FM582X

5.8GHz 毫米波雷达芯片

寄存器配置手册

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V3.0

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1、FM582X 寄存器读写介绍

FM582X 内部有 233 个字节的寄存器可配置，偏移地址 0x00~0xe8。分别用于发射射频功率，接收放大器增益，PLL 频率，内部各模块电压设置等参数配置。

FM582X 可以通过 I2C 总线与 MCU 进行交互。通信时，I2C Slave 地址为 0011010x(x=0 写，x=1 读)。最高可支持 400Kbit/S 的快速读写模式。

2、I2C 读写说明

图 1 是一个完整的 I2C 数据传输周期，包括起始条件，主机寻址从机，响应，数据传输停止条件等。

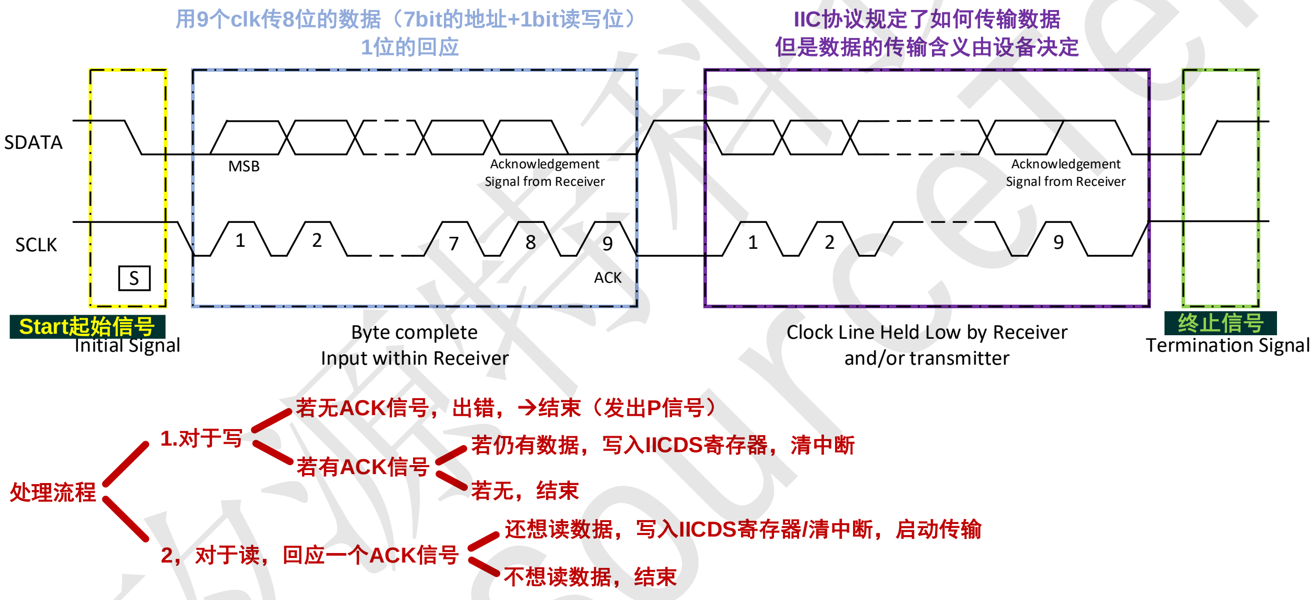

图 1 完整的数据传输

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3、寄存器配置说明

说明：调节TX发射频率

寄存器配置：

（1）5.72G 上下调节：

Reg.Address	Data		Function
Reg0a	0X84		
Reg0e	0X0C		默认值0X08 （0X08 High Frequency Band） 0X0C Low Frequency Band
Reg0c	0X21	0X27	Adjust the frequency(5.72G up and down)

（2）5.82G 上下调节：

Reg.Address	Data		Function
Reg0a	0X94		
Reg0e	0X08		默认值0X08 （0X08 High Frequency Band） 0X0C Low Frequency Band
Reg0c	0X21	0X27	Adjust the frequency(5.82G up and down)

