

User Guide  
**LX8213 High-Speed, Low-Noise CMOS LDO Regulator**  
Evaluation Board



## Contents

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<b>1</b>	<b>Revision History .....</b>	<b>1</b>
1.1	Revision 1.0 .....	1
<b>2</b>	<b>Product Overview .....</b>	<b>2</b>
2.1	Key Features .....	2
2.2	Applications .....	2
2.3	Ordering Information .....	2
2.4	Schematic and PCB Layout .....	3
2.5	IC Block Diagram .....	6
2.6	Connections .....	6
2.6.1	Jumper Settings .....	6
2.6.2	Test Setup Considerations .....	7
2.7	Bill of Materials .....	7

# 1 Revision History

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The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

## 1.1 Revision 1.0

Revision 1.0 was published in August 2017. It was the first publication of this document.

## 2 Product Overview

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The LX8213 Evaluation Board is available from Microsemi for evaluating the functionality and performance of the LX8213 high-speed, low-noise CMOS-based LDO regulator. The evaluation board allows the user to set a 1.2 V, 1.8 V, 2.5 V, or 3.3 V output through an on board jumper.

### 2.1 Key Features

The following are key features of the LX8213 device.

- Wide operating voltage range: 2.5 V to 6 V
- 1.2 V, 1.8 V, 2.5 V, or 3.3 V output voltage through on-board setting
- Fixed output version: 1.2 V or 3.3 V output available
- 1  $\mu$ F input and output low ESR ceramic capacitors
- Low dropout voltage: 170 mV at 3.3 V, 300 mA
- Low standby current: Typical 0.1  $\mu$ A
- Low quiescent current: Typical 60  $\mu$ A
- Low output noise: 60  $\mu$ Vrms
- Excellent line and load regulation
- Short current limit: typical 50 mA
- Over temperature protection
- High ripple rejection: 65 dB at 1 kHz, 45 dB at 10 kHz

### 2.2 Applications

The following are applications of the LX8213 device.

- Personal computers
- Datacom

### 2.3 Ordering Information

IC Part Number	Description
LX8213-00ISE	Adjustable output CMOS LDO regulator, plastic SOT23-5 pin.

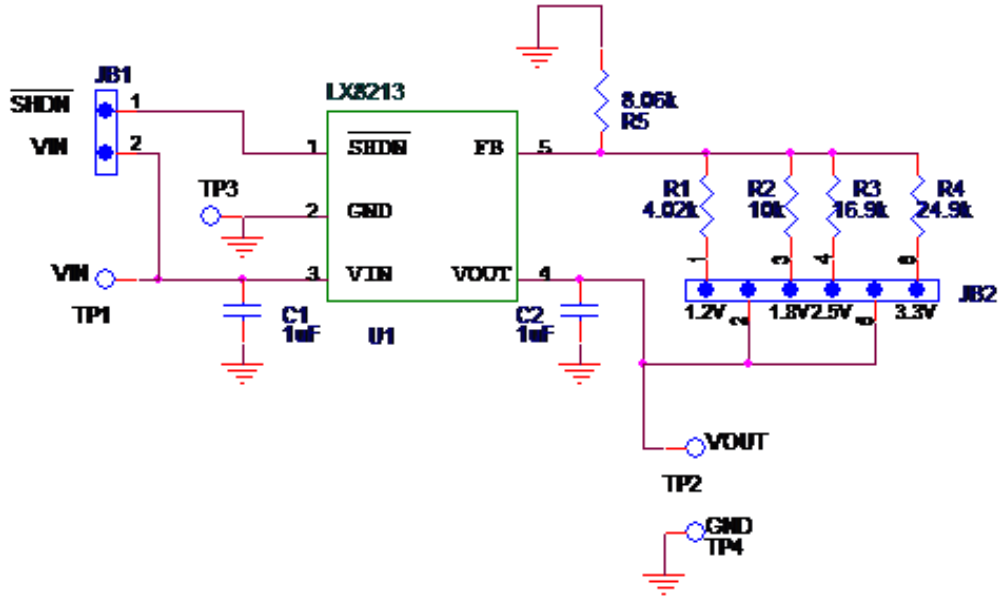
  

Evaluation Board Part Number	Description
LX8213-00ISE EVAL KIT	Evaluation PCB for the LX8213-00ISE device.

