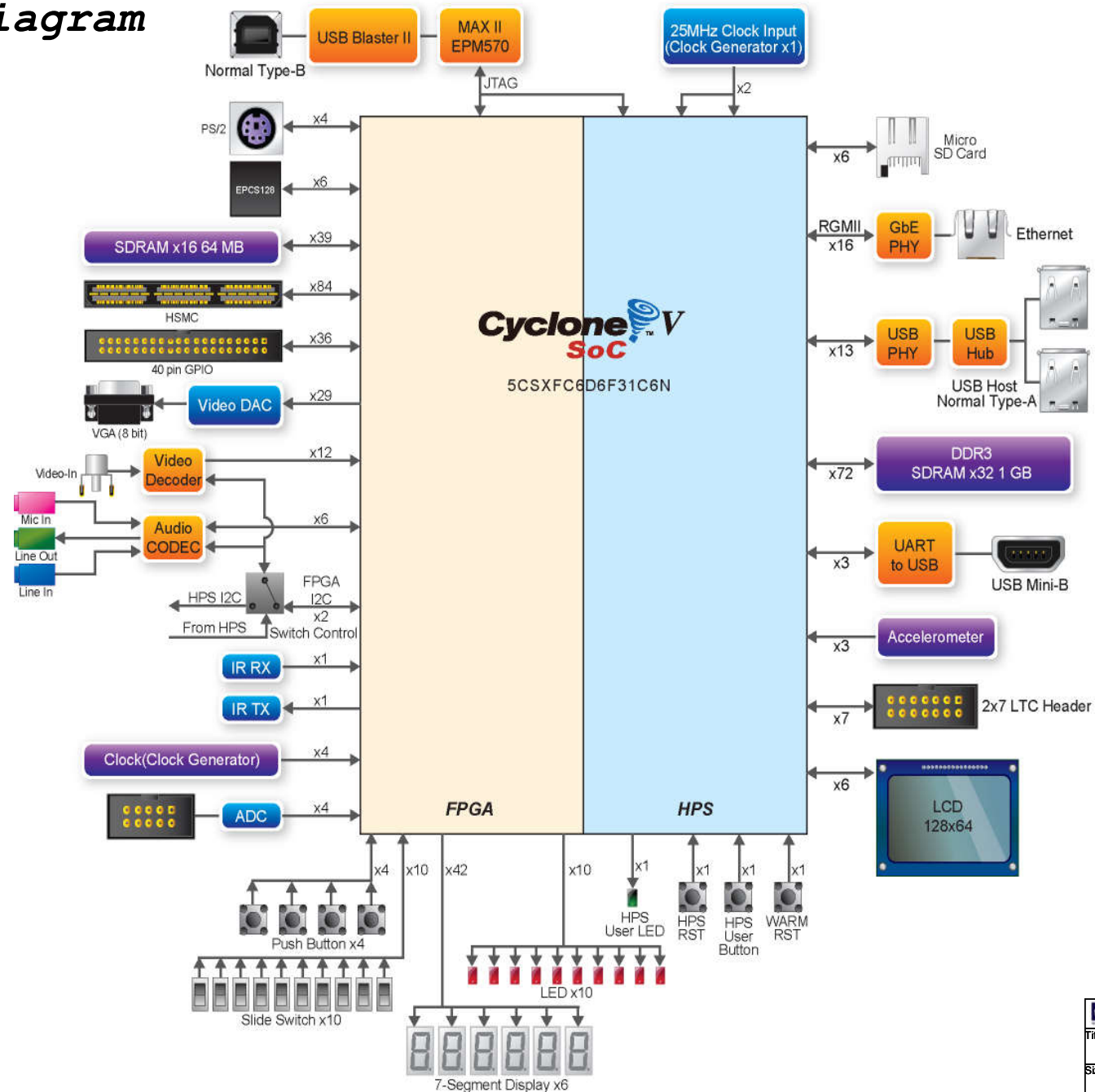


# Block Diagram





U20-9

Bank 3 VCCIO = 3.3V

Bank 3A

Bank 3B

GPIO17	AF4	IO_3A/PR_ERROR/DIFFIO_RX_B7P
GPIO18	AF5	IO_3A/PR_DONE/DIFFIO_RX_B7N
GPIO21	AF9	IO_3A/DIFFIO_TX_B8P/DQ1B
GPIO16	AG8	IO_3A/DIFFIO_TX_B8P/DQ1B
GPIO20	AF8	IO_3A/PR_READY/DIFFIO_TX_B8N/DQ1B
GPIO15	AG7	IO_3A/DIFFIO_TX_B8P/DQ2B
GPIO10	AG1	IO_3A/DIFFIO_TX_B9N
GPIO6	AH2	IO_3A/DIFFIO_RX_B10P/DQ2B
GPIO35	AA12	IO_3A/DIFFIO_RX_B11P/DQ2B
GPIO34	AB12	IO_3A/DIFFIO_RX_B11N/DQSN2B
GPIO19	AF6	IO_3A/DIFFIO_TX_B12P
GPIO14	AG6	IO_3A/DIFFIO_TX_B12N/DQ2B
GPIO13	AG5	IO_3A/DIFFIO_TX_B13P/DQ2B
GPIO9	AH5	IO_3A/DIFFIO_TX_B13N/DQ2B
GPIO4	AJ1	IO_3A/DIFFIO_RX_B14P/DQ2B
GPIO5	AJ2	IO_3A/DIFFIO_RX_B14N/DQ2B
GPIO33	AC12	IO_3A/DIFFIO_RX_B15P
GPIO31	AD12	IO_3A/DIFFIO_RX_B15N
GPIO11	AG2	IO_3A/DIFFIO_TX_B16P/DQ2B
GPIO7	AH3	IO_3A/DIFFIO_TX_B16N/DQ2B

