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# XRP6124EVB/XRP6124HVEVB 18V and 30V Non-Synchronous PFET Controller Evaluation Board

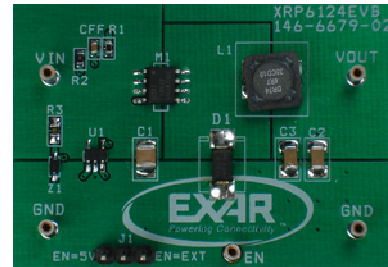
January 2011

Rev. 1.0.0

## GENERAL DESCRIPTION

The EXAR XRP6124EVB and XRP6124HVEVB Evaluation Board (EVB) is a fully assembled and tested surface-mount PCB that demonstrates the XRP6124 and XRP6124HV constant on-time buck controller. The switch-mode power supply regulator generates a preset 3.3V output (XRP6124EVB) and 5.0V output (XRP6124HVEVB) with a load of up to 3A.

## EVALUATION BOARD MANUAL



## FEATURES

- 3A Output Current
- Up to 18V Operating Input Range  
XRP6124EVB
- Up to 30V Operating Input Range  
XRP6124HVEVB
- Stable with Low-ESR Ceramic Output Capacitors
- No Loop Compensation Required
- Built-in Soft-start, UVLO and Short-Circuit Protection

