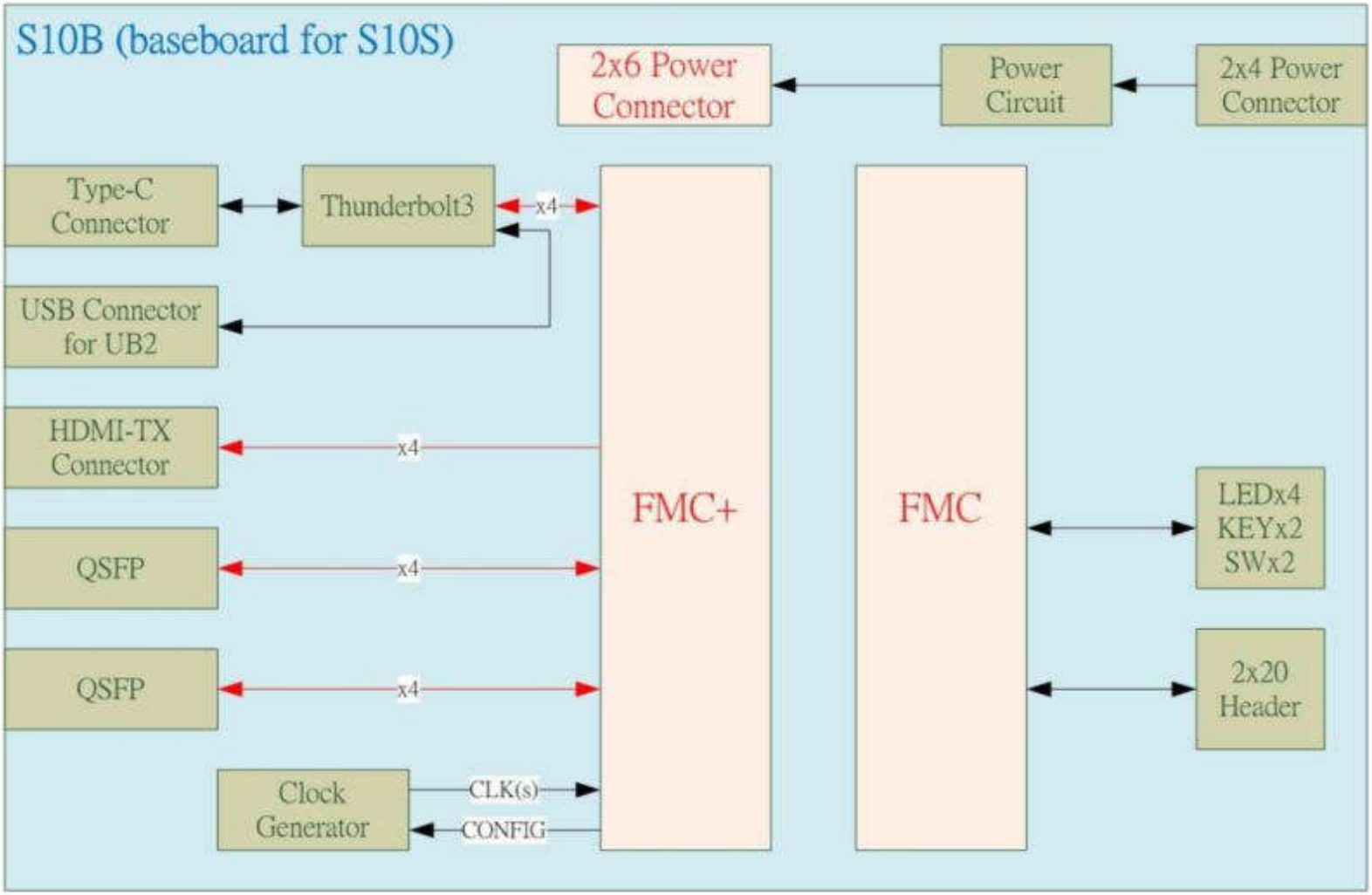
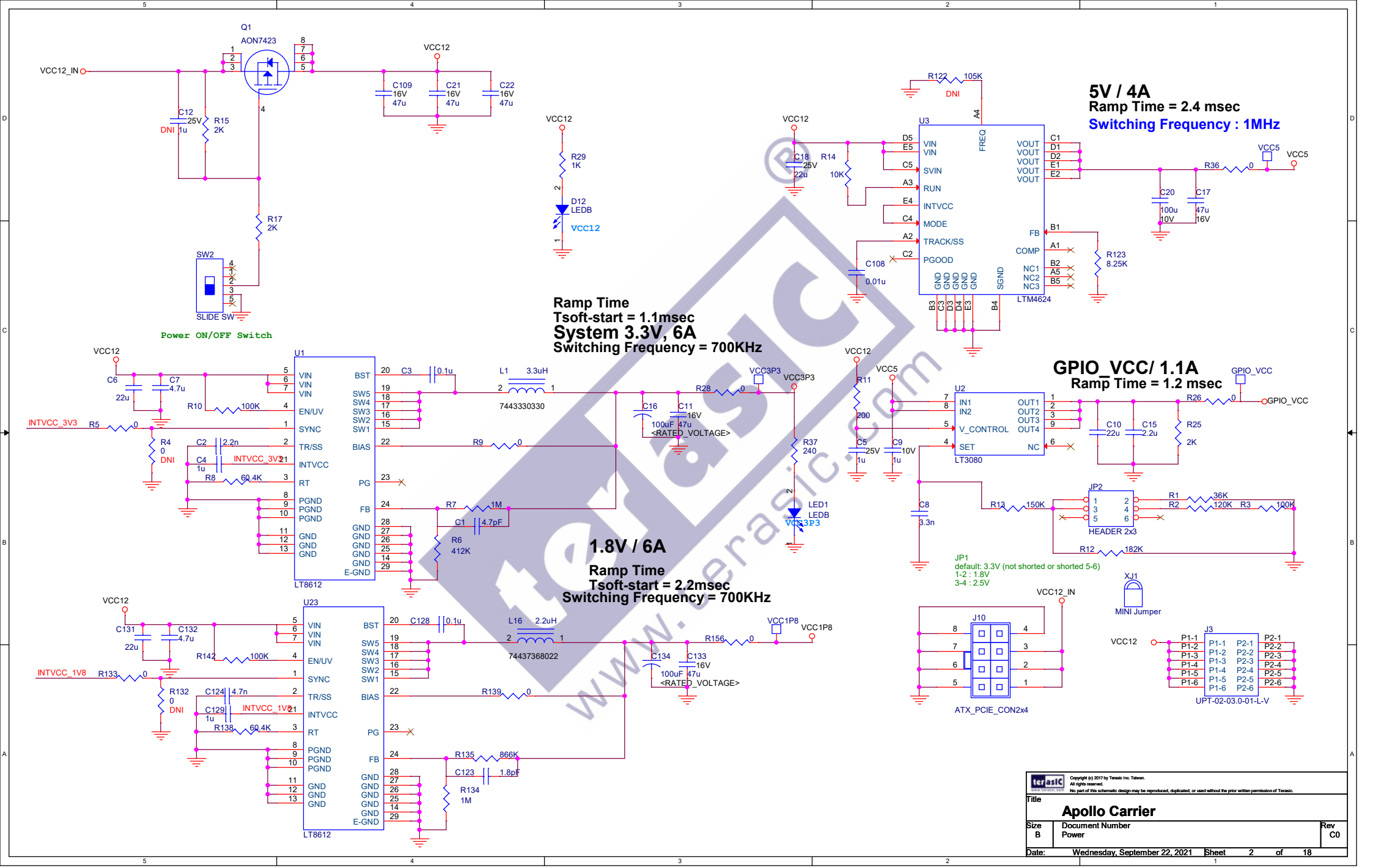


Title	**Apollo Carrier**	
Size: B	Document Number: Block diagram	Rev: C0
Date: Tuesday, September 14, 2021	Sheet 1 of 18	


Power ON/OFF Switch
Ramp Time
Tsoft-start = 1.1msec
System 3.3V, 6A
Switching Frequency = 700KHz
1.8V / 6A
Ramp Time
Tsoft-start = 2.2msec
Switching Frequency = 700KHz
5V / 4A
Ramp Time = 2.4 msec
Switching Frequency : 1MHz
GPIO_VCC/ 1.1A
Ramp Time = 1.2 msec
JP1
default: 3.3V (not shorted or shorted 5-6)
1-2 : 1.8V
3-4 : 2.5V
Title
Apollo Carrier
Size B
Document Number
Power
Rev C0
Date: Wednesday, September 22, 2021
Sheet 2 of 18

QSFP28 Port A Transceivers

QSFP28A_TX_p[3..0] 15
QSFP28A_TX_n[3..0] 15
QSFP28A_RX_p[3..0] 15
QSFP28A_RX_n[3..0] 15

QSFP28A Control Interface

QSFP28A_MOD_SEL_n 14
QSFP28A_RST_n 14
QSFP28A_SCL 14
QSFP28A_SDA 14
QSFP28A_LP_MODE 14
QSFP28A_INTERRUPT_n 14
QSFP28A_MOD_PRS_n 14

NOTE 1: Bypass Capacitors should be placed as close to the associated 20-pin connector as possible.
NOTE 2: Assuming that the SFP RD 100-ohm termination on the Host Board FPGA device will be implemented via the on-chip termination circuit.
NOTE 3: DC blocking capacitors are in the module for RX and TX.
NOTE 4: 1uH inductors should have a DC Resistance of less than 0.1-ohm.

