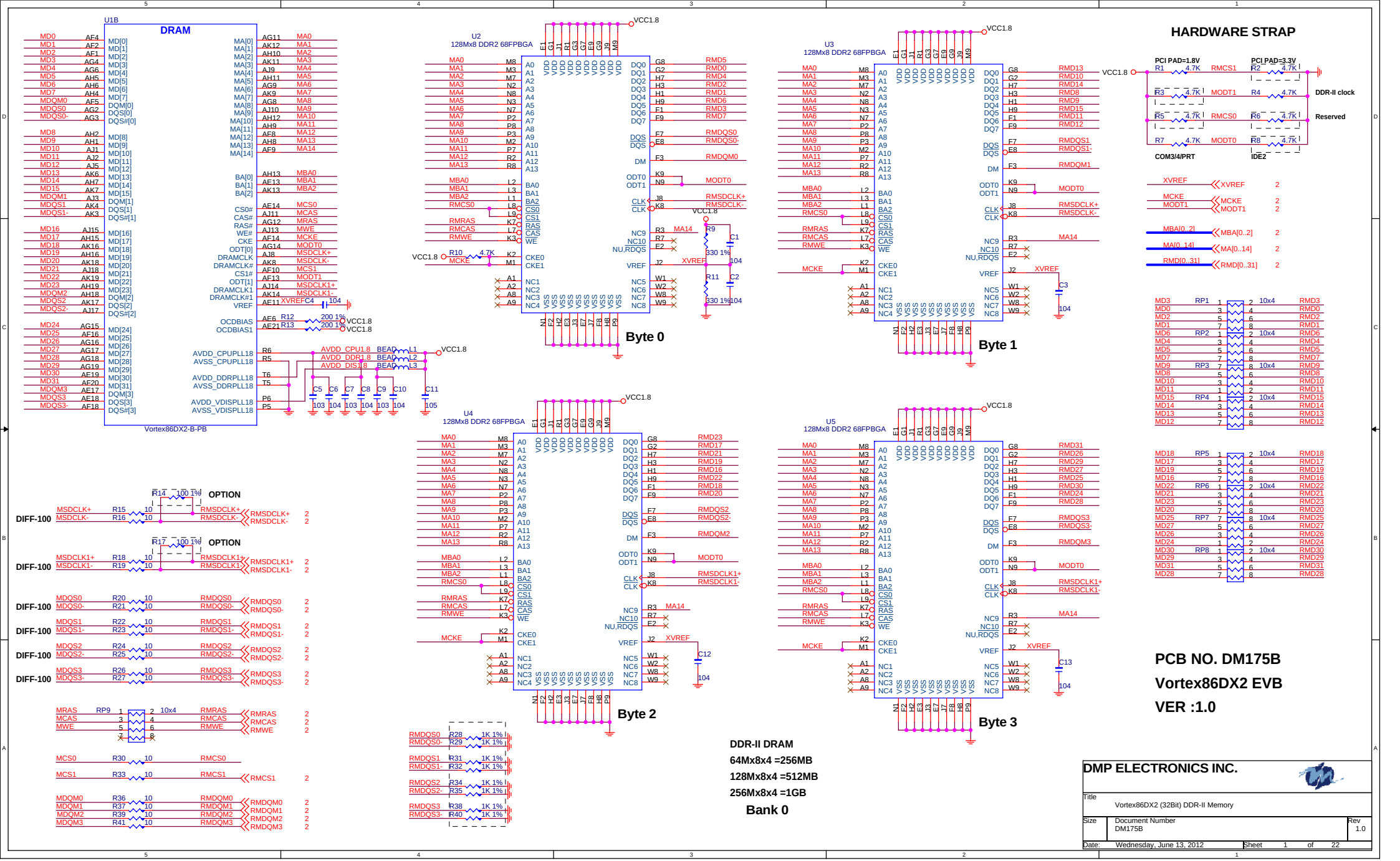
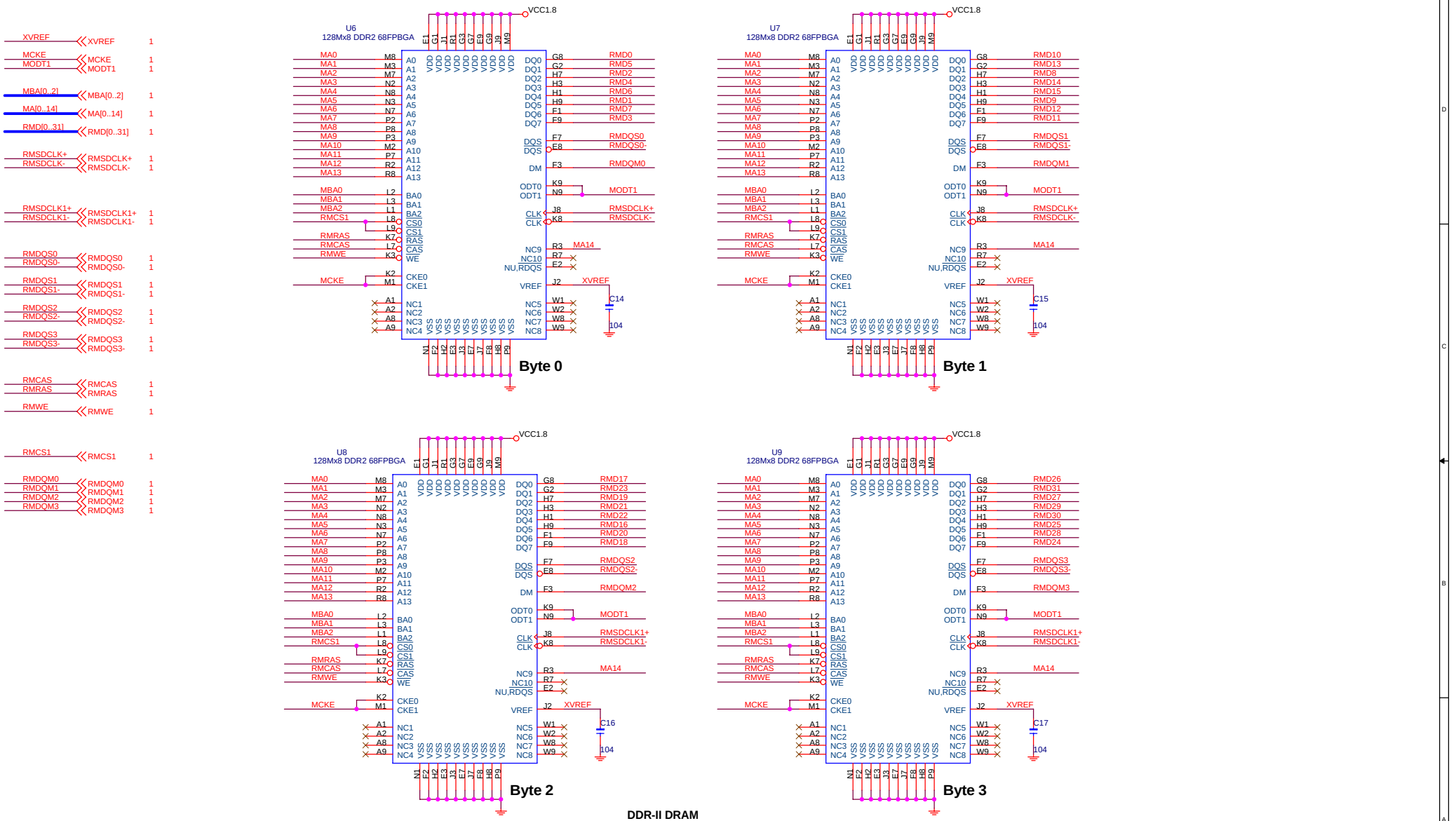


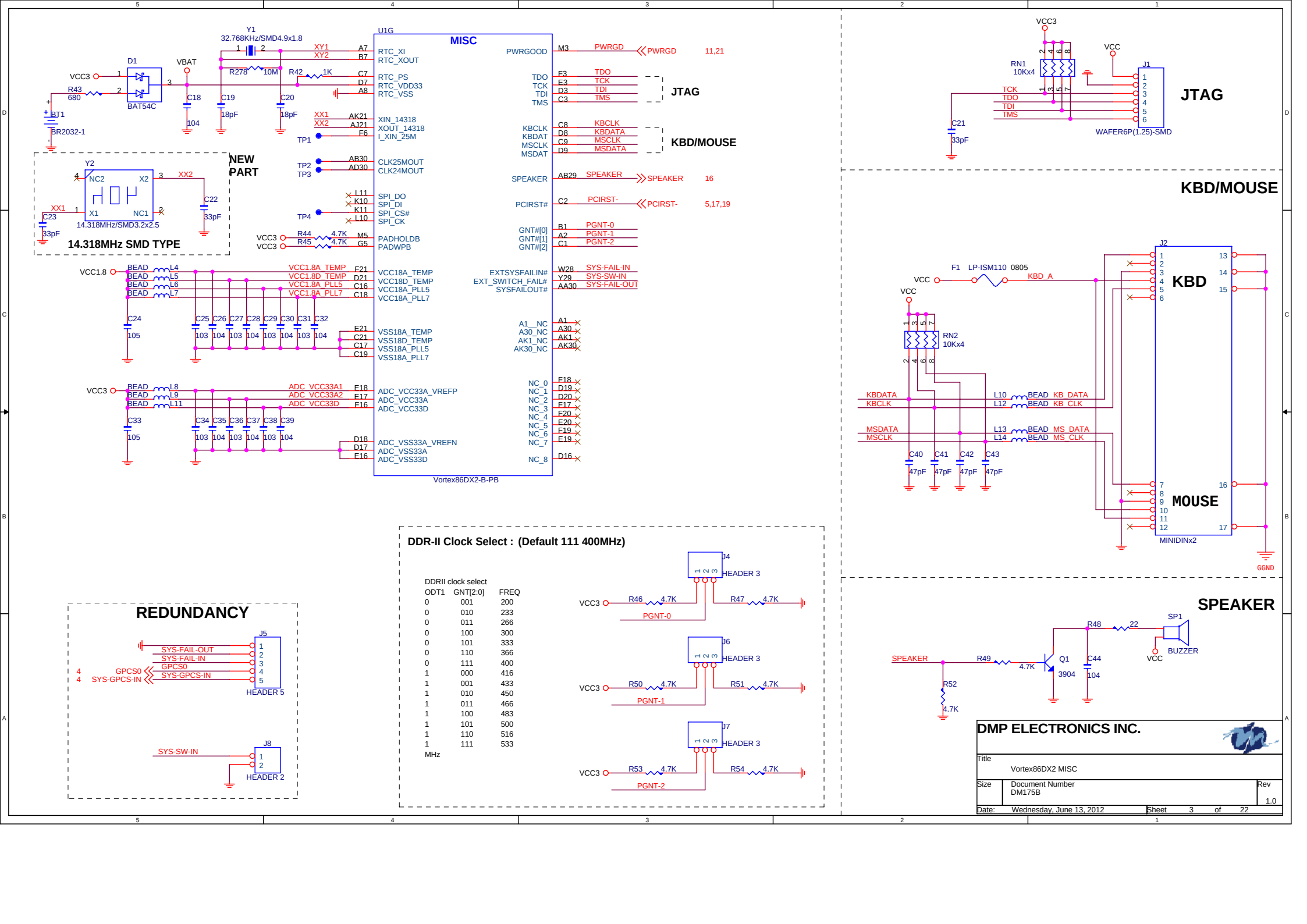
DMP ELECTRONICS INC.

Title	Vortex86DX2 (32Bit) DDR-II Memory		
Size	Document Number DM175B		Rev 1.0
Date:	Wednesday, June 13, 2012	Sheet 1 of 22	

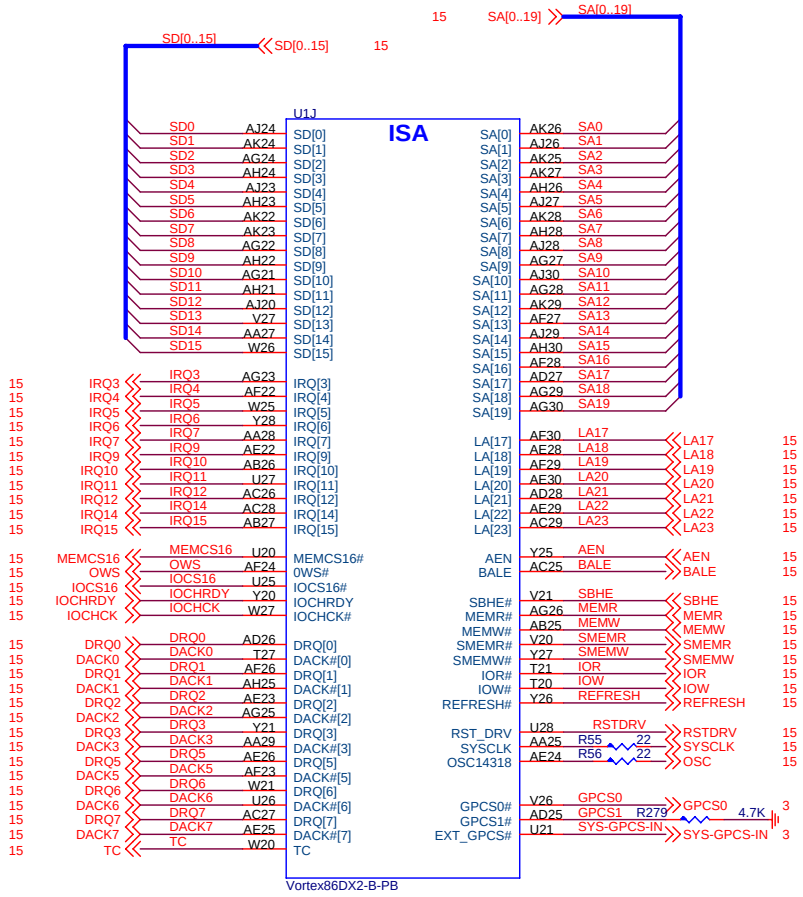


DMP ELECTRONICS INC.

