


REV	DESCRIPTION	DATE	BY
A2	Production Release	10/22/2015	EPD

- P01 TITLE PAGE
- P02 12V INPUT, 3.3V AND 5V SWITCHERS
- P03 TPS6590374 1 CONTROL
- P04 TPS6590374 2 RESET, & RTC
- P05 TPS6590374 3 MPU,DDR, & DSP SWITCHERS
- P06 TPS6590374 4 CORE & 1.8V
- P07 AM5728 CORE POWER & EEPROM
- P08 AM5728 CLOCKS AND RESET
- P09 AM5728 IO POWER AND GROUND
- P10 AM5728 DDR3 POWER & JTAG
- P11 AM5728 ETHERNET 1
- P12 AM5728 ETHERNET 2
- P13 AM5728 GPMC & LCD
- P14 AM5728 USB INTERFACES
- P15 AM5728 I/O, LEDs, AND GPIO
- P16 AM5728 AUDIO & DEBUG SERIAL
- P17 AM5728 HDMI PORT
- P18 AM5728 eMMC, MMC3, & uSD
- P19 AM5728 DDR INTERFACE 1
- P20 AM5728 DDR INTERFACE 2
- P21 DDR3 BANK 1
- P22 DDR3 BANK 2
- P23 DDR3 BANK 2 CAPS & TERM
- P24 DDR3 BANK 1 CAPS & TERM
- P25 USB & SATA CONNECTOR
- P26 PCIe, SATA, & SERDES CLOCK
- P27 EXPANSION HEADERS
- P28 MECHANICAL

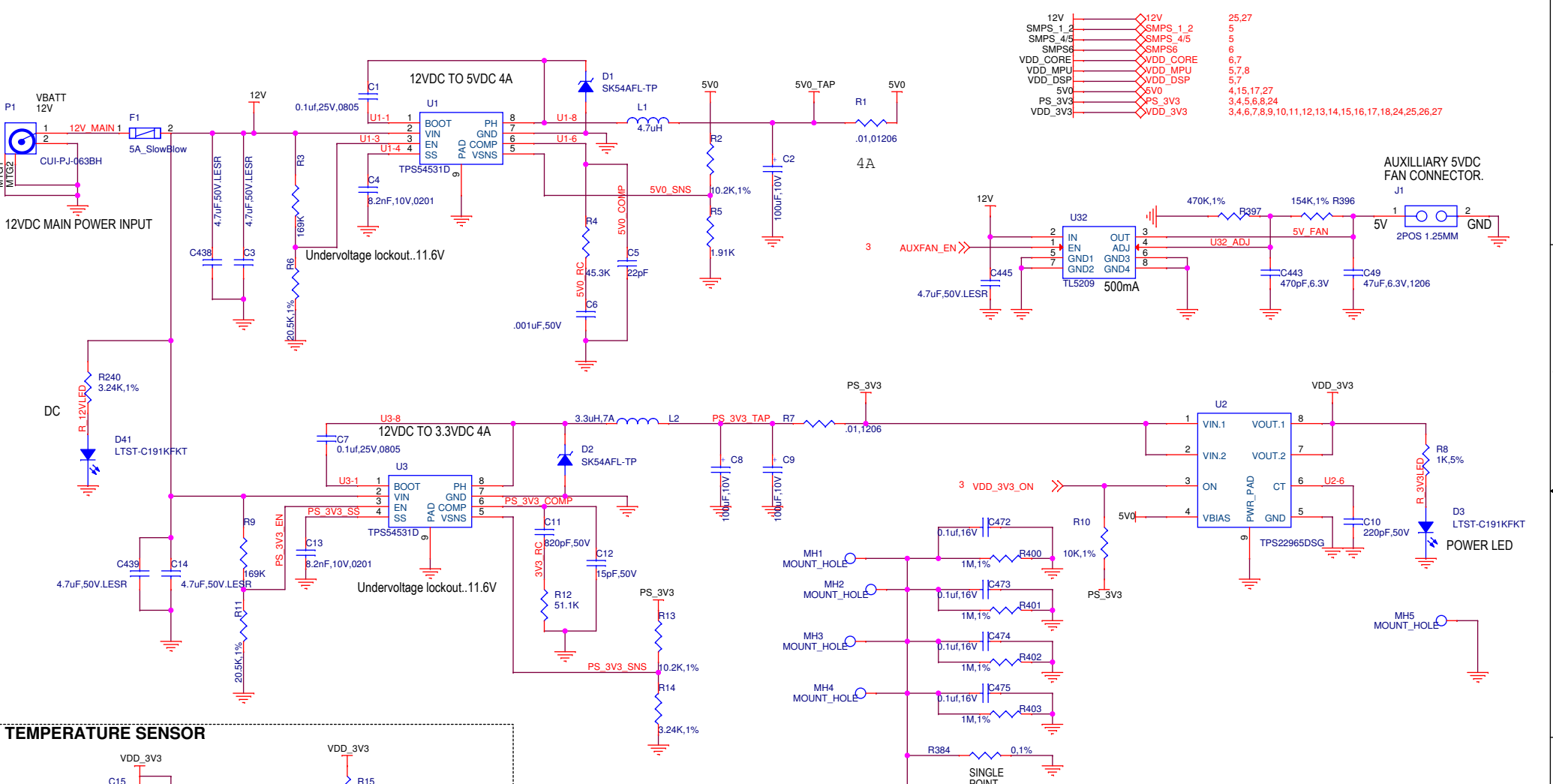
This schematic is **\*NOT SUPPORTED\*** and DOES NOT constitute a reference design. Only "community" support is allowed via resources at [BeagleBoard.org/discuss](http://BeagleBoard.org/discuss).

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Title		BeagleBoard-X15	
Size	Document Number		Rev
B	BeagleBoard-X15- A2.dsn		A2
Date: Friday, October 23, 2015		Sheet 1 of 27	



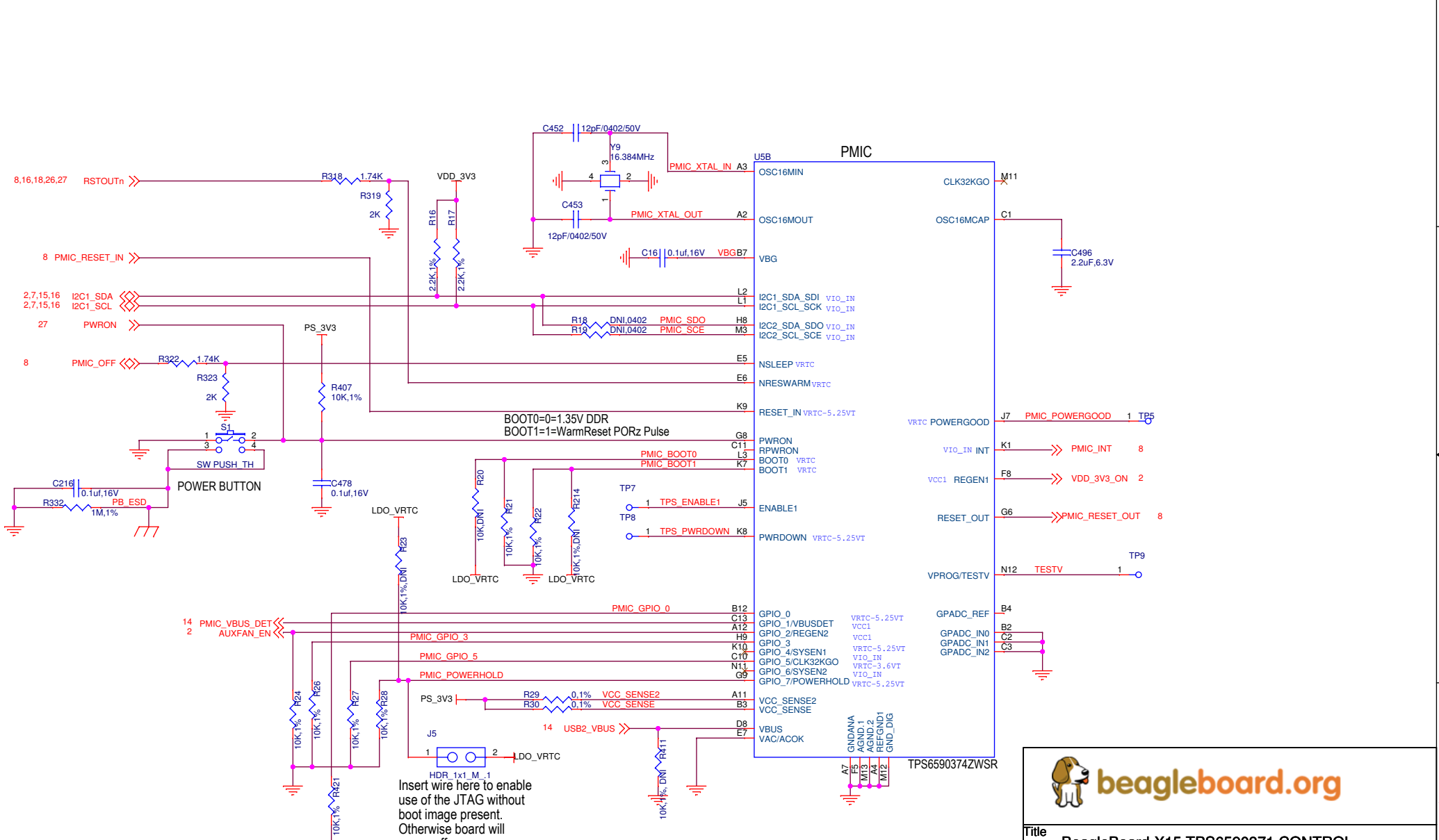



12V	SMPS_1_2	25,27
SMPS_1_2	SMPS_4/5	5
SMPS_4/5	SMPS6	6
SMPS6	VDD_CORE	6,7
VDD_CORE	VDD_MPU	5,7,8
VDD_MPU	VDD_DSP	5,7
VDD_DSP	5V0	4,15,17,27
5V0	PS_3V3	3,4,5,6,8,24
PS_3V3	VDD_3V3	3,4,6,7,8,9,10,11,12,13,14,15,16,17,18,24,25,26,27
VDD_3V3		

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Title	BeagleBoard-X15 12V in,3,3V & 5V SWITCHERS	
Size	Document Number	Rev A2
B	BeagleBoard-X15_A2.dsn	
Date:	Thursday, October 22, 2015	Sheet 2 of 27

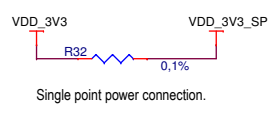




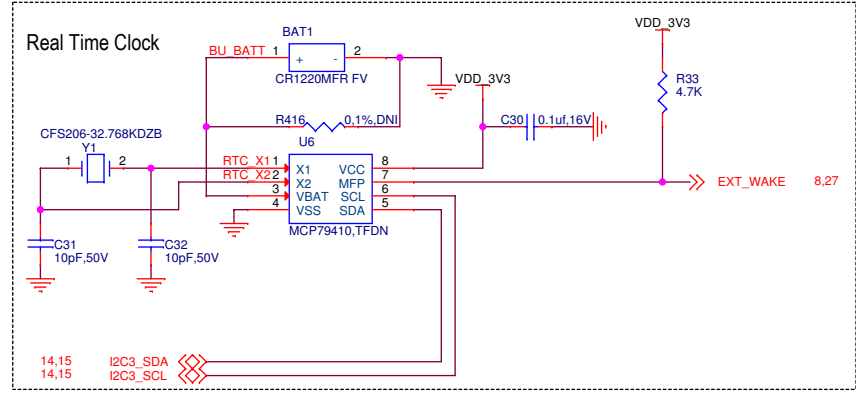
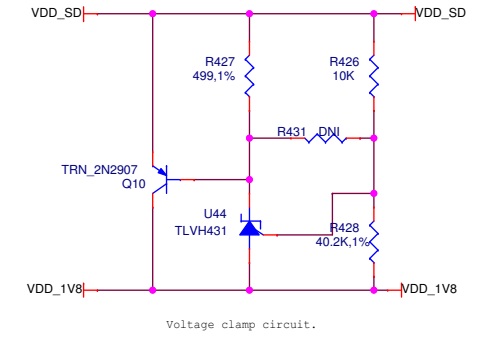
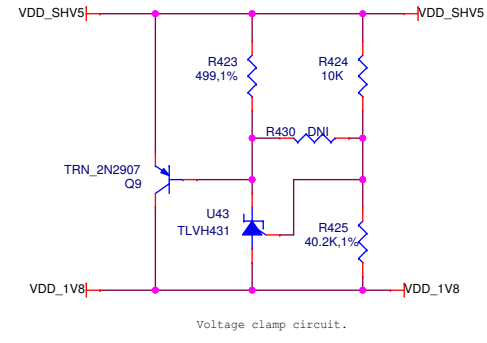
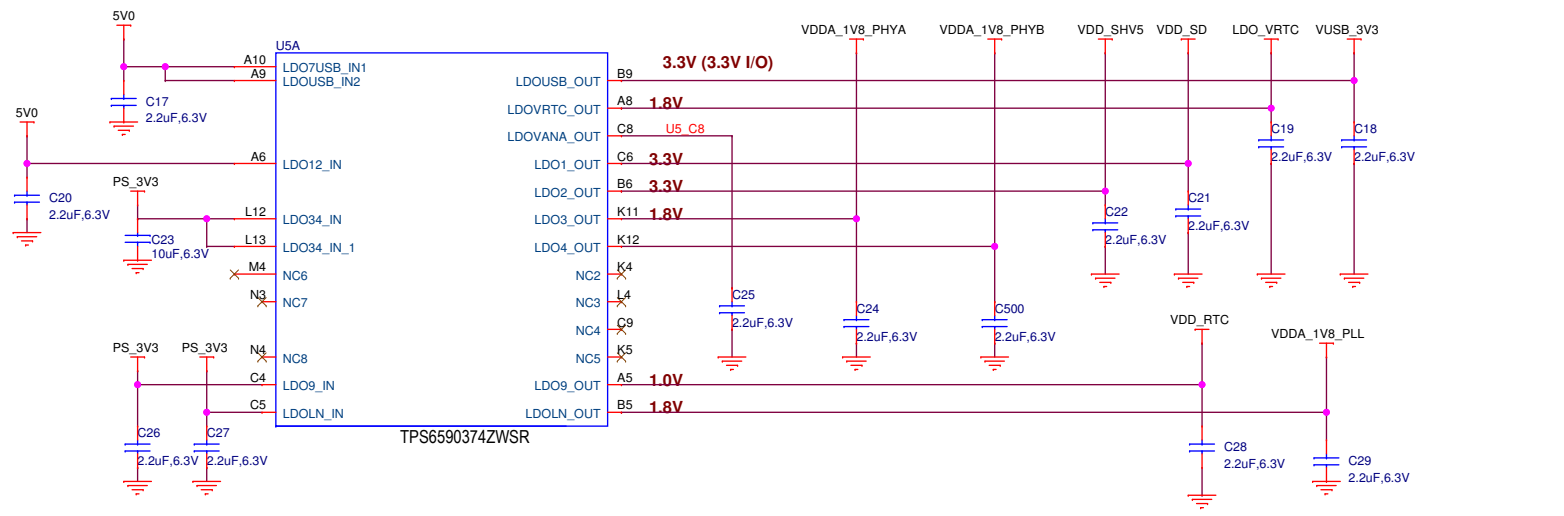
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Title		
BeagleBoard-X15 TPS6590371 CONTROL		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 3 of 27





