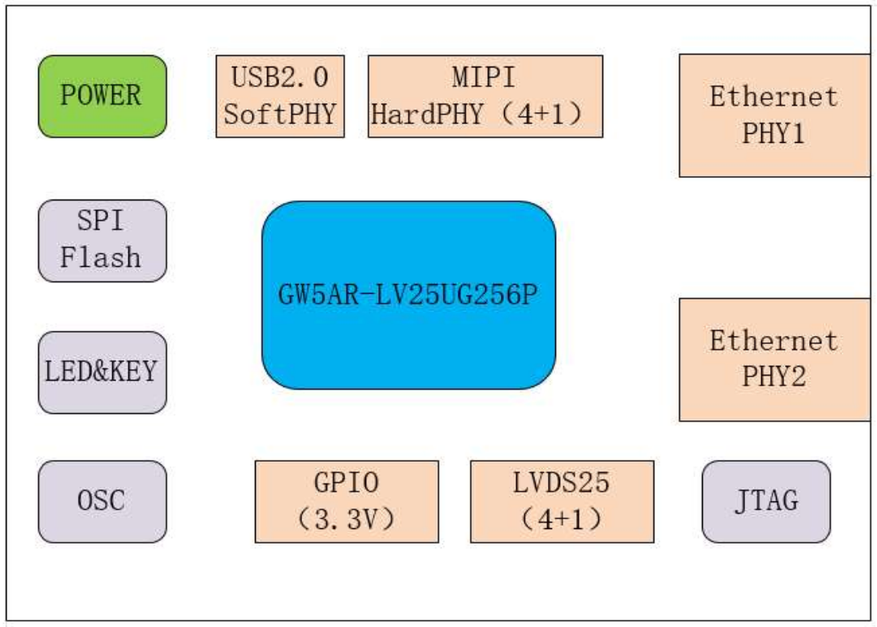
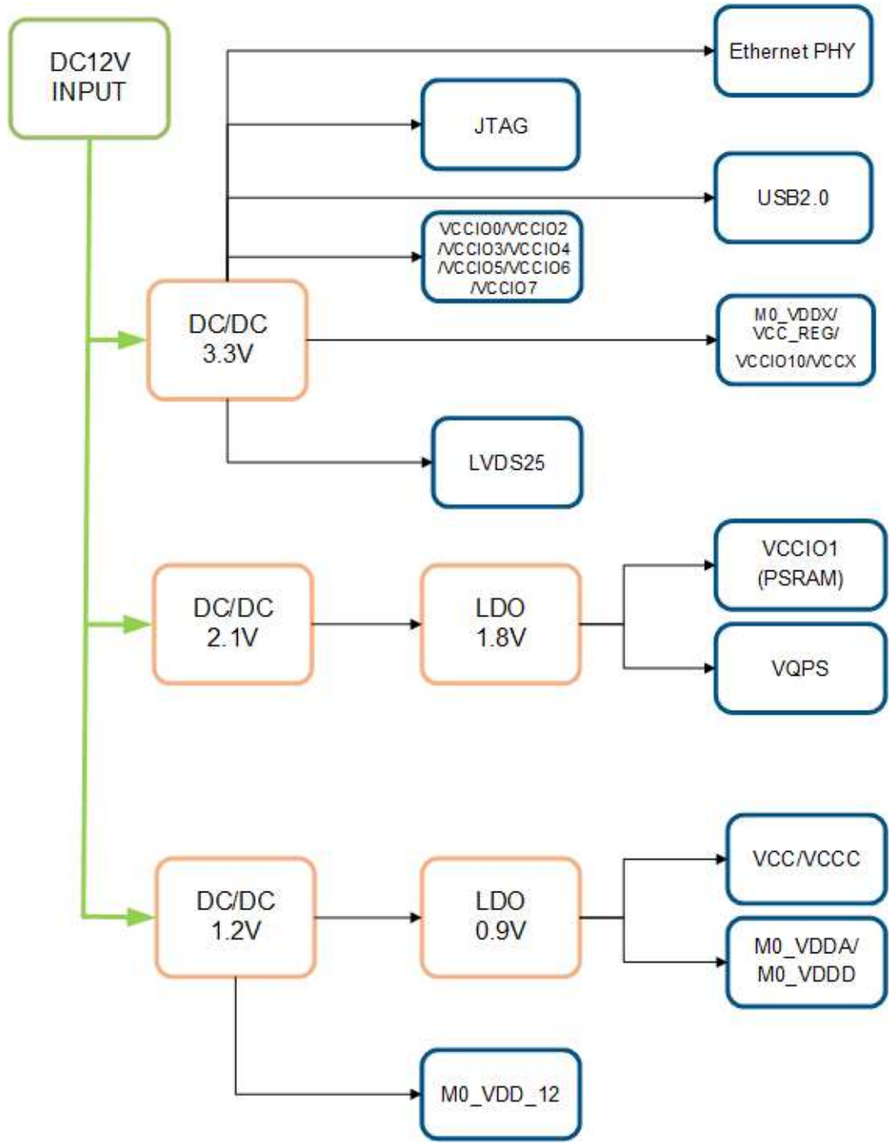


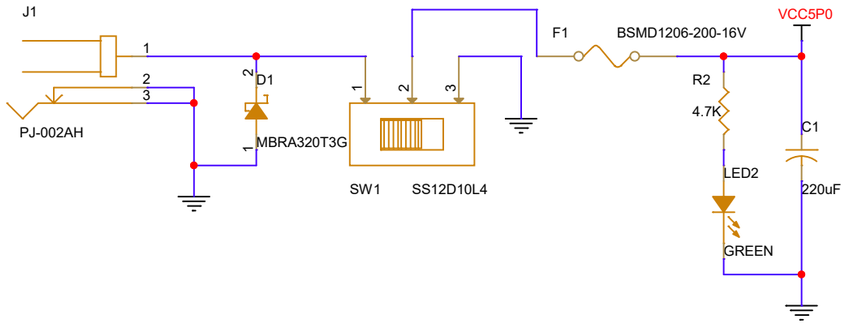
Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number Block Diagram	Rev 1.0
Date: Friday, December 22, 2023	Sheet 1 of 9	

POWER TREE

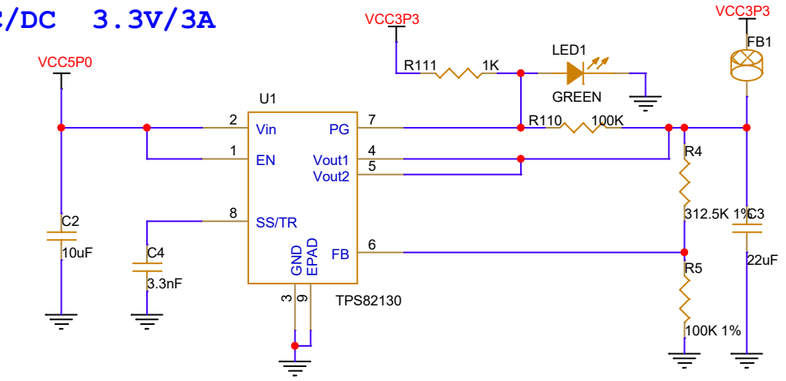


Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number POWER TREE	Rev 1.0
Date: Friday, December 22, 2023	Sheet 2 of 9	