## EVALUATION BOARD SCHEMATICS

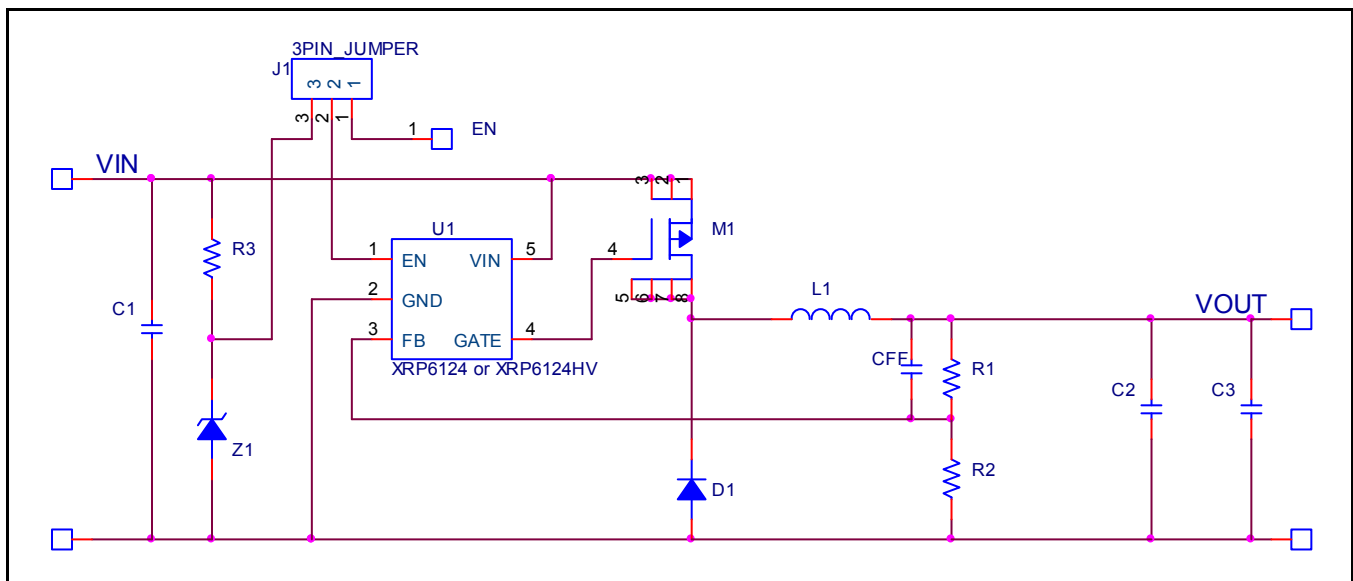


Fig. 1: XRP6124/XRP6124HV Evaluation Board Schematics



# XRP6124EVB/XRP6124HVEVB

## 18V and 30V Non-Synchronous PFET Controller Evaluation Board

### PIN ASSIGNMENT

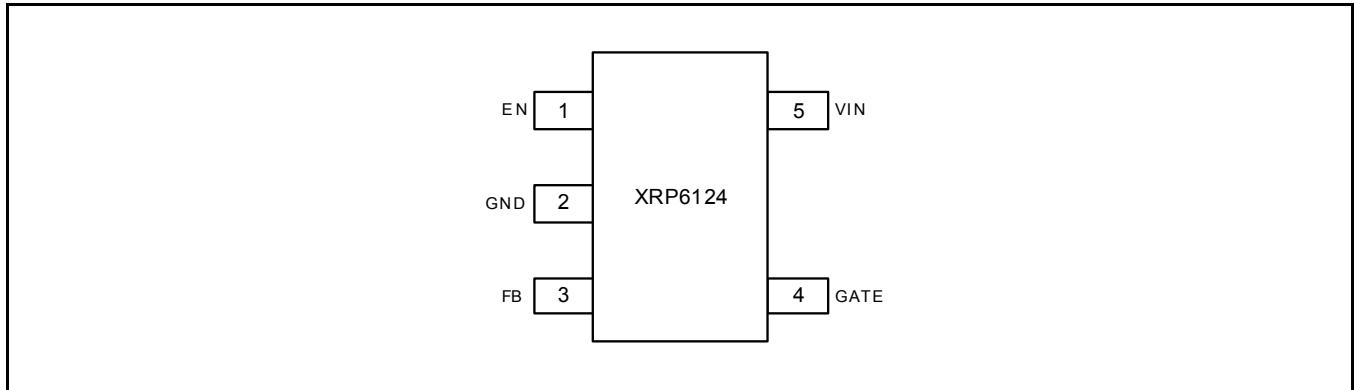


Fig. 2: XRP6124/XRP6124HV Pin Assignment

### PIN DESCRIPTION

Name	Pin Number	Description
EN	1	Enable Pin. Actively pull high to enable the part.
GND	2	Ground
FB	3	Feedback pin
GATE	4	Gate Pin. Connect to gate of PFET. This pin pulls the gate of the PFET approximately 6V below $V_{in}$ in order to turn on the FET. For $6V > V_{in} > 3V$ the gate pulls to within 0.4V of ground. Therefore a PFET with a gate rating of 2.6V or lower should be used.
VIN	5	Input Voltage

### ORDERING INFORMATION

Refer to XRP6124's datasheet and/or [www.exar.com](http://www.exar.com) for exact and up to date ordering information.



# **XRP6124EVB/XRP6124HVEVB**

## **18V and 30V Non-Synchronous PFET Controller Evaluation Board**

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### **USING THE EVALUATION BOARD**

#### **INITIAL SETUP**

For the XRP6124EVB, set the input supply to a voltage between 6V to 18V and connect it to VIN and GND connectors on the left side of the EVB. Please note that XRP6124 controller has a minimum input range of 3V, however the components used in the EVB limit the minimum input to 6V. For the XRP6124HVEVB the input voltage range is from 8V to 30V. Connect the load to the VOUT and GND connectors at the right side of the EVB. Check to make sure that jumper J1 is set to left side (position marked 'EN=5V'). The EVB will power-up and regulate the output VOUT at 3.3V (5.0V for XRP6124HVEVB) upon turning

on the input supply. The EVB will operate with a load current  $I_{OUT}$  of up to 3A and provide efficiency comparable to figure 4 and 5 of XRP6124 datasheet.

