



**Eval Kit Manual**

# **AS5215**

## **Adapter Board**

**AS5215-AB**

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## Revision History

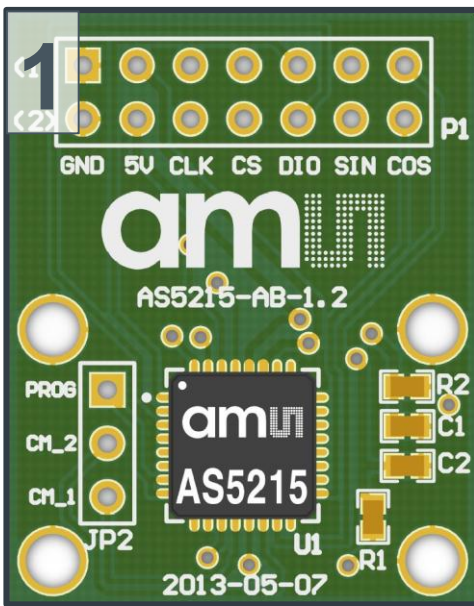
Revision	Date	Owner	Description
1.0	25.08.2009		Initial version
1.1	02.09.2009		Inserted adapter board photos
1.2	09.12.2009		Insert note
1.3	08.05.2013	mzie	Updated to new corporate design
1.4	10.12.2014	mzie	Updated all figures, updated to new template

## 1 Introduction

The AS5215 adapter board is a small PCB allowing simple and quick testing or evaluation of the AS5215 magnetic position sensor without the need to build a test fixture or design an own PCB.

### 1.1 Kit Content

Figure 1: Kit content



Pos.	Item	Comment
1	AS5215-AB	Adapter board

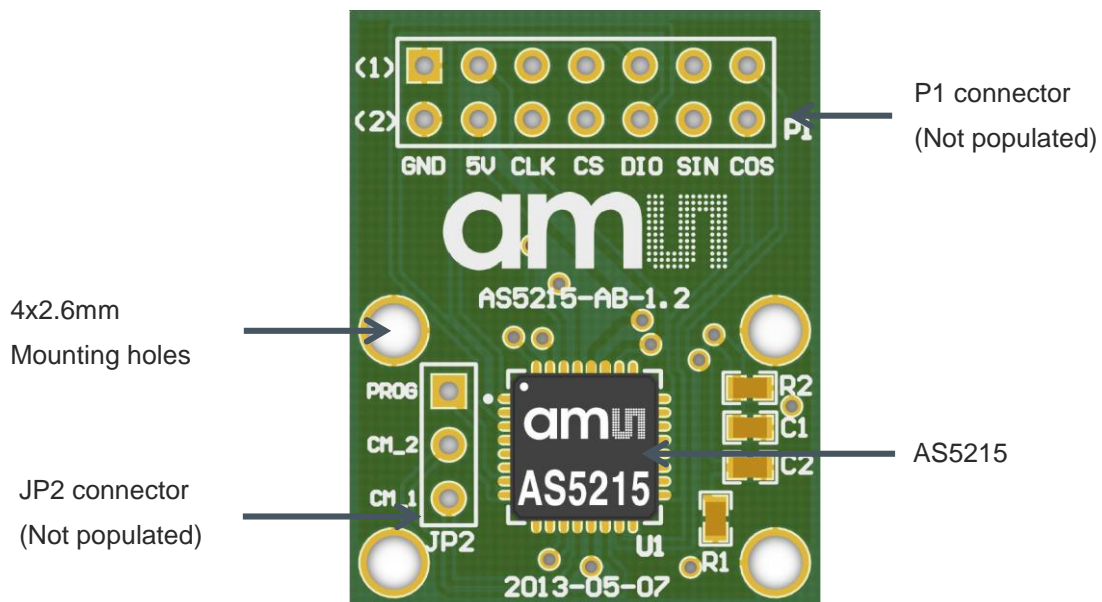
## 2 Board description

P1 has to be populated with a 2x7 pin header and is required for power supply as well as programming and signal output.

The connector JP2 provides access to PROG, CM\_SIN1 and CM\_SIN2.