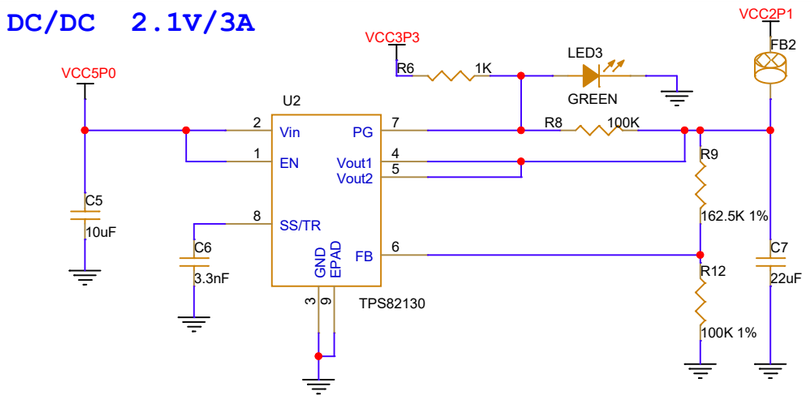
5V INPUT



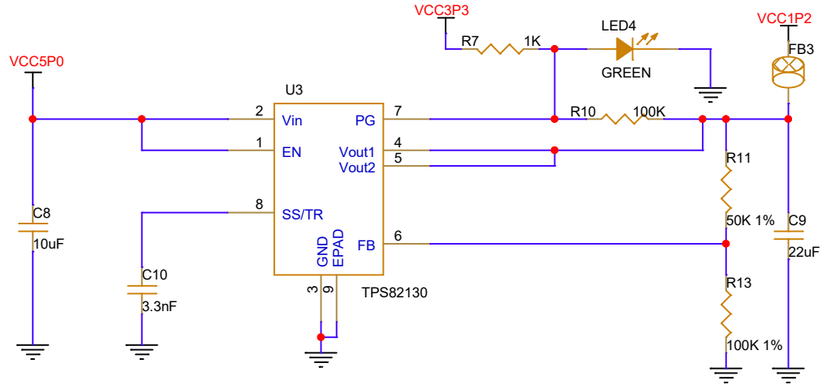
DC/DC 3.3V/3A



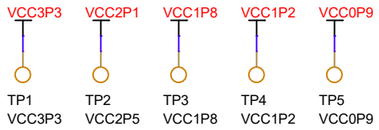
DC/DC 2.1V/3A



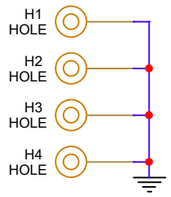
DC/DC 1.2V/3A



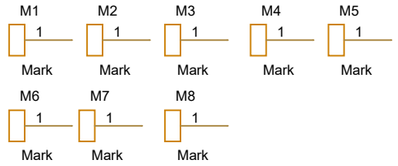
Power Test Hole



Mounting Hole

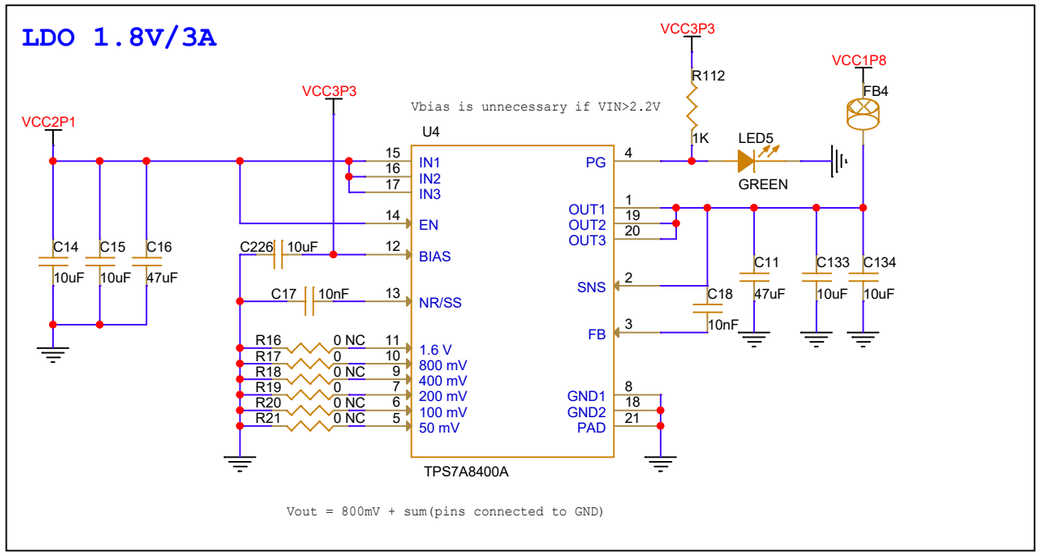


Mark

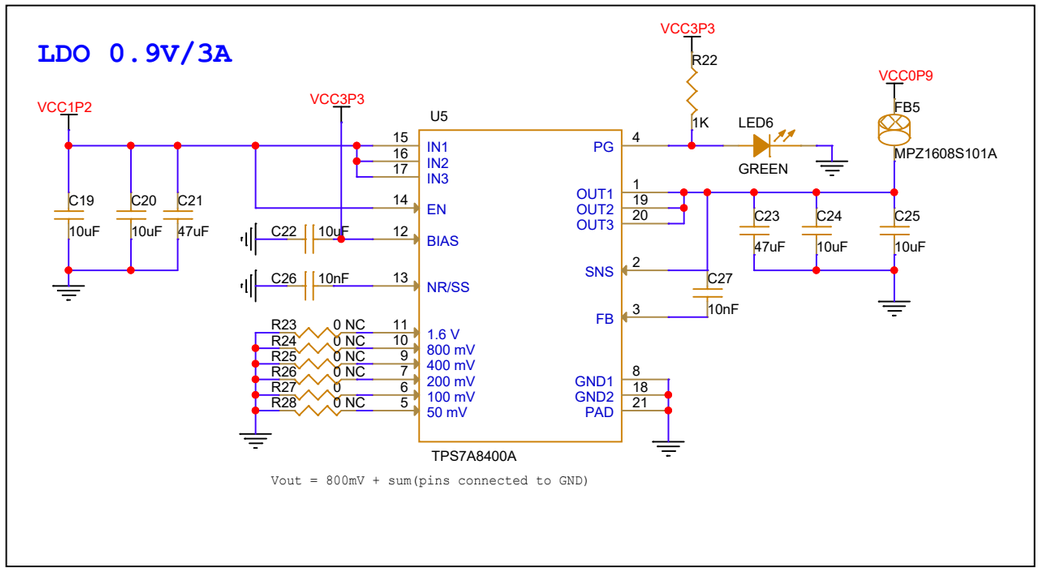


Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number POWER-DC/DC	Rev 1.0
Date: Wednesday, March 13, 2024	Sheet 3 of 9	

LDO 1.8V/3A



LDO 0.9V/3A



Title: DK_START_GW5AR-LV25UG256PC2I1_V1.0		
Size: A3	Document Number: POWER-LDO	Rev: 1.0
Date: Friday, March 15, 2024	Sheet 4 of 9	