#### **JUMPER J1 FUNCTION**

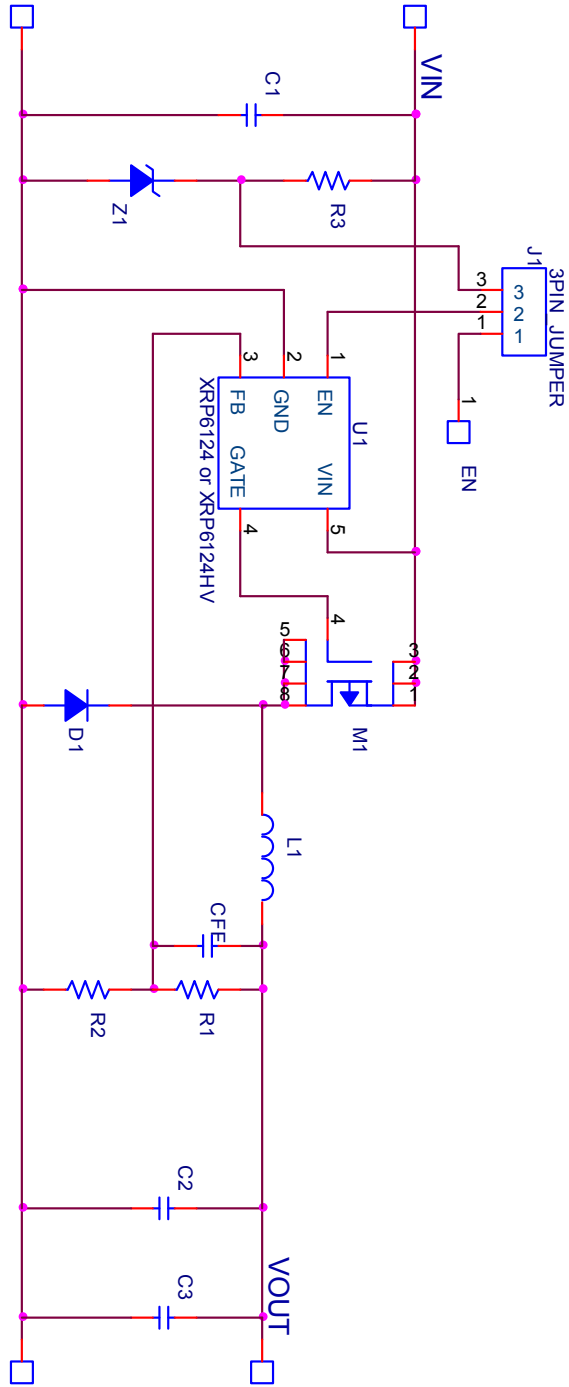
Jumper J1 can be used to either set EN to 5V or allow an external enable signal to be applied. The EVB is supplied from EXAR with jumper set at left side (position marked 'EN=5V'). With this setting the EN is supplied with a 5V nominal voltage that is derived from VIN with Zener Z1.



# XRP6124EVb/XRP6124HVEVB

## 18V and 30V Non-Synchronous PFET Controller Evaluation Board

### EVALUATION BOARD SCHEMATICS



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XRP6124/XRP6124HV EVB	
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Date:	Tuesday, January 25, 2011
Sheet	1 of 1
Rev	02



# XRP6124EVB/XRP6124HVEVB

## 18V and 30V Non-Synchronous PFET Controller Evaluation Board

### BILL OF MATERIAL XRP6124EVB

Reference Designator	Qty.	Manufacturer	Manufacturer Part Number	Size	Component
PCB	1	Exar	XRP6124EVB	1.3"x2"	XRP6124 Evaluation kit
U1	1	Exar	XRP6124ES0.5-F	SOT-23	18V Buck Controller
M1	1	Int. Rectifier	IRF9335TRPBF	SO-8	5.5A/30V PFET
D1	1	ON Semiconductor	MBRA340T3G	SMA	3A/40V Schottky
Z1	1	Diodes Inc.	DDZ9689S-7	SOD-323	5.1V/200mW Zener
L1	1	COOPER-Bussmann	DR74-4R7-R	7.6x7.6x4.3mm	4.7uH shielded inductor
C1	1	Murata Corp.	GRM32ER61E226KE15L	1210	CER CAP 22uF, 25V, X5R
C2, C3	2	Murata Corp.	GRM31CR61A226KE19L	1206	CER CAP 22uF, 10V, X5R
CFF	1	Murata Corp.	GRM188R71H102KA01D	0603	CAR CEP 1000pF, X7R, 50V
R1	1	Panasonic	ERJ-3EKF6341V	0603	Resistor 6.34kΩ, 1%
R2	1	Panasonic	ERJ-3EKF2001V	0603	Resistor 2kΩ, 1%
R3	1	Panasonic	ERJ-3EKF2002V	0603	Resistor 20kΩ, 1%
J1	1	Würth Elektronik	61304011121		Conn. Header 0.1" 3POS
J1(JUMPER)	1	Würth Elektronik	609002115121		CONN JUMPER SHORT.
VIN, VOUT, GND, EN	5	Vector Electronic	K24C/M	.042 Dia	Test Point Post