AG10	DRAM_DQ5	IO_3B/DIFFIO_TX_B17P/DQ3B
AH9	DRAM_DQ11	IO_3B/DIFFIO_TX_B17N
AF11 15	DRAM_CAS_N	IO_3B/DIFFIO_RX_B18P/DQ3B
AG11 15	DRAM_CS_N	IO_3B/DIFFIO_RX_B18N/DQ3B
AA13 15	DRAM_WE_N	IO_3B/DIFFIO_RX_B19P/DQ3B
AB13 15	DRAM_LDQM	IO_3B/DIFFIO_RX_B19N/DQSN3B
AK2	GPIO1	IO_3B/DIFFIO_TX_B20P
AK3	GPIO3	IO_3B/DIFFIO_TX_B20N/DQ3B
AJ4	KEY0	IO_3B/DIFFIO_TX_B21P/DQ3B
AK4	KEY1	IO_3B/DIFFIO_TX_B21N/DQ3B
AE13 15	DRAM_RAS_N	IO_3B/DIFFIO_RX_B22P/DQ3B
AF13 15	DRAM_BA0	IO_3B/DIFFIO_RX_B22N/DQ3B
AD14	DRAM_ADDR6	IO_3B/DIFFIO_RX_B23P
AE14	DRAM_ADDR3	IO_3B/DIFFIO_RX_B23N
AJ5	DRAM_DQ15	IO_3B/DIFFIO_TX_B24P/DQ3B
AK6	DRAM_DQ0	IO_3B/DIFFIO_TX_B24N/DQ3B
AJ6	DRAM_DQ14	IO_3B/DIFFIO_TX_B25N/GND
AJ7	DRAM_DQ1	IO_3B/DIFFIO_TX_B25P/DQ4B/B_VEN
AG12	DRAM_ADDR10	IO_3B/DIFFIO_TX_B26P/DQ4B/B_A_14
AG13	DRAM_ADDR9	IO_3B/DIFFIO_TX_B26N/DQ4B/B_A_15
AB15	DRAM_ADDR4	IO_3B/DIFFIO_RX_B27N/DQSN4B/B_CSN_1
AC14	DRAM_ADDR5	IO_3B/DIFFIO_TX_B28P/B_A_12
AK7	DRAM_DQ2	IO_3B/DIFFIO_TX_B28N/DQ4B/B_A_13
AK8	DRAM_DQ3	IO_3B/DIFFIO_TX_B29P/DQ4B/B_A_10
AJ9	DRAM_DQ10	IO_3B/DIFFIO_TX_B29N/DQ4B/B_A_11
AK9	DRAM_DQ4	IO_3B/DIFFIO_RX_B30P/DQ4B/B_A_8
AH13	DRAM_ADDR11	IO_3B/DIFFIO_RX_B30N/DQ4B/B_A_9
AH14	DRAM_ADDR1	IO_3B/DIFFIO_TX_B32P/DQ4B/B_CASN
AH7	DRAM_DQ13	IO_3B/DIFFIO_TX_B32N/DQ4B/B_RASN
AH8	DRAM_DQ12	IO_3B/DIFFIO_TX_B33P/DQ5B/B_BA_0
AH10	DRAM_DQ8	IO_3B/DIFFIO_TX_B33N/GND
AJ10	DRAM_DQ9	IO_3B/DIFFIO_RX_B34P/DQ5B/B_BA_1
AJ11	DRAM_DQ7	IO_3B/DIFFIO_RX_B34N/DQ5B/B_BA_2
AH11	DRAM_DQ6	IO_3B/DIFFIO_RX_B35P/DQ5B/B_CK
AA14	KEY2	IO_3B/DIFFIO_RX_B35N/DQSN5B/B_CKN
AA15	KEY3	IO_3B/DIFFIO_TX_B36P/B_A_6
AK12 15	DRAM_UDQM	IO_3B/DIFFIO_TX_B36N/DQ5B/B_A_7
AK13 15	DRAM_CKE	IO_3B/DIFFIO_RX_B38P/DQ5B/B_A_4
AG15	DRAM_ADDR2	IO_3B/DIFFIO_RX_B38N/DQ5B/B_A_5
AH15	DRAM_ADDR8	IO_3B/DIFFIO_TX_B40P/DQ5B/B_A_0
AJ14	DRAM_ADDR12	IO_3B/DIFFIO_TX_B40N/DQ5B/B_A_1
AK14	DRAM_ADDR0	

