



Application Note on Interfacing LX3302A Chip
with On-Board Microcontroller with Safety
Measures

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Preface

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation is constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our web site (www.microsemi.com) to obtain the latest documentation available.

Document Layout

This document describes how to interface LX3302A IC with On-Board Microcontroller with safety measures for programming EEPROM content to the sensor and for capturing the position data from the sensor without affecting the absolute electrical specifications of the On-Board Microcontroller.

- **CHAPTER 1: In Digital EEMODE** – this chapter describes how to interface On-Board Microcontroller (operated with 5V ,3.3V) with LX3302A sensor IC operated in Digital EEMODE for Programming the sensor (Read/Write EEPROM) and for sensor data capturing.
- **CHAPTER 2: In VIN EEMODE** – this chapter describes how to interface On-Board Microcontroller (operated with 5V ,3.3V) with LX3302A sensor IC operated in VIN EEMODE for Programming the sensor (Read/Write EEPROM) and for sensor data capturing.

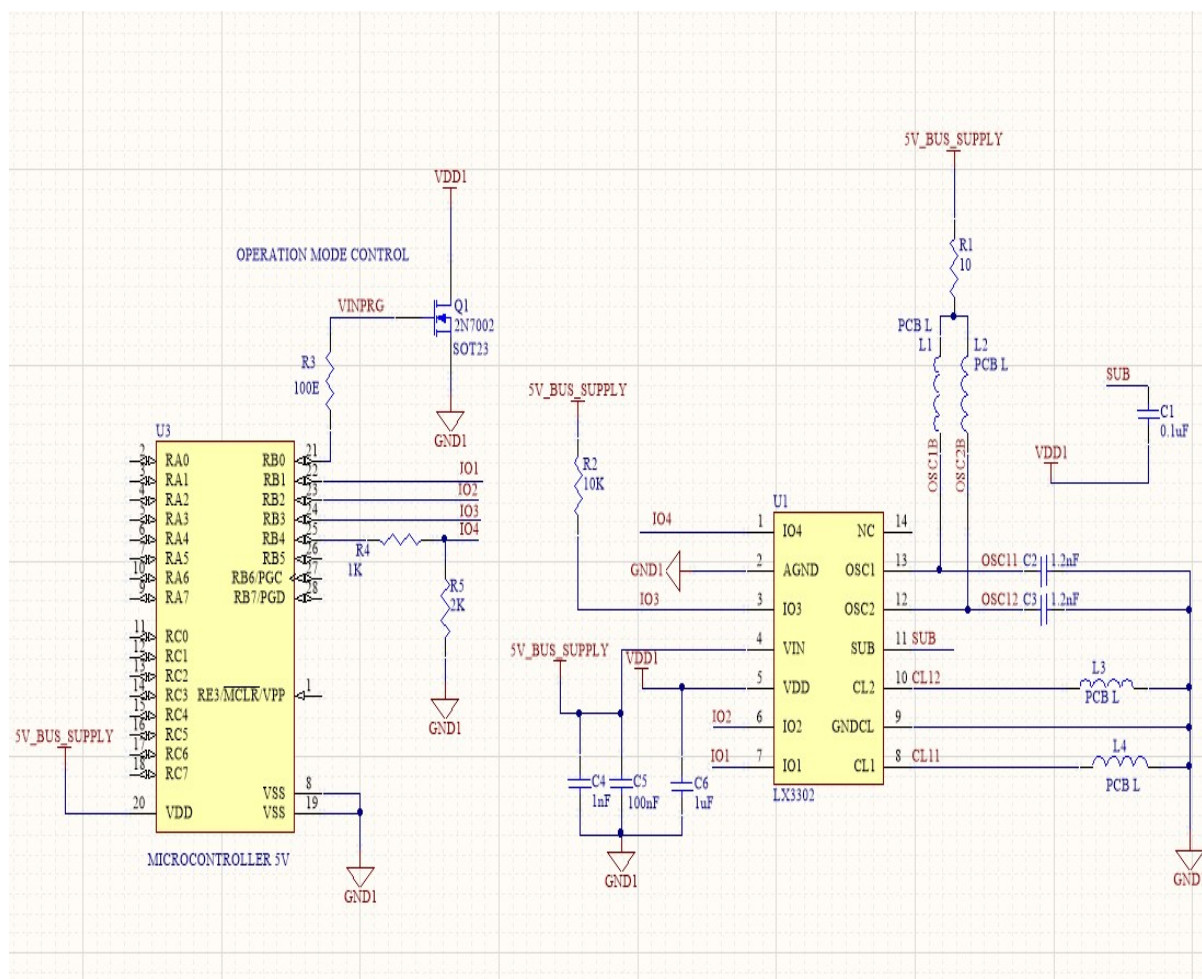
Chapter 1: In Digital Mode

In Digital Mode, the IO lines of LX3302A used for Programming the sensor i.e., Read Operation and Write operation of EEPROM. Here in Digital Mode, the LX3302A IC gets into EEMODE by pulling the IO4 pin high during reading and writing operation of EEPROM. During Normal operation of sensor IO4 is pulled Low.