FPGA

[8] GPIO[20:26] — GPIO[20:26]

[8] GPIO65 — GPIO65

U6F

		Bank 6
GPIO25	A15	IOL3A/GCLKT_14/LPLL0_T_IN2/LVDS/DQ7/X16
GPIO26	B16	IOL3B/GCLKC_14/LPLL0_C_FB0/LVDS/DQ7/X16
LR_2P5_CLKp	B14	IOL5A/GCLKT_13/LPLL0_T_IN1/LVDS/DQ7/X16
LR_2P5_CLKn	A14	IOL5B/GCLKC_13/LPLL0_C_FB1/LVDS/DQ7/X16
LR_2P5_2p	D11	IOL7A/LVDS/DQ7/X16
LR_2P5_2n	C11	IOL7B/LVDS/DQ7/X16
LT_2P5_2p	C9	IOL9A/LVDS/DQS7/DQ7/X16
LT_2P5_2n	D9	IOL9B/LVDS/DQS7/DQ7/X16
LT_2P5_3p	C8	IOL12A/LVDS/DQ7/X16
LT_2P5_3n	D8	IOL12B/LVDS/DQ7/X16
GPIO20	C6	IOL14A/LPLL1_T_IN0/LVDS/DQ7/X16
GPIO21	D6	IOL14B/LVDS/DQ7/X16
LR_2P5_1p	B13	IOL16A/LVDS/DQ6/DQS_67/X16
LR_2P5_1n	A13	IOL16B/LVDS/DQ6/DQS_67/X16
LR_2P5_3p	B11	IOL18A/LVDS/DQ6/X16
LR_2P5_3n	B12	IOL18B/LVDS/DQ6/X16
LR_2P5_4p	A11	IOL21A/LVDS/DQS6/DQ6/X16
LR_2P5_4n	A12	IOL21B/LVDS/DQS6/DQ6/X16
LT_2P5_1p	B10	IOL23A/LVDS/DQ6/X16
LT_2P5_1n	A10	IOL23B/LVDS/DQ6/X16
LT_2P5_CLKp	B9	IOL25A/LVDS/DQ6/X16
LT_2P5_CLKn	A9	IOL25B/LVDS/DQ6/X16
LT_2P5_4p	A8	IOL27A/LVDS/DQ6/X16
LT_2P5_4n	B8	IOL27B/LVDS/DQ6/X16
GPIO24	E8	IOL29A/LVDS/X16
GPIO65	F8	IOL29B/LVDS/X16
GPIO22	E7	IOL31A/LVDS/X16
GPIO23	F7	IOL31B/LVDS/X16

GW5AR-25-UG256P

U6H

		Bank 10
JTAG_TCK	R13	IOR1A/TCK
JTAG_TDI	R14	IOR1B/TDI
JTAG_TMS	T14	IOR3A/TMS
JTAG_TDO	T15	IOR3B/TDO
		MIPI
M0_CKn	B5	M0_CKN
M0_CKp	A5	M0_CKP
M0_D0n	B7	M0_D0N
M0_D0p	A7	M0_D0P
M0_D1n	B6	M0_D1N
M0_D1p	A6	M0_D1P
M0_D2n	B4	M0_D2N
M0_D2p	A4	M0_D2P
M0_D3n	B3	M0_D3N
M0_D3p	A3	M0_D3P

GW5AR-25-UG256P

[7] FM_GPIO1 — FM_GPIO1
[7] FM_GPIO2 — FM_GPIO2
[7] FM_GPIO3 — FM_GPIO3
[7] FM_GPIO4 — FM_GPIO4

MIPI

J2

M0_D0n	1	2	
M0_D0p	3	4	
	5	6	
M0_D1n	7	8	
M0_D1p	9	10	
	11	12	
M0_CKn	13	14	
M0_CKp	15	16	
	17	18	
M0_D2n	19	20	
M0_D2p	21	22	
	23	24	
M0_D3n	25	26	
M0_D3p	27	28	
	29	30	
	31	32	
	33	34	
	35	36	
	37	38	
	39	40	
	41	42	
	43	44	
	45	46	
	47	48	
	49	50	
	51	52	FM_GPIO1
	53	54	FM_GPIO2
	55	56	FM_GPIO3
	57	58	FM_GPIO4
	59	60	
	61	62	
	63	64	
	65	66	
	67	68	
	69	70	
	71	72	
	73	74	
	75	76	
	77	78	
	79	80	VCC3P3

AXK580147YG

USB DOWNLOAD

VCC3P3

C176 100nF, C177 100nF, C178 100nF, C179 100nF, C180 100nF

U24

40	VREGIN	
39	VCCD	
38	VCCCORE	
37	VCCA	
6	DM	USB_D-
7	DP	USB_D+
34	RESETn	
5	REF	
45	EECS	
44	EECLK	
43	EEDATA	
1	XCSI	
2	XCSO	
42	TEST	
3, 8, 12, 24, 46	VPHY, VPLL, VCCIO, VCCIO, VCCIO	
13	ADBUS0	JTAG_TCK
14	ADBUS1	JTAG_TDI
15	ADBUS2	JTAG_TDO
16	ADBUS3	JTAG_TMS
17	ADBUS4	
18	ADBUS5	
19	ADBUS6	
20	ADBUS7	
21	ACBUS0	
25	ACBUS1	
26	ACBUS2	
27	ACBUS3	
28	ACBUS4	
29	ACBUS5	
30	ACBUS6	
31	ACBUS7	
32	ACBUS8	
33	ACBUS9	
4, 9, 41, 10, 11, 22, 23, 35, 36, 47, 48, 49	AGND, AGND, AGND, GND, GND, GND, GND, GND, GND, GND, GND, GND	

FT232HQ

R189 4.7K

C182 0.1uF, C183 0.1uF, VCC3P3

R191 10K

R192 12K

C185 22pF, X3 (XIN, GND2, GND1, XOUT), C186 22pF, 12Mhz

J13 MINI-USB-B

VCC	1	FB24 → USB_VCC5
D-	2	USB_D-
D+	3	USB_D+
ID	4	
GND	5	
J6, J7, J8, J9	6, 7, 8, 9	C181 10nF, R190 100K

USB_VCC5

U25 TPD2E001DRLR

1	VCC	
2	NC	
3	IO1	USB_D+
4	GND	
5	IO2	USB_D-

C184 10nF

LVDS TX

J4

LT_2P5_1p	1	2	LT_2P5_1n
	3	4	
LT_2P5_2p	5	6	LT_2P5_2n
	7	8	
LT_2P5_CLKp	9	10	LT_2P5_CLKn
	11	12	
LT_2P5_3p	13	14	LT_2P5_3n
	15	16	
LT_2P5_4p	17	18	LT_2P5_4n
	19	20	

LT_2P5_1p	R29	100 NC	LT_2P5_1n
LT_2P5_2p	R30	100 NC	LT_2P5_2n
LT_2P5_CLKp	R31	100 NC	LT_2P5_CLKn
LT_2P5_3p	R32	100 NC	LT_2P5_3n
LT_2P5_4p	R34	100 NC	LT_2P5_4n