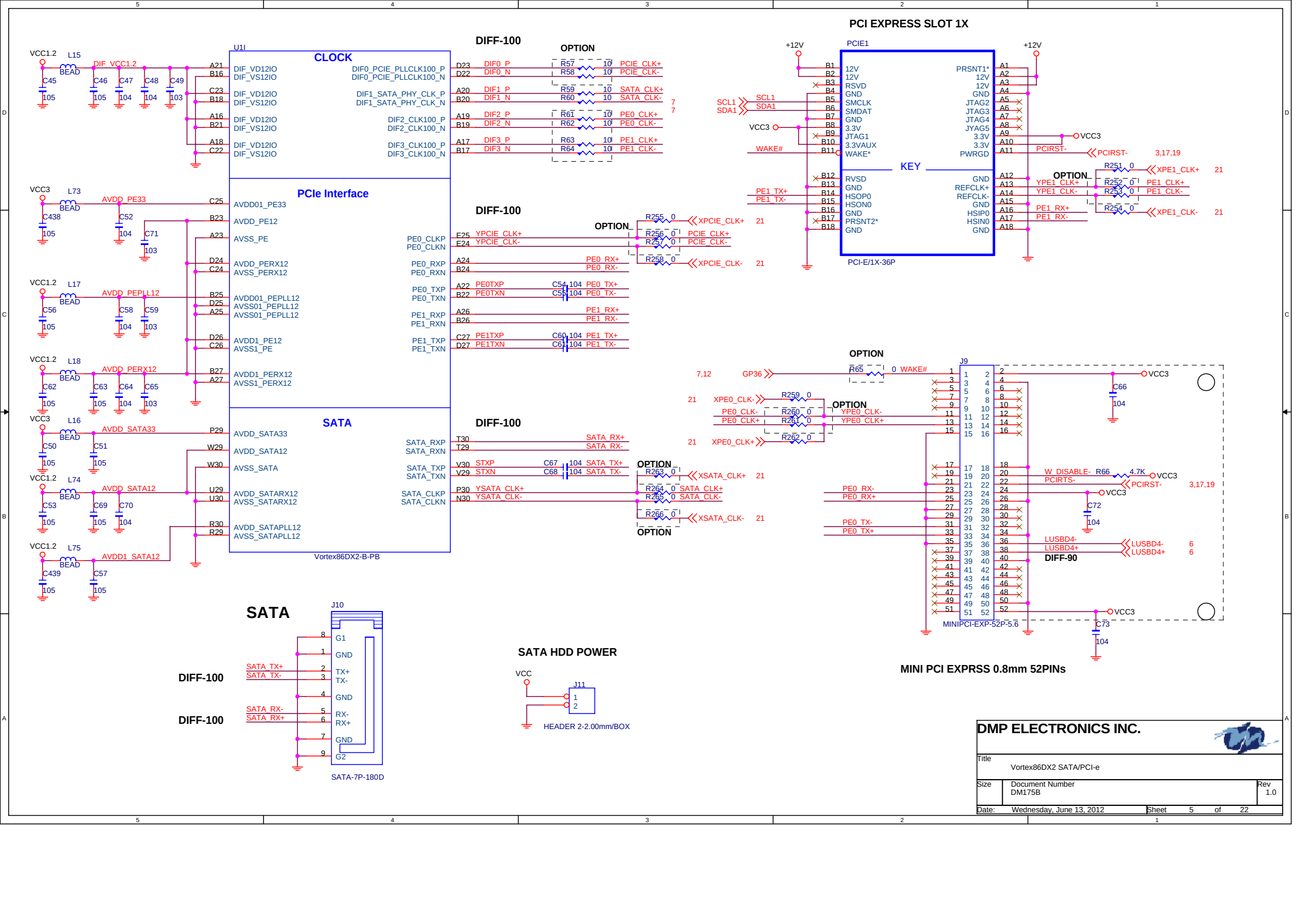
Title	Vortex86DX2 (32Bit) DDR-II Memory-2	
Size	Document Number DM175B	Rev 1.0
Date: Wednesday, June 13, 2012	Sheet 2 of 22	


MISC
U1G
Vortex86DX2-B-PB
JTAG
KBD/MOUSE
NEW PART
14.318MHz SMD TYPE
KBD
MOUSE
MINIDINx2
SPEAKER
BUZZER
REDUNDANCY
HEADER 5
HEADER 2
DDR-II Clock Select : (Default 111 400MHz)
DDRII clock select
ODT1 GNT[2:0] FREQ
0 001 200
0 010 233
0 011 266
0 100 300
0 101 333
0 110 366
0 111 400
1 000 416
1 001 433
1 010 450
1 011 466
1 100 483
1 101 500
1 110 516
1 111 533
MHz
DMP ELECTRONICS INC.
Title
Vortex86DX2 MISC
Size
Document Number
DM175B
Rev
1.0
Date: Wednesday, June 13, 2012
Sheet 3 of 22

ISA BUS



DMP ELECTRONICS INC.	
Title	Vortex86DX2 ISA BUS
Size	Document Number DM175B — Rev 1.0
Date: Wednesday, June 13, 2012	Sheet 4 of 22


