

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
01	Initial release	09/29/08	
02	Corrected EBI Static nCS1 Addr Space table, sht 13	10/16/08	
03	Change pull-up value on GPIO0, GPIO1 & GPIO2 to 4.7k; sht 7	01/22/09	
04	Tie LPC313x pin K11 to SUP3; Match LPC313x symbol to datasheet names	04/15/09	
05	LPC313x symbol correction: pin H11 to GPIO19; K13 to GPIO20	06/15/09	
06	Change U16 to XNOR; fix EMC static memory contention with Nand Flash boot; sht 12. Add EBI nSTCS0/1 to Boot Mode Table; sht 7.	12/03/09	
07	Fix OTG SRP D+ pulsing by changeing USB D+/D- protection diode high side supply to +VSUP3 (3.3V).	1/03/10	

NXP Semiconductors LPC313x Validation Board Schematics

Jan 3, 2010

- Page 1 - Index
- Page 2 - Block Diagram
- Page 3 - LPC313x Power
- Page 4 - LPC313x Peripherals
- Page 5 - EBI ADDR / LCD HDR
- Page 6 - NAND Flash
- Page 7 - SDRAM / SPI Flash / Boot Mode
- Page 8 - SD/SDIO/MMC/MMCPlus
- Page 9 - JTAG / Reset / Serial Port
- Page 10 - USB
- Page 11 - Stereo Audio Codec
- Page 12 - EBI Bus Buffers
- Page 13 - EBI NOR Flash
- Page 14 - EBI LCD Interface
- Page 15 - EBI Ethernet / Expand Conn
- Page 16 - Power Supply
- Page 17 - EBI Expansion / Par/Ser LCD
- Page 18 - Logic Analyzer Connectors

CONTRACT NO.		Sheet Index			
APPROVALS	DATE	NXP Semiconductors 1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/			
DRAWN D. Consiglio	2/3/2010				
CHECKED					
ISSUED	12/03/2009	SIZE D	FSCM NO.	DWG. NO. SCH-VAL313x-01	REV 07
SCALE				SHEET 1 OF 18	

REVISIONS			
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BOOT Modes:
 NAND FLASH
 SPI
 UART
 USB
 SD/MMC/EMMC

NAND FLASH
 1.8V - Default
 3.3V - supported
 On_board NAND 2G x 8
 1 - TSOP-48 SKT D[7:0]
 1 - TSOP-48 SKT D[15:8]

SDRAM
 1.8V - Default
 3.3V - supported
 32M x 16

3.3V DUAL Supply Buffer
 1.8 or 3.3V

MICTOR Conns

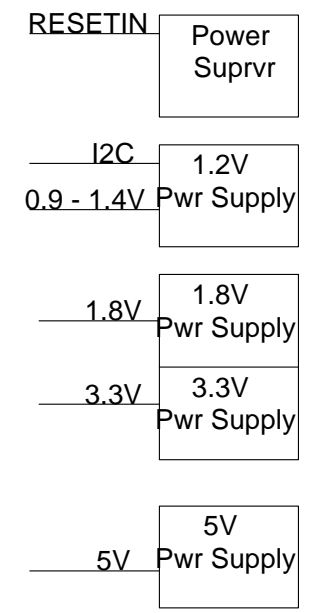
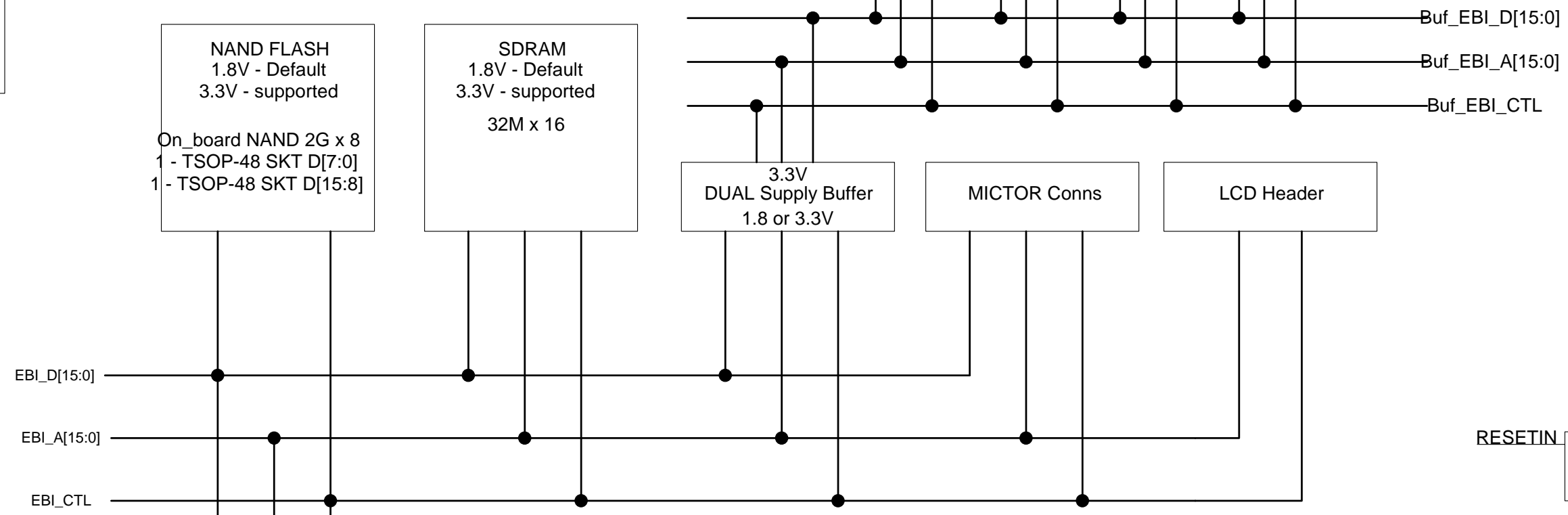
LCD Header

Expansion Connector

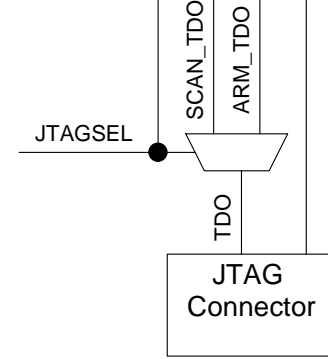
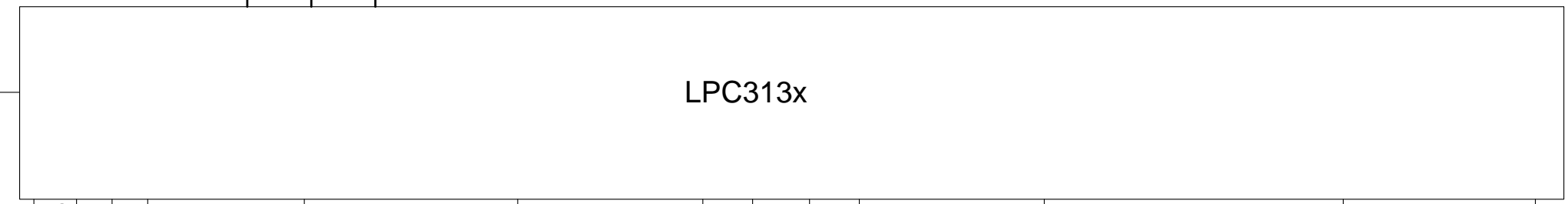
NOR FLASH
 512k x 16

Ethernet Dongle Conn

Bus LCD



12Mhz XTAL



2 Slots
 1 - SD/MMC - 1/4-bit
 1 - MMCPlus 1/4/8-bit
 3.3V

RS-232 Port - 1x
 3.3V

Stereo Audio Codec
 3.3V

SPI FLASH
 4MB

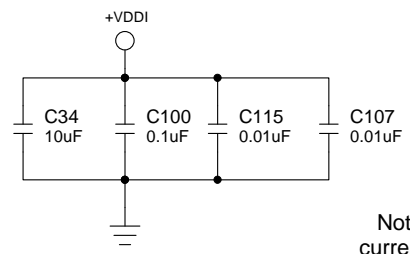
SPI WIFI Connector

USB Hi-spd A-type conn
 Mini-AB type conn

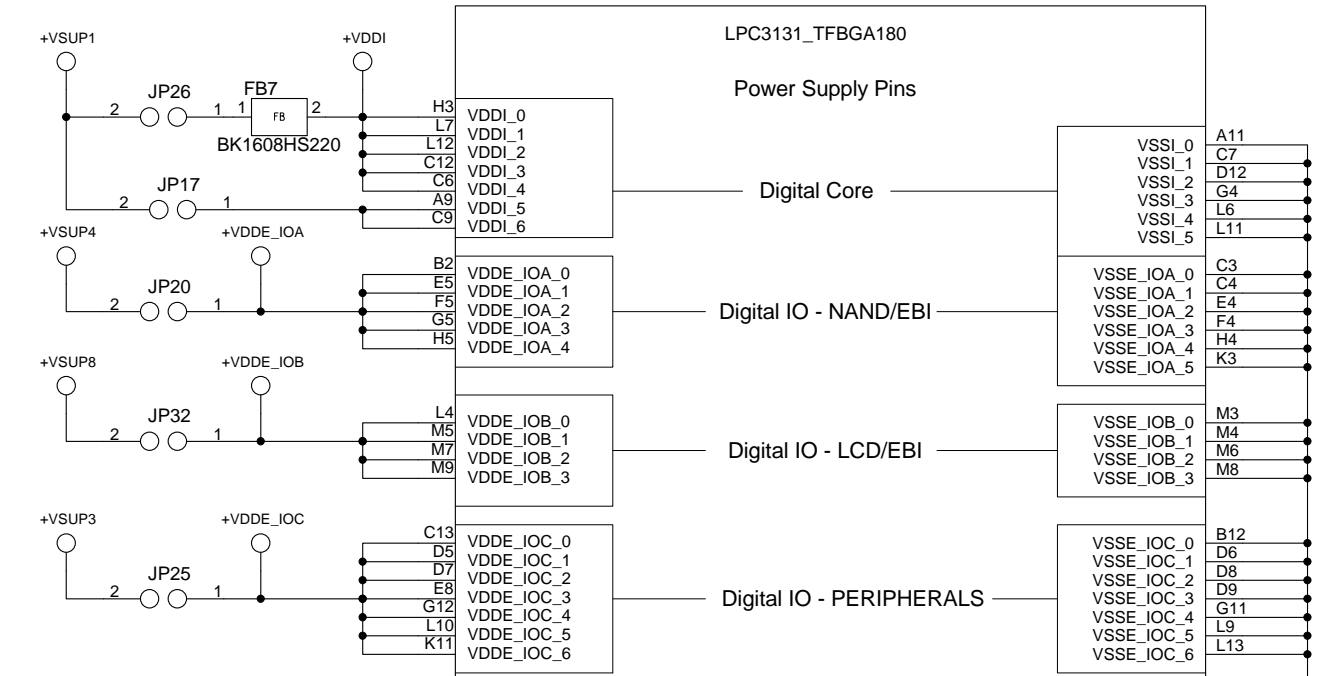
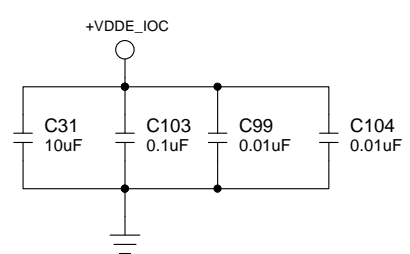
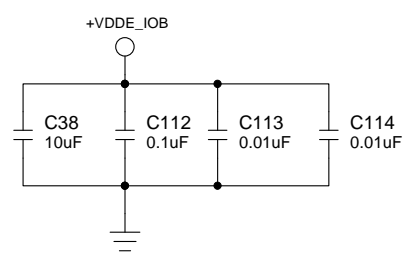
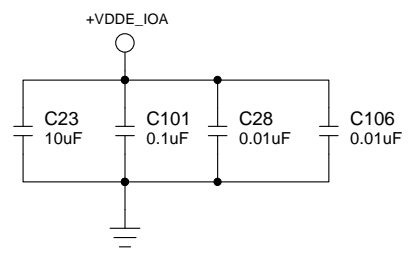
ADC Connector

CONTRACT NO.		Block Diagram	
APPROVALS	DATE	NXP Semiconductors	
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE	FSCM NO.
ISSUED	12/03/2009	D	
		DWG. NO.	REV
		SCH-VAL313x-01	07
SCALE		SHEET	2 OF 18