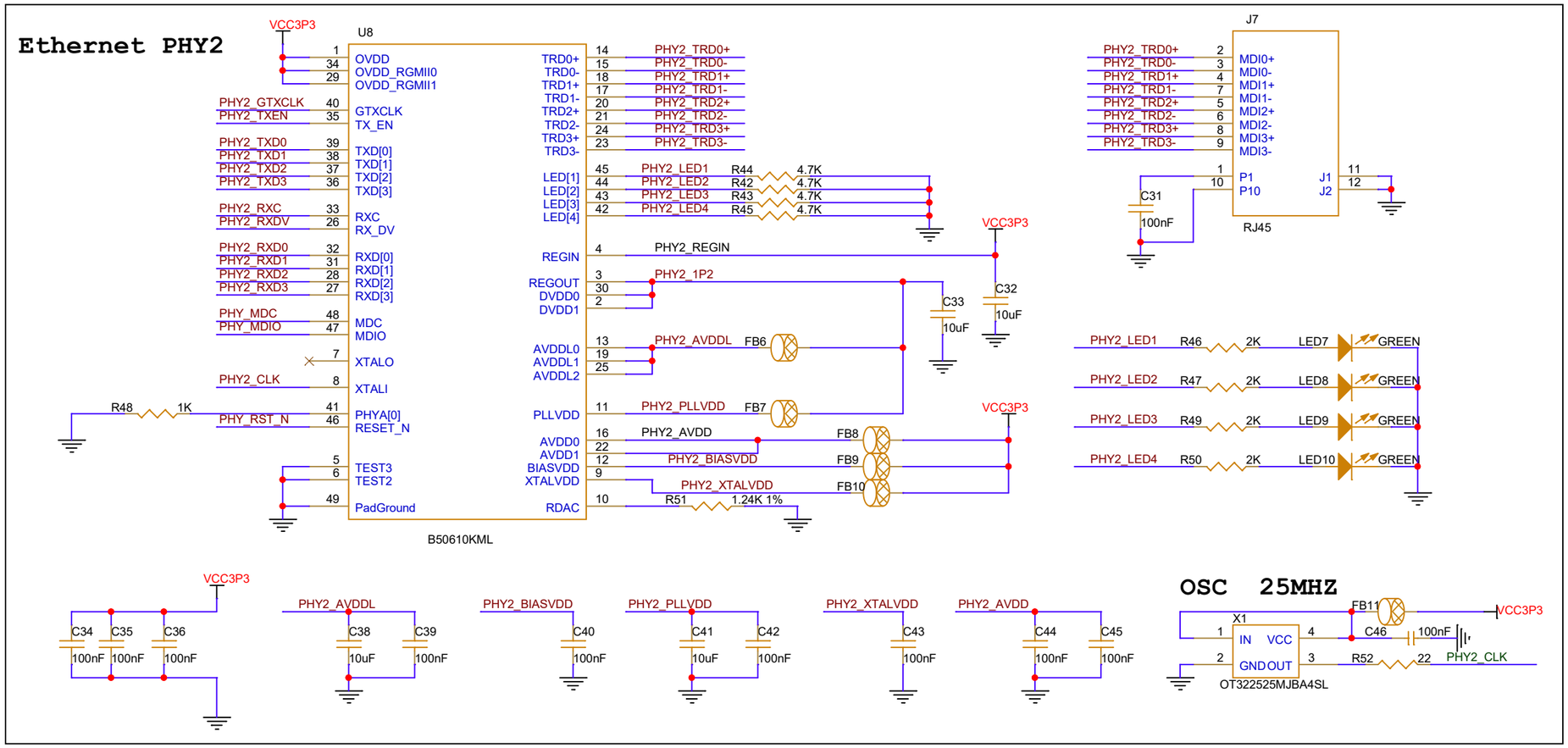
LVDS RX

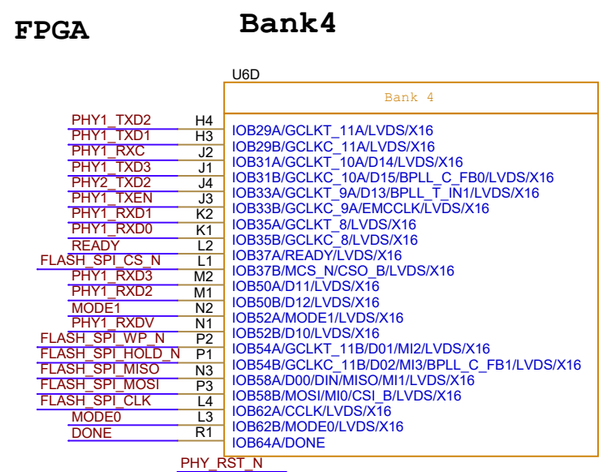
J5

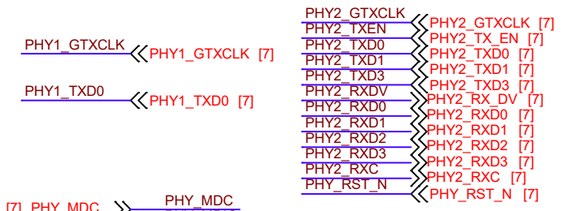
LR_2P5_1p	1	2	LR_2P5_1n
	3	4	
LR_2P5_2p	5	6	LR_2P5_2n
	7	8	
LR_2P5_CLKp	9	10	LR_2P5_CLKn
	11	12	
LR_2P5_3p	13	14	LR_2P5_3n
	15	16	
LR_2P5_4p	17	18	LR_2P5_4n
	19	20	