PCI EXPRESS SLOT 1X
CLOCK
PCIe Interface
SATA
DIFF-100
OPTION
KEY
PCIE1
PCI-E/1X-36P
J9
MINIPCI-EXP-52P-5.6
DIFF-90
MINI PCI EXPRSS 0.8mm 52PINs
SATA
J10
SATA-7P-180D
SATA HDD POWER
J11
HEADER 2-2.00mm/BOX
U1I
Vortex86DX2-B-PB
DMP ELECTRONICS INC.
Title
Vortex86DX2 SATA/PCI-e
Document Number
DM175B
Rev
1.0
Date: Wednesday, June 13, 2012
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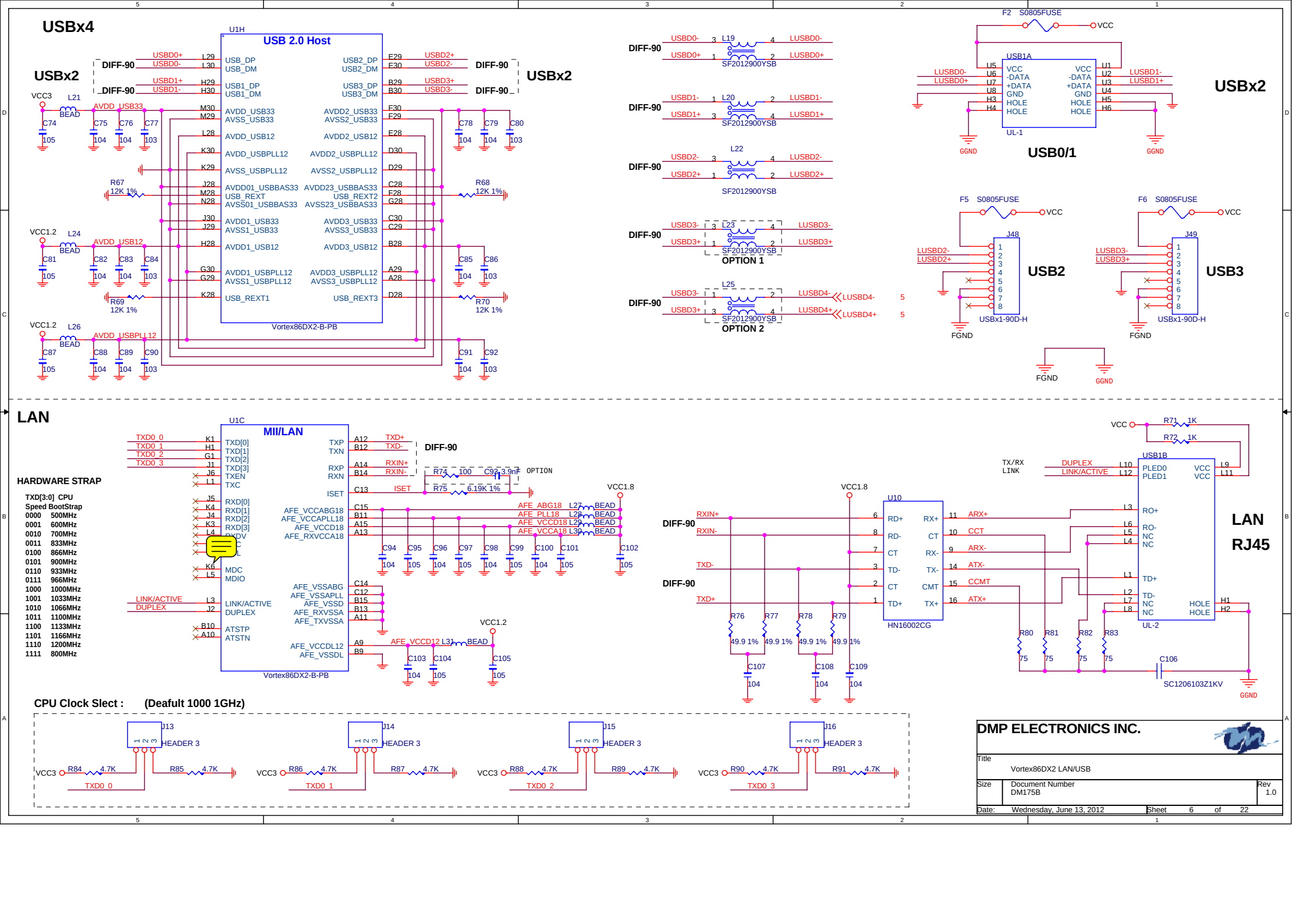
USBx4
USBx2
U1H
USB 2.0 Host
Vortex86DX2-B-PB
DIFF-90
USBD0+
USBD0-
USBD1+
USBD1-
USBD2+
USBD2-
USBD3+
USBD3-
USB_DP
USB_DM
USB1_DP
USB1_DM
USB2_DP
USB2_DM
USB3_DP
USB3_DM
AVDD_USB33
AVSS_USB33
AVDD_USB12
AVDD_USBPLL12
AVSS_USBPLL12
AVDD01_USBBAS33
USB_REXT
AVSS01_USBBAS33
AVDD1_USB33
AVSS1_USB33
AVDD1_USB12
AVDD1_USBPLL12
AVSS1_USBPLL12
USB_REXT1
AVDD2_USB33
AVSS2_USB33
AVDD2_USB12
AVDD2_USBPLL12
AVSS2_USBPLL12
AVDD23_USBBAS33
USB_REXT2
AVSS23_USBBAS33
AVDD3_USB33
AVSS3_USB33
AVDD3_USB12
AVDD3_USBPLL12
AVSS3_USBPLL12
USB_REXT3
VCC3
VCC1.2
L21
L24
L26
BEAD
R67 12K 1%
R68 12K 1%
R69 12K 1%
R70 12K 1%
L19
L20
L22
L23
L25
SF2012900YSB
OPTION 1
OPTION 2
USB1A
UL-1
USB0/1
F2 S0805FUSE
F5 S0805FUSE
F6 S0805FUSE
J48
J49
USB2
USB3
USBx1-90D-H
FGND
GGND
LAN
HARDWARE STRAP
TXD[3:0] CPU Speed BootStrap
0000 500MHz
0001 600MHz
0010 700MHz
0011 833MHz
0100 866MHz
0101 900MHz
0110 933MHz
0111 966MHz
1000 1000MHz
1001 1033MHz
1010 1066MHz
1011 1100MHz
1100 1133MHz
1101 1166MHz
1110 1200MHz
1111 800MHz
U1C
MII/LAN
TXD0_0
TXD0_1
TXD0_2
TXD0_3
LINK/ACTIVE
DUPLEX
MDC
MDIO
ATSTP
ATSTN
ISET
AFE_VCCABG18
AFE_VCCAPLL18
AFE_VCCD18
AFE_RXVCCA18
AFE_VSSABG
AFE_VSSAPLL
AFE_VSSD
AFE_RXVSSA
AFE_TXVSSA
AFE_VCCDL12
AFE_VSSDL
AFE_ABG18
AFE_PLL18
AFE_VCCD18
AFE_VCCA18
AFE_VCCD12
R74 100
C93 3.9nF OPTION
R75 6.19K 1%
U10
HN16002CG
R76 R77 R78 R79
49.9 1%
C107 C108 C109
USB1B
UL-2
LAN
RJ45
TX/RX LINK
R80 R81 R82 R83
75
C106
SC1206103Z1KV
CPU Clock Slect : (Deafult 1000 1GHz)
U13 U14 U15 U16
HEADER 3
R84 R85 R86 R87 R88 R89 R90 R91
4.7K
DMP ELECTRONICS INC.
Title
Vortex86DX2 LAN/USB
Size
Document Number
DM175B
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1.0
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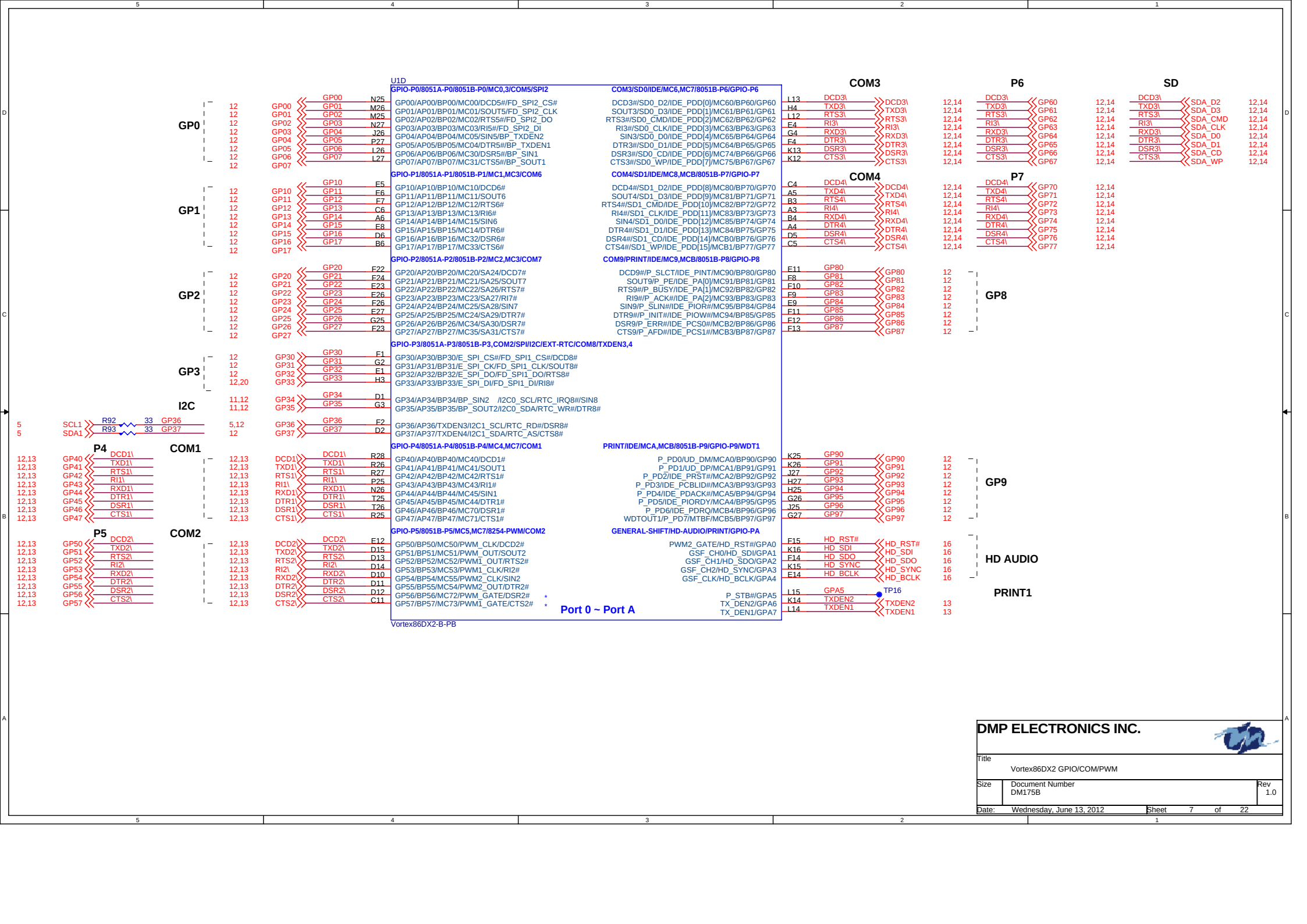
U1D
GPIO-P0/8051A-P0/8051B-P0/MC0,3/COM5/SPI2
COM3/SD0/IDE/MC6,MC7/8051B-P6/GPIO-P6
GP00/AP00/BP00/MC00/DCD5#/FD_SPI2_CS#
GP01/AP01/BP01/MC01/SOUT5/FD_SPI2_CLK
GP02/AP02/BP02/MC02/RTS5#/FD_SPI2_DO
GP03/AP03/BP03/MC03/RI5#/FD_SPI2_DI
GP04/AP04/BP04/MC05/SIN5/BP_TXDEN2
GP05/AP05/BP05/MC04/DTR5#/BP_TXDEN1
GP06/AP06/BP06/MC30/DSR5#/BP_SIN1
GP07/AP07/BP07/MC31/CTS5#/BP_SOUT1
DCD3#/SD0_D2/IDE_PDD[0]/MC60/BP60/GP60
SOUT3/SD0_D3/IDE_PDD[1]/MC61/BP61/GP61
RTS3#/SD0_CMD/IDE_PDD[2]/MC62/BP62/GP62
RI3#/SD0_CLK/IDE_PDD[3]/MC63/BP63/GP63
SIN3/SD0_D0/IDE_PDD[4]/MC65/BP64/GP64
DTR3#/SD0_D1/IDE_PDD[5]/MC64/BP65/GP65
DSR3#/SD0_CD/IDE_PDD[6]/MC74/BP66/GP66
CTS3#/SD0_WP/IDE_PDD[7]/MC75/BP67/GP67
GPIO-P1/8051A-P1/8051B-P1/MC1,MC3/COM6
COM4/SD1/IDE/MC8,MCB/8051B-P7/GPIO-P7
GP10/AP10/BP10/MC10/DCD6#
GP11/AP11/BP11/MC11/SOUT6
GP12/AP12/BP12/MC12/RTS6#
GP13/AP13/BP13/MC13/RI6#
GP14/AP14/BP14/MC15/SIN6
GP15/AP15/BP15/MC14/DTR6#
GP16/AP16/BP16/MC32/DSR6#
GP17/AP17/BP17/MC33/CTS6#
DCD4#/SD1_D2/IDE_PDD[8]/MC80/BP70/GP70
SOUT4/SD1_D3/IDE_PDD[9]/MC81/BP71/GP71
RTS4#/SD1_CMD/IDE_PDD[10]/MC82/BP72/GP72
RI4#/SD1_CLK/IDE_PDD[11]/MC83/BP73/GP73
SIN4/SD1_D0/IDE_PDD[12]/MC85/BP74/GP74
DTR4#/SD1_D1/IDE_PDD[13]/MC84/BP75/GP75
DSR4#/SD1_CD/IDE_PDD[14]/MCB0/BP76/GP76
CTS4#/SD1_WP/IDE_PDD[15]/MCB1/BP77/GP77
GPIO-P2/8051A-P2/8051B-P2/MC2,MC3/COM7
COM9/PRINT/IDE/MC9,MCB/8051B-P8/GPIO-P8
GP20/AP20/BP20/MC20/SA24/DCD7#
GP21/AP21/BP21/MC21/SA25/SOUT7
GP22/AP22/BP22/MC22/SA26/RTS7#
GP23/AP23/BP23/MC23/SA27/RI7#
GP24/AP24/BP24/MC25/SA28/SIN7
GP25/AP25/BP25/MC24/SA29/DTR7#
GP26/AP26/BP26/MC34/SA30/DSR7#
GP27/AP27/BP27/MC35/SA31/CTS7#
DCD9#/P_SLCT/IDE_PINT/MC90/BP80/GP80
SOUT9/P_PE/IDE_PA[0]/MC91/BP81/GP81
RTS9#/P_BUSY/IDE_PA[1]/MC92/BP82/GP82
RI9#/P_ACK#/IDE_PA[2]/MC93/BP83/GP83
SIN9/P_SLIN#/IDE_PIOR#/MC95/BP84/GP84
DTR9#/P_INIT#/IDE_PIOW#/MC94/BP85/GP85
DSR9/P_ERR#/IDE_PCS0#/MCB2/BP86/GP86
CTS9/P_AFD#/IDE_PCS1#/MCB3/BP87/GP87
GPIO-P3/8051A-P3/8051B-P3,COM2/SPI/I2C/EXT-RTC/COM8/TXDEN3,4
GP30/AP30/BP30/E_SPI_CS#/FD_SPI1_CS#/DCD8#
GP31/AP31/BP31/E_SPI_CK/FD_SPI1_CLK/SOUT8#
GP32/AP32/BP32/E_SPI_DO/FD_SPI1_DO/RTS8#
GP33/AP33/BP33/E_SPI_DI/FD_SPI1_DI/RI8#
GP34/AP34/BP34/BP_SIN2 /I2C0_SCL/RTC_IRQ8#/SIN8
GP35/AP35/BP35/BP_SOUT2/I2C0_SDA/RTC_WR#/DTR8#
GP36/AP36/TXDEN3/I2C1_SCL/RTC_RD#/DSR8#
GP37/AP37/TXDEN4/I2C1_SDA/RTC_AS/CTS8#
GPIO-P4/8051A-P4/8051B-P4/MC4,MC7/COM1
PRINT/IDE/MCA,MCB/8051B-P9/GPIO-P9/WDT1
GP40/AP40/BP40/MC40/DCD1#
GP41/AP41/BP41/MC41/SOUT1
GP42/AP42/BP42/MC42/RTS1#
GP43/AP43/BP43/MC43/RI1#
GP44/AP44/BP44/MC45/SIN1
GP45/AP45/BP45/MC44/DTR1#
GP46/AP46/BP46/MC70/DSR1#
GP47/AP47/BP47/MC71/CTS1#
P_PD0/UD_DM/MCA0/BP90/GP90
P_PD1/UD_DP/MCA1/BP91/GP91
P_PD2/IDE_PRST#/MCA2/BP92/GP92
P_PD3/IDE_PCBLID#/MCA3/BP93/GP93
P_PD4/IDE_PDACK#/MCA5/BP94/GP94
P_PD5/IDE_PIORDY/MCA4/BP95/GP95
P_PD6/IDE_PDRQ/MCB4/BP96/GP96
WDTOUT1/P_PD7/MTBF/MCB5/BP97/GP97
GPIO-P5/8051B-P5/MC5,MC7/8254-PWM/COM2
GENERAL-SHIFT/HD-AUDIO/PRINT/GPIO-PA
GP50/BP50/MC50/PWM_CLK/DCD2#
GP51/BP51/MC51/PWM_OUT/SOUT2
GP52/BP52/MC52/PWM1_OUT/RTS2#
GP53/BP53/MC53/PWM1_CLK/RI2#
GP54/BP54/MC55/PWM2_CLK/SIN2
GP55/BP55/MC54/PWM2_OUT/DTR2#
GP56/BP56/MC72/PWM_GATE/DSR2#
GP57/BP57/MC73/PWM1_GATE/CTS2#
PWM2_GATE/HD_RST#/GPA0
GSF_CH0/HD_SDI/GPA1
GSF_CH1/HD_SDO/GPA2
GSF_CH2/HD_SYNC/GPA3
GSF_CLK/HD_BCLK/GPA4
P_STB#/GPA5
TX_DEN2/GPA6
TX_DEN1/GPA7
Port 0 ~ Port A
Vortex86DX2-B-PB
COM3
P6
SD
COM4
P7
GP8
GP9
HD AUDIO
PRINT1
I2C
P4
COM1
P5
COM2
R92
R93
TP16
DMP ELECTRONICS INC.
Title
Vortex86DX2 GPIO/COM/PWM
Size
Document Number
DM175B
Rev
1.0
Date: Wednesday, June 13, 2012
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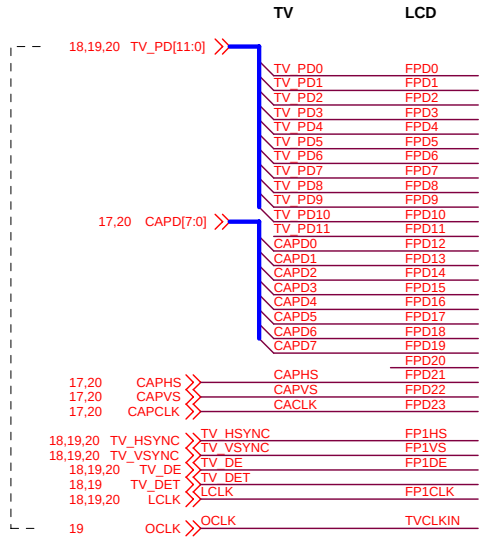
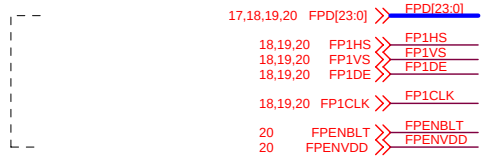
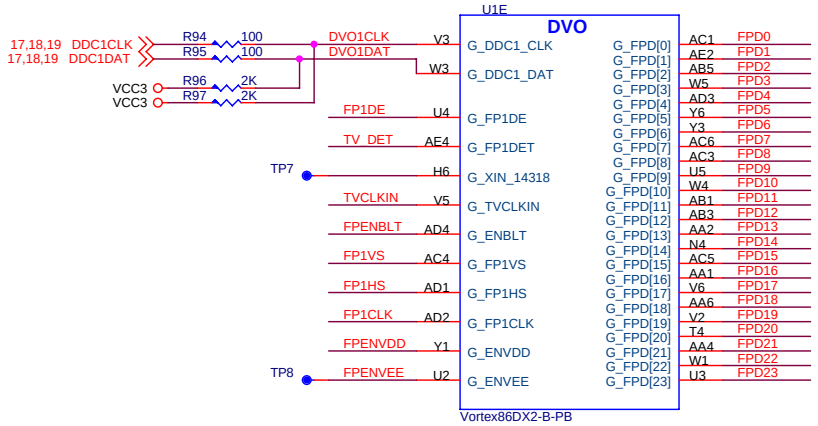
DVO/TV-IN/TV-OUT