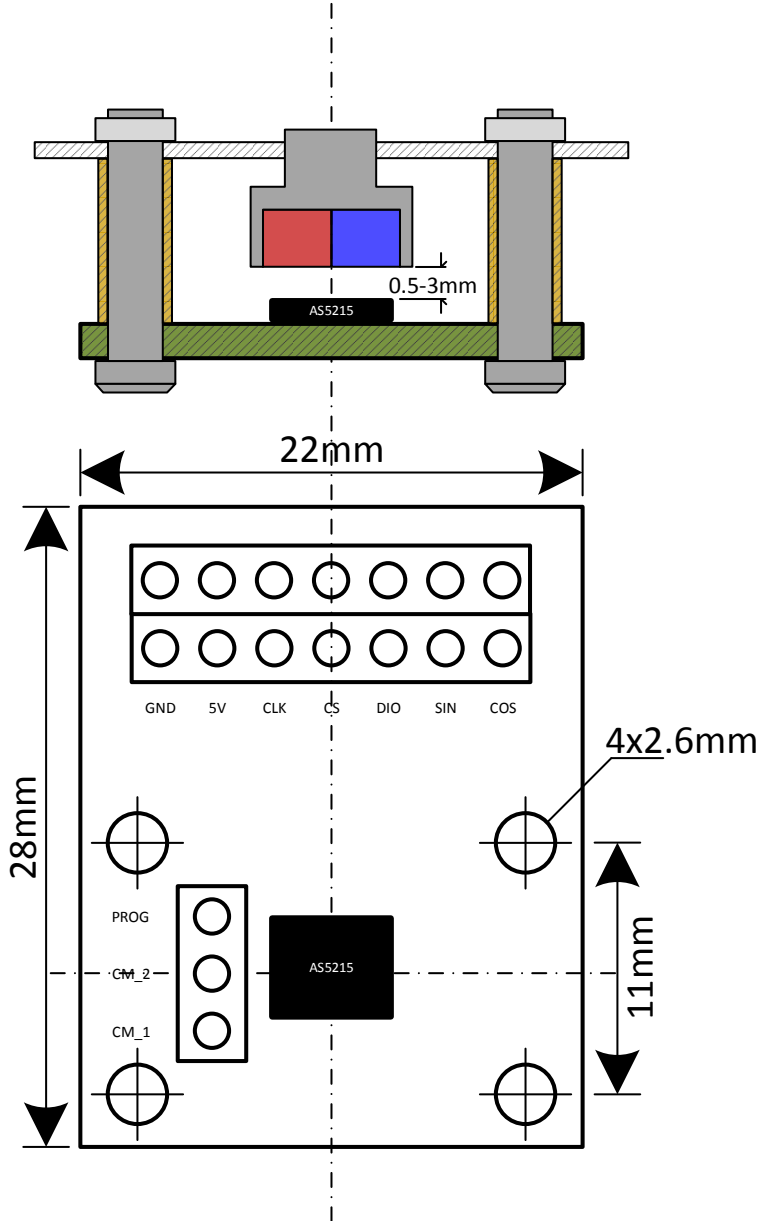
Resistors R1, R2 (100k) are used as Pull-up on CS pin and capacitors C1, C2 (2.2uF) are placed between VDD and GND.

