



**Eval Kit Manual**

# **AS1312**

**Standard Board**

**AS1312-TD-50\_EK\_ST**

## Table of Contents

1	Introduction .....	3
1.1	Kit Content .....	3
2	Getting Started .....	4
3	Hardware Description.....	4
3.1	LBI setting .....	6
4	Schematics, Layers and BOM .....	7
4.1	Schematic of AS1312 Evaluation Board .....	7
4.2	Layers of AS1312 Evaluation Board .....	8
4.3	BOM .....	9
5	Ordering & Contact Information .....	10
6	Copyrights & Disclaimer.....	11
7	Revision Information .....	12

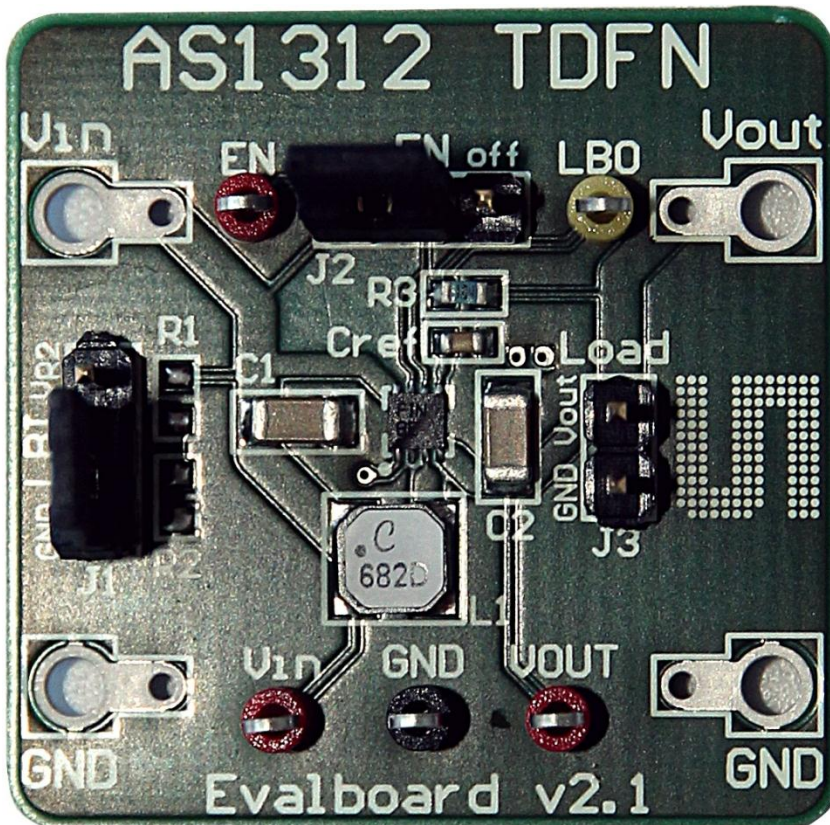
## 1 Introduction

This document describes the AS1312 Evaluation Kit.

The AS1312 is an ultra low quiescent current hysteretic step-up DC-DC converter which achieves an efficiency of up to 94%.

### 1.1 Kit Content

Figure 1: Kit Content



Item	Comment
AS1312 Evalboard v2.1	ultra low quiescent current hysteretic step-up DC-DC converter

## 2 Getting Started

Drive the AS1312 hysteretic step-up DC-DC converter only with the recommended settings and values as described in the datasheet.

Please check [www.ams.com](http://www.ams.com) for the latest version.

A detailed overview of AS1312 Evaluation Board is given in chapter 3, **Hardware Description**.

