Common Problems and Solutions of EMMC ISP Function

EMMC ISP is that reading and writing EMMC chip by flying line, communicate through connecting the CMD, CLK, D0 and GND. Because the power consumption varies from board to board, it is recommended that the power supply VCC be provided b the original board, and the VCC and VCCQ may not be connected in the case of power supply to the original board.

The relevant options for EMMC flying lines are:

Enter only printing		OK
emmc		UN
Manufacturers	Partnumber	
ALL	EMMC_AUTO	
GENEREAL MODE	EMMC_AUTO_1BIT	1
KINGSTON SOLUTIONS	EMMC_AUTO_4BIT	
KINGSTON TECHN	EMMC_AUTO_ISP	
MSTAR	EMMC_AUTO_ISP_BOOT_MST	
SANDISK	EMMC AUTO ISP BOOT MTK	
	EMMC ISP MST UART ON	
	EMMC04G-M627-X01U 1BIT@EBG4	(A) iFiz浸

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Partnumber
THGBMBG5D1KBAIL_1BIT@WFBGA153
THGBMBG5D1KBAIL_4BIT@WFBGA153
THGBMBG5D1KBAIL 8BIT@WEBGA153
THGBMBG5D1KBAIL ISP
THGBMBG5DTKBAIT_TBIT@WFBGAT53
THGBMBG5D1KBAIT_4BIT@WFBGA153
THGBMBG5D1KBAIT_8BIT@WFBGA153

EMMC_AUTO_ISP : read and write the whole piece or by setting partition; EMMC_AUTO_ISP_BOOT_MST : write the bootstrap for MST scheme single EMMC EMMC_AUTO_ISP_BOOT_MTK : write the bootstrap for MST scheme single EMMC EMMC_ISP_MST_UART_ON : open the serial port of the MST scheme single EMMC, and you can open most of the UART BUS OFF ;

THGBMBG5D1KBAIL_ISP : this is for a specific model when read and write by flying line, **while EMMC_AUTO_ISP is for all EMMC**, thus you don' t need to distinguish the chip models.

To read and write data from the EMMC normally through the flying line, the main thing to do is to handle the following issues:

1. ISP line length: the official color line, the long homemade wire will not be able to identify the chip, then error in reading and writing, etc.

RT809H 编程器 ISP 端口定义及彩线线序



上排对应	VCCQ	VCC	TXD(SCL)	RXD(SDA)	GND
颜色线	红色	黄色	蓝色	灰色	黑色
下排对应	暂未定义	暂未定义	D0	СМД	CLK
颜色线	棕色	橙色	绿色	紫色	白色



Upper row correspondence	VCCQ	VCC	TXD(SCL)	RXD(SDA)	GND
Line corlor	Red	Yellow	Blue	Gray	Black
lower row correspondence	Undefined	Undefined	D0	CMD	CLK
Line corlor	Brown	Orange	Green	Purple	Wine

2. The master chip needs to stop working:

(1) Short connect the crystal oscillator of the master chip, and then connect to the ground; Note, there are many large chips on some main board, do not short connect the wrong crystal oscillator, newcomers are easy to invade.

(2) For some special master chip, it may disconnect their standby power supply.

3. Find the flying line pin point correctly: For example, D0 and CMD of the following figure are supplied with the VCCQ through a 10K resistor. On the circuit diagram, I believe most people don't get it wrong, they all know where to connect. But it's very likely that the wire is connected to the power supply when they actually operate, Because it's the two ends of a resistance, **and it's easy to make mistakes here.**



In the above pitcture, the green arrow means correct, while the red arrow means worng.

4. Power supply for the board: Check if the EMMC power supply still exists when the master chip is not operational, 3.3V and 1.8V for EMMC5.0 version or later(in HS400 mode), the lower version is available at 3.3V. After the flying line is finished, do not forget to power on the board before you start reading and writing.