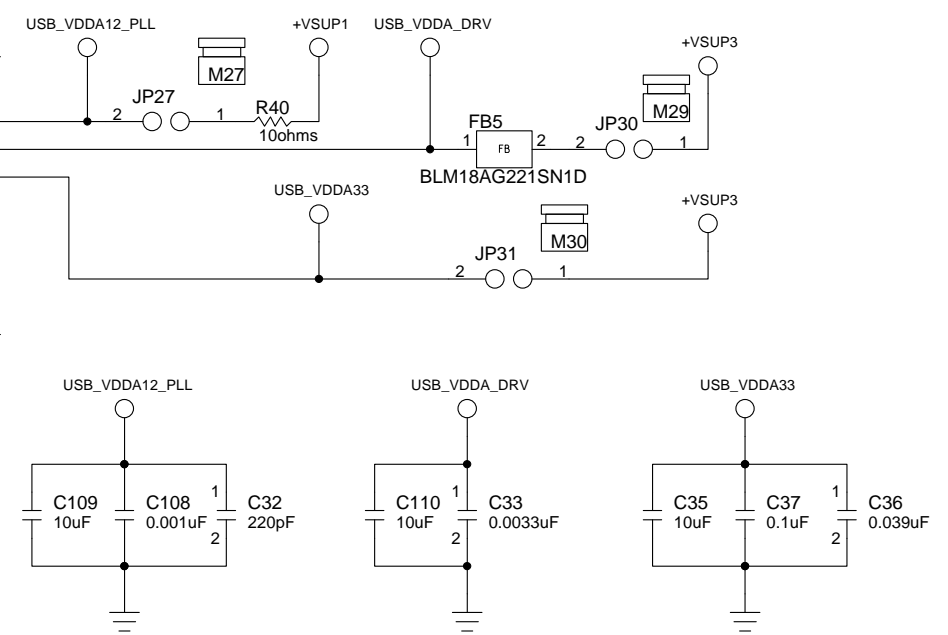
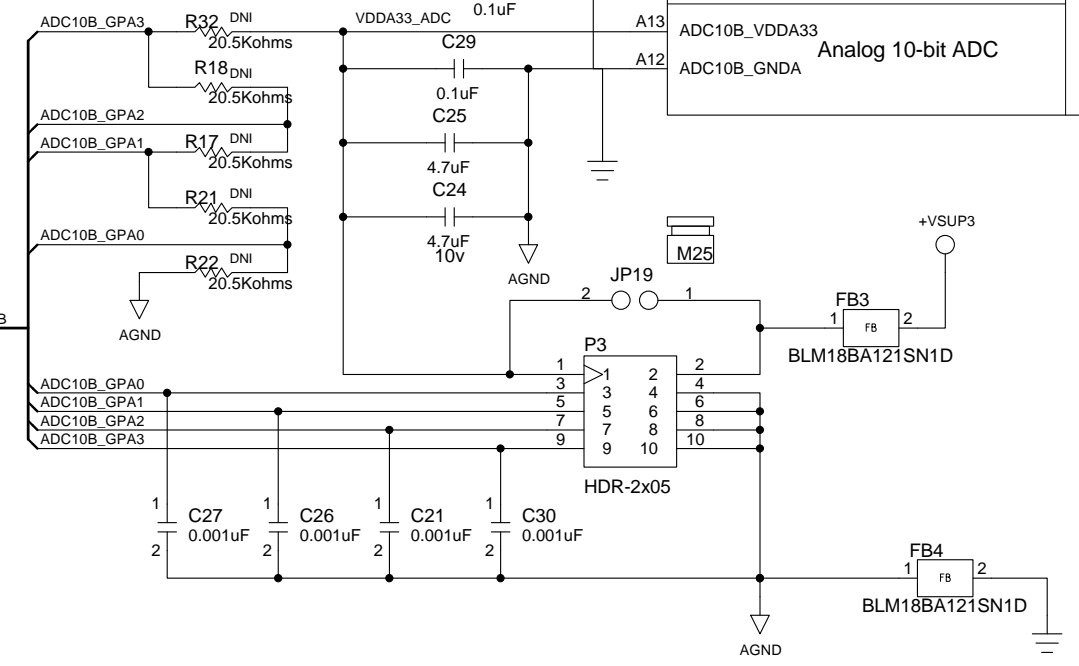
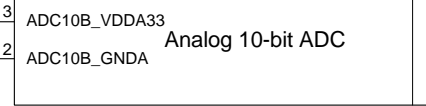
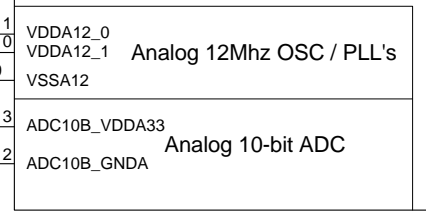
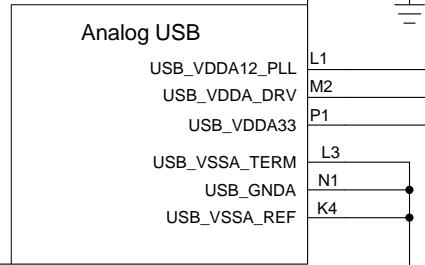
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



Note: all LPC314x power supply jumpers JPx are for current measurement and must be shorted for operation.

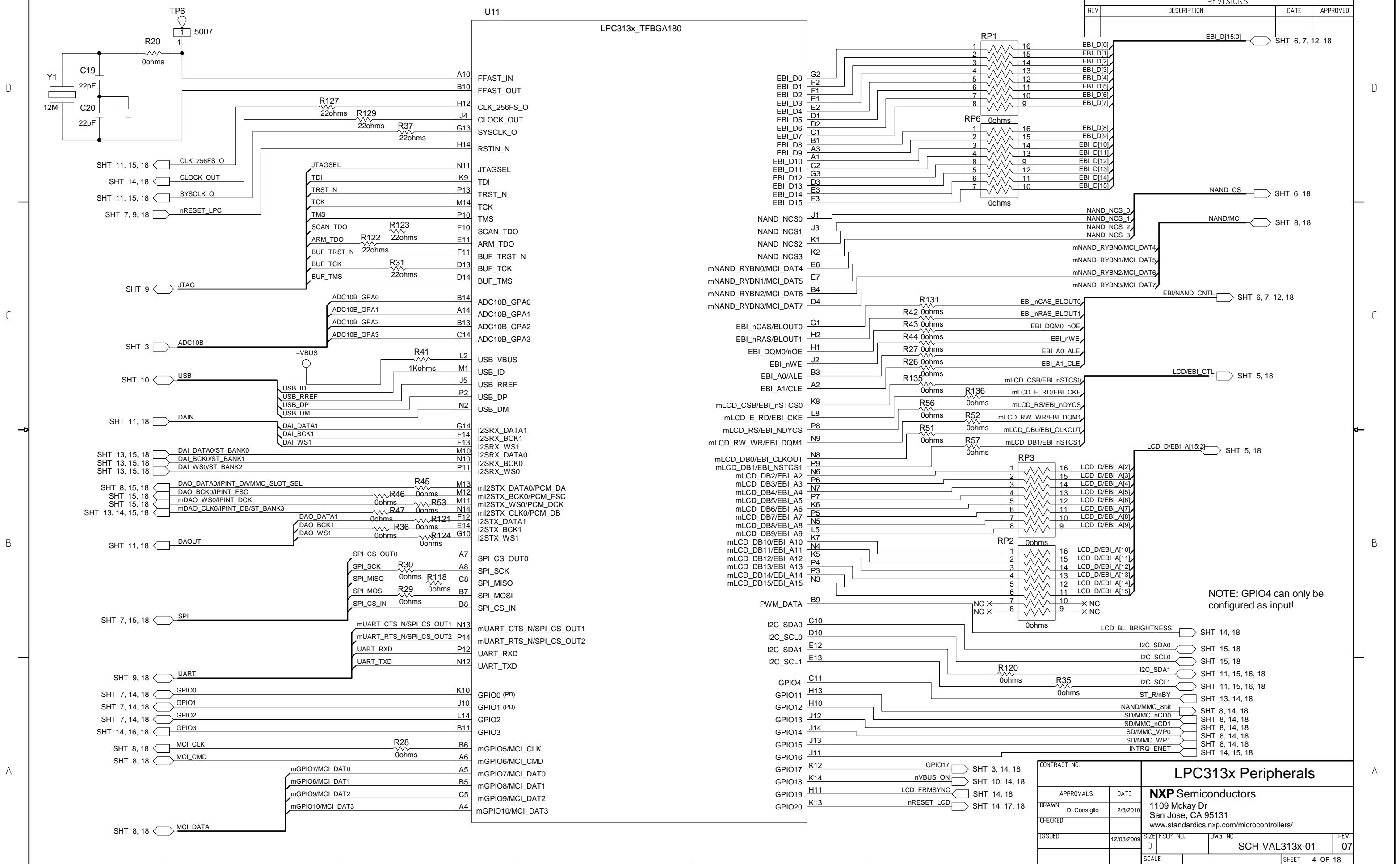


Voltage Mapping		
Supply Name	Voltage	Jumper
VSUP1	0.9 - 1.2v	n/a
VSUP3	3.3v	n/a
VSUP4	3.3 / 1.8v	JP16
VSUP8	3.3 / 1.8v	JP33



CONTRACT NO.		LPC313x Power	
APPROVALS	DATE	NXP Semiconductors	
DRAWN	2/3/2010	1109 Mckay Dr	
CHECKED		San Jose, CA 95131	
ISSUED	12/03/2009	www.standardics.nxp.com/microcontrollers/	
SCALE		SIZE	D
		FSCM NO.	
		DWG. NO.	SCH-VAL313x-01
		REV	07
		SHEET 3 OF 18	

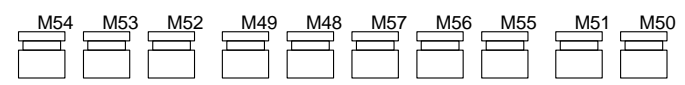
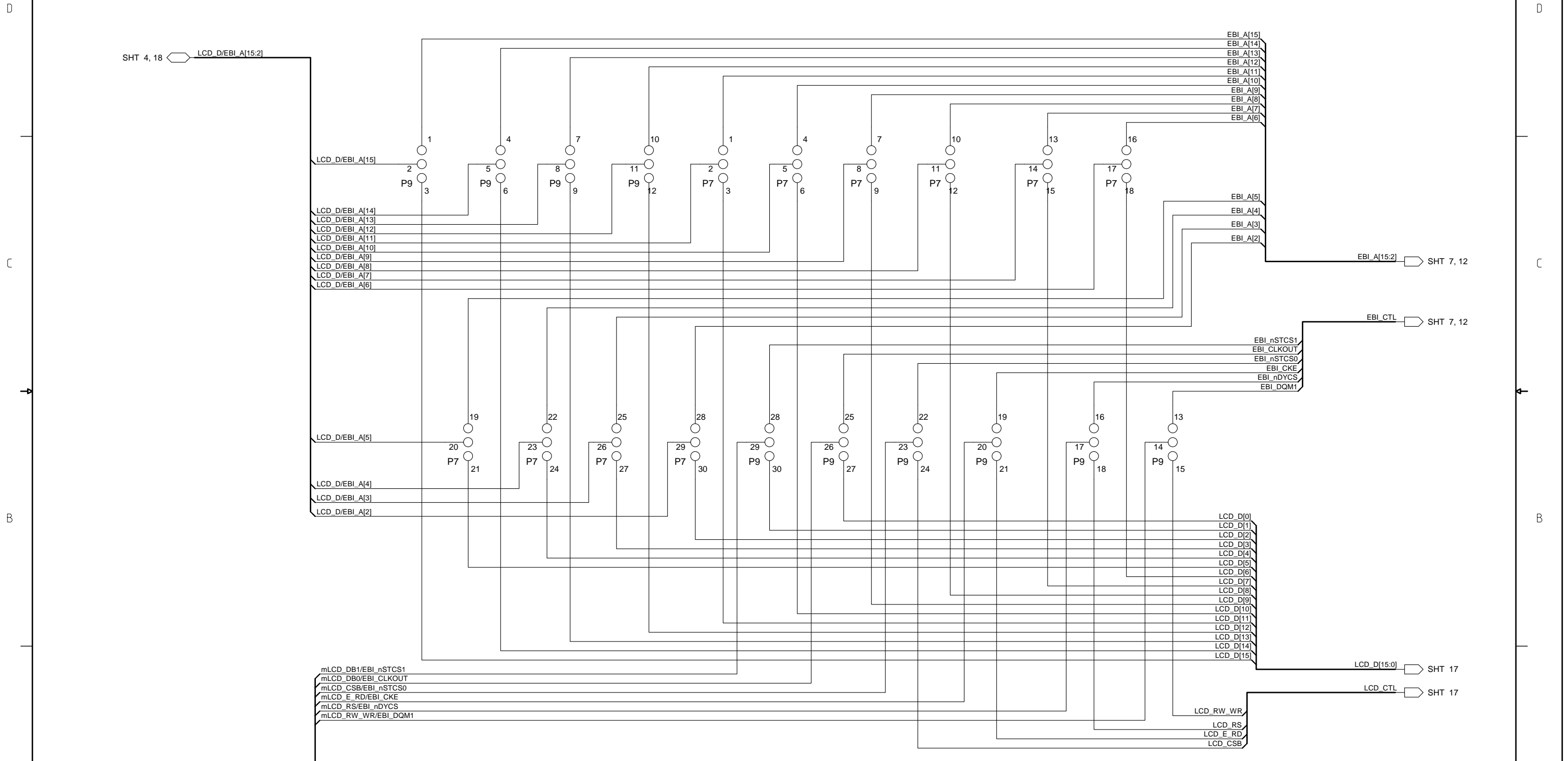
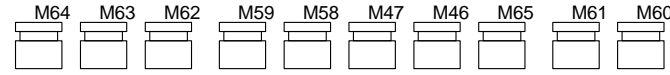
REVISIONS			
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NOTE: GPIO4 can only be configured as input!