## 2.4 Schematic and PCB Layout

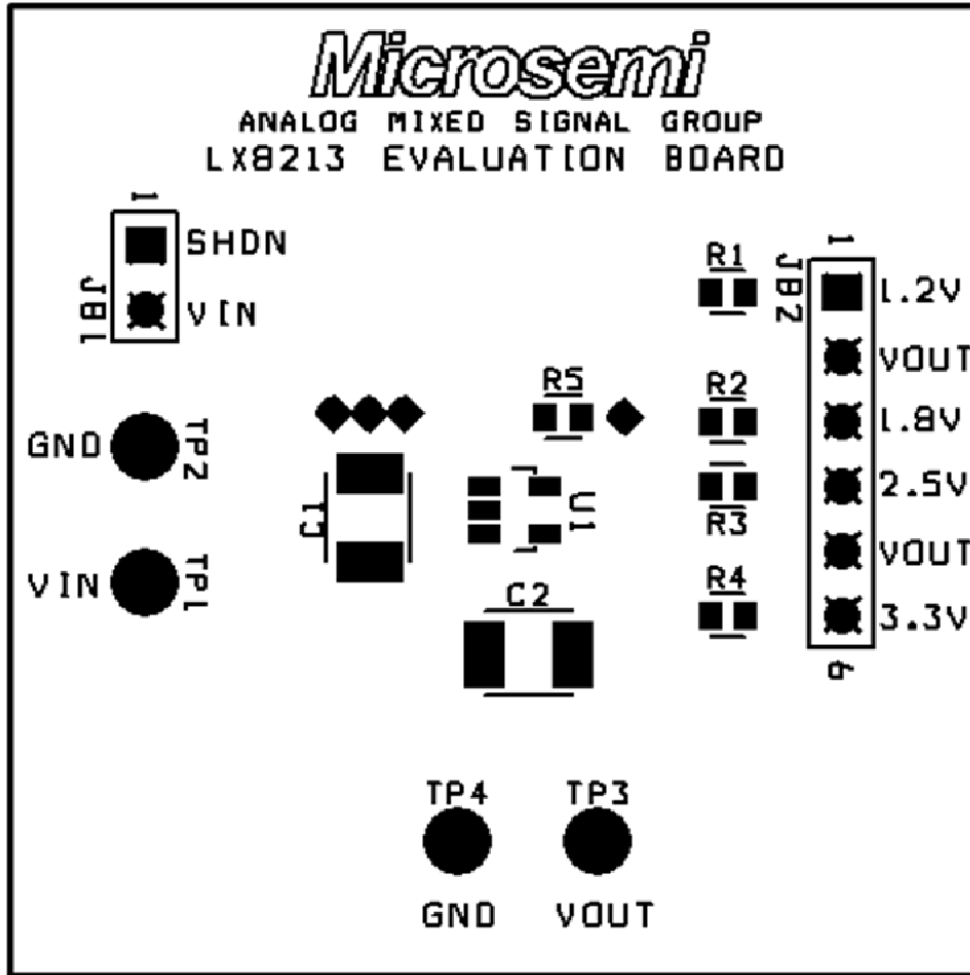
The following illustration shows the evaluation board schematic of the LX8213 device.