5. VCCQ voltage settings: IO power supply, divided into 3.3 V and 1.8 V, and then click OK.



6. Interference problem: if it is not convenient to eliminate the interference, it is recommended to use the BGA off-line adapter.

(1) Master chip: under this situation, disconnecting the resistance connected to the clk,cmd,d0; if there is no resistance connected, please also cut off the printed wire;

					断开,	取	下电阻	
NF	CLK	R809		22	2	11		101
NF	CMD	R811		0		->>>	EMMC_CLK	[2]
NF	RSTZ	R812		0	le contra de la co	\rightarrow	ENMC DST7	[2]
NF	DO	R813	VVV	0	3	\gg	EMMC DO	[4]
NF_	D1	R814		0	1	\rightarrow	EMMC D1	[4]
NF	D2	R815		0	1	\rightarrow	EMMC D2	[2]
NF	D3	R816		0	6	\rightarrow	EMMC D3	[2]
NF	D4	R817		0		\rightarrow	EMMC D4	[2]
NF	D5	R818		0		\gg	EMMC DE	[2]
NF	D6	R819		0	1	\gg	EMMC D6	[2]
NF	D7	R820		0	(\gg	EMMC_D7	[2]
EMM	IC芯片端				主控芯片	十端	2	
NF	DQS	R844		0	EMMC_DQS		EMMC_DQS	[2]
		R843	-~~1	0K	NF_DQS	5		
	17							心 iFix爱修网

(2) The external interference, please click Does RT809H Have the Weak Antijamming

Capability ?

Common phenomena:

Example 1:the customer needs to open the serial port, and the corresponding ID of the

chip has been identified, Errors in writing.

11 31 Open	ALL EMMC_AUTO_4BIT ALL EMMC_AUTO_ISP	~
写入 <u>W</u> rite	KINGSTON SOLUTIONS EMMC_AUTO_ISP_BOOT_MST KINGSTON TECHN EMMC_AUTO_ISP_BOOT_MTK	Rona a
校路 <u>Verify</u>	MSTAR EMMC_ISP_MST_UART_ON EMMC04G-M627-X01U_1BIT@FBGA153 EMMC04G-M627-X01U_4BIT@FBGA153	The second
精致 Erasa	EMMC04G-M627-X0111 8RIT@ERG4153	j
TER Blank	038: 读取错误,操作已终止。 039: 点"读取"后会先弹出"保存"对话框,点"写入"后会先弹出"打开"对话框。	2
设置(<u>N</u>)	041: 正在下载器件编程算法 042: 管注重新研究	-
取消 <u>C</u> ancel	043	and a second
RT809H 编程	046: eMMC CID: 110100303034474530022346EC9112 047: eMMC CSD: D05E00320F5903FFFFFFFFF7924000 048: Chip ID:00010011.Chip Name:004GE0 049: Chip Size: User=3776MB.Boot1=Boot2=2048KB.RPMB=512KB 050: 开始写入芯片 051: CRC error @ 0xFFFFFE00 052: CRL error @ 0xFFFFFE00	
	iFix爱修网	

Reason analysis: the interference caused by the main control chip; the chip problem;

Solving method: remind the customers to cut off all connections between the flying line

and the main chip, then it writes normally.

Originally, the customer only disconnect the CLK which is connected the the master chip,

and then disconnected the CMD and D0, then the problem was resolved.