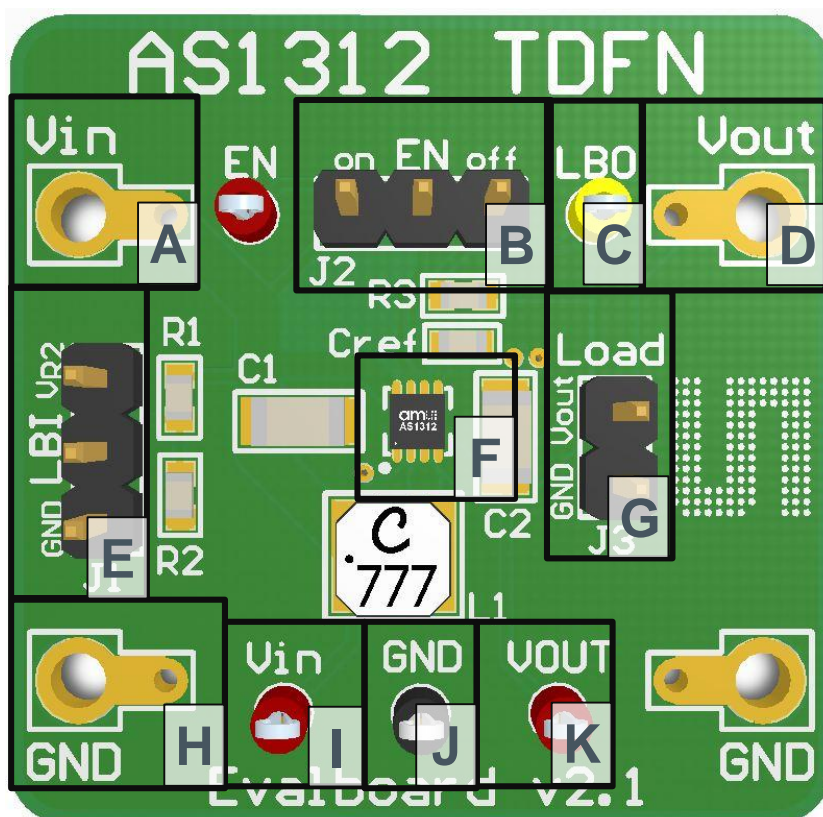
## 3 Hardware Description

The AS1312 Evalboard comes factory mounted with version AS1312-BTDT-50, providing 5.0V on Vout but it is designed to work with all available AS1312 TDFN versions as well.





The Evaluation Board has to be supplied via the pins Vin and GND in the range of 0.7V up to 5.0V.

For enabling the device jumper “EN” (J2) must be set to “on”, section B in **Figure 2**.

**Figure 2: Evaluation Board Overview**



### Jumper and device locations

Label	Name	Designator	Description	Info
A	Vin	BU1	Input voltage	Voltage range from 0.7V to 5.0V Connect to the pos. terminal of the supply voltage
B	EN	J2	Enable	 on: The AS1312 is enabled   off: The AS1312 is disabled
C	LBO	TP4	Low Battery Comparator Output	Measurement point
D	Vout	BU3	Output voltage	Factory mounted version with 5.0V
E	LBI	J1	Low Battery Comparator Input	<p><b>Connected to <math>V_{R2}</math>:</b></p>  The LBI monitors Vin via the resistive divider. <p><b>Connected to GND:</b></p>  LBO works like a POK.
				This jumper may not be left floating!
F	AS1312	U1	8-pin (2x2) TDFN	Ultra low quiescent current hysteretic step-up DC-DC converter
G	Load	J3	Load connector	Designated for load connection
H	GND	BU2	GND	Connect to the neg. terminal of the supply voltage
I	Vin	TP1	Input voltage	Measurement point
J	GND	TP5	GND	Measurement point
K	Vout	TP3	Output voltage	Measurement point

For detailed information according electrical characteristics please refer to the AS1312 datasheet. The latest version of the datasheet can be found on our homepage, [www.ams.com](http://www.ams.com)

### 3.1 LBI setting

For input voltage monitoring, set jumper “LBI” (J1) to “V<sub>R2</sub>”, section E in **Figure 2**. In this case the LBO stays high as long as the voltage on the LBI pin is higher than the LBI threshold of 0.6V. With the resistive divider R1/R2 (not mounted) the monitored voltage level (threshold) can be defined which is compared to this internal threshold of 0.6V.

