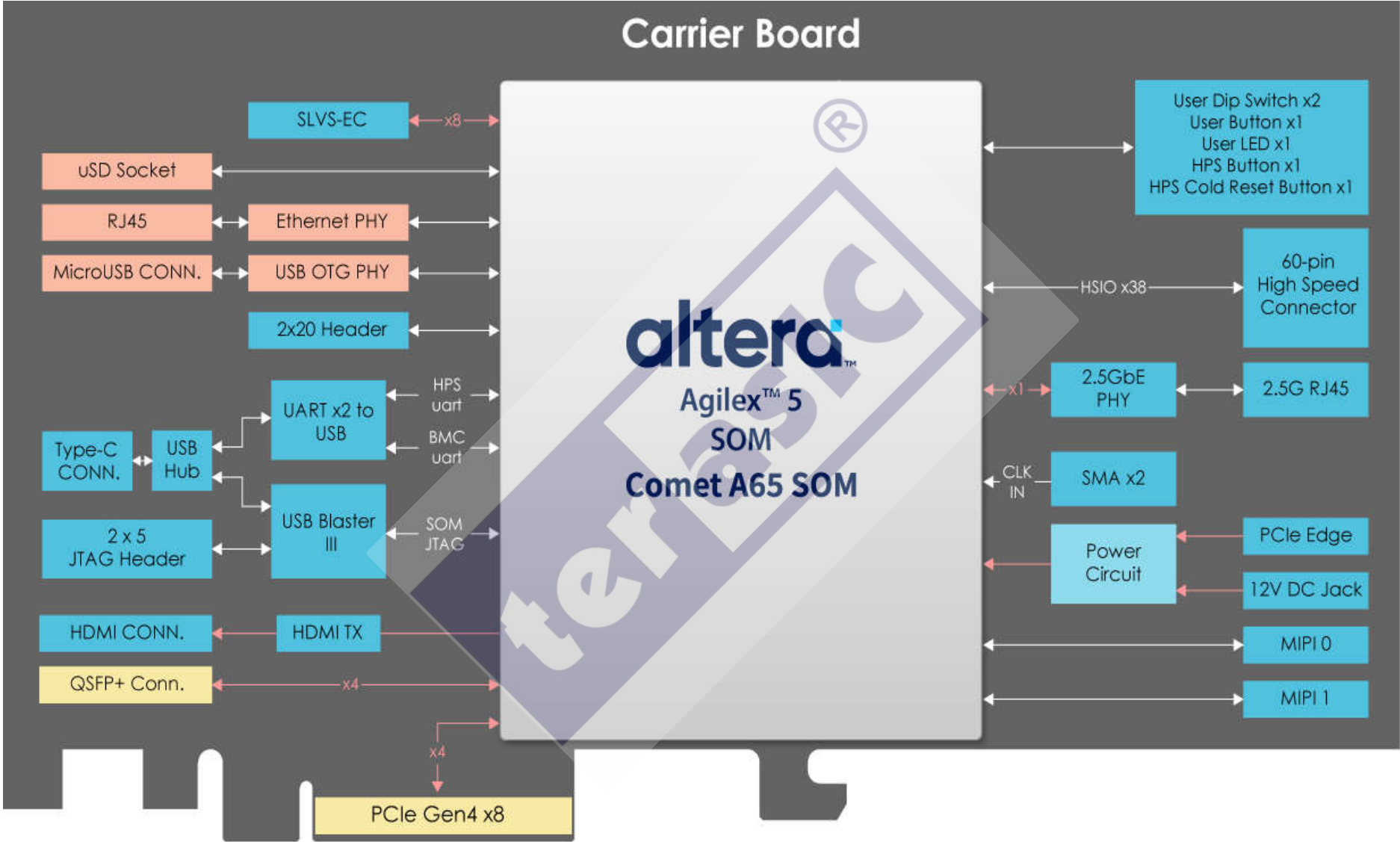
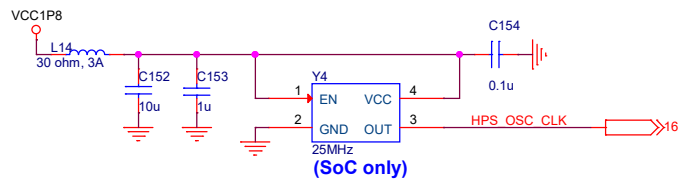


Comet A65 Carrier

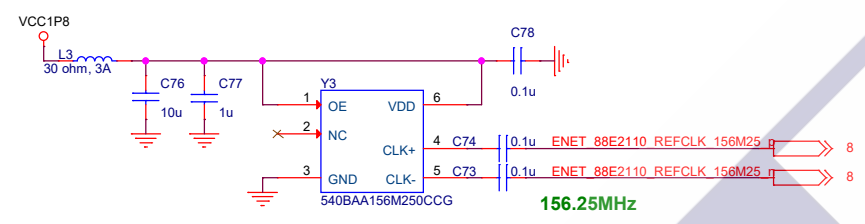
PAGE	CONTENT	PAGE	CONTENT
1	Cover Page	14	HDMI TX
2	Block Diagram	15	PCI Express x 4
3	Oscillators	16	8x50 B2B Connector, J1
4	USB Blaster III	17	8x50 B2B Connector, J2
5	QTH-030 Connector	18	SLVS-EC Connector
6	MIPI x2, SMA x2	19	HPS Button, HPS LED
7	GPIO (2x20)	20	Power - Comet A65 SOM Power on/off Sequence
8	2.5G Ethernet	21	Power - Power Source 12V
9	USB 2.0 OTG	22	Power - 3.3V, VIN (5V or 12V)
10	HPS Gigabit Ethernet	23	Power - 1.2V, 1.3V, 1.8V
11	USB to Dual UART (HPS/MAX 10)	24	Power - 0.8V
12	HPS SD Card		
13	QSFP+		

Block Diagram

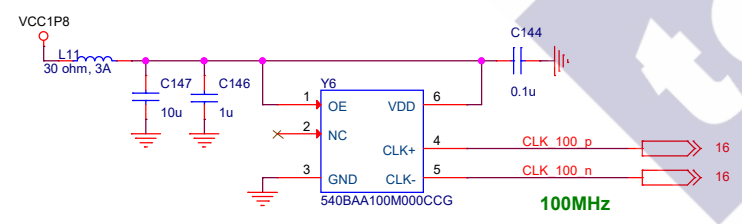
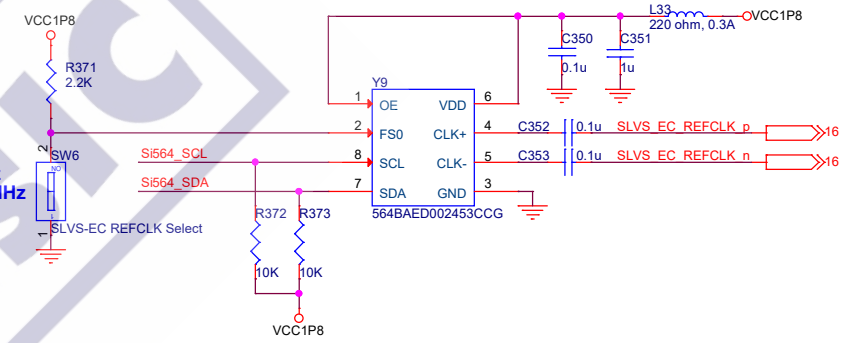




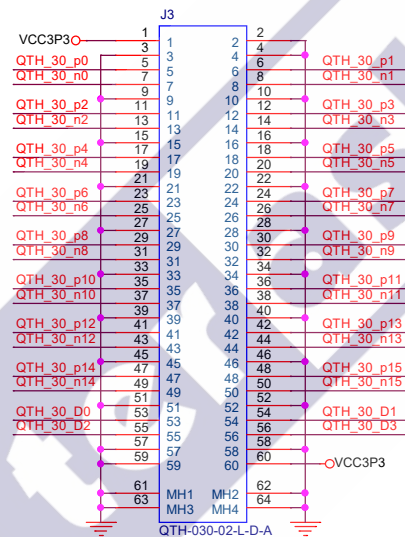
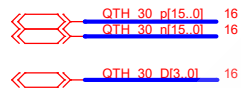
Si564_SCL
Si564_SDA




ON: 144MHz
OFF: 148.5MHz

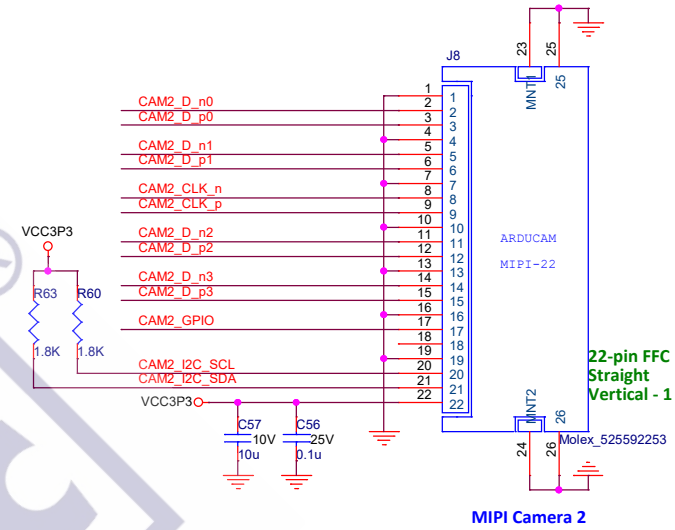
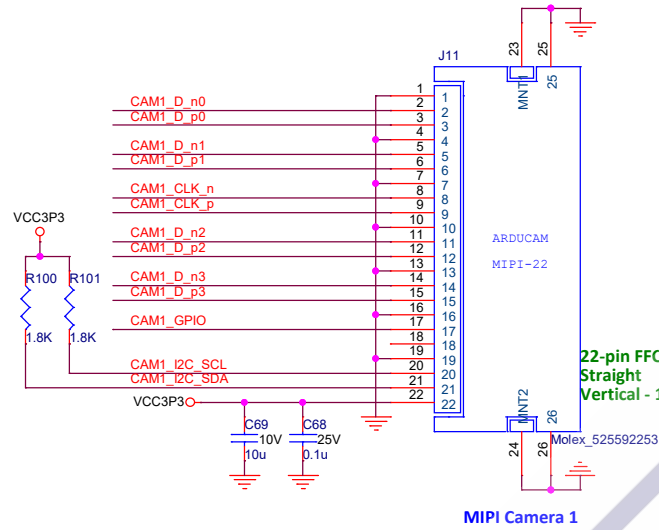