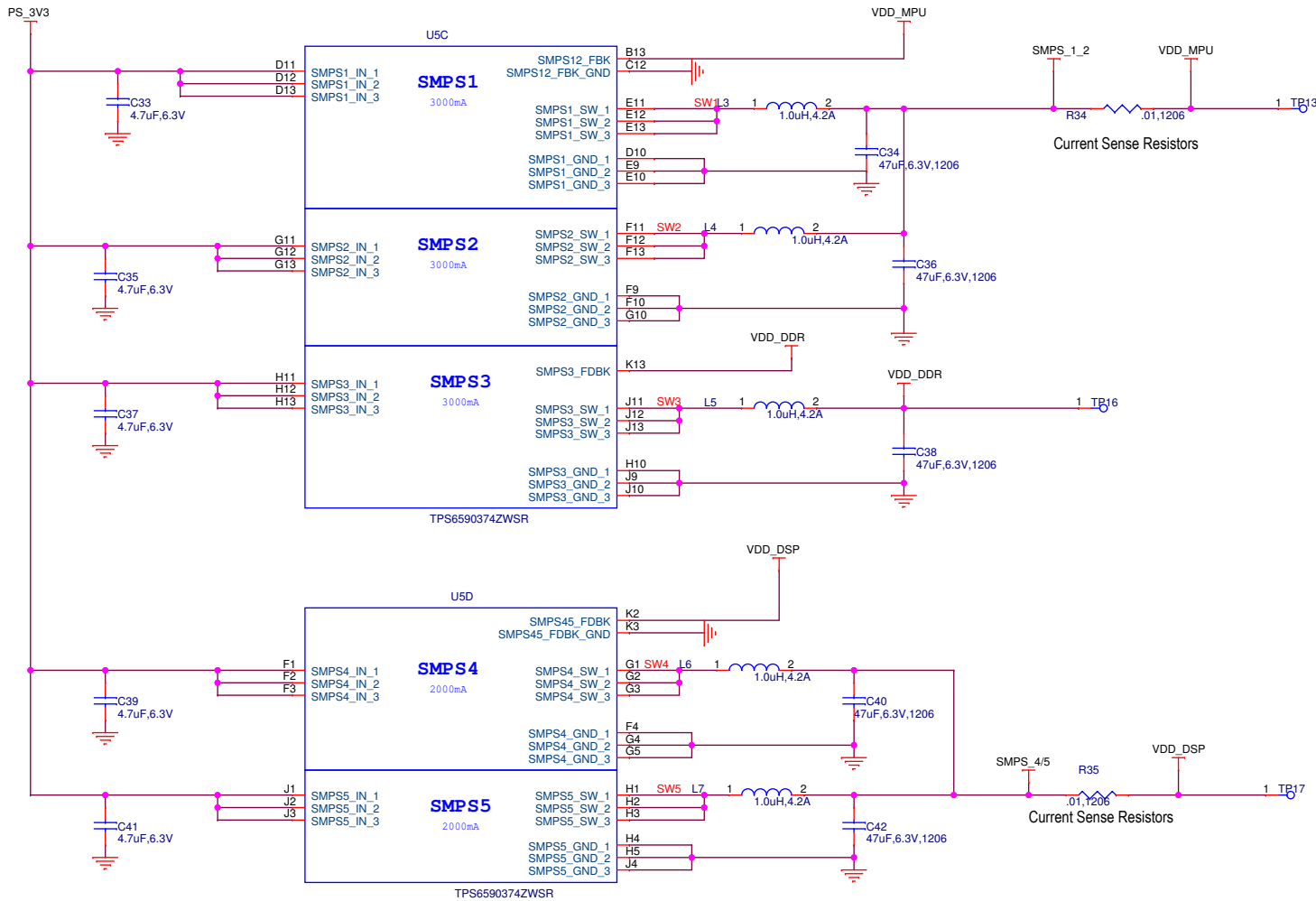
- VDDA\_1V8\_PHYB |> VDDA\_1V8\_PHYB 10
- VUSB\_3V3 |> VUSB\_3V3 14
- VDDA\_1V8\_PHYA |> VDDA\_1V8\_PHYA 10,14
- VDDA\_1V8\_PLL |> VDDA\_1V8\_PLL 8,10
- LDO\_VRTC |> LDO\_VRTC 3,8
- VDD\_SHV5 |> VDD\_SHV5 8
- VDD\_SD |> VDD\_SD 9,18
- VDD\_3V3\_SP |> VDD\_3V3\_SP 8
- PS\_3V3 |> PS\_3V3 2,3,5,6,8,24
- 5V0 |> 5V0 2,15,17,27
- VDD\_3V3 |> VDD\_3V3 2,3,6,7,8,9,10,11,12,13,14,15,16,17,18,24,25,26,27
- VDD\_1V8 |> VDD\_1V8 6,10,26



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Title		
BeagleBoard-X15 TPS6590371 CONTROL		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 4 of 27



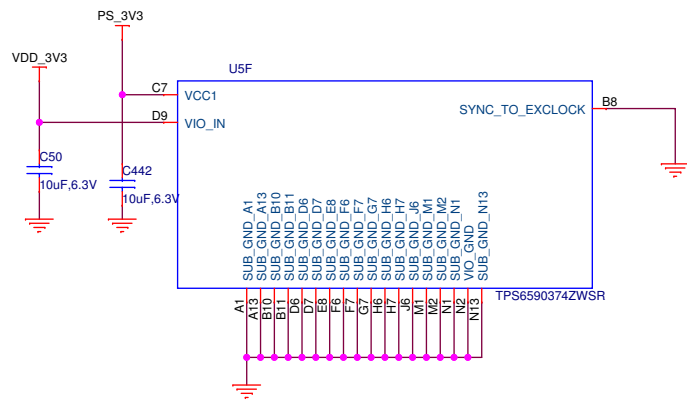
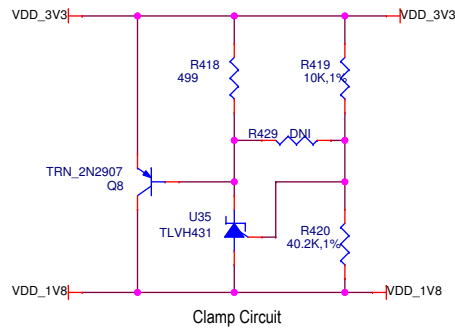
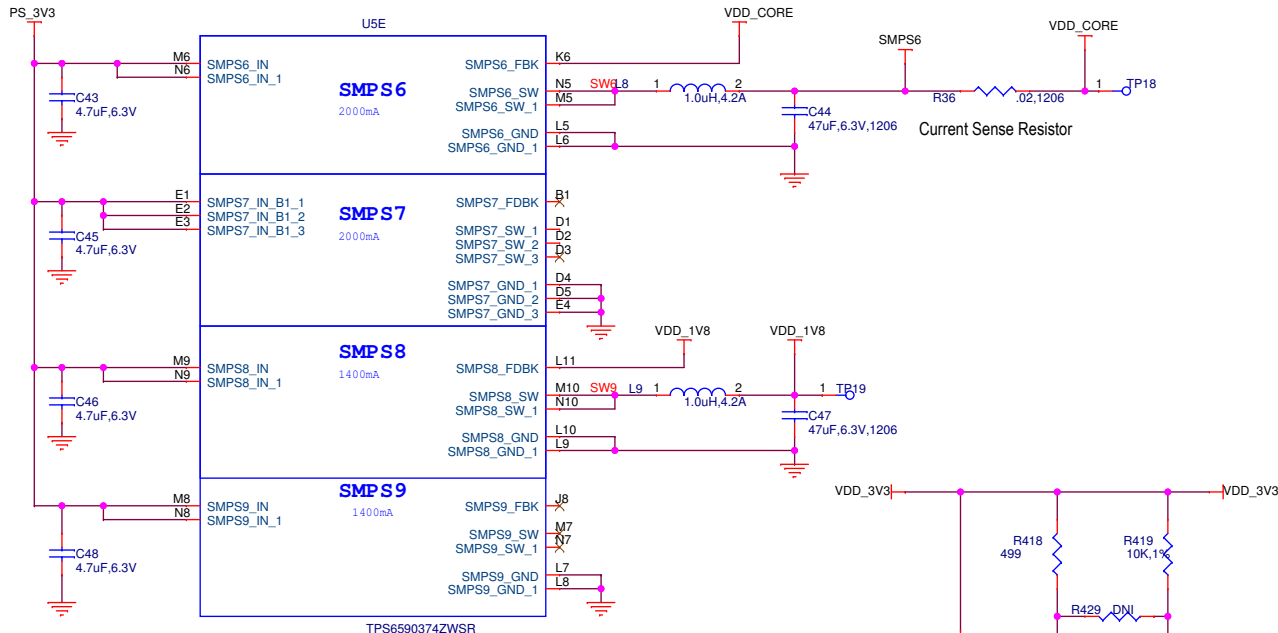


SMPS_1_2	◇ SMPS_1_2	2
VDD_MPU	◇ VDD_MPU	2,7,8
VDD_DDR	◇ VDD_DDR	10,19,21,22,23,24
VDD_DSP	◇ VDD_DSP	2,7
PS_3V3	◇ PS_3V3	2,3,4,6,8,24
SMPS_4/5	◇ SMPS_4/5	2




Title			BeagleBoard-X15 TPS6590371 MPU, DDR, & DSP		
Size			Document Number		
B			BeagleBoard-X15_A2.dsn		
Date:			Thursday, October 22, 2015		
			Sheet 5 of 27		
			Rev A2		



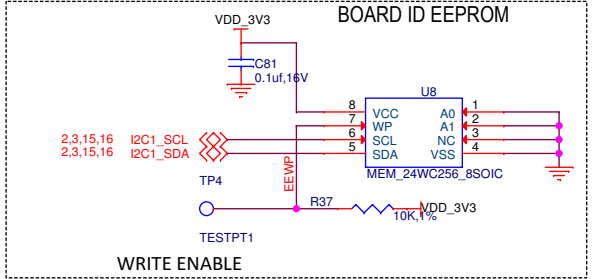
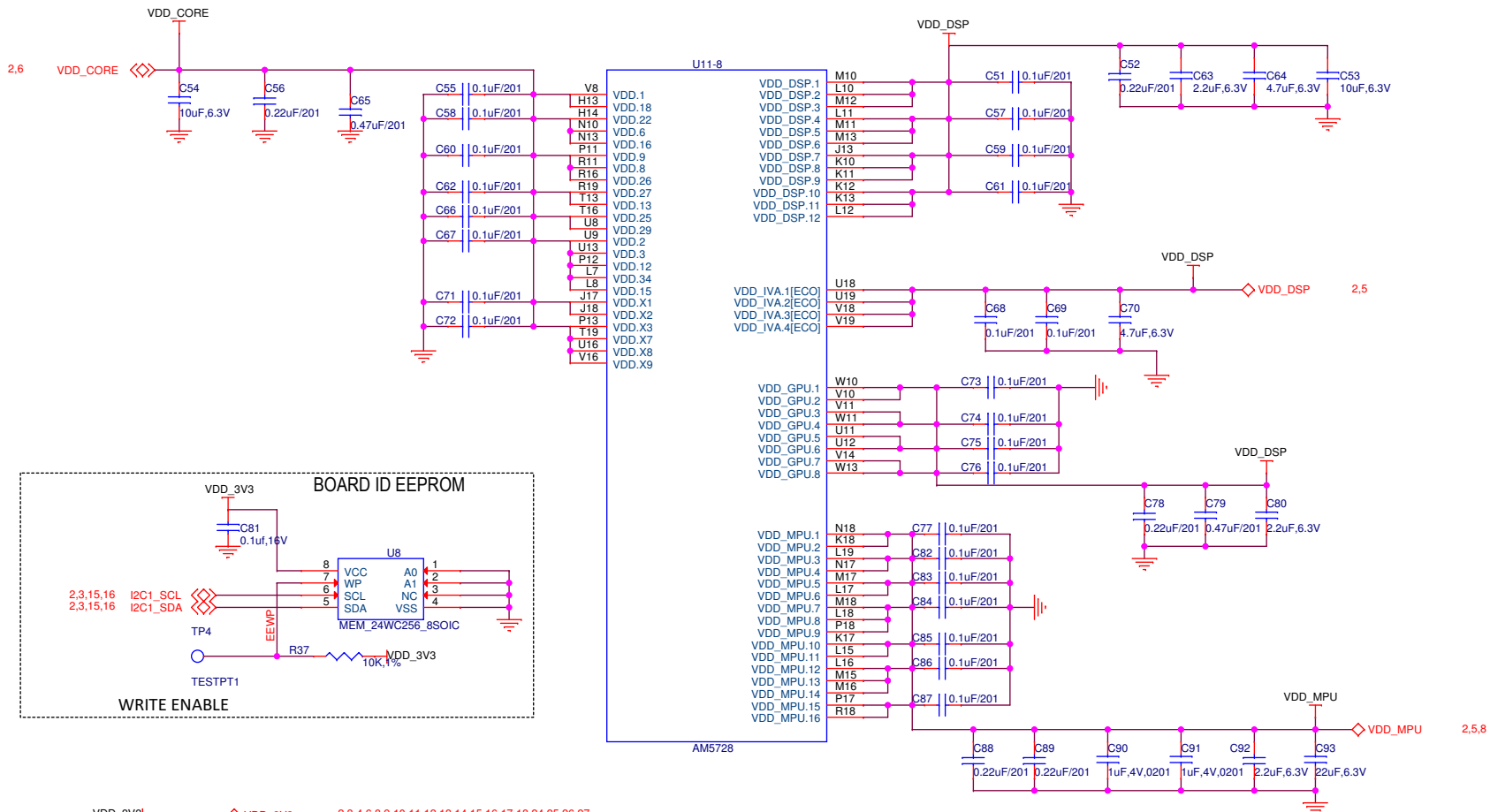


SMPS6	SMPS6	2
PS_3V3	PS_3V3	2,3,4,5,8,24
VDD_3V3	VDD_3V3	2,3,4,7,8,9,10,11,12,13,14,15,16,17,18,24,25,26,27
VDD_1V8	VDD_1V8	4,10,26
VDD_CORE	VDD_CORE	2,7


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Title		
BeagleBoard-X15 TPS6590374 SWITCHERS		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 6 of 27