### BILL OF MATERIAL XRP6124HVEVB

Reference Designator	Qty.	Manufacturer	Manufacturer Part Number	Size	Component
PCB	1	Exar	XRP6124HVEVB	1.3"x2"	XRP6124HV Evaluation kit
U1	1	Exar	XRP6124HVES0.5-F	SOT-23	30V Buck Controller
M1	1	DIODES INC.	DMP4050SSS-13	SO-8	4.7A/40V PFET
D1	1	ON Semiconductor	MBRA340T3G	SMA	3A/40V Schottky
Z1	1	DIODES INC.	DDZ9689S-7	SOD-323	5.1V/200mW Zener
L1	1	COOPER-Bussmann	HCM0703-8R2-R	7.4x7x3mm	8.2uH shielded inductor
C1	1	Murata Corp.	GRM32ER61H106KA12L	1210	CER CAP 10uF, 50V, X7R
C2, C3	2	Murata Corp.	GRM31CR61C226KE15L	1206	CER CAP 22uF, 16V, X5R
CFF	1	Murata Corp.	GRM188R71H471KA01D	0603	CAR CEP 470pF, X7R, 50V
R1	1	Panasonic	ERJ-3EKF1052V	0603	Resistor 10.5kΩ, 1%
R2	1	Panasonic	ERJ-3EKF2001V	0603	Resistor 2kΩ, 1%
R3	1	Panasonic	ERJ-3EKF6042V	0603	Resistor 60.4kΩ, 1%
J1	1	Würth Elektronik	61304011121		Conn. Header 0.1" 3POS
J1(JUMPER)	1	Würth Elektronik	609002115121		CONN JUMPER SHORT.
VIN, VOUT, GND, EN	5	Vector Electronic	K24C/M	.042 Dia	Test Point Post



# XRP6124EVB/XRP6124HVEVB

## 18V and 30V Non-Synchronous PFET Controller Evaluation Board

### EVALUATION BOARD LAYOUT

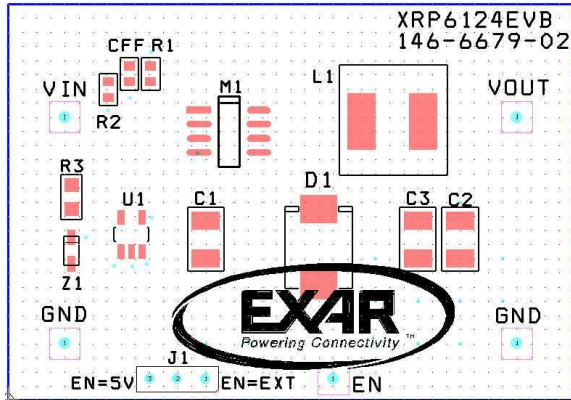


Fig. 3: Component Placement – Top Side

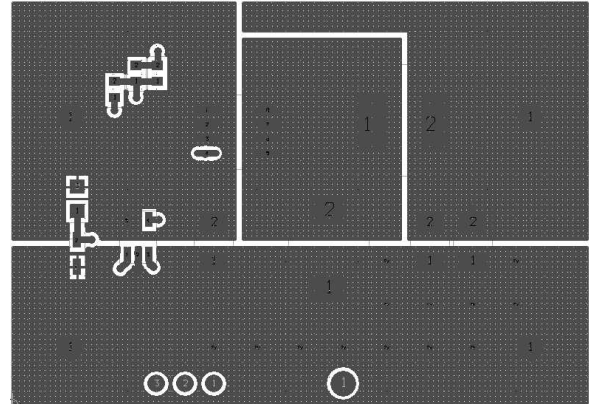


Fig. 4: Layout – Top Side

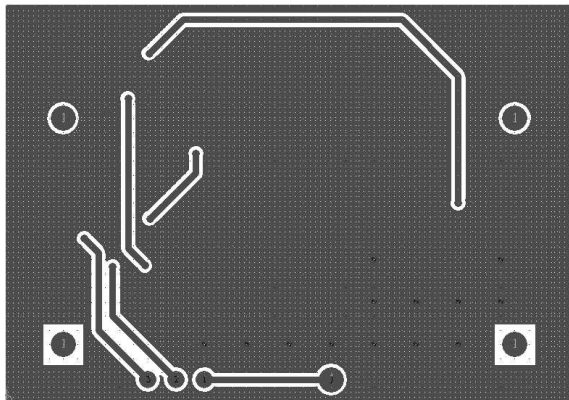


Fig. 5: Layout – Bottom Side



# XRP6124EVB/XRP6124HVEVB

## 18V and 30V Non-Synchronous PFET Controller Evaluation Board

### DOCUMENT REVISION HISTORY

Revision	Date	Description
1.0.0	01/25/11	Initial release of document

### BOARD REVISION HISTORY

Board Revision	Date	Description
146-6679-02	01/25/11	Initial release of evaluation board

### FOR FURTHER ASSISTANCE

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Exar Technical Documentation:

<http://www.exar.com/TechDoc/default.aspx?>



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