Pin Configuration:

IO1 – Clock input; IO2 – Data Input (cmd); IO3 -Data Output; IO4 – Operation Mode

1.1 Interfacing LX3302A with 5V Operated Microcontroller.

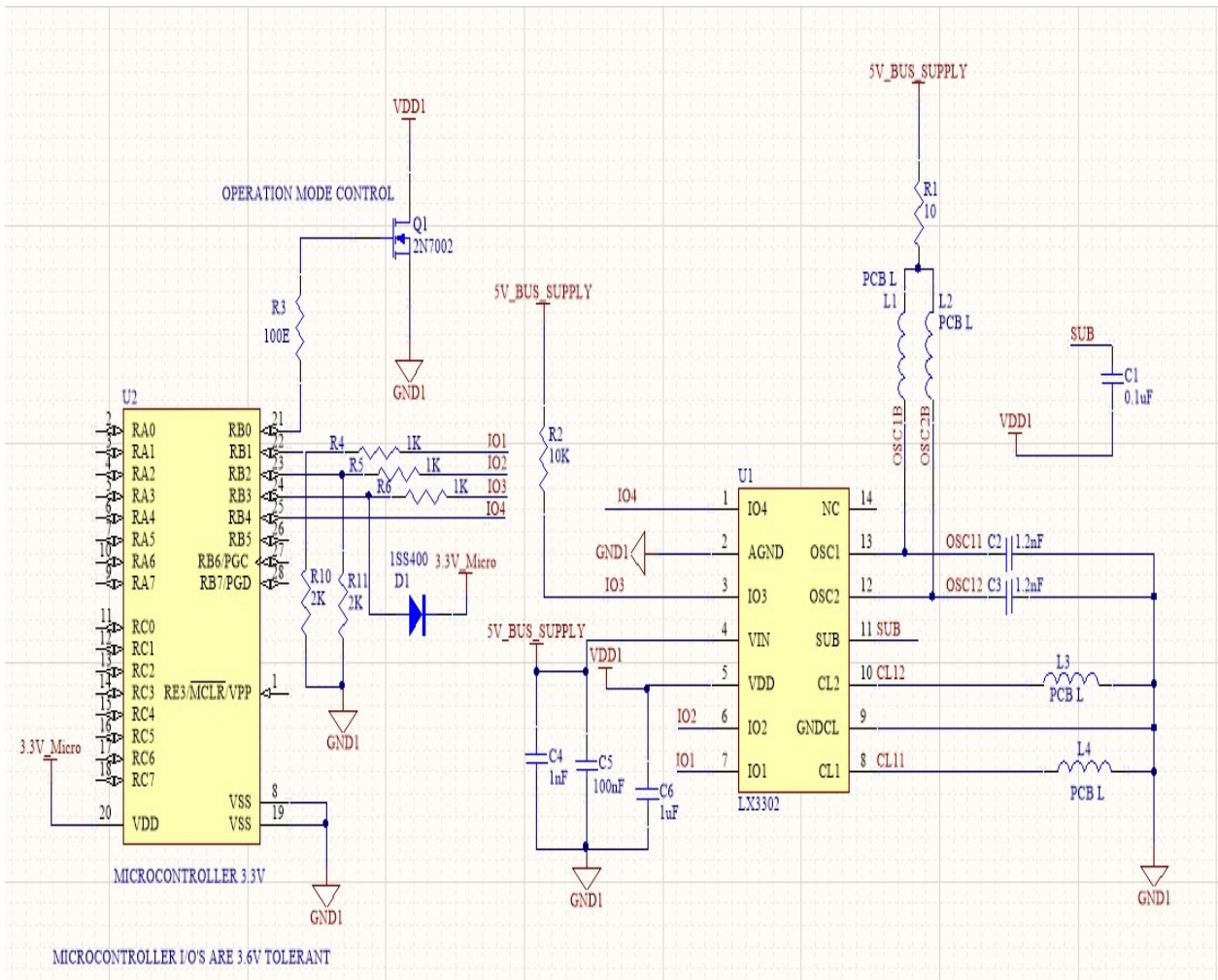


Note: In Digital EEMODE, EEPROM data Readback is available only on IO3 pin.