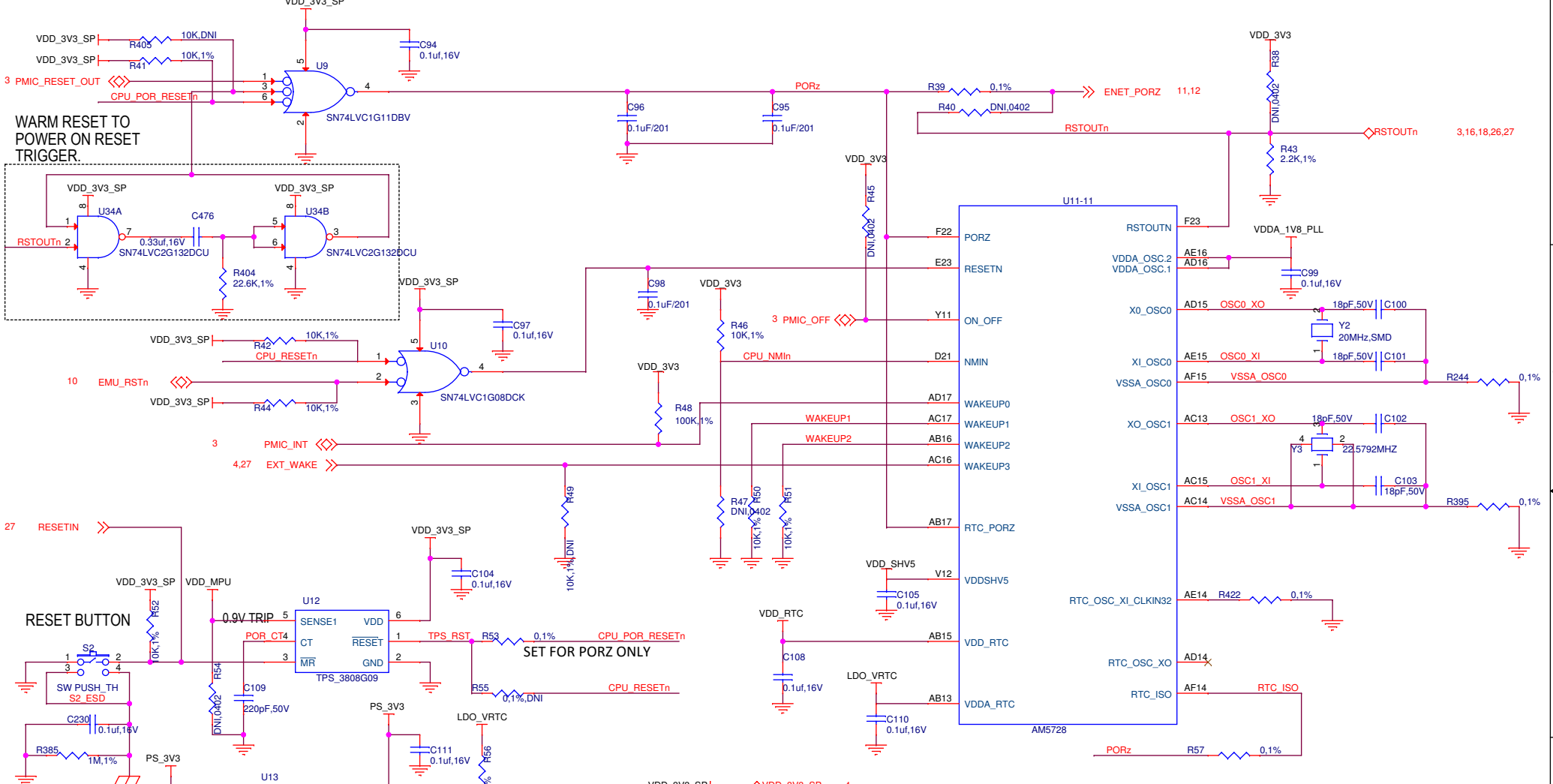


VDD\_3V3  $\diamond$  VDD\_3V3 2,3,4,6,8,9,10,11,12,13,14,15,16,17,18,24,25,26,27

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Title		BeagleBoard-X15 AM5728 CORE POWER
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 7 of 27






WARM RESET TO POWER ON RESET TRIGGER.

SET FOR PORZ ONLY

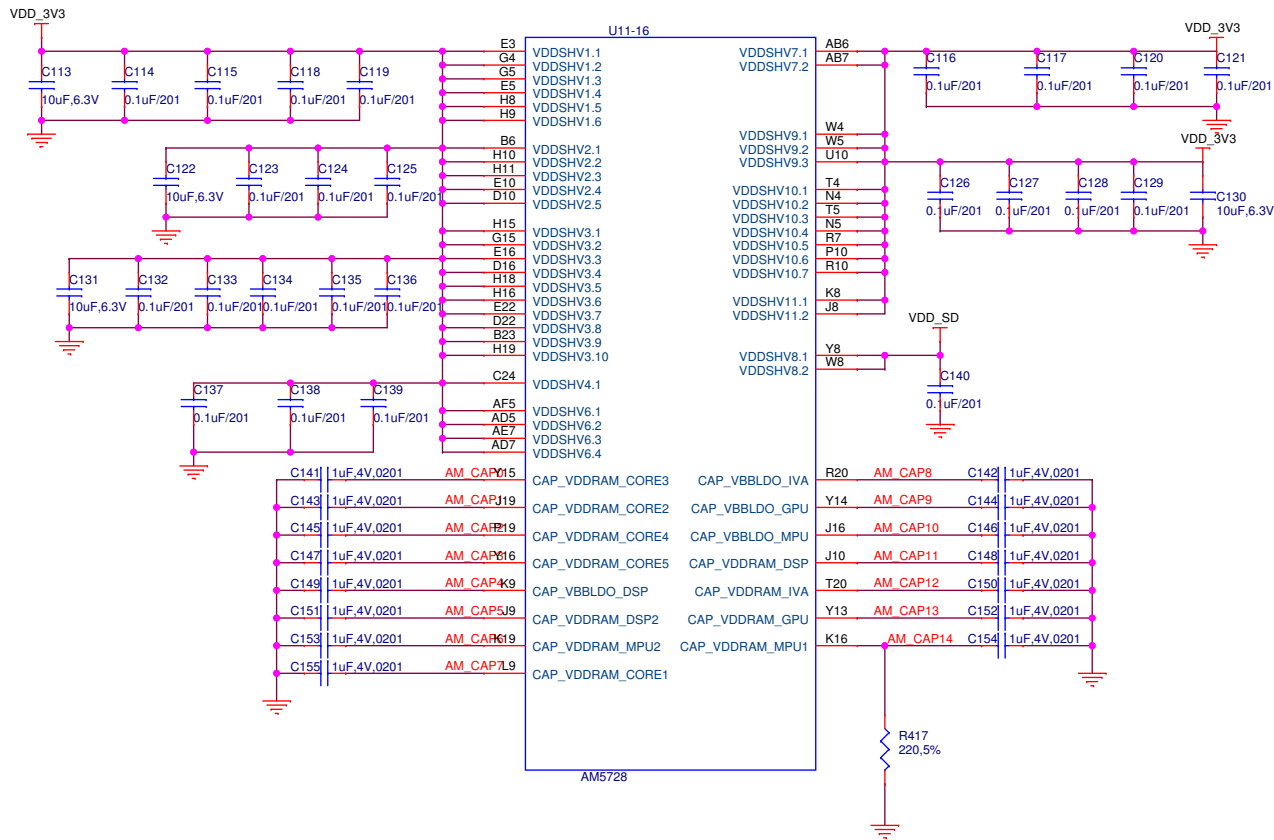
- VDD\_3V3\_SP <math>\rightarrow</math> VDD\_3V3\_SP 4
- VDD\_3V3 <math>\rightarrow</math> VDD\_3V3 2,3,4,6,7,9,10,11,12,13,14,15,16,17,18,24,25,26,27
- VDD\_CORE <math>\rightarrow</math> VDD\_CORE 2,6,7
- PS\_3V3 <math>\rightarrow</math> PS\_3V3 2,3,4,5,6,24
- VDD\_MPU <math>\rightarrow</math> VDD\_MPU 2,5,7
- LDO\_VRTC <math>\rightarrow</math> LDO\_VRTC 3,4
- VDDA\_1V8\_PLL <math>\rightarrow</math> VDDA\_1V8\_PLL 4,10
- VDD\_SHV5 <math>\rightarrow</math> VDD\_SHV5 4



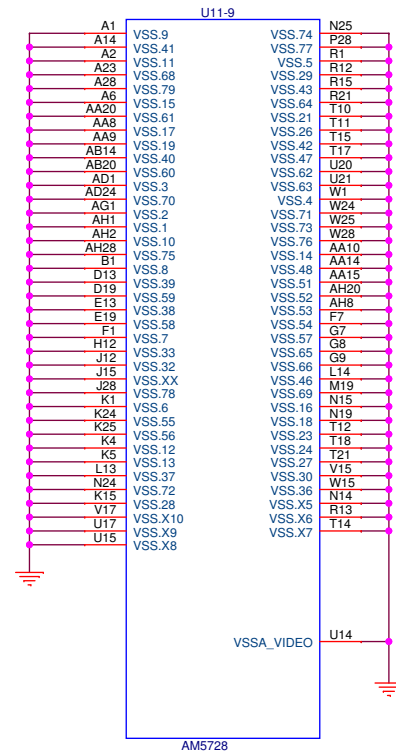
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Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 8 of 27





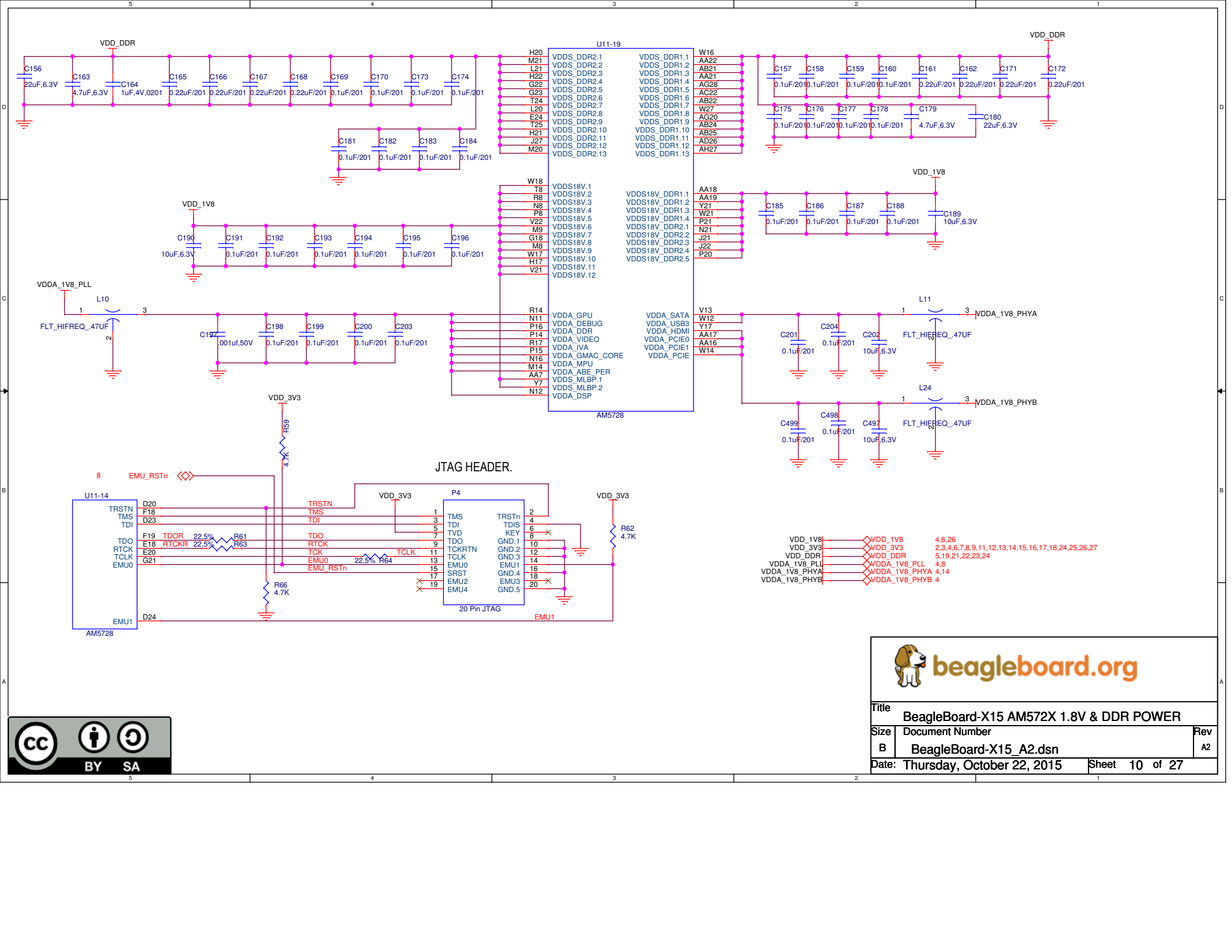


VDD\_SD | VDD\_SD 4,18  
 VDD\_3V3 | VDD\_3V3 2,3,4,6,7,8,10,11,12,13,14,15,16,17,18,24,25,26,27




Title			BeagleBoard-X15 AM572X I/O POWER & GROUND
Size			Document Number
B			BeagleBoard-X15_A2.dsn
Date:		Thursday, October 22, 2015	Sheet 9 of 27
			Rev A2



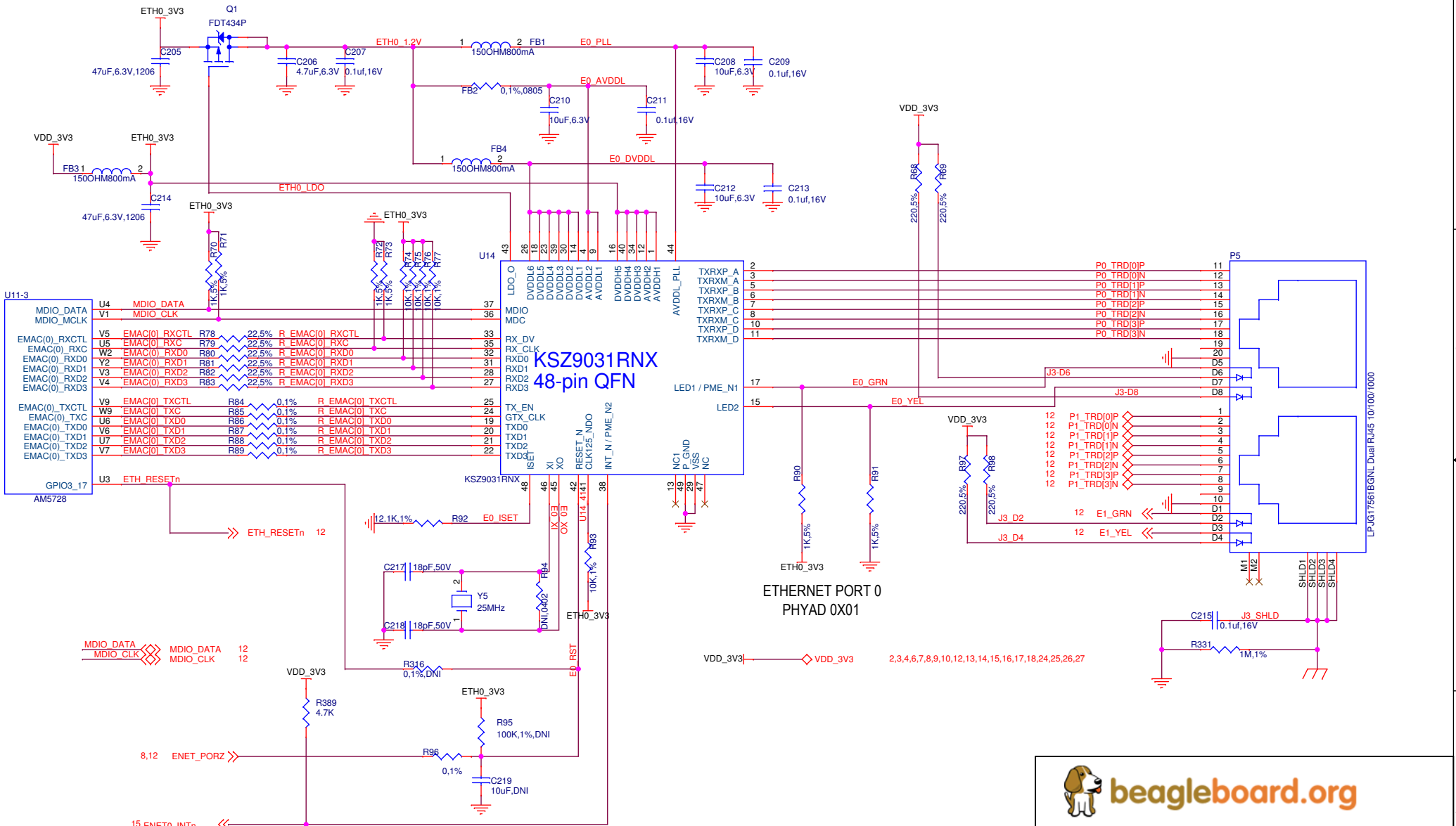


- VDD\_1V8 → VDD\_1V8 4,6,26
- VDD\_3V3 → VDD\_3V3 2,3,4,6,7,8,9,11,12,13,14,15,16,17,18,24,25,26,27
- VDD\_DDR → VDD\_DDR 5,19,21,22,23,24
- VDDA\_1V8\_PLL → VDDA\_1V8\_PLL 4,8
- VDDA\_1V8\_PHYA → VDDA\_1V8\_PHYA 4,14
- VDDA\_1V8\_PHYB → VDDA\_1V8\_PHYB 4