Figure 1 • LX8213 Evaluation Board Schematic



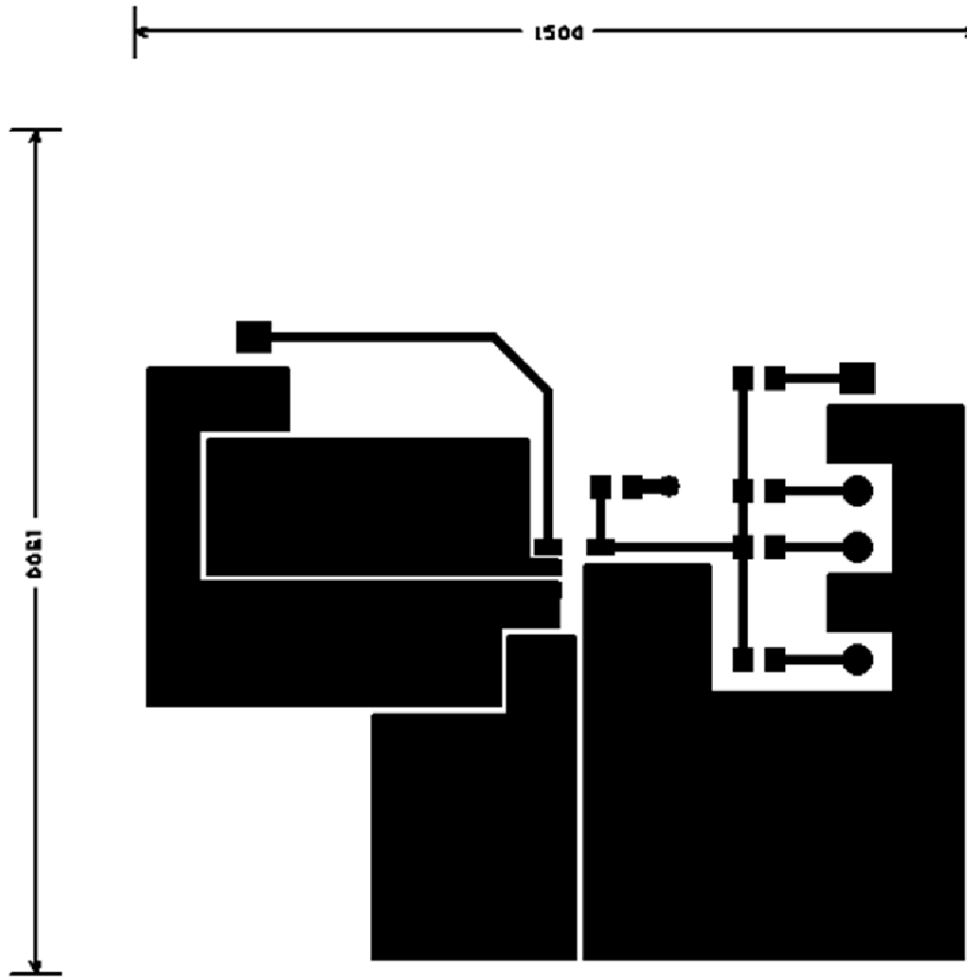
The following illustration shows the silkscreen and solder mask of the LX8213 device.

Figure 2 • Silkscreen and Solder Mask



The following illustration shows the top layer of the LX8213 device.