1.2.1 Microcontroller with 5V tolerant Pins

Note: For Analog Measurements need to add signal conditioning circuits that converts 5V to V_{ref} ADC of Microcontroller.

1.2.2 Microcontroller with 3.6V tolerant Pins

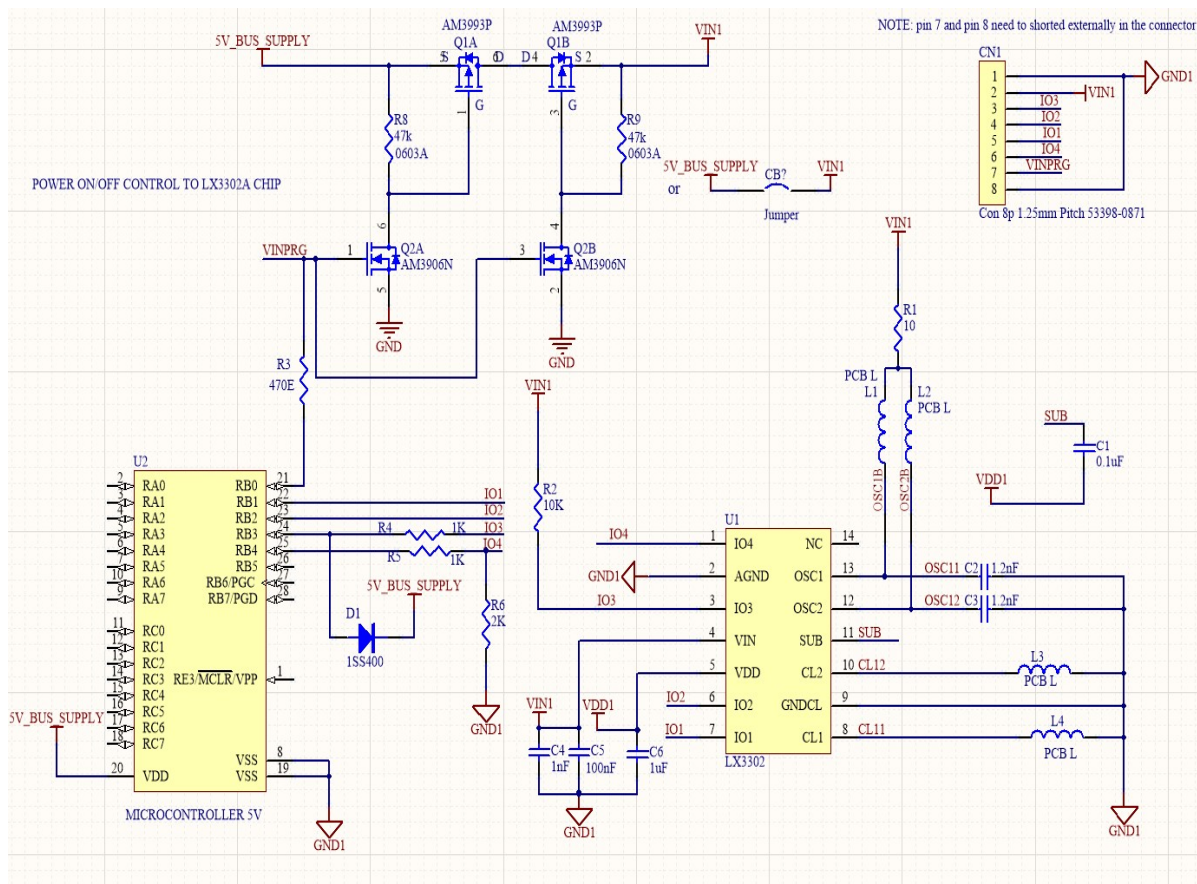


Note: For Analog Measurements need to add signal conditioning circuits that converts 5V to V_{ref} ADC of Microcontroller.

Chapter 2: In VIN Mode

In VIN mode the Power line of sensor IC is switched to voltages 13V to 17V for EEPROM data write/ Read from the LX3302A Chip using Dongle Programmer LXM9518 Gen 2. During Programming, the Sensor supply and Microcontroller Supply need to be isolated in case if they are connected to same Power Bus.