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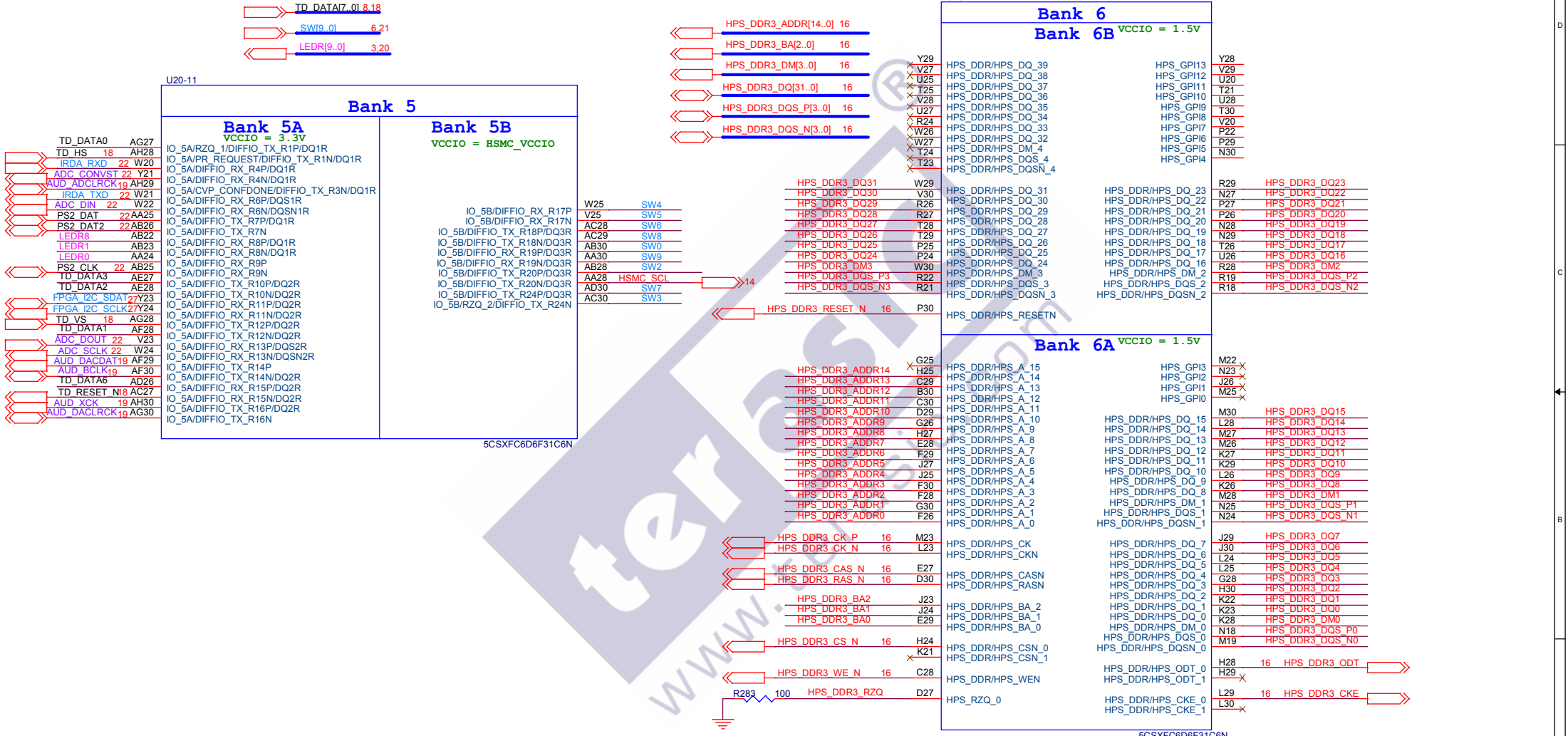
U20-10