**Figure 2: AS5215 adapter board**



## 2.1 Mounting the AS5215 adapter board

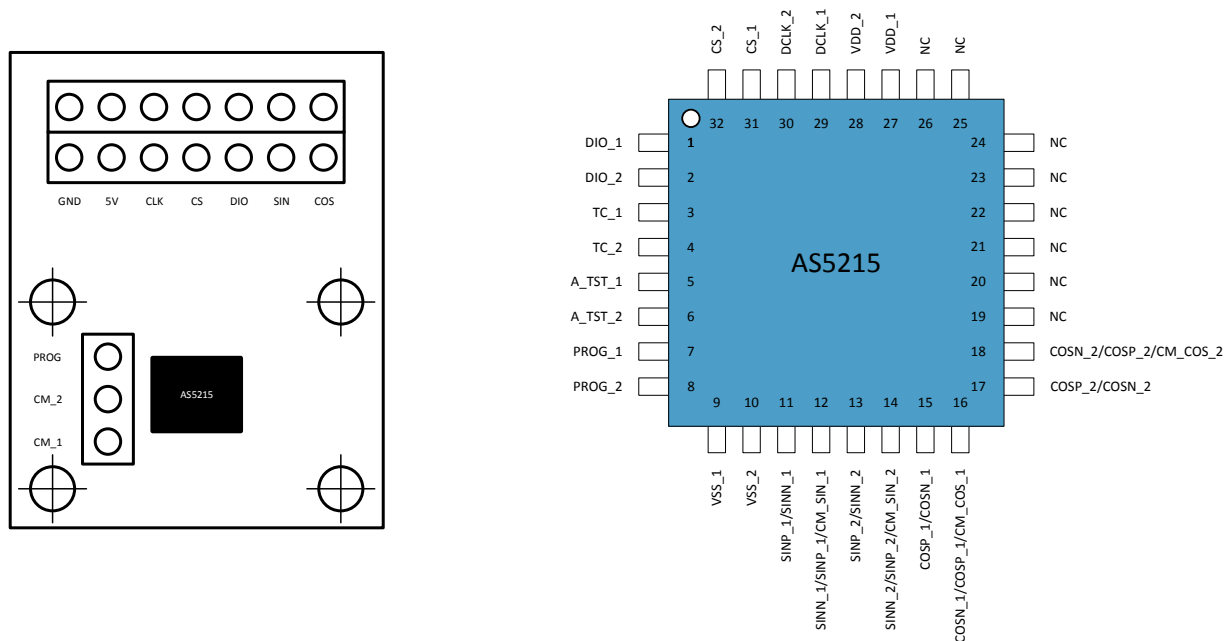
Figure 3: Mounting and dimensions



A 6x2.5mm diametric magnet must be placed over or under the AS5215 sensor, and should be centered on the middle of the package with a tolerance of 0.5mm. The airgap between the magnet surface and the package should be maintained in the range 0.5mm to 3mm. The magnet holder must not be ferromagnetic. Materials as brass, copper, aluminum, stainless steel are the best choices to make this part.

### 3 AS5215 adapter board and pinout

Figure 4: AS5215 adapter board and sensor pinout



Pin# Board	Pin# AS5215	Symbol board	Type	Description
P1 - 1	9, 10	GND	Power supply	Ground (Die 1)
P1 - 2	9, 10	GND	Power supply	Ground (Die 2)
P1 - 3	27, 28	5V	Power supply	Positive supply voltage (Die 1)
P1 - 4	27, 28	5V	Power supply	Positive supply voltage (Die 2)
P1 - 5	29	CLK	Digital input	Clock for digital interface (Die 1)
P1 - 6	30	CLK	Digital input	Clock for digital interface (Die 2)
P1 - 7	31	CS	Digital input	Chip select for digital interface (Die 1)
P2 - 8	32	CS	Digital input	Chip select for digital interface (Die 2)
P2 - 9	1	DIO	Digital input	Data I/O for digital interface (Die 1)
P2 - 10	2	DIO	Digital input	Data I/O for digital interface (Die 2)
P2 - 11	11	SIN	Analog output	Switchable buffered analog outputs (Die 1)
P2 - 12	13	SIN	Analog output	Switchable buffered analog outputs (Die 2)
P2 - 13	15	COS	Analog output	Switchable buffered analog outputs (Die 1)
P2 - 14	17	COS	Analog output	Switchable buffered analog outputs (Die 2)
JP2 - 1	7, 8	PROG	Power supply	OTP programming pad
JP2 - 2	14	CM_2	Analog output	Switchable buffered analog outputs (Die 1)
JP2 - 3	12	CM_1	Analog output	Switchable buffered analog outputs (Die 2)

