GigaDevice Semiconductor Inc.

GD32F103VBT6 Evaluation Board

User Manual

Table of Contents

List of Figures

1 Introduction

GD32F103VBT6 evaluation board uses GD32F103VBT6 as the main controller. As a complete development platform of GD32F103xx powered by ARM® Cortex™-M3 core, the board supports full range of peripherals, such as USART, I2C, SPI, ADC, PWM, CAN, USB, EXMC and so on. This document details its hardware and the relevant applications.

2 Function pin assignment

Table 1. Pin assignment

Function	Pin	Description
ADC	PC4	ADC_IN14
PWM	PB8	TM4_CH3
LED	PC6	LED2
	PC7	LED3
	PC8	LED4
	PC9	LED5
RESET		K1-Reset
KEY	PA0	K2-Wakeup
	PB9	K3-User key
	PC13	K4-Tamper
EXMC	PD14	EXMC_AD0
	PD15	EXMC_AD1
	PD0	EXMC_AD2
	PD1	EXMC_AD3
	PE7	EXMC_AD4
	PE8	EXMC_AD5
	PE9	EXMC_AD6
	PE10	EXMC_AD7
	PE11	EXMC_AD8
	PE12	EXMC_AD9
	PE13	EXMC_AD10
	PE14	EXMC_AD11
	PE15	EXMC_AD12
	PD8	EXMC_AD13
	PD9	EXMC_AD14
	PD10	EXMC_AD15
	PD11	EXMC_A16
	PD12	EXMC_A17
	PD13	EXMC_A18
	PE3	EXMC_A19
	PE4	EXMC_A20

Function	Pin	Description
EXMC	PE5	EXMC_A21
	PE6	EXMC_A22
	PE2	EXMC_A23
	PD4	EXMC_NOE
	PD5	EXMC_NWE
	PD6	EXMC_NWAIT
	PD7	EXMC_NE1
	PE0	EXMC_NBL0
	PE1	EXMC_NBL1
	PB7	EXMC_NADV
I2C1	PB6	I2C1_SCL
	PB7	I2C1_SDA
SPI1	PA4	SPI-Flash _CS
	PA5	SPI1_SCK
	PA6	SPI1_MISO
	PA7	SPI1_MOSI
	PC12	SPI-Micro SD_CS
	PC5	SPI-Touch Panel_CS
USART1	PA9	USART1_TX
	PA10	USART1_RX
USART2	PD3	USART2_CTS (Remap)
	PD4	USART2_RTS (Remap)
	PD5	USART2_TX (Remap)
	PD6	USART2_RX (Remap)
USART3 - Smart Card	PB10	USART3_TX
	PB11	USART3_RX
	PB12	USART_CK
USART3 - IrDA	PC10	USART3_TX (Remap)
	PC11	USART3_RX (Remap)
USB	PA11	USBDM
	PA12	USBDP
	PD9	USBDP pull up pin
CAN	PD0	CANRX
	PD1	CANTX

3 Getting started

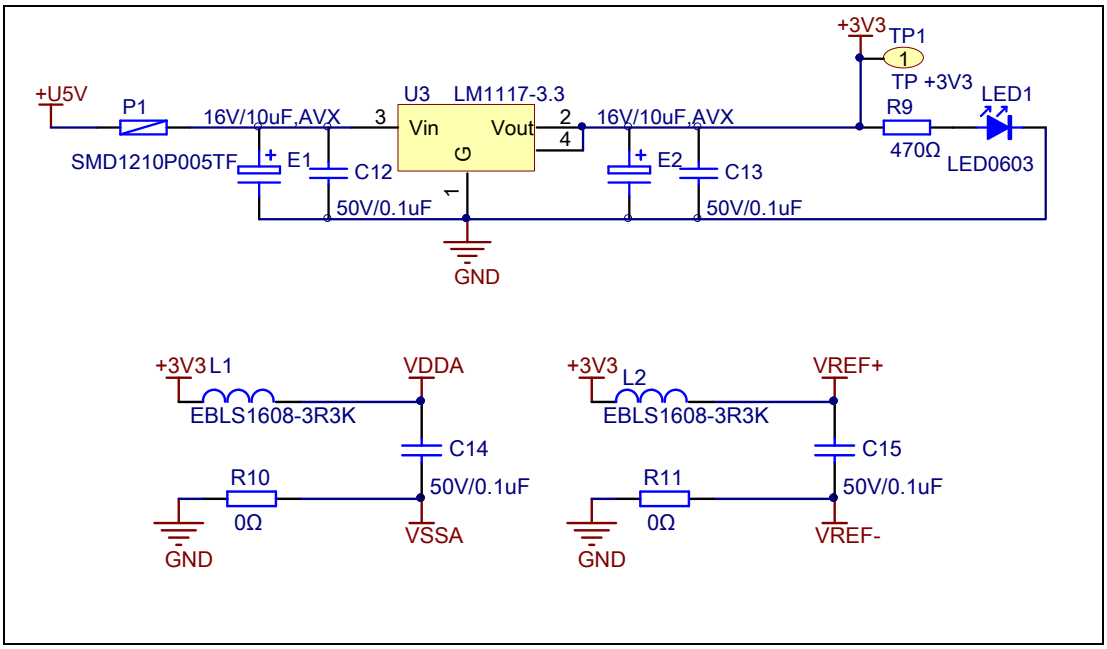
The evaluation board uses USB connecter to get power, and the hardware system power is +3.3V. A USB cable and a J-Link tool are necessary in order to down programs.

