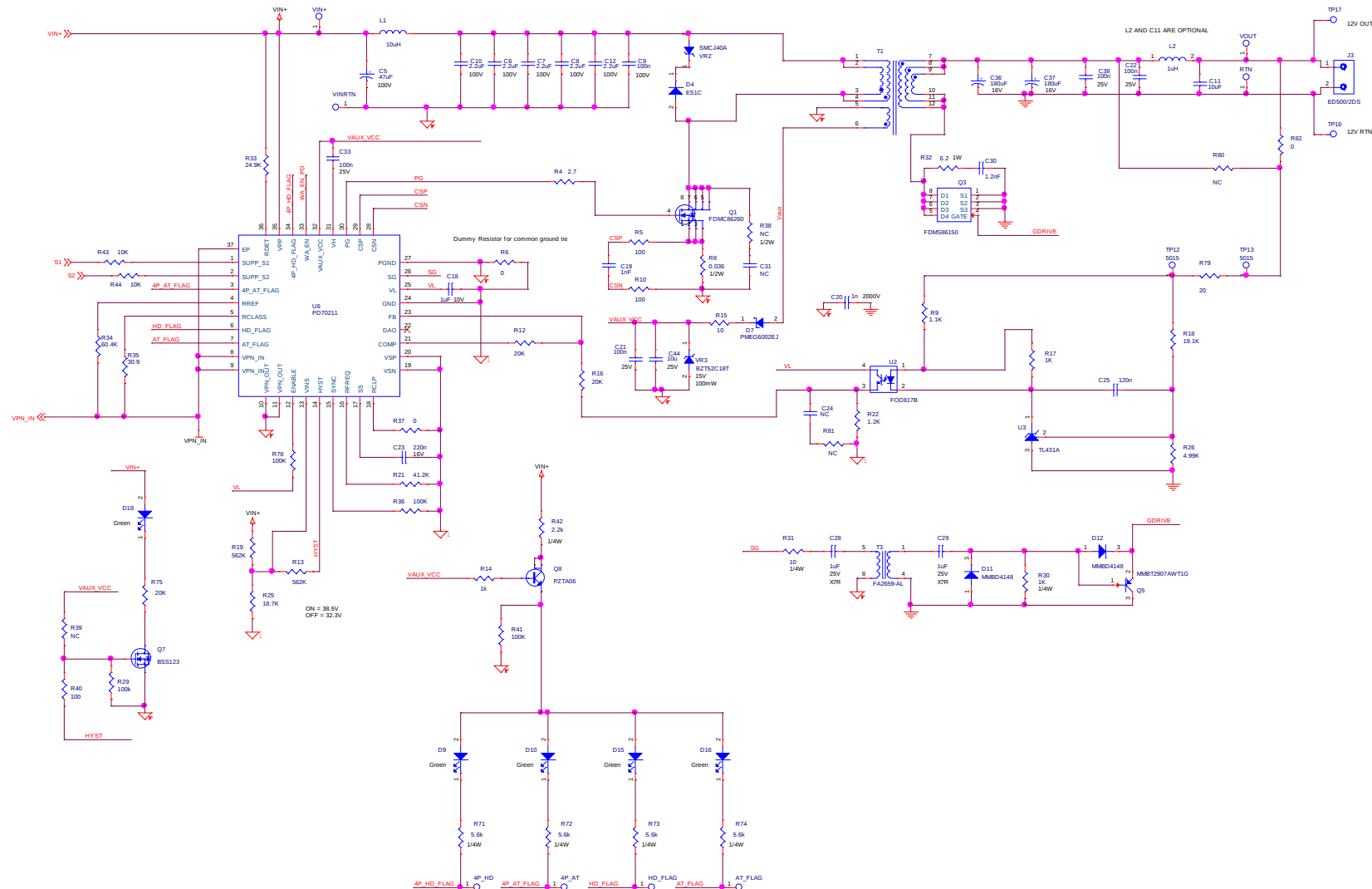


Figure 13: Evaluation Board Schematic (2 of 2)