CONTRACT NO.		LPC313x Peripherals	
APPROVALS	DATE		
DRAWN	D. Consiglio	2/3/2010	NXP Semiconductors 1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/
CHECKED			
ISSUED			
SCALE			SIZE/FSCM NO. D DWG. NO. SCH-VAL313x-01 REV. 07 SHEET 4 OF 18

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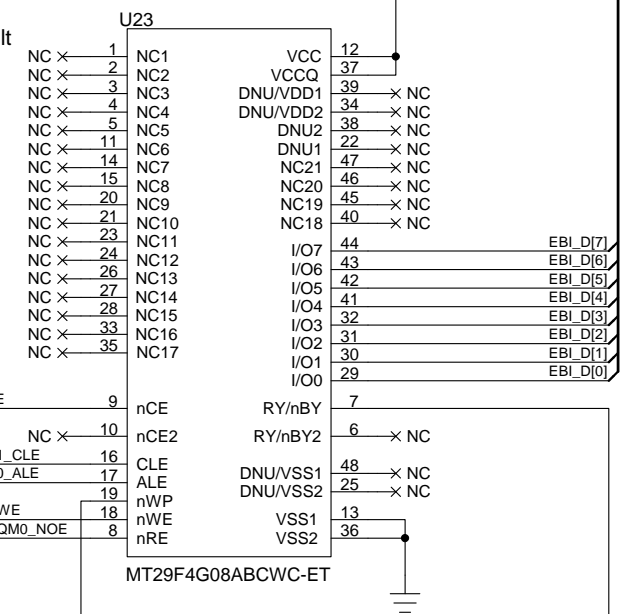


CONTRACT NO.		EBI ADDR / LCD HDR Select	
APPROVALS	DATE	NXP Semiconductors	
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE	REV
ISSUED	12/03/2009	D	SCH-VAL313x-01 07
SCALE		SHEET	5 OF 18

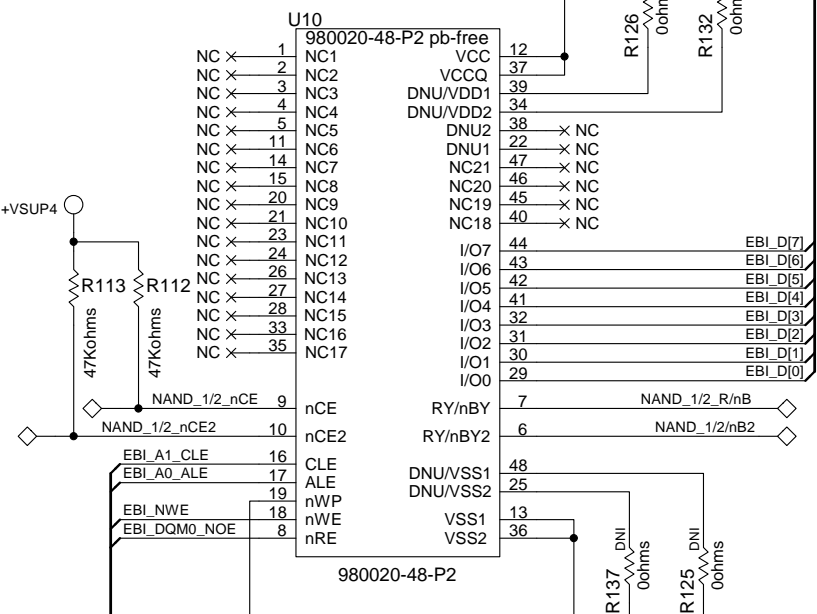
NAND Device	SUP4 Voltage
MT29F8G08AAAWP	3.3V
MT29F2G08AADWP:D	3.3V
MT29F4G08ABCWC	1.8V

default

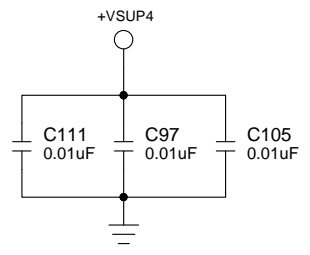
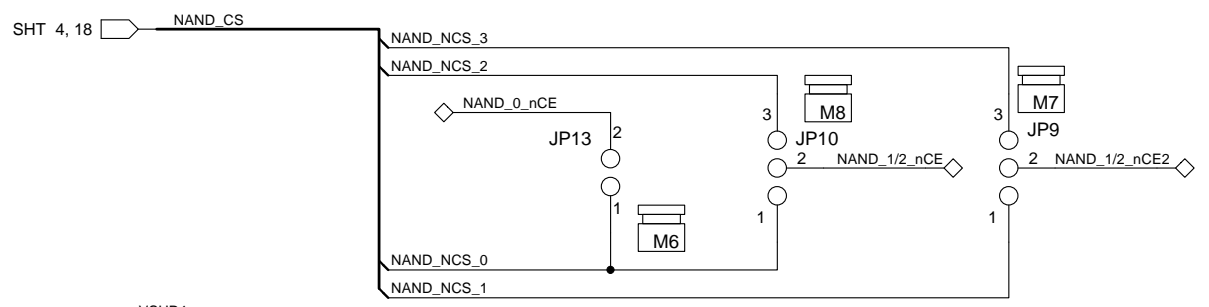
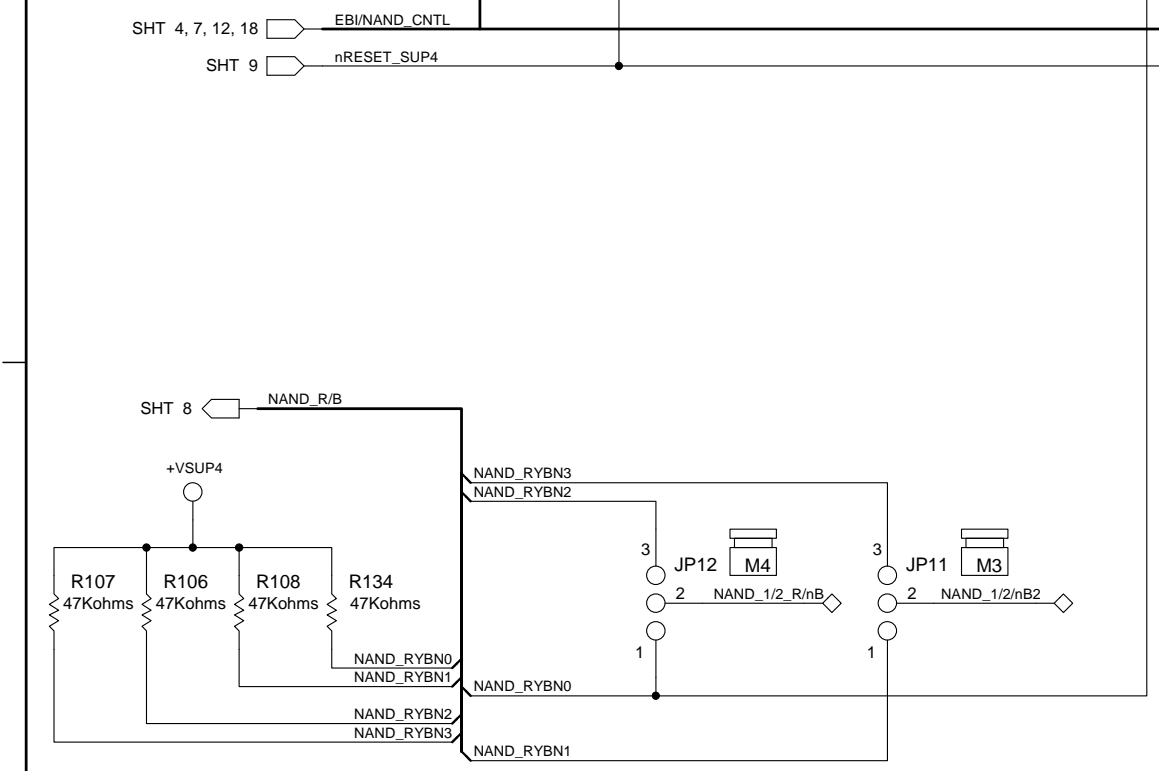
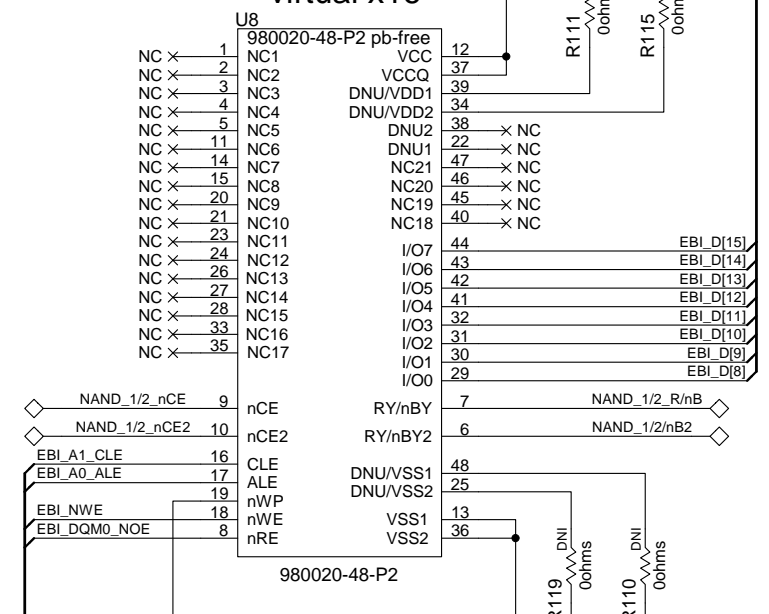
NAND Device 0



NAND Device 1



NAND Device 2 virtual x16



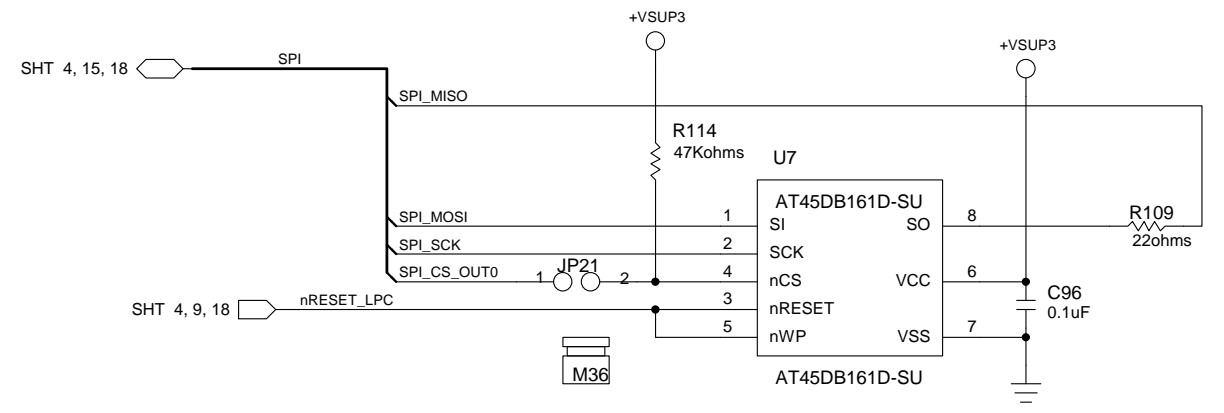
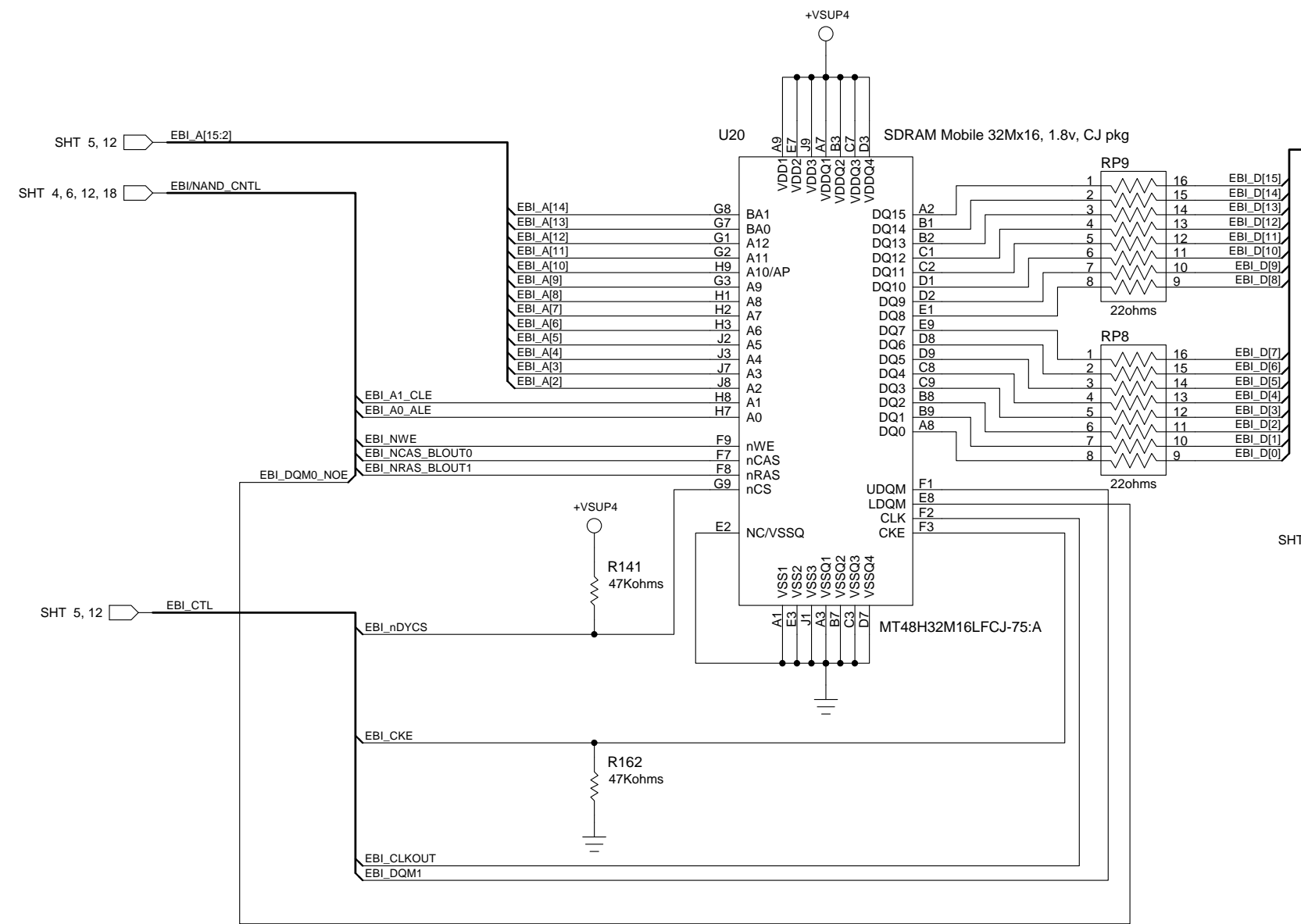
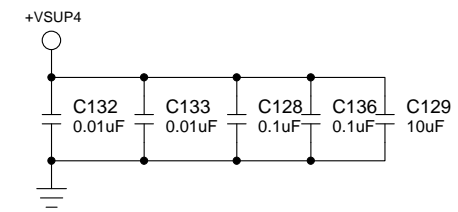
CONTRACT NO.		NAND Flash	
APPROVALS	DATE		
DRAWN	D. Consiglio	2/3/2010	NXP Semiconductors 1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/
CHECKED			
ISSUED	12/03/2009	SIZE	FSCM NO.
		DWG. NO.	SCH-VAL313x-01
		REV	07
		SHEET	6 OF 18

