1. Description

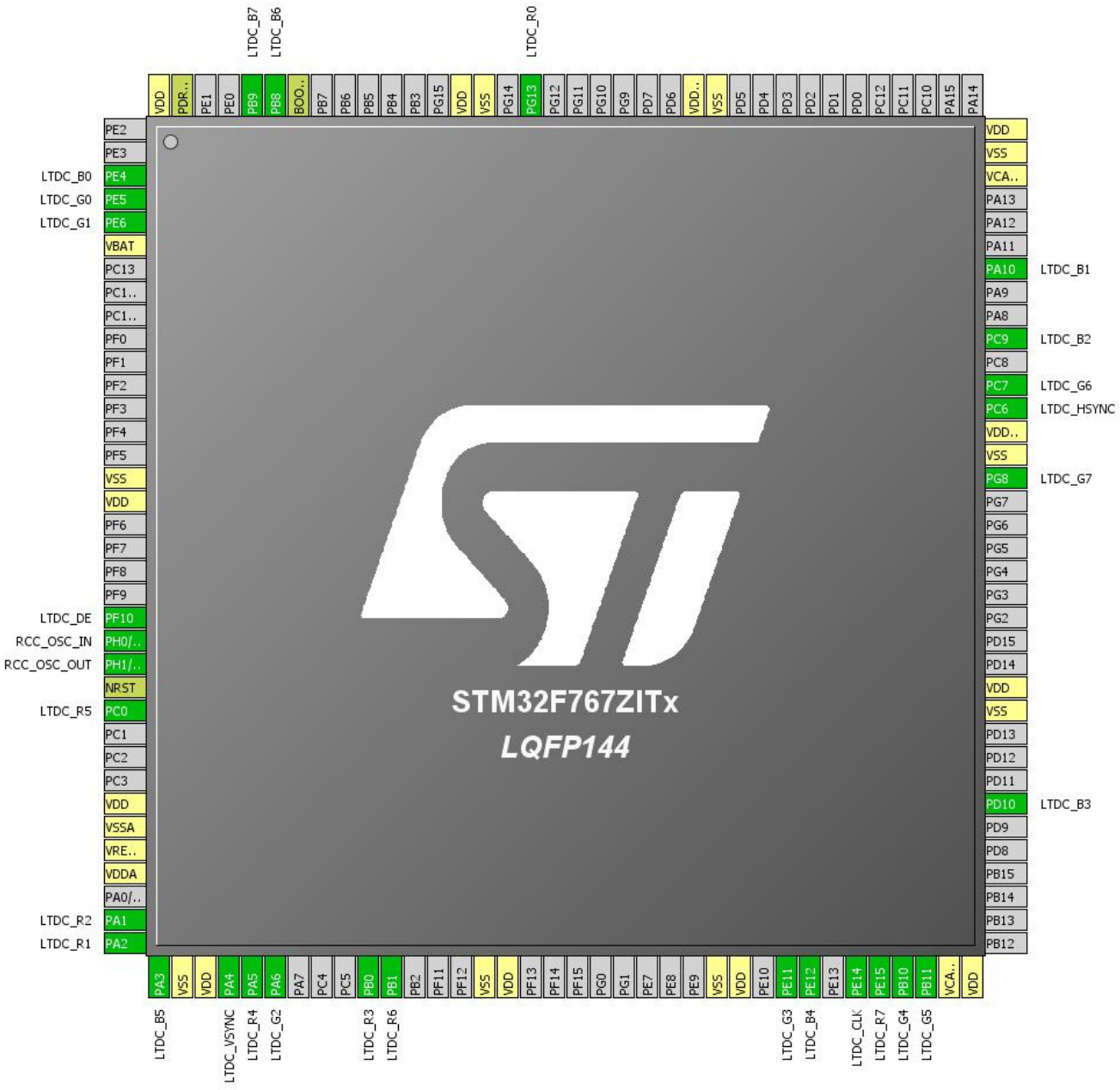
1.1. Project

Project Name	zx_stm32f7_ltdc
Board Name	zx_stm32f7_ltdc
Generated with:	STM32CubeMX 4.23.0
Date	03/07/2018

1.2. MCU

MCU Series	STM32F7
MCU Line	STM32F7x7
MCU name	STM32F767ZITx
MCU Package	LQFP144
MCU Pin number	144