## 8 List of Materials

| Qty | Ref Des                                               | Part Value       | Description                                 | Mfr. Name  | Mfr. Part Number     |
|-----|-------------------------------------------------------|------------------|---------------------------------------------|------------|----------------------|
| 9   | 4P_HD,4P_AT,VOUT,VIN+,HD_F LAG,AT_F LAG,RTN,TP12,TP13 | 5015             | TEST POINT PC MINIATURE SMT                 | Keystone   | 5015                 |
| 1   | C5                                                    | 47uF             | CAP ALUM 47UF 100V 20% RADIAL               | Nichicon   | UPW2A470MPD6         |
| 5   | C6,C7,C8,C10,C12                                      | 2.2uF            | CAP CER 2.2UF 100V 10% X7R 1210             | TAIYOYUDEN | HMK325B7225KN-T      |
| 1   | C9                                                    | 100n             | CAP CER 0.1UF 100V 10% X7R 0805             | TDK        | C2012X7R2A104K1 25AA |
| 1   | C11                                                   | 10uF             | CAP X7R 10uF 16V 10% 1206                   | TDK        | C3216X7R1C106K       |
| 1   | C18                                                   | 1uF              | Capacitor, Ceramic, 10V, X7R, 0805          | Any        | Any                  |
| 1   | C19                                                   | 1nF              | Capacitor, Ceramic, X7R, 16V, 0603          | Any        | Any                  |
| 5   | C20,C27,C35,C39,C40                                   | 1n               | CAP CRM 1nF/2000V 10%++X7R 1206 SMT         | AVX        | 1206GC102KAT1A       |
| 4   | C21,C22,C26,C38                                       | 100n             | Capacitor, Ceramic, 25V, X7R, 0603          | Any        | Any                  |
| 1   | C23                                                   | 220n             | Capacitor, X7R, 16V, 10% 0603               | Any        | Any                  |
| 1   | C24                                                   | NC               | Capacitor, Ceramic, 10V, X7R, 0603          | Any        | Any                  |
| 1   | C25                                                   | 120n             | Capacitor, X7R, 16V, 10% 0603               | Any        | Any                  |
| 2   | C28,C29                                               | 1uF              | CAP CER 1UF 25V 10% X7R 0805                | TDK        | C2012X7R1E105K       |
| 1   | C30                                                   | 1.2nF            | CAP CER 1200PF 100V 5% NP0 1206             | Any        | Any                  |
| 2   | C31,R38                                               | NC               |                                             |            |                      |
| 2   | C32,C34                                               | 100nF            | CAP CRM 100nF 100V 10%^^X7R 1206 SMT        | Any        | Any                  |
| 1   | C33                                                   | 100n             | Capacitor, Ceramic, 10V, X7R, 0805          | Any        | Any                  |
| 2   | C36,C37                                               | 180uF            | CAP ALUM 180UF 16V 20% RADIAL               | Nichicon   | RL81C181MDN1KX       |
| 1   | C44                                                   | 10u              | Capacitor, Ceramic, 25V, X7R, 1206          | Any        | Any                  |
| 1   | D4                                                    | ES1C             | DIO FAST SWI 150V, 1A                       | Fairchild  | ES1C                 |
| 1   | D7                                                    | PMEG6002 EJ      | Diode, Schottky, 200mA, 60V,SOD323 Type SMT | NXP        | PMEG6002EJ           |
| 5   | D9,D10,D15,D16,D18                                    | LTST-C193KGKT-5A | LED GREEN RECT CLEAR 0603                   | LITE-ON    | LTST-C193KGKT-5A     |