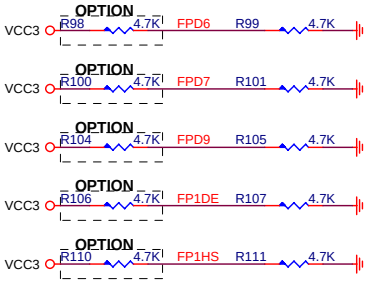


LCD

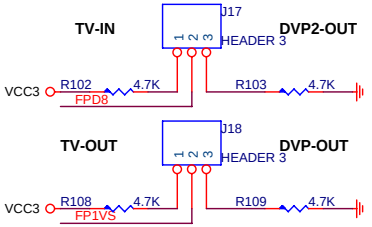




DISPLAY STRAP SETUP:

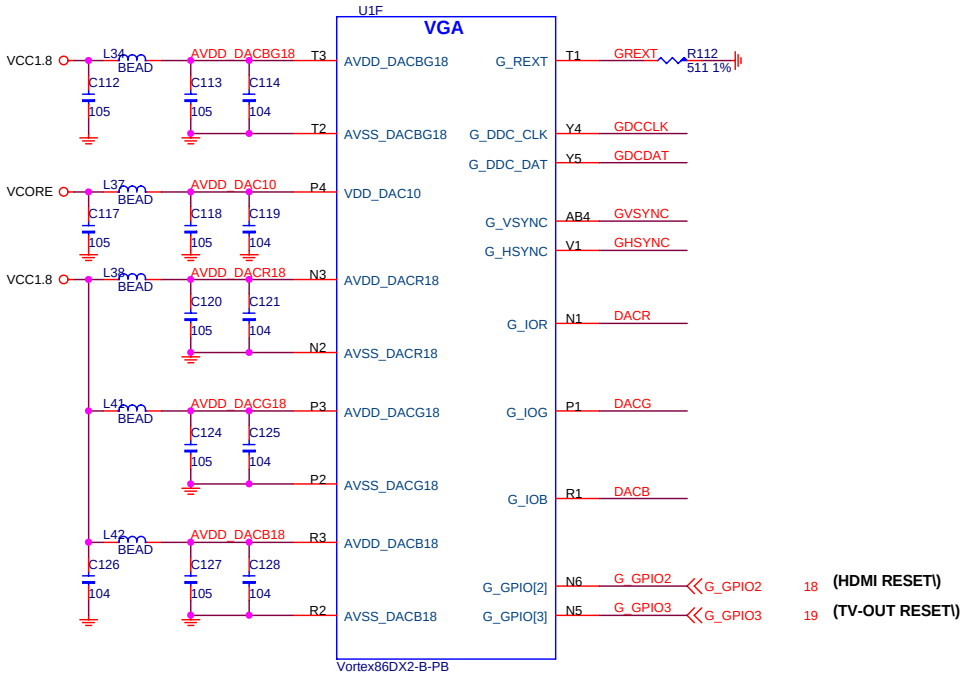


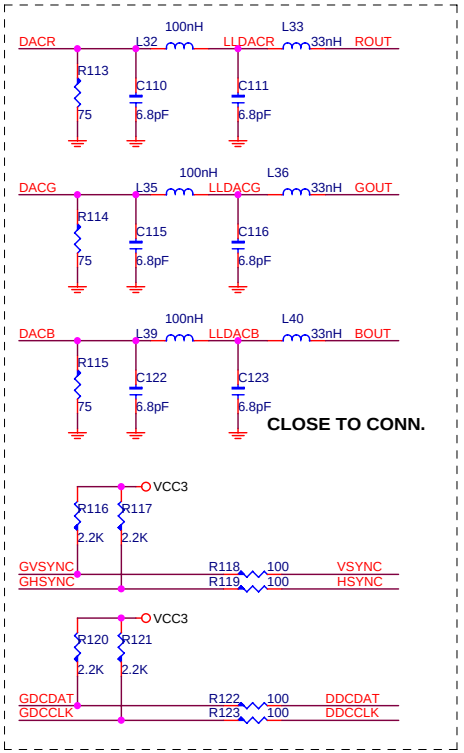
DISPLAY STRAP SETUP:



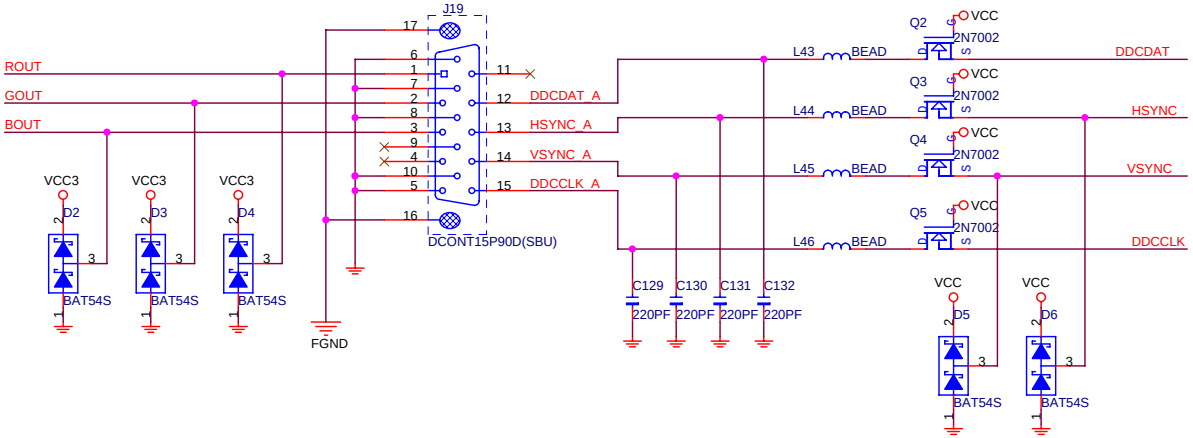
DMP ELECTRONICS INC.		
Title: Vortex86DX2 VGA/ PLL		
Size	Document Number: DM175B	Rev: 1.0
Date: Wednesday, June 13, 2012	Sheet 8 of 22	

VGA



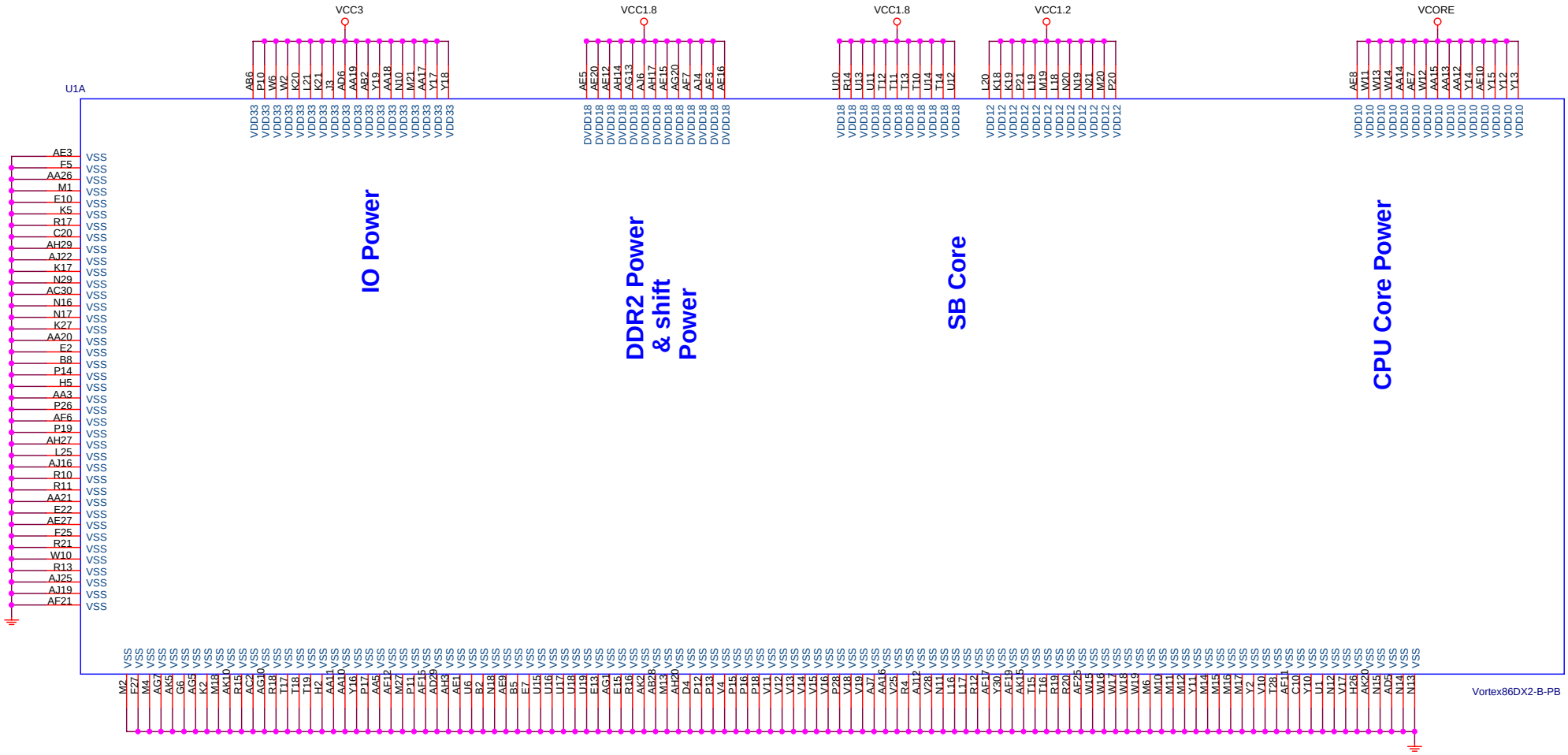


VGA



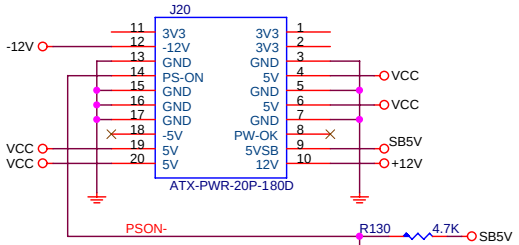
DMP ELECTRONICS INC.

Title	Vortex86DX2 VGA/ PLL	
Size	Document Number DM175B	Rev 1.0
Date: Wednesday, June 13, 2012	Sheet 9 of 22	

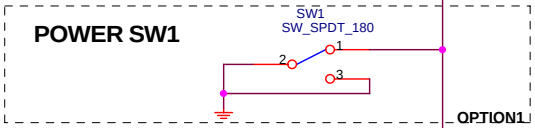


DMP ELECTRONICS INC.			
Title: Vortex86DX2 POWER			
Size	Document Number: DM175B		Rev: 1.0
Date: Wednesday, June 13, 2012		Sheet 10 of 22	

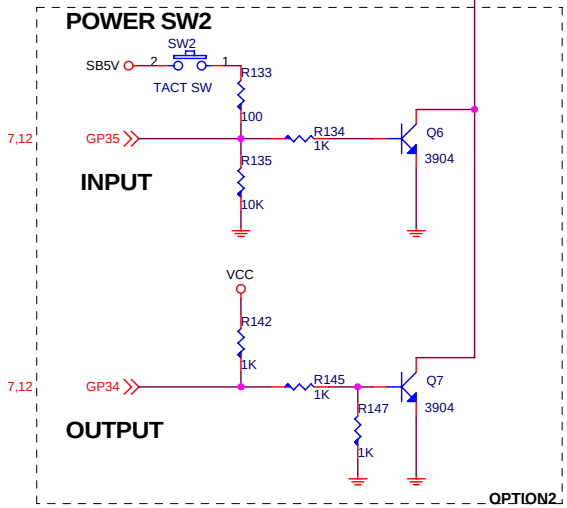
ATX POWER



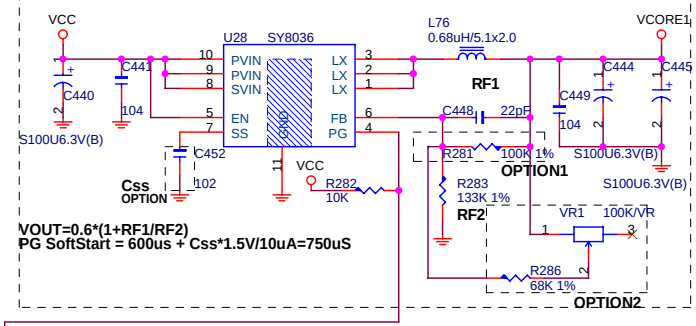
POWER SW1



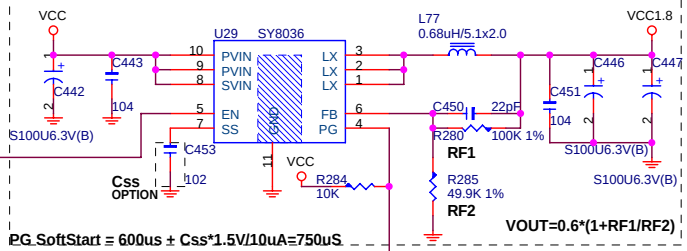
POWER SW2



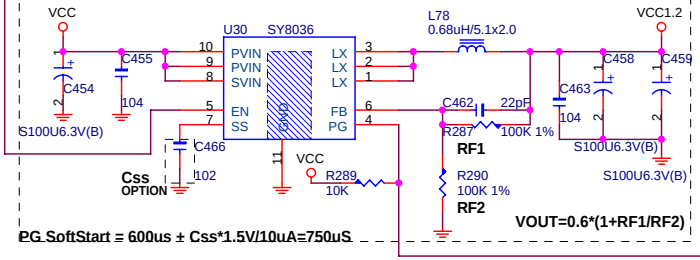
SY8036 -> 1.051V RF1=100K RF2=133K VCORE = 1.05V @ 6A , 1MHz