VCC3P3
L18 1uH
QSFP28A_VCC
C193 0.1u 25V
C188 22u 6.3V
C196 0.1u 25V
C192 22u 6.3V
L21 1uH
QSFP28A_VCCT
C201 0.1u 25V
C205 22u 6.3V
L20 1uH
QSFP28A_VCCR
C202 0.1u 25V
C203 22u 6.3V

VCCIO_FMCP
C176 0.1u 25V
VCC3P3
C177 0.1u 25V
U24
VCCA VCCB OE GND
TXS0108ERGYR
QSFP28A_MOD_SEL_n
QSFP28A_RST_n
QSFP28A_SCL
QSFP28A_SDA
QSFP28A_LP_MODE
QSFP28A_INTERRUPT_n
QSFP28A_MOD_PRS_n
E_QSFP28A_MOD_SEL_n
E_QSFP28A_RST_n
E_QSFP28A_SCL
E_QSFP28A_SDA
E_QSFP28A_LP_MODE
E_QSFP28A_INTERRUPT_n
E_QSFP28A_MOD_PRS_n
VCCIO_FMCP
R196 10K

VCC3P3
E_QSFP28A_MOD_SEL_n R172 4.7K
E_QSFP28A_RST_n R182 4.7K
E_QSFP28A_SCL R183 4.7K
E_QSFP28A_SDA R191 4.7K
E_QSFP28A_LP_MODE R192 4.7K
E_QSFP28A_INTERRUPT_n R194 4.7K
E_QSFP28A_MOD_PRS_n R195 4.7K

QSFP28A_VCCT
QSFP28A_VCCR
QSFP28A_VCC
J9
VCC VCCR VCCT
QSFP28A_TX_p0 QSFP28A_TX_n0 TD1_P TD1_N RD1_P RD1_N QSFP28A_RX_p0 QSFP28A_RX_n0
QSFP28A_TX_p1 QSFP28A_TX_n1 TD2_P TD2_N RD2_P RD2_N QSFP28A_RX_p1 QSFP28A_RX_n1
QSFP28A_TX_p2 QSFP28A_TX_n2 TD3_P TD3_N RD3_P RD3_N QSFP28A_RX_p2 QSFP28A_RX_n2
QSFP28A_TX_p3 QSFP28A_TX_n3 TD4_P TD4_N RD4_P RD4_N QSFP28A_RX_p3 QSFP28A_RX_n3
E_QSFP28A_MOD_SEL_n MOD_SELn
E_QSFP28A_LP_MODE LP_MODE
E_QSFP28A_RST_n RSTn
E_QSFP28A_SCL SCL
E_QSFP28A_SDA SDA
INTn MOD_PRSn E_QSFP28A_INTERRUPT_n E_QSFP28A_MOD_PRS_n
GND
CAGE_GND
QSFP-28_AND_CAGE
GND_CHASSIS

QSFP_CONNECTOR1

R119 100K
C92 0.1u 25V
GND_CHASSIS

Title: **Apollo Carrier**
Size: B
Document Number: QSFP28 Connector Port A
Rev: C0
Date: Wednesday, September 22, 2021
Sheet 3 of 18

QSFP28 Port B Transceivers

QSFP28B_TX_p[3..0] 15
QSFP28B_TX_n[3..0] 15
QSFP28B_RX_p[3..0] 15
QSFP28B_RX_n[3..0] 15

QSFP28B Control Interface

QSFP28B_MOD_SEL_n 14
QSFP28B_RST_n 14
QSFP28B_SCL 14
QSFP28B_SDA 14
QSFP28B_LP_MODE 14
QSFP28B_INTERRUPT_n 14
QSFP28B_MOD_PRS_n 14

NOTE 1: Bypass Capacitors should be placed as close to the associated 20-pin connector as possible.
NOTE 2: Assuming that the SFP RD 100-ohm termination on the Host Board FPGA device will be implemented via the on-chip termination circuit.
NOTE 3: DC blocking capacitors are in the module for RX and TX.
NOTE 4: 1uH inductors should have a DC Resistance of less than 0.1-ohm.

VCC3P3
QSFP28B_VCC
L24 1uH
C214 0.1u 25V
C210 22u 6.3V
C216 0.1u 25V
C217 22u 6.3V

QSFP28B_VCCT
L27 1uH
C222 0.1u 25V
C233 22u 6.3V

QSFP28B_VCCR
L25 1uH
C223 0.1u 25V
C224 22u 6.3V

VCCIO_FMCP
C206 0.1u 25V
C207 0.1u 25V

U28 TXS0108ERGYR

QSFP28B_MOD_SEL_n	1	20	E_QSFP28B_MOD_SEL_n
QSFP28B_RST_n	3	18	E_QSFP28B_RST_n
QSFP28B_SCL	4	17	E_QSFP28B_SCL
QSFP28B_SDA	5	16	E_QSFP28B_SDA
QSFP28B_LP_MODE	6	15	E_QSFP28B_LP_MODE
QSFP28B_INTERRUPT_n	7	14	E_QSFP28B_INTERRUPT_n
QSFP28B_MOD_PRS_n	8	13	E_QSFP28B_MOD_PRS_n

VCCIO_FMCP R217 10K

VCC3P3

E_QSFP28B_MOD_SEL_n	R209	4.7K
E_QSFP28B_RST_n	R210	4.7K
E_QSFP28B_SCL	R211	4.7K
E_QSFP28B_SDA	R213	4.7K
E_QSFP28B_LP_MODE	R214	4.7K
E_QSFP28B_INTERRUPT_n	R215	4.7K
E_QSFP28B_MOD_PRS_n	R218	4.7K

QSFP28B_VCCT
QSFP28B_VCCR
QSFP28B_VCC

J12 QSFP-28_AND_CAGE

		VCC			
		VCCR			
		VCCT			
QSFP28B_TX_p0	36	TD1_P	RD1_P	17	QSFP28B_RX_p0
QSFP28B_TX_n0	37	TD1_N	RD1_N	18	QSFP28B_RX_n0
QSFP28B_TX_p1	3	TD2_P	RD2_P	22	QSFP28B_RX_p1
QSFP28B_TX_n1	2	TD2_N	RD2_N	21	QSFP28B_RX_n1
QSFP28B_TX_p2	33	TD3_P	RD3_P	14	QSFP28B_RX_p2
QSFP28B_TX_n2	34	TD3_N	RD3_N	15	QSFP28B_RX_n2
QSFP28B_TX_p3	6	TD4_P	RD4_P	25	QSFP28B_RX_p3
QSFP28B_TX_n3	5	TD4_N	RD4_N	24	QSFP28B_RX_n3
			INTn	28	E_QSFP28B_INTERRUPT_n
E_QSFP28B_MOD_SEL_n	8	MOD_SELn	MOD_PRSn	27	E_QSFP28B_MOD_PRS_n
E_QSFP28B_LP_MODE	31	LP_MODE	GND	1	
E_QSFP28B_RST_n	9	RSTn	GND	4	
E_QSFP28B_SCL	11	SCL	GND	7	
E_QSFP28B_SDA	12	SDA	GND	13	
			GND	16	
			GND	19	
			GND	20	
			GND	23	
			GND	26	
			GND	32	
			GND	35	
			GND	38	
39		CAGE_GND	CAGE_GND	45	
40		CAGE_GND	CAGE_GND	46	
41		CAGE_GND	CAGE_GND	47	
42		CAGE_GND	CAGE_GND	48	
43		CAGE_GND	CAGE_GND	49	
44		CAGE_GND	CAGE_GND	50	