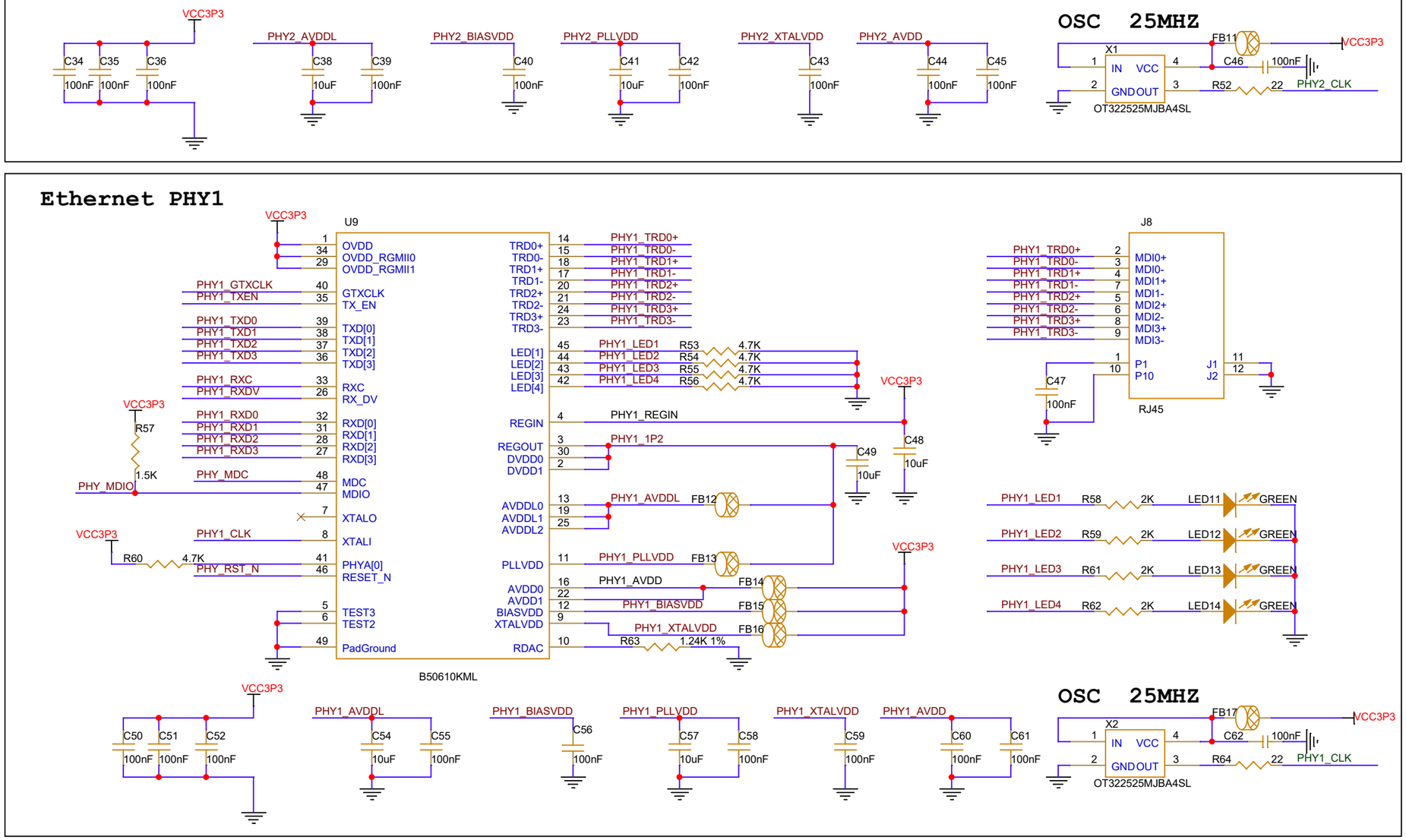
LR_2P5_1p	R36	100	LR_2P5_1n
LR_2P5_2p	R37	100	LR_2P5_2n
LR_2P5_CLKp	R38	100	LR_2P5_CLKn
LR_2P5_3p	R40	100	LR_2P5_3n
LR_2P5_4p	R41	100	LR_2P5_4n

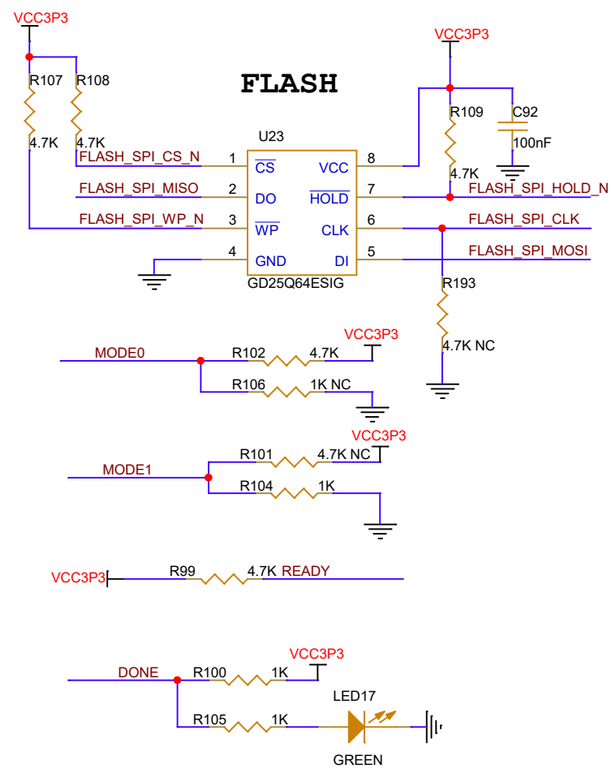
Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number FPGA-LVDS-MIPI	Rev 1.0
Date: Thursday, January 11, 2024	Sheet 5 of 9	











Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number FPGA-EthernetPHY	Rev 1.0
Date: Thursday, April 18, 2024	Sheet 6 of 9	

PHY2_RXDV
PHY2_RXD0
PHY2_RXD1
PHY2_RXD2
PHY2_RXD3
PHY2_RXC
PHY2_RX_DV [6]
PHY2_RXD0 [6]
PHY2_RXD1 [6]
PHY2_RXD2 [6]
PHY2_RXD3 [6]
PHY2_RXC [6]

PHY2_GTXCLK
PHY2_TXEN
PHY2_TXD0
PHY2_TXD1
PHY2_TXD3
PHY2_GTXCLK [6]
PHY2_TX_EN [6]
PHY2_TXD0 [6]
PHY2_TXD1 [6]
PHY2_TXD3 [6]

PHY1_GTXCLK
PHY1_TXD0
PHY_RST_N
PHY1_GTXCLK [6]
PHY1_TXD0 [6]
PHY_RST_N [6]

[6] PHY_MDC
[6] PHY_MDIO
PHY_MDC
PHY_MDIO

[8] GPIO[19:17]
[8] GPIO[112:66]
[8] GPIO[64:27]
GPIO[19:17]
GPIO[112:66]
GPIO[64:27]

[5] FM_GPIO1
[5] FM_GPIO2
[5] FM_GPIO3
[5] FM_GPIO4
FM_GPIO1
FM_GPIO2
FM_GPIO3
FM_GPIO4

VCC3P3 R103 4.7K RECONFIG_N

FPGA

R65
1K NC

Bank0

U6A

Bank 0

KEY1	K15	IOT29A/PUDC_B/LVDS/X16
GPIO37	K16	IOT29B/LVDS/X16
GPIO89	J11	IOT31A/LVDS/X16
GPIO90	K11	IOT31B/LVDS/X16
GPIO97	K10	IOT33A/LVDS/X16
GPIO112	K9	IOT33B/LVDS/X16
GPIO84	K12	IOT35A/LVDS/X16
GPIO87	L12	IOT35B/LVDS/X16
GPIO85	L13	IOT37A/LVDS/X16
GPIO86	L14	IOT37B/LVDS/X16
GPIO39	L15	IOT39A/LVDS/X16
GPIO38	L16	IOT39B/LVDS/X16
GPIO103	L10	IOT41A/LVDS/X16
GPIO99	L9	IOT41B/LVDS/X16
GPIO91	L11	IOT43A/LVDS/X16
GPIO98	M11	IOT43B/LVDS/X16
GPIO102	M10	IOT45A/LVDS/X16
GPIO58	M9	IOT45B/LVDS/X16
GPIO92	M12	IOT48A/LVDS/X16
GPIO93	N12	IOT48B/LVDS/X16
GPIO88	M15	IOT50A/LVDS/X16
GPIO40	M16	IOT50B/LVDS/X16
GPIO94	N13	IOT52A/LVDS/X16
GPIO95	N14	IOT52B/LVDS/X16
GPIO96	P14	IOT54A/LVDS/X16
GPIO44	P15	IOT54B/LVDS/X16
GPIO42	N15	IOT56A/GCLKT_0/TPLL_T_IN1/LVDS/X16
GPIO41	N16	IOT56B/GCLKC_0/TPLL_C_FB1/LVDS/X16
GPIO43	P16	IOT58A/GCLKT_1/TPLL_T_IN2/LVDS/X16
GPIO45	R16	IOT58B/GCLKC_1/TPLL_C_FB0/LVDS/X16