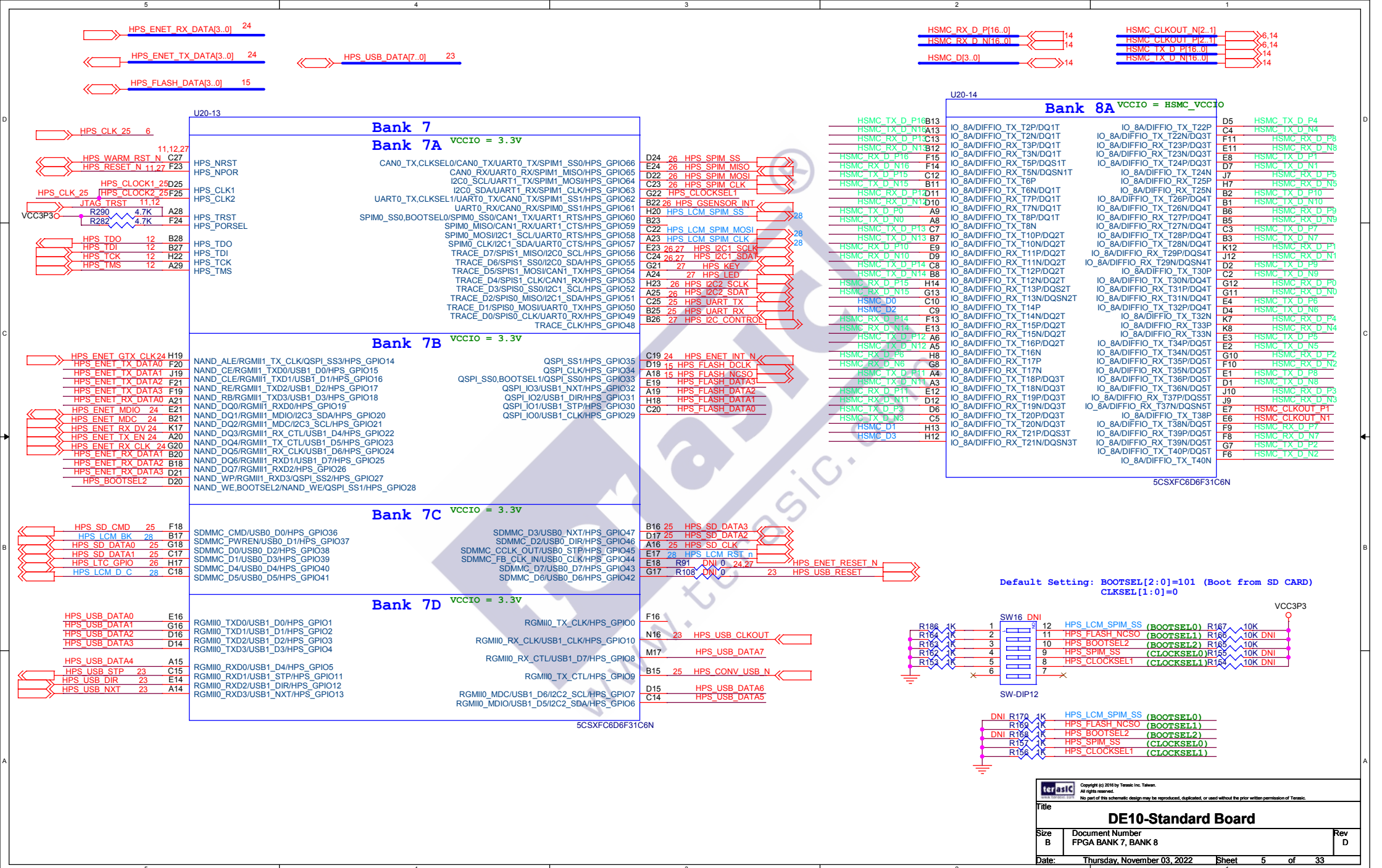
Bank 4A VCCIO = 3.3V

HEX03	AG16	IO_4A/DIFFIO_TX_B41P/DQ6B/B_DQ_2
HEX02	AG17	IO_4A/RZQ_0/DIFFIO_TX_B41N
HEX15	AE17	IO_4A/DIFFIO_RX_B42P/DQ6B/B_DQ_1
HEX25	AF18	IO_4A/DIFFIO_RX_B42N/DQ6B/B_DQ_0
HEX11	V16	IO_4A/DIFFIO_RX_B43P/DQ6B/B_DQ_5
HEX26	W16	IO_4A/DIFFIO_RX_B43N/DQ6B/B_DQ_6
HEX12	AE16	IO_4A/DIFFIO_TX_B44P/DQ6B/B_DQ_3
HEX10	AF16	IO_4A/DIFFIO_TX_B44N/DQ6B/B_DQ_4
VGA_B6	AJ16	IO_4A/DIFFIO_TX_B45P/DQ6B/B_DQ_8
VGA_B7	AK16	IO_4A/DIFFIO_TX_B45N/DQ6B/B_DQ_7
HEX51	AG21	IO_4A/DIFFIO_RX_B46P/DQ6B/B_DQ_5
VGA_B2	AH20	IO_4A/DIFFIO_RX_B46N/DQ6B/B_DQ_4
HEX04	AH17	IO_4A/DIFFIO_TX_B48P/DQ6B/B_DM_0
HEX06	AH18	IO_4A/DIFFIO_TX_B48N/DQ6B/B_DM_1
HEX05	AG18	IO_4A/DIFFIO_TX_B49P/DQ7B/B_DQ_10
VGA_B4	AH19	IO_4A/DIFFIO_TX_B49N/GND
VGA_B5	AJ17	IO_4A/DIFFIO_RX_B50P/DQ7B/B_DQ_9
VGA_VS	V17	IO_4A/DIFFIO_RX_B50N/DQ7B/B_DQ_8
HEX16	W17	IO_4A/DIFFIO_RX_B51P/DQ7B/B_DQ_5
HEX00	W17	IO_4A/DIFFIO_RX_B51N/DQSN7B/B_DQSN_1
VGA_B3	AJ19	IO_4A/DIFFIO_TX_B52P/B_CKE_1
VGA_HS	AJ19	IO_4A/DIFFIO_TX_B52N/DQ7B/B_DQ_11
VGA_B1	AJ20	IO_4A/DIFFIO_TX_B53P/DQ7B/B_DQ_14
VGA_B0	AJ21	IO_4A/DIFFIO_TX_B53N/DQ7B/B_CKE_0
HEX55	AF19	IO_4A/DIFFIO_RX_B54P/DQ7B/B_DQ_13
HEX53	AG20	IO_4A/DIFFIO_RX_B54N/DQ7B/B_DQ_12
HEX44	AG23	IO_4A/DIFFIO_TX_B56P/DQ7B/B_DM_1
VGA_G5	AH24	IO_4A/DIFFIO_TX_B56N/DQ7B/B_DM_2
HEX41	AG22	IO_4A/DIFFIO_TX_B57P/DQ8B/B_DQ_18
HEX46	AH22	IO_4A/DIFFIO_TX_B57N/DQ8B/B_DQ_17
HEX14	AE18	IO_4A/DIFFIO_RX_B58P/DQ8B/B_DQ_16
HEX54	AE19	IO_4A/DIFFIO_RX_B58N/DQ8B/B_DQ_15
HEX23	Y17	IO_4A/DIFFIO_RX_B59P/DQSN8B/B_DQSN_2
HEX22	AA18	IO_4A/DIFFIO_RX_B59N/DQSN8B/B_DQSN_1
VGA_CLK	AK21	IO_4A/DIFFIO_TX_B60P/B_RESETN
VGA_BLANK_N	AK22	IO_4A/DIFFIO_TX_B60N/DQ8B/B_DQ_19
VGA_G7	AH23	IO_4A/DIFFIO_TX_B61P/DQ8B/B_DQ_22
VGA_SYNC_N	AJ22	IO_4A/DIFFIO_TX_B61N/DQ8B/B_DQ_21
AF20	HEX52	IO_4A/DIFFIO_RX_B62P/DQ8B/B_DQ_21
AF21	HEX50	IO_4A/DIFFIO_RX_B62N/DQ8B/B_DQ_20
Y18	HEX24	IO_4A/DIFFIO_RX_B63P/GND
AA19	HEX35	IO_4A/DIFFIO_RX_B63N/GND
AK23	VGA_G6	IO_4A/DIFFIO_TX_B64P/DQ8B/B_DM_2
AK24	VGA_G3	IO_4A/DIFFIO_TX_B64N/DQ8B/B_DM_2