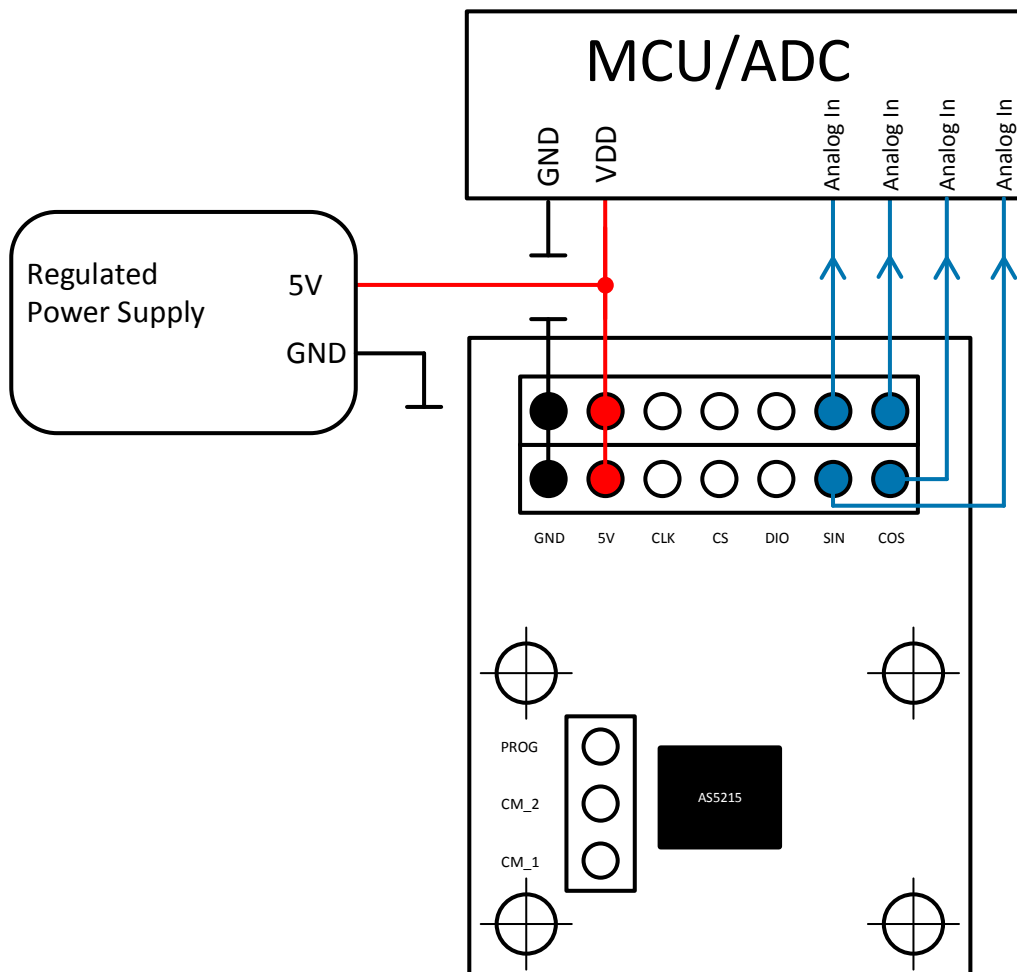
## 4 Operation case

### 4.1 Standalone sine-cosine output

The AS5215 provides analog Sine and Cosine outputs (P1 – 11, P1 – 13 and P1 – 12, P1 - 14). These outputs allow the user to perform the angle calculation by an external ADC +  $\mu\text{C}$ , e.g. to compute the angle with a high resolution. The signal lines should be as short as possible, longer lines should be shielded in order to achieve best noise performance. Through the programming of one bit, you have the possibility to choose between the analog Sine and Cosine outputs (SINP, COSP) and their inverted signals (SINN, COSN). Furthermore, by programming the bits <9:10> you can enable the common mode output signals of SIN and COS (JP2 – 2 and JP – 3). The DC bias voltage is 1.5 or 2.5 V.

For further information, please refer to datasheet.