GND_CHASSIS

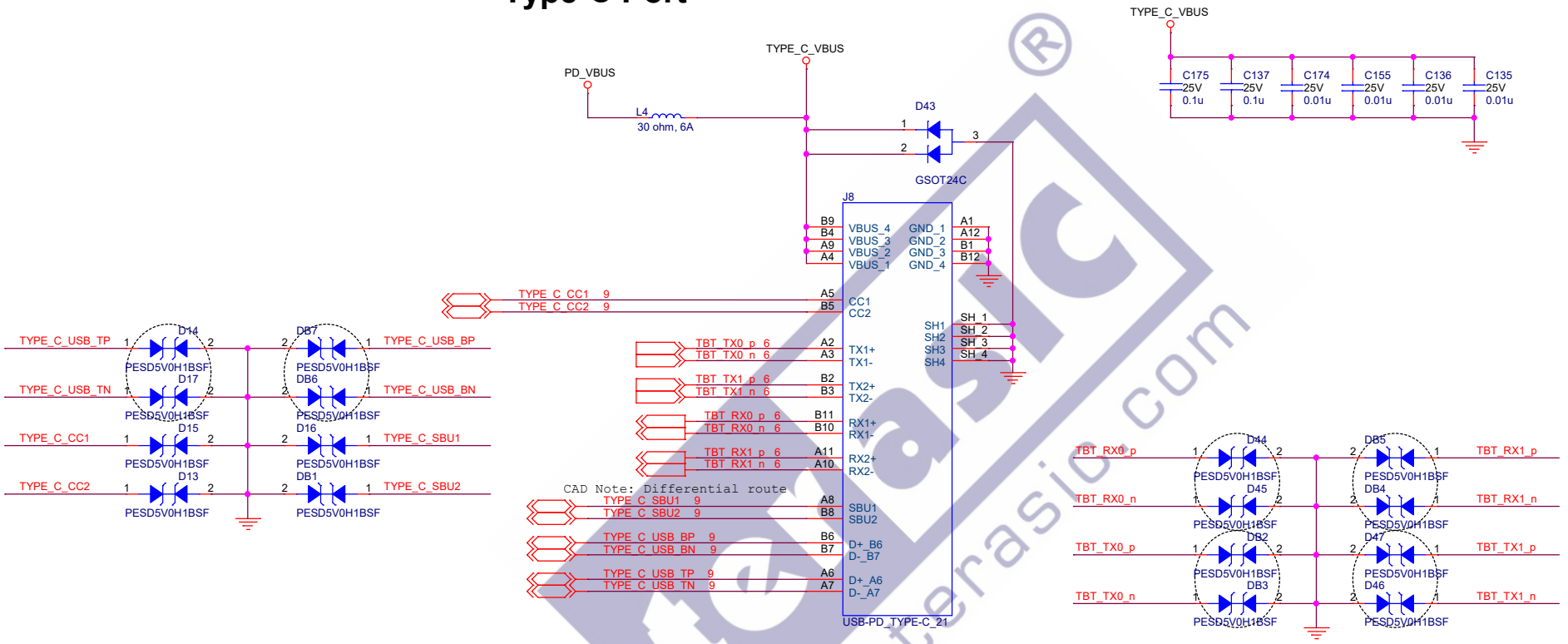
QSFP_CONNECTOR2

Title: **Apollo Carrier**

Size	Document Number	Rev
B	QSFP28 Connector Port B	C0

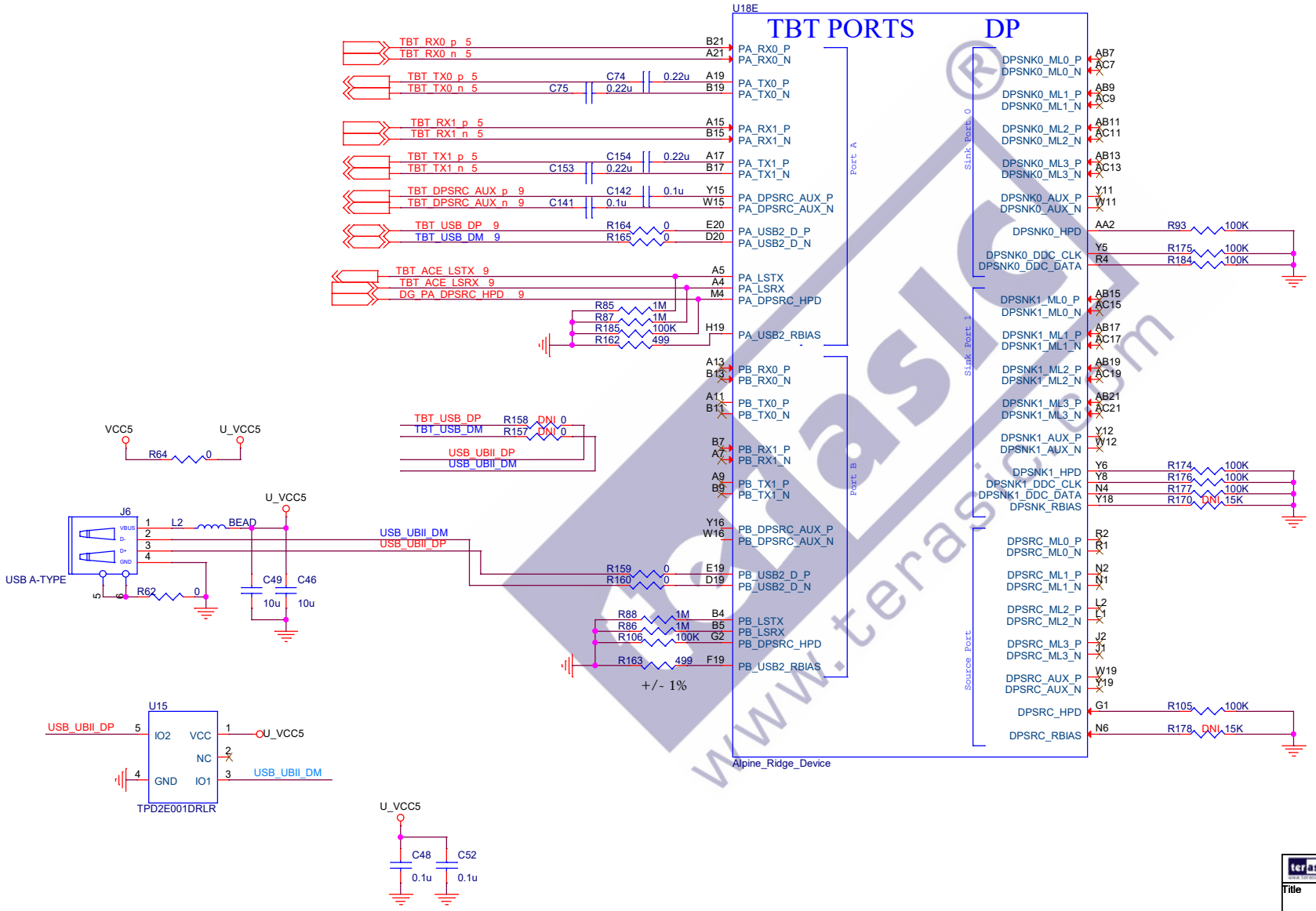
Date: Wednesday, September 22, 2021 Sheet 4 of 18

Type-C Port



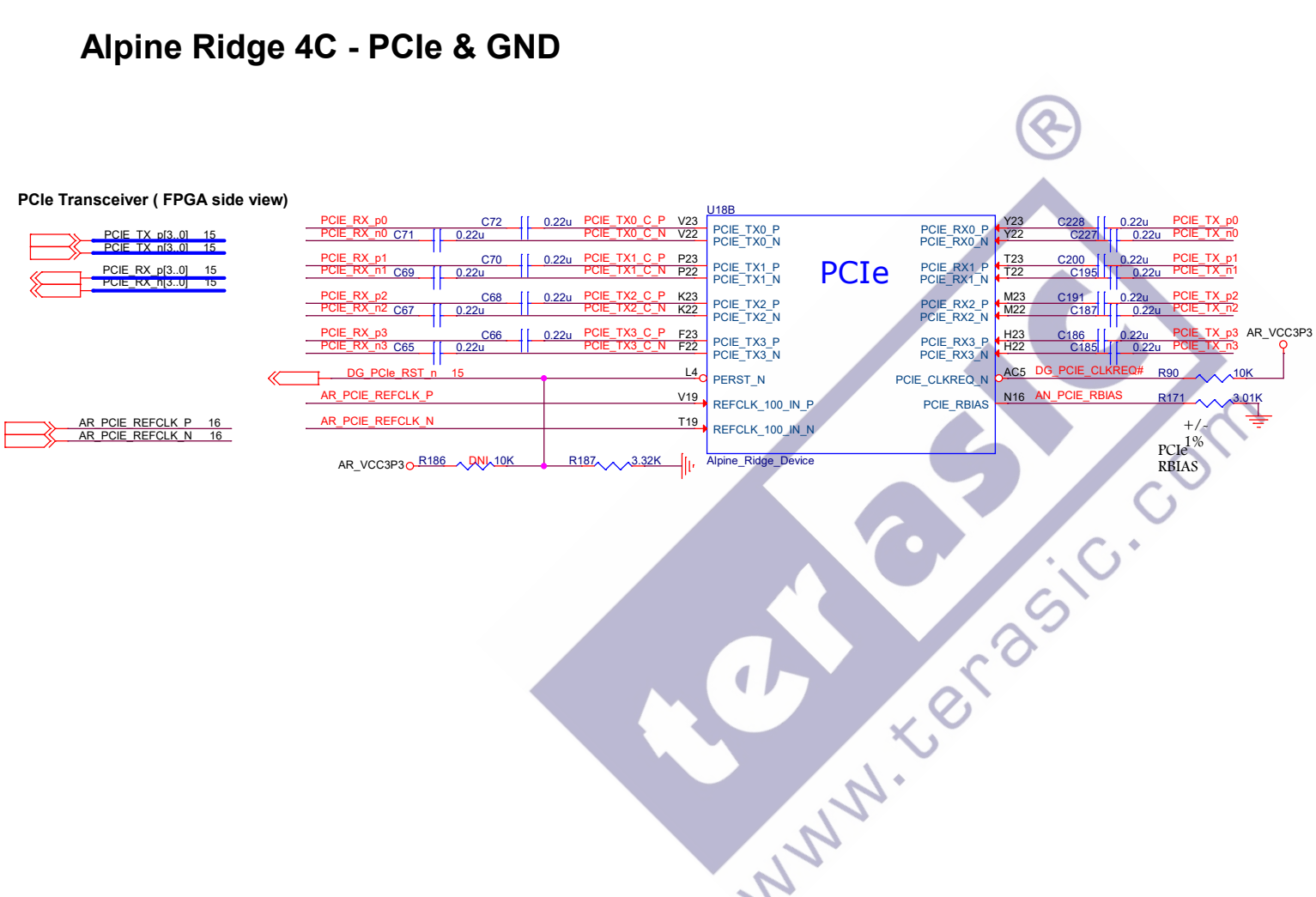
Title	Apollo Carrier	
Size B	Document Number Type-C Port	Rev C0
Date: Wednesday, September 22, 2021	Sheet 5 of 18	

Alpine Ridge 4C - TBT, USB2

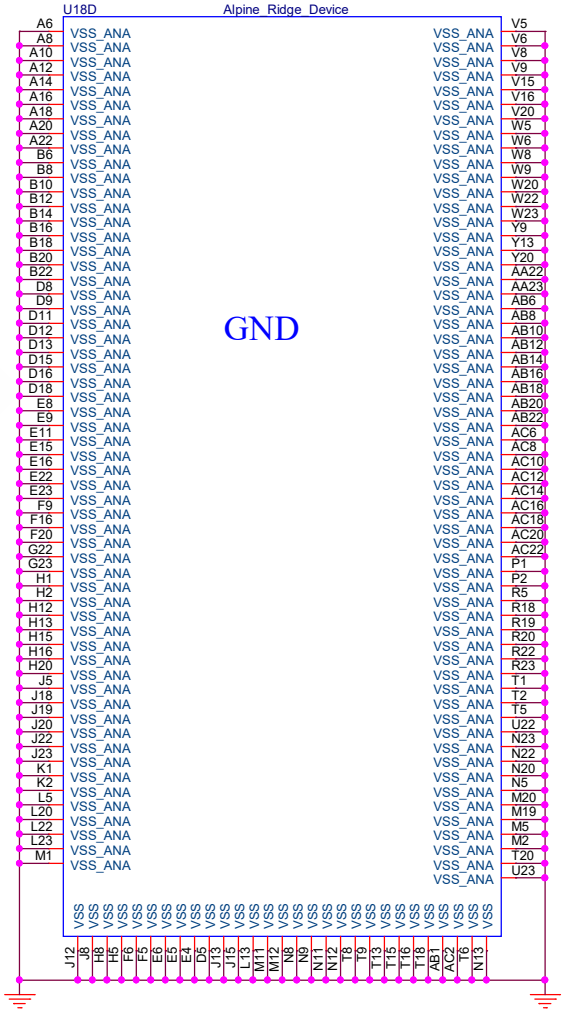


Title	**Apollo Carrier**	
Size B	Document Number AR - TBT3 & USB2	Rev C0
Date: Tuesday, September 14, 2021	Sheet 6 of 18	

Alpine Ridge 4C - PCIe & GND

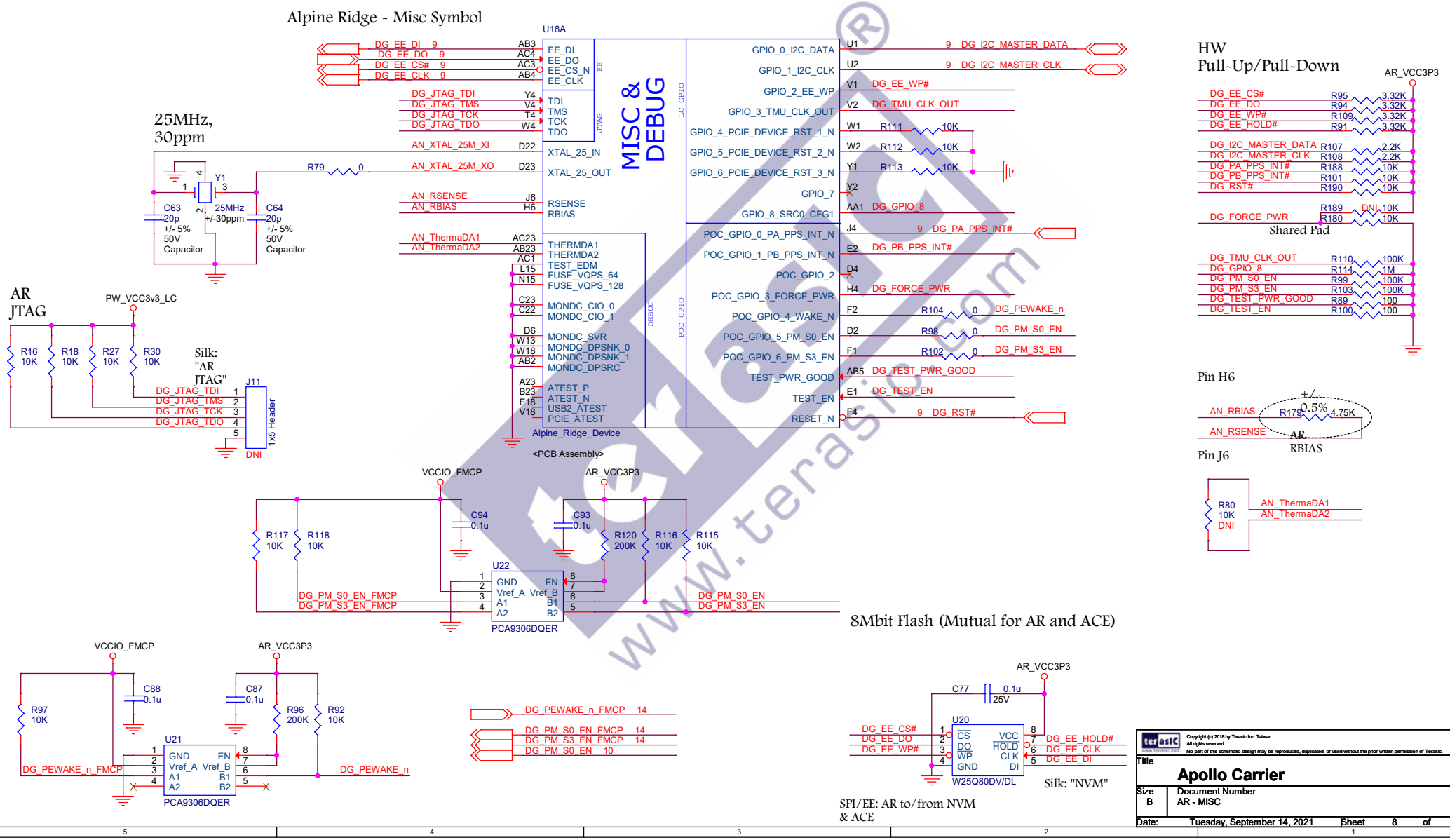


Alpine Ridge - GND Symbol



Title	Apollo Carrier	
Size B	Document Number AR - PCIe & GND	Rev C0
Date: Tuesday, September 14, 2021	Sheet 7 of 18	