2.1 Interfacing LX3302A with 5V Operated Microcontroller on Same PCB

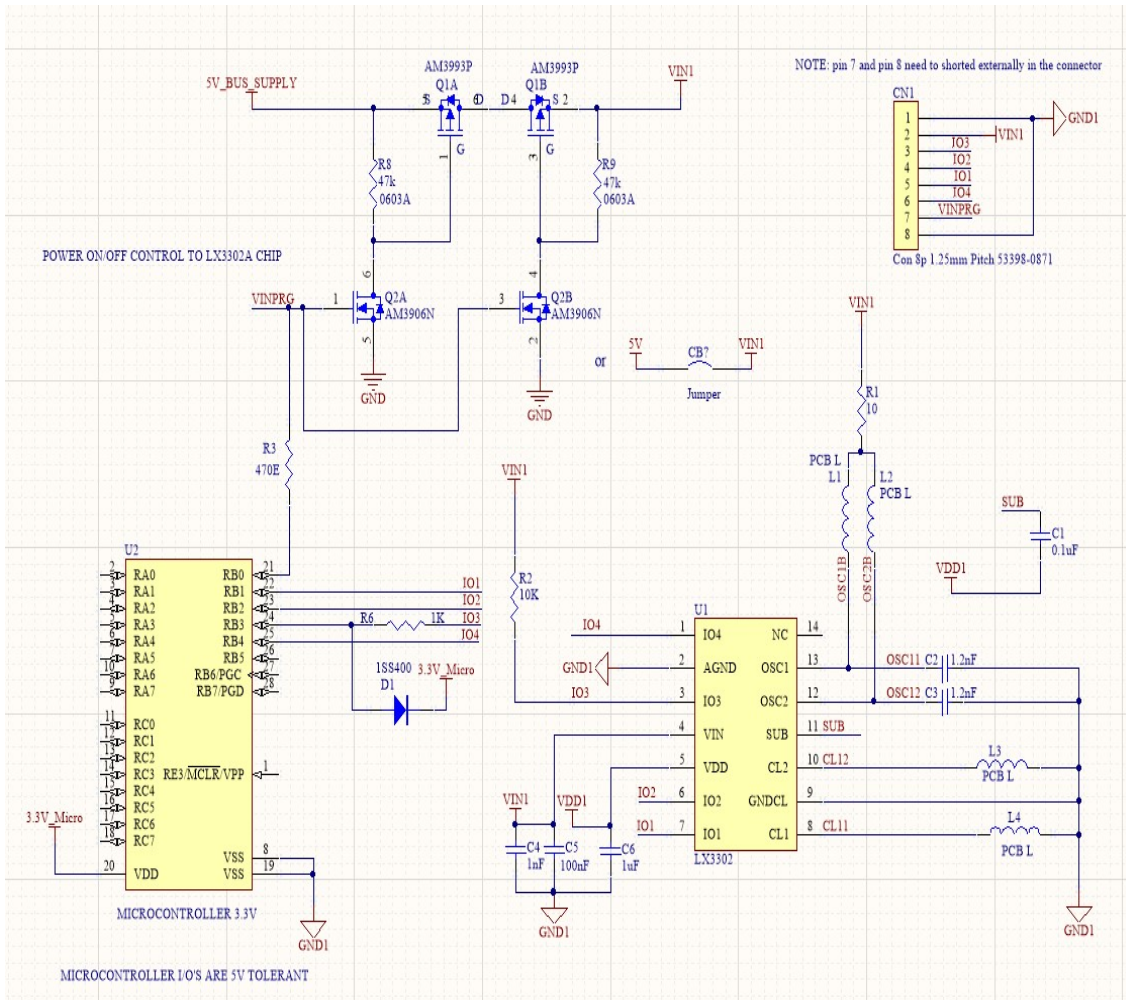


Note:

- In VIN EEMODE, Any of the IO's IO1, IO2, IO3 can be used for EEPROM data readback with command through VIN Power Line. Here IO3 is considered as EEPROM readback path.
- If IO1, IO2 is used for EEPROM readback, then IO1, IO2 need to add pullup to VDD of LX3302A chip
- Here assumed the Chip is programmed with Microchip programmer Gen 2(LXM9518) external to it.
- Need to be VINPRG = 0V or Jumper open (if used) While programming the sensor.