AJ24	VGA_G4	IO_4A/DIFFIO_TX_B65P/DQ9B/B_DQ_26
AJ25	VGA_G1	IO_4A/DIFFIO_TX_B65N/DQ9B/B_DQ_25
AF23	HEX45	IO_4A/DIFFIO_RX_B66P/DQ9B/B_DQ_25
AF24	LEDR7	IO_4A/DIFFIO_RX_B66N/DQ9B/B_DQ_24
AC20	HEX34	IO_4A/DIFFIO_RX_B67P/DQSN9B/B_DQSN_3
AD19	HEX32	IO_4A/DIFFIO_RX_B67N/DQSN9B/B_DQSN_3
AJ26	VGA_R7	IO_4A/DIFFIO_TX_B68P/GND
AK26	VGA_G0	IO_4A/DIFFIO_TX_B68N/DQ9B/B_DQ_27
AG25	LEDR4	IO_4A/DIFFIO_TX_B69P/DQ9B/B_DQ_30
AH25	VGA_G2	IO_4A/DIFFIO_TX_B69N/DQ9B/B_DQ_29
AE22	HEX42	IO_4A/DIFFIO_TX_B69P/DQ9B/B_DQ_29
AE23	HEX43	IO_4A/DIFFIO_TX_B70N/DQ9B/B_DQ_28
V18	HEX01	IO_4A/DIFFIO_RX_B70P/DQ9B/B_DQ_28
W19	HEX31	IO_4A/DIFFIO_RX_B71P/GND
AJ27	VGA_R3	IO_4A/DIFFIO_TX_B72P/DQ9B/B_DM_3
AK27	VGA_R2	IO_4A/DIFFIO_TX_B72N/DQ9B/B_DM_3
AK28	VGA_R1	IO_4A/DIFFIO_TX_B73P/DQ10B/B_DQ_34
AK29	VGA_R0	IO_4A/DIFFIO_TX_B73N/DQ10B/B_DQ_33
AD20	HEX36	IO_4A/DIFFIO_RX_B74P/DQ10B/B_DQ_33
AD21	HEX40	IO_4A/DIFFIO_RX_B74N/DQ10B/B_DQ_32
Y19	HEX30	IO_4A/DIFFIO_RX_B75P/DQ10B/B_DQ_32
AA20	HEX33	IO_4A/DIFFIO_RX_B75N/DQ10B/B_DQ_31
AG26	VGA_R6	IO_4A/DIFFIO_TX_B76P/GND
AH27	VGA_R4	IO_4A/DIFFIO_TX_B76N/DQ10B/B_DQ_35
AF25	LEDR5	IO_4A/DIFFIO_TX_B77P/DQ10B/B_DQ_38
AF26	VGA_R5	IO_4A/DIFFIO_TX_B77N/DQ10B/B_DQ_37
AC22	LEDR9	IO_4A/DIFFIO_RX_B78P/DQ10B/B_DQ_37
AC23	LEDR2	IO_4A/DIFFIO_RX_B78N/DQ10B/B_DQ_36
AA21	HEX20	IO_4A/DIFFIO_RX_B79P/GND
AB21	HEX56	IO_4A/DIFFIO_RX_B79N/GND
AD24	LEDR3	IO_4A/DIFFIO_TX_B80P/DQ10B/B_DM_4
AE24	LEDR6	IO_4A/DIFFIO_TX_B80N/DQ10B/B_DM_4

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## Clocks

Bank 3B VCCIO = 3.3V

IO\_3B/CLK0P,FPLL\_BL\_FBP/DIFFIO\_RX\_B31P  
IO\_3B/CLK0N,FPLL\_BL\_FBN/DIFFIO\_RX\_B31N  
GPIO0 W15  
GPIO2 Y16  
IO\_3B/CLK1P/DIFFIO\_RX\_B39P  
IO\_3B/CLK1N/DIFFIO\_RX\_B39N

Bank 4A VCCIO = 3.3V

IO\_4A/CLK2P/DIFFIO\_RX\_B47P  
IO\_4A/CLK2N/DIFFIO\_RX\_B47N  
IO\_4A/CLK3P/DIFFIO\_RX\_B55P  
IO\_4A/CLK3N/DIFFIO\_RX\_B55N

Bank 5B VCCIO = HSMC\_VCCIO

IO\_5B/CLK4P,FPLL\_BR\_FBP/DIFFIO\_RX\_R23P/DQ3R  
IO\_5B/CLK4N,FPLL\_BR\_FBN/DIFFIO\_RX\_R23N/DQ3R  
IO\_5B/CLK5P/DIFFIO\_RX\_R21P/DQ53R  
IO\_5B/CLK5N/DIFFIO\_RX\_R21N/DQ53R