QTH High Speed Connector

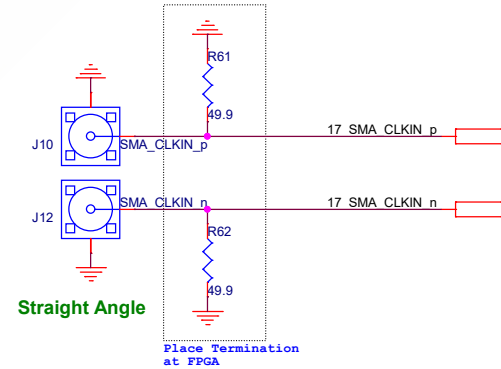


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Title	
Comet A65 Carrier	
Size	Document Number
B	FMC+1
Date:	Monday, September 22, 2025
Sheet	5 of 24
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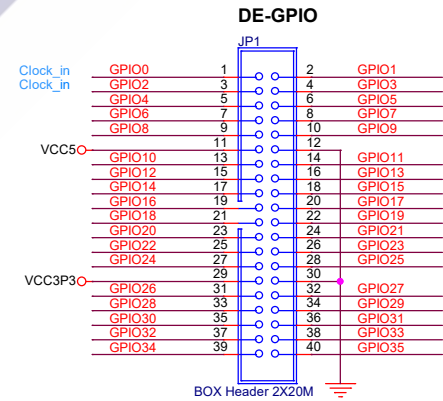
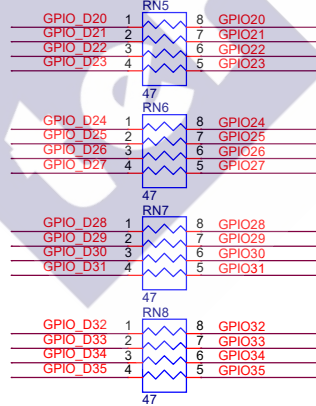
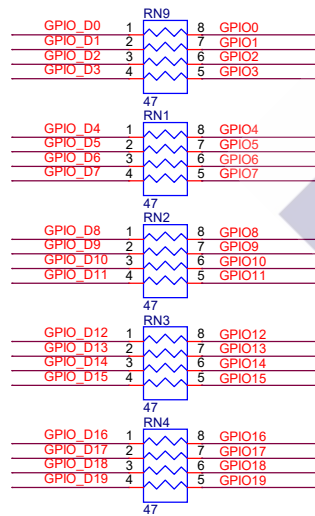
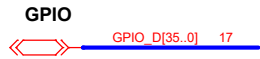
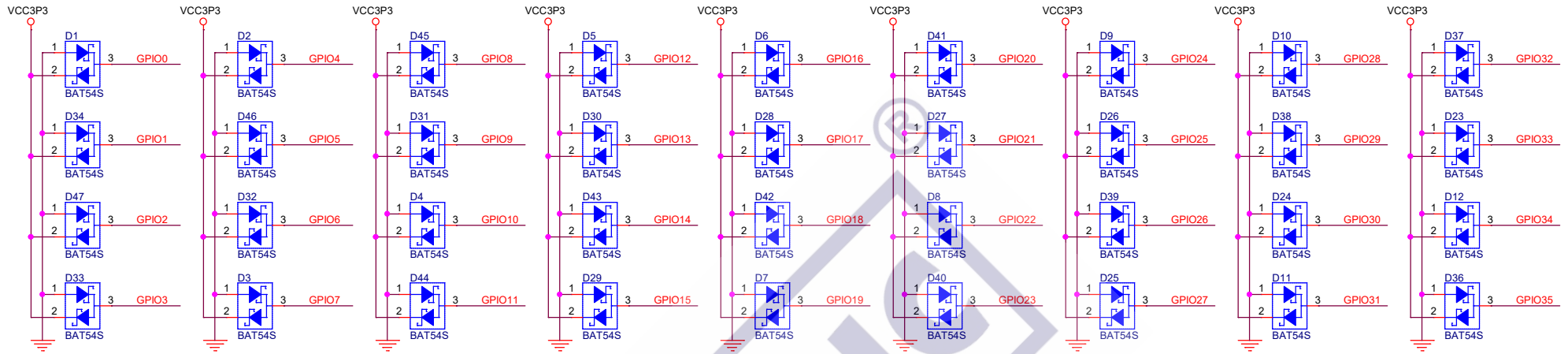
- CAM1_D_n[3:0] 16
 CAM1_D_n[3:0] 16
 CAM1_CLK_p 16
 CAM1_CLK_n 16
 CAM1_GPIO 17
 CAM1_I2C_SDA 17
 CAM1_I2C_SCL 17
 CAM2_D_n[3:0] 16
 CAM2_D_n[3:0] 16
 CAM2_CLK_p 16
 CAM2_CLK_n 16
 CAM2_GPIO 17
 CAM2_I2C_SDA 17
 CAM2_I2C_SCL 17




SMA Clock Input



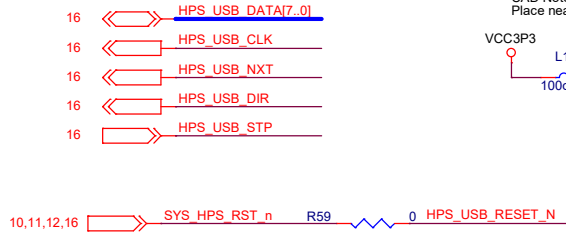
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Title		
Comet A65 Carrier		
Size	Document Number	Rev
B	MIPI x2, SMA x2	B
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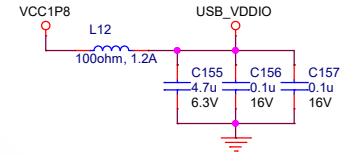
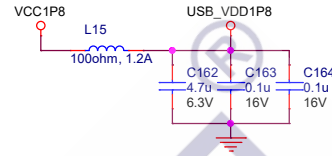
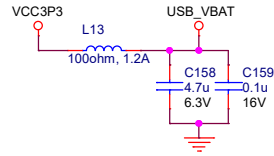
[illegible]

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Title		
<h1 style="text-align: center;">Comet A65 Carrier</h1>		
Size C	Document Number 2.5G Ethernet	Rev B
Date:	Monday, September 22, 2025	Sheet 8 of 24

UBS PHY Interface (ULPI)

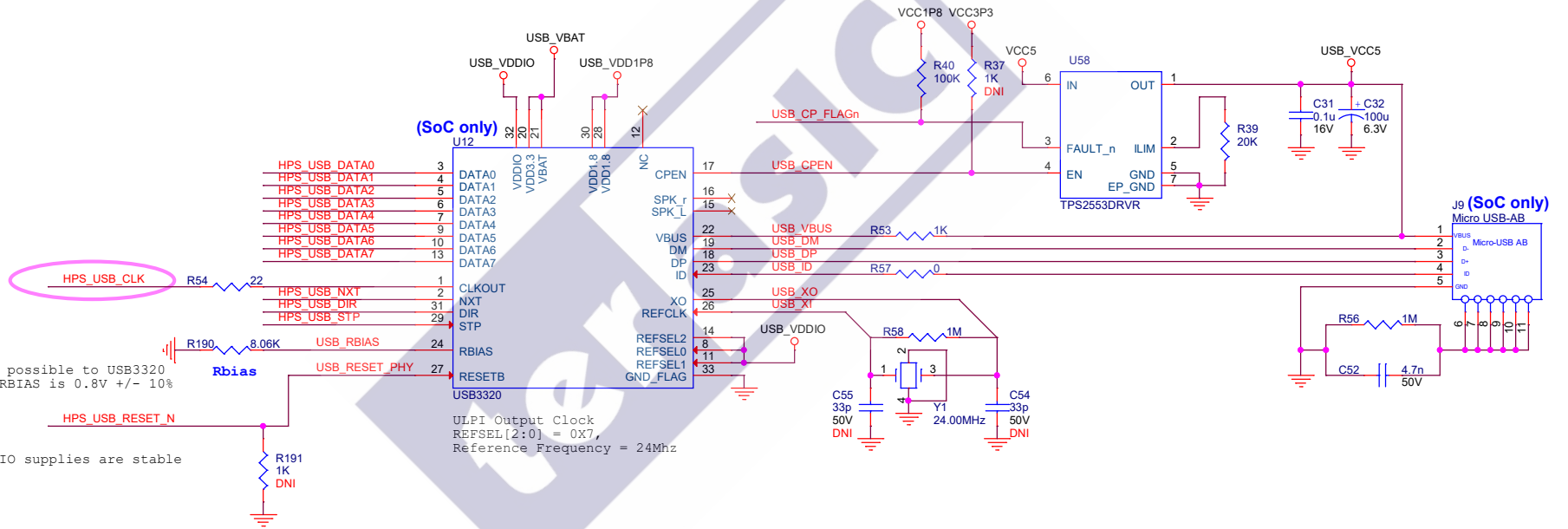


CAD Note:
Place near power pin



Place Rbias as close as possible to USB3320
The nominal voltage at RBIAS is 0.8V +/- 10%