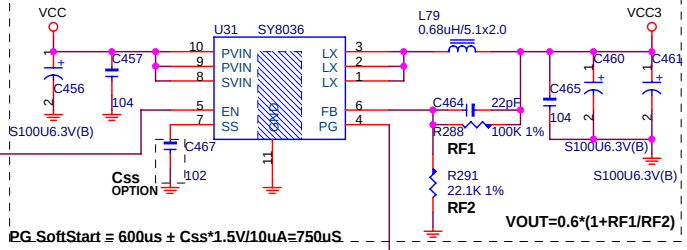
SY8036 -> 1.802V RF1=100K RF2=49.9K



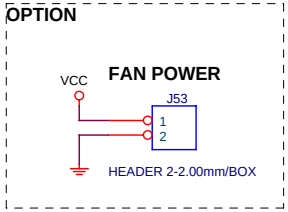
SY8036 -> 1.200V RF1=100K RF2=100K



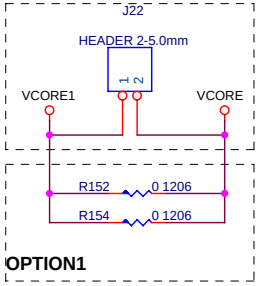
SY8036 -> 3.314V RF1=100K RF2=22.1K

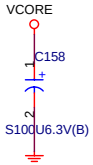


OPTION

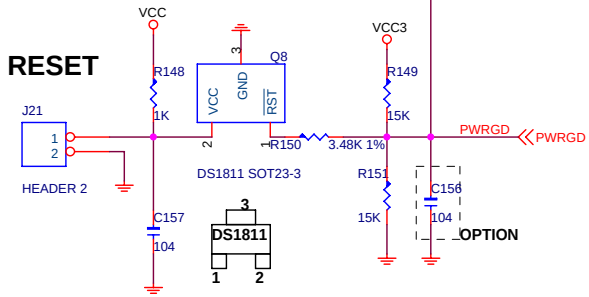


OPTION2

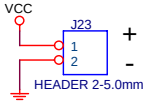




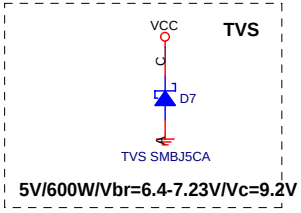
RESET



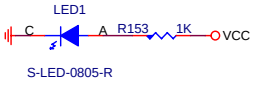
POWER CONN.



TVS



POWER LED



DMP ELECTRONICS INC.

Title	DC to DC	
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GP0

GP1

GP2

GP3

GP4

GP5

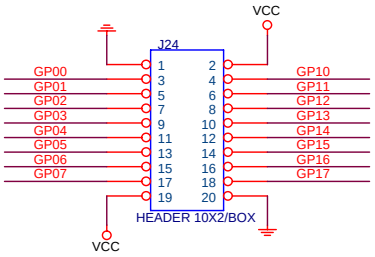
GP6

GP7

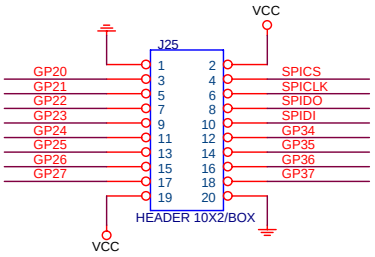
GP8

GP9

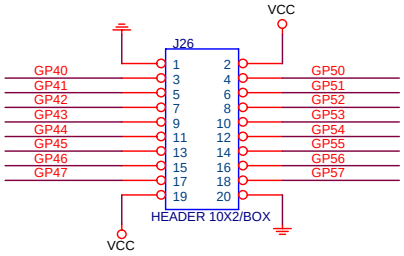
P0/P1



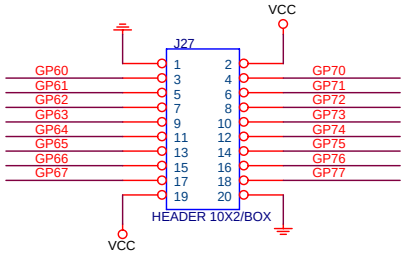
P2/P3



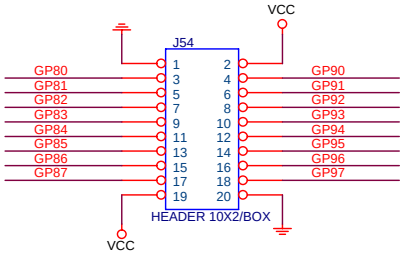
P4/P5



P6/P7

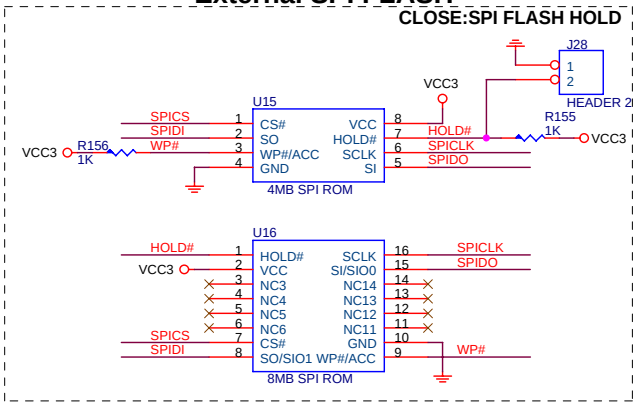


P8/P9



External SPI FLASH

CLOSE:SPI FLASH HOLD



DMP ELECTRONICS INC.	
Title	GPIO P0-P7
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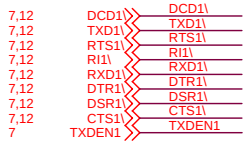
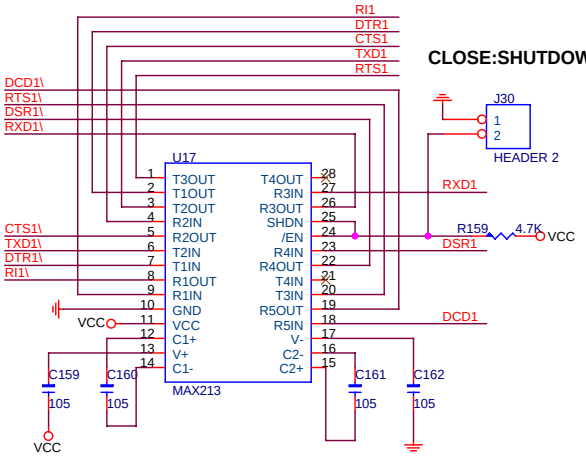
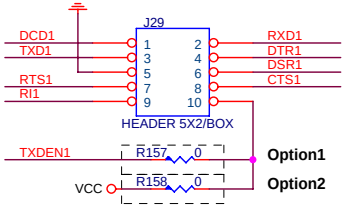
COM1

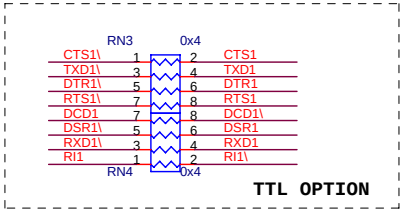


RS232

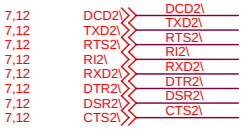


COM1 RS232/TTL

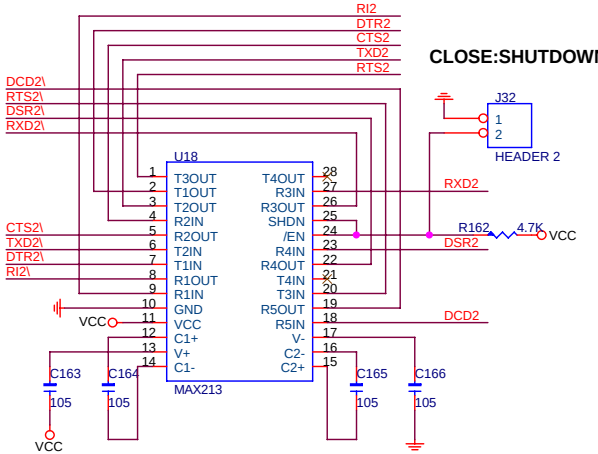




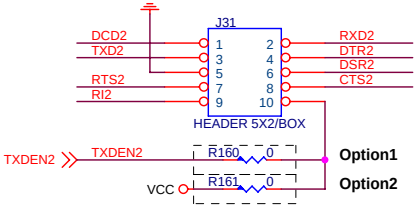
COM2

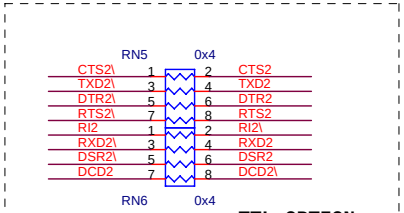


RS232



COM2 RS232/TTL





DMP ELECTRONICS INC.		
Title: PRN1/COM3/4		
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COM3/COM4/SD

7,12 RXD3\
7,12 TXD3\
7,12 RTS3\
7,12 DCD3\
7,12 CTS3\
7,12 RI3\
7,12 DTR3\
7,12 DSR3\

RXD3\
TXD3\
RTS3\
DCD3\
CTS3\
RI3\
DTR3\
DSR3\

RI3
DTR3
CTS3
TXD3
RTS3

DCD3\
RTS3\
DSR3\
RXD3\

CLOSE:SHUTDOWN

J34
1
2
HEADER 2

U19

1	T3OUT	T4OUT	28
2	T1OUT	R3IN	27
3	T2OUT	R3OUT	26
4	R2IN	SHDN	25
5	R2OUT	/EN	24
6	T2IN	R4IN	23
7	T1IN	R4OUT	22
8	R1OUT	T4IN	21
9	R1IN	T3IN	20
10	GND	R5OUT	19
11	VCC	R5IN	18
12	C1+	V-	17
13	V+	C2-	16
14	C1-	C2+	15

MAX213

RXD3
DSR3
DCD3

R163
10K
VCC

CTS3\
TXD3\
DTR3\
RI3\

VCC

C175 105
C176 105
C177 105
C178 105

VCC

RS232

J33

DCD3	1	2	RXD3
TXD3	3	4	DTR3
	5	6	DSR3
RTS3	7	8	CTS3
RI3	9	10	

HEADER 5X2/BOX

COM3
RS232

OPTION

VCC3

RP10 47Kx4
RP11 47Kx4

7,12 SDA_CMD — SDA_CMD — R243 33 — XSDA_CMD

7,12 SDA_CLK — SDA_CLK — R244 0 — XSDA_CLK
7,12 SDA_D3 — SDA_D3 — XSDA_D3
7,12 SDA_D0 — SDA_D0 — XSDA_D0
7,12 SDA_D1 — SDA_D1 — XSDA_D1
7,12 SDA_D2 — SDA_D2 — XSDA_D2

RP12 33x4

7,12 SDA_CD — SDA_CD — R245 33 — XSDA_CD
7,12 SDA_WP — R246 33 — XSDA_WP

VCC3 — L70 200@100MHz — VCCSDA

C423 105
C424 104

J50

1	DAT3
2	CMD
3	VSS1
4	VDD
5	CLK
6	VSS2
7	DAT0
8	DAT1
9	DAT2
10	Card Detect
11	Write Protect
12	Common Ground
13	Common Ground

SD-PUSH-T-CONT

SD CARD 1

7,12 RXD4\
7,12 TXD4\
7,12 RTS4\
7,12 DCD4\
7,12 CTS4\
7,12 RI4\
7,12 DTR4\
7,12 DSR4\

RXD4\
TXD4\
RTS4\
DCD4\
CTS4\
RI4\
DTR4\
DSR4\

RI4
DTR4
CTS4
TXD4
RTS4

DCD4\
RTS4\
DSR4\
RXD4\

CLOSE:SHUTDOWN

J37
1
2
HEADER 2

U20

1	T3OUT	T4OUT	28
2	T1OUT	R3IN	27
3	T2OUT	R3OUT	26
4	R2IN	SHDN	25
5	R2OUT	/EN	24
6	T2IN	R4IN	23
7	T1IN	R4OUT	22
8	R1OUT	T4IN	21
9	R1IN	T3IN	20
10	GND	R5OUT	19
11	VCC	R5IN	18
12	C1+	V-	17
13	V+	C2-	16
14	C1-	C2+	15

MAX213

RXD4
DSR4
DCD4

R166
10K
VCC

CTS4\
TXD4\
DTR4\
RI4\

VCC

C188 105
C189 105
C190 105
C191 105

VCC

RS232

J35

DCD4	1	2	RXD4
TXD4	3	4	DTR4
	5	6	DSR4
RTS4	7	8	CTS4
RI4	9	10	

HEADER 5X2/BOX

COM4
RS232

DMP ELECTRONICS INC.