REVISIONS			
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Boot Mode Select			
BOOT Device	Mode-2	Mode-1	Mode-0
NAND	1-2	1-2	1-2
SPI	2-3	1-2	1-2
DFU	1-2	2-3	1-2
SD/MMC	2-3	2-3	1-2
Reserved	1-2	1-2	2-3
EBI NSTCS0/1	2-3	1-2	2-3
UART	1-2	2-3	2-3
Test	2-3	2-3	2-3

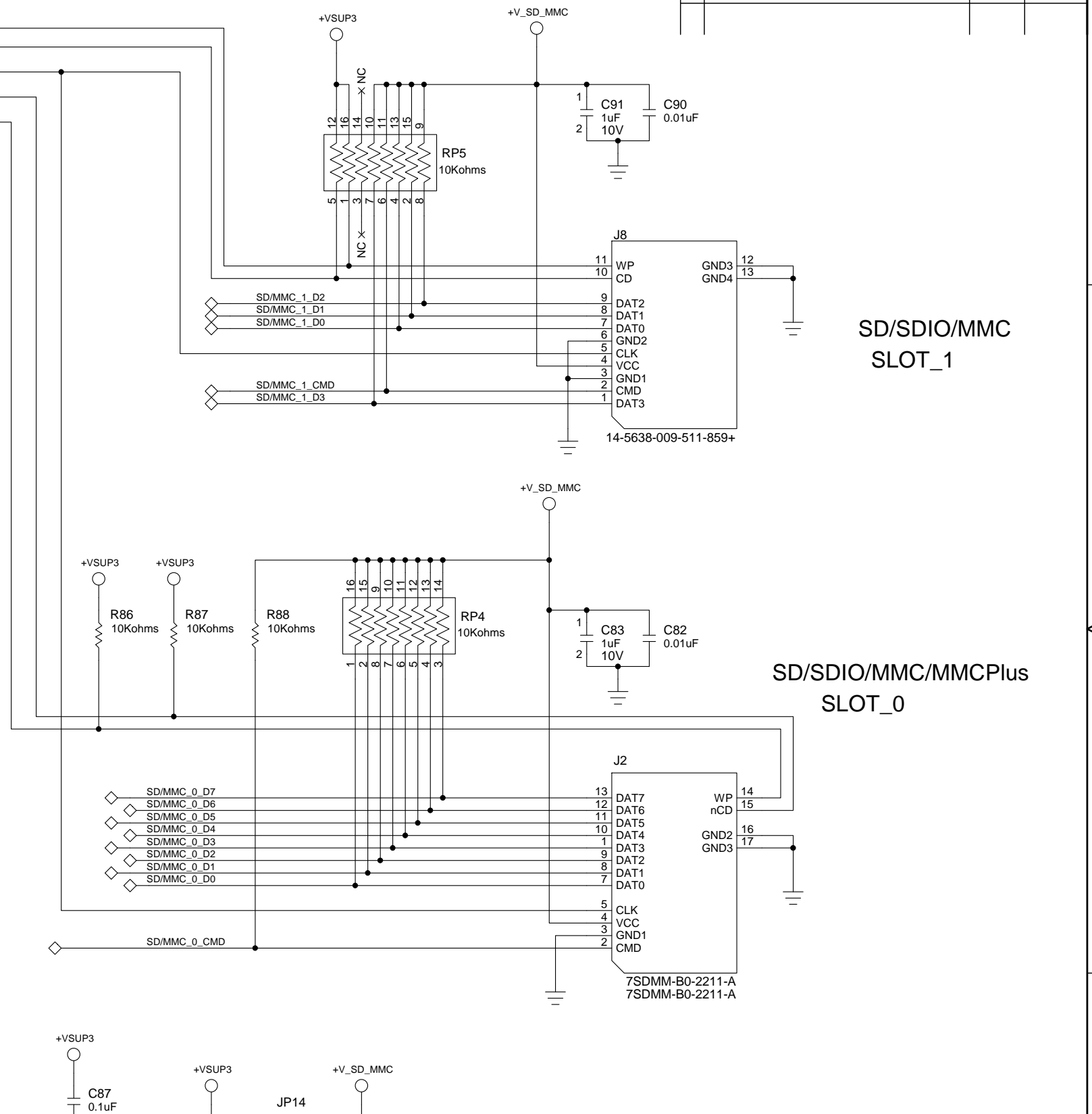
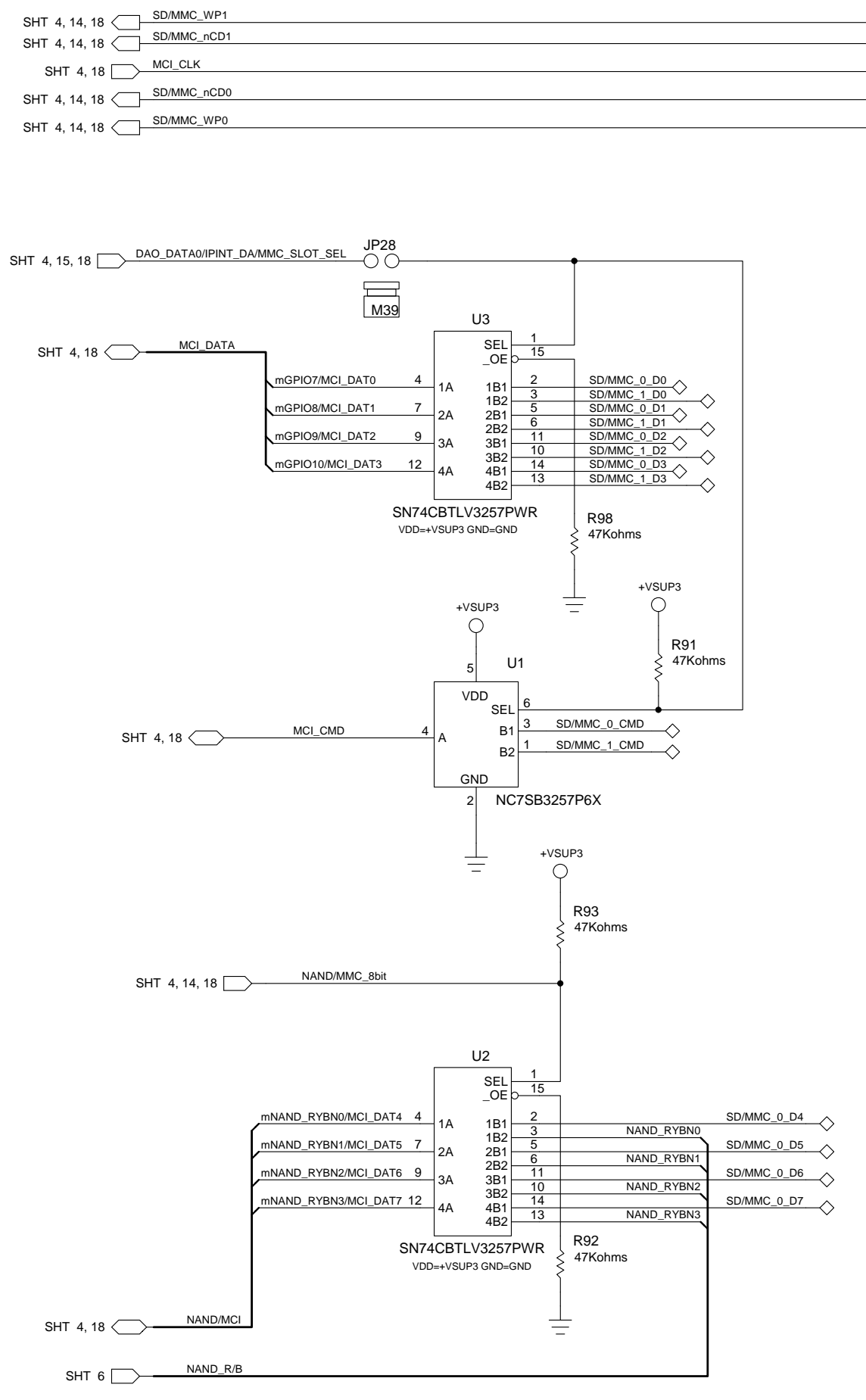
SDRAM Device	SUP4 Voltage
MT48LC16M16A2BG	3.3V
MT48H32M16LFCJ	1.8V
MT48H16M16LFBF	1.8V

default



CONTRACT NO.		SDRAM / SPI Flash / Boot Mode	
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CHECKED		SIZE	DWG. NO.
ISSUED	12/03/2009	D	SCH-VAL313x-01
		SCALE	SHEET 7 OF 18

REVISIONS		DATE	APPROVED
REV	DESCRIPTION		

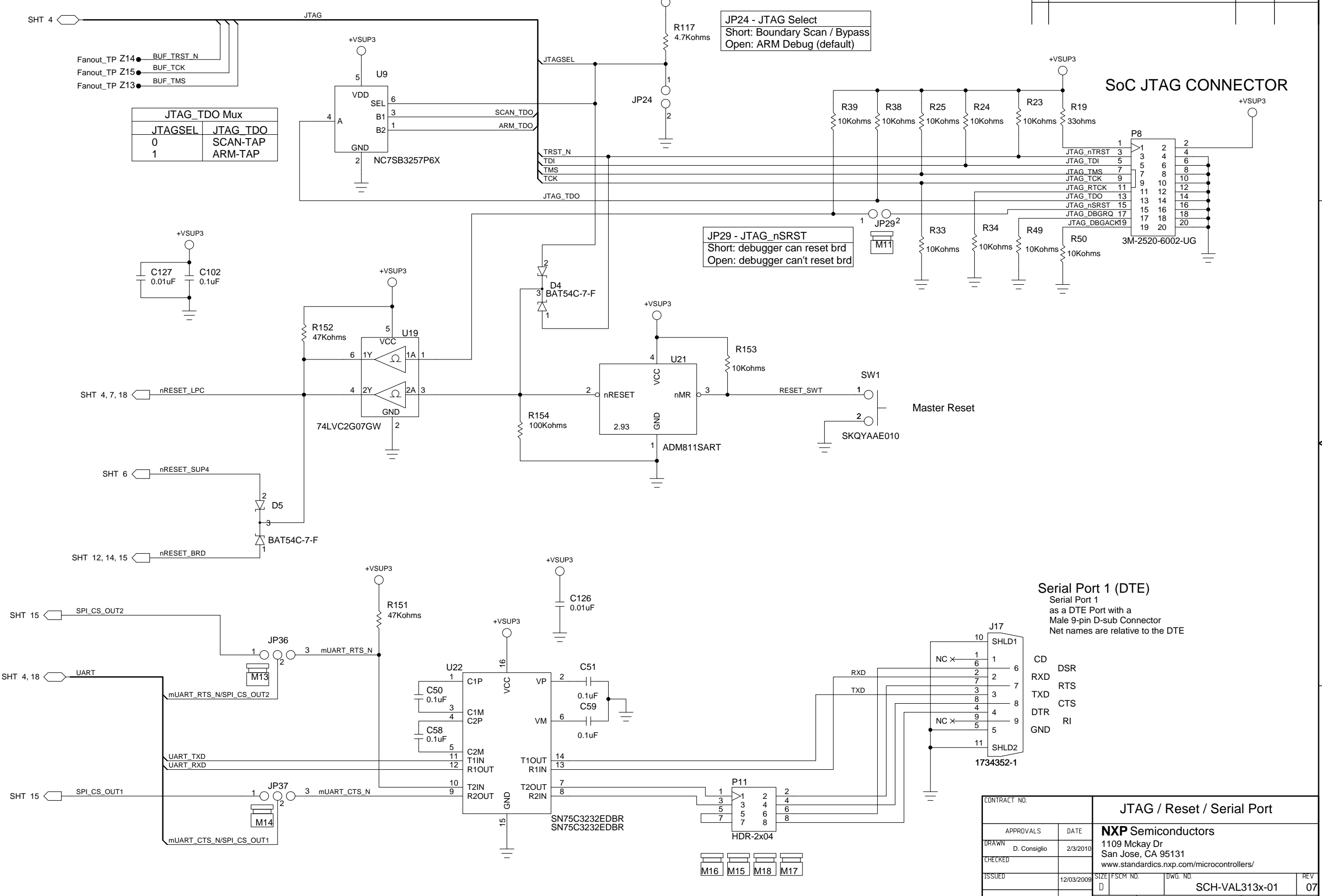


SD/SDIO/MMC
SLOT_1

SD/SDIO/MMC/MMCPlus
SLOT_0

CONTRACT NO.		SD/SDIO/MMC/MMCPlus	
APPROVALS	DATE	NXP Semiconductors	
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CHECKED		SIZE	REV
ISSUED	12/03/2009	D	SCH-VAL313x-01 07
SCALE		SHEET 8 OF 18	