Select the right boot mode and then power on, the LED1 will turn on, which indicates that the power supply is ready.

4 Hardware layout overview

4.1 Power supply

Figure 1 Schematic diagram of power supply



4.2 Boot option

Figure 2. Schematic diagram of boot option

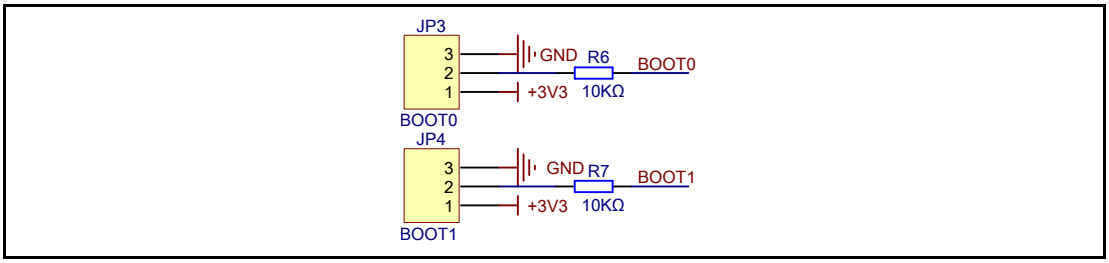
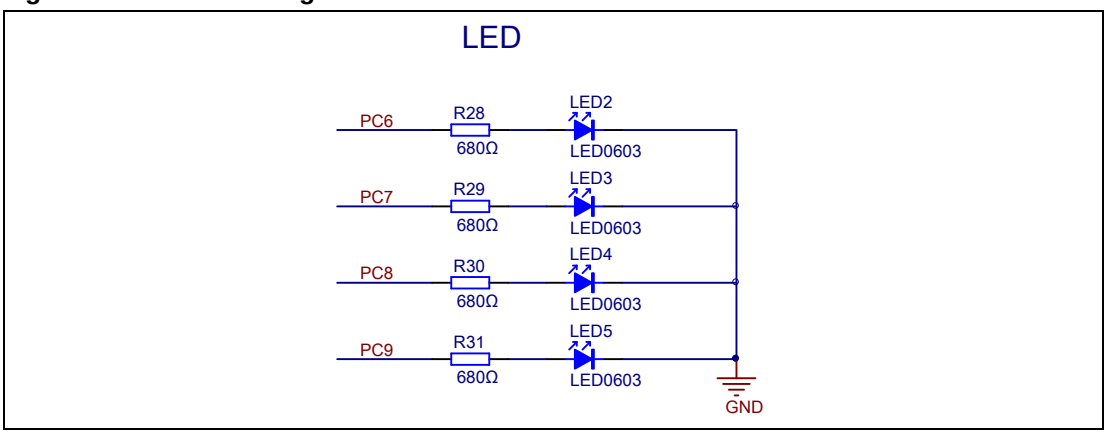


Table 2. Boot configuration

BOOT1	BOOT0	Boot Mode
Any	2-3	User memory
2-3	1-2	System memory
1-2	1-2	SRAM memory