Title	COM3/4/SD		
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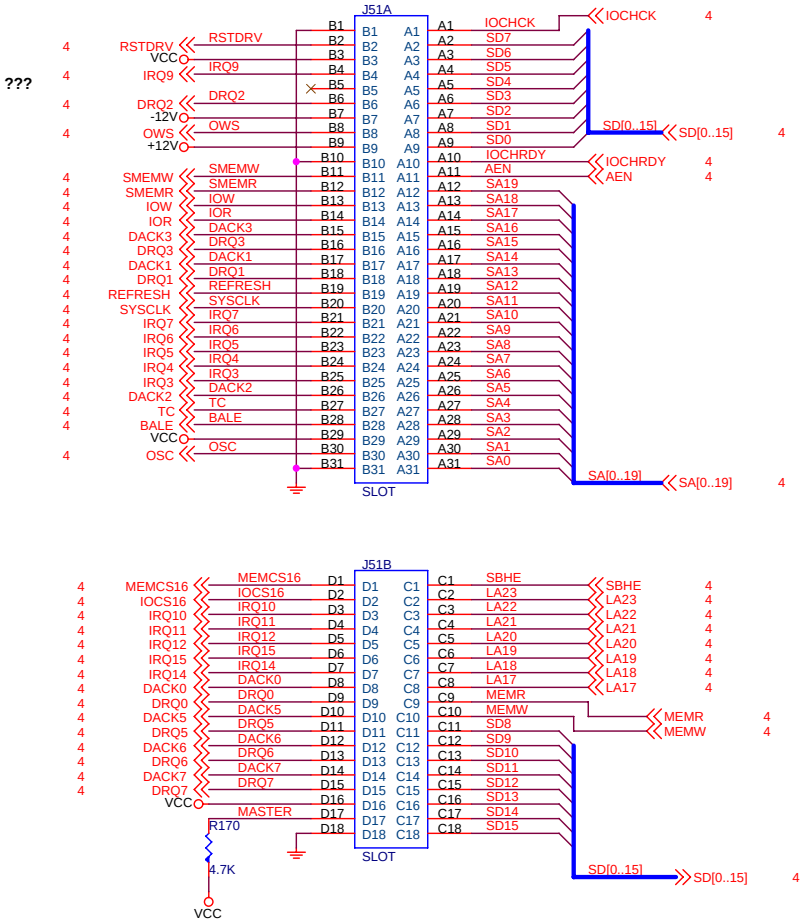
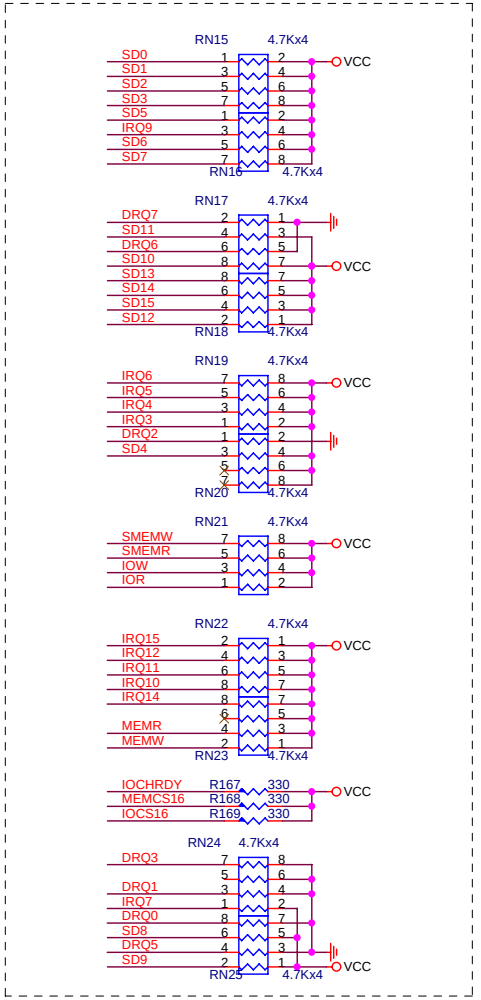
ISA 8/16 BIT SLOT



OPTION PULL UP/DOWN



DMP ELECTRONICS INC.

Title	ISA SLOT	
Size	Document Number DM175B	Rev 1.0
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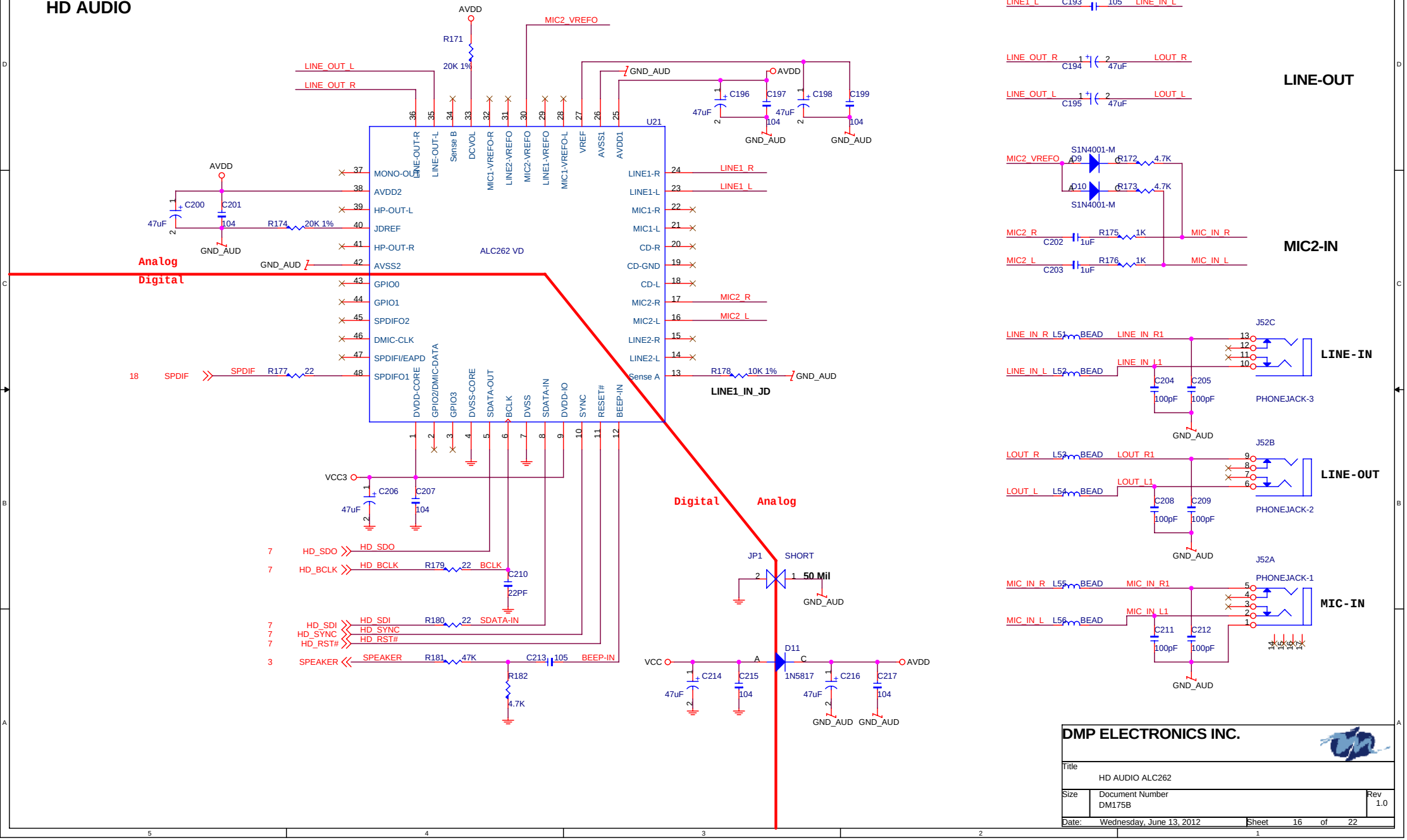
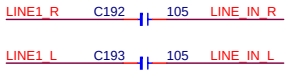
HD AUDIO



LINE1-IN



LINE-OUT

MIC2-IN

LINE-IN

LINE-OUT

MIC-IN

DMP ELECTRONICS INC.		
Title: HD AUDIO ALC262		
Size	Document Number: DM175B	Rev: 1.0
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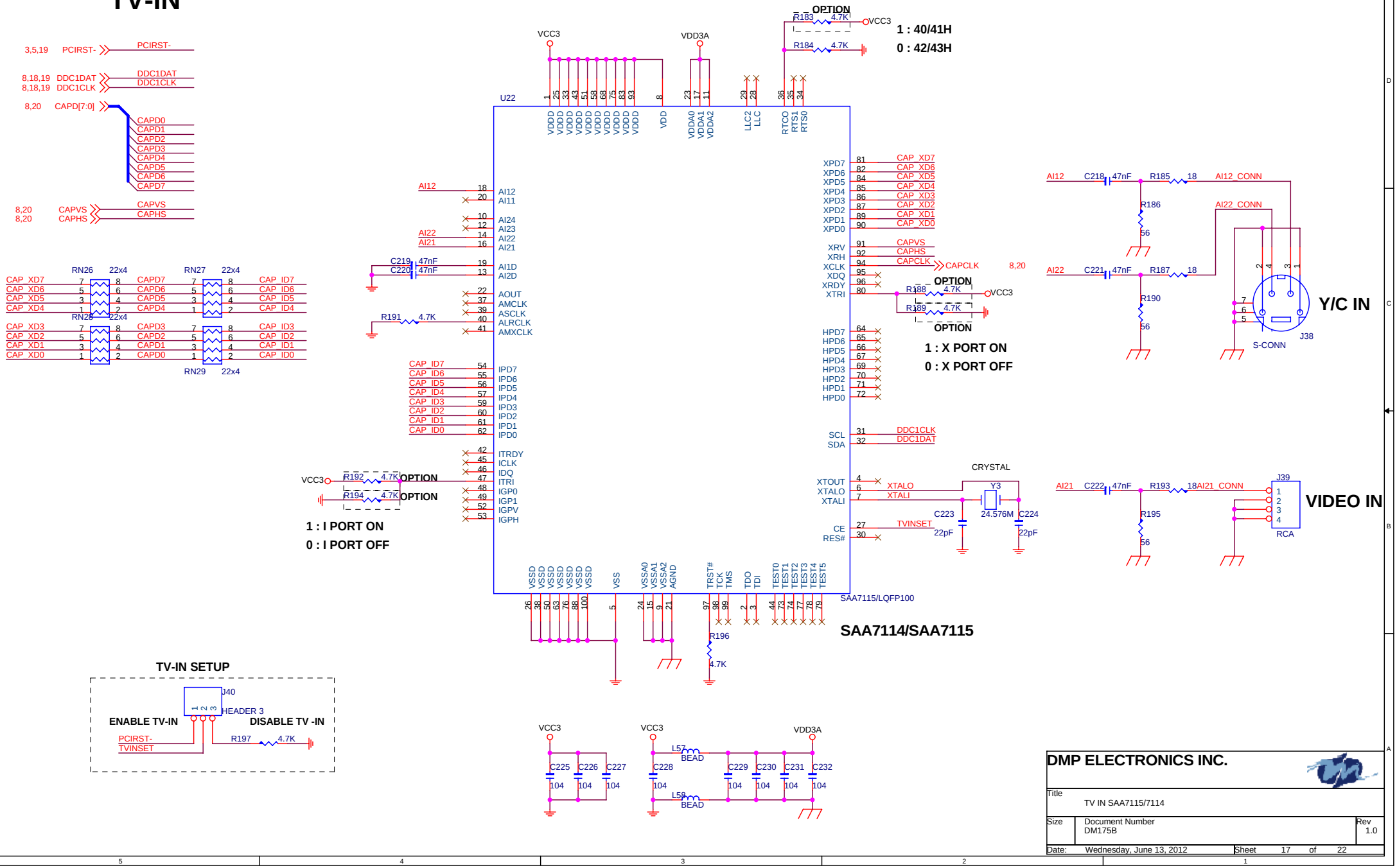
TV-IN



DMP ELECTRONICS INC.		
Title	TV IN SAA7115/7114	
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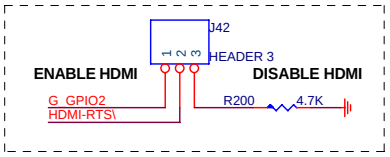
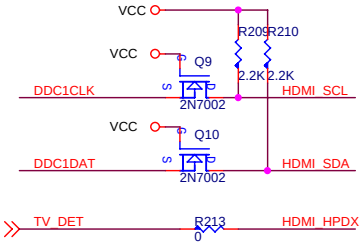
HDMI

8,19,20 TV_PD[11:0] — TV_PD[11:0]
8,19,20 TV_VSYNC — TV_VSYNC
8,19,20 TV_HSYNC — TV_HSYNC
8,19,20 TV_DE — TV_DE
8,19,20 LCLK — LCLK
8,17,19 DDC1DAT — DDC1DAT
8,17,19 DDC1CLK — DDC1CLK