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| Qty | Ref Des    | Part Value         | Description                                       | Mfr. Name               | Mfr. Part Number   |
|-----|------------|--------------------|---------------------------------------------------|-------------------------|--------------------|
| 2   | D11,D12    | MMBD4148           | DIODE SML SIG 100V 0.2A SOT23-3                   | Fairchild Semiconductor | MMBD4148           |
| 1   | D13        | 1SMA58AT3G         | DIO TVS 58V 40A SRG^400WPK SMA SMT                | ON Semiconductor        | 1SMA58AT3G         |
| 1   | D17        | B2100              | DIODE SCHOTTKY 100V 2A SMB                        | Diodes Inc              | B2100-13-F         |
| 1   | J1         | Stewart AT MagJack | CONN MAGJACK 1PORT 1000 BASE-T                    | Bel Stewart             | 8261X1TGH-F        |
| 1   | J2         | RAPC722X           | DC Power Jack 16V 5A TH                           | Switchcraft             | RAPC722X           |
| 1   | J3         | ED500/2DS          | TERMINAL BLOCK 5MM 2POS PCB                       | On Shore Technology     | ED500/2DS          |
| 1   | L1         | 10uH               | INDUCTOR POWER 10UH 3A SMD                        | Vishay                  | IHLP2525CZER100M01 |
| 1   | L2         | 1uH                | Inductor, 1uH SMD Inductor, 5.3A, 11m Ohm         | Würth                   | 7447779001         |
| 1   | Q1         | FDMC86260          | MOSFET N-CH 150V 16A POWER33                      | Fairchild               | FDMC86260          |
| 1   | Q3         | FDMS86150          | MOSFET N CH 100V 16A POWER56                      | Fairchild Semiconductor | FDMS86150          |
| 1   | Q5         | MMBT2907AWT1G      | TRN PNP 60V 600mA SOT323 SMT 250mW MMBT2907AW^    | ON Semiconductor        | MMBT2907AWT1G      |
| 1   | Q6         | ZVP3310FTA         | MOSFET P-CH 100V 75MA SOT23-3                     | Diodes Inc              | ZVP3310FTA         |
| 1   | Q7         | BSS123             | MOSFET N-CH 100V 170MA SOT-23                     | Fairchild               | BSS123             |
| 1   | VINRTN     | 5016               | Terminal, Compact style test point, SMT PCB Mount | Keystone                | 5016               |
| 1   | R4         | 2.7                | Resistor, 5%, 1/10W, 0603                         | Any                     | Any                |
| 3   | R5,R10,R40 | 100                | Resistor, 1%, 1/16W, 0603                         | Any                     | Any                |
| 1   | R6         | 0                  | Resistor, 1%, 1/16W, 0603                         | Any                     | Any                |
| 1   | R8         | 0.036              | RES 0.036 OHM 1/2W 1% 1206                        | TE Connectivity         | RLP73M2BR036FTDF   |
| 1   | R9         | 1.1k               | Resistor, 5%, 1/10W, 0603                         | Any                     | Any                |
| 2   | R12,R16    | 20k                | Resistor, 5%, 1/10W, 0603                         | Any                     | Any                |
| 1   | R13        | 562k               | Resistor, 1%, 1/16W, 0603                         | Any                     | Any                |
| 1   | R15        | 10                 | Resistor, 5%, 1/10W, 0603 SMD                     | Any                     | Any                |
| 2   | R14,R17    | 1k                 | Resistor, 5%, 1/10W, 0603                         | Any                     | Any                |
| 1   | R18        | 19.1k              | Resistor, 1%, 1/16W, 0603                         | Any                     | Any                |
| 1   | R19        | 562k               | Resistor, 1%, 1/10W, 0805                         | Any                     | Any                |
|     |            |                    |                                                   |                         |                    |



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| Qty | Ref Des         | Part Value     | Description                                       | Mfr. Name               | Mfr. Part Number |
|-----|-----------------|----------------|---------------------------------------------------|-------------------------|------------------|
| 1   | R21             | 41.2k          | Resistor, 1%, 1/16W, 0603                         | Any                     | Any              |
| 1   | R22             | 1.2k           | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 1   | R23             | 2.00k          | Resistor, 1%, 1/16W, 0603                         | Any                     | Any              |
| 2   | R20,R24         | 15.0k          | Resistor, 1%, 1/10W, 0805                         | Any                     | Any              |
| 1   | R25             | 18.7k          | Resistor, 1%, 1/16W, 0603                         | Any                     | Any              |
| 1   | R26             | 4.99k          | Resistor, 1%, 1/16W, 0603                         | Any                     | Any              |
| 1   | R27             | 820            | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 1   | R28             | 620            | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 3   | R29,R36,R41     | 100k           | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 1   | R30             | 1k             | Resistor, 1K Ohms, 1/4 Watt, 5% 1206 Type SMD     | Panasonic               | ERJ-8GEYJ102     |
| 1   | R31             | 10             | Resistor, 10 Ohms, 1/4 Watt, 5% 1206 Type SMD     | Any                     | Any              |
| 1   | R32             | 6.2            | RES 6.2 OHM 1W 5% 2512 SMD                        | Any                     | Any              |
| 1   | R33             | 24.9k          | Resistor, 1%, 1/10W, 0805                         | Any                     | Any              |
| 1   | R34             | 60.4k          | Resistor, 60.4K Ohms, 1/16 Watt, 1% 0603 Type SMD | Panasonic               | ERJ-3EKF6042     |
| 1   | R35             | 30.9           | Resistor, 30.9 Ohms, 1/16 Watt, 1% 0603 Type SMD  | Panasonic               | ERJ-3EKF30R9     |
| 2   | R37,R82         | 0              | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 3   | R39,R80,R81     | NC             |                                                   |                         |                  |
| 4   | R71,R72,R73,R74 | 5.6k           | Resistor, 5%, 1/4W, 1206                          | Any                     | Any              |
| 1   | R75             | Not used       |                                                   |                         |                  |
| 1   | R78             | 100k           | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 1   | R79             | 20             | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 2   | R43,R44         | 10k            | Resistor, 5%, 1/10W, 0603                         | Any                     | Any              |
| 1   | T1              | FB Transformer | 51W transformer; EFD25 SMD                        | TMP                     | DG-EFD25-0004 GP |
|     |                 |                | Alternate transformer                             | Coilcraft               | TA-7818-AE       |
| 1   | T3              | FA2659-AL      | Transformer, Gate Drive, 1:1 turns ratio,         | Coilcraft               | FA2659-AL        |
| 1   | U2              | FOD817B        | OPTOCOUPLER TRANS 5KVRMS 4SMD                     | Fairchild Semiconductor | FOD817BS         |



