FS26XX OTP Instruction

I. Instructions

The FS26 series chip is NXP's new generation of functionally safe SBC products and can be used in FS26 according to customer requirements

Set some parameters of the chip on the sample: One Time Program (OTP). This article mainly introduces the use of FS26 Socket

Develop board to realize the operation flow of burning OTP configuration file on FS26 empty sample.

2:Hardware and software equipment:

- (1) 12V power supply (current capacity > 0.5A)
- (2) FS26 Socket Development Board (Model: KITFS26SKTEVM)

Order information link: : https://www.nxp.com/design/development-boards/analog-toolbox/fs26-safety_sbc-programming-socket-board:KITFS26SKTEVM

Schematic and PCB layout materials download link : https://www.nxp.com/design/development-boards/analog□toolbox/fs26-safety-sbcprogramming-socket-board:KITFS26SKTEVM

(3) PC, install FS26 GUI software (software version 3.1.342 or later)

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Sign Out	PRODUCT FS26: Safety System Basis Chip (SBC) with Low Power F Functional Safety System Basis Chips	Fit for ASIL D		() files

(4) USB cable (USB Mini-B)



3. Preparation before OTP burning

(1) Check whether the default Jumper Settings of the EVB board are correct, with special attention

J12: 3-4 J13: 1-2 J22: 1-2 SW6: OFF SW7: OFF



(2) Hardware connection



1:The 12V power supply for the FS26 development board comes from the connector J1, or the Banana Head J2. SW1 switch is used to select the 12V power supply for FS26 coming from J1 or J2.

2:Connect the KL25 and PC on the FS26 development board with USB cable.



(3) 12V power + FS26 EVB + computer is connected well, pay attention to the 12V is not powered on first.



(4) Double-click the GUI file of FS26, select the version of FS26-C1, and click OK. After opening, the interface is as follows:

				M NDG	GUI (DEV_build) - FS26-	C1 - 3.1.342		
NXP GUI	(DEV_build) Kit Selection -	3.1.342	×	File V	26 Start Device ID:		Poling SPI Freq (KHz): 600	
Select the	kit,on board device(s), ta	get MCU ar	d USB interfac	ce 🔊	System Configuration	Switching Regulators LDO Re	egulators Voltage Monitorin	g System Safety Configuration OTP I
Kit and Devi	ces			(000)		lock Diagram		System Configuration
* KITPF710	0			· 0	FS26-	D	VSUP_UVTH_OTP	4.8 V/4.3 V
PF71	00	3.1.231	2021/9/21	0000		I	WK1DF5_D15_OTP	DFS Exit on Wake1 Event En
▼ KITFS26				0	VIST	B 5.00 V	RETRY_DIS_OTP	Auto-retry Enabled
FS26		3.1.218	2021/7/22	(1)	VPRE	3.70 V	RETRY_MODE_OTP	Limited retry
FS26	-B0	3.1.238	2021/10/6		La contra	TT - 0.60 V	RETRY_MSK_OTP	200 ms
FS26	-C0	3.1.300	2022/6/21		- NOR	224	CLK_FREQ_OTP	18 MHz
FS26		3.1.342			LDO1	3.3 V	BOS_IN_OTP	Force VBOS_IN = VSUP
* KITFS560	00			- 0	LDO2	→ 3.3 V	VBST_CLK_SEL_OTP	450 kHz
A kit for NKP P	MIC evaluation			8000	7861	VREF		
Advanced S	ettings			1111	VREF	3.3 V		
Feature Set	SPI							
Target MCU	FRDM-KL25Z							
USB Interface	usb-hid					1/O Configuration		Sequence
Application	Mode				GPI01STAGE_OTP	GPIO1 configured as an I	nput = 00	
Password			Drop		GPIO1_MODE_OTP		- 0	
Launch privile	ADVA	NCED			GPIO1PU_OTP	Pul-Up Disabled	- 0	
		11020			GPIO1PD_OTP	Pul-Down Disabled	- 0	
Use this cor	nfiguration and Donot ask again!	~	_		GPIO1TH_OTP	Low voltage threshold	- 0 VO	246
		OK	Cancel		GPI01TSD_PD_OTP	Pull-down enabled in TSD	- 0 u	101

4:OTP burning steps

(1) Put the FS26 blank->A0 version chip into the Socket, and pay attention to the correct position of pin 1



(2) Put SW6 ON the FS26 development board in the "OFF" state, SW7 in the "on" state, at this time, the "blue" on the EVB board Lights up.



(3) Turn on the 12V power supply and power on the FS26 EVB. At this time, the EVB is on as follows



(4) Open the FS26 GUI interface and click "Start" and "Apply Test Mode" successively.



