FPGA_BANK&CONFIG&CLOCK

BANK 1 — U1A — EP4CE6E22C8
BANK 2 — U1B — EP4CE6E22C8
BANK 3 — U1C — EP4CE6E22C8
BANK 4 — U1D — EP4CE6E22C8
BANK 5 — U1E — EP4CE6E22C8
BANK 6 — U1F — EP4CE6E22C8
BANK 7 — U1G — EP4CE6E22C8
BANK 8 — U1H — EP4CE6E22C8

U1K — EP4CE6E22C8
U1J — EP4CE6E22C8
U1M — EP4CE6E22C8
U1I — EP4CE6E22C8
U1L — EP4CE6E22C8

RP1 4.7K
RP2 4.7K

原理图注释：
（一）该部分为FPGA的BANK的IO，引脚上所标数字，比如98.表示FPGA芯片的PIN98这个引脚如果
连线上，有2种网络标号，表示这2种网络是连在一起的。原理图上纯数字网络标号均表示
FPGA的对应引脚，此规则适用于全图。

SDRAM
U2 — HY57V641620

EEPROM
U3 — AT24C08

BUZZER
Q1 S8550
SP1
BEEP
蜂鸣器9*5.5

扩展GPIO
P1 — Header 14X2
Y1 — OSC-SMD3225-50MHz
U4 — EPCS4SI8N
U5 — DS18B20 / 18B20

JTAG
JTAG1 — JTAG 10 2.54
TCK / TDO / TMS / TDI

数码管
RP3 1 — 8 220R
RP5 220R
RP6 4.7K
RP7 4.7K
Q4 Q5 Q6 Q2 Q7 Q8 Q9 Q3 — S8550
DP1 — a b c d e f g dp — D1 D2 D3 D4
DP2 — a b c d e f g dp — D1 D2 D3 D4

拨码开关
SW1 — SW_DIP8
RP4 4.7K

独立按键
K1 K2 K3 K4
RP8 4.7K
RST1 — nCONFIG

系统电源
DC-1
SW2 — SS-12F23
U7 — AMS1117-3.3V
U8 — AMS1117-2.5V
U9 — AMS1117-1.2V
C23 10UF/16V C24 10UF/16V C25 0.1uF
C26 10UF/16V C27 10UF/16V C28 0.1uF
C31 10UF/16V C29 10UF/16V C30 0.1uF

原理图注释：
（一）开发板供电有2种方式：
1、外部IO 5V可直接供电；
2、电源插座DC-05供电，
只接一个即可。
（二）电源开关，ON 开 OFF 关。
（三）板载三种电源DC，分别为：
AMS1117-3.3V
AMS1117-2.5V
AMS1117-1.2V
3.3V为IO电压，2.5V为PLL电压
1.2V为内核电压。

VGA
RP10 220R
RP11 4.7K
D8
VGA1 — DB9-母座
VSYNC / HSYNC / BEEP
VGA_R / VGA_G / VGA_B

RS232
U6 — MAX3232E
C19 0.1uF C20 0.1uF C21 0.1uF C22 0.1uF
J1 — DB9-母座
UART_TXD / UART_RXD

LCD液晶显示器
P2 — LCD1602
LCD1 — LCD12864
VBG
R1 10K

独立LED
D1 D2 D3 D4 D5 D6 D7 D9
RP9 220R
RP12 220R
J2 Socket J3 Socket J4 Socket J5 Socket

RFB-D

DC+5V

JTAG

OFF ←→ ON

SW1

K4 K3 K2 K1 RST1

U9 U8 U7

U4 U3

R1

P1
DP1

+5V +5V GND 3.3V 3.3V 144 143 142 141 138 137 136 135 133 132 129 128 127 126 125 124 121 120 119 115 114 113

LCD1
P2
DP2

VR

Q3 Q7 Q9 Q8
Q2 Q5 Q6 Q4

RP1 RP2 RP6 RP5 RP7 RP3

U1

C31 C30 C29
C13
C7
C15

C26 C28 C27
Y1
C18
C12

C23 C25 C24

C16 C8 C17 C6

C14
C11
C10
C5
C9

U2

R43

U6

C20
C19
C21
C22
C4
C2
C3
C1

DB9

VGA

11
6
1
15
10
5

U5

SP1
+

Q1
RP11 RP10
D8

RP4 RP8 RP9 RP12

LED

D1 D2 D3 D4 D5 D6 D7 D9

85.0 (mm)

120.0 (mm)

Bill of Materials
<Parameter Title not found>

Source Data From:	**RFB-D-V2.0.PrjPcb**
Project:	**RFB-D-V2.0.PrjPcb**
Variant:	**None**

Creation Date:	2020-01-09	09:58:43
Print Date:	43839	43839.41595

Footprint	Comment	#Column Name E	Designator	Description	Quantity
C0603(1608)	0.1uF		C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C25, C28, C30		25
C0805(2012)	10UF/16V		C23, C24, C26, C27, C29, C31		6
LED0603(1608)	LED/BLUE		D1, D2, D3, D4, D5, D6, D7, D9	Typical RED, GREEN, YELLOW, AMBER GaAs LED	8
LED0603(1608)	LED/RED		D8	Typical RED, GREEN, YELLOW, AMBER GaAs LED	1
DC5.5*2.1	DC-005		DC-1	Low Voltage Power Supply Connector	1
3.6_4LED	4位共阴		DP1, DP2		2
DB9-母座	DB9-母座		J1	Receptacle Assembly, 9 Position, Right Angle	1
定位孔 Φ3-2	Socket		J2	Socket	1
定位孔 Φ3 -2	Socket		J3, J4, J5	Socket	3
JTAG-10-2.54	JTAG 10 2.54		JTAG1		1
KEY-6.0X3.3X4.3	按键3*6		K1, K2, K3, K4		4
HDR1X20	LCD12864		LCD1	Header, 20-Pin	1
HDR2X14	Header 14X2		P1	Header, 14-Pin, Dual row	1
HDR1X16	LCD1602		P2	Header, 16-Pin	1
SOT-23	S8550		Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9	PNP Transistor	9
RES-ADJ_3362P	10K		R1		1
8P4R_0603	4.7K		RP1, RP2, RP4, RP6, RP7, RP8, RP11		7
8P4R_0603	220R		RP3, RP5, RP9, RP10, RP12		5
KEY-6.0X3.3X4.3	按键-直插		RST1		1
蜂鸣器9*5.5	蜂鸣器9*5.5		SP1		1
DIP-8KEY	SW_DIP8		SW1	DIP Switch	1
SS-12F23	SS-12F23		SW2	Double-Pole, Double-Throw Switch	1
EQFP144_N	EP4CE6E22C8		U1	Cyclone IV Family FPGA, 2V Core, 91 I/O Pins, 2 PLLs, 144-Pin QFP, Speed Grade 8, Commercial Grade	1
TSO-54	HY57V641620		U2	HY57V641620	1
SOIC-8	AT24C08		U3		1
SOIC-8	EPCS4SI8N		U4		1
DS18B20	DS18B20		U5		1
SOJ-16	MAX3232E		U6		1
SOT-223	AMS1117-3.3V		U7		1
SOT-223	AMS1117-2.5V		U8		1
SOT-223	AMS1117-1.2V		U9		1
DB15FLC	PRJ_OUT		VGA1		1
OSC-SMD3225	OSC-SMD3225-50MHz		Y1		1
					93

Approved	Notes	