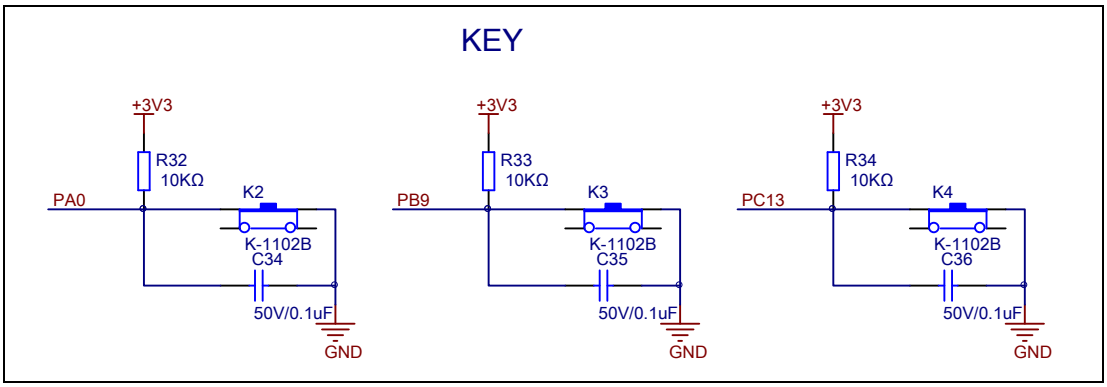
4.3 LED

Figure 3. Schematic diagram of LED function



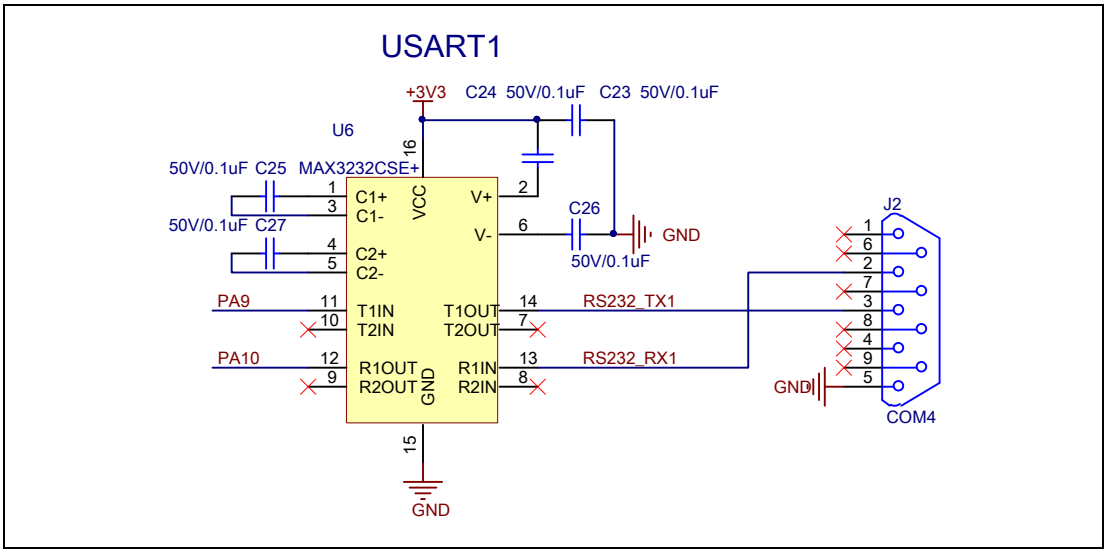
4.4 Key

Figure 4. Schematic diagram of Key function



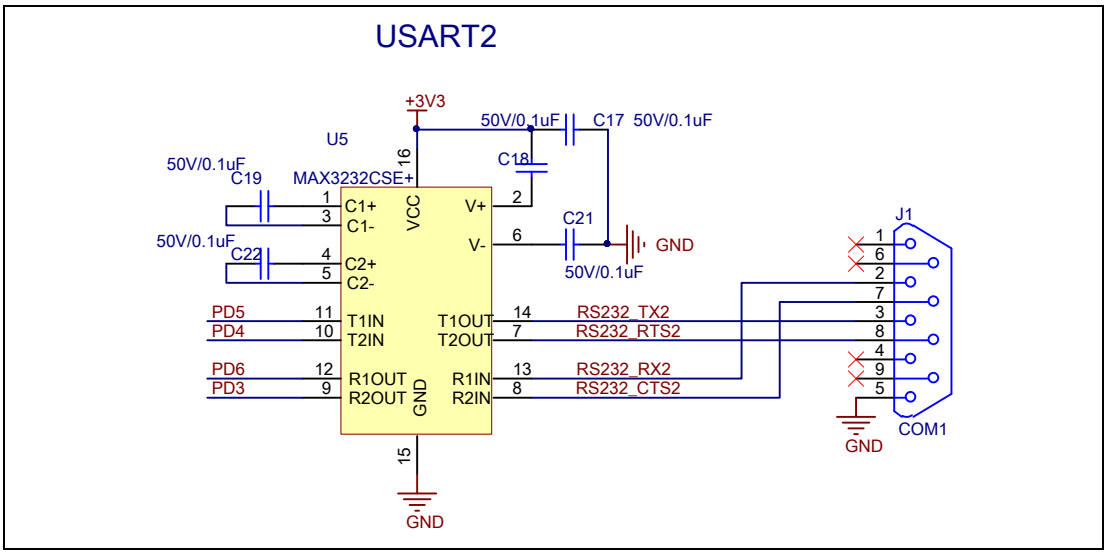
4.5 USART1

Figure 5. Schematic diagram of USART1 function



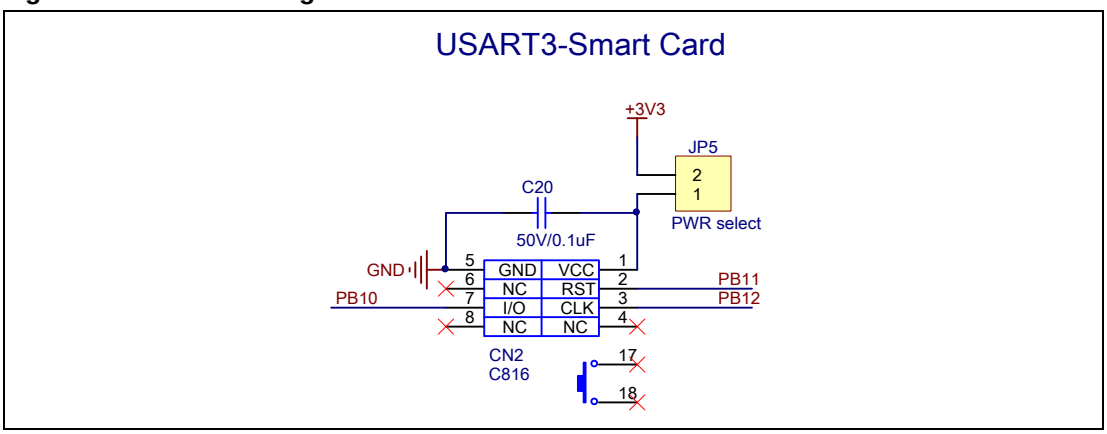
4.6 USART2

Figure 6. Schematic diagram of USART2 function



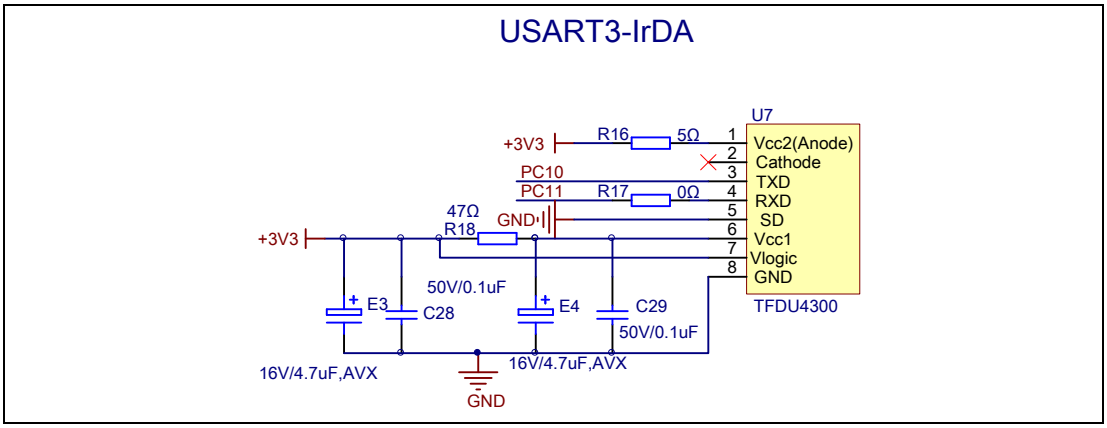
4.7 USART3 - Smart card