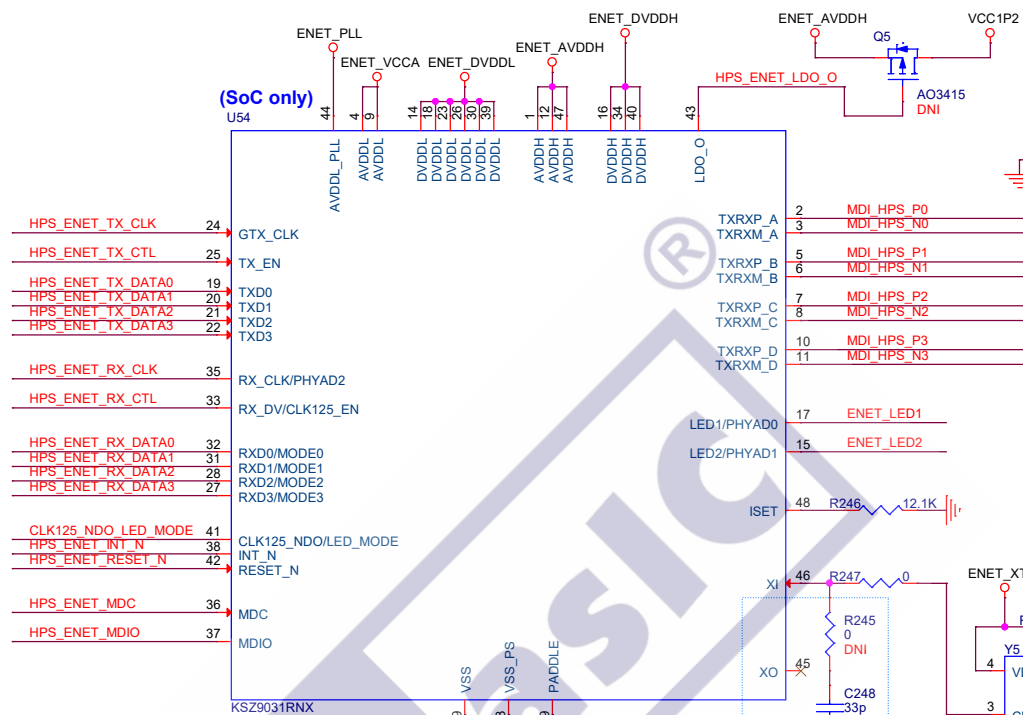
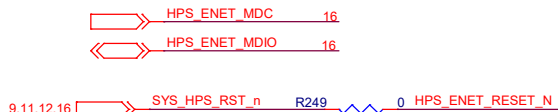
RESETB must be held low
until the VDD18 and VDDIO supplies are stable



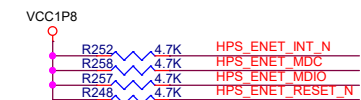
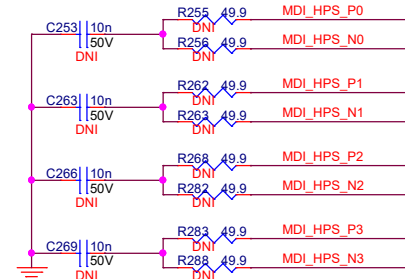
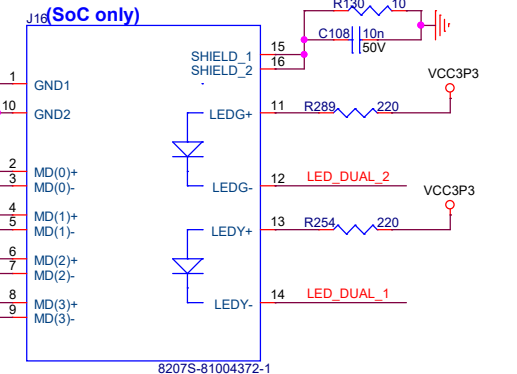
<div>terasic</div> <div>Copyright (c) 2017 by Terasic Inc. Taiwan. All rights reserved. No part of this schematic design may be reproduced, duplicated, or used without the prior written permission of Terasic.</div>		Title	
Size		Comet A65 Carrier	
B		Document Number	Rev
		USB 2.0 OTG	B
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Diagram illustrating the HPS ENET TX and RX signals:

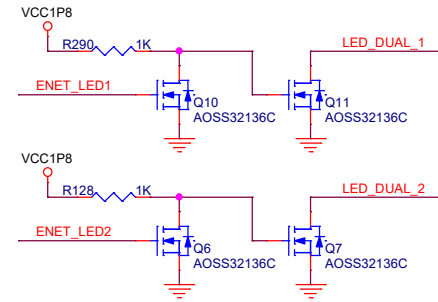
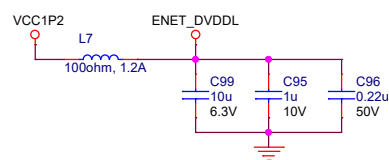
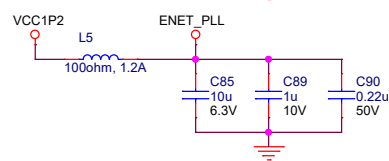
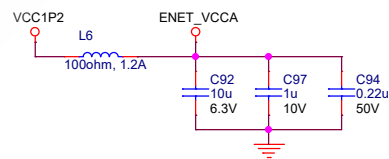
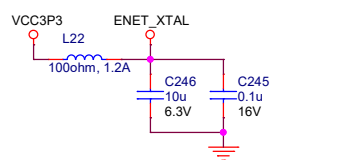
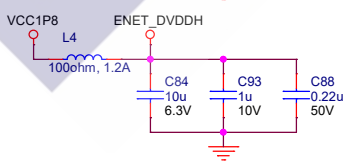
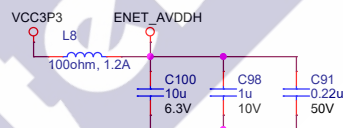
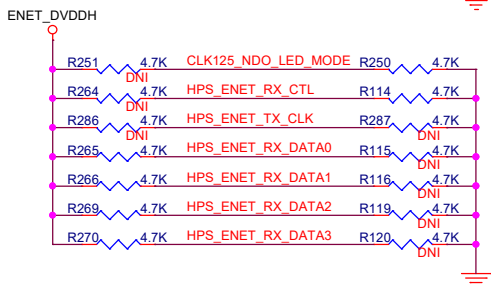
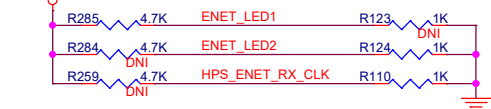
- HPS ENET TX DATA[3..0]** (16 bits)
- HPS ENET TX CLK** (16 bits)
- HPS ENET TX CTL** (16 bits)
- HPS ENET RX DATA[3..0]** (16 bits)
- HPS ENET RX CLK** (16 bits)
- HPS ENET RX CTL** (16 bits)



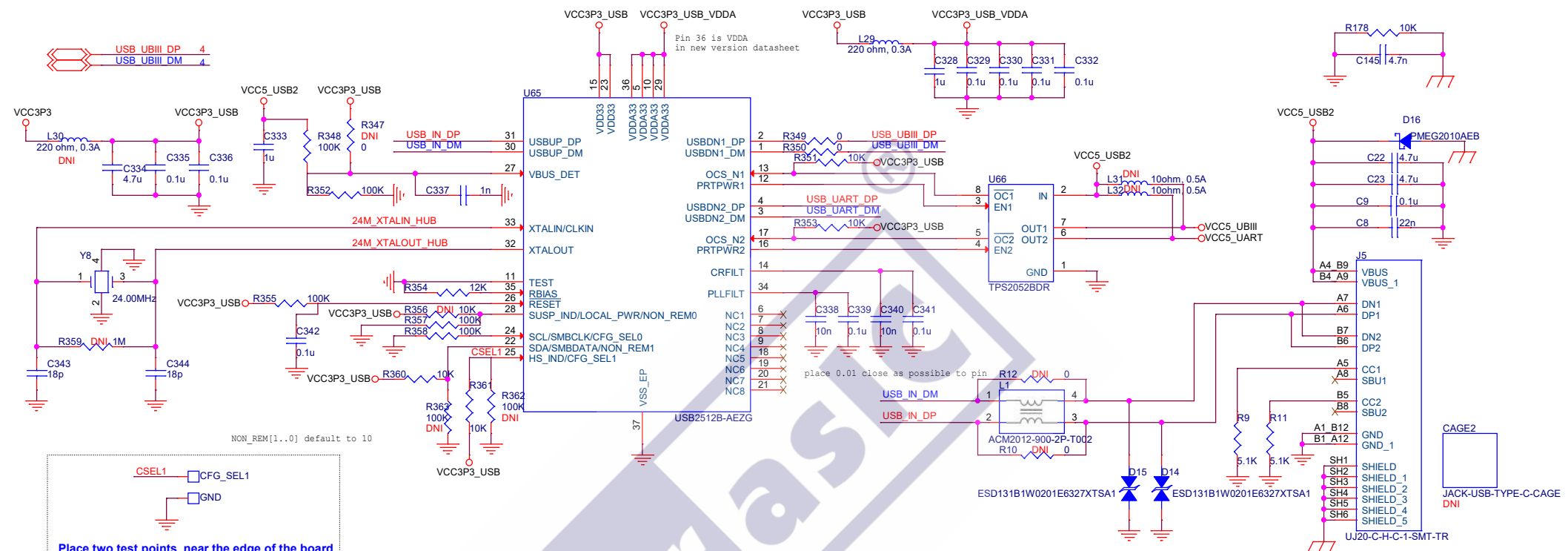
STRAP IN Option:
RGMII mode (MODE[3:0]=1111)



