Precautions on RFM75 Replacing RFM73

1) Bank1 SPI setting

The setting of RFM75 Bank1 SPI is same as RFM73.In order to have good performance, you can consider to set as following:

Bank1 **Address (Hex)**	250KHz	1MHz	2MHz
00	Reserved	Reserved	Reserved
01	Reserved	Reserved	Reserved
02	Reserved	Reserved	Reserved
03	Reserved	Reserved	Reserved
04	0xDB8A96F9	0x1B8296F9	0xDB8296F9
05	0xB60F0624	0xA60F0624	0xB60F0624
06	Reserved	Reserved	Reserved
07	Reserved	Reserved	Reserved
08	Reserved	Reserved	Reserved
09	Reserved	Reserved	Reserved
0A	Reserved	Reserved	Reserved
0B	Reserved	Reserved	Reserved
0C	0x00127300	0x00127300	0x00127300
0D	0x36B48000	0x36B48000	0x36B48000
0E	0x 412008048120CFF7FEFFFF	0x 412008048120CFF7FEFFFF	0x 412008048120CFF7FEFFFF

2) TX power setting

The TX power of RFM75 is different with RFM73.The setting as following:

Bank1.Reg4<29:27>	Bank0.Reg6<2:1>	TX Power(dBm)
7	3	4
0	3	-1
0	2	-7
2	1	-12
3	1	-12
0	1	-18
3	0	-18
0	0	-25
Others Value		-1

3) RSSI Threshold

RSSI threshold of RFM75 cannot be adjusted.

	250KHz	1MHz	2MHz
RSSI (dBm)	-84	-80	-67

4) Precautions for hardware

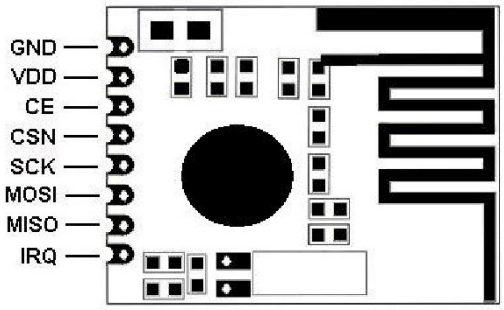
The Application Processing for 5V IO

The normal application of RFM75 IO is that the high level input same as the supply voltage of chip (1.9V ~ 3.6V).

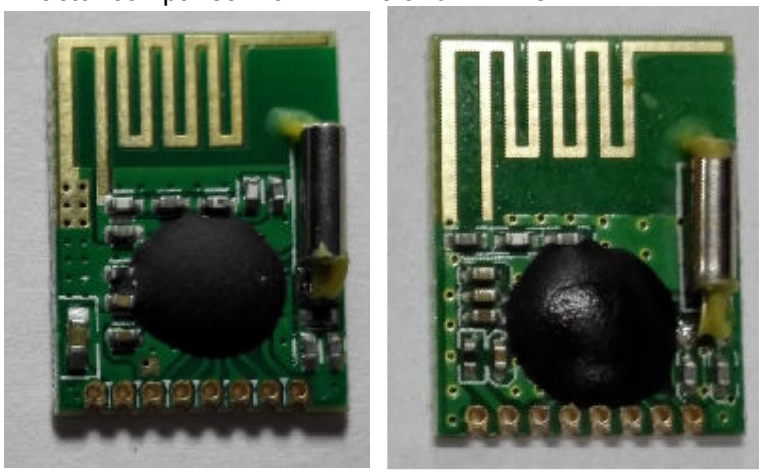
In some applications, the high level of IO is higher than the supply voltage of chip. For example, the voltage of chip is 3.3V, and the high level of IO is 5V. Then you need to connect a resistance with 2K Ohm respectively on SCK, CE, CSN, MOSI by series connection.

5) Form factor and package

a) RFM75 and RFM73 are pin-to-pin replacement. Their sizes are same.



b) The form factor comparison for RFM73 and RFM75.