Figure 7. Schematic diagram of USART3 - Smart card function



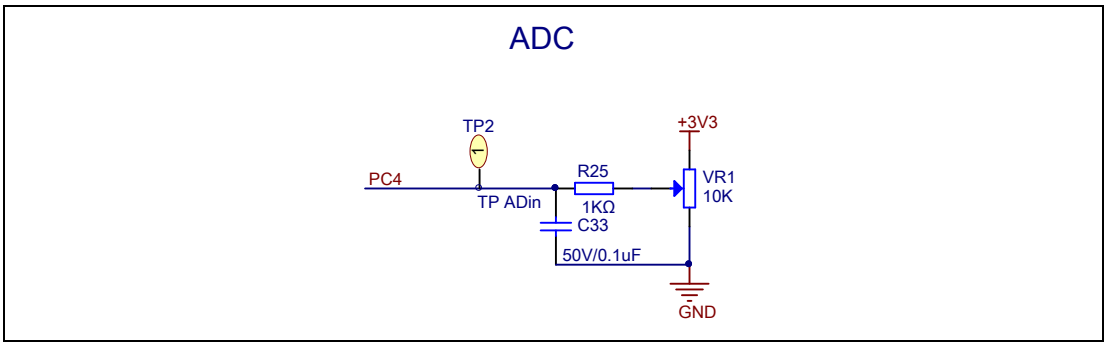
4.8 USART3 - Irda

Figure 8. Schematic diagram of USART3 - Irda function



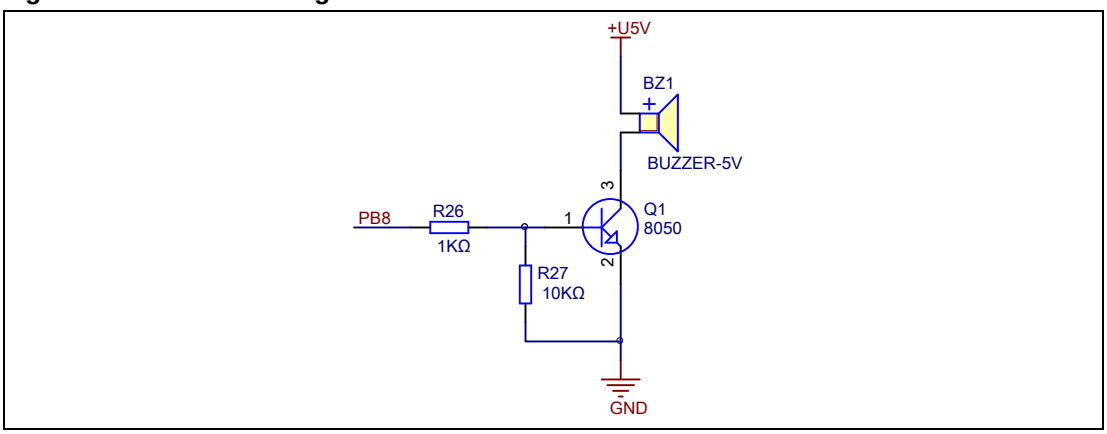
4.9 ADC

Figure 9. Schematic diagram of ADC function



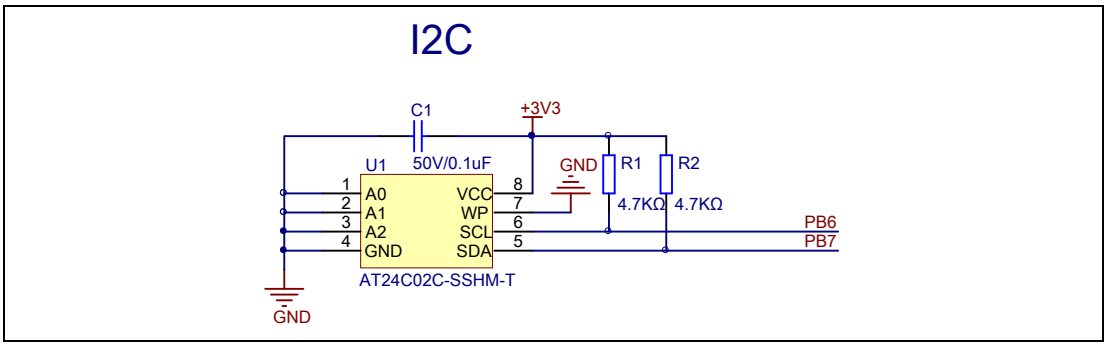
4.10 PWM

Figure 10. Schematic diagram of PWM function



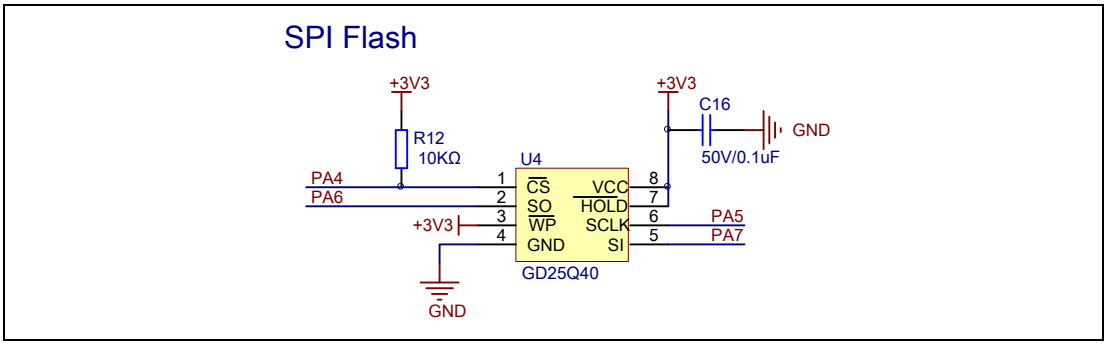
4.11 I2C

Figure 11. Schematic diagram of I2C function