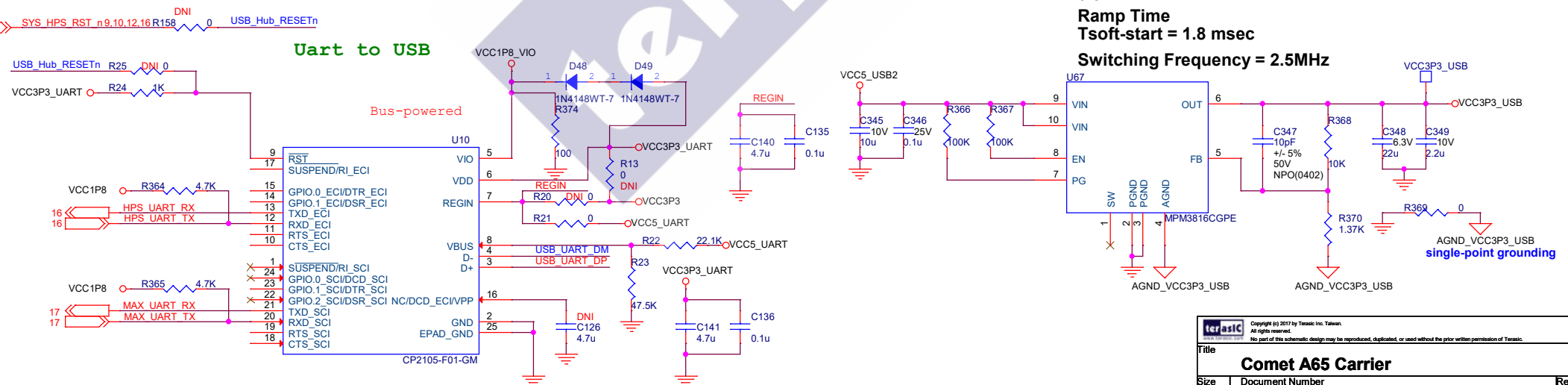
PHY Address is 00001

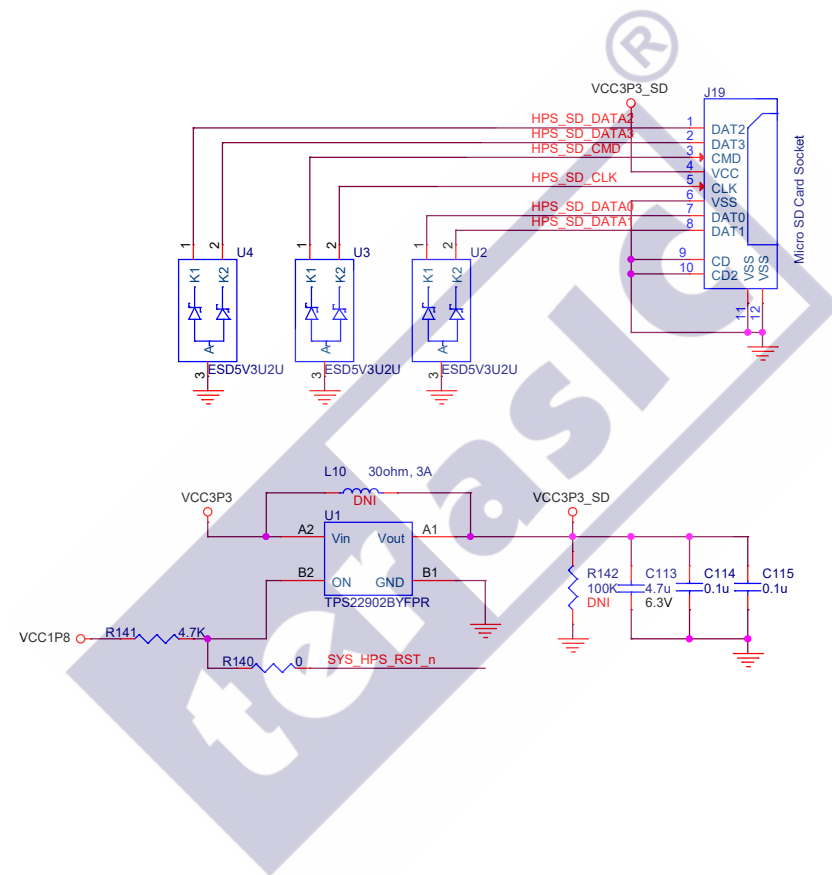
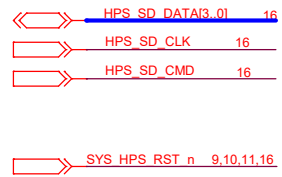



USB Hub



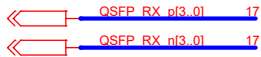
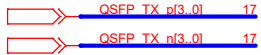
3.3V / 1A
Ramp Time
Tsoft-start = 1.8 msec
Switching Frequency = 2.5MHz



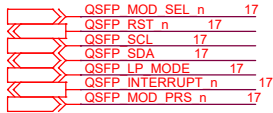


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Title	
Comet A65 Carrier	
Size	Document Number
B	HPS SD Card
Date:	Monday, September 22, 2025
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QSFP+ Transceivers



QSFP+ Control Interface

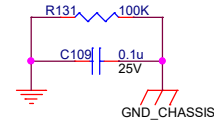
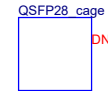
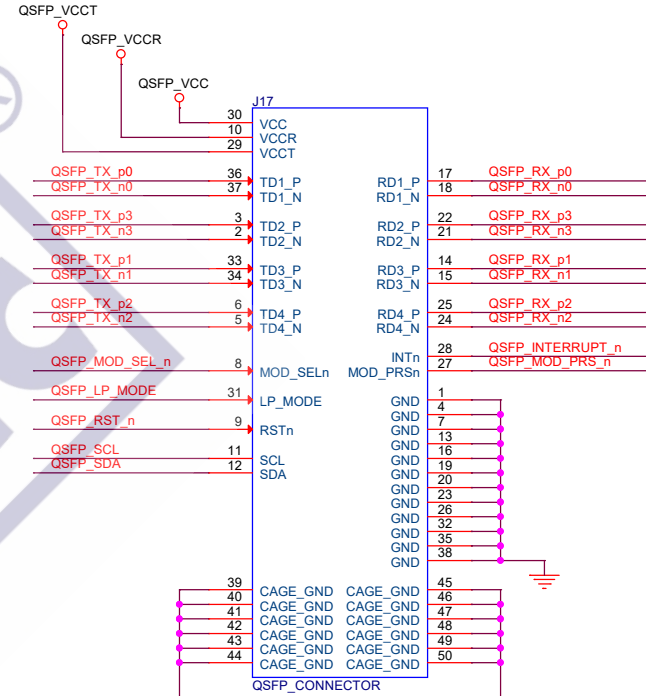
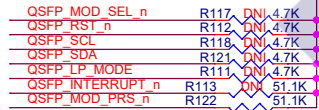
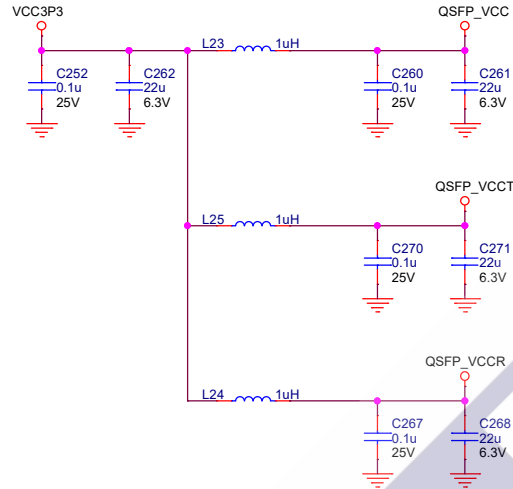



NOTE 1: Bypass Capacitors should be placed as close to the associated 20-pin connector as possible.

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.