AR - MISC

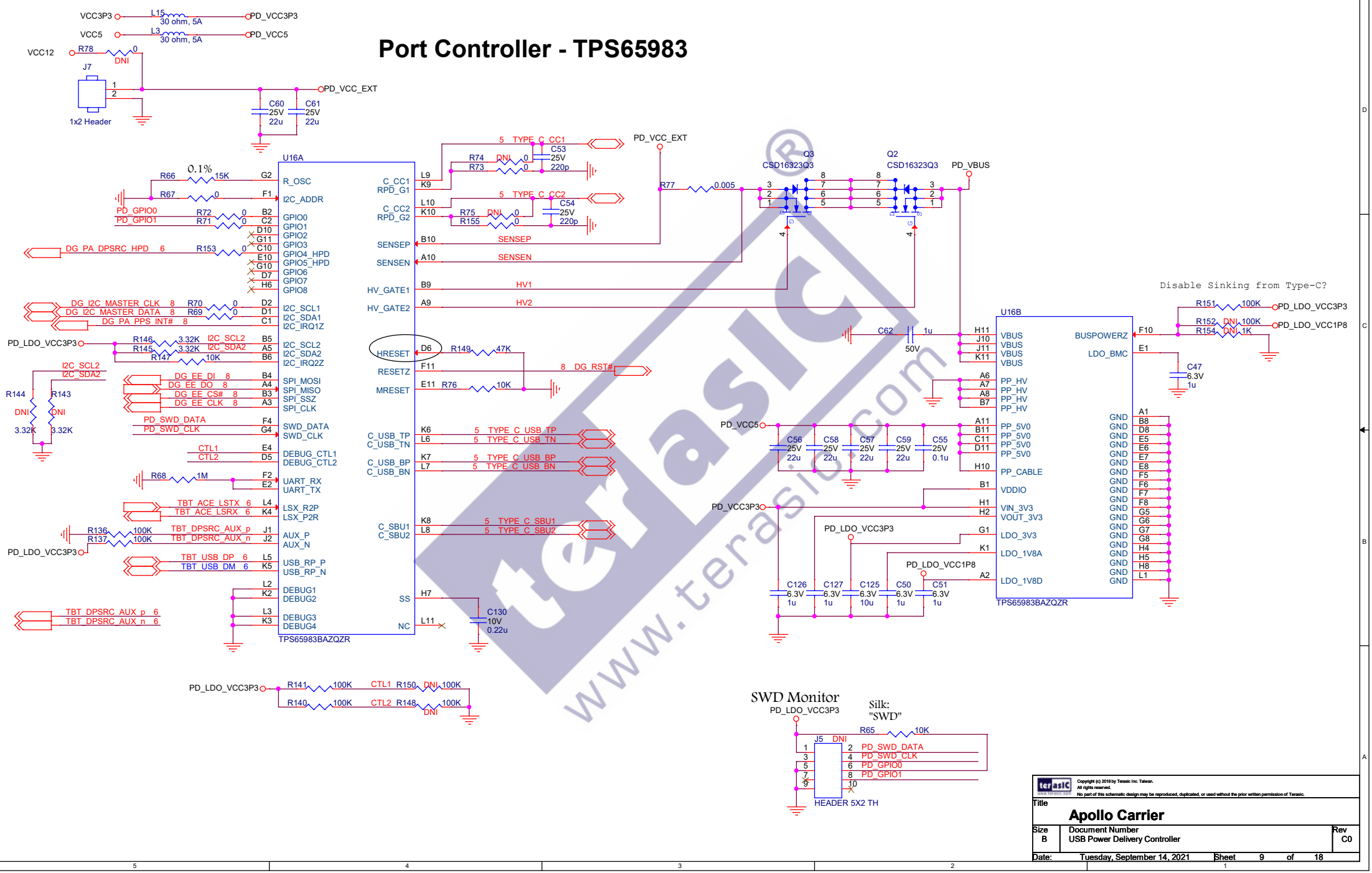


Title: **Apollo Carrier**

Size	Document Number	Rev
B	AR - MISC	C0

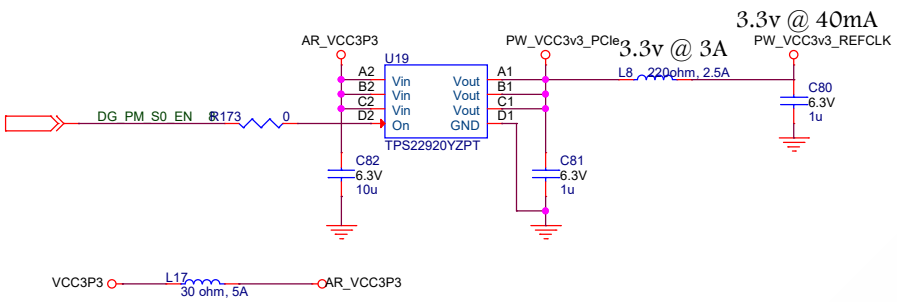
Date: Tuesday, September 14, 2021 Sheet 8 of 18

Port Controller - TPS65983

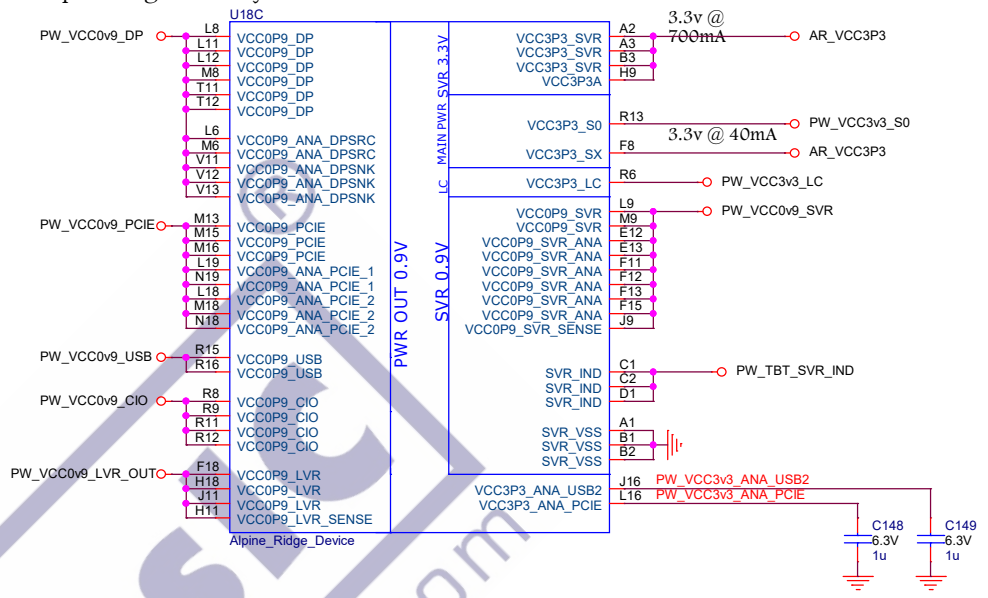


Title	**Apollo Carrier**	
Size B	Document Number: USB Power Delivery Controller	Rev C0
Date: Tuesday, September 14, 2021	Sheet 9 of 18	