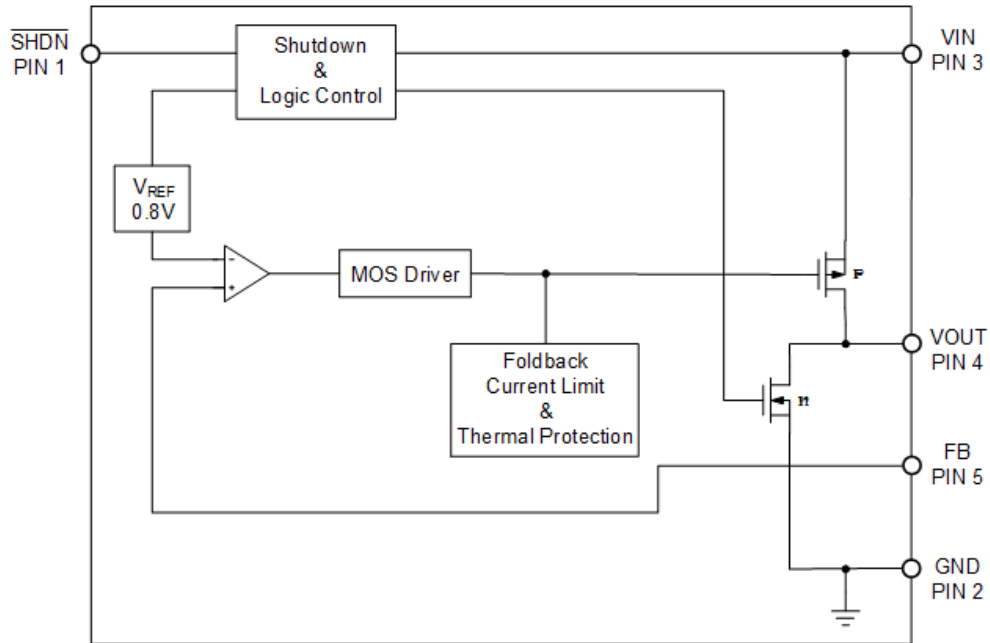
**Figure 3 • Top Layer**



## 2.5 IC Block Diagram

The following illustration shows a simplified block diagram of the LX8213 device.

Figure 4 • LX8213 Simplified Block Diagram



## 2.6 Connections

The following sections describe the test point and jumper connections of the LX8213 evaluation board.

Table 1 • Test Point Assignment

Test Point	Pin Name	Function
TP1	VIN	LX8213 device input
TP2	OUTPUT	LX8213 device output
TP3	GND	Ground, input return power
TP4	GND	Ground, output return power

### 2.6.1 Jumper Settings

Jumper JB1 allows SHDN to be connected to VIN to enable the LX8213. When the SHDN pin is left floating, an internal pull-down will disable the device. An external source can also be used to toggle SHDN through pin 1 of JB1. Jumper JB2 sets the LX8213 output voltage to one of four levels: 1.2 V, 1.8 V, 2.5 V, or 3.3 V. Refer to [LX8213 Output Voltage Setting \(see page 6\)](#) for setting the desired output voltage.

Table 2 • LX8213 Device Enable Setting

Device Enabled	Jumper JB1 Setting
Yes	Connect pins 1 and 2
No	Open



**Table 3 • LX8213 Output Voltage Setting**

Output Voltage	Jumper JB2 Setting
1.2 V	Connect pins 1 and 2
1.8 V	Connect pins 2 and 3
2.5 V	Connect pins 4 and 5
3.3 V	Connect pins 5 and 6

## 2.6.2 Test Setup Considerations

For good load transient response and noise rejection, the 1  $\mu$ F input bypass capacitor may not be sufficient if additional parasitic inductance is introduced by the cables through the bench power supply to the LX8213 input. Use additional input bypassing to help alleviate the parasitic inductance. Recommended capacitance values depend on the setup; however, a 10  $\mu$ F electrolytic should suffice to account for typical power supply cable connection parasitics. In real applications, the extra input bypassing is not needed.

## 2.7 Bill of Materials

The following section describes the bill of materials for the LX8213-00ISE evaluation board.

**Table 4 • Bill of Materials**

Line Item	Part Description	Manufacturer and Part Number	Case	Reference Designators	Qty
1	Microsemi IC—low dropout linear regulator	Microsemi, LX8213-00ISE	SOT23-5	U1	1
2	Header, 2 positions, vertical mount, 0.1 center	3M, 929647-02-36-I	Through hole	JB1	1
3	Header, 6 positions, vertical mount, 0.1 center	3M, 929647-02-36-I	Through hole	JB2	1
4	Test point, miniature surface mount	Keystone, 5015	Through hole	TP1, TP2, TP3	3
5	Ceramic capacitor, 1 $\mu$ F, 6.3 V, $\pm$ 15%, X5R	Panasonic, ECJ-1VB0J105K	0603	C1, C2	2
6	Resistor, 4.02K, 1%, 1/16 W	Panasonic, ERJ-3EKF4021V	0603	R1	1
7	Resistor, 10K, 1%, 1/16 W	Panasonic, ERJ-3EKF1002V	0603	R2	1
8	Resistor, 16.9K, 1%, 1/16 W	Panasonic, ERJ-3EKF1692V	0603	R3	1
9	Resistor, 24.9K, 1%, 1/16 W	Panasonic, ERJ-3EKF2492V	0603	R4	1
10	Resistor, 8.06K, 1%, 1/16 W	Panasonic, ERJ-3EKF8061V	0603	R5	1

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