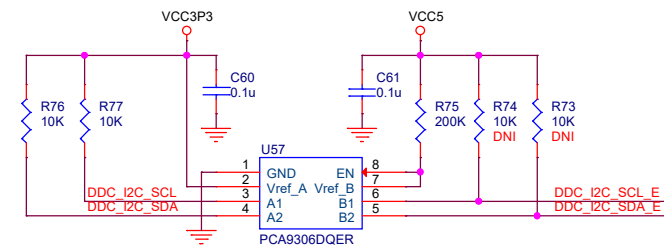
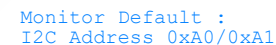
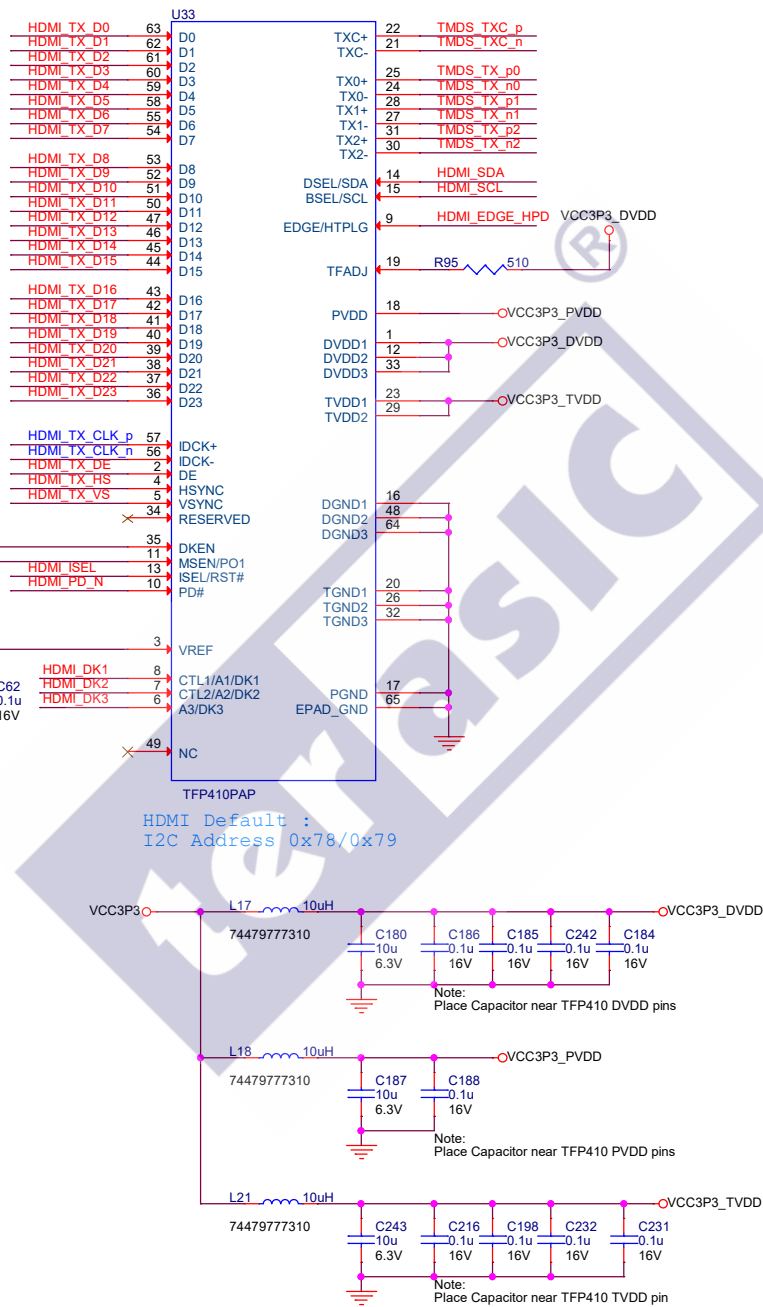
NOTE 4: 1uH inductors should have a DC Resistance of less than 0.1-ohm.



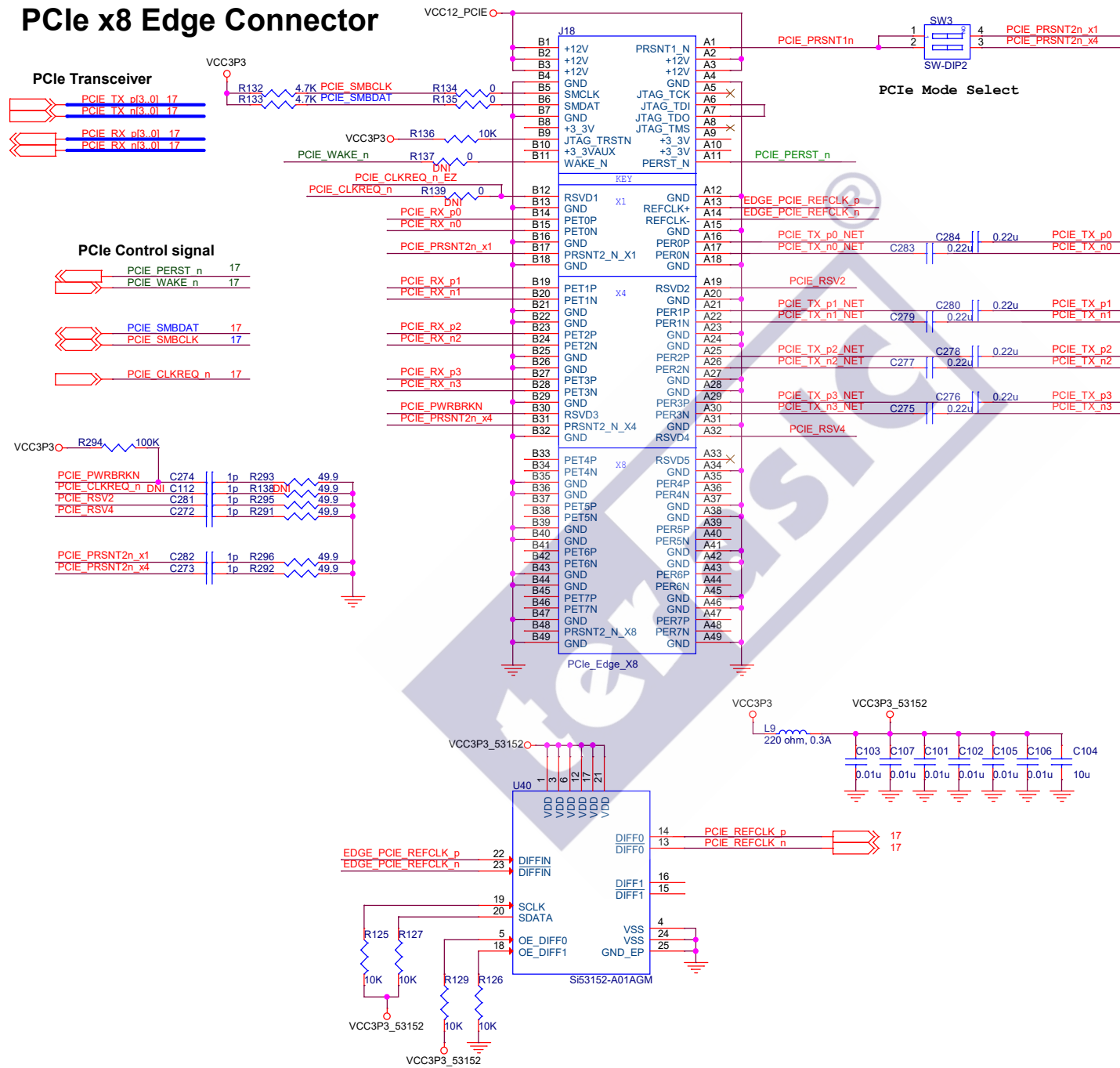
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Title		
Comet A65 Carrier		
Size	Document Number	Rev
B	QSFP+	B
Date:	Monday, September 22, 2025	Sheet 13 of 24

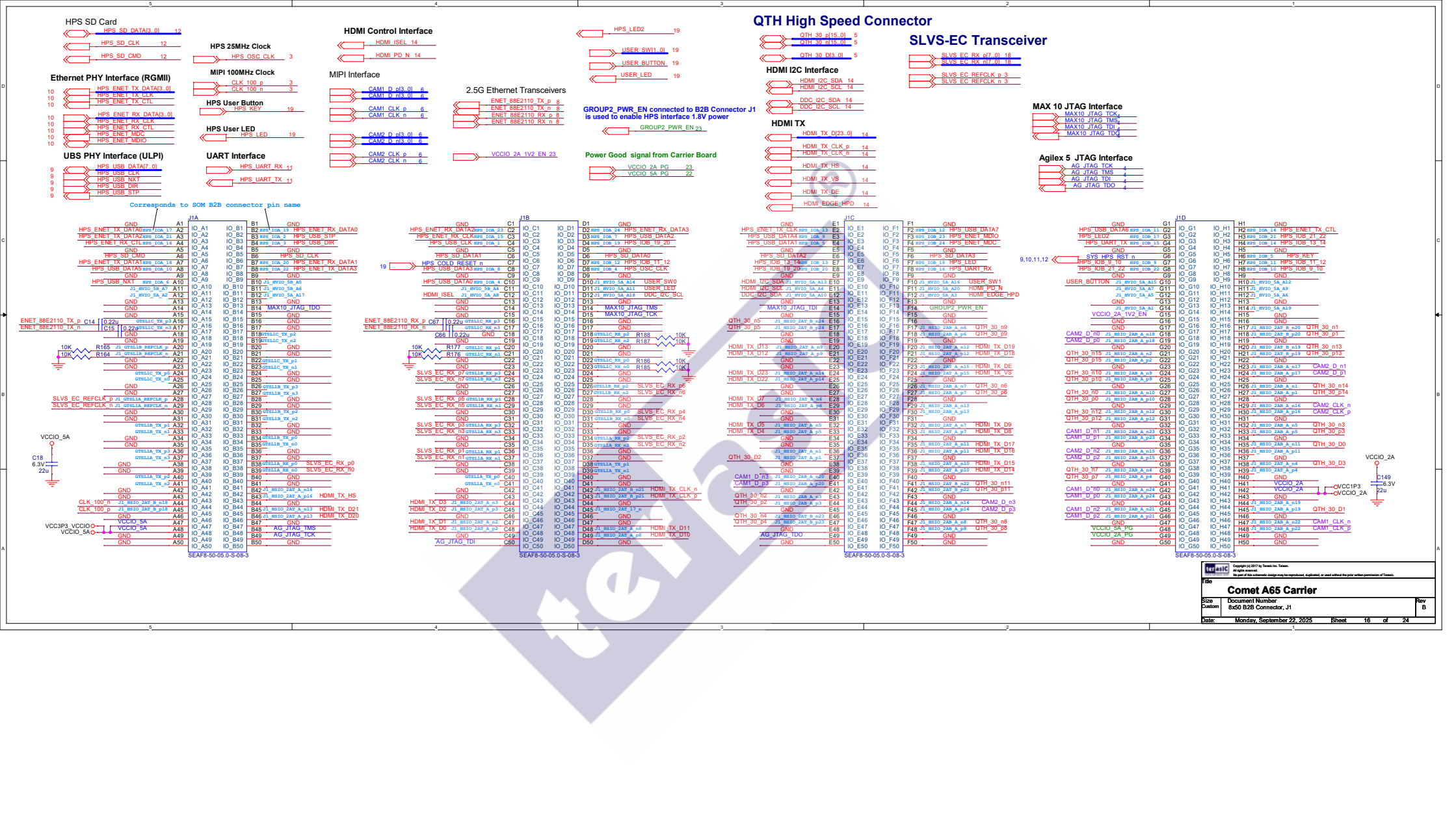
HDMI TX D[23..0]	16
HDMI TX CLK_p	16
HDMI TX CLK_n	16
HDMI TX HS	16
HDMI TX VS	16
HDMI TX DE	16
HDMI ISEL	16
HDMI PD_N	16
HDMI_EDGE_HPD	16