RFM73-S **RFM75-S**

6) Parameter comparison for RFM73 and RFM75

a) Electrical Specifications of RFM73

Name	Parameter (Condition)	Min	Typical	Max	Unit	Comment
	Operating Condition					
VDD	Voltage	1.9	3.0	3.6	V	
TEMP	Temperature	-40	+27	+85	℃	
	Digital input Pin					
VIH	High level	0.7VDD		5.25	V	
VIL	Low level	VSS		0.3VDD	V	
	Digital output Pin					
VOH	High level (IOH=-0.25mA)	VDD- 0.3		VDD	V	
VOL	Low level(IOL=0.25mA)	0		0.3	V	
	Normal condition					
IVDD	Power Down current		2.5		uA	
IVDD	Standby-I current		50		uA	
IVDD	Standby-II current		330		uA	
	Normal RF condition					
FOP	Operating frequency	2400		2527	MHz	
FXTAL	Crystal frequency		16		MHz	
RFSK	Air data rate	250		2000	Kbps	
	Transmitter					
PRF	Output power	-40	0	3	dBm	
PBW	Modulation 20 dB bandwidth(2Mbps)		2.5		MHz	
PBW	Modulation 20 dB bandwidth (1Mbps)		1.3		MHz	
PBW	Modulation 20 dB bandwidth (250Kbps)		960		KHz	
PRF1	Out of band emission 2 MHz		-20		dBm	
PRF2	Out of band emission 4 MHz		-40		dBm	
IVDD	Current at -40 dBm output power		11		mA	
IVDD	Current at -30 dBm output power		11		mA	
IVDD	Current at -25 dBm output power		12		mA	
IVDD	Current at -10 dBm output power		13		mA	
IVDD	Current at -5 dBm output power		15		mA	
IVDD	Current at 0 dBm output power		17		mA	
IVDD	Current at 5 dBm output power		23		mA	
	Receiver					
IVDD	Current (2Mbps)		22		mA	
IVDD	Current (1Mbps)		22		mA	
IVDD	Current (250Kbps)		22		mA	
Max Input	1 E-3 BER		10		dBm	
RXSENS	1 E-3 BER sensitivity (2Mbps)		-87		dBm	High Sen mode
RXSENS	1 E-3 BER sensitivity (1Mbps)		-90		dBm	High Sen mode
RXSENS	1 E-3 BER sensitivity (250Kbps)		-97		dBm	High Sen mode
C/ICO	Co-channel C/I (2Mbps)		3		dB	
C/I1ST	ACS C/I 2MHz (2Mbps)		-5		dB	
C/I2ND	ACS C/I 4MHz (2Mbps)		-25		dB	
C/I3RD	ACS C/I 6MHz (2Mbps)		-25		dB	
C/ICO	Co-channel C/I (1Mbps)		3		dB	
C/I1ST	ACS C/I 1MHz (1Mbps)		4		dB	
C/I2ND	ACS C/I 2MHz (1Mbps)		-25		dB	
C/I3RD	ACS C/I 3MHz (1Mbps)		-20		dB	
C/ICO	Co-channel C/I (250Kbps)		1		dB	
C/I1ST	ACS C/I 1MHz (250Kbps)		-11		dB	
C/I2ND	ACS C/I 2MHz (250Kbps)		-15		dB	
C/I3RD	ACS C/I 3MHz (250Kbps)		-28		dB	

b) Electrical Specifications of RFM75

Name	Parameter (Condition)	Min	Typical	Max	Unit	Comment
	Operating Condition					
VDD	Voltage	1.9	3.0	3.6	V	
TEMP	Temperature	-40	+27	+85	℃	
	Digital input Pin					
VIH	High level	0.7VDD		VDD+0.7	V VIL	
	Low level	VSS		0.3VDD	V	
	Digital output Pin					
VOH	High level (IOH=-0.25mA)	VDD- 0.3		VDD	V VOL	
	Low level(IOL=0.25mA)	0		0.3	V	
	Normal condition					
IVDD	Power Down current		3		uA	
IVDD	Standby-I current		50		uA	
IVDD	Standby-II current		300		uA	
	Normal RF condition					
FOP	Operating frequency	2400		2527	MHz	
FXTAL	Crystal frequency		16		MHz	
RFSK	Air data rate	250		2000	Kbps	
	Transmitter					
PRF	Output power		4		dBm	
PBW	Modulation 20 dB bandwidth(2Mbps)		TBD		MHz	
PBW	Modulation 20 dB bandwidth (1Mbps)		TBD		MHz	
PBW	Modulation 20 dB bandwidth (250Kbps)		TBD		KHz	
IVDD	Current at -25 dBm output power		9.8		mA	
IVDD	Current at -18 dBm output power		10.2		mA	
IVDD	Current at -12 dBm output power		10.8		mA	
IVDD	Current at -7 dBm output power		11.6		mA	
IVDD	Current at -1 dBm output power		13.4		mA	
IVDD	Current at 4 dBm output power		18		mA	
	Receiver					
IVDD	Current (2Mbps)		16.5		mA	
IVDD	Current (1Mbps)		16		mA	
IVDD	Current (250Kbps)		16		mA	
Max Input	1 E-3 BER		10		dBm	
RXSENS	1 E-3 BER sensitivity (2Mbps)		-88		dBm	
RXSENS	1 E-3 BER sensitivity (1Mbps)		-91		dBm	
RXSENS	1 E-3 BER sensitivity (250Kbps)		96		dBm	

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