2.2 Interfacing LX3302A with 3.3V Operated Microcontroller

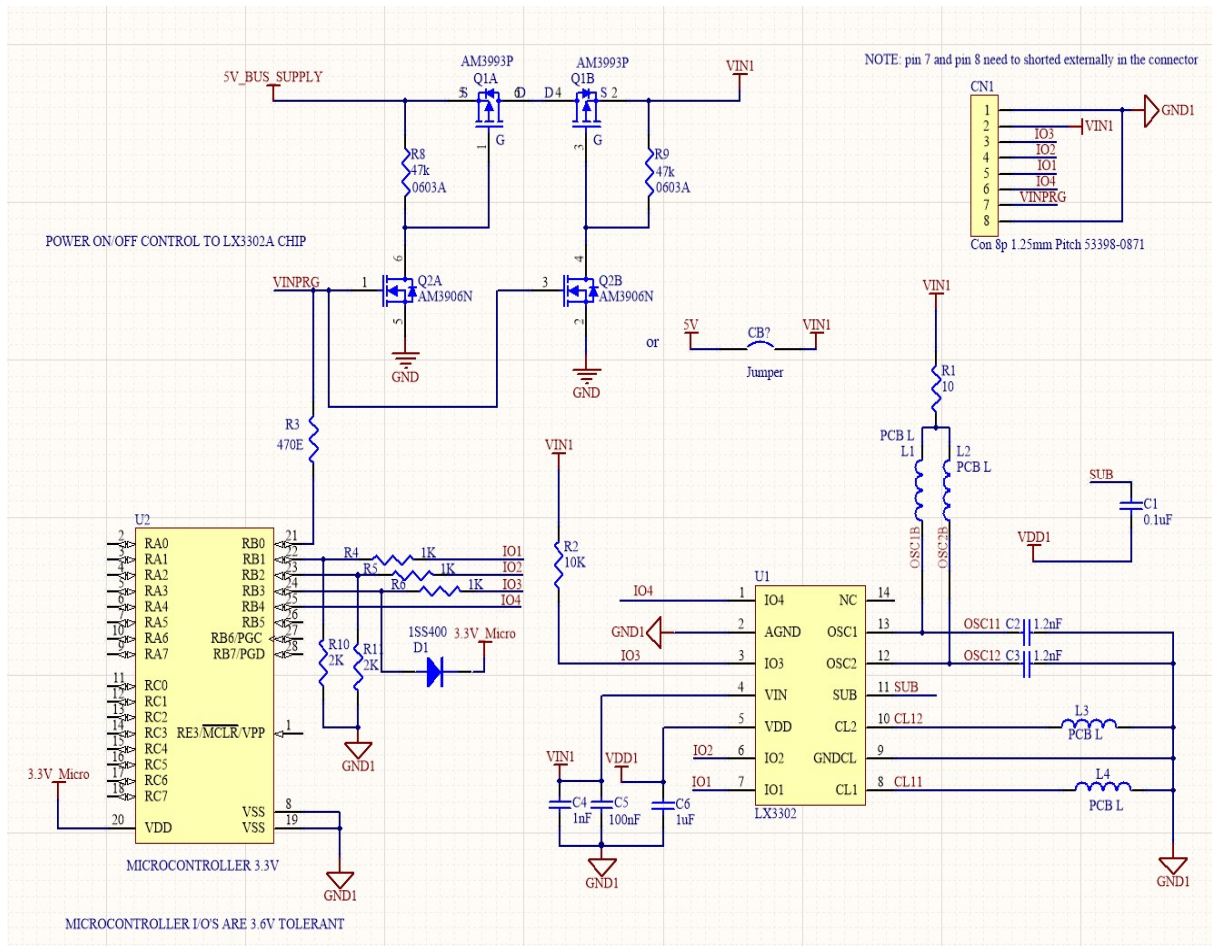
2.2.1 Microcontroller with 5V tolerant Pins



Note:

- For Analog Measurements need to add signal conditioning circuits that converts 5V to V_{ref} ADC of Microcontroller.
- Here we assumed the Chip is programmed with Microchip programmer Gen 2(LXM9518) external to it.
- Need to be VINPRG = 0V or Jumper open (if used) While programming the sensor.

2.2.2 Microcontroller with 3.6V tolerant Pins



Note:

- For Analog Measurements need to add signal conditioning circuits that converts 5V to V_{ref} ADC of Microcontroller.
- Here we assumed the Chip is programmed with Microchip programmer Gen 2(LXM9518) external to it.
- Need to be VINPRG = 0V or Jumper open (if used) While programming the sensor.