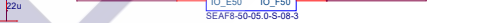
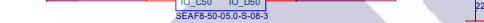
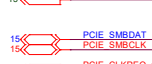
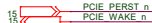
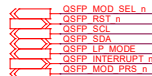
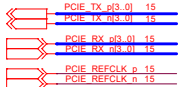
《》	HDMI I2C SDA	16
《》	HDMI I2C SCL	16
《》	DDC I2C SDA	16
《》	DDC I2C SCL	16



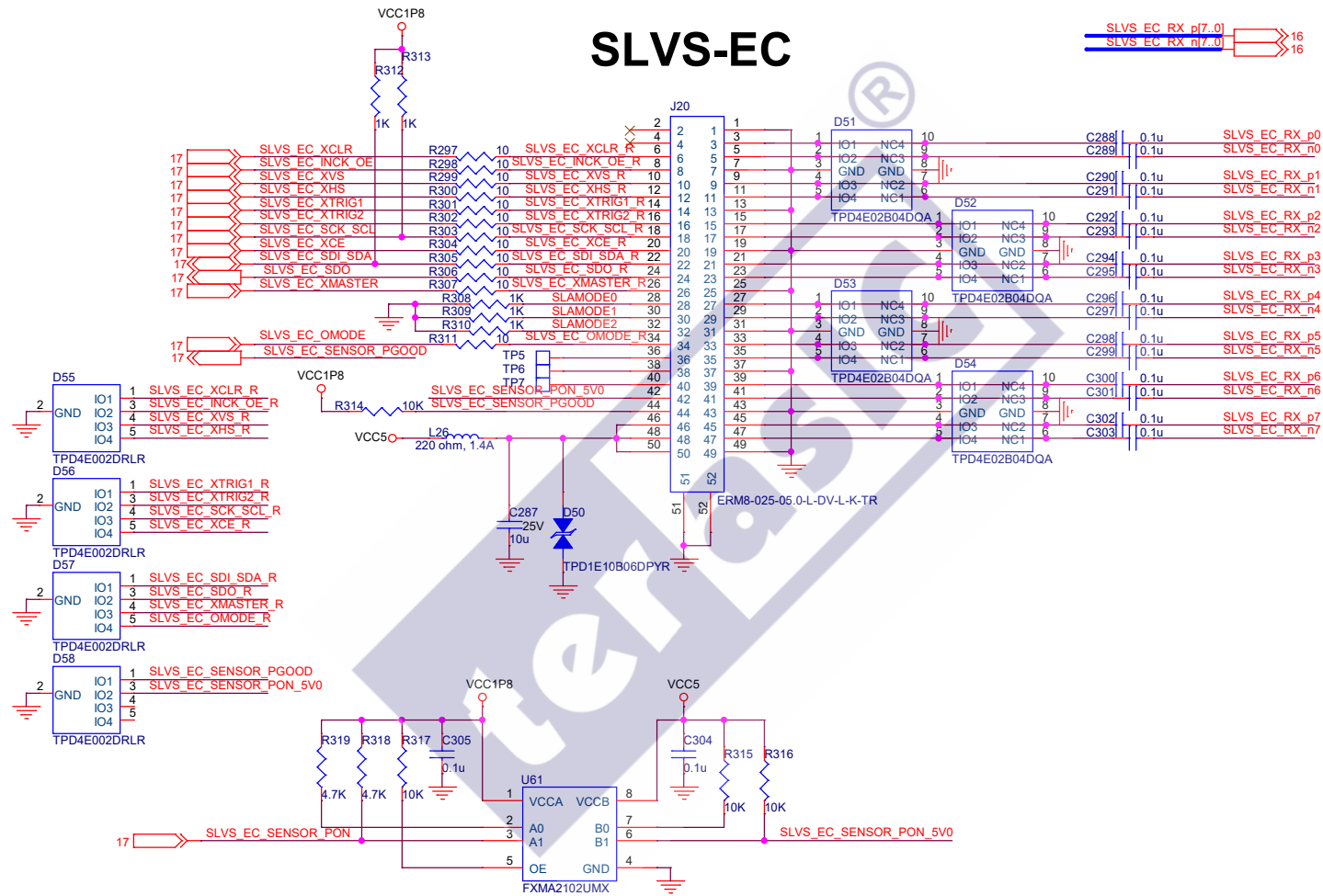
PCIe x8 Edge Connector





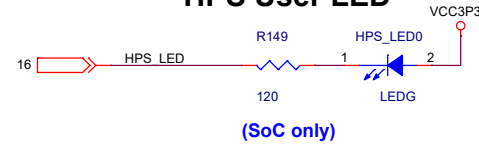


SLVS-EC

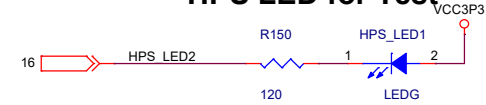


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Title		
Comet A65 Carrier		
Size	Document Number	Rev
B	SLVS-EC Connector	B
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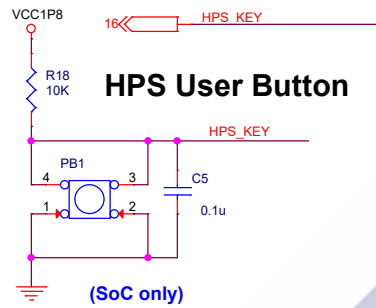
HPS User LED



