

## **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	250KHz	1MHz	2MHz
Address (Hex)			
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
80	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	-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

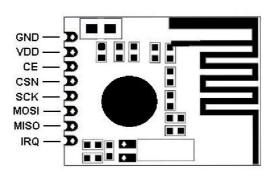
The normal application of RFM75 IO is that the high level input same as the supply voltage of chip  $(1.9V \sim 3.6V)$ .

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.
a)	Operating Condition₽	•				'
VDD43	Voltage₽	1.9₽	3.0₽	3.6₽	V₽	ت
TEMP₽	Temperature₽	-40₽	+27₽	+85₽	<b>©</b>	<sub>2</sub>
۵	Digital input Pin₽	•				
VIH₽	High level₽	0.7VDD₽	ت	5.25₽	V₽	ω.
VIL <sub>4</sub> 2	Low level₽	VSS₽	ت	0.3VDD₽	V₽	ı,
a)	Digital output Pin₽	1	-			
VOH <sub>€</sub>	High level (IOH=-0.25mA)₽	VDD- 0.3₽	ت	VDD₽	V₽	ت د
VOL₽	Low level(IOL=0.25mA)₽	04□	ته	0.3₽	V₽	e)
ت	Normal condition₽	•				
IVDD₽	Power Down current₽	ت .	2.5₽	ت	uA₽	ت د
IVDD₽	Standby-I current	ب	50₽	υ υ	uA₽	٥
IVDD€	Standby-II current₽		330₽	٥	uA₽	a a
47	Normal RF condition	P-		ν-	*****	F
FOP₽	Operating frequency	2400₽	-7	2527₽	MHz₽	-7
FXTAL₽	Crystal frequency@	-1	16₽	41	MHz₽	47
RFSK₽	Air data rate	250€		2000₽	Kbps₽	-
	Transmitter₽		H-			P.
PRF₽	Output power	-40₽	0€	3₽	dBm₽	
PBW₽	Modulation 20 dB bandwidth(2Mbps)↔	-	2.5₽	_	MHz₽	-
PBW₽	Modulation 20 dB bandwidth (1Mbps)	<u>ب</u>	1.3₽	<u>ب</u>	MHz43	-
PBW₽	Modulation 20 dB bandwidth (250Kbps)	P	960₽	٩	KHz₽	P
PRF1₽	Out of band emission 2 MHz	₽	-20€	ته	dBm₽	t <sub>2</sub>
PRF2₽	Out of band emission 4 MHz	₽ <sup>2</sup>	-40₽	ته	dBm₽	ت
IVDD@	Current at -40 dBm output power	₽	114	ته	mA-	t <sub>2</sub>
IVDD₽	Current at -40 dBm output power	₽	114	٦	mA₽	₽
IVDD₽	Current at -25 dBm output power	P	12€	ته	300000	₽ <sup>3</sup>
IVDD₽	Current at -10 dBm output power  Output pow	47	130	ته	mA₁	ĘJ.
IVDD₽	Current at -10 dBm output power	ę.	15₽	ته	mA₽	ĘJ.
IVDD₽		٥	17₽	تي	mA₁	T <sub>2</sub>
IVDD₽	Current at 0 dBm output power₄	ę.	23₽	ت	mA₽	t)
ועטטי	Current at 5 dBm output power₽	P	23€	ته	mA₽	ته
ę.	Receiver					
IVDD₽	Current (2Mbps)₽	ته	22₽	ته	mA₁□	ته
IVDD₽	Current (1Mbps)↔	ته	22₽	ته	mA₊□	ته
IVDD₽	Current (250Kbps)₽	ته	22₽	ته	mA₽	the Cartesian
Max Input₄	1 E-3 BER₽	ت	10₽	ته	dBm₽	ته
RXSENS₽	1 E-3 BER sensitivity (2Mbps) <sub>€</sub> <sup>3</sup>	ته	-87∻	ته	dBm₽	High <u>Sen</u> mode∂
RXSENS₽	1 E-3 BER sensitivity (1Mbps)√	ته	-90₽	ته	dBm₽	High Sen mode₽
RXSENS₽	1 E-3 BER sensitivity (250Kbps)√	ته	-97₽	ته	dBm₽	High Sen mode₽
C/ICO€ <sup>3</sup>	Co-channel C/I (2Mbps)	ته	3₽	ته	dB↔	ته
C/I1ST <sub>4</sub> 2	ACS C/I 2MHz (2Mbps)+2	ت	-5↔	ته	dB₽	ت
C/I2ND₽	ACS C/I 4MHz (2Mbps)+2	ته	-25₽	ę.	dB₽	42
C/I3RD42	ACS C/I 6MHz (2Mbps)+2	د.	-25₽	ب	dB₽	42
C/ICO₽	Co-channel C/I (1Mbps)€	ته	3₽	ت	dB↔	ت
C/I1ST	ACS C/I 1MHz (1Mbps)	ت	4₽	ته	dB↔	ت
C/I2ND₽	ACS C/I 2MHz (1Mbps)₽	ته	-25₽	ته	dB⊎	t <sub>2</sub>
C/I3RD₽	ACS C/I 3MHz (1Mbps)	ته	-20₽	ته	dB↔	ت
C/ICO₽	Co-channel C/I (250Kbps)₽	ته	1₽	ت	dB₽	ب
	ACS C/I 1MHz (250Kbps)	ب	-11₽	ت. ت	dB₽	تيا
C/I1ST₽		P		r -	+	r
C/I1S1# C/I2ND#	ACS C/I 2MHz (250Kbps)₽	ت ا	-15₽	ت	dB⊎	ت ا



#### b) Electrical Specifications of RFM75

Name	Parameter (Condition)	Min	Typical	Max	Unit	<b>Comment</b> <sub>←</sub>	
	Operating Condition	•		•			
VDD	Voltage	1.9	3.0	3.6	V		
TEMP	Temperature	-40	+27	+85	<b>°C</b> ⊷		
	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 ي	V₊		
	Normal condition   ✓						
IVDD	Power Down current		3		uA.		
IVDD	Standby-I current		50	Ą	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↓		J				
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)	4	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	1	13.4		mA₊		
IVDD	Current at 4 dBm output power	+	18		mA		
	Receiver				*****		
IVDD	Current (2Mbps)	Τ	16.5	1	mA ↔		
IVDD	Current (1Mbps)	+	16		mA₊		
IVDD	Current (250Kbps)	<u> </u>	16		mA₄		
	i	<del> </del>	1	1	1		
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		ldBm₁∟l		

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