REVISIONS		DATE	APPROVED
REV	DESCRIPTION		



JTAG_TDO Mux

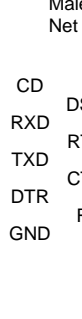
JTAGSEL	JTAG_TDO
0	SCAN-TAP
1	ARM-TAP

JP24 - JTAG Select
 Short: Boundary Scan / Bypass
 Open: ARM Debug (default)

JP29 - JTAG_nSRST
 Short: debugger can reset brd
 Open: debugger can't reset brd

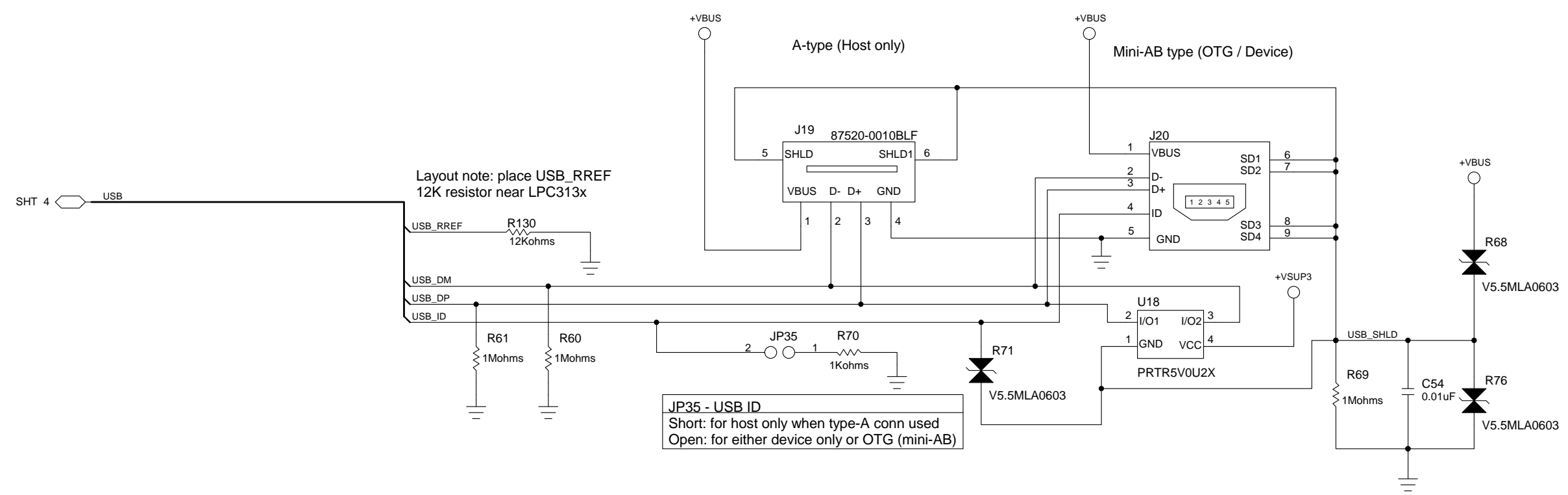
Master Reset

Serial Port 1 (DTE)
 Serial Port 1
 as a DTE Port with a
 Male 9-pin D-sub Connector
 Net names are relative to the DTE

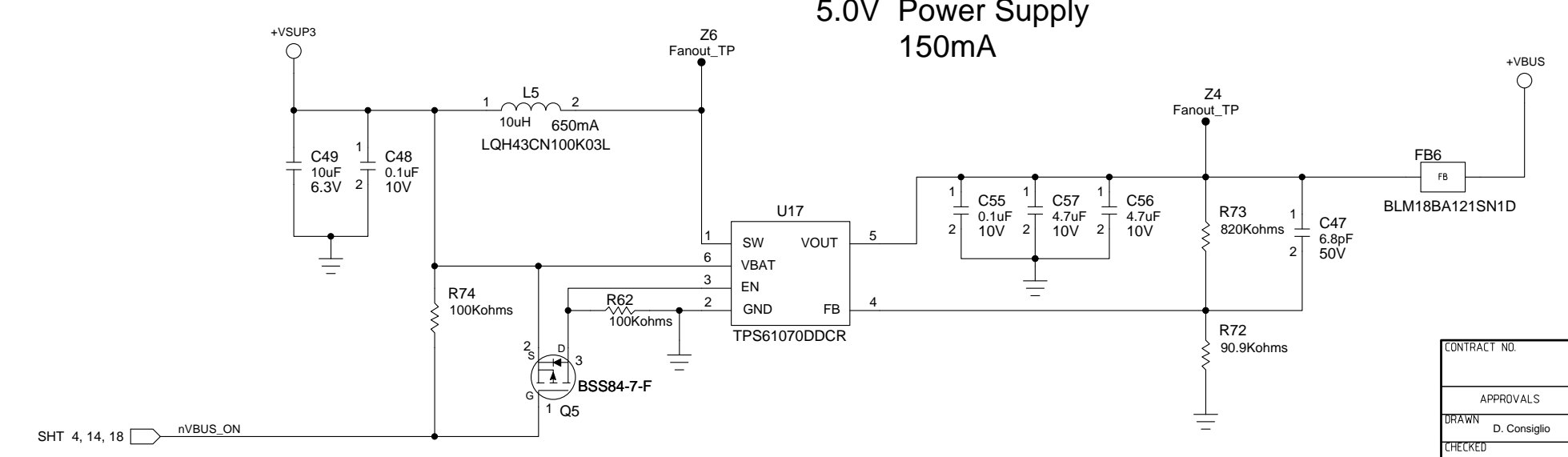


CONTRACT NO.		JTAG / Reset / Serial Port	
APPROVALS	DATE	NXP Semiconductors	
DRAWN	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE	FWSCM NO.
ISSUED	12/03/2009	D	DWG. NO. SCH-VAL313x-01
SCALE		REV 07	
		SHEET 9 OF 18	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

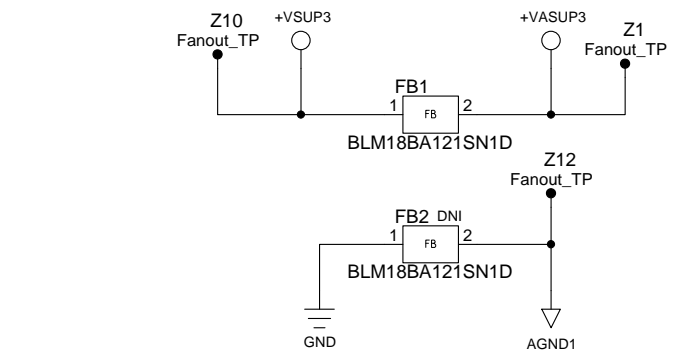
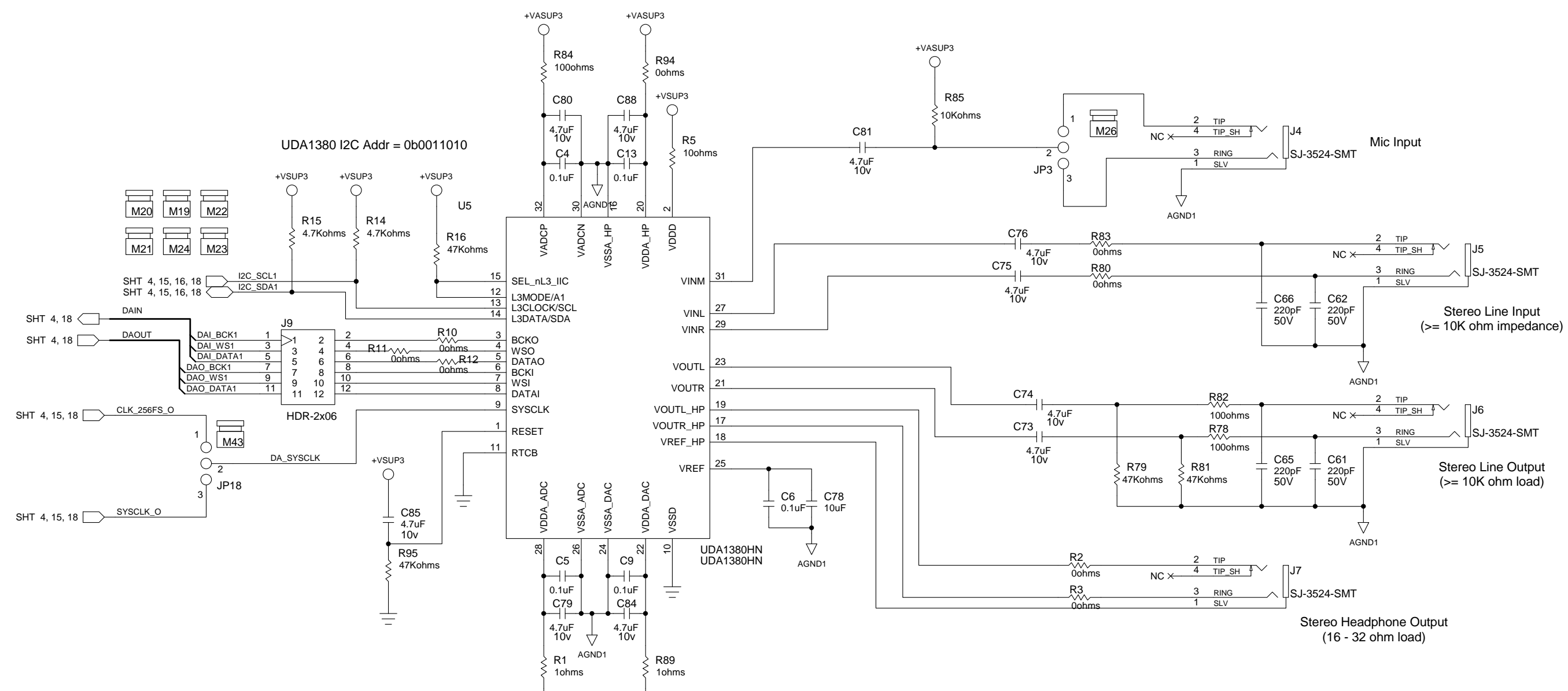


5.0V Power Supply 150mA



CONTRACT NO.		USB	
APPROVALS	DATE	NXP Semiconductors	
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE	REV
ISSUED	12/03/2009	D	SCH-VAL313x-01 07
SCALE		SHEET 10 OF 18	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

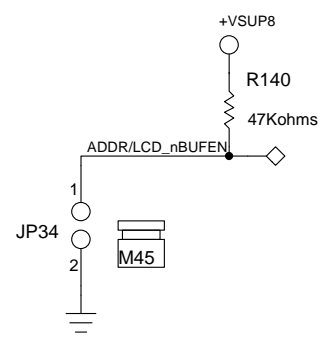


AGND1 & GND are connected together by the exposed gnd pad on the underside of UDA1380HN

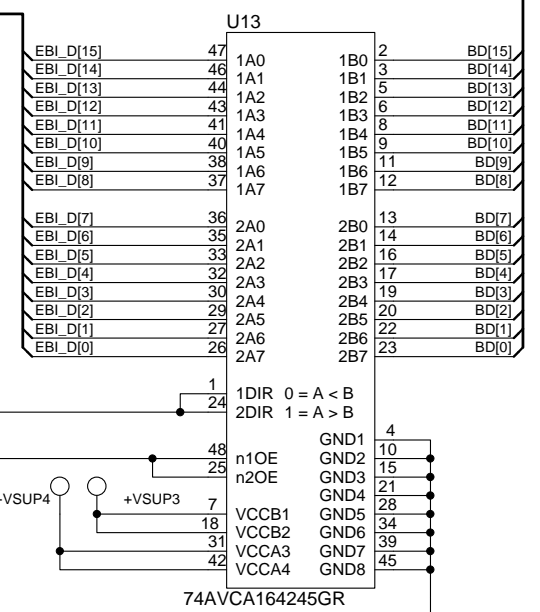
CONTRACT NO.		Stereo Audio Codec	
APPROVALS	DATE	NXP Semiconductors	
DRAWN	D. Consiglio	1109 Mckay Dr	
CHECKED		San Jose, CA 95131	
ISSUED	12/03/2009	www.standardics.nxp.com/microcontrollers/	
		SIZE	D
		FSCM NO.	
		DWG. NO.	SCH-VAL313x-01
		REV	07
		SCALE	SHEET 11 OF 18

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

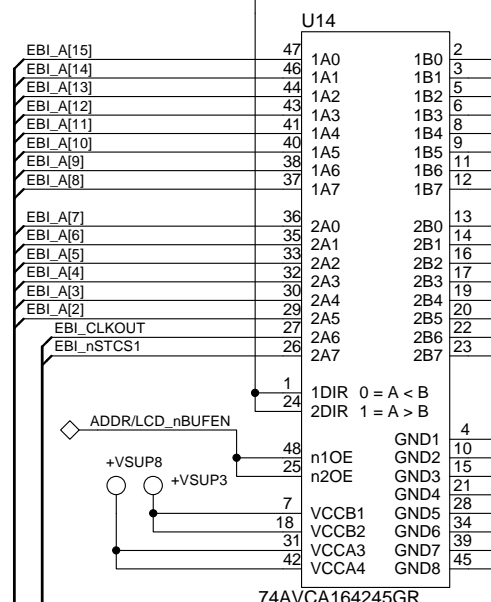
EBI BUFFER ENA
 EBI LCD Short
 LCD Open



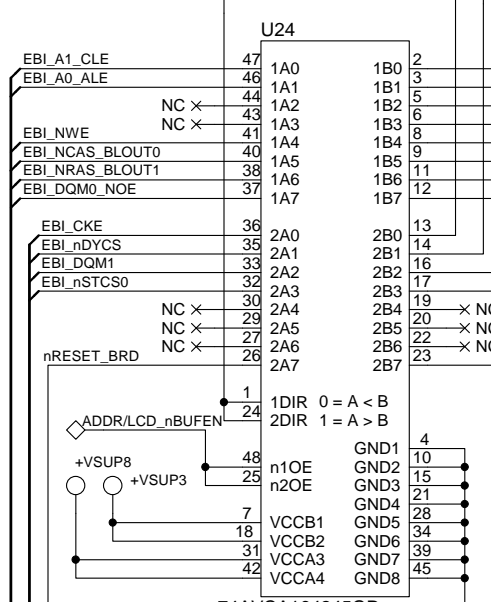
SHT 4, 6, 7, 18 EBI_D[15:0]