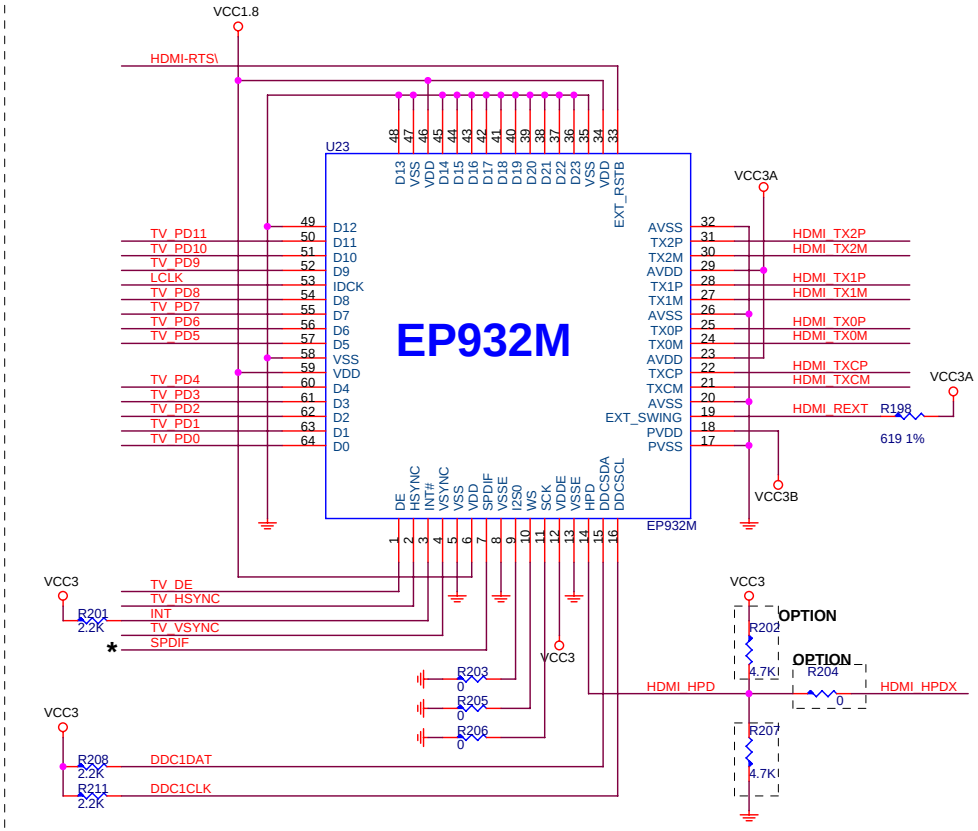
9 G_GPIO2 — G_GPIO2 (HDMI RESET\)
16 SPDIF — SPDIF ALC262

HDMI SETUP

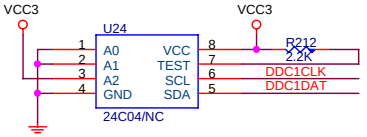




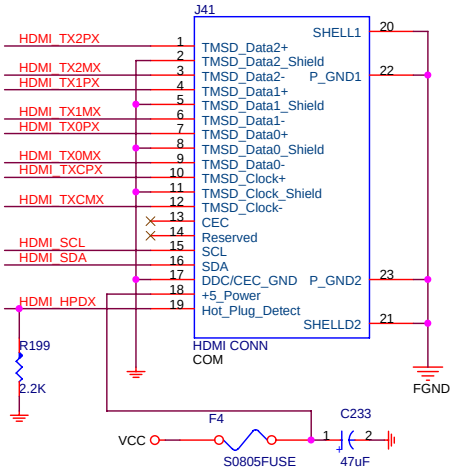
8,19 TV_DET — TV_DET — R213 0 — HDMI_HPDX



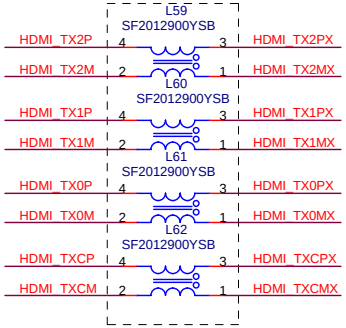
HDCP KEY OPTION



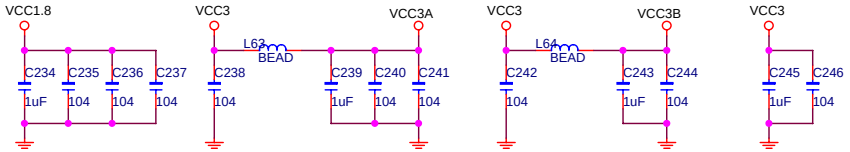
HDMI-OUT



Differential 100 ohm **Differential 100 ohm**



BY PASS



DMP ELECTRONICS INC.

Title	HDMI EP932M	
Size	Document Number DM175B	Rev 1.0
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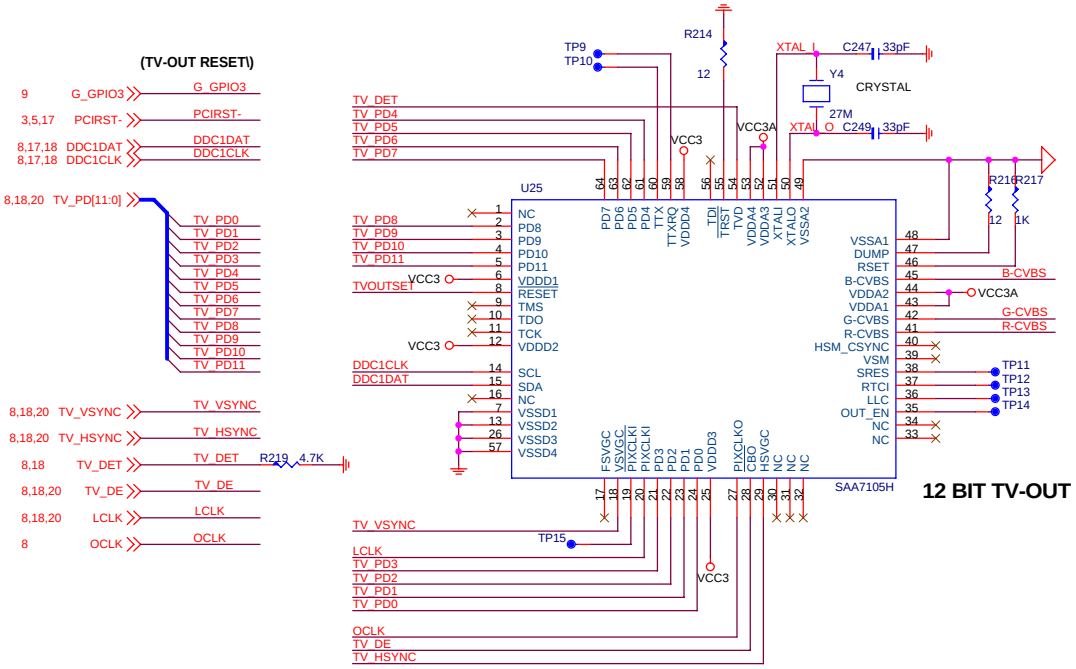
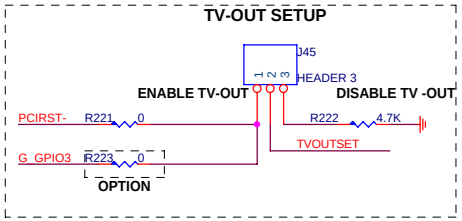
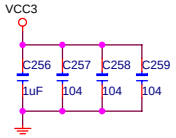
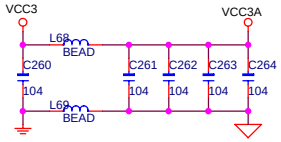
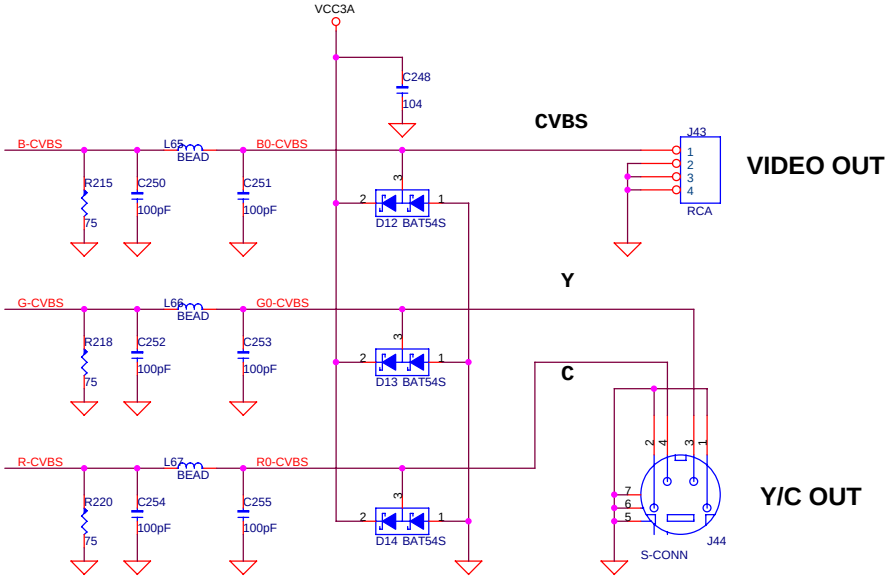
TV-OUT/HDMI











DMP ELECTRONICS INC.		
Title	TV OUT SAA7105	
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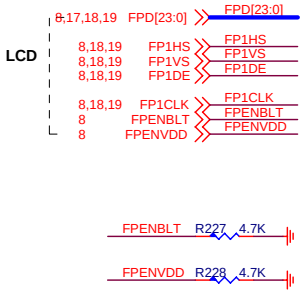
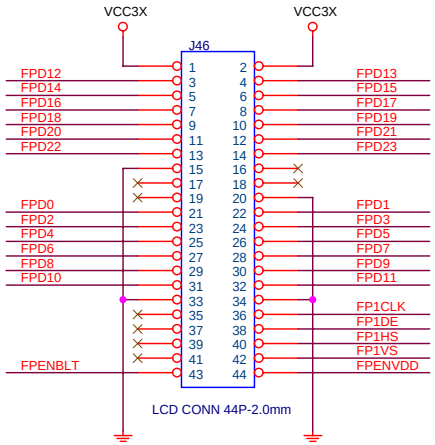
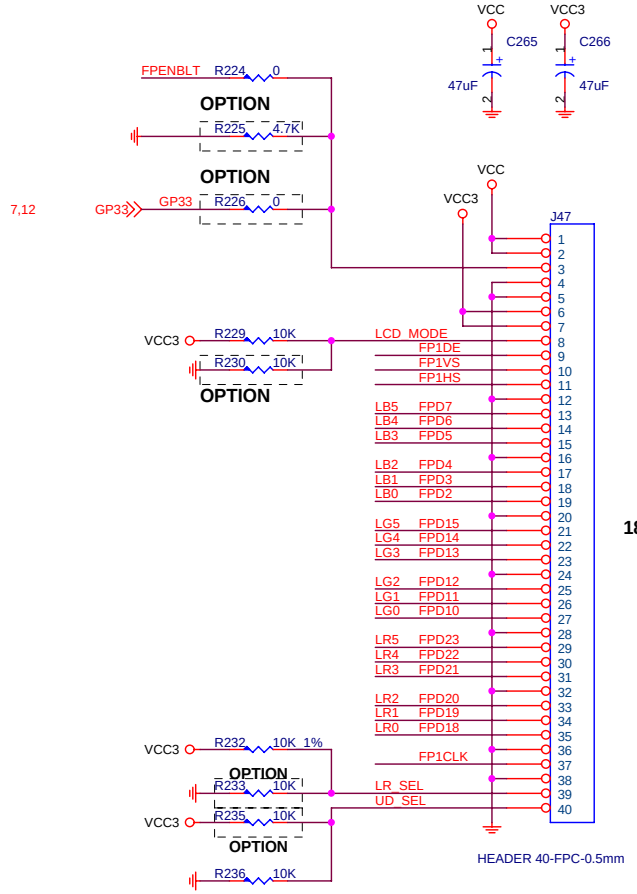
LCD Support 24BIT/18BIT/DSTN