Bank 8A VCCIO = HSMC\_VCCIO

IO\_8A/CLK6P,FPLL\_TL\_FBP/DIFFIO\_RX\_T9P  
IO\_8A/CLK6N,FPLL\_TL\_FBN/DIFFIO\_RX\_T9N  
IO\_8A/CLK7P/DIFFIO\_RX\_T1P  
IO\_8A/CLK7N/DIFFIO\_RX\_T1N

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CLOCK\_50 AF14  
DRAM\_ADDR7 AF15  
GPIO0 W15  
GPIO2 Y16

CLOCK2\_50 AA16  
HEX21 AB17  
TD\_CLK27 18 AC18  
HEX13 AD17

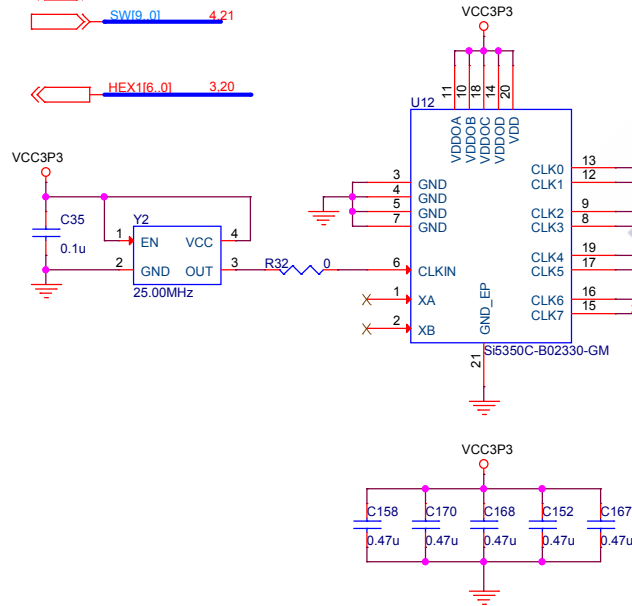
CLOCK3\_50 Y26  
SW1 Y27  
HSMC\_CLKIN\_P1 AA26  
HSMC\_CLKIN\_N1 AB27

CLOCK4\_50 K14  
HSMC\_CLKIN0 14 J14  
HSMC\_CLKIN\_P2 H15  
HSMC\_CLKIN\_N2 G15

HEX216\_01 3.20  
DRAM\_ADDR[12..0] 3.15

GPIO[35..0] 3.8,13  
SW19\_01 4.21

HEX116\_01 3.20

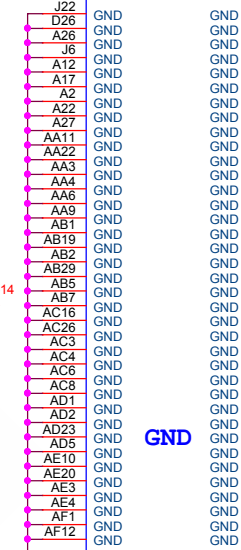


AH12 15 DRAM\_CLK  
AJ12 15 DRAM\_BA1

AE29 HSMC\_SDA  
AD29 14 HSMC\_CLKOUT0

A11 HSMC\_CLKOUT\_P2  
A10 HSMC\_CLKOUT\_N2

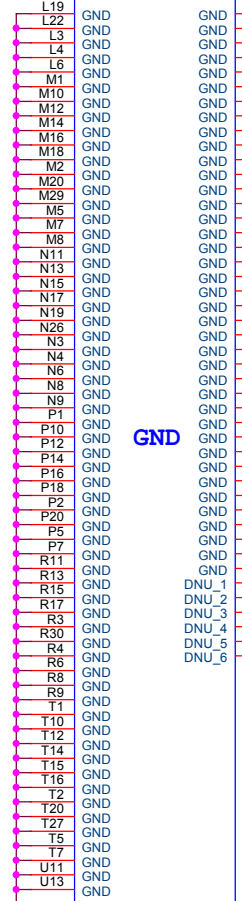
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GND