GW5AR-25-UG256P

Bank2

U6B

Bank 2

GPIO100	N11	IOR5A/LVDS/X16
GPIO101	P11	IOR5B/LVDS/X16
GPIO48	T12	IOR7A/LVDS/DQ2/X16
GPIO46	T13	IOR7B/LVDS/DQ2/X16
GPIO49	R11	IOR9A/LVDS/DQ2/X16
GPIO47	R12	IOR9B/MCKTEST/LVDS/DQ2/X16
GPIO52	T10	IOR12A/LVDS/DQS2/DQ2/X16
GPIO50	T11	IOR12B/ADCINCLK/LVDS/DQS2/DQ2/X16
GPIO54	R9	IOR14A/LVDS/DQ2/X16
GPIO51	R10	IOR14B/ADCOTEST/LVDS/DQ2/X16
GPIO53	T9	IOR16A/LVDS/DQ2/X16
GPIO55	T8	IOR16B/LVDS/DQ2/X16
GPIO57	N9	IOR18A/LVDS/DQ2/DQS_23/X16
GPIO104	P9	IOR18B/LVDS/DQ2/DQS_23/X16
GPIO61	N8	IOR20A/LVDS/DQ3/X16
GPIO60	P8	IOR20B/LVDS/DQ3/X16
GPIO56	R8	IOR22A/LVDS/DQ3/X16
GPIO64	R7	IOR22B/LVDS/DQ3/X16
GPIO62	N6	IOR24A/LVDS/DQ3/X16
PHY2_RXDV	P6	IOR24B/LVDS/DQ3/X16
GPIO63	T7	IOR26A/LVDS/DQS3/DQ3/X16
PHY2_RXD2	T6	IOR26B/LVDS/DQS3/DQ3/X16
PHY2_RXD3	R6	IOR29A/LVDS/DQ3/X16
PHY2_TXD3	R5	IOR29B/LVDS/DQ3/X16
PHY2_RXC	T5	IOR31A/GCLKT_4/RPLL1_T_IN0/LVDS/DQ3/X16
PHY2_TXD1	T4	IOR31B/GCLKC_4/RPLL1_C_FB1/LVDS/DQ3/X16
PHY2_TXD0	T3	IOR33A/GCLKT_5/RPLL1_T_IN1/LVDS/X16
PHY2_GTXCLK	T2	IOR33B/GCLKC_5/RPLL1_C_FB0/LVDS/X16

GW5AR-25-UG256P

Bank3

U6C

Bank 3

GPIO111	M6	IOB65A/LVDS/X16
PHY2_TXEN	N5	IOB65B/DOUT/LVDS/X16
	J6	IOB81A/LVDS/DQ4/X16
PHY2_RXD1	J5	IOB81B/LVDS/DQ4/X16
GPIO105	K6	IOB83A/LVDS/DQ4/X16
PHY2_RXD0	K5	IOB83B/LVDS/DQ4/X16
GPIO106	K8	IOB85A/LVDS/DQS4/DQ4/X16
GPIO108	L8	IOB85B/LVDS/DQS4/DQ4/X16
GPIO110	M7	IOB87A/LVDS/DQ4/X16
GPIO59	M8	IOB87B/LVDS/DQ4/X16
GPIO109	L6	IOB89A/GCLKT_7/BPLL_T_IN0/LVDS/DQ4/X16
GPIO107	L7	IOB89B/GCLKC_7/LVDS/DQ4/X16
ADCVP	R3	IOB91A/GCLKT_6A/LVDS/DQ4/X16
ADCVN	R4	IOB91B/GCLKC_6A/LVDS/DQ4/X16

GW5AR-25-UG256P

Bank5

U6E

Bank 5

RECONFIG_N	A2	IOB1A/RECONFIG_N
GPIO19	F6	IOB2A/LVDS/X16
GPIO18	E6	IOB2B/LVDS/X16
USB_DXP_D+	C1	IOB4A/D08/SDA/LVDS/X16
USB_DXP_D-	B1	IOB4B/D09/SCL/LPLL1_C_FB0/LVDS/X16
FM_GPIO1	D5	IOB6A/LVDS/X16
LED2	D4	IOB6B/LVDS/X16
USB_TERM_RXDP	C3	IOB8A/D05/SO/SSI1/LVDS/X16
USB_TERM_RXDN	C2	IOB8B/D06/LVDS/X16
USB_RXDN_D+	D3	IOB10A/D03/SSPI_CS_N/LVDS/X16
USB_RXDN_D-	D2	IOB10B/D04/SI/SSI0/LVDS/X16
USB_RXDP_D+	E1	IOB12A/GCLKT_10B/D07/SSPI_WPN/SSI2/LVDS/X16
USB_RXDP_D-	D1	IOB12B/GCLKC_10B/RDWR_B/LPLL1_C_IN1/LVDS/X16
PHY_MDC	F2	IOB14A/SSPI_CLK/LVDS/X16
USB_PULLUP_EN	F1	IOB14B/CLKHOLD_N/SSI3/LVDS/X16
FM_GPIO3	F5	IOB16A/LVDS/X16
FM_GPIO2	E5	IOB16B/LVDS/X16
LED1	F4	IOB18A/LVDS/X16
PHY1_GTXCLK	F3	IOB18B/LVDS/X16
FM_GPIO4	G5	IOB22A/LVDS/X16
GPIO17	H5	IOB22B/LVDS/X16
PHY_RST_N	G2	IOB24A/LVDS/X16
PHY_MDIO	G1	IOB24B/LVDS/X16
CLK_G	H2	IOB26A/GCLKT_9B/LVDS/X16
PHY1_TXD0	H1	IOB26B/GCLKC_9B/LVDS/X16

GW5AR-25-UG256P

Bank7

U6G

Bank 7

GPIO27	C15	IOT1A/GCLKT_15/LPLL0_T_IN0/LVDS/X16
GPIO28	C16	IOT1B/GCLKC_15/LVDS/X16
GPIO29	D15	IOT3A/GCLKT_16/LVDS/X16
GPIO30	D16	IOT3B/GCLKC_16/LVDS/X16
GPIO68	E10	IOT5A/LVDS/X16
GPIO69	F10	IOT5B/LVDS/X16
GPIO67	F9	IOT7A/LVDS/X16
GPIO66	E9	IOT7B/LVDS/X16
GPIO70	E11	IOT9A/LVDS/X16
GPIO74	D12	IOT9B/LVDS/X16
GPIO75	D14	IOT11A/LVDS/X16
GPIO73	C14	IOT11B/LVDS/X16
GPIO72	G11	IOT13A/LVDS/X16
GPIO71	F11	IOT13B/LVDS/X16
GPIO31	E15	IOT15A/LVDS/X16
GPIO32	E16	IOT15B/LVDS/X16
GPIO76	F13	IOT17A/LVDS/X16
GPIO77	F14	IOT17B/LVDS/X16
GPIO78	F15	IOT19A/LVDS/X16
GPIO79	F16	IOT19B/LVDS/X16
GPIO80	G15	IOT21A/LVDS/X16
GPIO33	G16	IOT21B/LVDS/X16
GPIO34	H14	IOT23A/LVDS/X16
GPIO83	J14	IOT23B/LVDS/X16
GPIO36	J15	IOT25A/LVDS/X16
GPIO35	J16	IOT25B/LVDS/X16
GPIO81	J12	IOT27A/LVDS/X16
GPIO82	J13	IOT27B/LVDS/X16

