

APPLICATION NOTE



BCG REFERENCE DESIGN

Table of Contents

1	Introduction	3
1.1	Description.....	3
1.2	Features	3
1.3	Getting started	3
2	Schematics	4
3	Layout	5
4	Bill of Materials	5
5	SW interface	6
6	FW upgrade	6
7	Change control	6

1 Introduction

1.1 Description

The purpose of this reference design is to help the integration of SCL3300 and BCG MCU into the final application. Though not intended to be used as is, it will be a fully tested debugger and BCG performance validation tool with the production sw.

1.2 Features

- SCL3300 inclinometer
- EFM32JG1B200F microcontroller family
- 5...9 V input voltage
- UART interfaces for data and FW upgrade
- 40 MHz crystal

1.3 Getting started

1. Connect voltage supply 5...9 V to Vin (J1)
2. Connect the host e.g. UART-USB bridge (e.g. FTDI's TTL-232RG-VSW5V-WE) to the 3.3V UART-interface pins SERIAL_RX and SERIAL_TX (J2).
UART settings are below in Table 1.

Table 1 Serial port configuration

Parameter	
Baud rate	230400 baud
Data bits	8
Parity	None
Stop bits	1
Flow control	None

3. MCU will start to send BCG-data at 1 Hz in binary format according to *Product Specification 1327 SCA10H binary protocol specification*

3 Layout

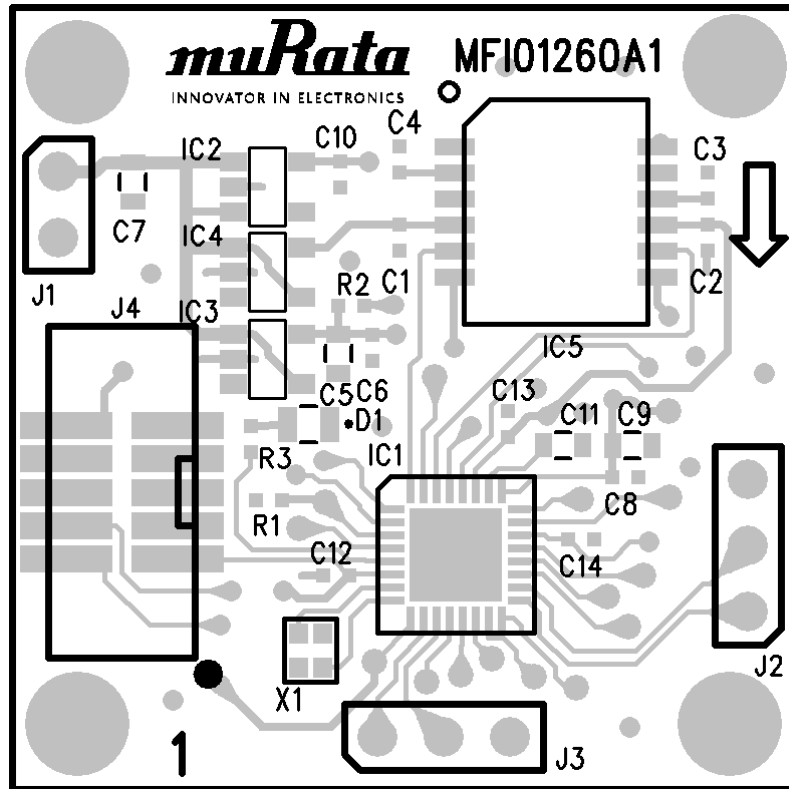


Figure 2 Reference design layout

4 Bill of Materials

Item	Qty	Reference	Description/Component value	Assembled	Manufacturer	Manufacturer type
1	1	IC5	3-axis inclinometer	X	Murata	SCL3300-D01
2	1	IC1	ARM Cortex-M3 32-bit Microcontroller	X	Silicon Labs	EFM32JG1B100FGM32-C0
3	1	IC2	IC REG LINEAR 1.8V 150MA SOT25 1.8 V	X	Torex	XC6204B182MR-G
4	2	IC3-4	IC REG LINEAR 3.3V 150MA SOT25 3.3 V	X	Torex	XC6701B332MR-G
5	2	C12-13	MLCC 10nF/50V	X	Murata	GCM155R71H103KA55D
6	8	C1-4,C6,C8,C10,C14	MLCC 100nF/16V	X	Murata	GCM155R71C104KA55J
7	2	C5,C9	MLCC 10uF/16V	X	Murata	GRM188C81C106MA73J
8	2	C7,C11	MLCC 1uF/35V	X	Murata	GRT188C8YA105KE13D
9	1	R1	SMD resistor 0402 4K7	X	N/A	N/A
10	1	R2	SMD resistor 0402 0R		N/A	N/A
11	1	R3	SMD resistor 0402 1K		N/A	N/A
12	1	D1	SMD LED 0805 Green		N/A	N/A
13	1	J4	CONNECTOR HEADER SMD 10POS 1.27MM		Samtec	SHF-105-01-L-D-SM
14	1	X1	CRYSTAL 40.0000MHZ 8PF SMD 40 MHz	X	Murata	XRCGB40M000F4M01R0

5 SW interface

According to *Product Specification 1327 SCA10H binary protocol specification*.

Note: Mode 9: Sleep mode is not supported (Table 7 in *Product Specification 1327 SCA10H binary protocol specification*).

6 FW upgrade

FW can upgraded to the MCU according to *Product Specification 5668 Rev.1 BCG-MCU FW upgrade specification ENG*.

7 Change control

Rev.	Date	Change Description
1	18-Mar-19	1 st draft