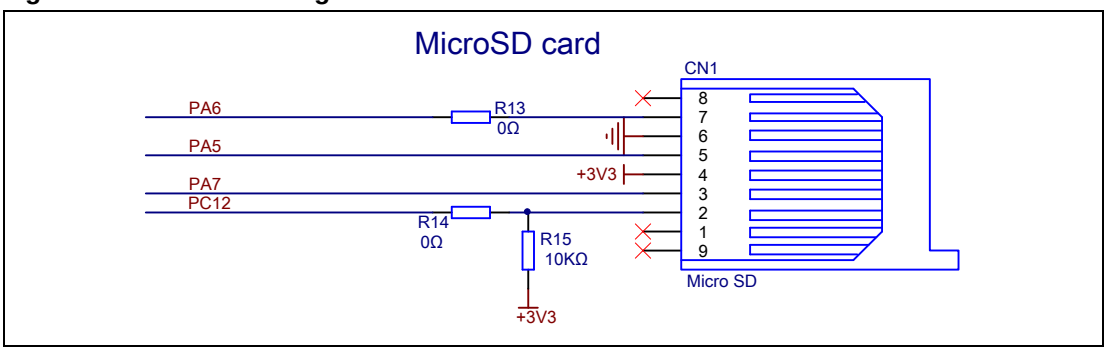
4.12 SPI - Serial Flash

Figure 12. Schematic diagram of SPI - Serial Flash function



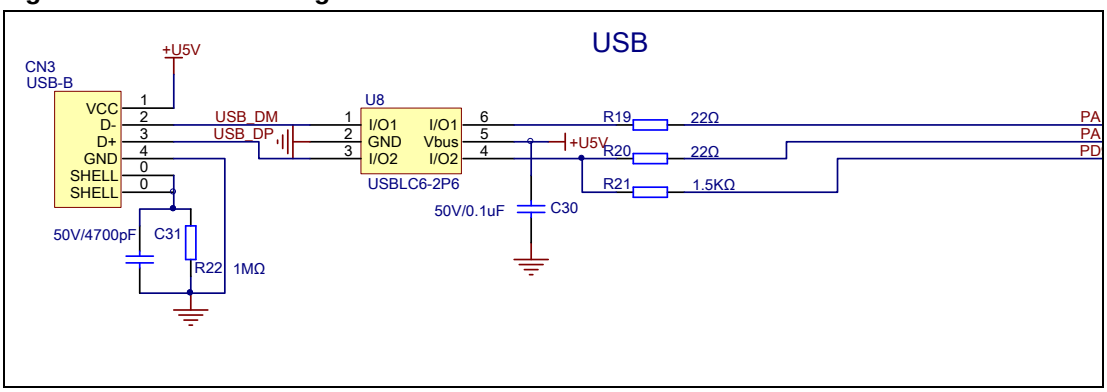
4.13 SPI - Micro SD Card

Figure 13. Schematic diagram of SPI - Micro SD Card function



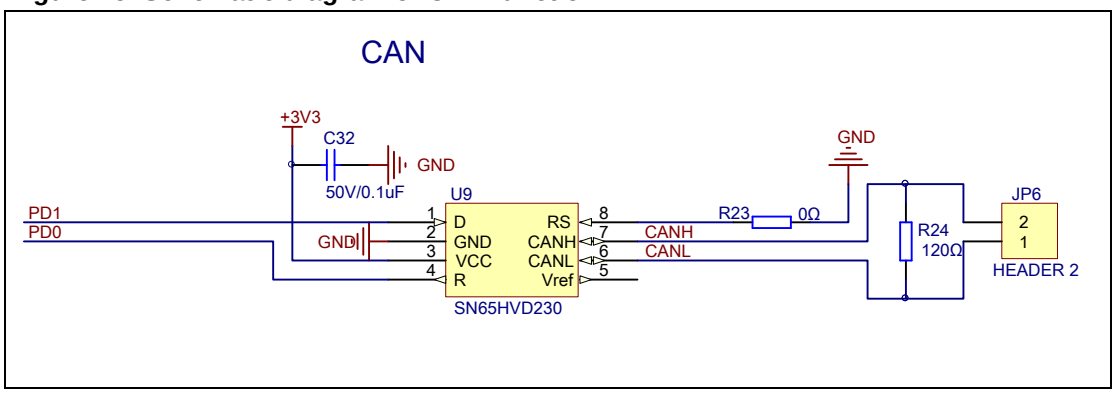
4.14 USB

Figure 14. Schematic diagram of USB function



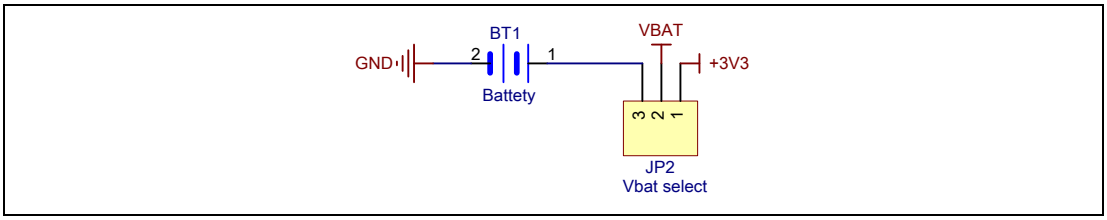
4.15 CAN

Figure 15. Schematic diagram of CAN function