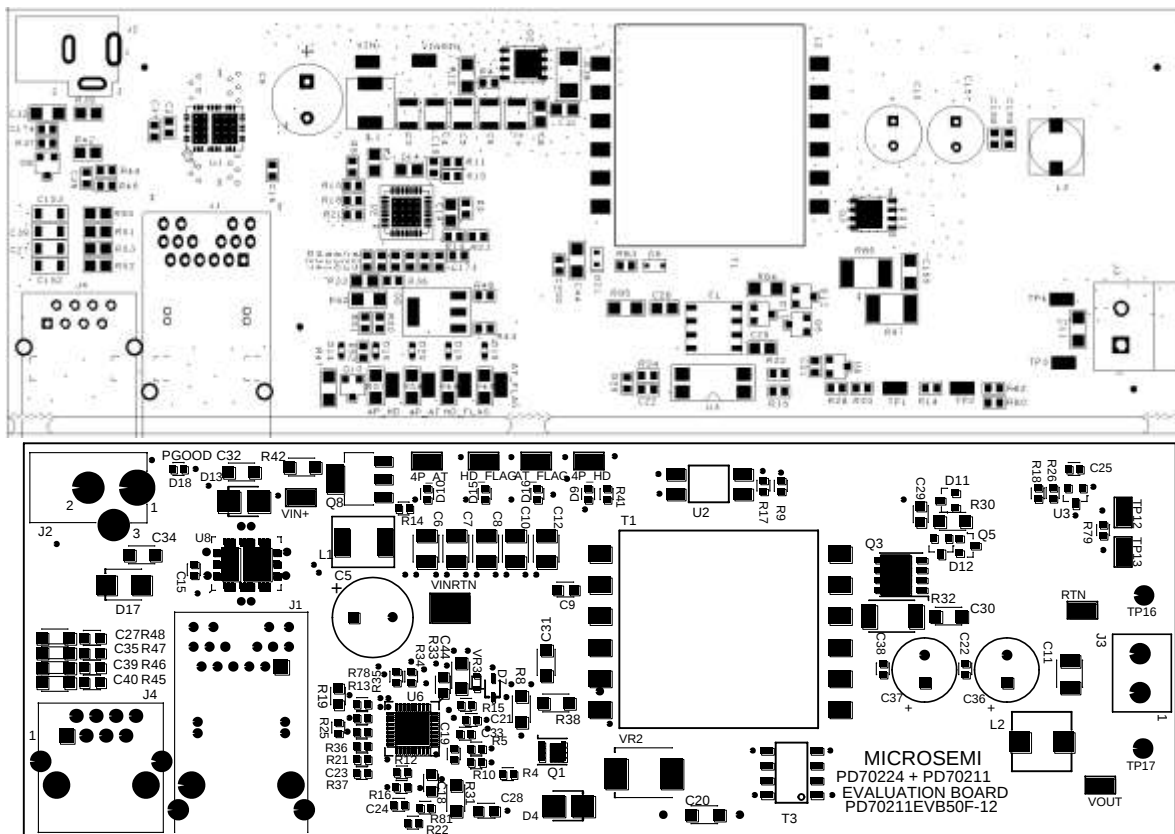
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| Qty | Ref Des         | Part Value | Description                           | Mfr. Name               | Mfr. Part Number |
|-----|-----------------|------------|---------------------------------------|-------------------------|------------------|
| 1   | U3              | TL431A     | IC VREF SHUNT PREC ADJ SOT-23-3       | Texas Instruments       | TL431AIDBZR      |
| 1   | U6              | PD70211    | IC, Power Over Ethernet PD Controller | Microsemi               | PD70211ILQ       |
| 1   | U8              | PD70224    | IC, Ideal Diode Bridge                | Microsemi               | PD70224ILQ       |
| 1   | VR2             | SMCJ40A    | TVS DIODE 40VWM 64.5VC SMC            | Fairchild Semiconductor | SMCJ40A          |
| 1   | VR3             | BZT52C18T  | Diode, Zener, 18V, 100mW, SOD-523     | Micro Commercial Co.    | BZT52C18T-TP     |
| 1   | R42             | 2.2k       | Resistor, 5%, 1/4W, 1206              | Any                     | Any              |
| 1   | Q8              | PZTA06     | TRANSISTOR GP NPN 80V SOT-223         | Fairchild Semiconductor | PZTA06           |
| 2   | C13,C14         | 1nF        | Capacitor, Ceramic, X7R, 100V, 0603   | Any                     | Any              |
| 1   | C15             | 10nF       | Capacitor, Ceramic, X7R, 100V, 0603   | Any                     | Any              |
| 4   | R45,R46,R47,R48 | 75         | Resistor, 5%, 1/8W, 0805              | Any                     | Any              |
| 1   | J4              | RJ45 Jack  | CON RJ45 SINGLE 8 POS SHIELDED        | Kinsun                  | 3060115907       |