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U20-7



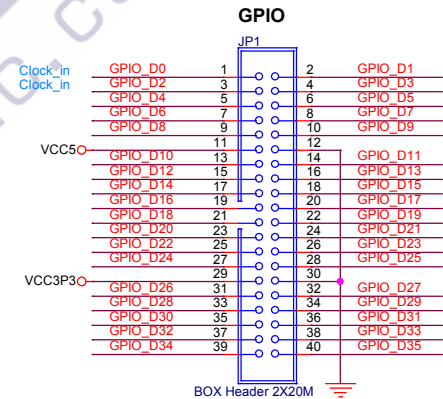
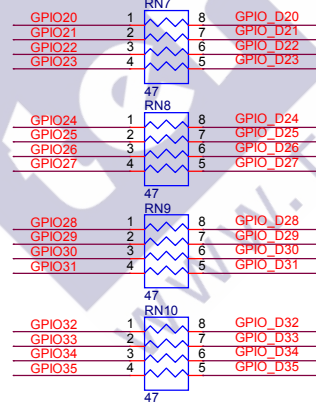
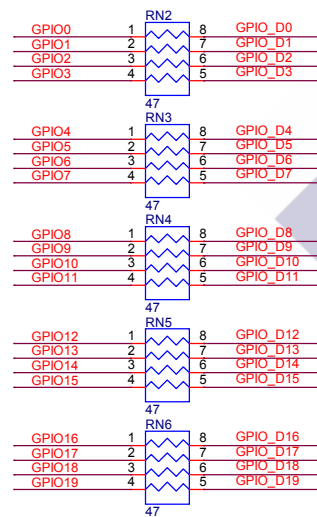
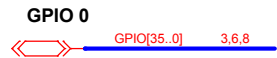
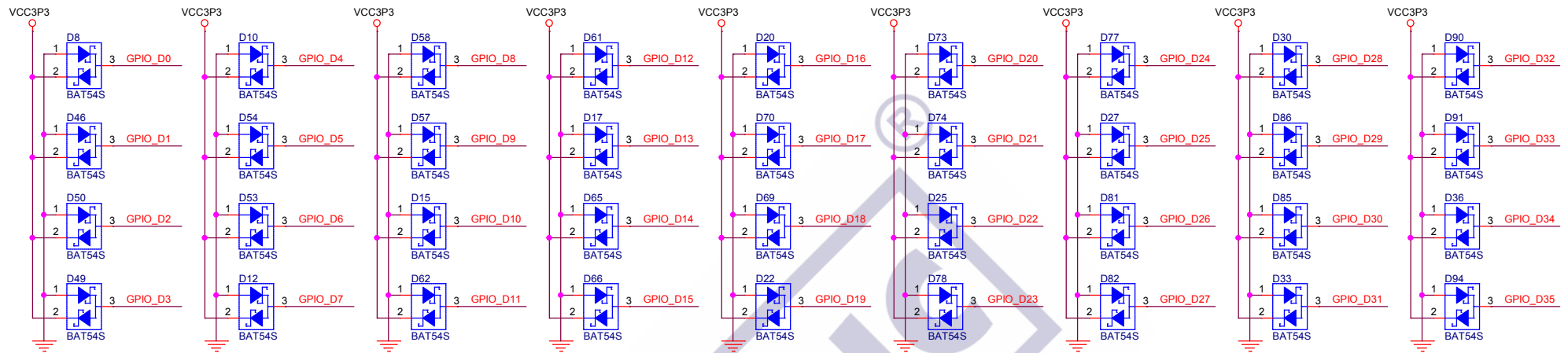
GND

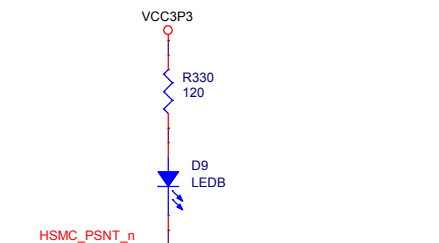
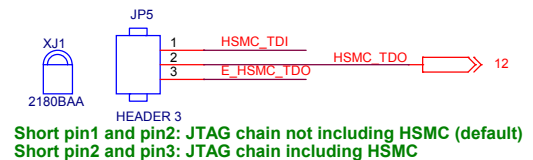
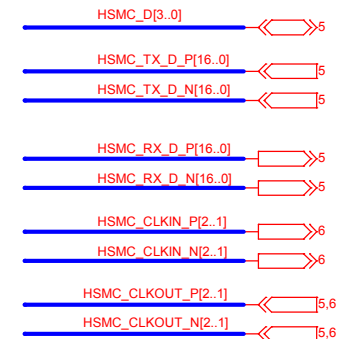
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DNU\_1 G2  
DNU\_2 AA7  
DNU\_3 AD15  
DNU\_4 E26  
DNU\_5 J15  
DNU\_6

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Title			
DE10-Standard Board			
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B	FPGA Clocks & GND		D
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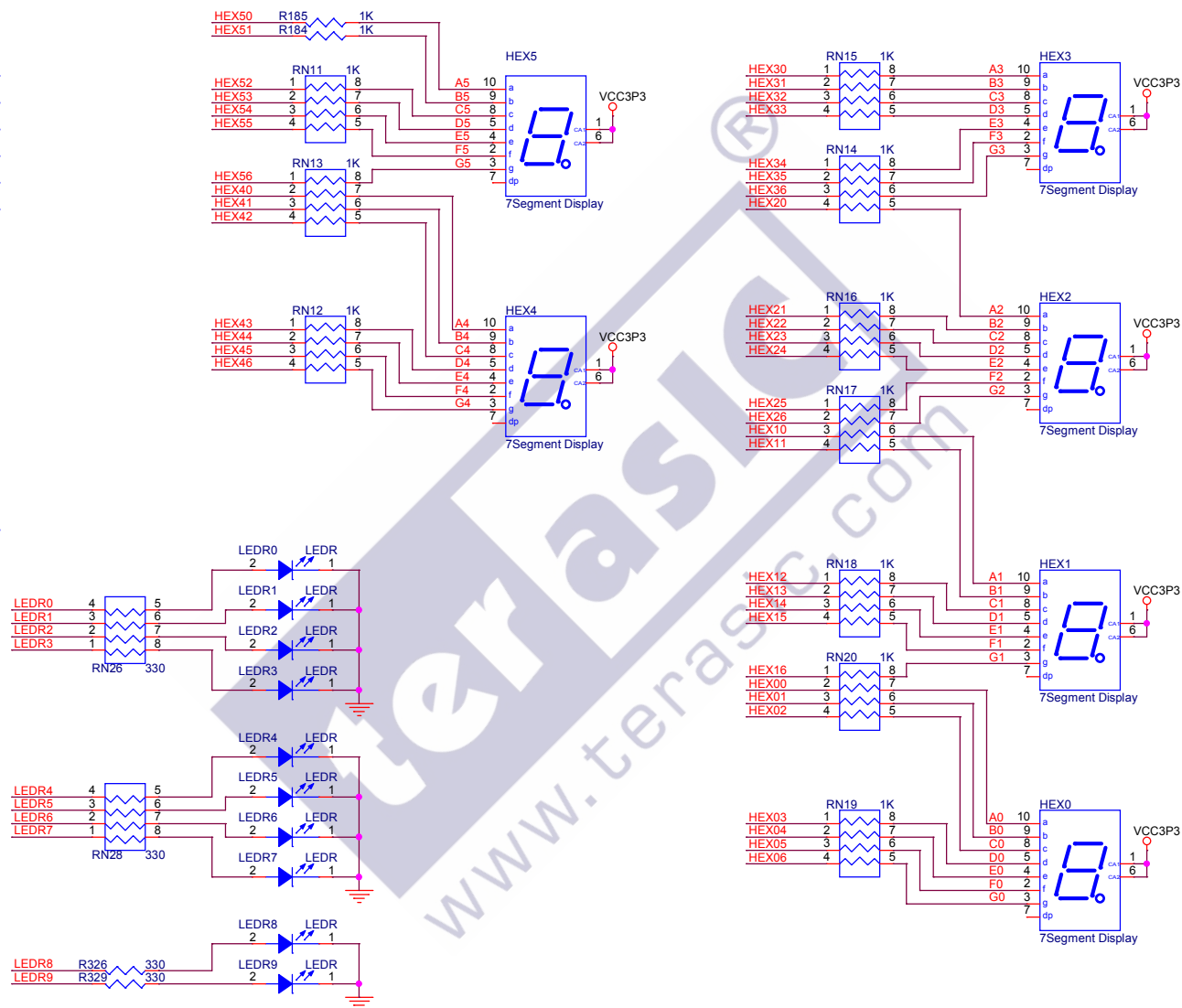