4.16 RTC

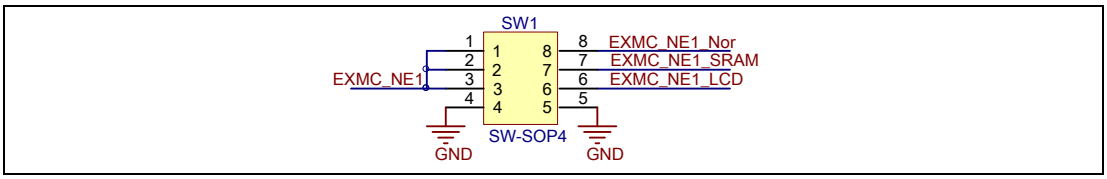
Figure 16. Schematic diagram of RTC function

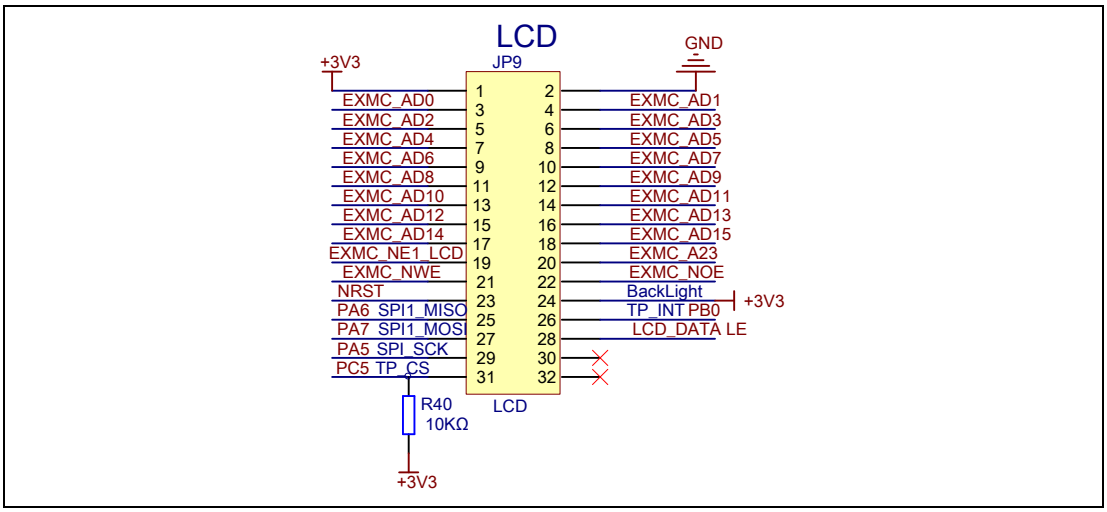


4.17 EXMC - LCD

GD32F103VBT6 supports EXMC function by EXMC_NE1. The evaluation board uses a multiplexer switch SW1 to extend EXMC_NE1 in order to support three kinds of memory type, such as NOR Flash, SRAM and LCD, but only one extended NE1 (EXMC_NE1_NOR, EXMC_NE1_SRAM, EXMC_NE1_LCD) can be used at any time.