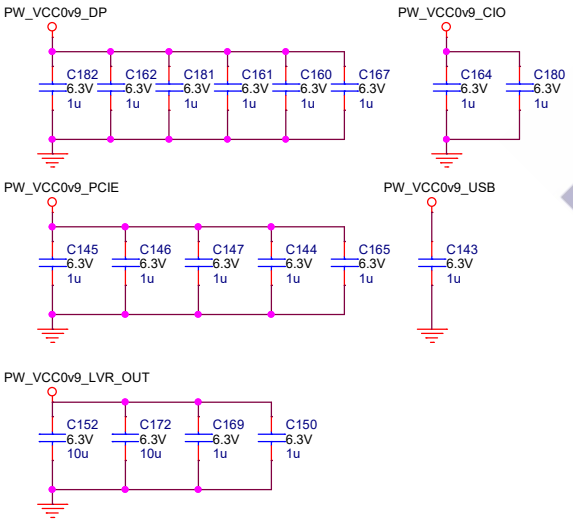
Alpine Ridge 4C - Power Supply



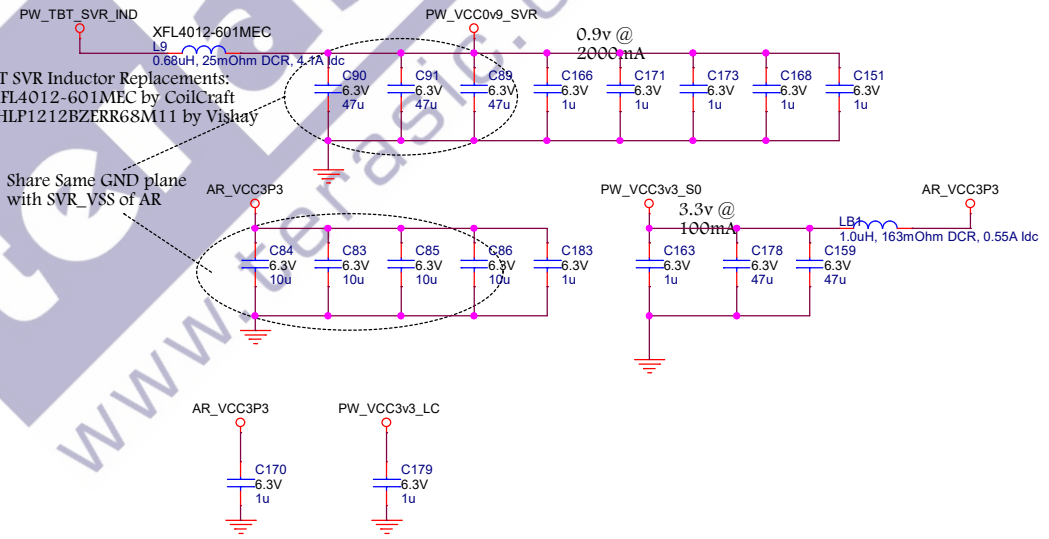
Alpine Ridge - VCC Symbol



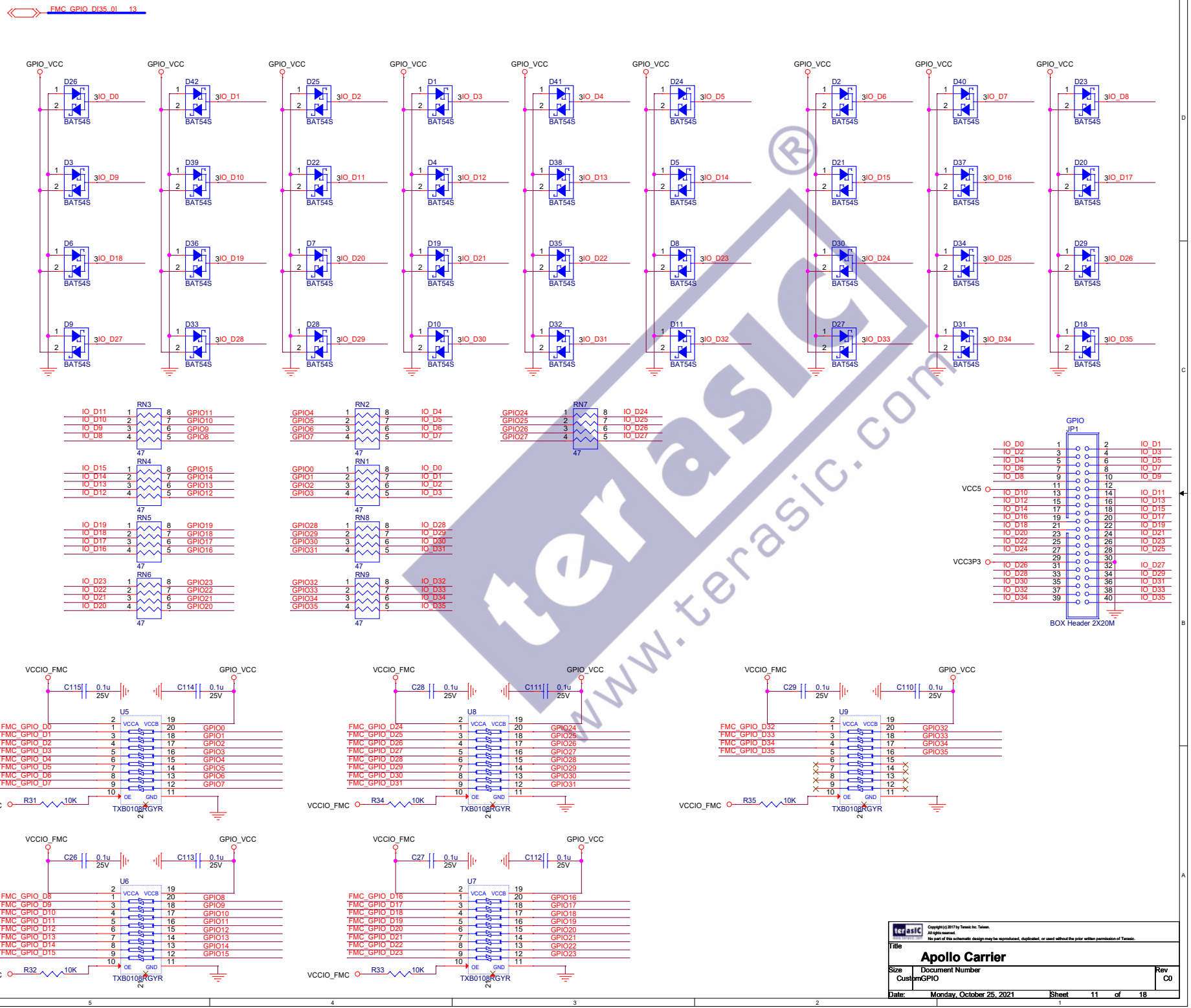
Power Supply Decoupling



<PCB Assembly>



Title	**Apollo Carrier**	
Size B	Document Number AR - Power	Rev C0
Date: Tuesday, September 14, 2021	Sheet 10 of 18	


FMC_GPIO_DI[35..0]
13
GPIO_VCC
D26
D42
D25
D1
D41
D24
D2
D40
D23
D3
D39
D22
D4
D38
D5
D21
D37
D20
D6
D36
D7
D19
D35
D8
D30
D34
D29
D9
D33
D28
D10
D32
D11
D27
D31
D18
BAT54S
IO_D0
IO_D1
IO_D2
IO_D3
IO_D4
IO_D5
IO_D6
IO_D7
IO_D8
IO_D9
IO_D10
IO_D11
IO_D12
IO_D13
IO_D14
IO_D15
IO_D16
IO_D17
IO_D18
IO_D19
IO_D20
IO_D21
IO_D22
IO_D23
IO_D24
IO_D25
IO_D26
IO_D27
IO_D28
IO_D29
IO_D30
IO_D31
IO_D32
IO_D33
IO_D34
IO_D35
RN3
RN4
RN5
RN6
RN2
RN1
RN8
RN9
RN7
47
GPIO11
GPIO10
GPIO9
GPIO8
GPIO15
GPIO14
GPIO13
GPIO12
GPIO19
GPIO18
GPIO17
GPIO16
GPIO23
GPIO22
GPIO21
GPIO20
GPIO4
GPIO5
GPIO6
GPIO7
GPIO0
GPIO1
GPIO2
GPIO3
GPIO28
GPIO29
GPIO30
GPIO31
GPIO32
GPIO33
GPIO34
GPIO35
GPIO24
GPIO25
GPIO26
GPIO27
GPIO
JP1
VCC5
VCC3P3
BOX Header 2X20M
VCCIO_FMC
C115
C114
C28
C111
C29
C110
0.1u
25V
U5
U8
U9
VCCA
VCCB
OE
GND
TXB0108RGYR
FMC_GPIO_D0
FMC_GPIO_D1
FMC_GPIO_D2
FMC_GPIO_D3
FMC_GPIO_D4
FMC_GPIO_D5
FMC_GPIO_D6
FMC_GPIO_D7
FMC_GPIO_D24
FMC_GPIO_D25
FMC_GPIO_D26
FMC_GPIO_D27
FMC_GPIO_D28
FMC_GPIO_D29
FMC_GPIO_D30
FMC_GPIO_D31
FMC_GPIO_D32
FMC_GPIO_D33
FMC_GPIO_D34
FMC_GPIO_D35
R31
R34
R35
10K
C26
C113
C27
C112
U6
U7
FMC_GPIO_D8
FMC_GPIO_D9
FMC_GPIO_D10
FMC_GPIO_D11
FMC_GPIO_D12
FMC_GPIO_D13
FMC_GPIO_D14
FMC_GPIO_D15
FMC_GPIO_D16
FMC_GPIO_D17
FMC_GPIO_D18
FMC_GPIO_D19
FMC_GPIO_D20
FMC_GPIO_D21
FMC_GPIO_D22
FMC_GPIO_D23
R32
R33
Copyright(c) 2017 by Terasic Inc. Taiwan.
All rights reserved.
No part of this schematic design may be reproduced, duplicated, or used without the prior written permission of Terasic.
Title
Apollo Carrier
Size
Custom
Document Number
GPIO
Rev
C0
Date:
Monday, October 25, 2021
Sheet
11
of
18