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Title		
<b>BeagleBoard-X15 AM572X 1.8V &amp; DDR POWER</b>		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 10 of 27





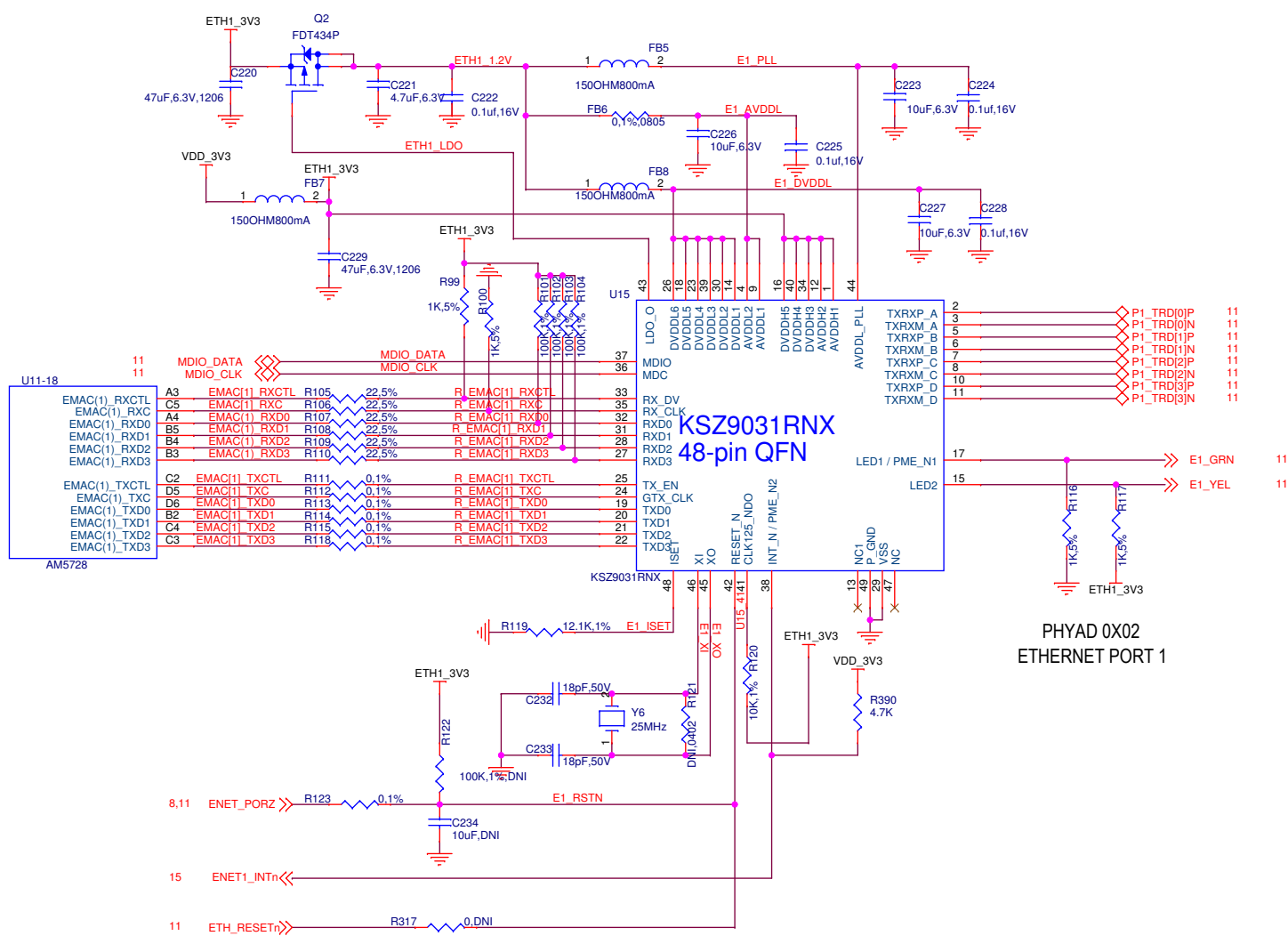
**KSZ9031RNX**  
**48-pin QFN**

**ETHERNET PORT 0**  
**PHYAD 0X01**



Title		BeagleBoard-X15 ETHERNET PORT 0	
Size	Document Number	Rev	
B	BeagleBoard-X15_A2.dsn	A2	
Date:	Thursday, October 22, 2015	Sheet	11 of 27





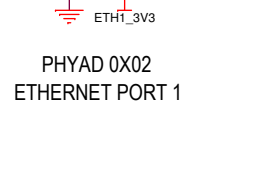
PHYAD 0X02  
ETHERNET PORT 1


U11-18	EMAC(1)_RXCTL	A3	EMAC(1)_RXCTL	R105	22.5%	R	EMAC(1)_RXCTL	33
	EMAC(1)_RXC	C5	EMAC(1)_RXC	R106	22.5%	R	EMAC(1)_RXC	35
	EMAC(1)_RXD0	A4	EMAC(1)_RXD0	R107	22.5%	R	EMAC(1)_RXD0	32
	EMAC(1)_RXD1	B5	EMAC(1)_RXD1	R108	22.5%	R	EMAC(1)_RXD1	31
	EMAC(1)_RXD2	B4	EMAC(1)_RXD2	R109	22.5%	R	EMAC(1)_RXD2	28
	EMAC(1)_RXD3	B3	EMAC(1)_RXD3	R110	22.5%	R	EMAC(1)_RXD3	27
	EMAC(1)_TXCTL	C2	EMAC(1)_TXCTL	R111	0.1%	R	EMAC(1)_TXCTL	25
	EMAC(1)_TXC	D5	EMAC(1)_TXC	R112	0.1%	R	EMAC(1)_TXC	24
	EMAC(1)_TXD0	D6	EMAC(1)_TXD0	R113	0.1%	R	EMAC(1)_TXD0	19
	EMAC(1)_TXD1	B2	EMAC(1)_TXD1	R114	0.1%	R	EMAC(1)_TXD1	20
	EMAC(1)_TXD2	C4	EMAC(1)_TXD2	R115	0.1%	R	EMAC(1)_TXD2	21
	EMAC(1)_TXD3	C3	EMAC(1)_TXD3	R118	0.1%	R	EMAC(1)_TXD3	22

**KSZ9031RXN**  
48-pin QFN

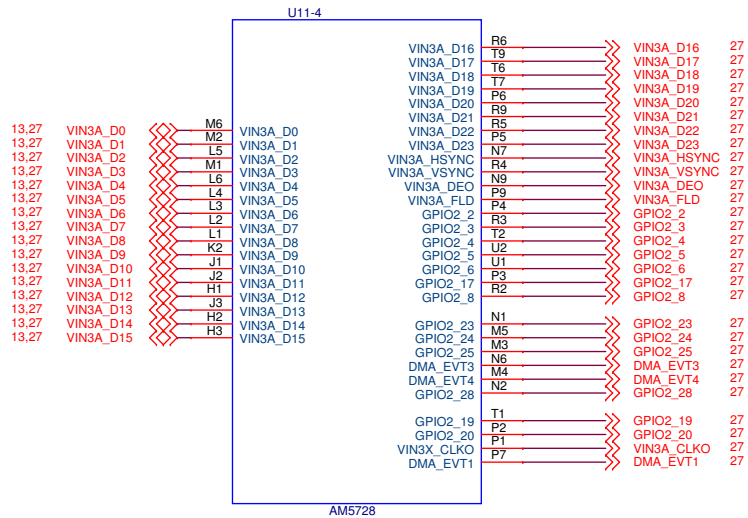
2	TXRXP_A	P1_TRD[0]P	11
3	TXRXP_A	P1_TRD[0]N	11
4	TXRXP_B	P1_TRD[1]P	11
5	TXRXP_B	P1_TRD[1]N	11
6	TXRXP_C	P1_TRD[2]P	11
7	TXRXP_C	P1_TRD[2]N	11
8	TXRXP_D	P1_TRD[3]P	11
9	TXRXP_D	P1_TRD[3]N	11

17	LED1 / PME_N1	E1_GRN	11
15	LED2	E1_YEL	11



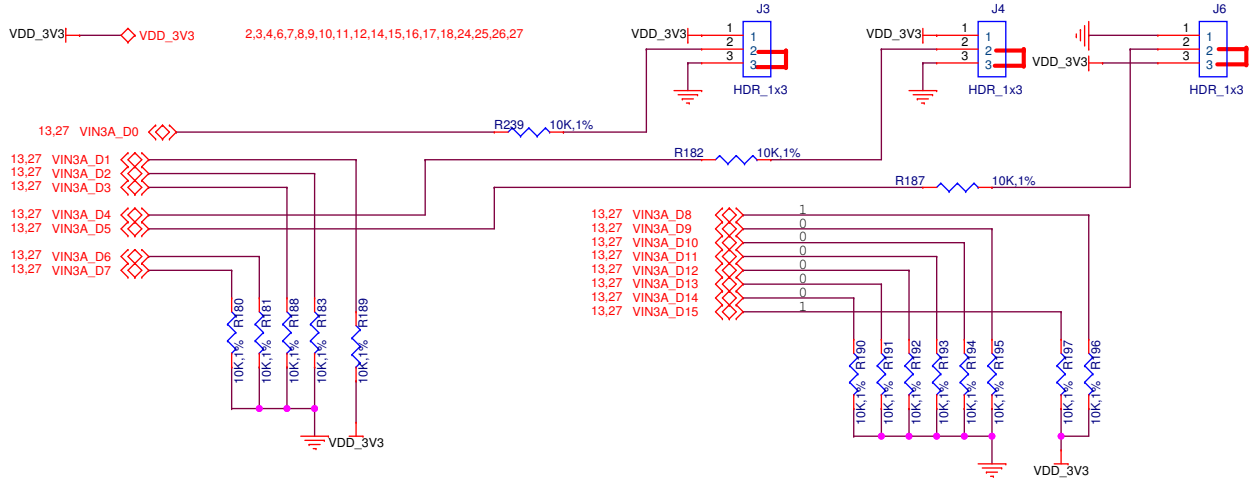
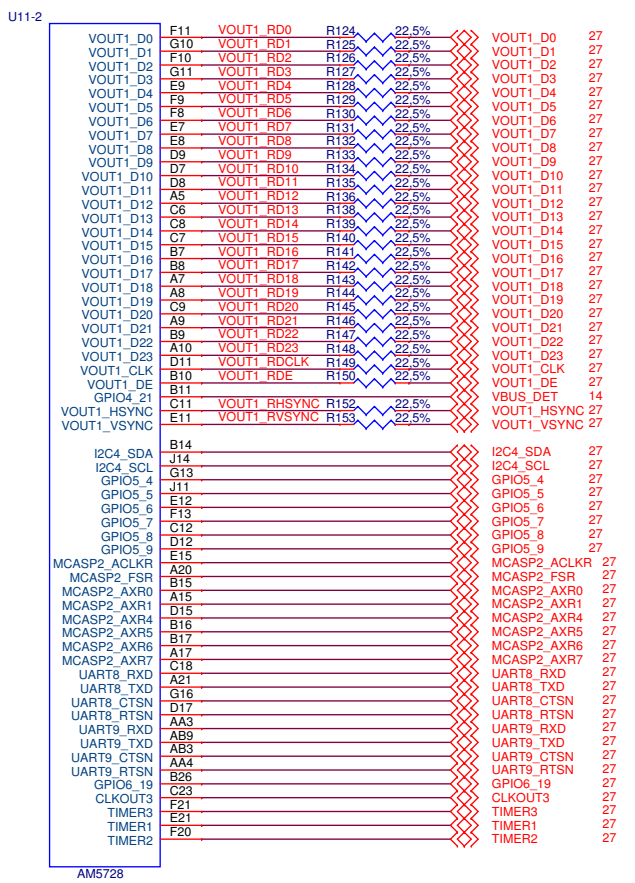
 <b>beagleboard.org</b>		
Title <b>BeagleBoard-X15 ETHERNET PORT 1</b>		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 12 of 27

VDD\_3V3 2,3,4,6,7,8,9,10,11,13,14,15,16,17,18,24,25,26,27



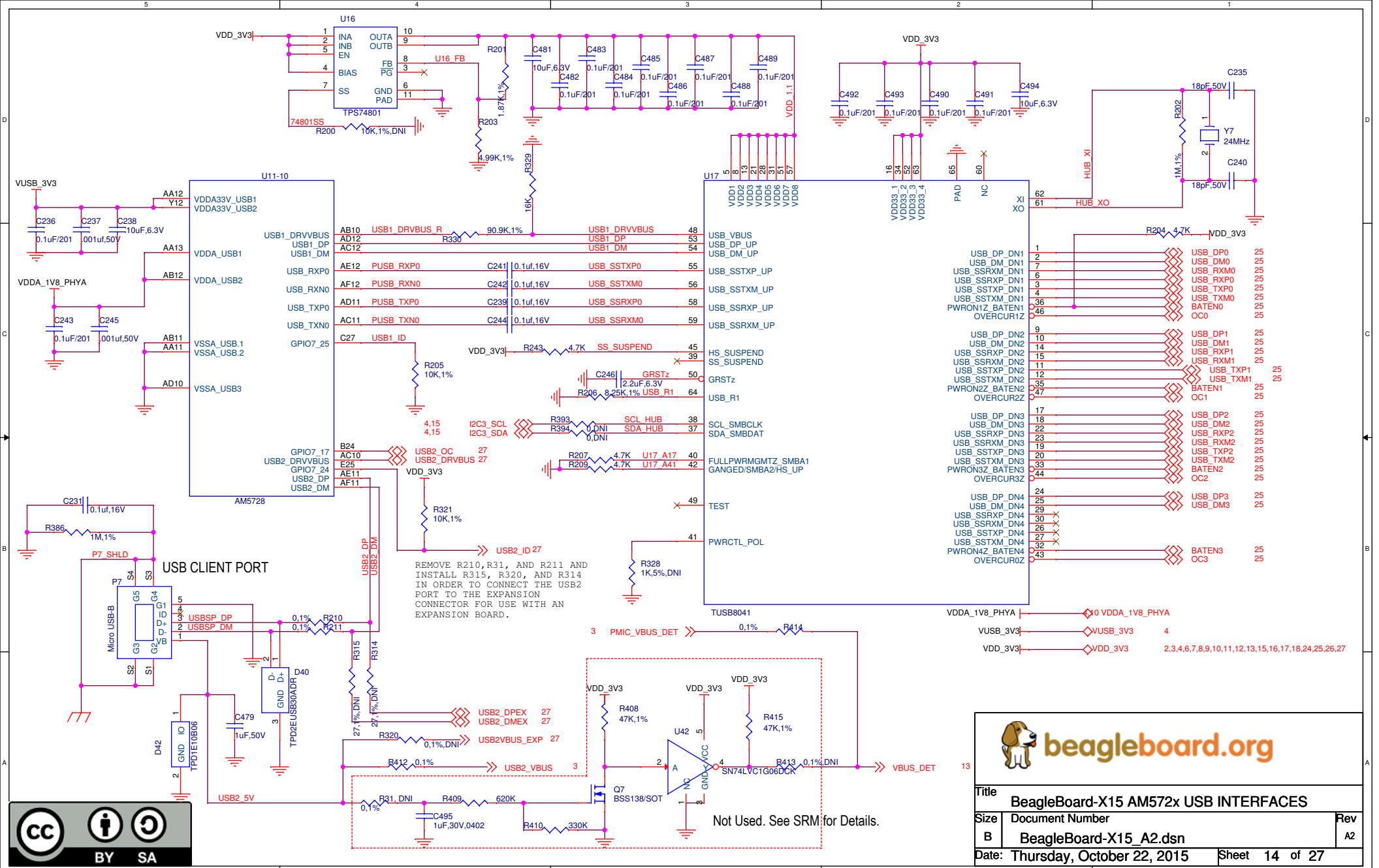
Optional Boot Options. Strapped for SD then eMMC boot by default.