+VSUP8

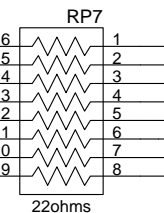


+VSUP8



Fanout_TP
 Fanout_TP
 Fanout_TP

R59 22ohms



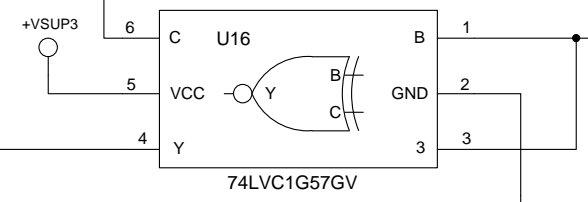
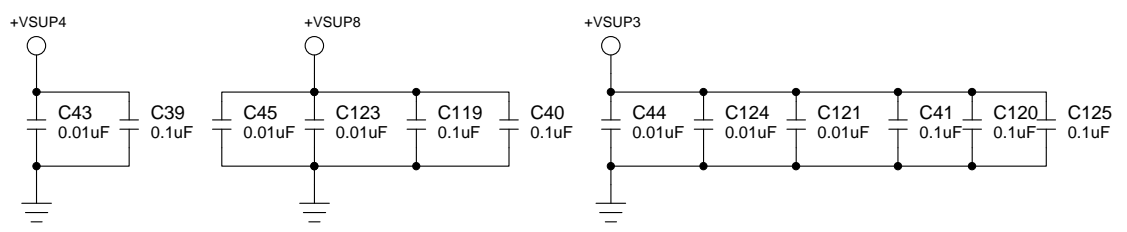
BD[15:0] SHT 13, 14, 15, 17

BA[15:0] SHT 13, 14, 15, 17

BEBI_CLKOUT SHT 17

BEBI_STAT_CTL SHT 13, 14, 15, 17

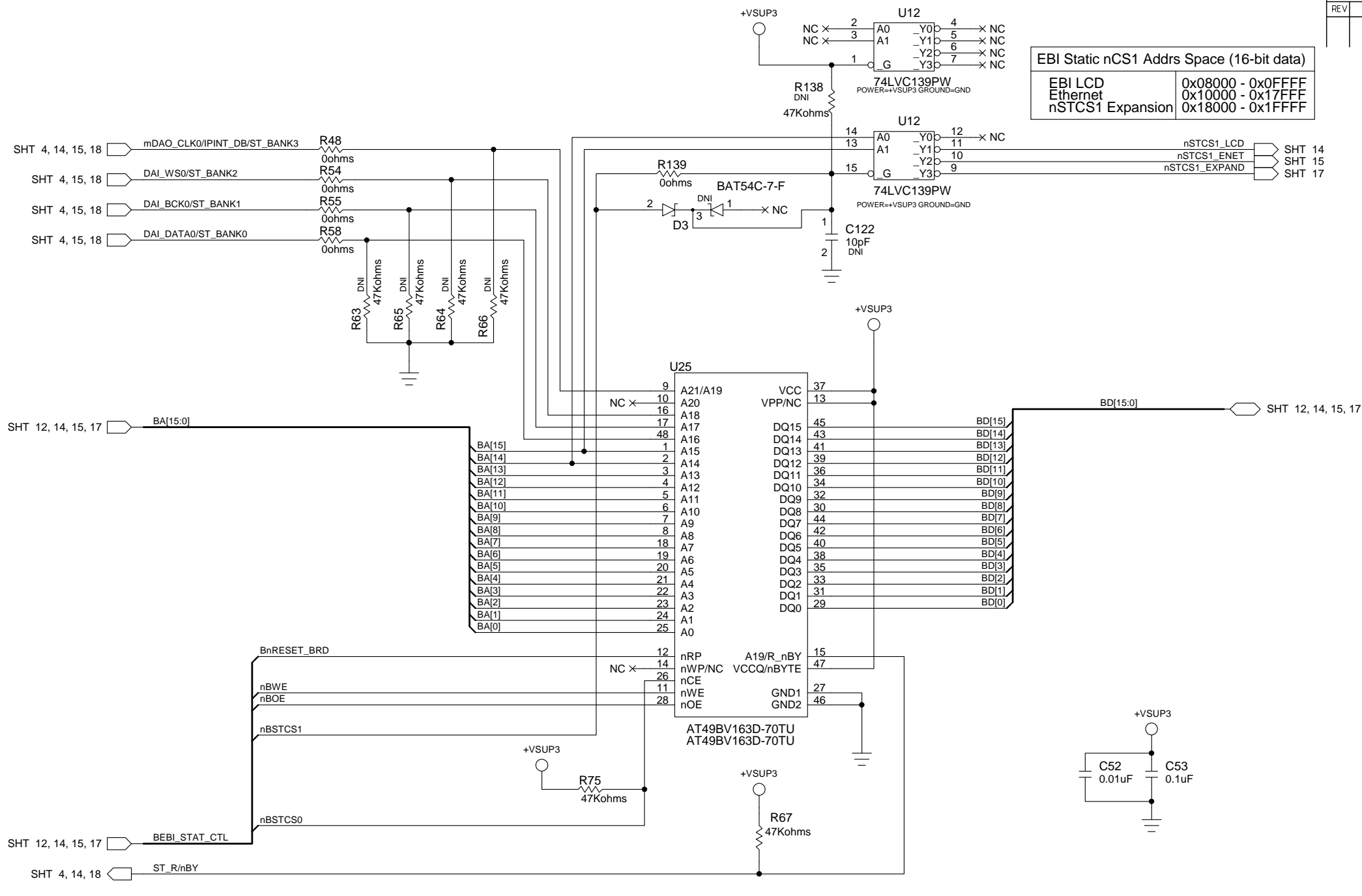
SHT 5, 7 EBI_A[15:2]
 SHT 4, 6, 7, 18 EBI/NAND_CNTL
 SHT 5, 7 EBI_CTL
 SHT 9, 14, 15 nRESET_BRD



CONTRACT NO.		EBI Bus Buffers	
APPROVALS	DATE	NXP Semiconductors	
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE D	FSCM NO.
ISSUED	12/03/2009	DWG. NO. SCH-VAL313x-01	REV 07
SCALE		SHEET 12 OF 18	

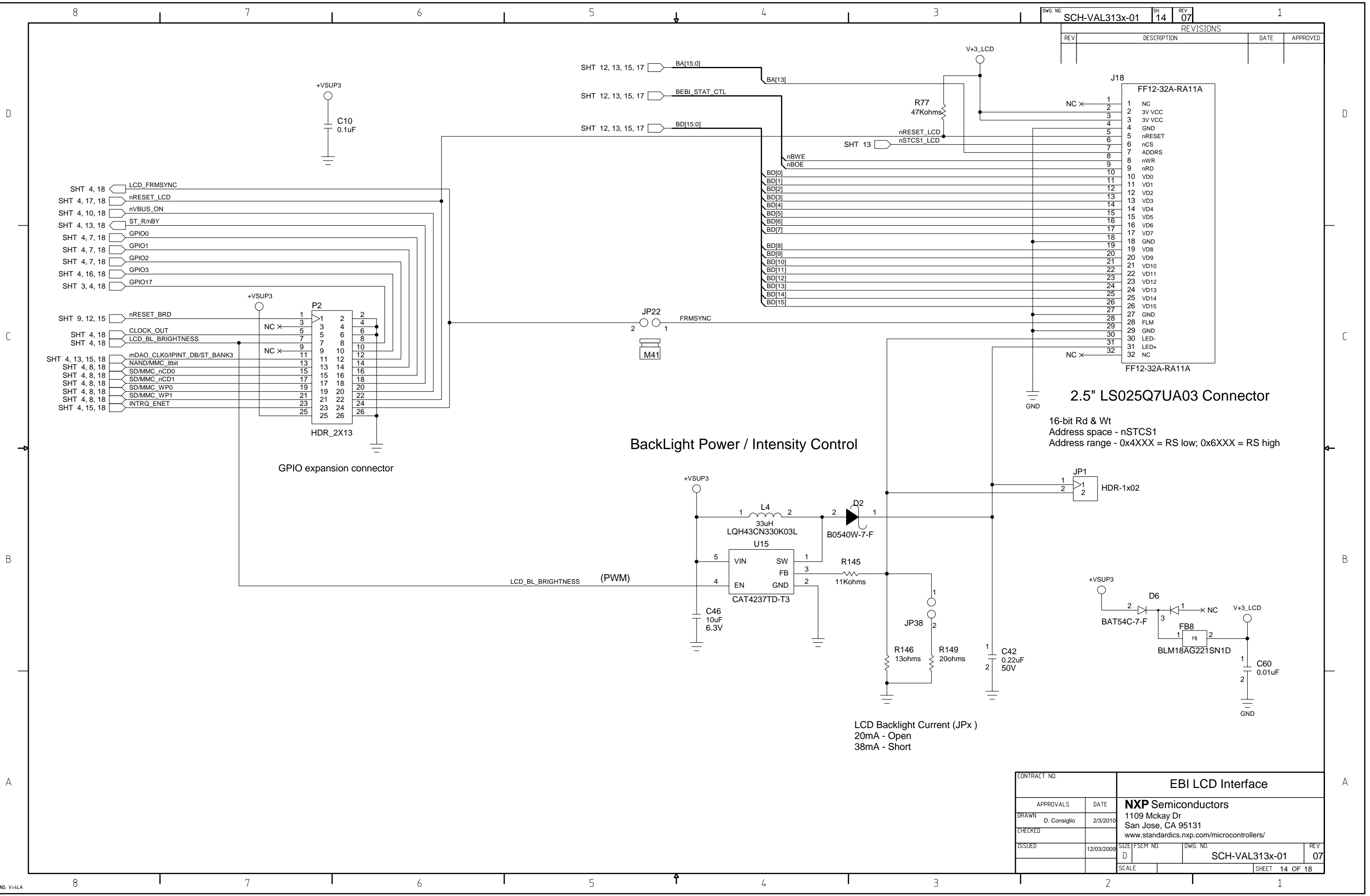
REVISIONS		DATE	APPROVED
REV	DESCRIPTION		

EBI Static nCS1 Adrs Space (16-bit data)	
EBI LCD	0x08000 - 0x0FFFF
Ethernet	0x10000 - 0x17FFF
nSTCS1 Expansion	0x18000 - 0x1FFFF



CONTRACT NO.		EBI NOR Flash	
APPROVALS	DATE	NXP Semiconductors	
DRAWN	D. Consiglio	1109 Mckay Dr	
CHECKED		San Jose, CA 95131	
ISSUED	12/03/2009	www.standardics.nxp.com/microcontrollers/	
SCALE		SIZE	D
		FSCM NO.	
		DWG. NO.	SCH-VAL313x-01
		REV	07
		SHEET 13 OF 18	

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BackLight Power / Intensity Control

2.5" LS025Q7UA03 Connector

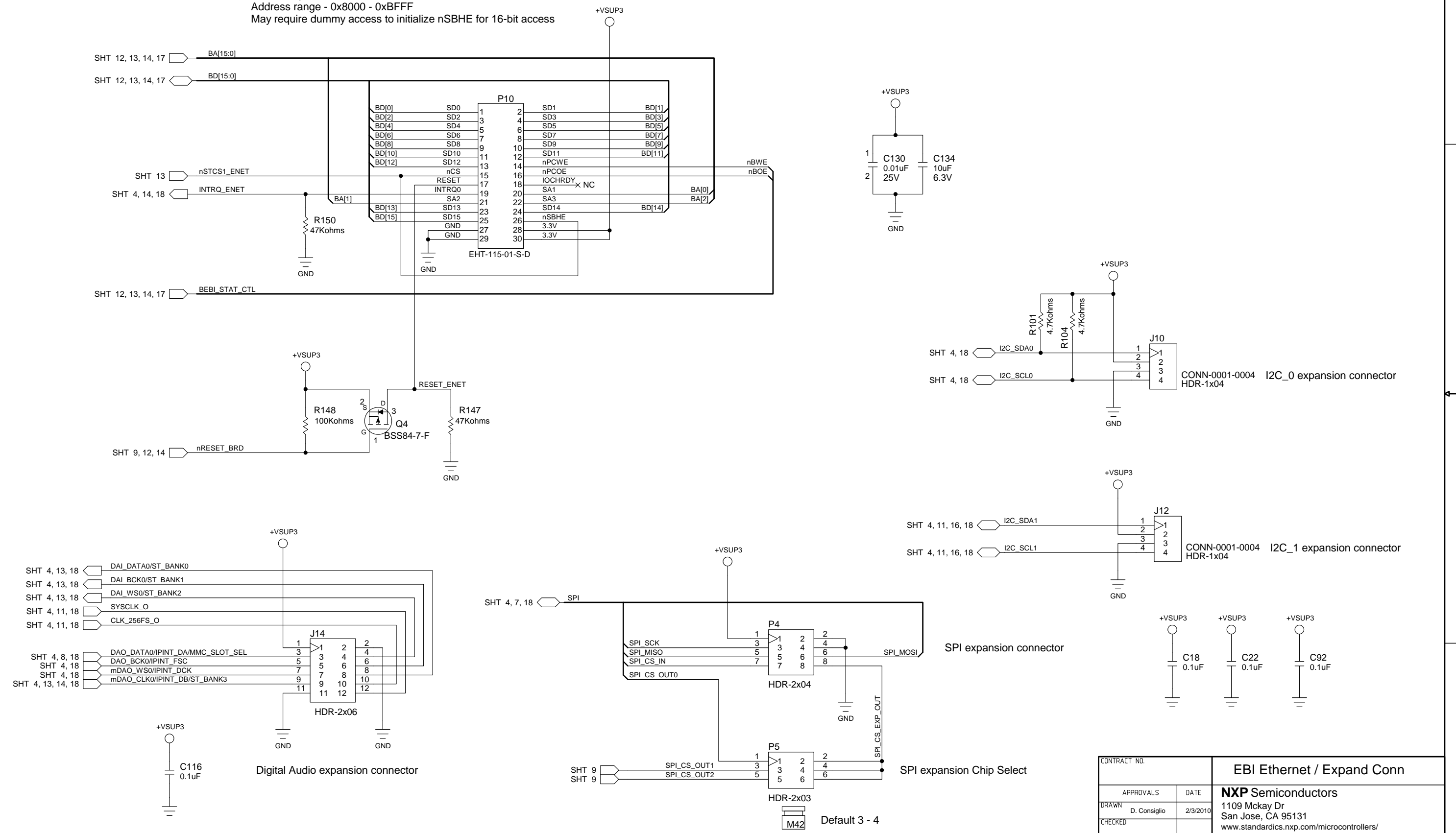
16-bit Rd & Wt
 Address space - nSTCS1
 Address range - 0x4XXX = RS low; 0x6XXX = RS high