Example 2: after the flying lines are connected, power on the mainboard, select EMMC_AUTO_ISP , then click Read, and the following phenomenon: **the chip is not recognized**

读取 Read		输入芯片印字	历史记录	
		EMMC_AUTO_ISP	•	确定 OK
保存 <u>S</u> ave		厂商	型号	S
打开 <u>O</u> pen			EMMC_AUTO	*
写入 <u>W</u> rite		KINGSTON SOLUTIONS KINGSTON TECHN	EMMC_AUTO_4BIT EMMC_AUTO_ISP	
校验 ⊻erify		SANDISK	EMMC_AUTO_ISP_BOOT_MS EMMC_AUTO_ISP_BOOT_MT EMMC_ISP_MST_UART_ON	ГК
擦除 <u>E</u> rase			EMMC04G-M627-X0111 1BIT	@FRGA153
查空 <u>B</u> lank		001: 序列号 : 20170821093857	-058255 ,PCB V1.80,Boot V1.00	
				L'httare
设置(N)		002. 〈- "读取"后会先弹出"保存"对 004. 当前所选: EMMC_AUTO_I 005. 您已选择GENEREAL MODI	-OK	, 话框。 1厂商的通用算法。
设置(N) 取消 <u>C</u> ancel		002. 〈 "读取"后会先弹出"保存"对 004: 当前所选: EMMC_AUTO_I 005: 您已选择GENEREAL MODI 006: http://www.ifix.net.cn/thread 007: 正在下载器件编程算法 008: 算法更新成功。	-OK]话框。 1厂商的通用算法。
设置(N) 取消 <u>C</u> ancel		002: 〈 "读取"后会先弹出"保存"对 004: 当前所选: EMMC_AUTO_I 005: 您已选择GENEREAL MODI 006: http://www.ifix.net.cn/thread 007: 正在下载器件编程算法 008: 算法更新成功。 009: > 010: VCCIO: 3.3V 011: eMMC OCR: 0000 012: eMMC CID: 00000000000	-OK]话框。 1厂商的通用算法。
设置(N) 取消 <u>C</u> ancel vcco vcc ^{xx0} ^{xx0} _{sth}	Pint	002: 〈=`读取"后会先弹出"保存"对 004: 当前所选: EMMC_AUTO_I 005: 您已选择GENEREAL MODI 006: http://www.ifix.net.cn/thread 007: 正在下载器件编程算法 008: 算法更新成功。 009: > 010: VCCIO: 3.3V 011: eMMC OCR: 0000 012: eMMC CID: 0000000000 013: eMMC CSD: 0000000000	-OK]话框。 1丁商的通用算法。
设置(N) 取消 <u>Cancel</u> vcca vcc ¹⁵⁰ issto vcca vcc c c c c c c c c c c		002: 点"读取"后会先弹出"保存"对 004: 当前所选: EMMC_AUTO_I 005: 您已选择GENEREAL MODI 006: http://www.ifix.net.cn/thread 007: 正在下载器件编程算法 008: 算法更新成功。 009: >	-OK	话框。 (厂商的通用算法。 :

Possible cause: the board is not electrified, the point of the flying line is not accurate,VCCQ voltage set wrongly,or the main control chip is interfered.

Solving method: if you forget to power up, turn on the power supply; to find the right point and then fly the line; VCCIQ voltage, please set on the left side of the software interface, this voltage is 3.3V and 1.8V, which cut off the connection between cmd, clk d0 of emmc end and the master chip, and short connect the crystal oscillator to ground.

Example 3: Error reporting after reading xx%



Possible cause: master chip interference; external interference; chip problem.

Solving method: cut off the connection between cmd clk d0 of EMMC end and the main chip, and short connect the crystal oscillator to ground; if it is the chip problem, replace it.

Pay attention to distinguish between these options, which **write bootstrap through the serial port**, the serial port is RX, TX, that is, the port that can be written through VGA, HDMI, UART, DEBUG, RX TX, RXD TXD and other connections.

MSTAR_EMMC_MBOOT #ISP

MSD6A338_EMMC_MBOOT #ISP

MSD6A628_EMMC_MBOOT #ISP

MSD6A638_EMMC_MBOOT #ISP

MSD6A828_EMMC_MBOOT #ISP

MSD6A918_EMMC_MBOOT #ISP

MSD6A928_EMMC_MBOOT #ISP

The features of these options are described in detail in this later article A Detailed Explanation of the New Functions of RT809H