	1-2	2-3
BOOT from SD then eMMC	J3	X
	J4	X
	J6	X
BOOT from UART	J3	X
	J4	X
	J6	X
BOOT from SATA then SD	J3	X
	J4	X
	J6	X



Title		
BeagleBoard-X15 I/O, LCD, & BOOT		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 13 of 27



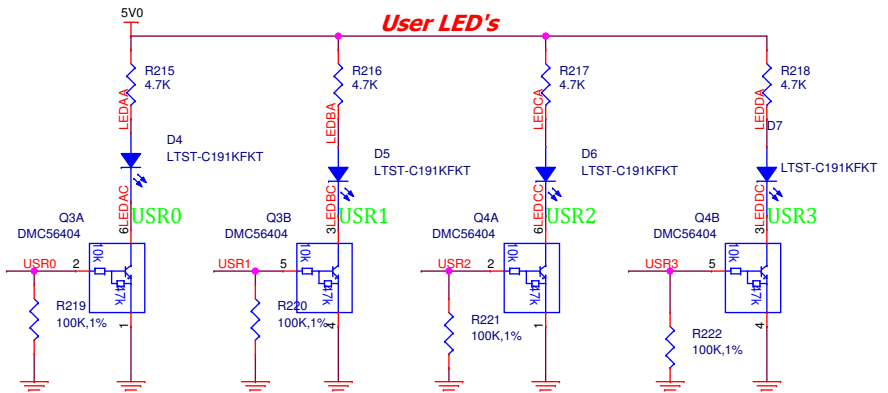
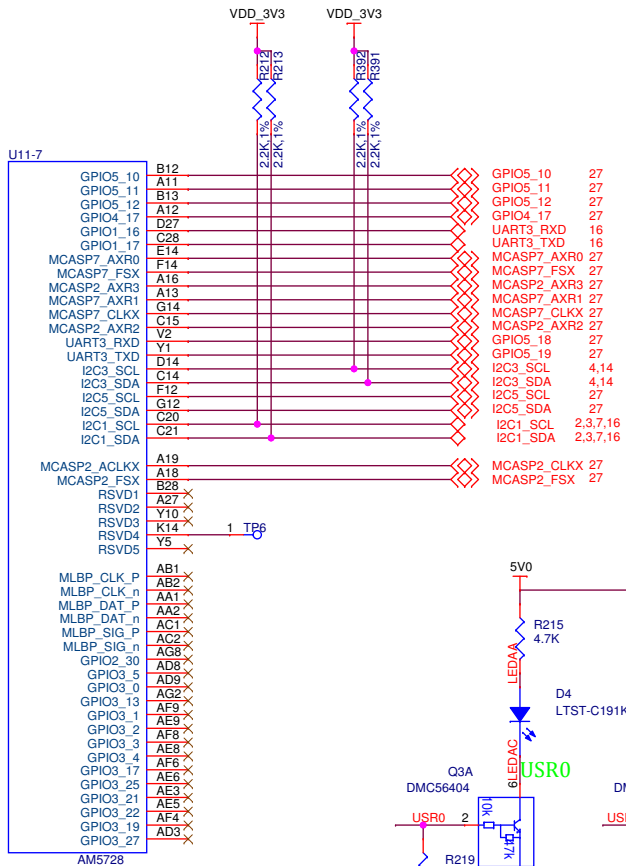




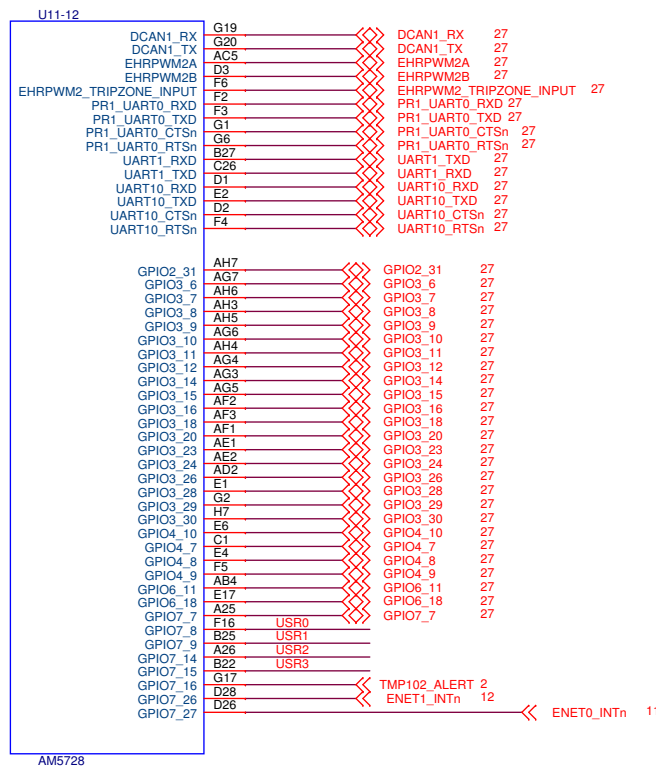
Title		
<b>BeagleBoard-X15 AM572x USB INTERFACES</b>		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 14 of 27




Not Used. See SRM for Details.



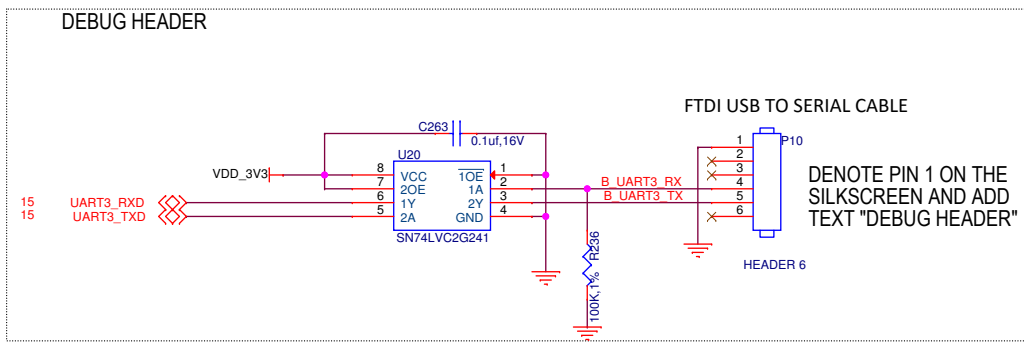
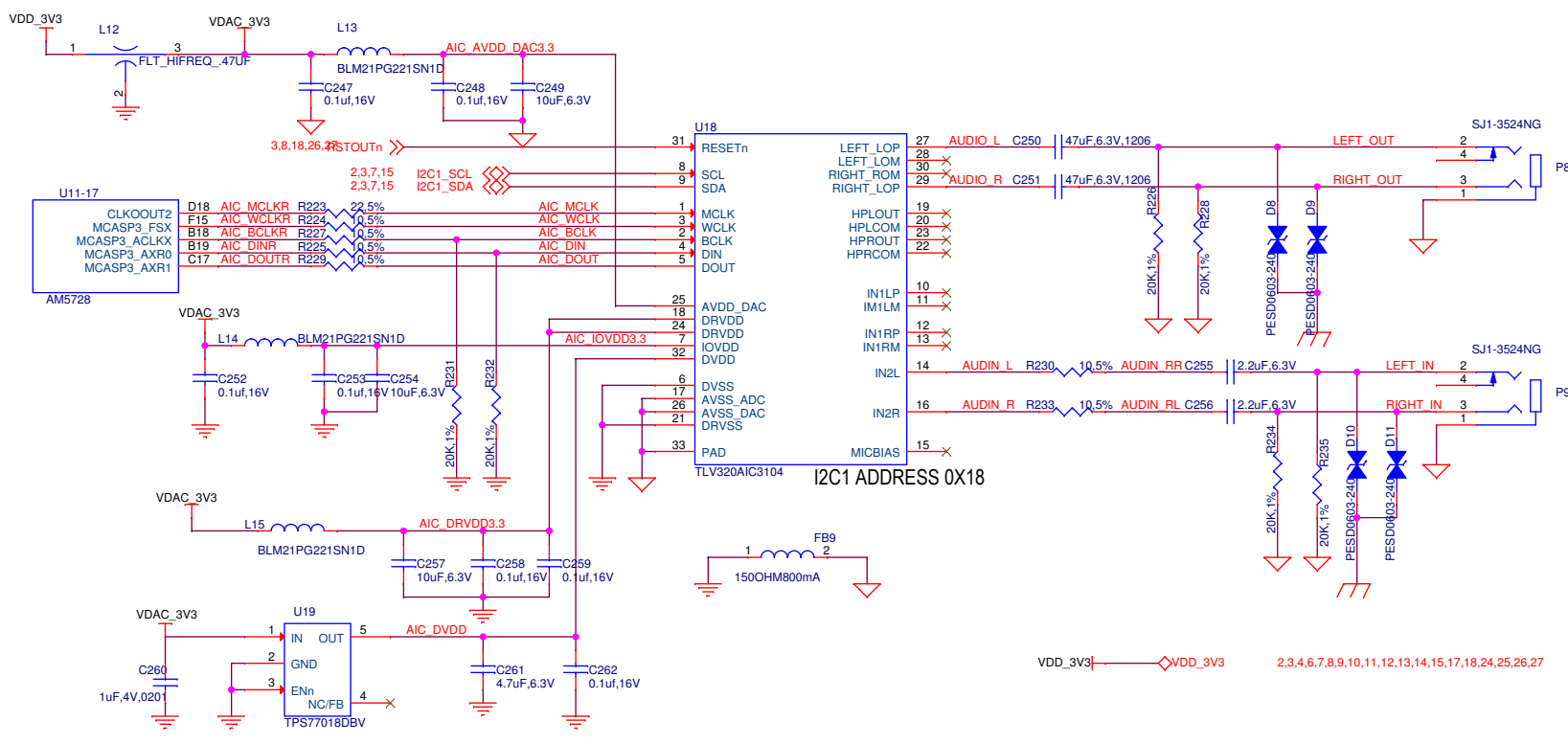
VDD\_3V3 — VDD\_3V3 2,3,4,6,7,8,9,10,11,12,13,14,16,17,18,24,25,26,27  
 5V0 — 5V0 2,4,17,27



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Title		
BeagleBoard-X15 AM5728 I/O & LEDS		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 15 of 27



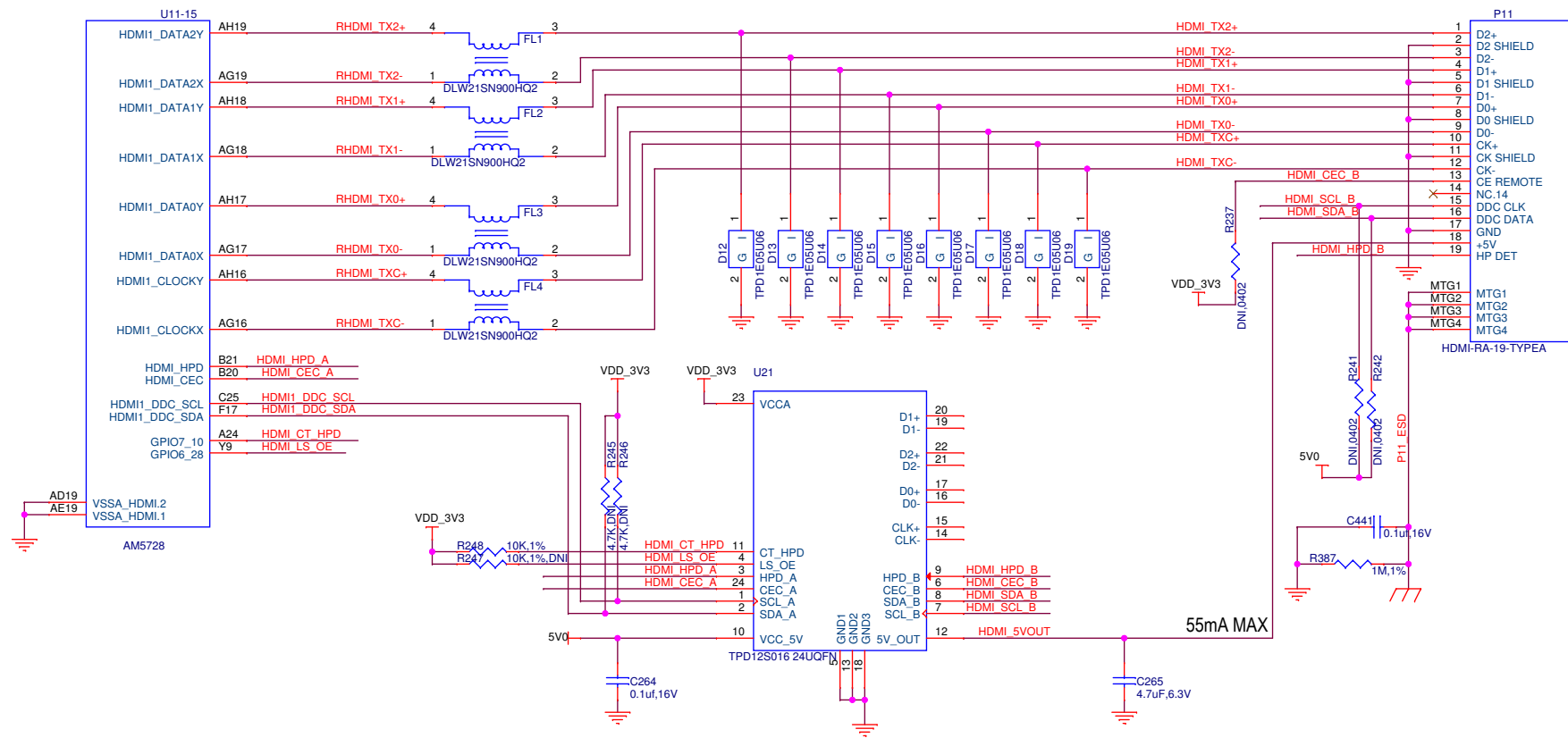


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Title		BeagleBoard-X15 AUDIO CODEC & DEBUG PORT
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 16 of 27