说明：调节TX发射功率

寄存器配置：

Reg.Address	Data			Function
Reg04	0X2E		0X8E	Adjust the TX power 值越大 增益越小

注：示例：Reg04 的寄存器只能按照 2E\4E\8E 写入；

说明：调节RX接收增益

寄存器配置：

（1）射频增益调节：

Reg.Address	Data		Function
Reg12	0X40	0X5A	Bit4~1；0000～1111 值越大增益越大

MIXER 增益会放大直流信号成分，在增加增益时需要注意防范造成 mixer 输出直流饱和风险。测试方法：分别测量芯片 mixer_outp, mixer_outn 这两个 pin 脚的对地直流电压。这两个电压之差越小则越不容易饱和。若电压差值过大则表接近直流饱和，需要适当降低 mixer 增益。一般情况下， mixer_outp, mixer_outn 差值不超过 400mV。

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（2）内部 LPF 增益

接收增益的调整由滤波器来实现，其包含输入电阻和反馈电阻，增益由反馈电阻和输入电阻的比值绝定。增益以及电阻的配置如下表所示：

寄存器地址	Bit	名称	功能
REG15	BIT4~1	输入电阻	增益 0001~1101，3db/steb
REG17	BIT7~5	反馈电阻	增益 111~000，6db/steb

REG15 BIT4~1	输入电阻	REG17 BIT7~5	反馈电阻
1101	1k	111	20k
1100	1.4k	110	40k
1011	2k	101	80k
1010	2.9k	100	160k
1001	4.4k	011	320k
1000	6.3k	010	640k
0111	8.7k	001	1.28M
0110	12k	000	2.56M
0101	17.6k		
0100	25.4k		
0011	36.6k		
0010	51.8k		
0001	77.6k		
0000	108.2k		

计算公式：

$$A = \frac{\text{反馈电阻}}{\text{输入电阻}}$$

A	增益
2	6dB
4	12dB
8	18dB
16	24dB
32	30dB
64	36dB

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4、II2C 读写程序说明示例

```
Write_IIC_Command(0X34,0x00,0xFA);
Write_IIC_Command(0X34,0x01,0xEE);
Write_IIC_Command(0X34,0x02,0xE6);
Write_IIC_Command(0X34,0x03,0xDF);
Write_IIC_Command(0X34,0x04,0x4E);// 2E 4E 8E Change TX     Power
Write_IIC_Command(0X34,0x05,0x80);
Write_IIC_Command(0X34,0x06,0xDA);
Write_IIC_Command(0X34,0x07,0x40);
Write_IIC_Command(0X34,0x08,0x00);
Write_IIC_Command(0X34,0x09,0x00);
Write_IIC_Command(0X34,0x0a,0x84);//Change Frequency: 74  84  94
Write_IIC_Command(0X34,0x0b,0x69);
Write_IIC_Command(0X34,0x0c,0x23);//21~27 Micro Change Frequency some MHz?
Write_IIC_Command(0X34,0x0d,0xC2);//First C2
Write_IIC_Command(0X34,0x0e,0x08);
Write_IIC_Command(0X34,0x0f,0x95);//LNA 90 95
Write_IIC_Command(0X34,0x10,0xAB);
Write_IIC_Command(0X34,0x11,0x12);//
Write_IIC_Command(0X34,0x12,0x50);//48 50
Write_IIC_Command(0X34,0x13,0x00);//LPF_GAIN MAX 00
Write_IIC_Command(0X34,0x14,0x05);
Write_IIC_Command(0X34,0x15,0x00);
Write_IIC_Command(0X34,0x16,0x0A);
Write_IIC_Command(0X34,0x17,0x61);
Write_IIC_Command(0X34,0x18,0x02);
Write_IIC_Command(0X34,0x19,0x02);
Write_IIC_Command(0X34,0x1a,0x02);
Write_IIC_Command(0X34,0x1b,0x02);
Write_IIC_Command(0X34,0x1c,0x02);
Write_IIC_Command(0X34,0x1d,0x02);
Write_IIC_Command(0X34,0x1e,0x02);
Write_IIC_Command(0X34,0x1f,0x37);
Write_IIC_Command(0X34,0x20,0x15);
Write_IIC_Command(0X34,0x21,0x15);
Write_IIC_Command(0X34,0x22,0x15);
Write_IIC_Command(0X34,0x23,0x5A); //First 5A
Write_IIC_Command(0X34,0x24,0x09);
Write_IIC_Command(0X34,0x25,0xC4);
Write_IIC_Command(0X34,0x26,0x00);
Write_IIC_Command(0X34,0x27,0x02);
Write_IIC_Command(0X34,0x28,0x8B);
Write_IIC_Command(0X34,0x29,0xFE);
Write_IIC_Command(0X34,0x2a,0xC7);
Write_IIC_Command(0X34,0x2b,0x2F);
Write_IIC_Command(0X34,0x2c,0x00);
Write_IIC_Command(0X34,0x2d,0x6A);
Write_IIC_Command(0X34,0x2e,0x12);

Write_IIC_Command(0X34,0x23,0x00);//Second 00
EA = 1;
DelayMs(50);
EA = 0;
Write_IIC_Command(0X34,0x0d,0x82);// Second 82
```