2. Pinout Configuration

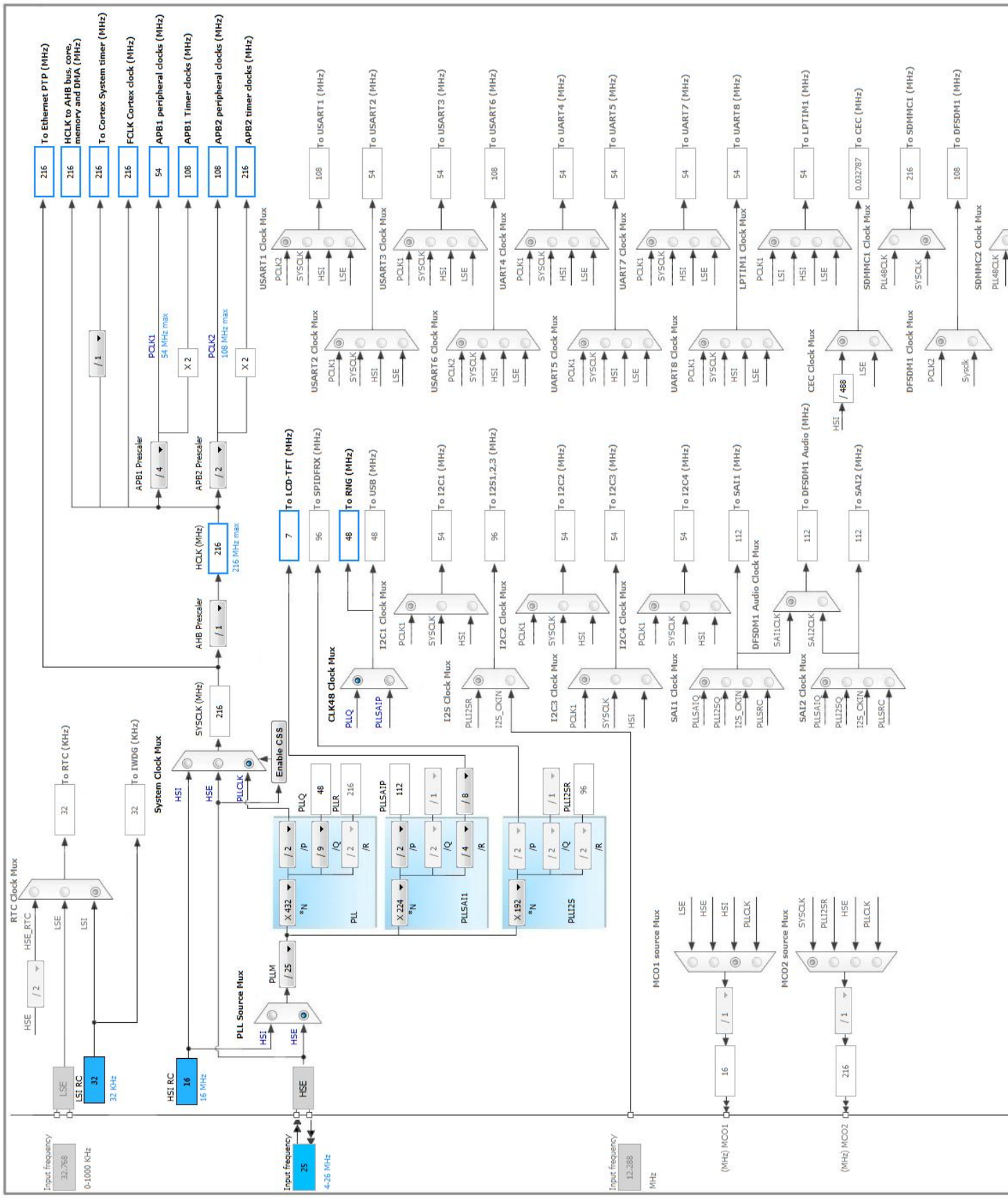


3. Pins Configuration

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
3	PE4	I/O	LTDC_B0	
4	PE5	I/O	LTDC_G0	
5	PE6	I/O	LTDC_G1	
6	VBAT	Power		
16	VSS	Power		
17	VDD	Power		
22	PF10	I/O	LTDC_DE	
23	PH0/OSC_IN	I/O	RCC_OSC_IN	
24	PH1/OSC_OUT	I/O	RCC_OSC_OUT	
25	NRST	Reset		
26	PC0	I/O	LTDC_R5	
30	VDD	Power		
31	VSSA	Power		
32	VREF+	Power		
33	VDDA	Power		
35	PA1	I/O	LTDC_R2	
36	PA2	I/O	LTDC_R1	
37	PA3	I/O	LTDC_B5	
38	VSS	Power		
39	VDD	Power		
40	PA4	I/O	LTDC_VSYNC	
41	PA5	I/O	LTDC_R4	
42	PA6	I/O	LTDC_G2	
46	PB0	I/O	LTDC_R3	
47	PB1	I/O	LTDC_R6	
51	VSS	Power		
52	VDD	Power		
61	VSS	Power		
62	VDD	Power		
64	PE11	I/O	LTDC_G3	
65	PE12	I/O	LTDC_B4	
67	PE14	I/O	LTDC_CLK	
68	PE15	I/O	LTDC_R7	
69	PB10	I/O	LTDC_G4	
70	PB11	I/O	LTDC_G5	
71	VCAP_1	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
72	VDD	Power		
79	PD10	I/O	LTDC_B3	
83	VSS	Power		
84	VDD	Power		
93	PG8	I/O	LTDC_G7	
94	VSS	Power		
95	VDDUSB	Power		
96	PC6	I/O	LTDC_HSYNC	
97	PC7	I/O	LTDC_G6	
99	PC9	I/O	LTDC_B2	
102	PA10	I/O	LTDC_B1	
106	VCAP_2	Power		
107	VSS	Power		
108	VDD	Power		
120	VSS	Power		
121	VDDSDMMC	Power		
128	PG13	I/O	LTDC_R0	
130	VSS	Power		
131	VDD	Power		
138	BOOT0	Boot		
139	PB8	I/O	LTDC_B6	
140	PB9	I/O	LTDC_B7	
143	PDR_ON	Reset		
144	VDD	Power		