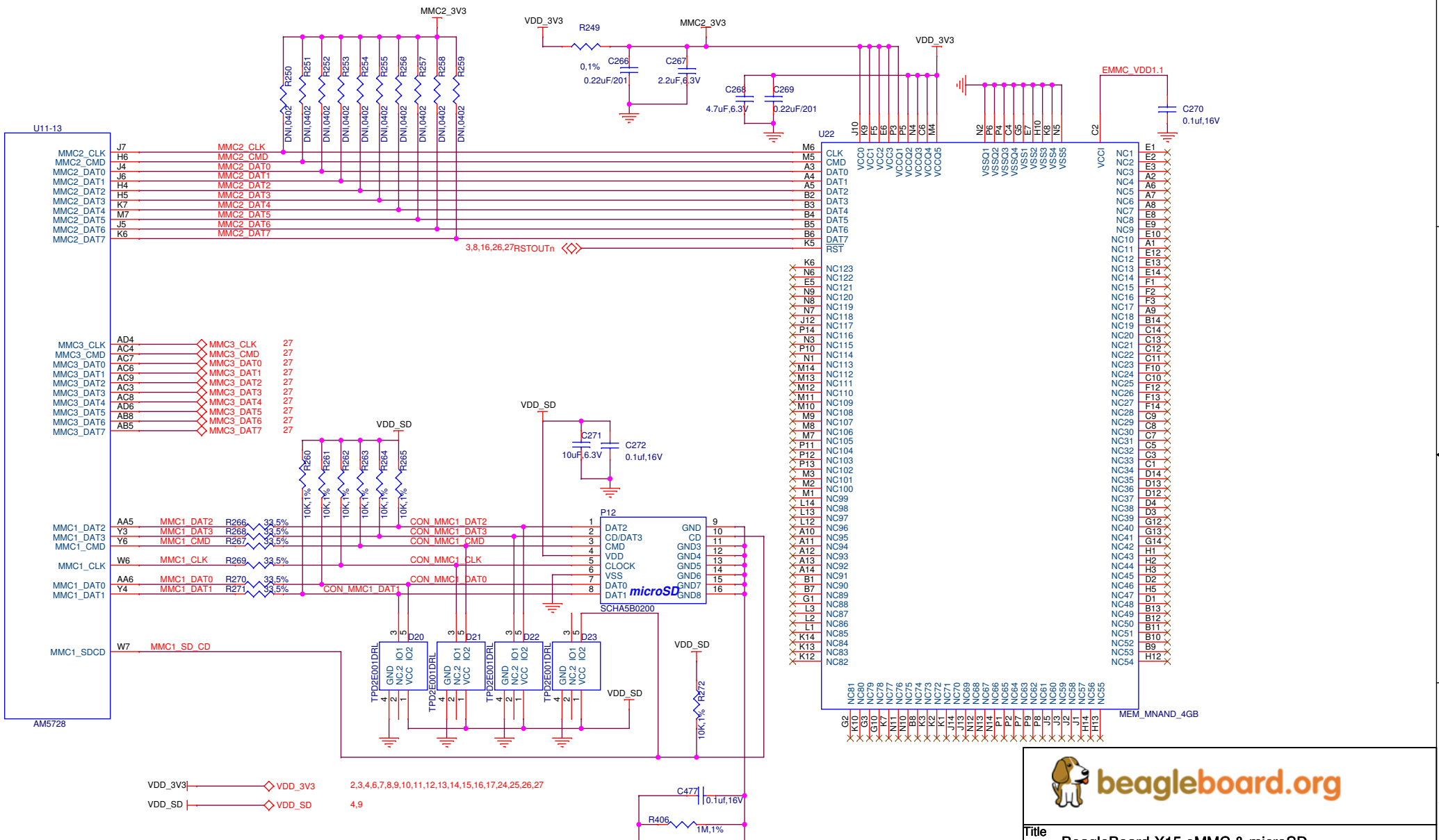


5V0 → 5V0 2,4,15,27  
 VDD\_3V3 → VDD\_3V3 2,3,4,6,7,8,9,10,11,12,13,14,15,16,18,24,25,26,27


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Title		BeagleBoard-X15 HDMI PORT	
Size	Document Number		Rev
B	BeagleBoard-X15_A2.dsn		A2
Date: Thursday, October 22, 2015		Sheet 17 of 27	





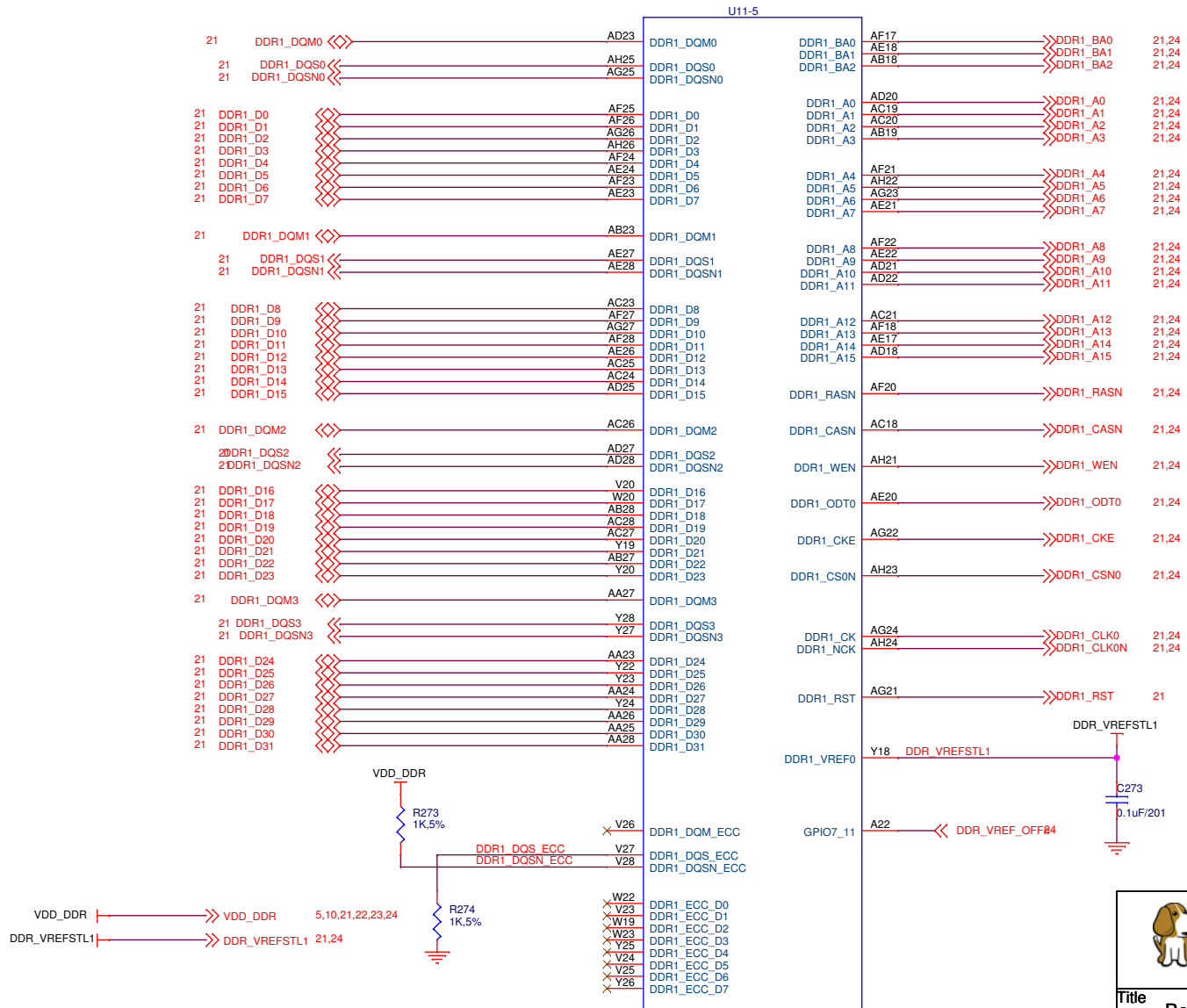
VDD\_3V3 | VDD\_3V3 2,3,4,6,7,8,9,10,11,12,13,14,15,16,17,24,25,26,27  
 VDD\_SD | VDD\_SD 4,9


M6	CLK	NC122
M5	CMD	NC121
A3	DAT0	NC120
A4	DAT1	NC119
B2	DAT2	NC118
B3	DAT3	NC117
B4	DAT4	NC116
B5	DAT5	NC115
B6	DAT6	NC114
B7	DAT7	NC113
K5	RST	NC112
K6	NC123	NC111
N6	NC123	NC110
E5	NC121	NC109
N9	NC120	NC108
N8	NC120	NC107
N7	NC119	NC106
J12	NC118	NC105
P14	NC117	NC104
N3	NC116	NC103
P10	NC115	NC102
N1	NC114	NC101
M14	NC113	NC100
M13	NC112	NC99
M12	NC111	NC98
M11	NC110	NC97
M10	NC109	NC96
M9	NC108	NC95
M10	NC107	NC94
M8	NC106	NC93
M7	NC105	NC92
M11	NC104	NC91
P11	NC103	NC90
P13	NC103	NC89
M3	NC102	NC88
M2	NC101	NC87
M1	NC100	NC86
L14	NC99	NC85
L13	NC98	NC84
L12	NC97	NC83
A10	NC96	NC82
A11	NC95	NC81
A12	NC94	NC80
A13	NC93	NC79
A14	NC92	NC78
B1	NC91	NC77
B7	NC90	NC76
G1	NC89	NC75
L3	NC88	NC74
L2	NC87	NC73
L1	NC86	NC72
K14	NC84	NC71
K13	NC83	NC70
K12	NC82	NC69
G2	NC81	NC68
K10	NC80	NC67
G10	NC79	NC66
G11	NC78	NC65
K7	NC77	NC64
N11	NC76	NC63
N10	NC75	NC62
N9	NC74	NC61
B8	NC73	NC60
B9	NC72	NC59
K2	NC71	NC58
J14	NC70	NC57
J13	NC69	NC56
N13	NC68	NC55
N12	NC67	
N14	NC66	
P2	NC65	
P3	NC64	
P7	NC63	
P9	NC62	
P8	NC61	
J5	NC60	
J3	NC59	
J2	NC58	
J1	NC57	
H14	NC56	
H13	NC55	

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Title		
BeagleBoard-X15 eMMC & microSD		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 18 of 27

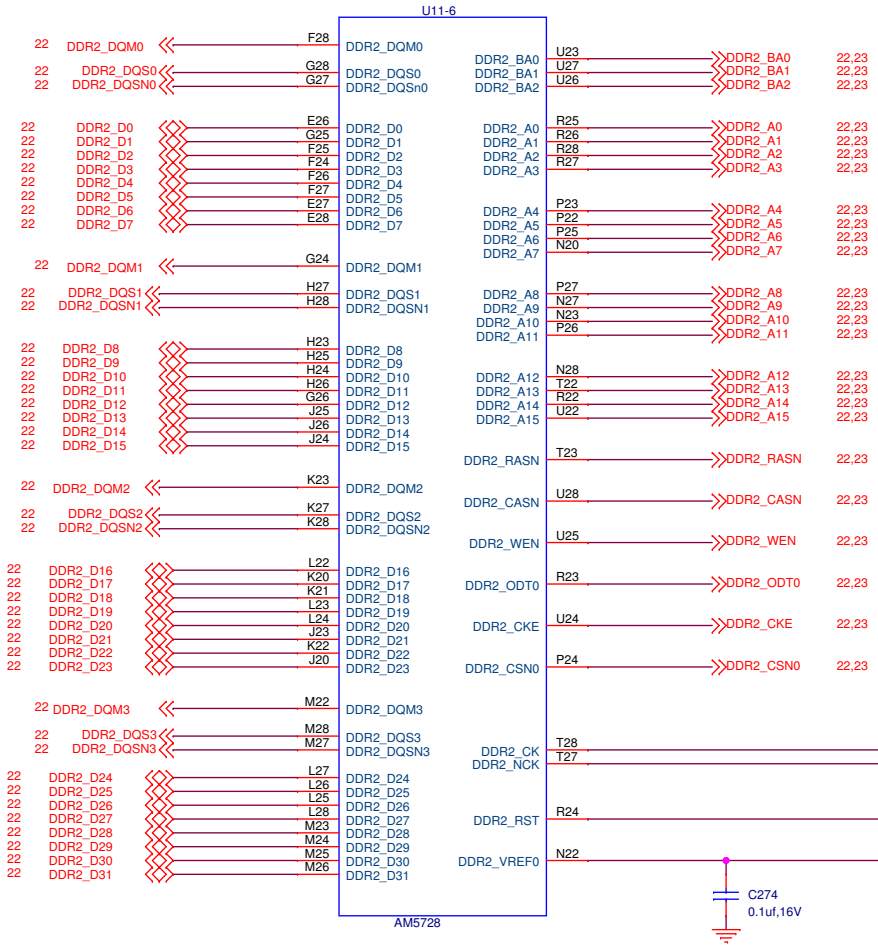






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Title		
BeagleBoard-X15 DDR INTERFACE 1		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 19 of 27