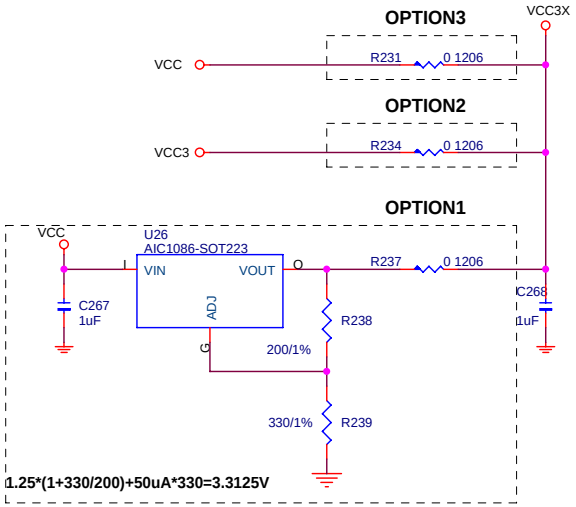




18bit DVO

DVO definition table

Port / Name / DMP LCD pin	LVDS-24bit SDR	TTL-18bit	LVDS-12bit DDR+CAP	CAP+TV-12bit	DSTN Color	DSTN Mono
FPD23 / LR5	LVD23: R7	D17: R5	CAPCLK	CAPCLK		
FPD22 / LR4	LVD22: R6	D16: R4	VSYNC	VSYNC		
FPD21 / LR3	LVD21: R5	D15: R3	HSYNC	HSYNC		
FPD20 / LR2	LVD20: R4	D14: R2	CAP_FILD	CAP_FILD		
FPD19 / LR1	LVD19: R3	D13: R1	CAPD07	CAPD07	LD7	
FPD18 / LR0	LVD18: R2	D12: R0	CAPD06	CAPD06	LD6	
FPD17	LVD17: R1		CAPD05	CAPD05	LD5	
FPD16	LVD16: R0		CAPD04	CAPD04	LD4	
FPD15 / LG5	LVD15: G7	D11: G5	CAPD03	CAPD03	LD3	LD3
FPD14 / LG4	LVD14: G6	D10: G4	CAPD02	CAPD02	LD2	LD2
FPD13 / LG3	LVD13: G5	D09: G3	CAPD01	CAPD01	LD1	LD1
FPD12 / LG2	LVD12: G4	D08: G2	CAPD00	CAPD00	LD0	LD0
FPD11 / LG1	LVD11: G3	D07:G1	LV1D11:G3R7	TVD11		
FPD10 / LG0	LVD10: G2	D06:G0	LV1D10:G2R6	TVD10		
FPD09	LVD9: G1		LV1D09:G1R5	TVD09		
FPD08	LVD8: G0		LV1D08:G0R4	TVD08		
FPD07 / LB5	LVD7: B7	D05: B5	LV1D07:B7R3	TVD07	HD7	
FPD06 / LB4	LVD6: B6	D04: B4	LV1D06:B6R2	TVD06	HD6	
FPD05 / LB3	LVD5: B5	D03: B3	LV1D05:B5R1	TVD05	HD5	
FPD04 / LB2	LVD4: B4	D02: B2	LV1D04:B4R0	TVD04	HD4	
FPD03 / LB1	LVD3: B3	D01: B1	LV1D03:B3G7	TVD03	HD3	HD3
FPD02 / LB0	LVD2: B2	D00: B0	LV1D02:B2G6	TVD02	HD2	HD2
FPD01	LVD1: B1		LV1D01:B1G5	TVD01	HD1	HD1
FPD00	LVD0: B0		LV1D00:B0G4	TVD00	HD0	HD0
FP1DE	LVDE	DE	LV1DE	TVDE	DISP	
FP1HS	LVHS	HS	LV1HS	TVHS	LOAD	
FP1VS	LVVS	VS	LV1VS	TVVS	FRM	
FP1CLK	LVCLK	CLK	LV1CLK	TVCLK	CP	
TVCLKIN				TVCLKIN		
FP1DET	DVIDET	DVIDET	DVIDET	TVDET	DVIDET	
ENVEE	ENVEE	ENVEE	ENVEE		ENVEE	
ENPVDD	EPVDD	EPVDD	EPVDD		EPVDD	
ENBLT	ENBL	ENBL	ENBL		ENBL	



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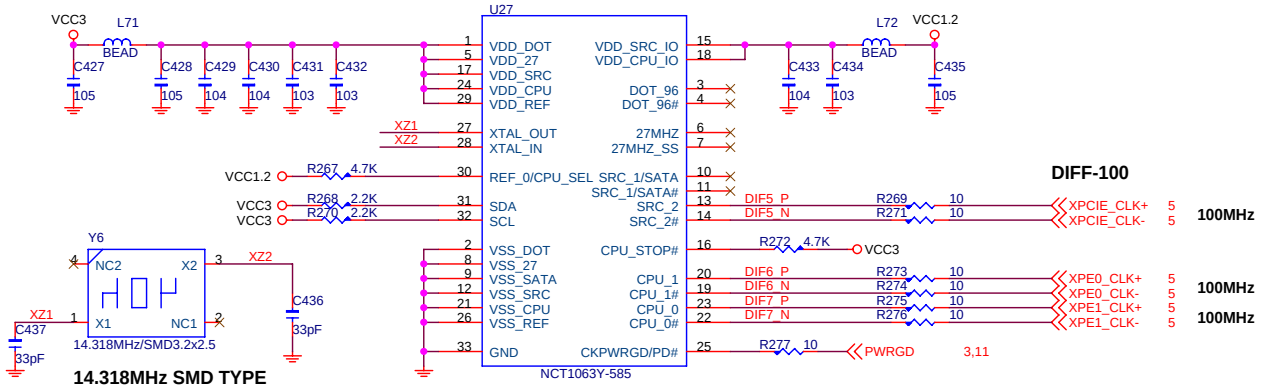
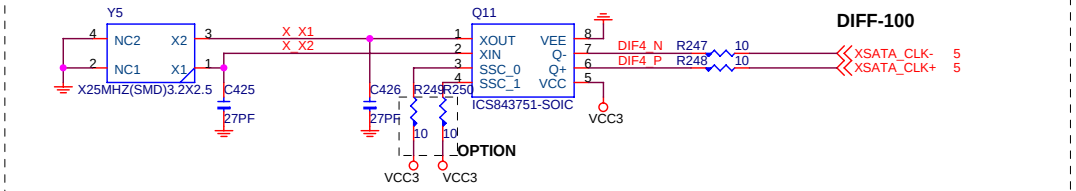
PCI-E CLOCK



OPTION

SATA CLOCK



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Title: PCI-E/SATA CLOCK		
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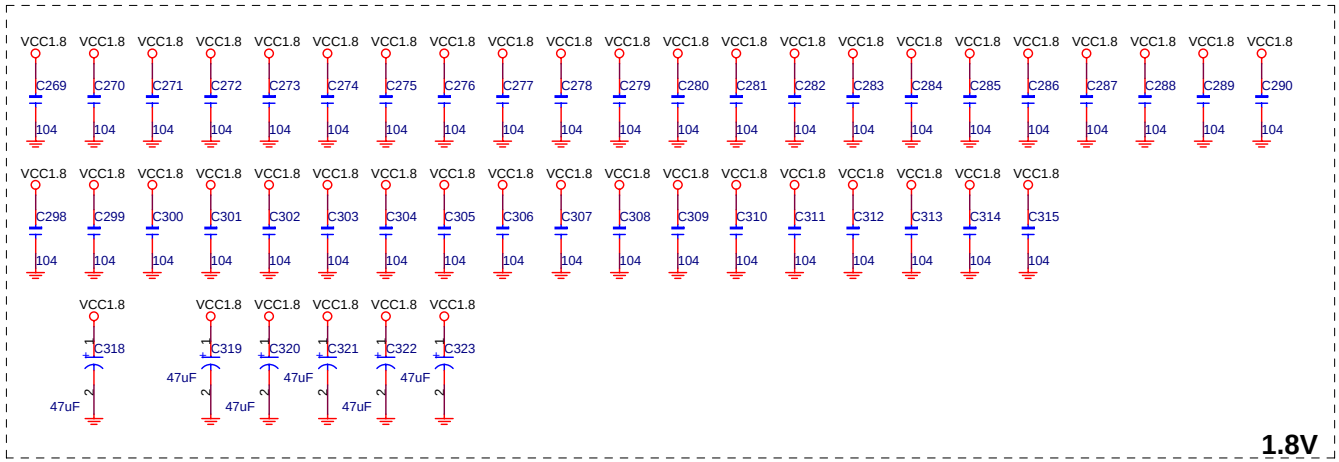
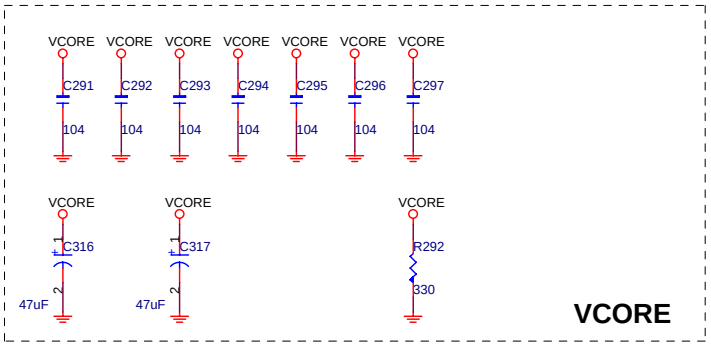
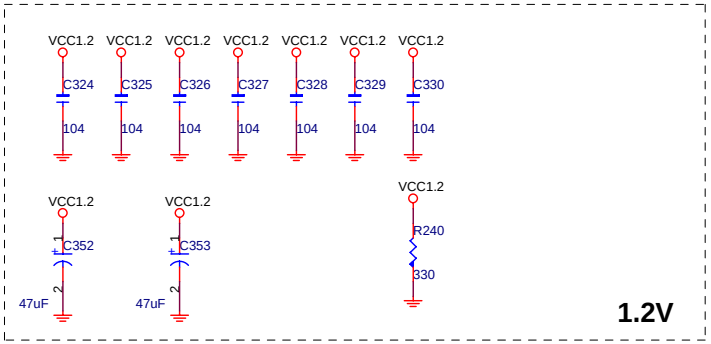
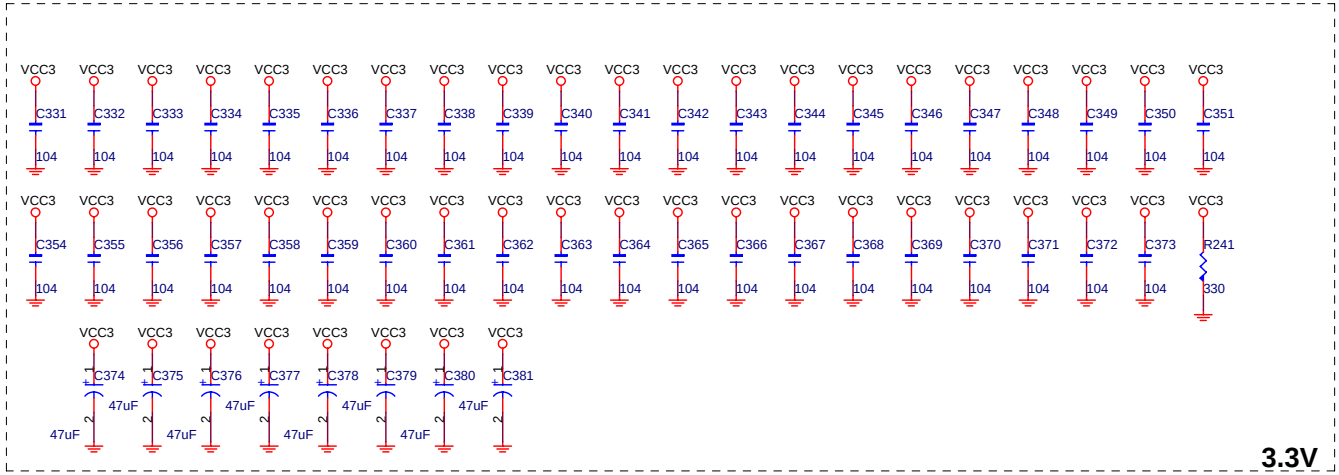
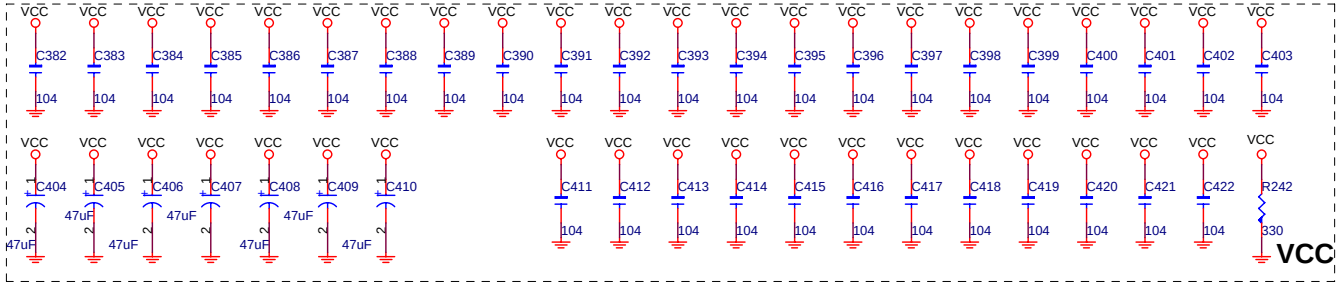
BYPASS

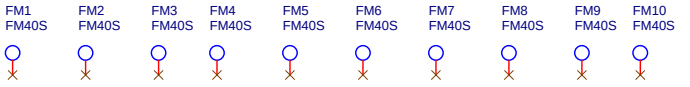


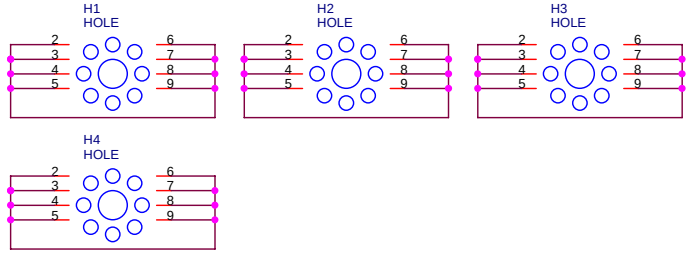












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