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. LTDC

Display Type: RGB888 (24 bits)

5.1.1. Parameter Settings:

Synchronization for Width:

Horizontal Synchronization Width	**14 ***
Horizontal Back Porch	**43 ***
Active Width	**384 ***
Horizontal Front Porch	**8 ***
HSync Width	13
Accumulated Horizontal Back Porch Width	56
Accumulated Active Width	440
Total Width	448

Synchronization for Height:

Vertical Synchronization Height	**25 ***
Vertical Back Porch	**12 ***
Active Height	**272 ***
Vertical Front Porch	**4 ***
VSync Height	24
Accumulated Vertical Back Porch Height	36
Accumulated Active Height	308
Total Height	312

Signal Polarity:

Horizontal Synchronization Polarity	Active Low
Vertical Synchronization Polarity	Active Low
Not Data Enable Polarity	Active Low
Pixel Clock Polarity	Normal Input

BackGround Color:

Red	0
Green	0
Blue	0

5.1.2. Layer Settings:

BackGround Color:

Layer 0 - Blue	0
Layer 0 - Green	0
Layer 0 - Red	0

Number of Layers:

Number of Layers	**1 layer ***

Windows Position:

Layer 0 - Window Horizontal Start	**64 ***
Layer 0 - Window Horizontal Stop	**320 ***
Layer 0 - Window Vertical Start	**40 ***
Layer 0 - Window Vertical Stop	**232 ***

Pixel Parameters:

Layer 0 - Pixel Format	**RGB565 ***

Blending:

Layer 0 - Alpha constant for blending	**255 ***
Layer 0 - Default Alpha value	0
Layer 0 - Blending Factor1	**Alpha constant x Pixel Alpha ***
Layer 0 - Blending Factor2	**Alpha constant x Pixel Alpha ***

Frame Buffer:

Layer 0 - Color Frame Buffer Start Adress	0
Layer 0 - Color Frame Buffer Line Length (Image Width)	**256 ***
Layer 0 - Color Frame Buffer Number of Lines (Image Height)	**192 ***

5.2. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.2.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	7 WS (8 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled

HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Over Drive	Enabled
Power Regulatror Voltage Scale	Power Regulator Voltage Scale 1

5.3. RNG

mode: Activated

5.4. SYS

Timebase Source: SysTick

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
LTDC	PE4	LTDC_B0	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PE5	LTDC_G0	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PE6	LTDC_G1	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PF10	LTDC_DE	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PC0	LTDC_R5	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA1	LTDC_R2	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA2	LTDC_R1	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA3	LTDC_B5	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA4	LTDC_VSYNC	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA5	LTDC_R4	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA6	LTDC_G2	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PB0	LTDC_R3	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PB1	LTDC_R6	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PE11	LTDC_G3	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PE12	LTDC_B4	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PE14	LTDC_CLK	Alternate Function Push Pull	No pull-up and no pull-down	**Very High**	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
					*	
	PE15	LTDC_R7	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PB10	LTDC_G4	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PB11	LTDC_G5	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PD10	LTDC_B3	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PG8	LTDC_G7	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PC6	LTDC_HSYNC	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PC7	LTDC_G6	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PC9	LTDC_B2	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA10	LTDC_B1	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PG13	LTDC_R0	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PB8	LTDC_B6	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PB9	LTDC_B7	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
RCC	PH0/OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1/OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	

6.2. DMA configuration

nothing configured in DMA service

6.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Pre-fetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
System service call via SWI instruction	true	0	0
Debug monitor	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
HASH and RNG global interrupts	unused		
FPU global interrupt	unused		
LTDC global interrupt	unused		
LTDC global error interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F7
Line	STM32F7x7
MCU	STM32F767ZITx
Datasheet	029041_Rev4

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	zx_stm32f7_ltdc
Project Folder	C:\Users\Yegor\Documents\GitHub\zx_stm32f7_ltdc\zx_stm32f7_ltdc\zx_stm32f7
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F7 V1.8.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	Yes
Backup previously generated files when re-generating	No
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No