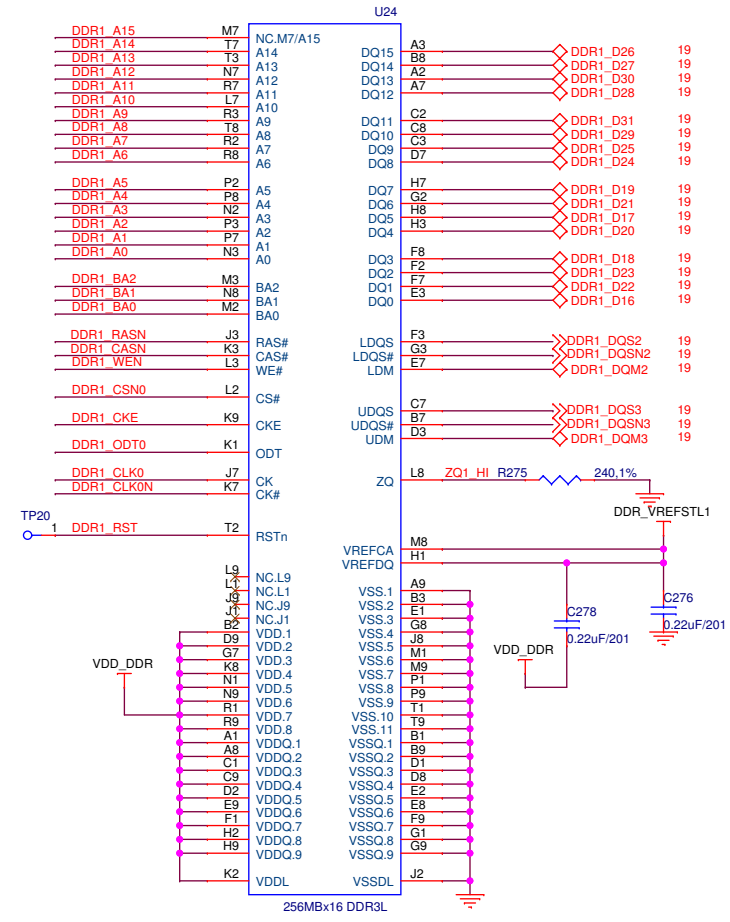
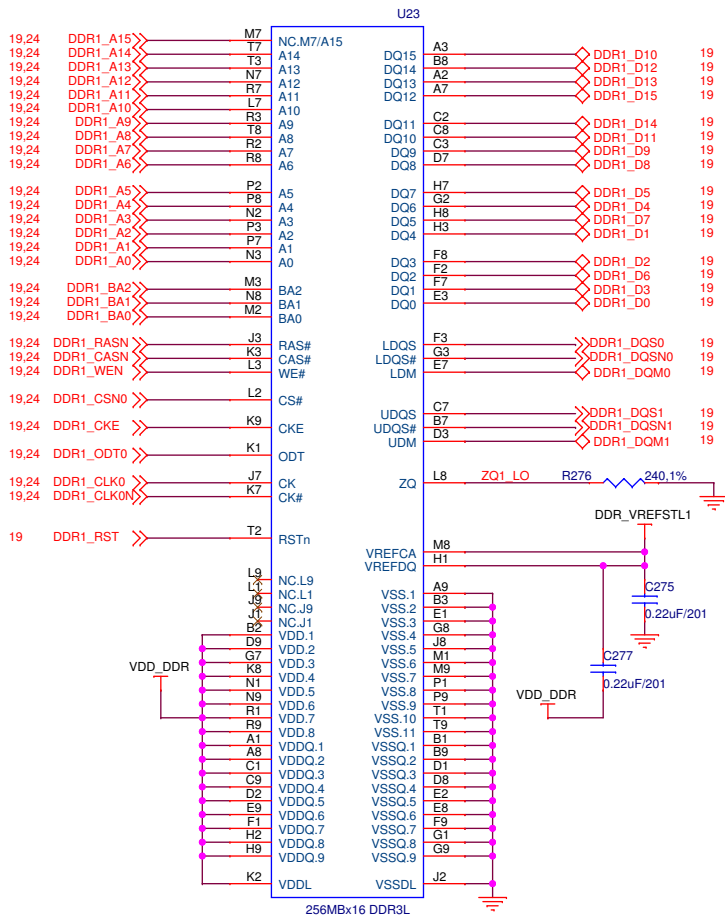


DDR\_VREFSTL2 >> DDR\_VREFSTL2 20,22,24


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Title		
BeagleBoard-X15 DDR INTERFACE2		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 20 of 27



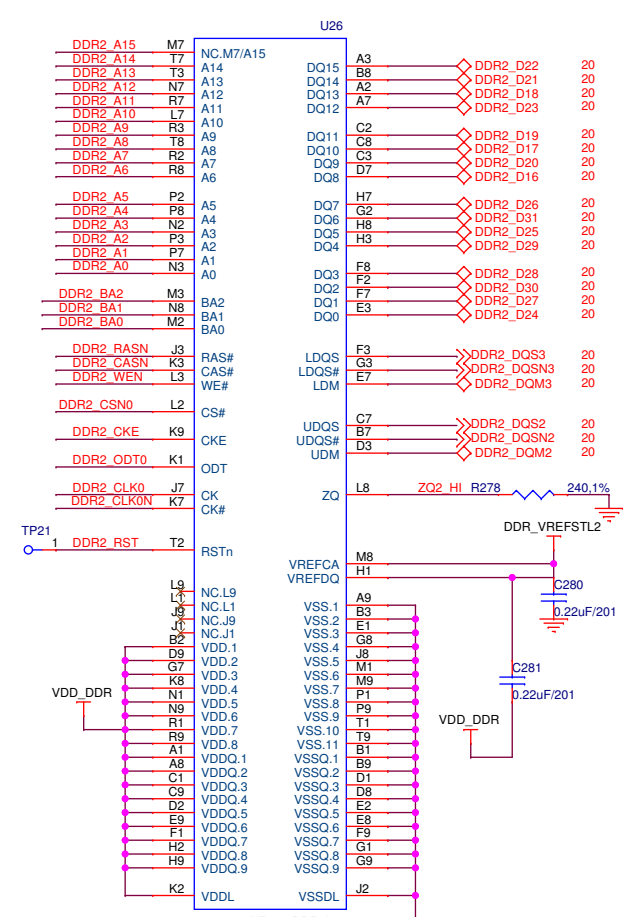
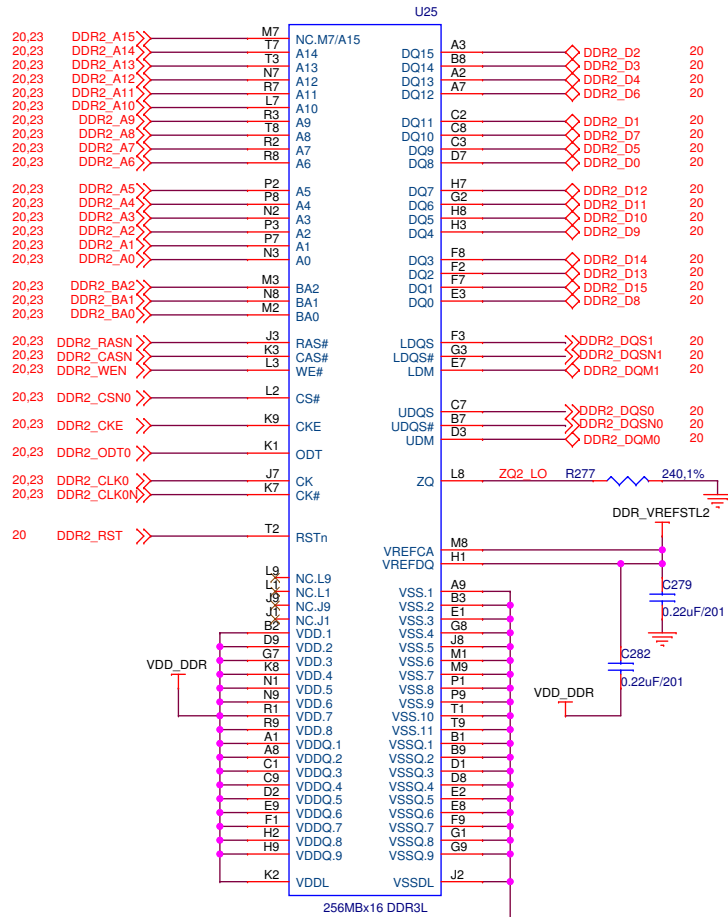


VTT ———— ◇ VTT 23.24  
 DDR\_VREFSTL1 ———— >> DDR\_VREFSTL1 19.24  
 VDD\_DDR ———— ◇ VDD\_DDR 5,10,19,22,23.24

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Title		
BeagleBoard-X15 DDR BANK 1		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 21 of 27





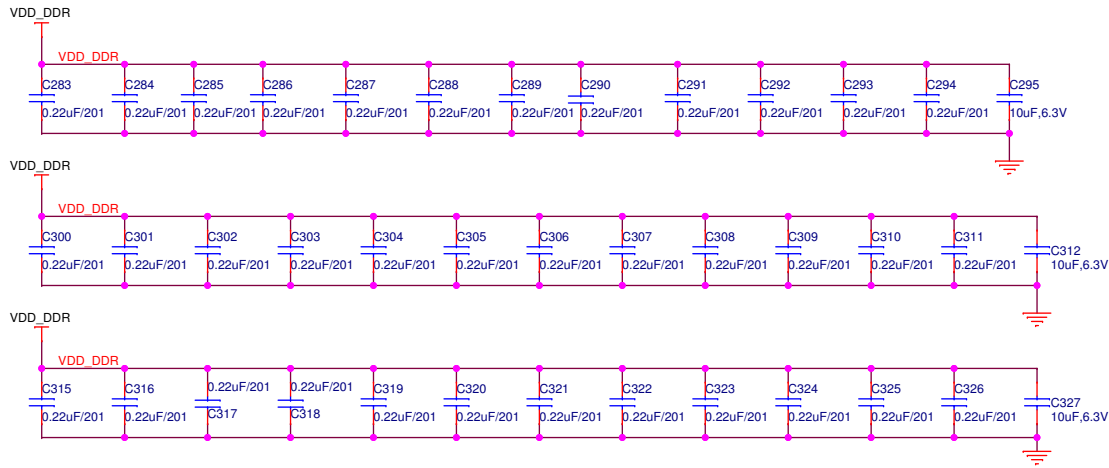
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DDR\_VREFSTL2 |-----> DDR\_VREFSTL2 20,24

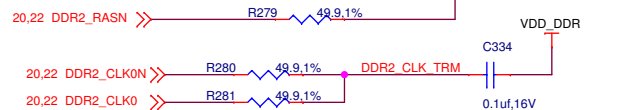
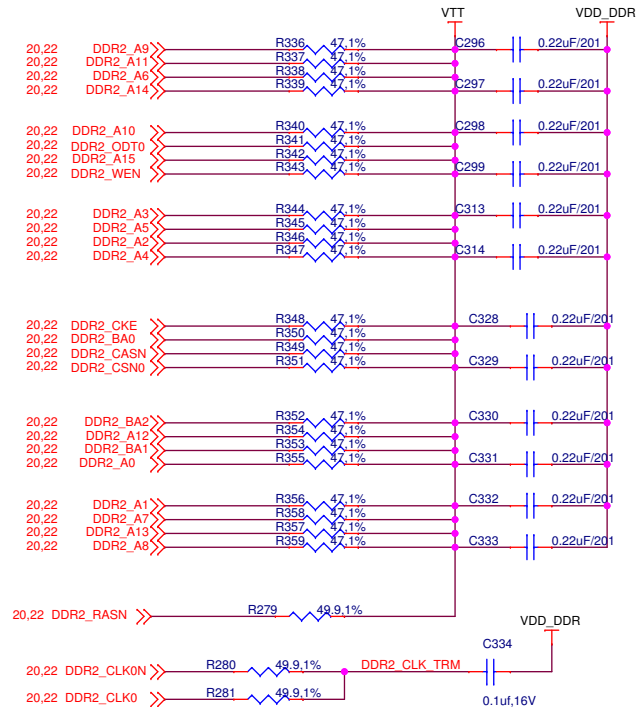
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Title		
BeagleBoard-X15 DDR BANK 2		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date: Thursday, October 22, 2015		Sheet 22 of 27





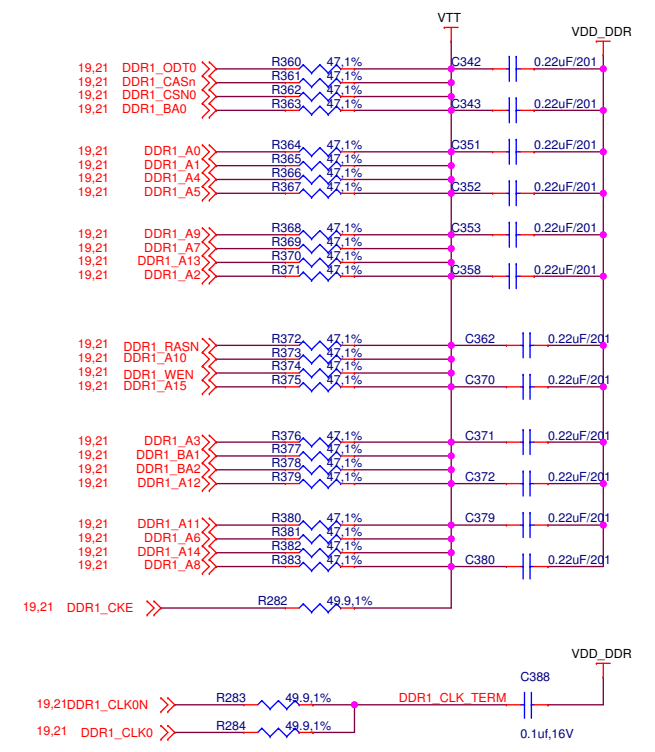
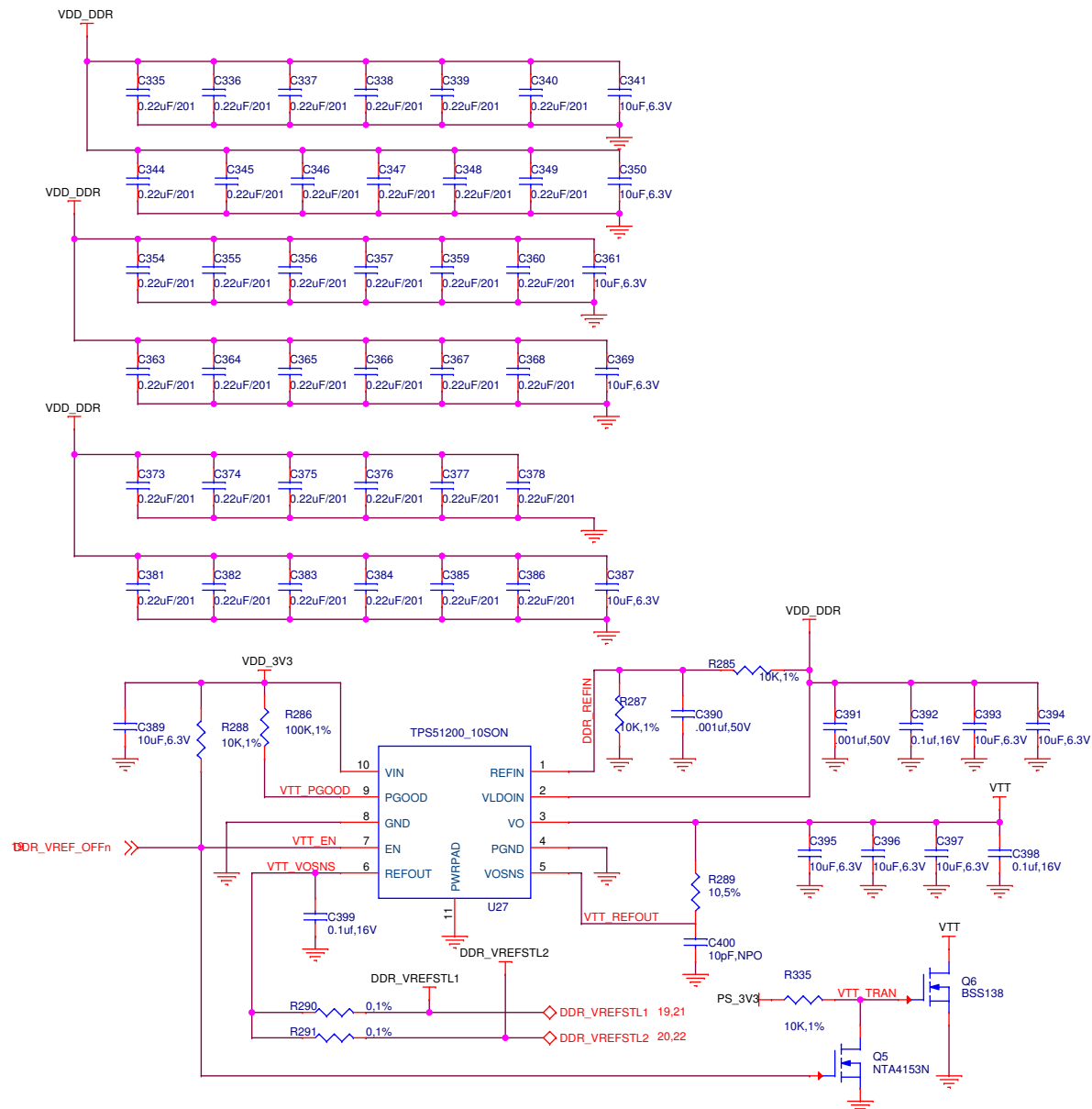
VDD\_DDR |> VDD\_DDR 5,10,19,21,22,24  
 VTT |> VTT 24