Figure 17. Schematic diagram of EXMC - LCD function

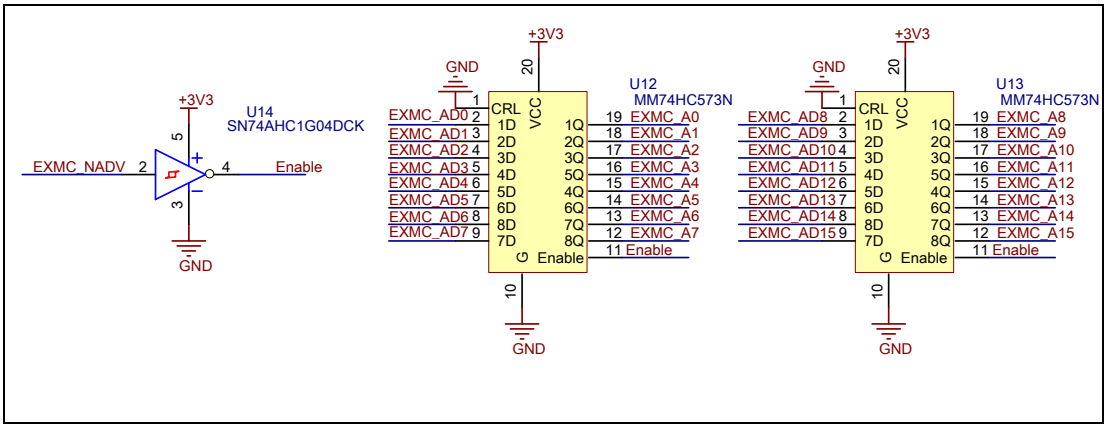


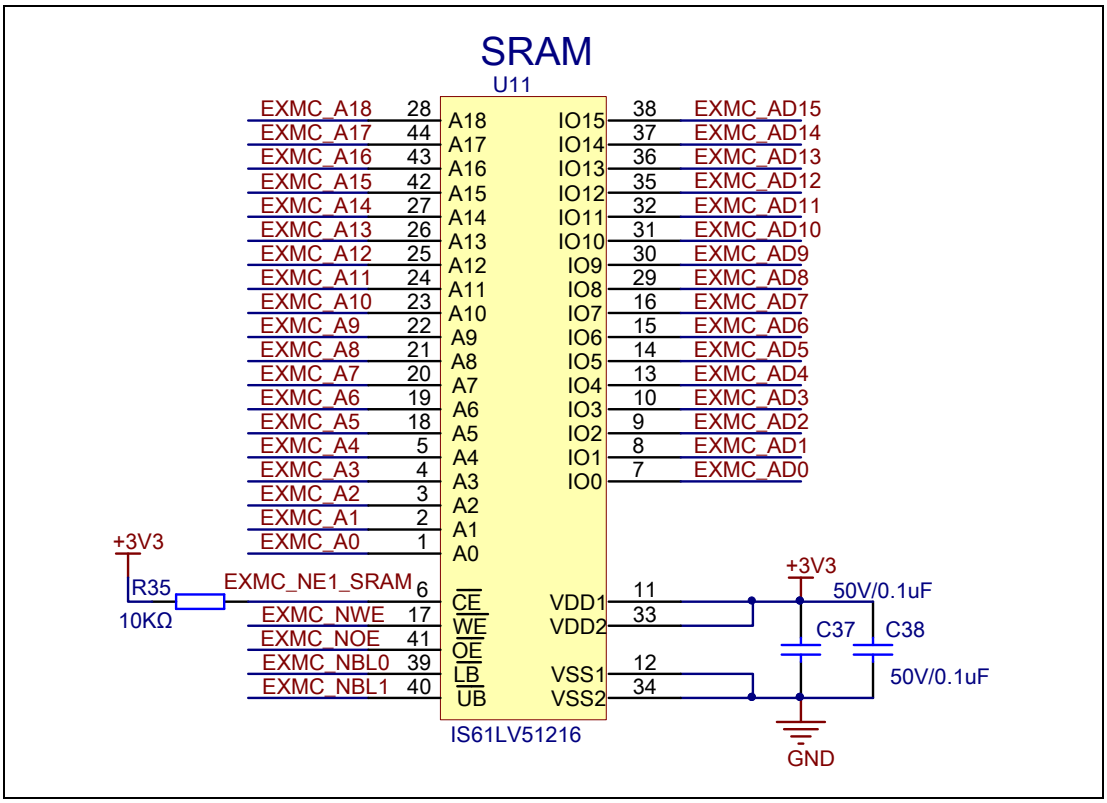


4.18 EXMC - SRAM

The EXMC of GD32F103VBT6 is multiplex, the SRAM and NOR-Flash have independent data lines and address lines. It uses address latch 74AHC573 to separate the address and data lines from multiplex EXMC bus.