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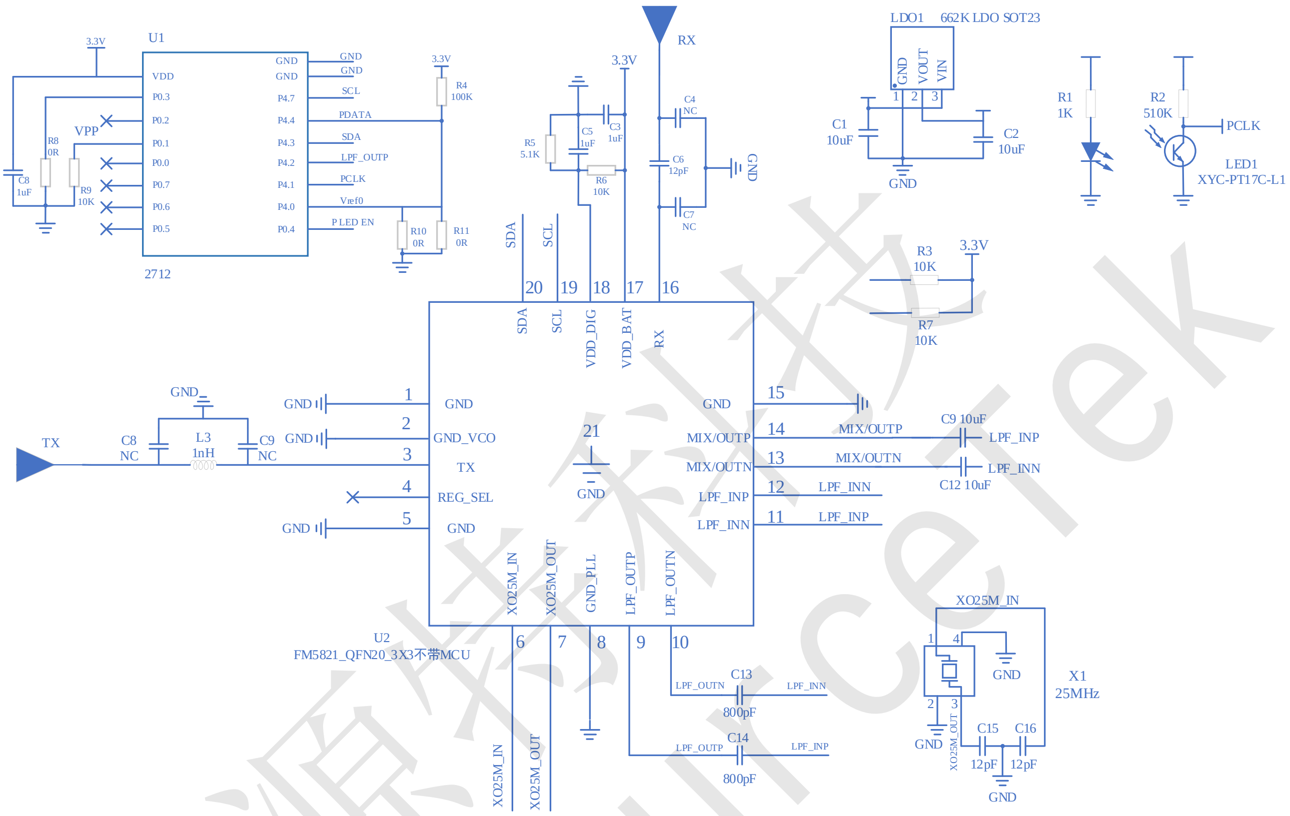
5、芯片应用原理图



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