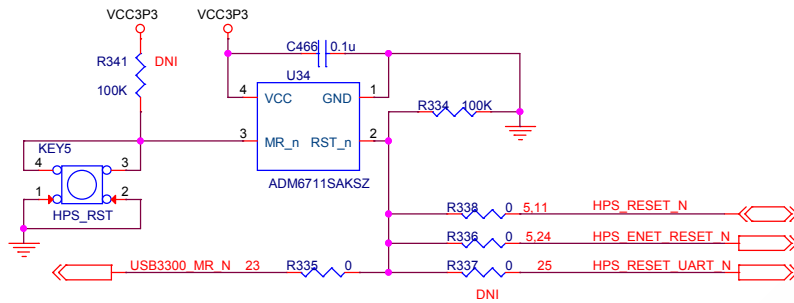


HEX0[6..0] 3  
 HEX1[6..0] 3,6  
 HEX2[6..0] 3  
 HEX3[6..0] 3  
 HEX4[6..0] 3  
 HEX5[6..0] 3

LEDRI9..0] 3,4

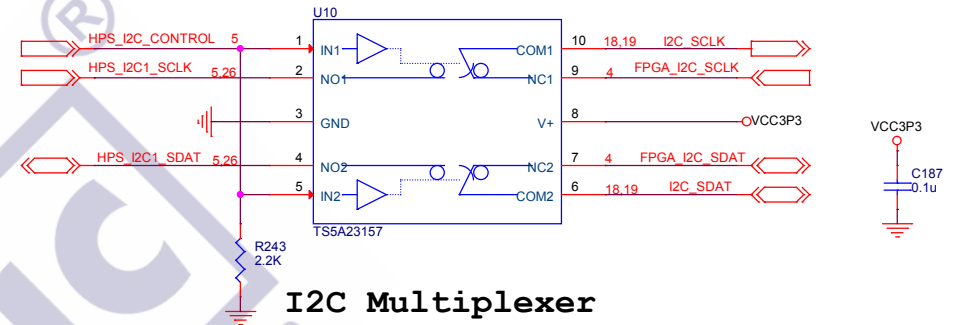




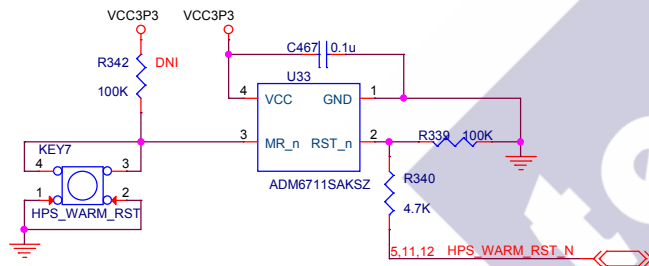


**HPS Cold Reset**

LOW --> NC to/from COM = ON and NO to/from COM = OFF  
HIGH --> NC to/from COM = OFF and NO to/from COM = ON



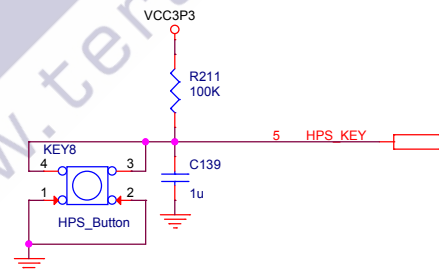
**I2C Multiplexer**



**HPS Warm Reset**



**HPS User LED**



**HPS User Button**

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Title		
<b>DE10-Standard Board</b>		
Size	Document Number	Rev
B	I2C Multiplexer, HPS BUTTON, HPS LED	D
Date:	Thursday, November 03, 2022	Sheet 27 of 33