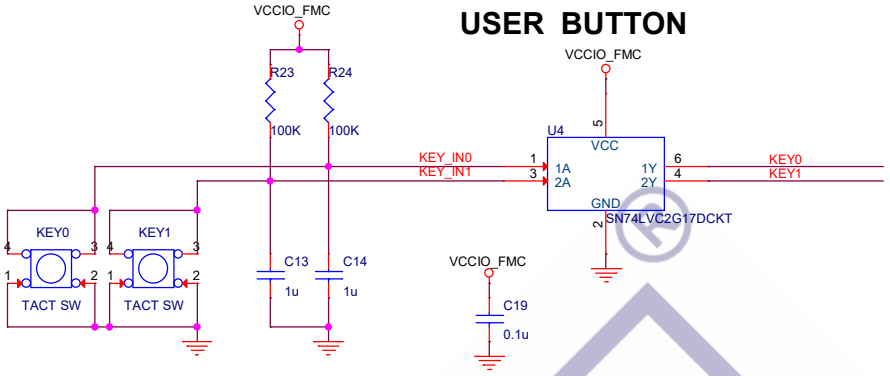
KEY[1..0] 13

SW[1..0] 13

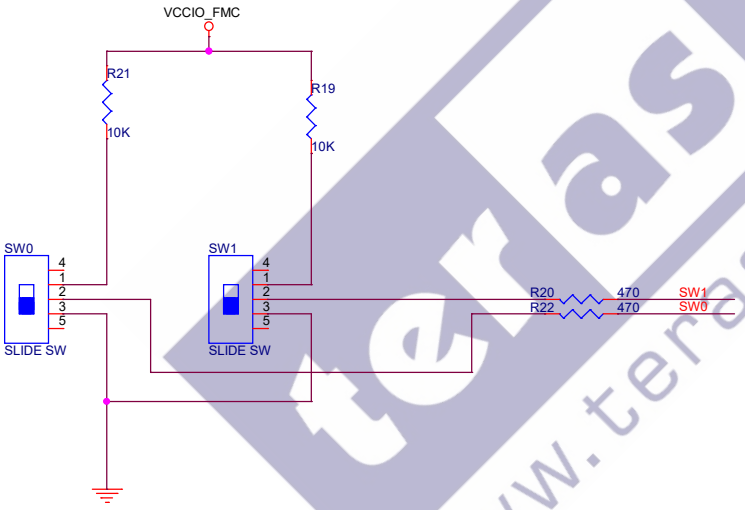
LED

LED[3..0] 13

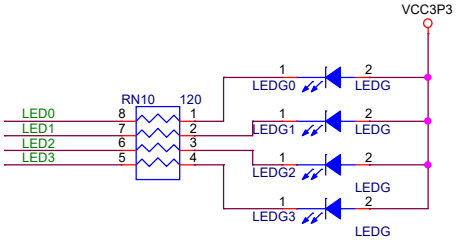
USER BUTTON



SLIDE SWITCH

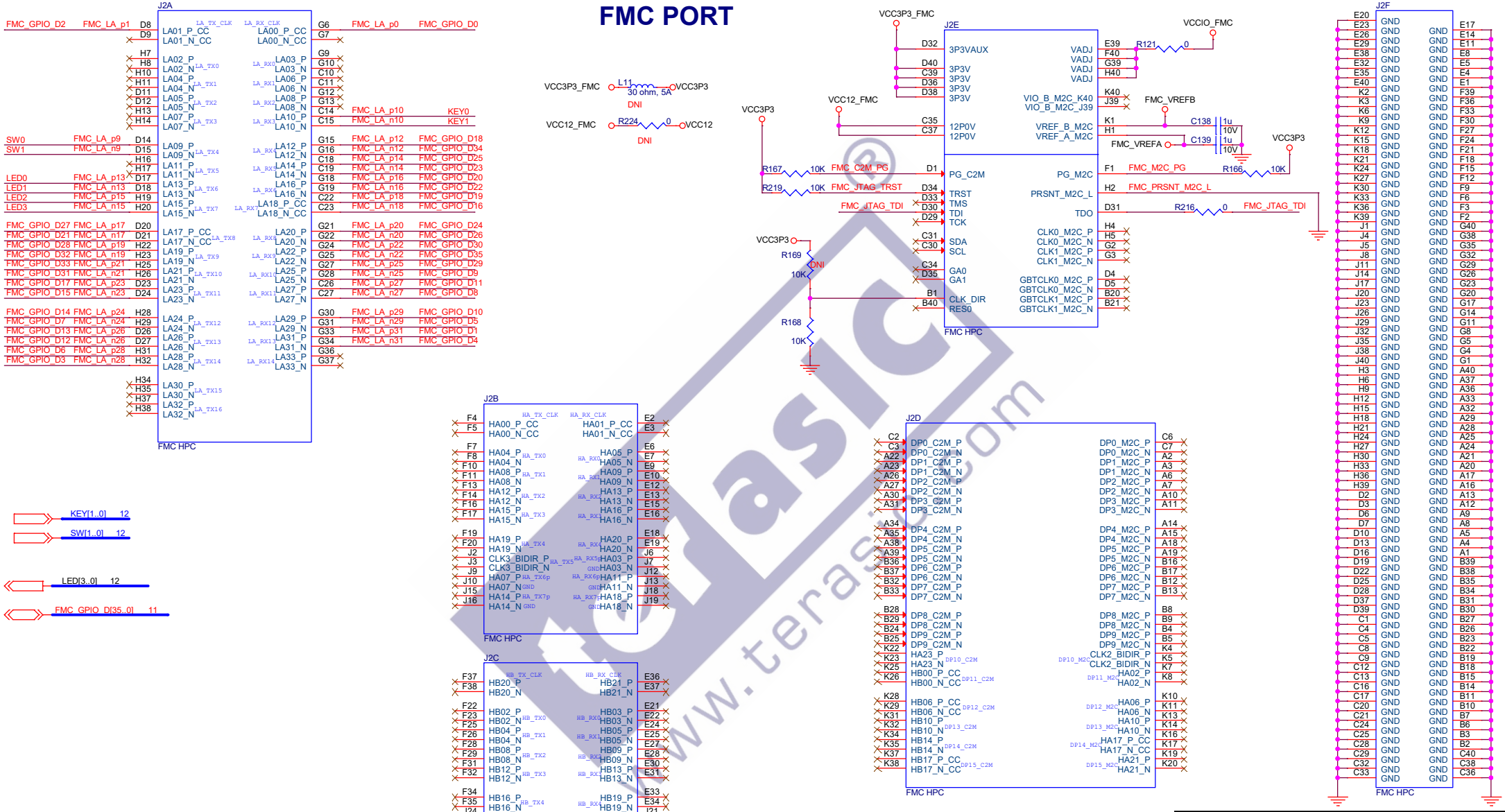


USER LED



Title	Apollo Carrier	
Size: B	Document Number: LED/SW/KEY	Rev: C0
Date: Wednesday, September 22, 2021	Sheet 12 of 18	

FMC PORT



Title
Apollo Carrier

Size	Document Number	Rev
Custom	FMC	C0

Date: Tuesday, September 14, 2021 Sheet 13 of 18

FMC+ 1

HDMI_TX_HPD 17
HDMI_TX_CEC 17

SI5340A_RST_n 16
SI5340A_OE_n 16

DG_PM_S0_EN_FMCP 8
DG_PM_S3_EN_FMCP 8
DG_PEWAKE_n_FMCP 8

QSFP28A Control Interface

QSFP28A_MOD_SEL_n 3
QSFP28A_RST_n 3
QSFP28A_SCL 3
QSFP28A_SDA 3
QSFP28A_LP_MODE 3
QSFP28A_INTERRUPT_n 3
QSFP28A_MOD_PRS_n 3

QSFP28B Control Interface

QSFP28B_MOD_SEL_n 4
QSFP28B_RST_n 4
QSFP28B_SCL 4
QSFP28B_SDA 4
QSFP28B_LP_MODE 4
QSFP28B_INTERRUPT_n 4
QSFP28B_MOD_PRS_n 4

J1A

G6	LA_P0_CC	LA_P16	G18		
G7	LA_N0_CC	LA_N16	G19		
D8	LA_P1_CC	LA_P17_CC	D20		
D9	LA_N1_CC	LA_N17_CC	D21		
H7	LA_P2	LA_P18_CC	C22		
H8	LA_N2	LA_N18_CC	C23	FMCP_LA_n18	DG_PM_S0_EN_FMCP
G9	LA_P3	LA_P19	H22	FMCP_LA_p19	DG_PM_S3_EN_FMCP
G10	LA_N3	LA_N19	H23	FMCP_LA_n19	DG_PEWAKE_n_FMCP
H10	LA_P4	LA_P20	G21	FMCP_LA_p20	HDMI_TX_HPD
H11	LA_N4	LA_N20	G22	FMCP_LA_n20	HDMI_TX_CEC
D11	LA_P5	LA_P21	H25	FMCP_LA_p21	SI5340A_RST_n
D12	LA_N5	LA_N21	H26	FMCP_LA_n21	SI5340A_OE_n
C10	LA_P6	LA_P22	G24		
C11	LA_N6	LA_N22	G25		
H13	LA_P7	LA_P23	D23		
H14	LA_N7	LA_N23	D24		
G12	LA_P8	LA_P24	H28	FMCP_LA_p24	QSFP28A_MOD_SEL_n
G13	LA_N8	LA_N24	H29	FMCP_LA_n24	QSFP28A_RST_n
D14	LA_P9	LA_P25	G27		
D15	LA_N9	LA_N25	G28		
C14	LA_P10	LA_P26	D26	FMCP_LA_p26	QSFP28A_SCL
C15	LA_N10	LA_N26	D27	FMCP_LA_n26	QSFP28A_SDA
H16	LA_P11	LA_P27	C26		
H17	LA_N11	LA_N27	C27		
G15	LA_P12	LA_P28	H31	FMCP_LA_p28	QSFP28A_LP_MODE
G16	LA_N12	LA_N28	H32	FMCP_LA_n28	QSFP28A_INTERRUPT_n
D17	LA_P13	LA_P29	G30	FMCP_LA_p29	QSFP28A_MOD_PRS_n
D18	LA_N13	LA_N29	G31	FMCP_LA_n29	QSFP28B_MOD_SEL_n
C18	LA_P14	LA_P30	H34	FMCP_LA_p30	QSFP28B_RST_n
C19	LA_N14	LA_N30	H35	FMCP_LA_n30	QSFP28B_SCL
H19	LA_P15	LA_P31	G33	FMCP_LA_p31	QSFP28B_SDA
H20	LA_N15	LA_P31	G34	FMCP_LA_n31	QSFP28B_LP_MODE
		LA_N31	H37	FMCP_LA_p32	QSFP28B_INTERRUPT_n
		LA_P32	H38	FMCP_LA_n32	QSFP28B_MOD_PRS_n
		LA_N32	G36		
		LA_P33	G37		
		LA_N33			

ASP-184330-01

J1C

K25	HB_P0_CC	HB_P11	J30
K26	HB_N0_CC	HB_N11	J31
J24	HB_P1	HB_P12	F32
J25	HB_N1	HB_N12	E30
F22	HB_P2	HB_P13	E31
F23	HB_N2	HB_N13	K34
E21	HB_P3	HB_P14	K35
E22	HB_N3	HB_N14	
F25	HB_P4	HB_P15	J33
F26	HB_N4	HB_N15	J34
E24	HB_P5	HB_P16	F34
E25	HB_N5	HB_N16	F35
K28	HB_P6_CC	HB_P17_CC	K37
K29	HB_N6_CC	HB_N17_CC	K38
J27	HB_P7	HB_P18	J36
J28	HB_N7	HB_N18	J37
F28	HB_P8	HB_P19	E33
F29	HB_N8	HB_N19	E34
E27	HB_P9	HB_P20	F37
E28	HB_N9	HB_N20	F38
K31	HB_P10	HB_P21	E36
K32	HB_N10	HB_N21	E37

ASP-184330-01

J1B

F4	HA_P0_CC	HA_P12	F13
F5	HA_N0_CC	HA_N12	F14
E2	HA_P1_CC	HA_P13	E12
E3	HA_N1_CC	HA_N13	E13
K7	HA_P2	HA_P14	J15
K8	HA_N2	HA_N14	J16
J6	HA_P3	HA_P15	F16
J7	HA_N3	HA_N15	F17
F7	HA_P4	HA_P16	E15
F8	HA_N4	HA_N16	E16
E6	HA_P5	HA_P17_CC	K16
E7	HA_N5	HA_N17_CC	K17
K10	HA_P6	HA_P18	J18
K11	HA_N6	HA_N18	J19
J9	HA_P7	HA_P19	F19
J10	HA_N7	HA_N19	F20
F10	HA_P8	HA_P20	E18
F11	HA_N8	HA_N20	E19
E9	HA_P9	HA_P21	K19
E10	HA_N9	HA_N21	K20
K13	HA_P10	HA_P22	J21
K14	HA_N10	HA_N22	J22
J12	HA_P11	HA_P23	K22
J13	HA_N11	HA_N23	K23

ASP-184330-01

J1F

E20	GND0		E17
E23	GND1	GND80	E14
E26	GND2	GND81	E11
E29	GND3	GND82	E8
E38	GND4	GND83	E5
E32	GND5	GND84	E4
E35	GND6	GND85	E1
E40	GND7	GND86	F39
K2	GND8	GND87	F36
K3	GND9	GND88	F33
K6	GND10	GND89	F30
K9	GND11	GND90	F27
K12	GND12	GND91	F24
K15	GND13	GND92	F21
K18	GND14	GND93	F18
K21	GND15	GND94	F15
K24	GND16	GND95	F12
K27	GND17	GND96	F9
K30	GND18	GND97	F6
K33	GND19	GND98	F3
K36	GND20	GND99	F2
K39	GND21	GND100	G40
J1	GND22	GND101	G38
J4	GND23	GND102	G35
J5	GND24	GND103	G32
J8	GND25	GND104	G29
J11	GND26	GND105	G26
J14	GND27	GND106	G23
J17	GND28	GND107	G20
J20	GND29	GND108	G17
J23	GND30	GND109	G14
J26	GND31	GND120	G11
J29	GND32	GND121	G8
J32	GND33	GND122	G5
J35	GND34	GND123	G4
J38	GND35	GND124	G1
J40	GND36	GND125	A40
H3	GND37	GND126	A37
H6	GND38	GND127	A36
H9	GND39	GND128	A33
H12	GND40	GND129	A32
H15	GND41	GND130	A29
H18	GND42	GND131	A28
H21	GND43	GND132	A25
H24	GND44	GND133	A24
H27	GND45	GND134	A21
H30	GND46	GND135	A20
H33	GND47	GND136	A17
H36	GND48	GND137	A16
H39	GND49	GND138	A13
D2	GND50	GND139	A12
D3	GND51	GND140	A9
D6	GND52	GND141	A8
D7	GND53	GND142	A5
D10	GND54	GND143	A4
D13	GND55	GND144	A1
D16	GND56	GND145	B39
D19	GND57	GND146	B38
D22	GND58	GND147	B35
D25	GND59	GND148	B34
D28	GND60	GND149	B31
D37	GND61	GND150	B30
D39	GND62	GND151	B27
C1	GND63	GND152	B26
C4	GND64	GND153	B23
C5	GND65	GND154	B22
C8	GND66	GND155	B19
C9	GND67	GND156	B18
C12	GND68	GND157	B15
C13	GND69	GND158	B14
C16	GND70	GND159	B11
C17	GND71	GND110	B10
C20	GND72	GND111	B7
C21	GND73	GND112	B6
C24	GND74	GND113	B3
C25	GND75	GND114	B2
C28	GND76	GND115	C40
C29	GND77	GND116	C38
C32	GND78	GND117	C36
C33	GND79	GND118	