GW5AR-25-UG256P

USB2.0

J9
VCC 1
D- 2
D+ 3
ID 4
GND 5
J6 6
J7 7
J8 8
J9 9
fus130-fdbk6k

TVCC5P0
C63 1uF
U10
IO1 3
IO2 5
VCC 1
NC 2
GND 4
TPD2E001DRLR
TVCC5P0
R95 1M
C64 10nF
VCC3P3
R92 1.8k
R96 75
C66 1uF

R69 0 USB_TERM_RXDN
R71 0 USB_TERM_RXDP
R75 42 USB_DXP_D-
R77 42 USB_DXP_D+
R86 1.5k USB_PULLUP_EN
USB_RXDN_D+
USB_RXDN_D-
USB_RXDP_D+
USB_RXDP_D-

OSC

VCC3P3
FB19
C65 10nF
X4
1 IN
2 GND
VCC 4
OUT 3
R98 22 CLK_G
OT322550MJBA4SL
50MHz

KEY*1

KEY1
1 K1
2 K2
KO1 4
KO2 3
VCC3P3
R97 1K
KEY1
C67 10uF

LED*2

VCC3P3
R70 510
LED16
GREEN
Q2
LED2 R79 510
R85 10K
NPN

VCC3P3
R72 510
LED15
GREEN
Q1
LED1 R80 510
R87 10K
NPN

ADC

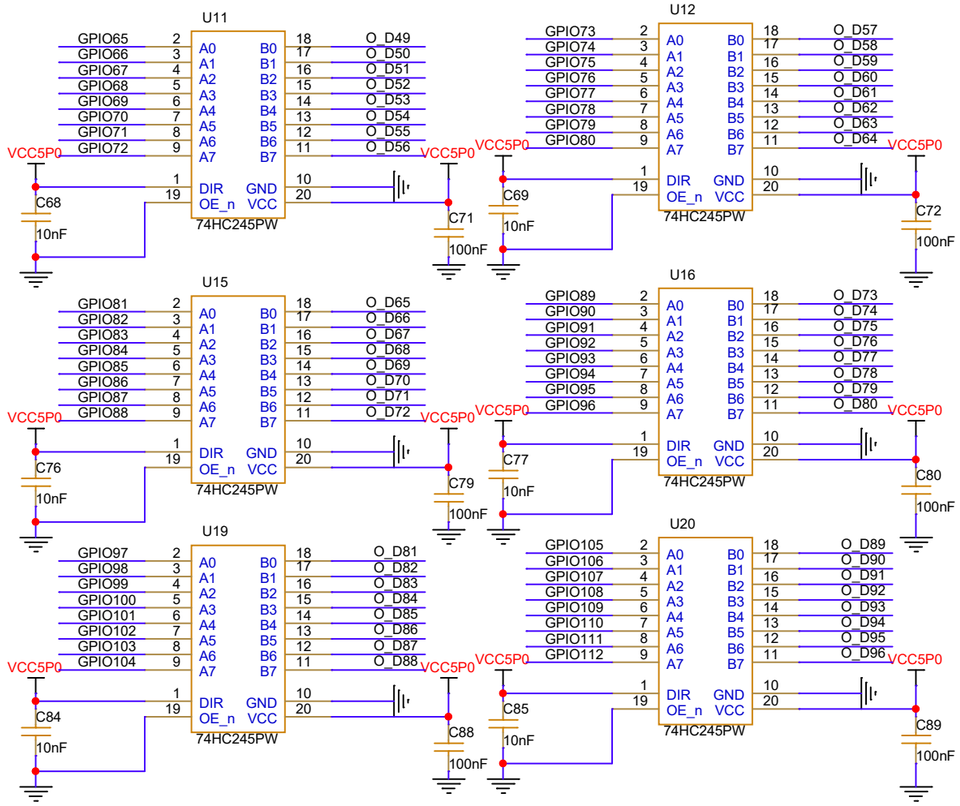
H_ADCVP 1
J6
3
2 H_ADCVN
4

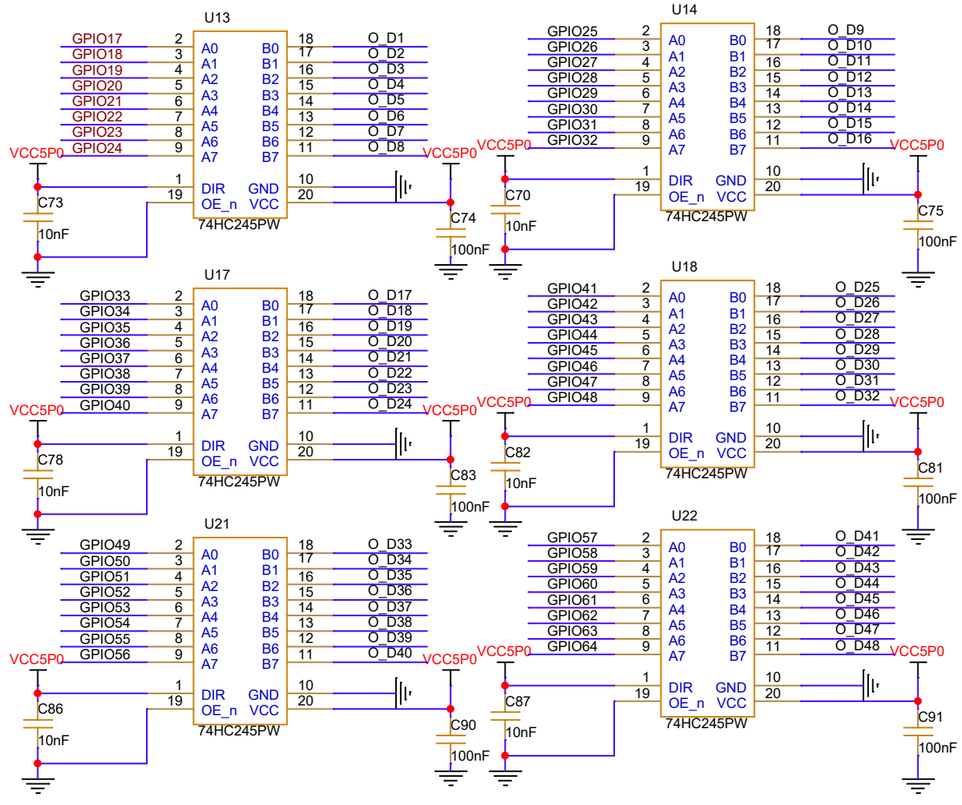
H_ADCVP R35 49.9 ADCVP
C30 1nF
H_ADCVN R39 49.9 ADCVN