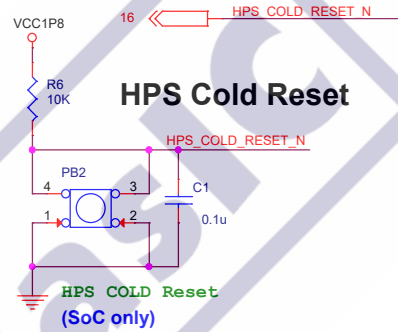
HPS LED for Test



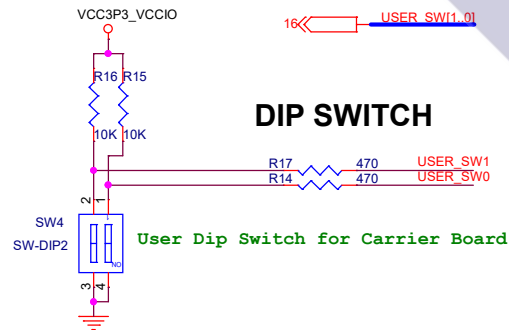
HPS User Button



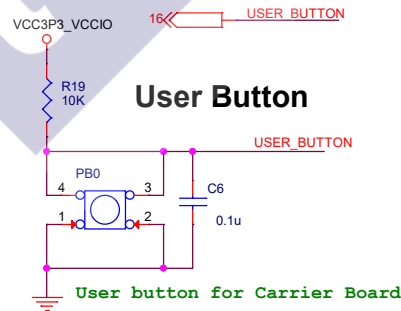
HPS Cold Reset



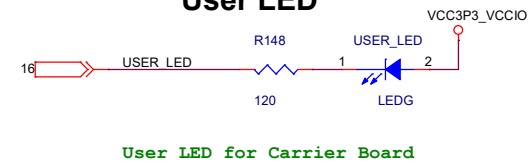
DIP SWITCH




User Button

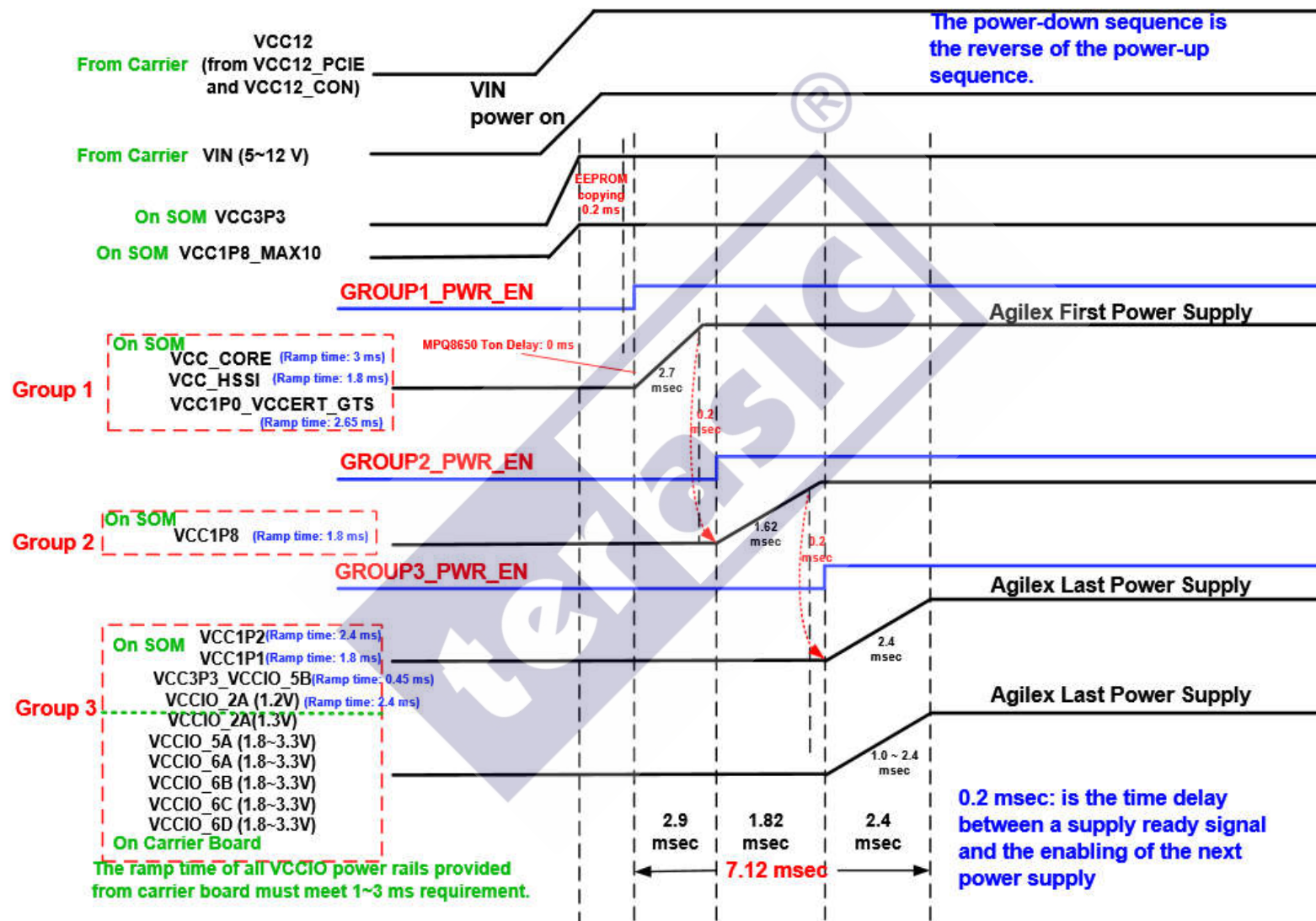


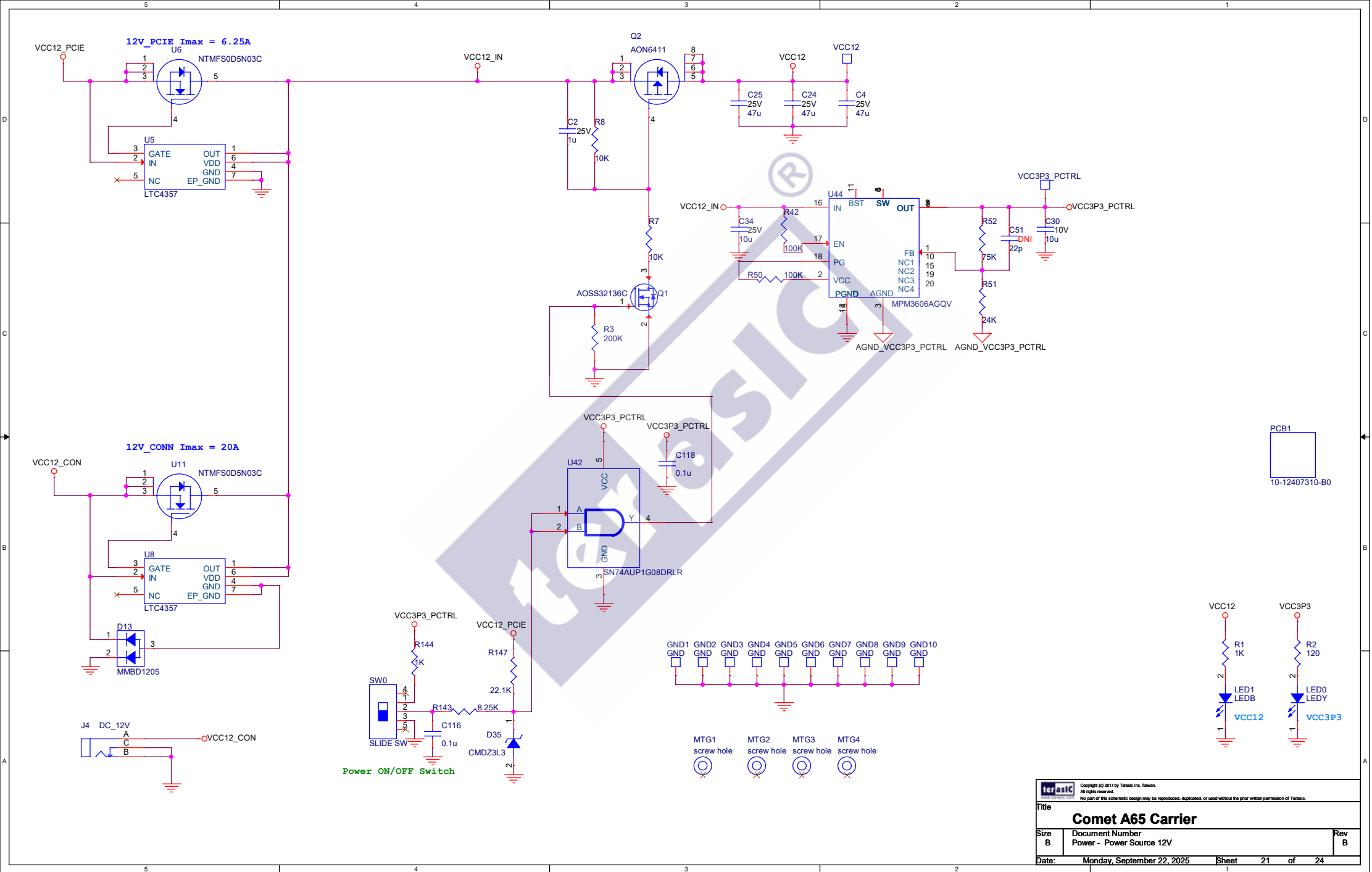
User LED

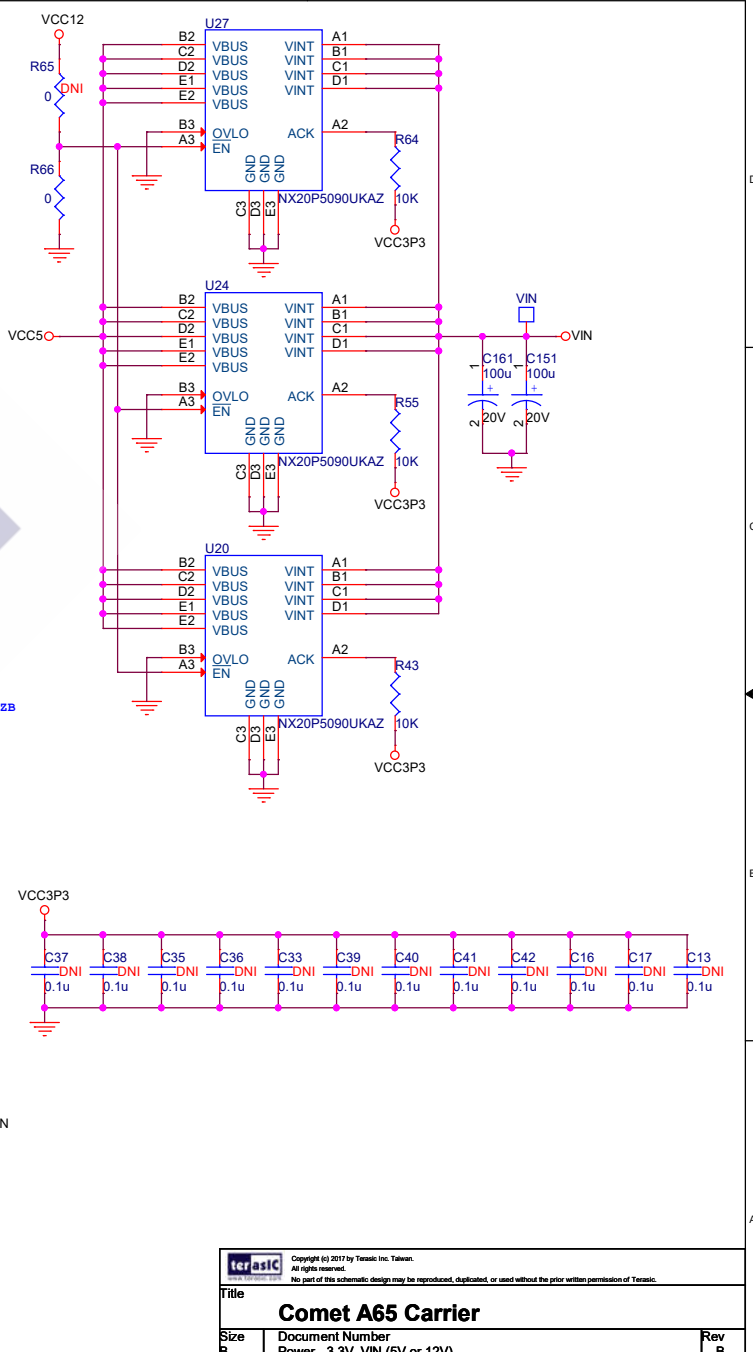
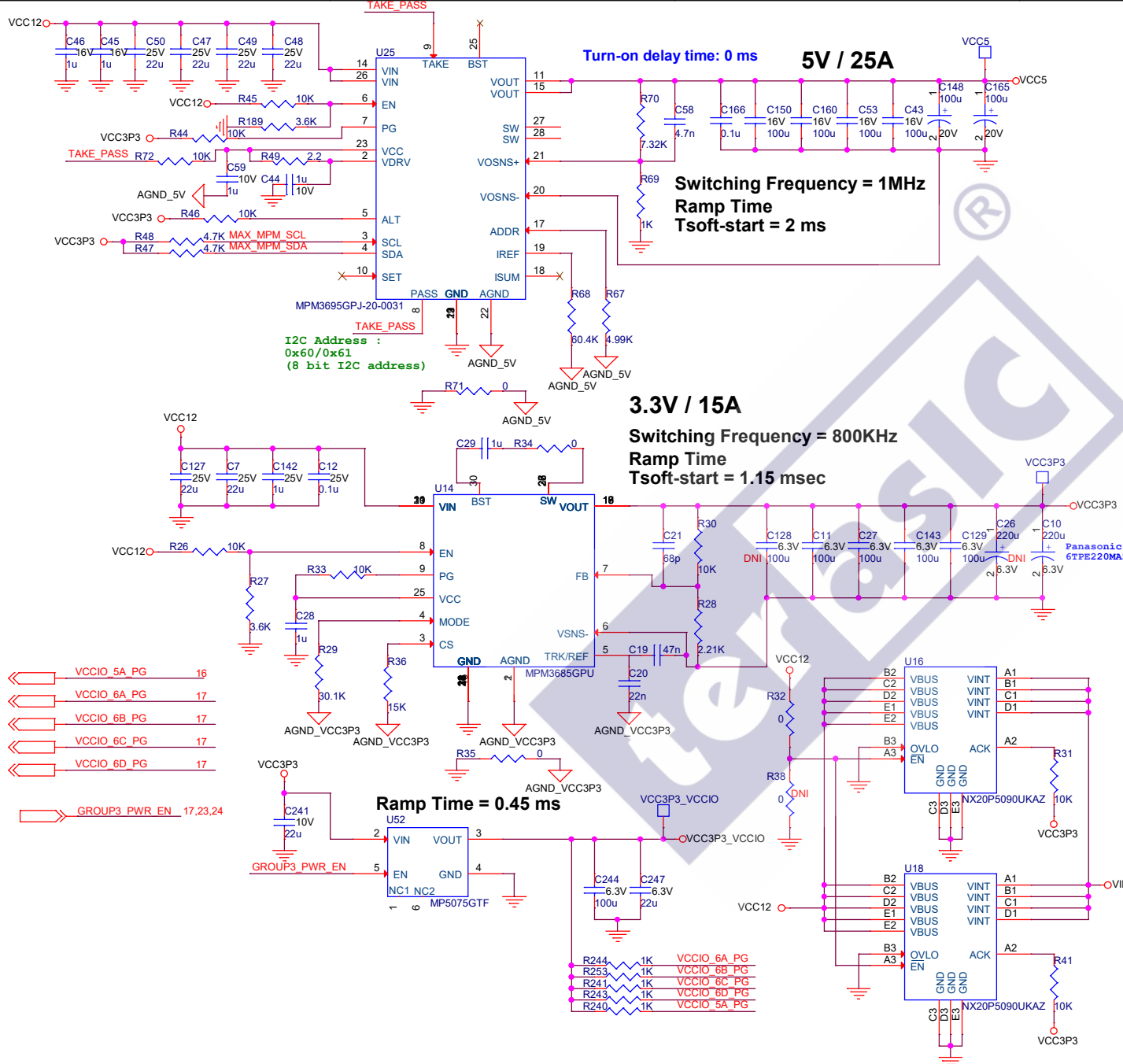