Use a defined resistor for R2 and then calculate R1 as:

$$R1 = R2 \times (V_{in} / V_{LBI} - 1)$$

$$V_{LBI} = 0.6V$$

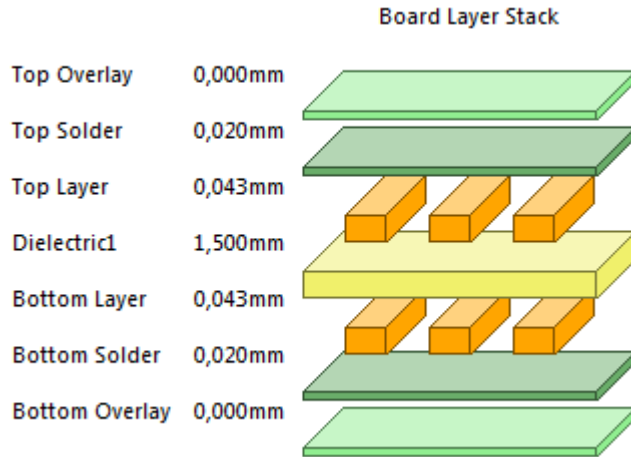
$$V_{in} = \text{monitored voltage}$$

For the Power-OK (POK) feature, please set jumper “LBI” (J1) to “GND”, section E in **Figure 2**. In this case the LBO is related to Vout and stays high as long as the Vout is higher than 92.5% of its nominal value.

## 4 Schematics, Layers and BOM

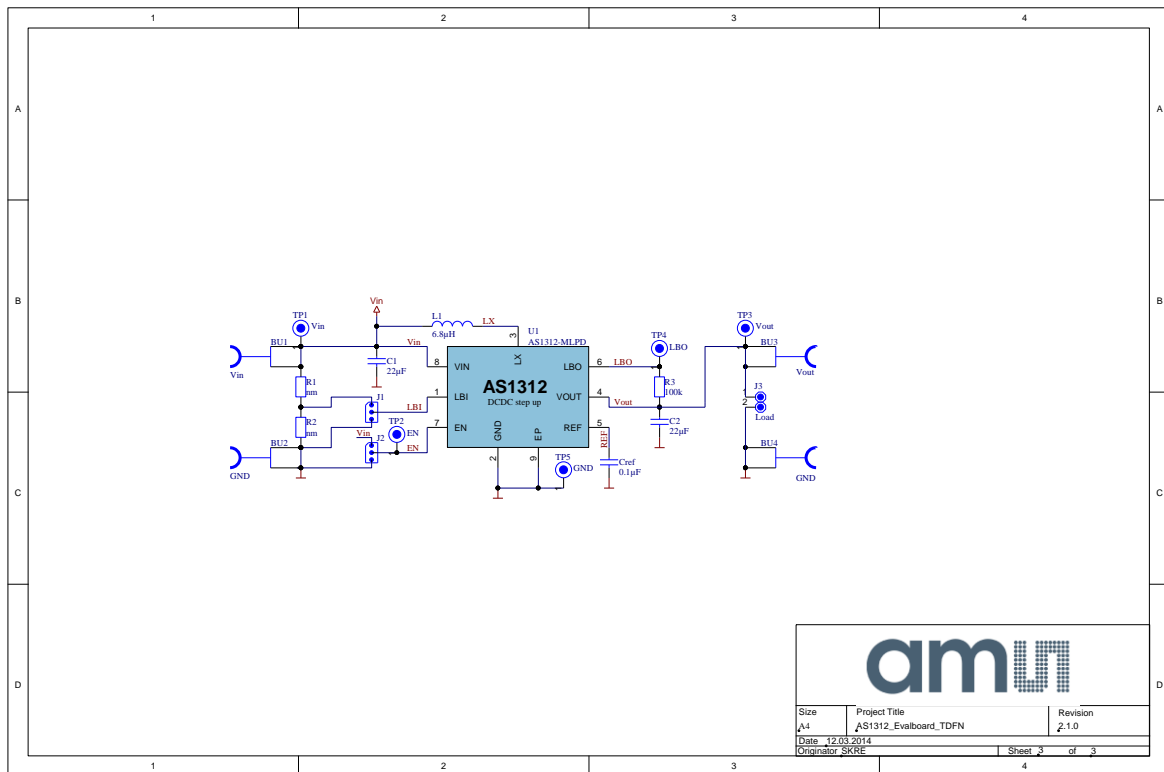
The AS1312 Evaluation Board is a 2-layer FR4 board.