ASP-184330-01

J1G

M1	GND119	GND199	Y1
M4	GND160	GND200	Y4
M5	GND161	GND201	Y5
M8	GND162	GND202	Y8
M9	GND163	GND203	Y9
M12	GND164	GND204	Y12
M13	GND165	GND205	Y13
M16	GND166	GND206	Y16
M17	GND167	GND207	Y17
M20	GND168	GND208	Y20
M21	GND169	GND209	Y21
M24	GND170	GND210	Y24
M25	GND171	GND211	Y25
M28	GND172	GND212	Y28
M29	GND173	GND213	Y29
M32	GND174	GND214	Y32
M33	GND175	GND215	Y33
M36	GND176	GND216	Y36
M37	GND177	GND217	Y37
M40	GND178	GND218	Y40
L2	GND179	GND219	Z2
L3	GND180	GND220	Z3
L6	GND181	GND221	Z6
L7	GND182	GND222	Z7
L10	GND183	GND223	Z10
L11	GND184	GND224	Z11
L14	GND185	GND225	Z14
L15	GND186	GND226	Z15
L18	GND187	GND227	Z18
L19	GND188	GND228	Z19
L22	GND189	GND229	Z22
L23	GND190	GND230	Z23
L26	GND191	GND231	Z26
L27	GND192	GND232	Z27
L30	GND193	GND233	Z30
L31	GND194	GND234	Z31
L34	GND195	GND235	Z34
L35	GND196	GND236	Z35
L38	GND197	GND237	Z38
L39	GND198	GND238	Z39