LCD Backlight Current (JPx)
 20mA - Open
 38mA - Short

CONTRACT NO.		EBI LCD Interface	
APPROVALS	DATE	NXP Semiconductors	
DRAWN	D. Consiglio	1109 Mckay Dr	
CHECKED	2/3/2010	San Jose, CA 95131	
ISSUED	12/03/2009	www.standardics.nxp.com/microcontrollers/	
SIZE	D	DWG. NO.	SCH-VAL313x-01
SCALE		REV	07
		SHEET 14 OF 18	

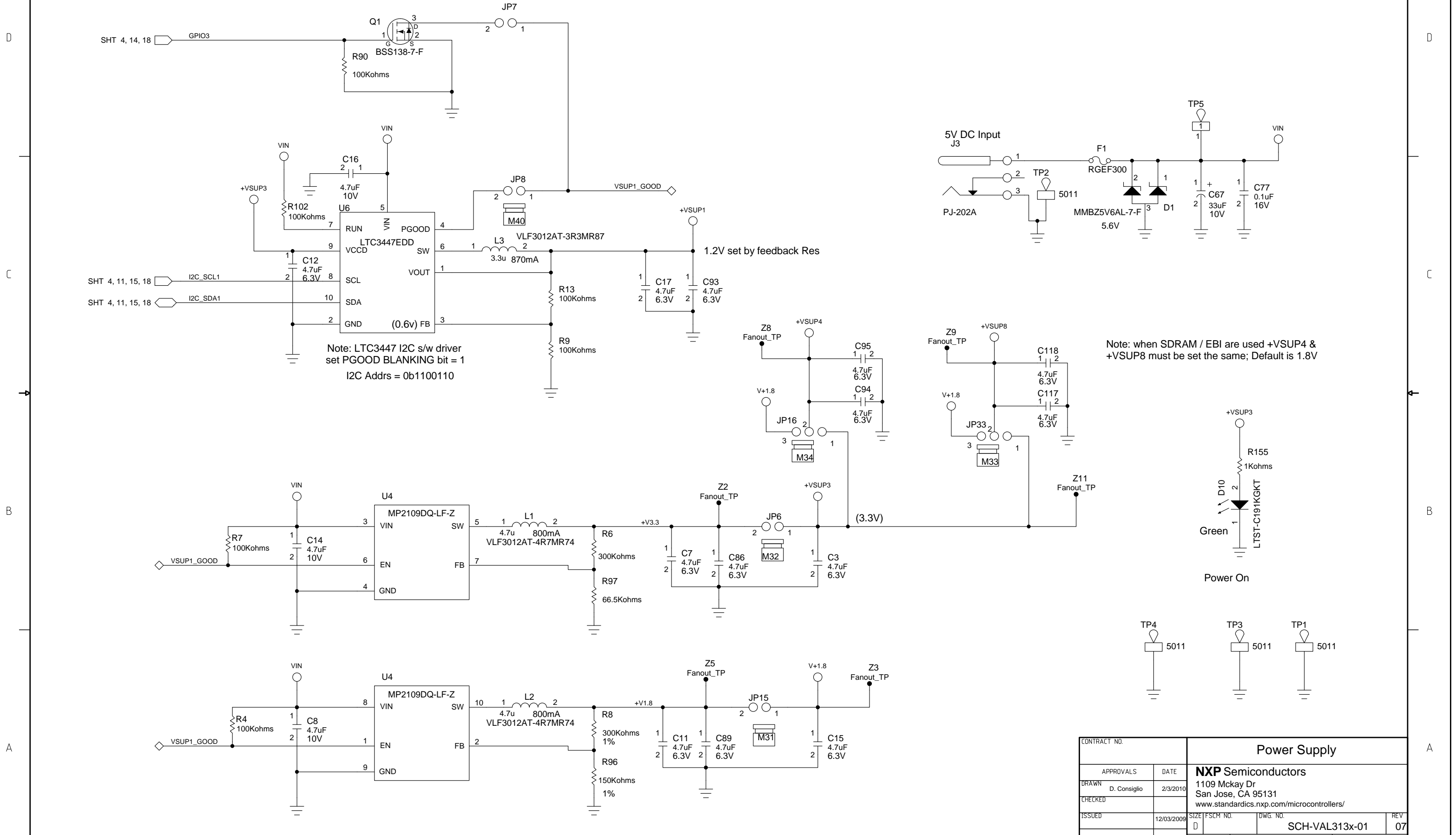
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

Ethernet Dongle
 CS8900A - 16-bit I/O Rd & Wt, no IOCHRDY
 Address space - nSTCS1
 Address range - 0x8000 - 0xBFFF
 May require dummy access to initialize nSBHE for 16-bit access



CONTRACT NO.		EBI Ethernet / Expand Conn	
APPROVALS	DATE	NXP Semiconductors	
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE	D
ISSUED	12/03/2009	FWSCM NO.	
		DWG. NO.	SCH-VAL313x-01
		REV	07
		SCALE	SHEET 15 OF 18

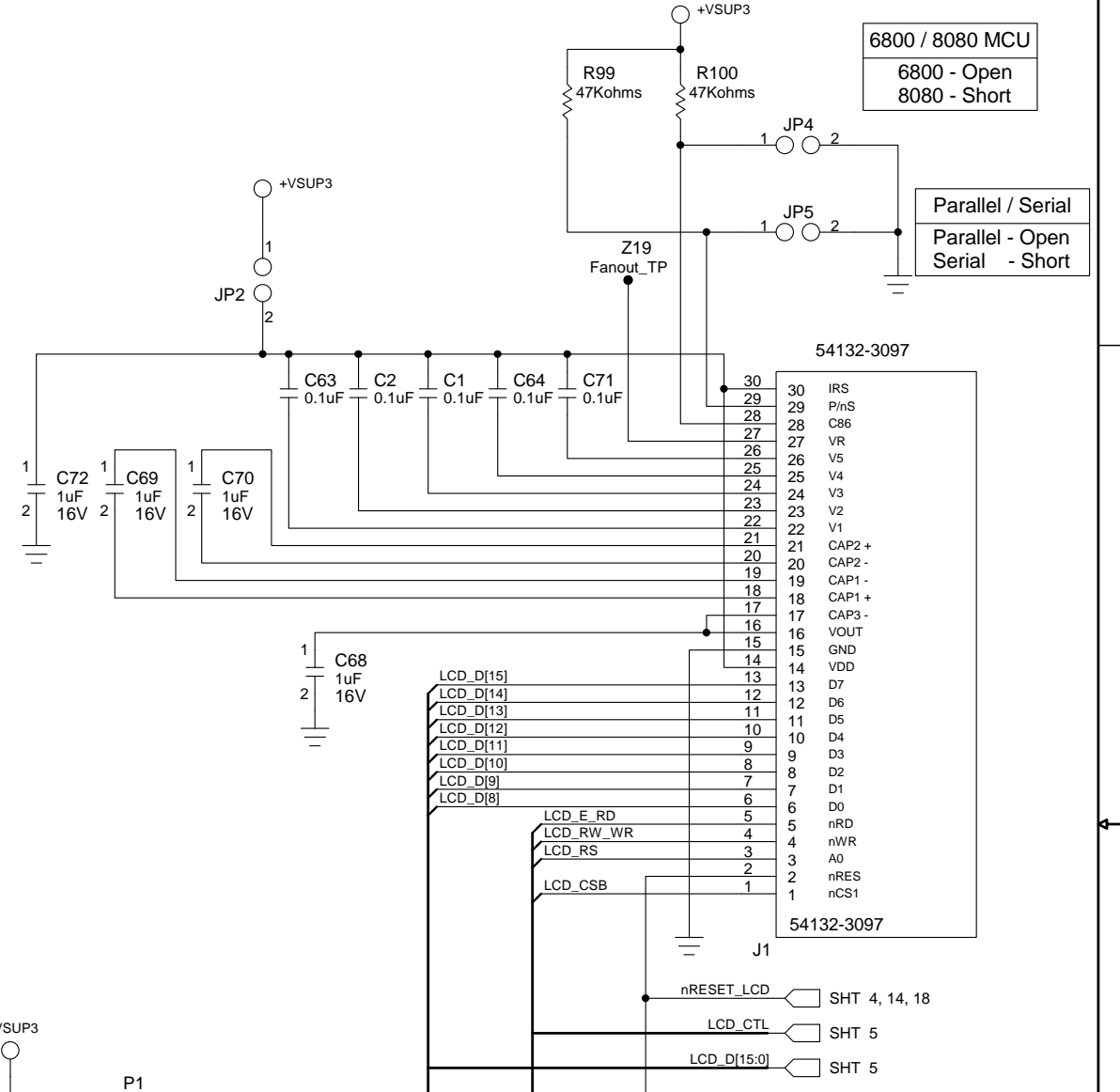
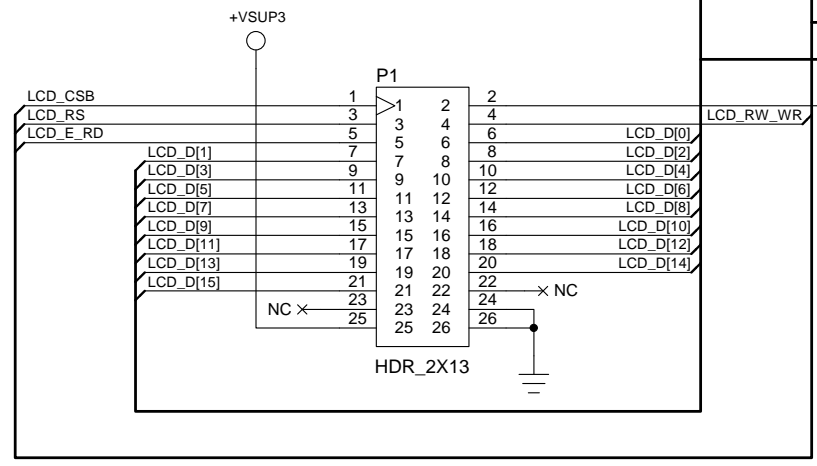
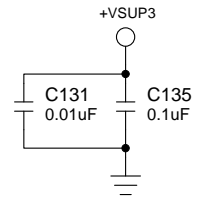
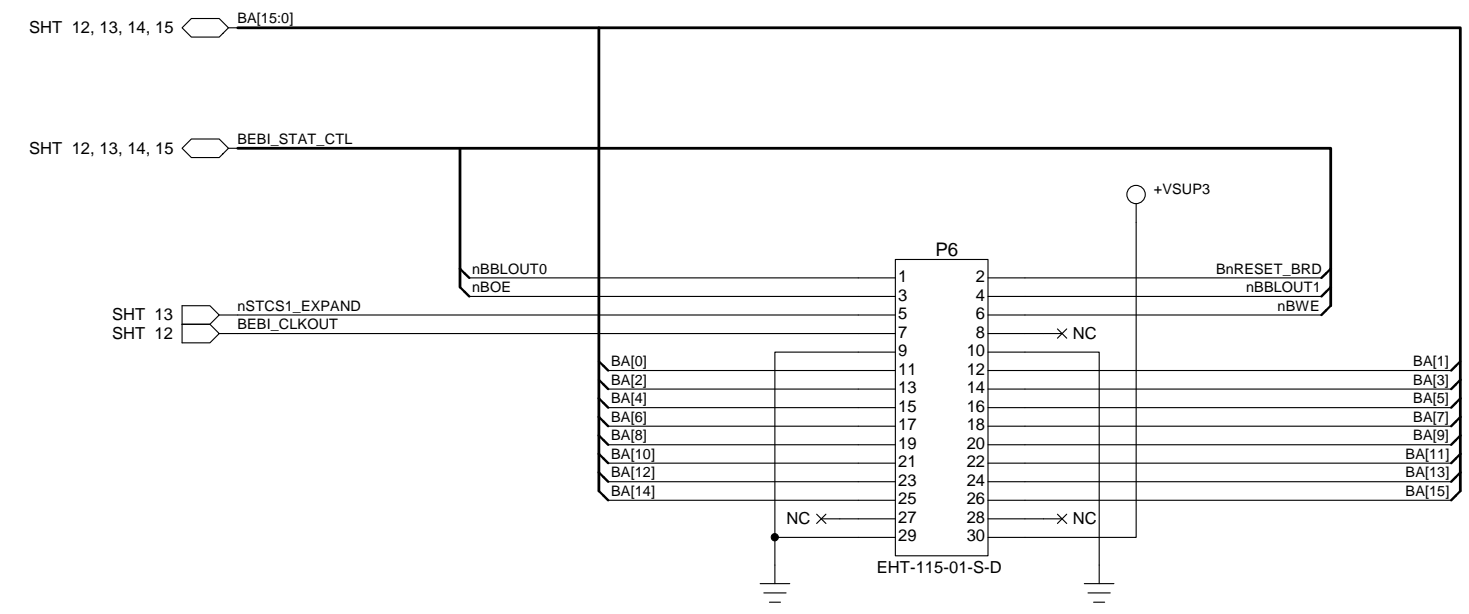
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