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Title		
Comet A65 Carrier		
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B	HPS Button, HPS LED	B
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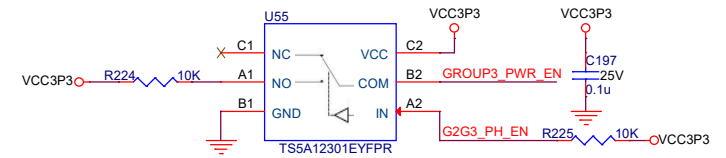
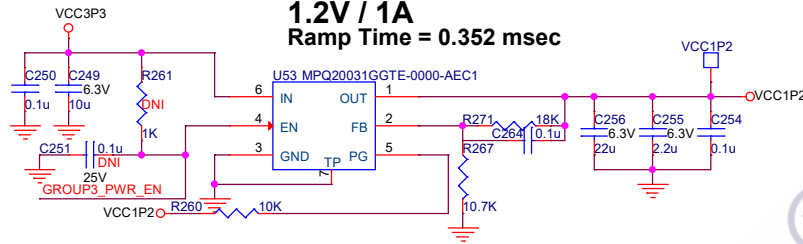
Comet A65 SOM + Carrier board power up sequence







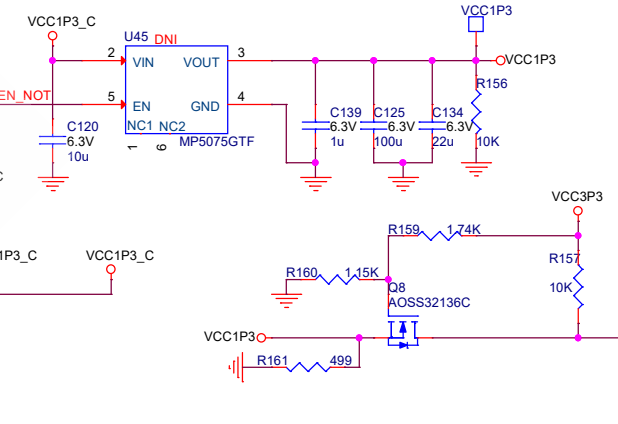
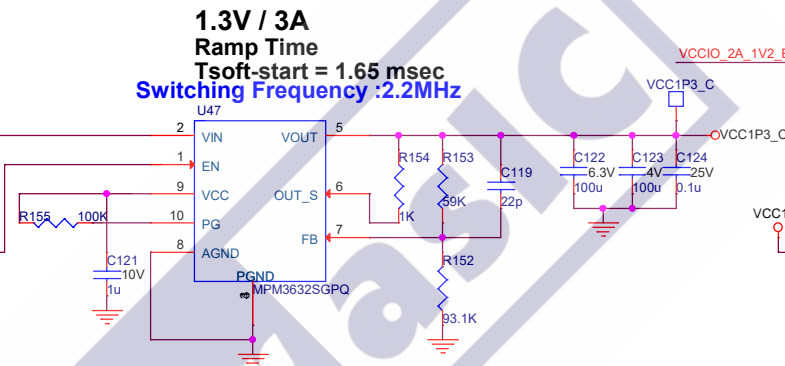
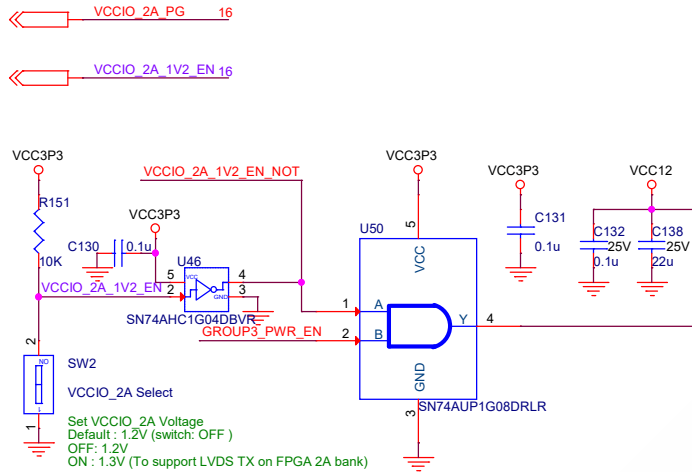
1.2V / 1A **Ramp Time = 0.352 msec**



IN	NC TO COM, COM TO NC	NO TO COM, COM TO NO
L or Open	ON	OFF
H	OFF	ON

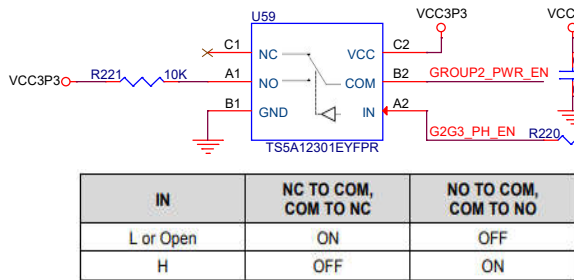
Ramp Time = 0.45 ms

1.3V / 3A **Ramp Time** **Tsoft-start = 1.65 msec** **Switching Frequency : 2.2MHz**

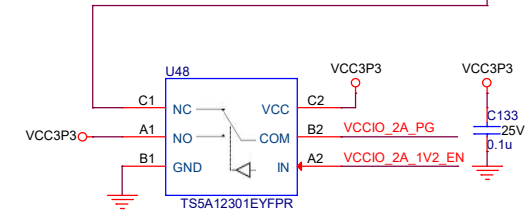
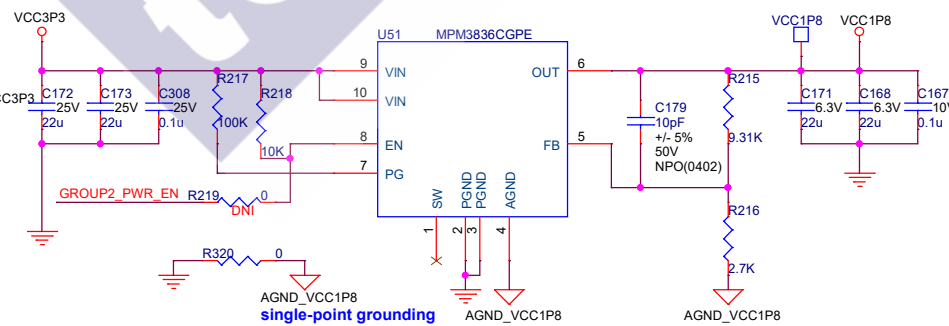


Connect AGND to GND plane with a single trace

1.8V / 3A **Tsoft-start = 2 msec** **Switching Frequency = 2.4MHz** **Current Limit = 3A**



IN	NC TO COM, COM TO NC	NO TO COM, COM TO NO
L or Open	ON	OFF
H	OFF	ON



IN	NC TO COM, COM TO NC	NO TO COM, COM TO NO
L or Open	ON	OFF
H	OFF	ON