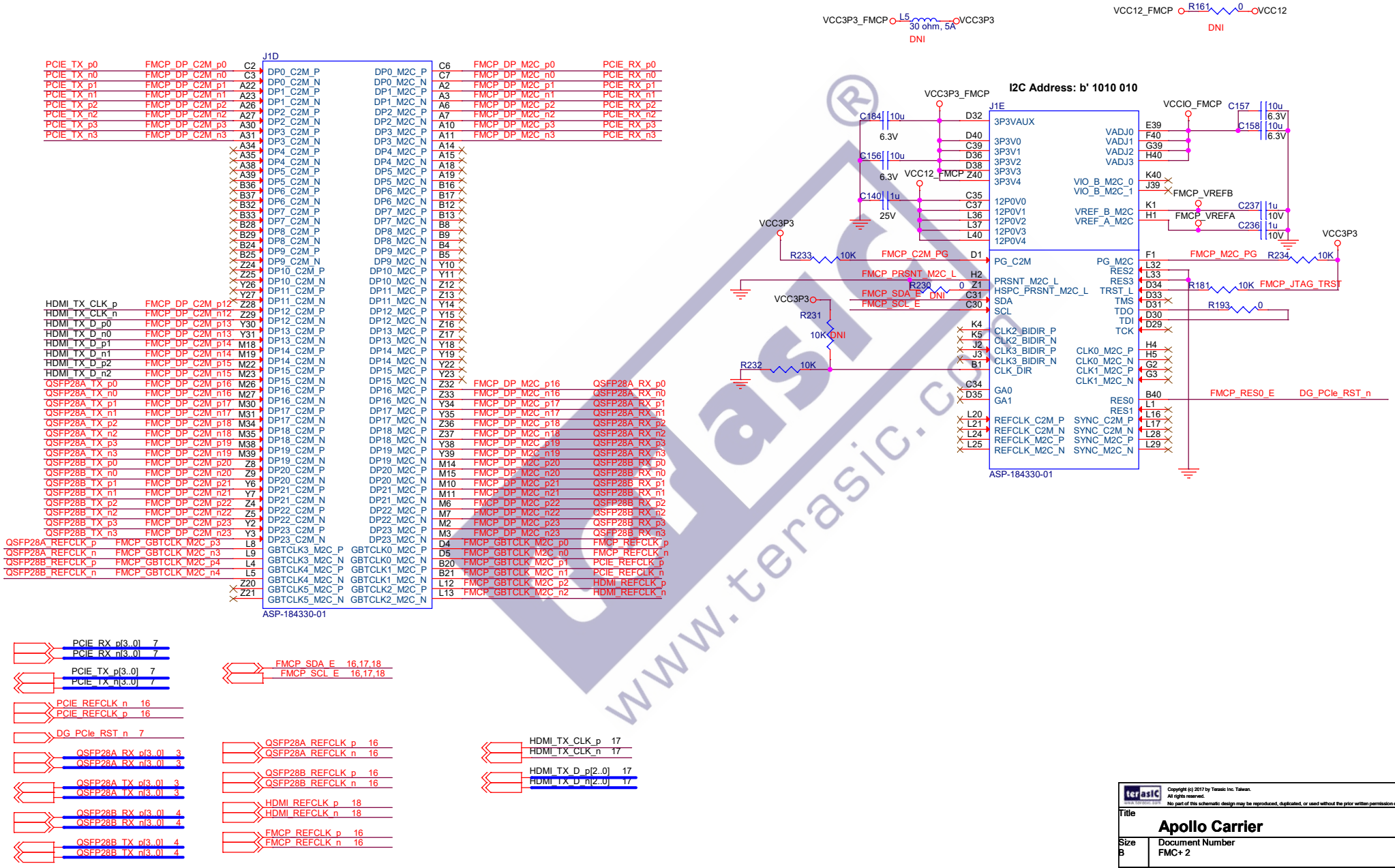
ASP-184330-01

Title: **Apollo Carrier**

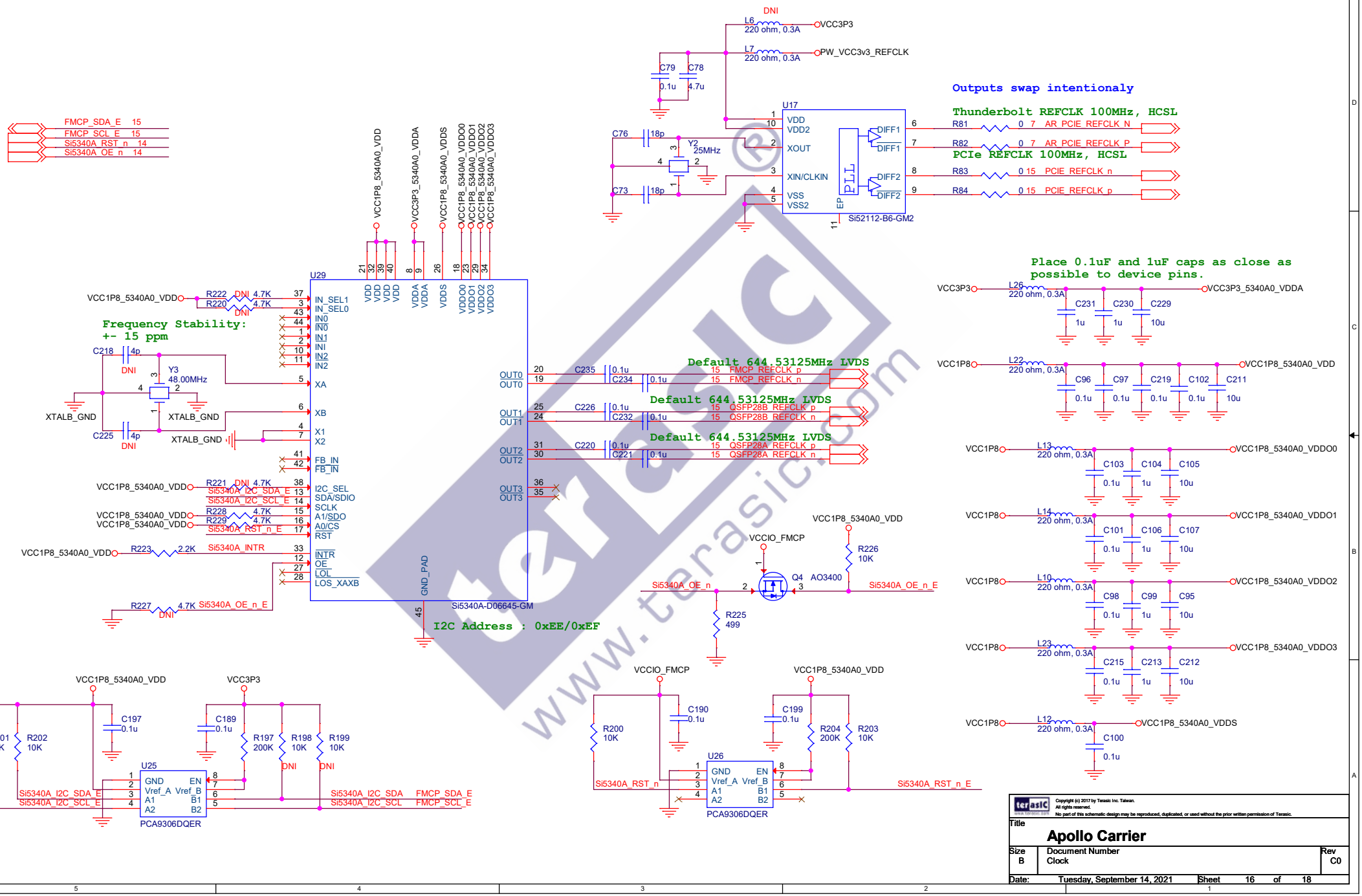
Size	Document Number	Rev
B	FMC+ 1	C0

Date: Wednesday, September 15, 2021 Sheet 14 of 18

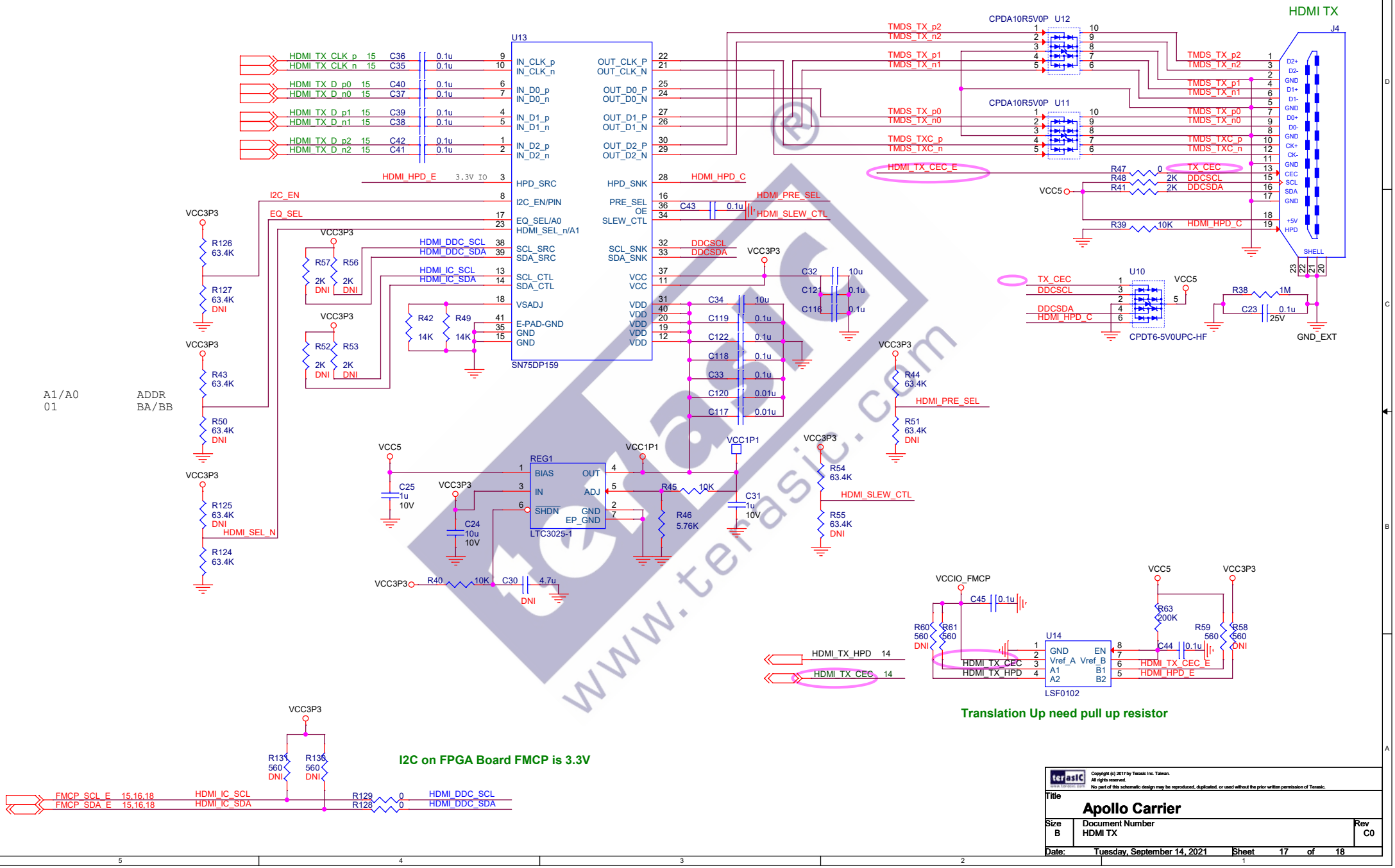
FMC+ 2



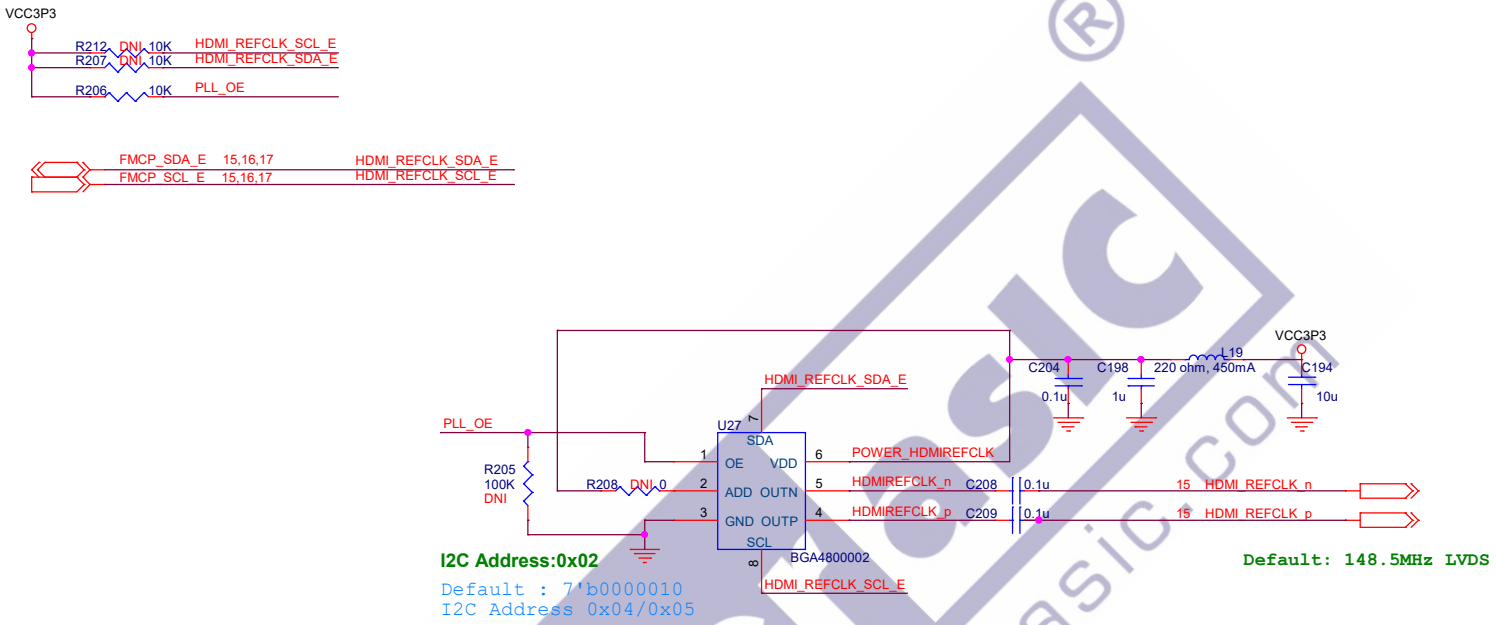
Title	Apollo Carrier	
Size B	Document Number FMC+ 2	Rev C0
Date: Tuesday, September 14, 2021	Sheet 15 of 18	


FMCP_SDA_E 15
FMCP_SCL_E 15
Si5340A_RST_n 14
Si5340A_OE_n 14
DNI
L6 220 ohm, 0.3A
VCC3P3
L7 220 ohm, 0.3A
PW_VCC3v3_REFCLK
C79 0.1u
C78 4.7u
U17
VDD
VDD2
XOUT
XIN/CLKIN
VSS
VSS2
EP
PLL
DIFF1
DIFF1
DIFF2
DIFF2
Si52112-B6-GM2
C76 18p
C73 18p
Y2 25MHz
Outputs swap intentionaly
Thunderbolt REFCLK 100MHz, HCSL
R81 0 7 AR_PCIE_REFCLK_N
R82 0 7 AR_PCIE_REFCLK_P
PCIe REFCLK 100MHz, HCSL
R83 0 15 PCIE_REFCLK_n
R84 0 15 PCIE_REFCLK_p
VCC1P8_5340A0_VDD
VCC3P3_5340A0_VDDA
VCC1P8_5340A0_VDDS
VCC1P8_5340A0_VDDO0
VCC1P8_5340A0_VDDO1
VCC1P8_5340A0_VDDO2
VCC1P8_5340A0_VDDO3
U29
Frequency Stability:
+- 15 ppm
C218 4p
DNI
Y3 48.00MHz
C225 4p
DNI
XTALB_GND
R222 DNI 4.7K
R220 4.7K
DNI
IN_SEL1
IN_SEL0
IN0
IN0
IN1
INI
IN2
IN2
XA
XB
X1
X2
FB_IN
FB_IN
R221 DNI 4.7K
Si5340A_I2C_SDA_E
Si5340A_I2C_SCL_E
I2C_SEL
SDA/SDIO
SCLK
R228 4.7K
R229 4.7K
A1/SDO
A0/CS
Si5340A_RST_n_E
RST
R223 2.2K
Si5340A_INTR
INTR
OE
LOL
LOS_XAXB
R227 4.7K DNI
Si5340A_OE_n_E
GND_PAD
Si5340A-D06645-GM
I2C Address : 0xEE/0xEF
OUT0
OUT0
OUT1
OUT1
OUT2
OUT2
OUT3
OUT3
C235 0.1u
C234 0.1u
C226 0.1u
C232 0.1u
C220 0.1u
C221 0.1u
Default 644.53125MHz LVDS
15 FMCP_REFCLK_p
15 FMCP_REFCLK_n
Default 644.53125MHz LVDS
15 QSFP28B_REFCLK_p
15 QSFP28B_REFCLK_n
Default 644.53125MHz LVDS
15 QSFP28A_REFCLK_p
15 QSFP28A_REFCLK_n
VCCIO_FMCP
R226 10K
Q4 AO3400
R225 499
Si5340A_OE_n
Si5340A_OE_n_E
Place 0.1uF and 1uF caps as close as possible to device pins.
L26 220 ohm, 0.3A
C231 1u
C230 1u
C229 10u
L22 220 ohm, 0.3A
C96 0.1u
C97 0.1u
C219 0.1u
C102 0.1u
C211 10u
L13 220 ohm, 0.3A
C103 0.1u
C104 1u
C105 10u
L14 220 ohm, 0.3A
C101 0.1u
C106 1u
C107 10u
L10 220 ohm, 0.3A
C98 0.1u
C99 1u
C95 10u
L23 220 ohm, 0.3A
C215 0.1u
C213 1u
C212 10u
L12 220 ohm, 0.3A
C100 0.1u
R201 10K
R202 10K
C197 0.1u
C189 0.1u
R197 200K
R198 10K
R199 10K
DNI
DNI
U25
GND
Vref_A
A1
A2
EN
Vref_B
B1
B2
PCA9306DQER
Si5340A_I2C_SDA_E
Si5340A_I2C_SCL_E
Si5340A_I2C_SDA
Si5340A_I2C_SCL
FMCP_SDA_E
FMCP_SCL_E
R200 10K
C190 0.1u
C199 0.1u
R204 200K
R203 10K
U26
PCA9306DQER
Si5340A_RST_n
Si5340A_RST_n_E
Copyright (c) 2017 by Terasic Inc. Taiwan.
All rights reserved.
No part of this schematic design may be reproduced, duplicated, or used without the prior written permission of Terasic.
Title
Apollo Carrier
Size B
Document Number
Clock
Rev C0
Date: Tuesday, September 14, 2021
Sheet 16 of 18

HDMI TX



Title	Apollo Carrier	
Size B	Document Number HDMI TX	Rev C0
Date: Tuesday, September 14, 2021	Sheet 17 of 18	



Title	Apollo Carrier	
Size B	Document Number HDMI-Clock	Rev C0
Date: Wednesday, September 15, 2021	Sheet 18 of 18	