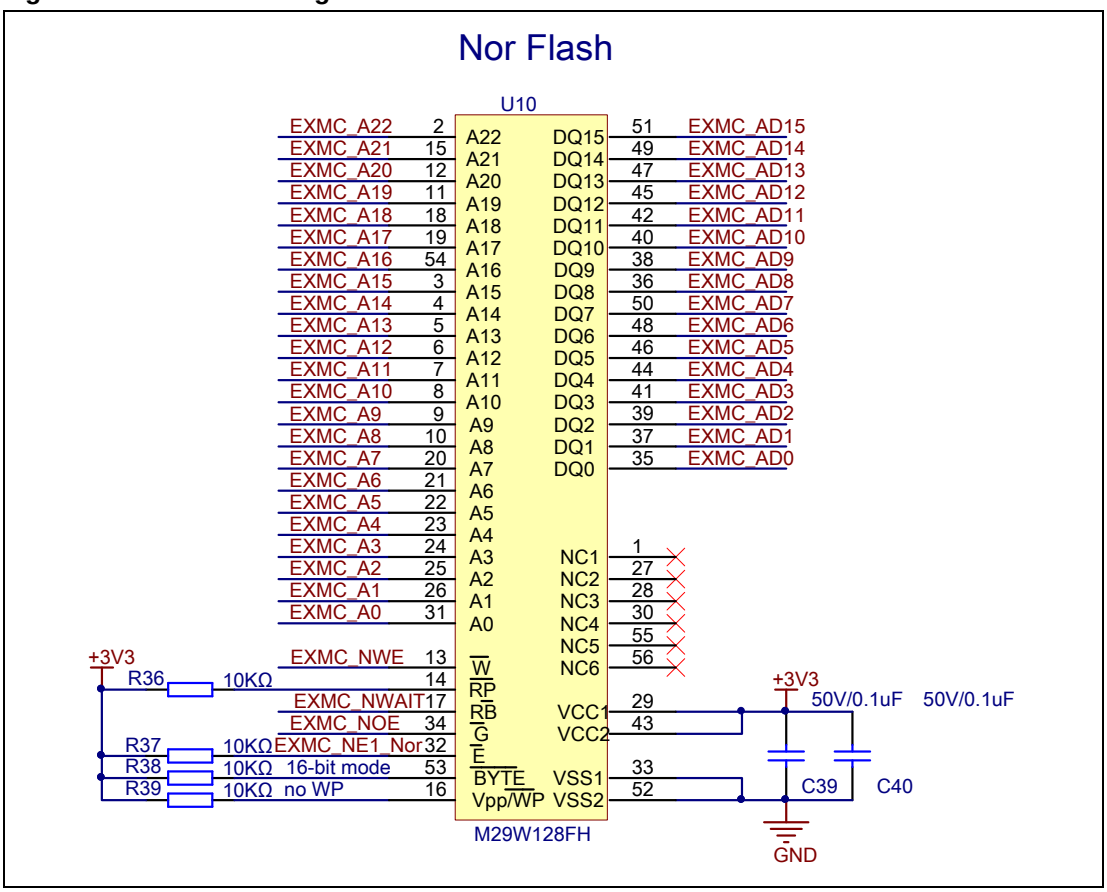
Figure 18. Schematic diagram of EXMC - SRAM function





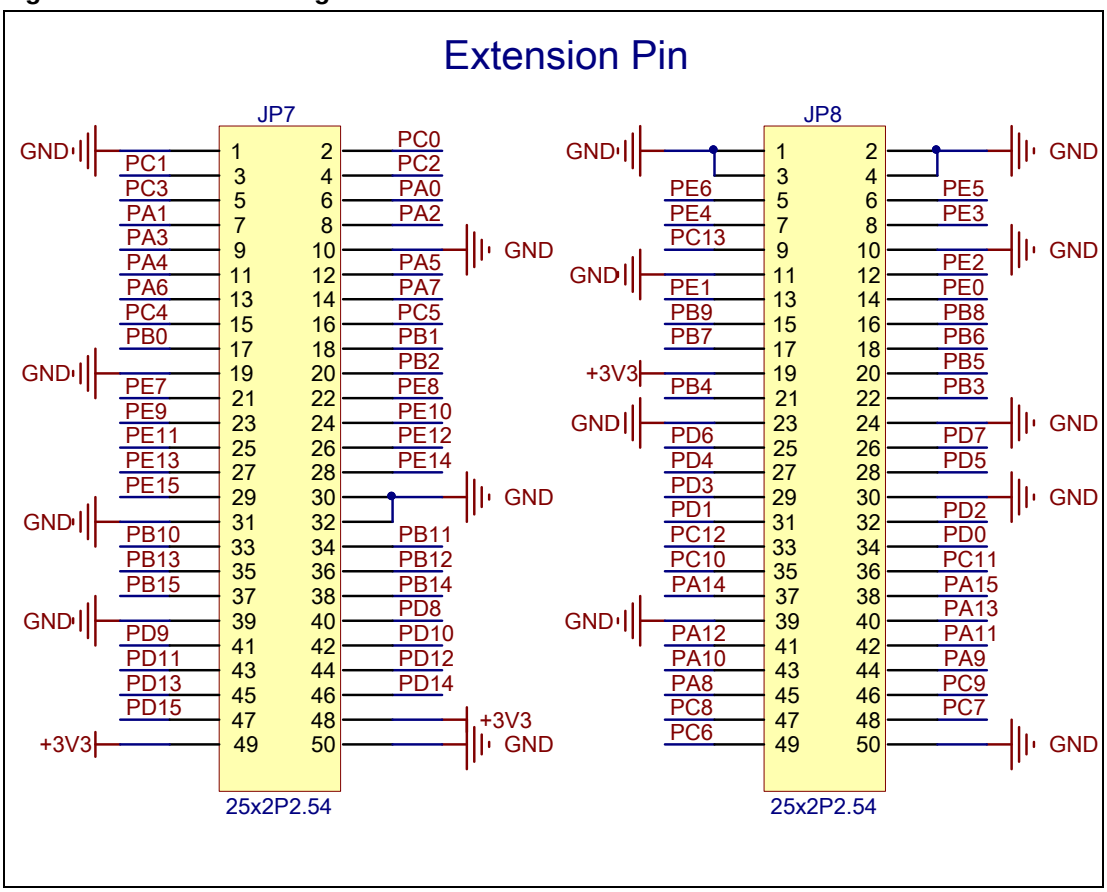
4.19 EXMC - NOR Flash

Figure 19. Schematic diagram of EXMC - NOR Flash function



4.20 Extension

Figure 20. Schematic diagram of Extension function



5 Revision history

Table 3. Revision history

Revision No.	Description	Date
1.0	Initial Release	Apr.10, 2013