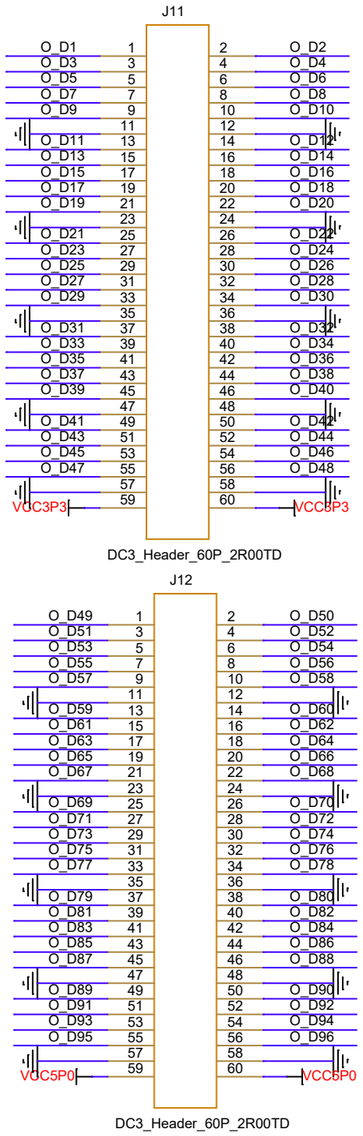
Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number FPGA-USB-OSC	Rev 1.0
Date: Thursday, January 11, 2024	Sheet 7 of 9	

74HC245

[7] GPIO[112:66] — GPIO[112:66]
[7] GPIO[19:17] — GPIO[19:17]
[7] GPIO[64:27] — GPIO[64:27]
[5] GPIO[20:26] — GPIO[20:26]
[5] GPIO65 — GPIO65

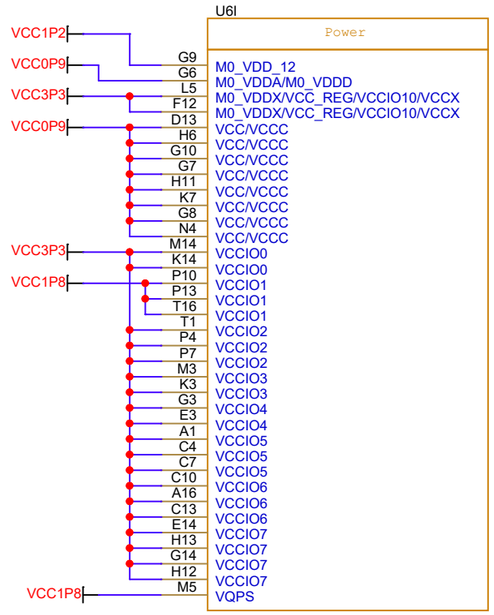




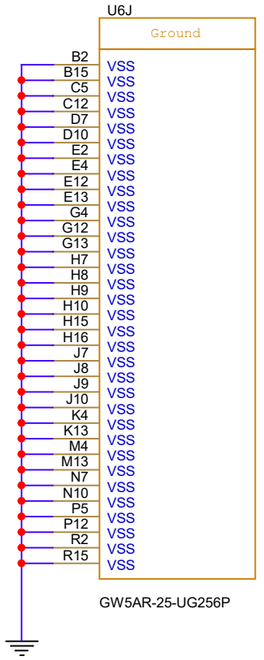


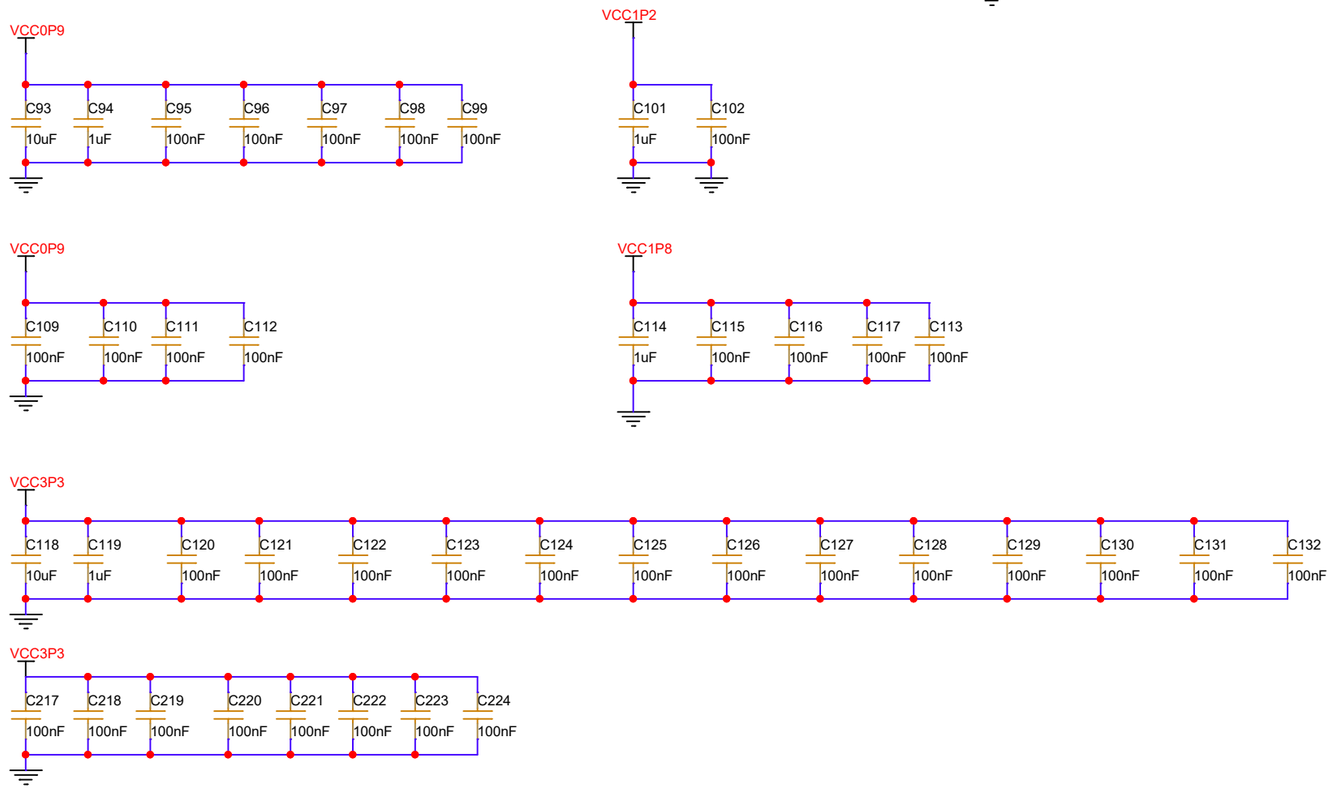
Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number 74HC245	Rev 1.0
Date: Thursday, December 28, 2023	Sheet 8 of 9	

FPGA POWER



FPGA GND





Title	DK_START_GW5AR-LV25UG256PC2I1_V1.0	
Size A3	Document Number FPGA POWER&GND	Rev 1.0
Date: Monday, December 25, 2023	Sheet 9 of 9	