CONTRACT NO.		Power Supply	
APPROVALS	DATE	NXP Semiconductors	
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE D	FSCM NO. SCH-VAL313x-01
ISSUED	12/03/2009	DWG. NO.	REV 07
		SCALE	SHEET 16 OF 18

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

EBI Expansion Connector

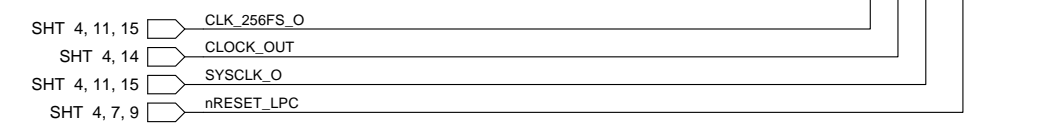
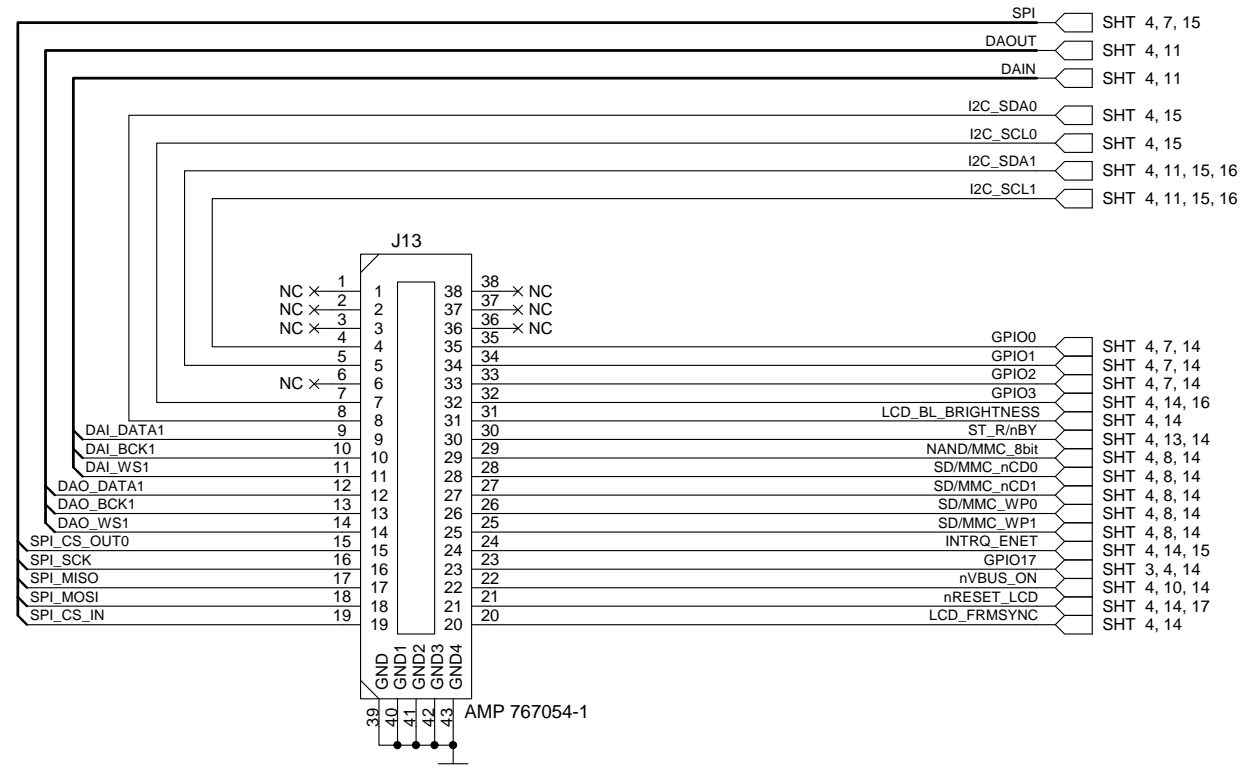
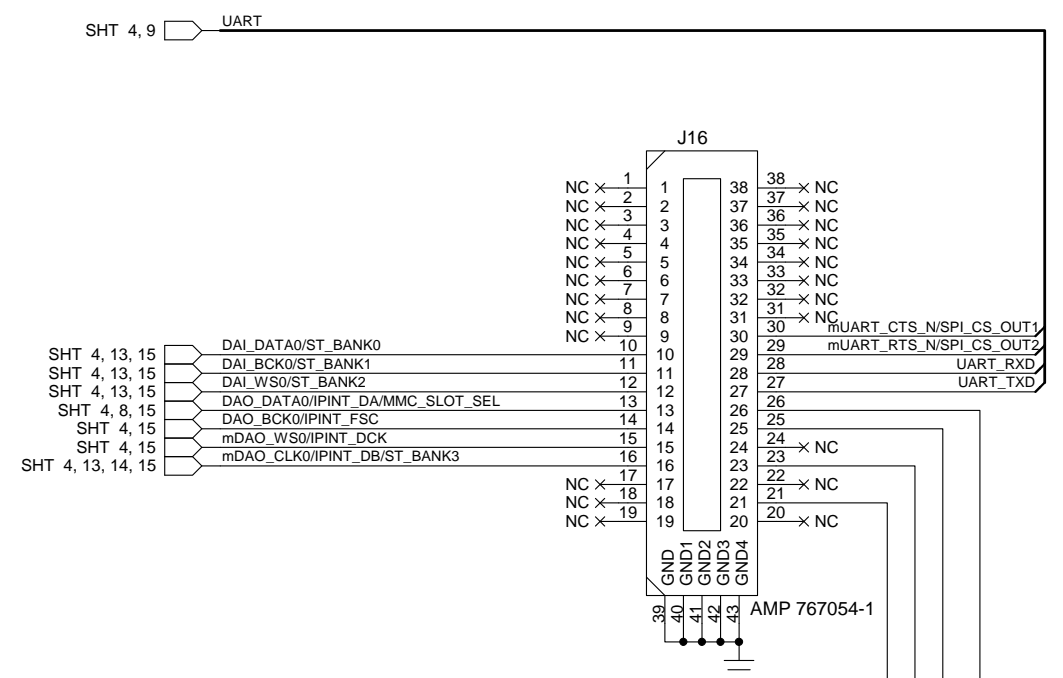
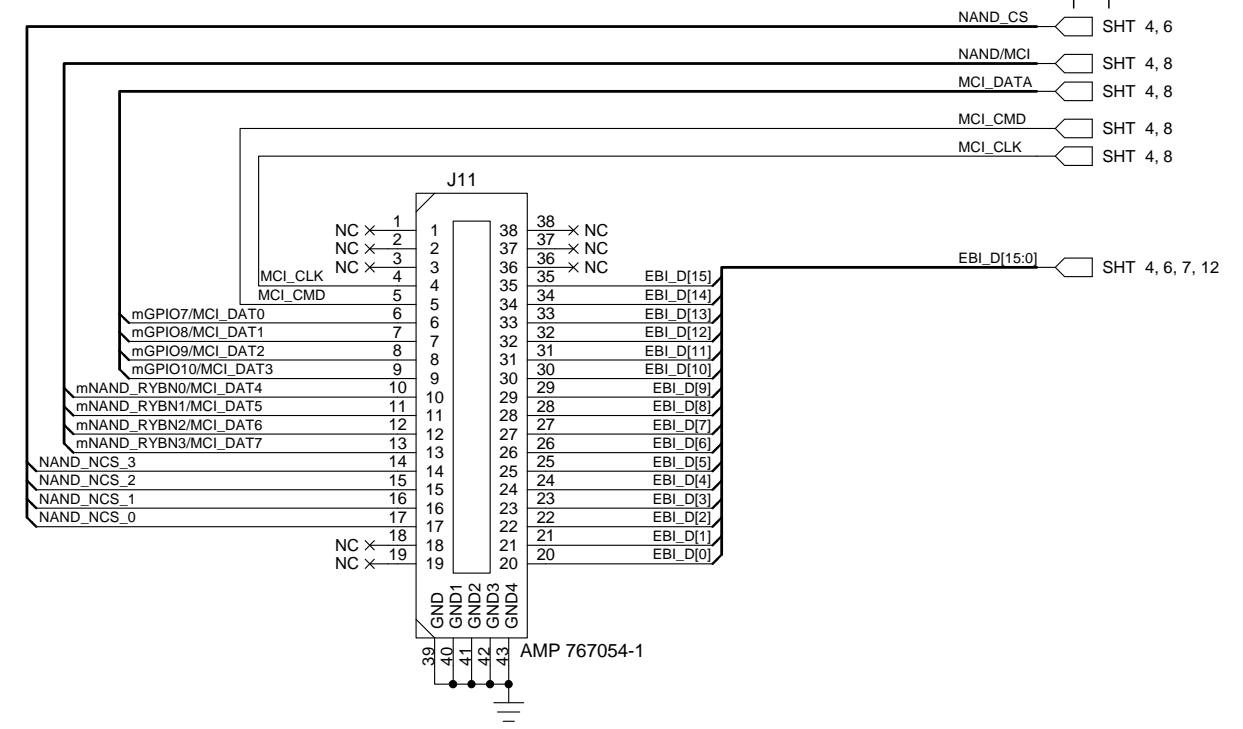
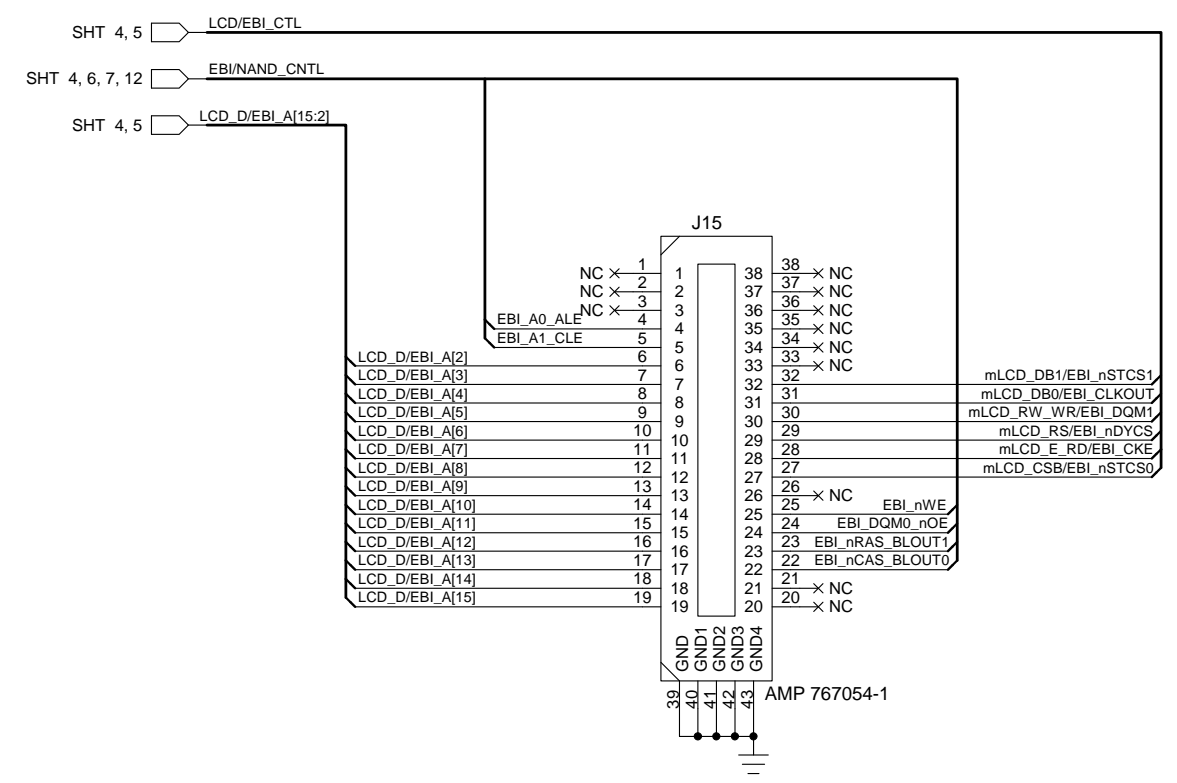


6800 / 8080 MCU
6800 - Open
8080 - Short

Parallel / Serial
Parallel - Open
Serial - Short

CONTRACT NO.		EBI Expansion / Par/Ser LCD		
APPROVALS	DATE	NXP Semiconductors		
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/		
CHECKED		SIZE	FSCM NO.	DWG. NO.
ISSUED	12/03/2009	D		SCH-VAL313x-01
		SCALE		REV 07
				SHEET 17 OF 18

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



CONTRACT NO.		Logic Analyzer Connectors	
APPROVALS	DATE	NXP Semiconductors	
DRAWN D. Consiglio	2/3/2010	1109 Mckay Dr San Jose, CA 95131 www.standardics.nxp.com/microcontrollers/	
CHECKED		SIZE FSCM NO.	DWG. NO. SCH-VAL313x-01
ISSUED	12/03/2009	REV	07
SCALE		SHEET 18 OF 18	