**Figure 5: Standalone sine-cosine output**

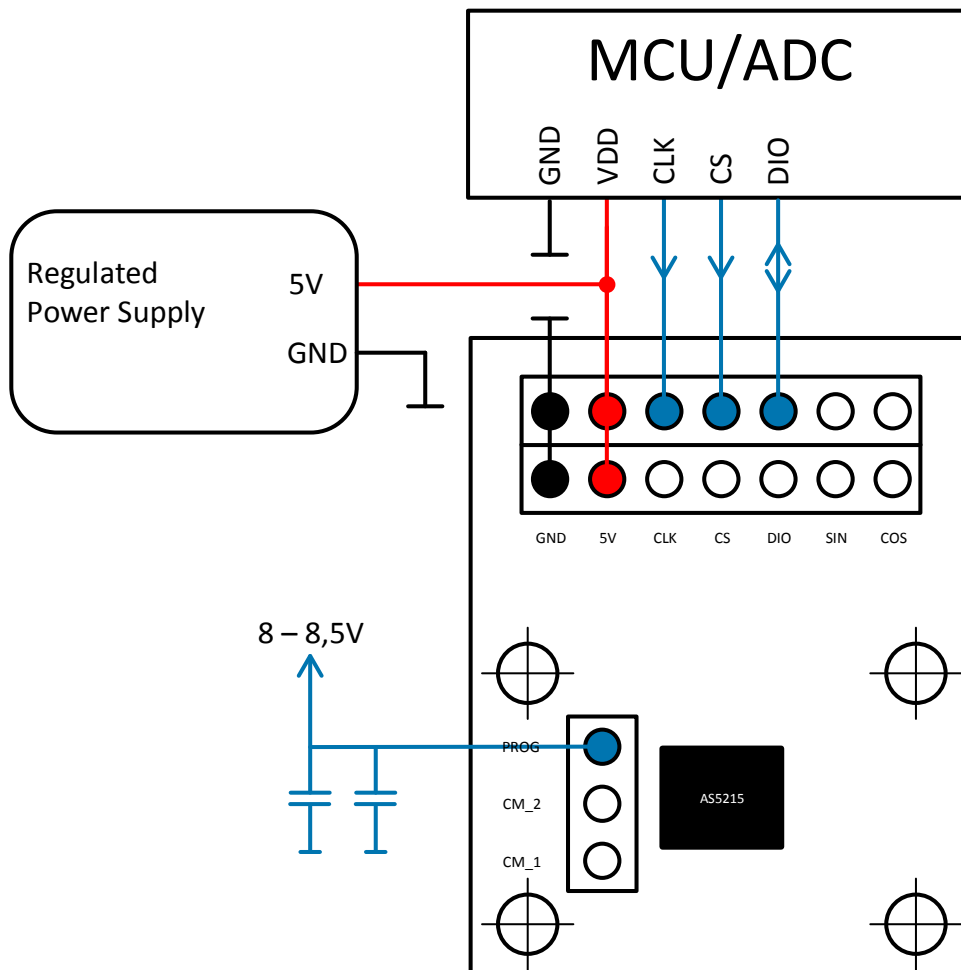


## 4.2 Programming of the AS5215

For programming of the OTP, an additional voltage has to be applied to the pin PROG. It has to be buffered by a fast 100nF capacitor (ceramic) and a 10 $\mu$ F capacitor (as close as possible to PROG pin). Programming of the AS5215 OTP memory does not require a dedicated programming hardware. The programming can be simply accomplished over the serial 3-wire interface. For permanent programming (command PROG OTP, #25), a constant DC voltage of 8.0 – 8.5V (=100mA) must be connected to PROG. For temporary OTP write (“soft write”; command WRITE OTP, #31), the programming voltage is not required.

For further information, please refer to datasheet.