## 9 Board Layout

This paragraph presents the layout of the evaluation board.

The board is a 4 layer board. All layers are 2 Oz layers. Below figures present the 4 copper layers and the silk of the board for tracking devices placements.



**Figure 14: Top Silk and Solder mask**

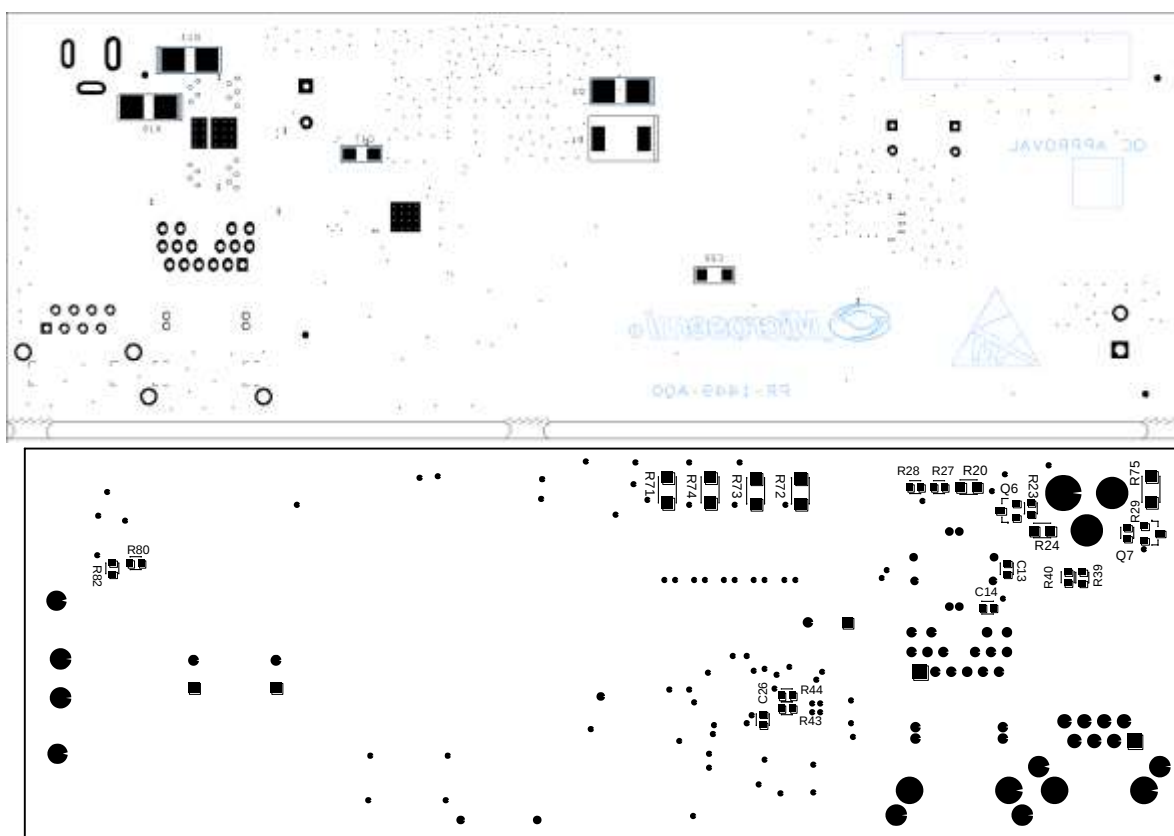


Figure 15: Bottom Silk and Solder mask (Image Looking From Bottom)

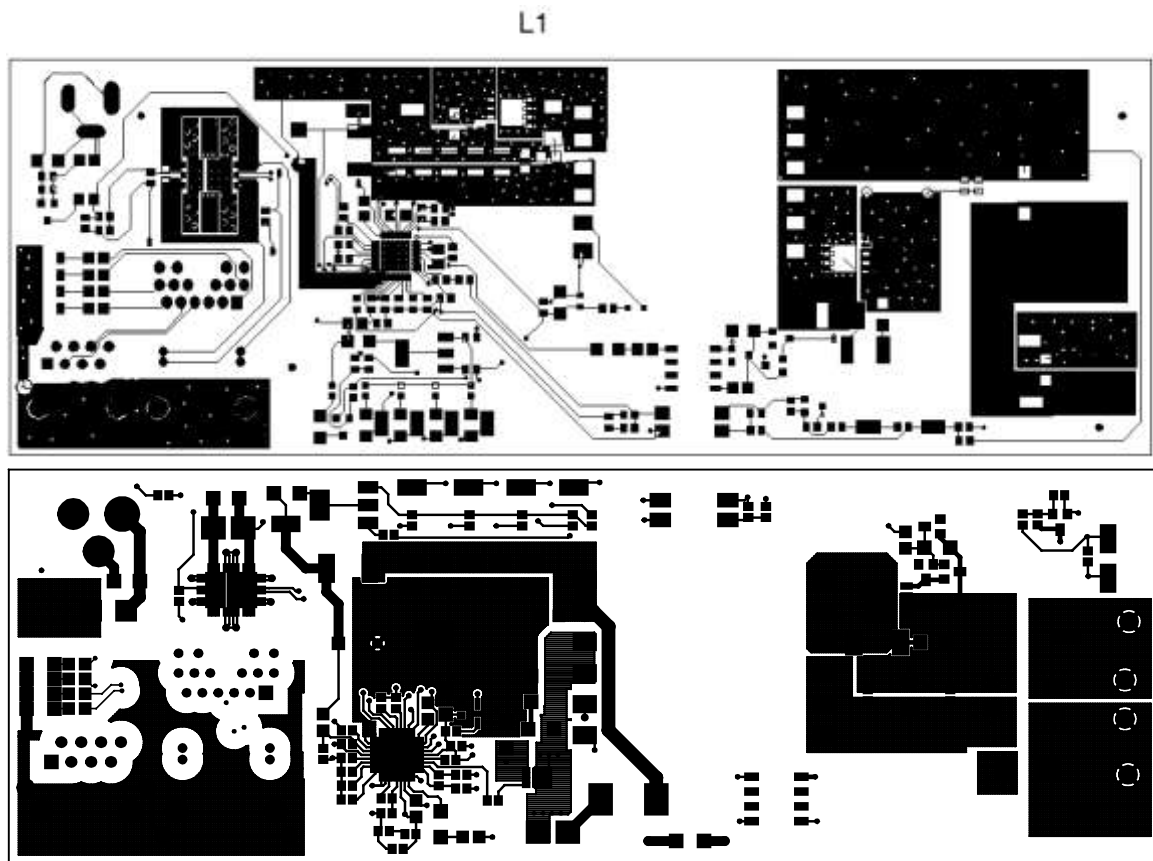


Figure 16: Top Layer



Figure 17: Bottom layer



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### Revision History

| Revision Level / Date | Para. Affected/Page | Description              |
|-----------------------|---------------------|--------------------------|
| 1.0 / 24-July-14      |                     | Initial revision         |
| 1.1/17-Sep-14         | Pgs 18, 19          | BOM Correction           |
| 1.2/22-May-16         |                     | Updated pictures and BOM |

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