Figure 3: AS1312 PCB Layer Stack up



### 4.1 Schematic of AS1312 Evaluation Board

Figure 4: Schematic



## 4.2 Layers of AS1312 Evaluation Board

Figure 5: Top Layer

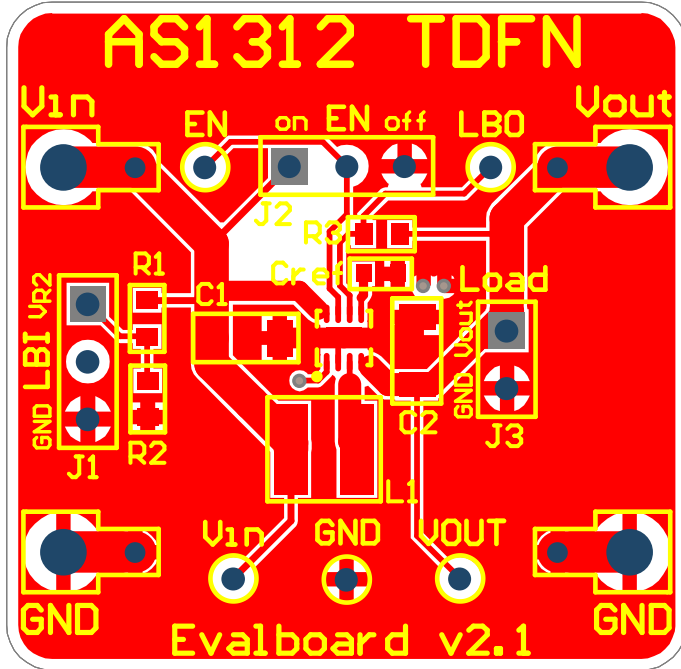
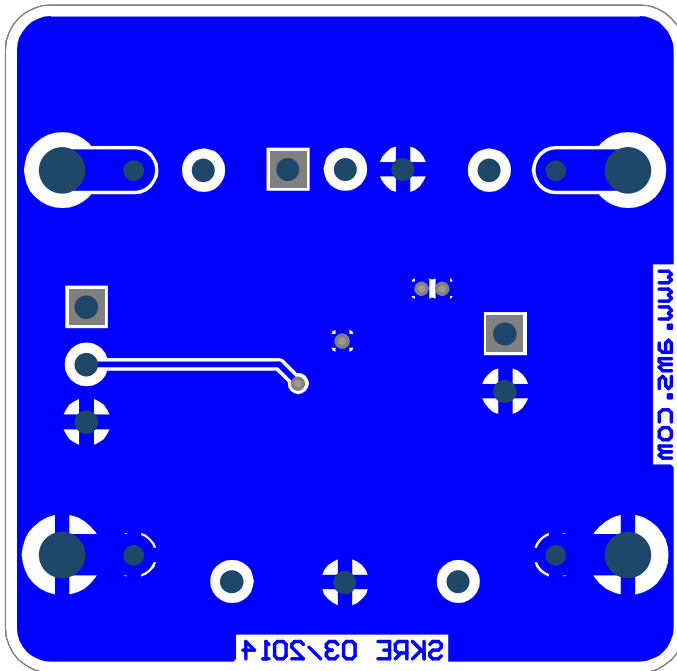