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Title		
BEAGLEBOARD-X15 DDR3L BANK 2 CAPS AND TERMINATIONS		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 23 of 27





PS_3V3	PS_3V3	2,3,4,5,6,8
VDD_DDR	VDD_DDR	5,10,19,21,22,23
VTT	VTT	23
VDD_3V3	VDD_3V3	2,3,4,6,7,8,9,10,11,12,13,14,15,16,17,18,25,26,27

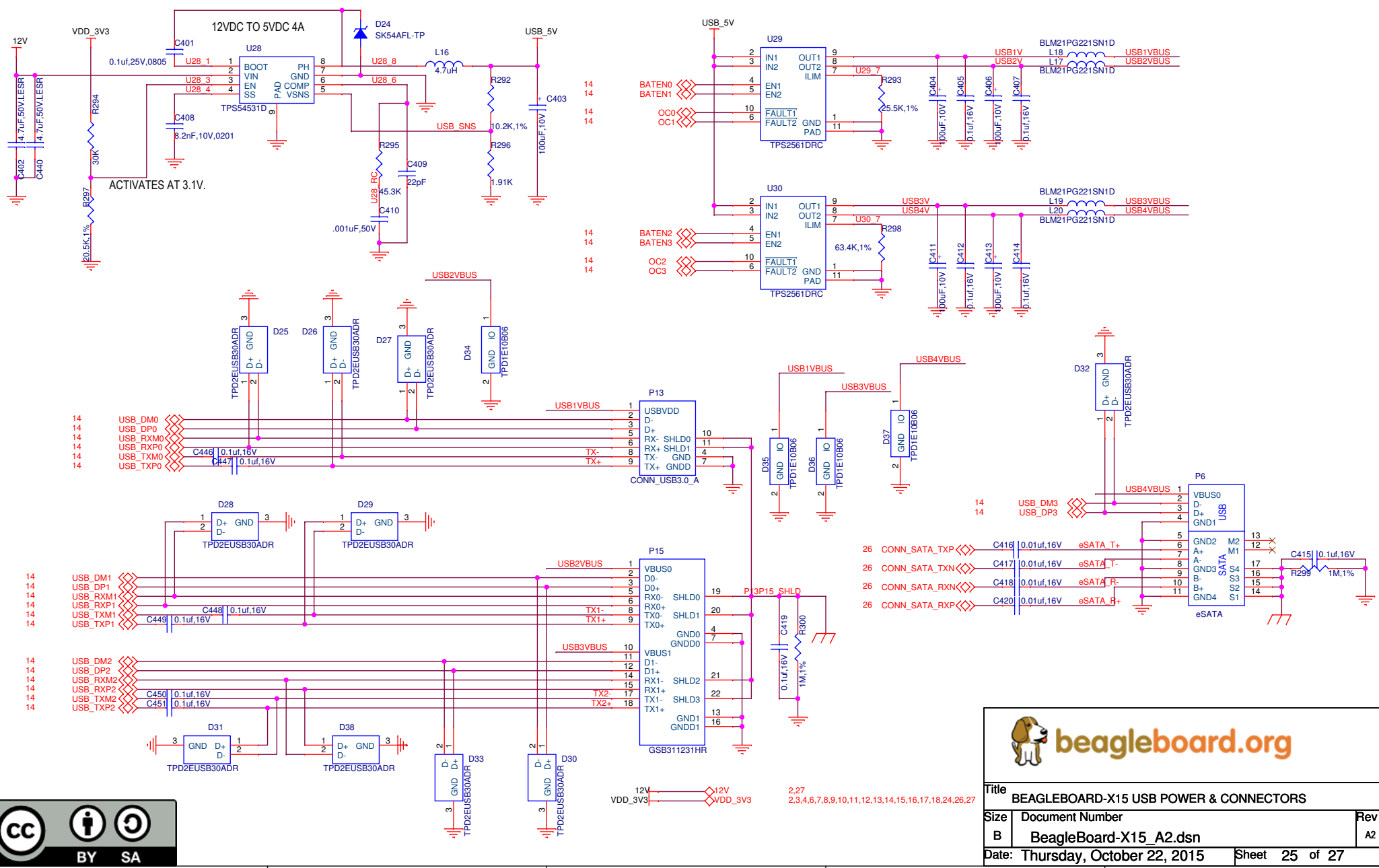



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Title: BEAGLEBOARD-X15 DDR3L BANK 1 CAPS AND TERMINATIONS		
Size: B	Document Number: BeagleBoard-X15.dsn	Rev: A2
Date: Thursday, October 22, 2015	Sheet 24 of 27	





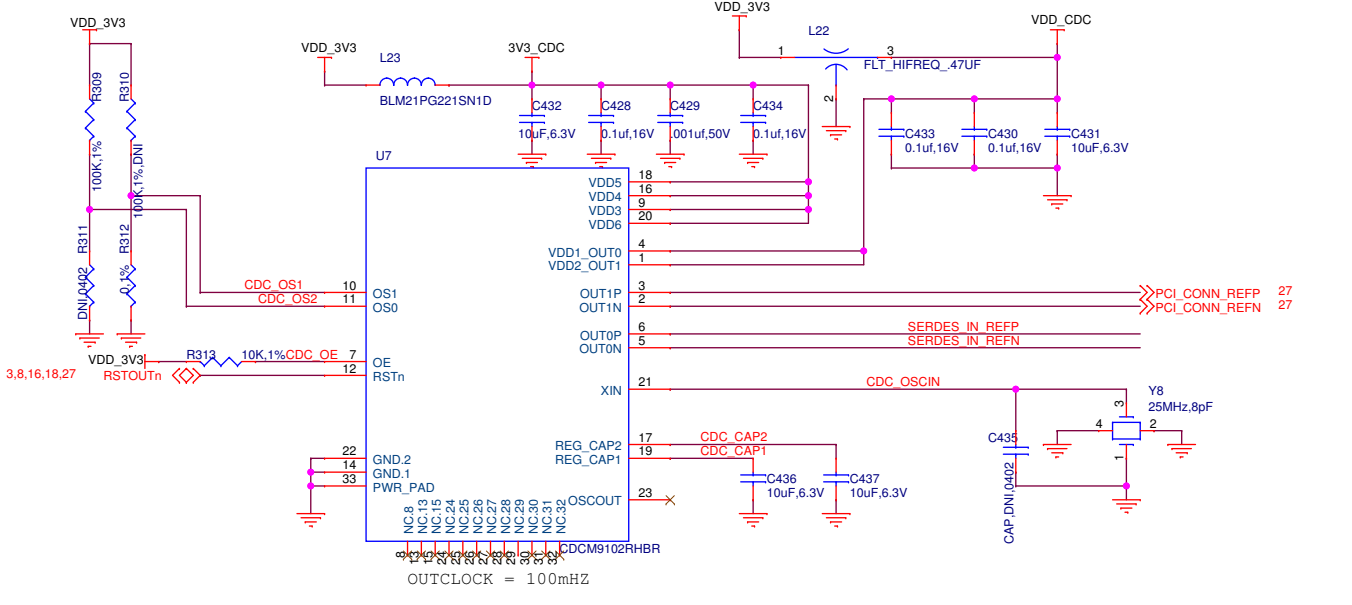
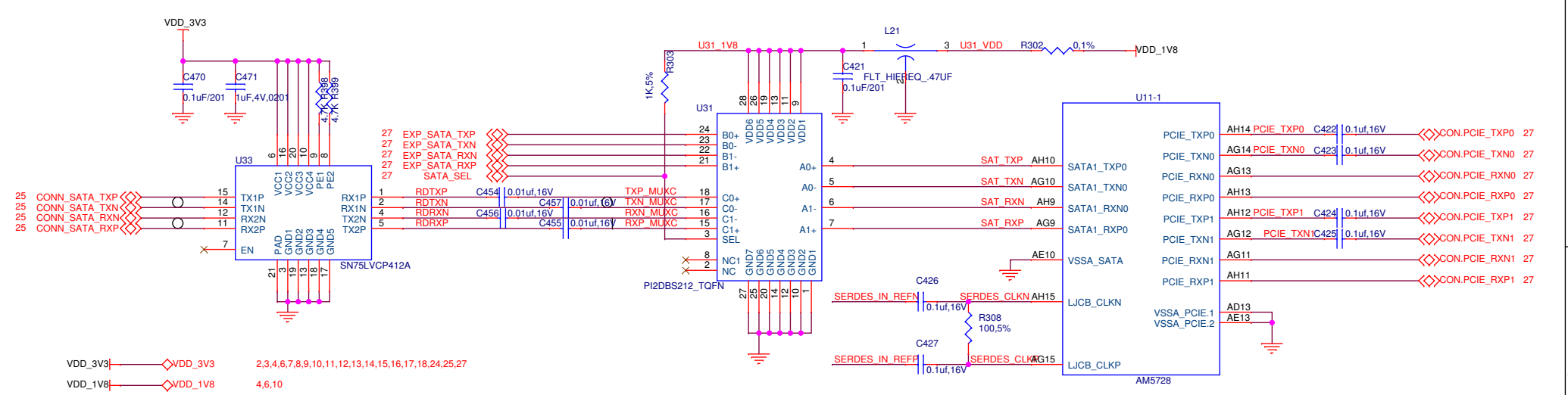




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<b>Title</b>		
BEAGLEBOARD-X15 USB POWER & CONNECTORS		
<b>Size</b>	Document Number	<b>Rev</b>
B	BeagleBoard-X15_A2.dsn	A2
<b>Date:</b> Thursday, October 22, 2015		<b>Sheet</b> 25 of 27



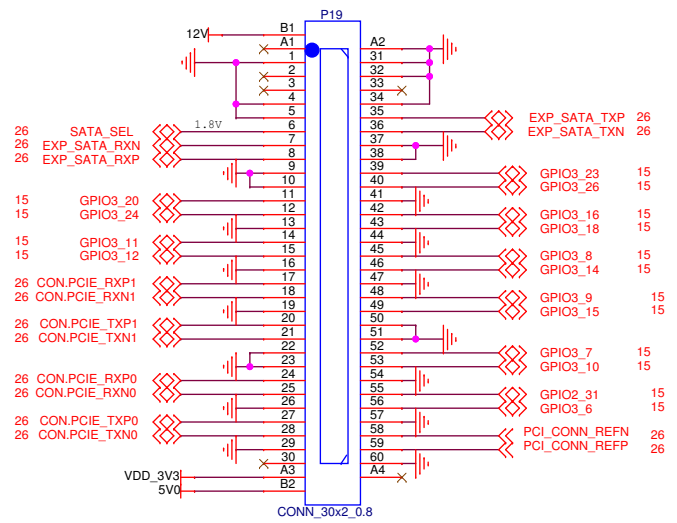
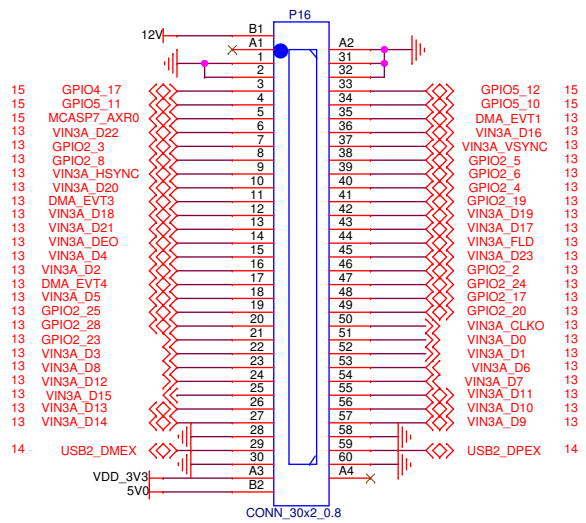
12V VDD\_3V3 2.27 2,3,4,6,7,8,9,10,11,12,13,14,15,16,17,18,24,26,27




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Title		
BEAGLEBOARD-X15 SERDES CLOCK, SATA, AND PCIe		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 26 of 27

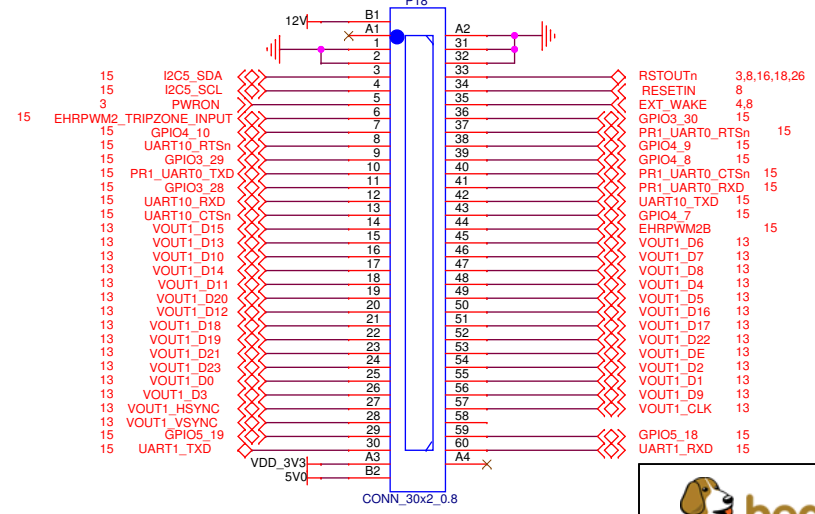
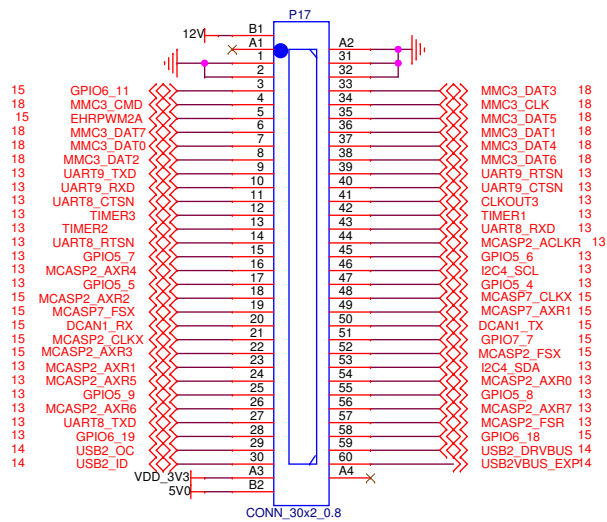




12V  
5V0  
VDD\_3V3

12V  
5V0  
VDD\_3V3

2,25  
2,4,15,17  
2,3,4,6,7,8,9,10,11,12,13,14,15,16,17,18,24,25,26



Title		
BEAGLEBOARD-X15 EXPANSION CONNECTORS		
Size	Document Number	Rev
B	BeagleBoard-X15_A2.dsn	A2
Date:	Thursday, October 22, 2015	Sheet 27 of 27