(5) After successfully entering "Test mode", find "Script" from the left bar of GUI, click OPEN, and click Open.

Select the OTP file to burn (e.g. FS26-C1_DEJ_OTP_Rev_B.txt)

Eilter Massages T 14	Device FS26	Script Commands Window	Script Results Window
FS26 [FS_STATES:0x17]R:0x20	Alias FS26 🔹		
FS26 [M_MIRRORCAD.Ox1c] W.Ox FS26 [M_MIRRORDATA:Ox1d] R:0	> Digital Pins		
FS26 [FS_WDW_DURATION:0x0b]	> Analog Pins		
FS26 [M_VSUP_FLG:0x07]R:0x0	> Registers		
FS26 [M_REG_FLG:0x05]R:0x00	> Mode		
FS26 [M_REG_MSK:0x06]R:0x00 FS26 [M_TSD_FLG:0x03]R:0x00	> Control		
FS26 [M_TSD_MSK:0x04] R:0x00	> Generator		
basic M_21141510022(R):03400 basic M_20141151002(R):03400 basic M_2014111010 basic M_201400 basic M_2014000 basic M_2014000 basic M_2014000 basic M_2014000 basic M_2014000 basic M_20140000 basic M_201400000000000000000000000000000000000			<u>ب</u>

(6)After selecting the OTP file to burn, click RUN until the burn is complete.

og Window Ø⊠	Device FS26	Script Commands Window	Script Results Window
S26 [FS_STATES:0x17]R:0x20	Alias FS26	SET_REG:FS26:FS_TestMode:FS_OTPCMD:0x0116	
S26 [M_MIRRORDATA:0x1d]R:0 S26 [D_VOTP:0x1D]R:0x00	Digital Pins	GET_REG:FS26:FS_TestMode:FS_OTPSTATUS0 GET_REG:FS26:FS_TestMode:FS_OTPSTATUS0	
26 [FS_WDW_DURATION:0x0b] 26 [FS_NOT_WDW_DURATION:0	Analog Pins	GET_REG:FS26:FS_TestMode:FS_OTPSTATUS0	
26 [M_VSUP_FLG:0x07]R:0x0 26 [M_VSUP_MSK:0x08]R:0x0	» Registers	GEI_REG:F320:F3_Testmode:F3_OFF3TR1030	
26 [M_REG_FLG:0x05]R:0x00 26 [M_REG_MSK:0x06]R:0x00	> Mode	//Burn Boot Enable and Write	
 a. al. = 20 r. Let 0803 ji: 0800 a. al. = 20 r. Let 0803 ji: 0800 M. TO [DL:0009] i: 0801 M. TO [DL:0009] i: 0801 C. M. STATIS: 1802 Ji: 0800 M. STATIS: 1802 Ji: 0800 M. STATIS: 1802 Ji: 0800 M. STATIS: 1802 Ji: 1800 M. M. M. STATIS: 1802 Ji: 1800 M. M. ENTRY: 0814 Ji: 1800 M. STATIS: 1802 Ji: 1800 M. M. ENTRY: 0814 Ji: 1800<td>Generator</td><td>SET_REG:FS26:FS_TestMode:FS_OTPADDR:0xFF7A SET_REG:FS26:FS_TestMode:FS_OTPADDR:0xF7A SET_REG:FS26:FS_TestMode:FS_OTPAMI:0x0055 SET_REG:FS26:FS_TestMode:FS_OTPAMI:0x0107 GET_REG:FS26:FS_TestMode:FS_OTPATIVS0 GET_REG:FS26:FS_TestMode:FS_OTPATIVS0 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x0</td><td>4 7</td>	Generator	SET_REG:FS26:FS_TestMode:FS_OTPADDR:0xFF7A SET_REG:FS26:FS_TestMode:FS_OTPADDR:0xF7A SET_REG:FS26:FS_TestMode:FS_OTPAMI:0x0055 SET_REG:FS26:FS_TestMode:FS_OTPAMI:0x0107 GET_REG:FS26:FS_TestMode:FS_OTPATIVS0 GET_REG:FS26:FS_TestMode:FS_OTPATIVS0 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x005 SET_REG:FS26:FS_TestMode:FS_OTPATA:0x00A SET_REG:FS26:FS_TestMode:FS_OTPATA:0x0	4 7
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(7)After the chip is burned, dial SW7 to "OFF", then you can see the corresponding output path configured in OTP LED light on.



(8)Power off 12V and take out the chip. At this point, the first chip is burned.(9)Repeat the previous process, burn multiple chips.