Figure 6: Bottom Layer





### 4.3 BOM

Figure 7: Bill of Material

Bill of Materials		AS1312_Evalboard_TDFN				ams
Company:		ams AG				
Originator:		SKRE				
PCB Name:		AS1312_Evalboard_TDFN				
PCB Version:		2.1				
Report Date:		12.03.2014				
#	Designator	Comment	Component_Description	Manufacturer	Manufacturer Part Number	Quantity
1	C1, C2	22µF	Multilayer Ceramic Capacitors MLCC - SMD/SMT 22µF 16Volts 20%	Murata Electronics	GRM31CR61C226ME15L	2
2	Cref	0.1µF	MURATA - GRM188R71C104KA01D - CAP, MLCC, X7R, 100NF, 16V, 0603	MURATA	GRM188R71C104KA01D	1
3	J1, J2, J3	LBI, EN, Load	FISCHER ELEKTRONIK - SL11 124 36G - HEADER, 36PIN, 2.54MM PITCH	FISCHER ELEKTRONIK	SL11 124 36G	3
4	L1	6.8µH	COILCRAFT - LPS4018-682MLB - POWER INDUCTOR 6.8UH, 1.5A, 0%,50MHZ	COILCRAFT	LPS4018-682MLB	1
5	R3	100k	RES 100K OHM 1/10W 1% 0603 SMD	Vishay Dale	CRCW0603100KFKEA	1
6	TP1, TP2, TP3	Vin, EN, Vout	VERO - 20-313137 - RED BEAD TERMINAL ASSY FOR 1.02mm hole	VERO	20-313137	3
7	TP4	LBO	VERO - 20-313140 - YELLOW BEAD TERMINAL ASSY FOR 1.02mm hole	VERO	20-313140	1
8	TP5	GND	VERO - 20-2137 - BLACK BEAD TERMINAL ASSY FOR 1.02mm hole	VERO	20-2137	1
9	U1	AS1312-MLPD	ULTRA LOW QUIESCENT CURRENT, HYSTERETIC DC-DC STEP-UP CONVERTER	ams	AS1312-BTDT-50	1
Approved		Notes				14

## 5 Ordering & Contact Information

Ordering Code	Description
AS1312-TD-50_EK_ST	AS1312 Eval Kit Standard Board Vout 5.0V

**Buy our products or get free samples online at:**

[www.ams.com/ICdirect](http://www.ams.com/ICdirect)

**Technical Support is available at:**

[www.ams.com/Technical-Support](http://www.ams.com/Technical-Support)

**Provide feedback about this document at:**

[www.ams.com/Document-Feedback](http://www.ams.com/Document-Feedback)

**For further information and requests, e-mail us at:**

[ams\\_sales@ams.com](mailto:ams_sales@ams.com)

**For sales offices, distributors and representatives, please visit:**

[www.ams.com/contact](http://www.ams.com/contact)

### Headquarters

ams AG

Tobelbaderstrasse 30

8141 Unterpremstaetten

Austria, Europe

Tel: +43 (0) 3136 500 0

Website: [www.ams.com](http://www.ams.com)

## 6 Copyrights & Disclaimer

Copyright ams AG, Tobelbader Strasse 30, 8141 Unterpremstaetten, Austria-Europe. Trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

ö

Demo Kits, Evaluation Kits and Reference Designs are provided to recipient on an “as is” basis for demonstration and evaluation purposes only and are not considered to be finished end-products intended and fit for general consumer use, commercial applications and applications with special requirements such as but not limited to medical equipment or automotive applications. Demo Kits, Evaluation Kits and Reference Designs have not been tested for compliance with electromagnetic compatibility (EMC) standards and directives, unless otherwise specified. Demo Kits, Evaluation Kits and Reference Designs shall be used by qualified personnel only.

ams AG reserves the right to change functionality and price of Demo Kits, Evaluation Kits and Reference Designs at any time and without notice.

Any express or implied warranties, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose are disclaimed. Any claims and demands and any direct, indirect, incidental, special, exemplary or consequential damages arising from the inadequacy of the provided Demo Kits, Evaluation Kits and Reference Designs or incurred losses of any kind (e.g. loss of use, data or profits or business interruption however caused) as a consequence of their use are excluded.

ams AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data herein. No obligation or liability to recipient or any third party shall arise or flow out of ams AG rendering of technical or other services.

## 7 Revision Information

Changes from 2-00 (2012-Nov-01) to current revision 2-01 (2014-Sep-10)	Page
Update to latest ams design	all

**Note:** Page numbers for the previous version may differ from page numbers in the current revision.