**Figure 6: Programming of the AS5215**

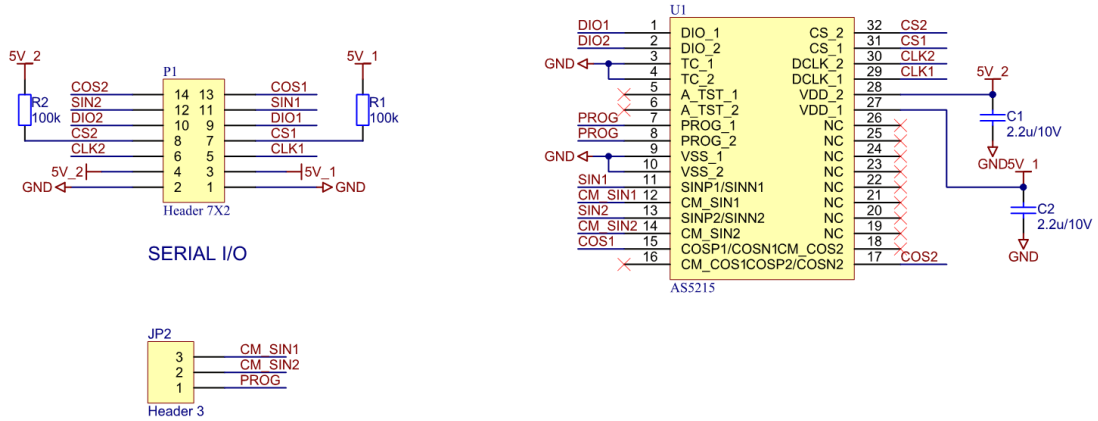




## 5 AS5215-AB Hardware

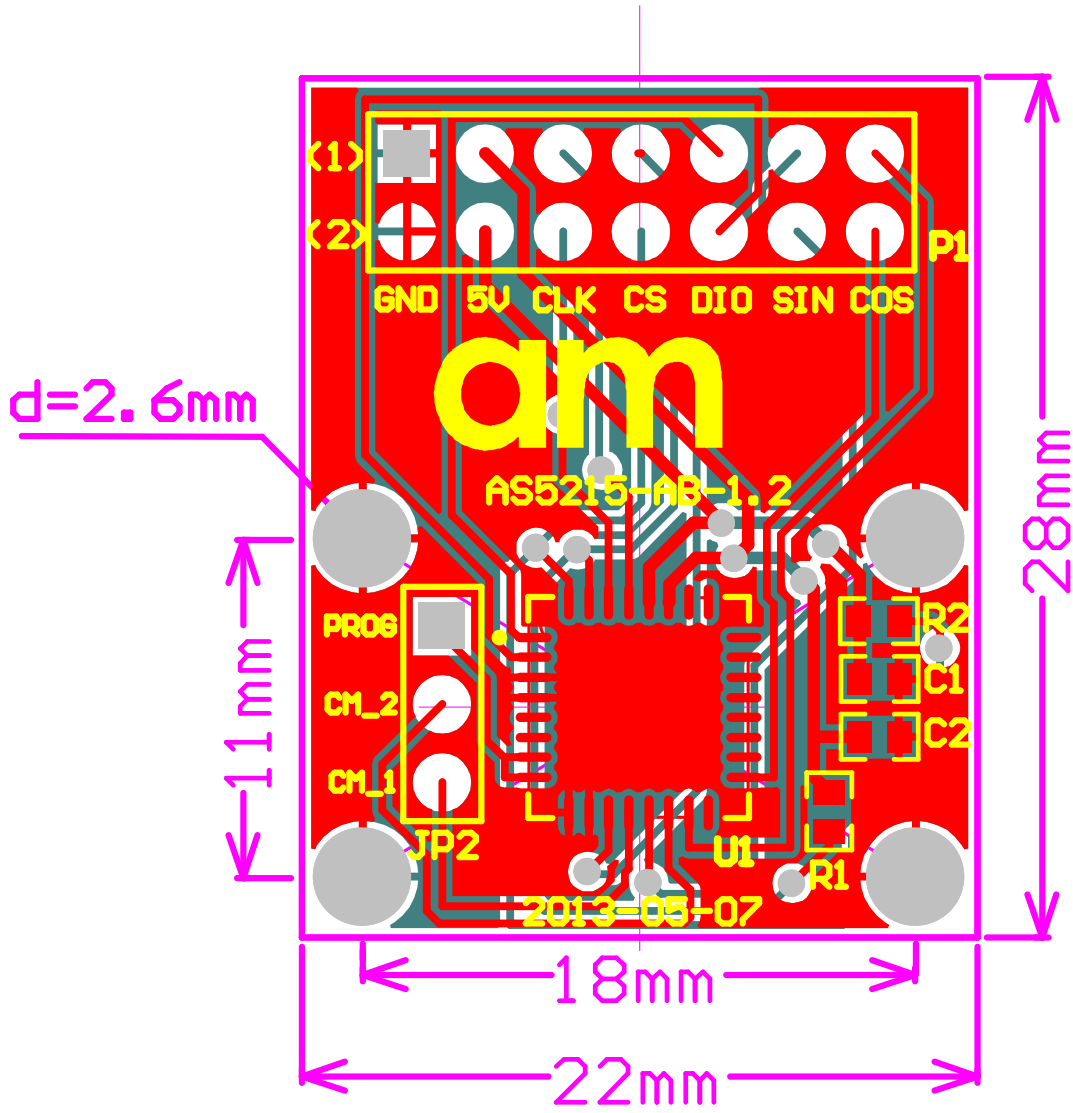
### 5.1 AS5215-AB schematics

Figure 7: AS5215-AB schematics



## 5.2 AS5215-AB PCB layout

Figure 8: AS5215-AB PCB layout



## 6 Ordering & Contact Information

Ordering Code	Description
AS5215-AB	AS5215 Eval Kit Adapter Board

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