SMDK6410 CPU B'd (S3C6410 Evaluation Board) Schematics

Revision	Date	Description
Rev 0.0	2008. 02.20	Preliminary Version
Rev 0.1	2008. 04.02	Second Version (Refer to Sheet 2,4,6,7,8,9,13,14 and 15)
Rev 0.2	2008. 04.30	Third Version (Refer to Sheet 3, 8, 9 and 10)

Table of Contents

Part Reference

<Component><Number>

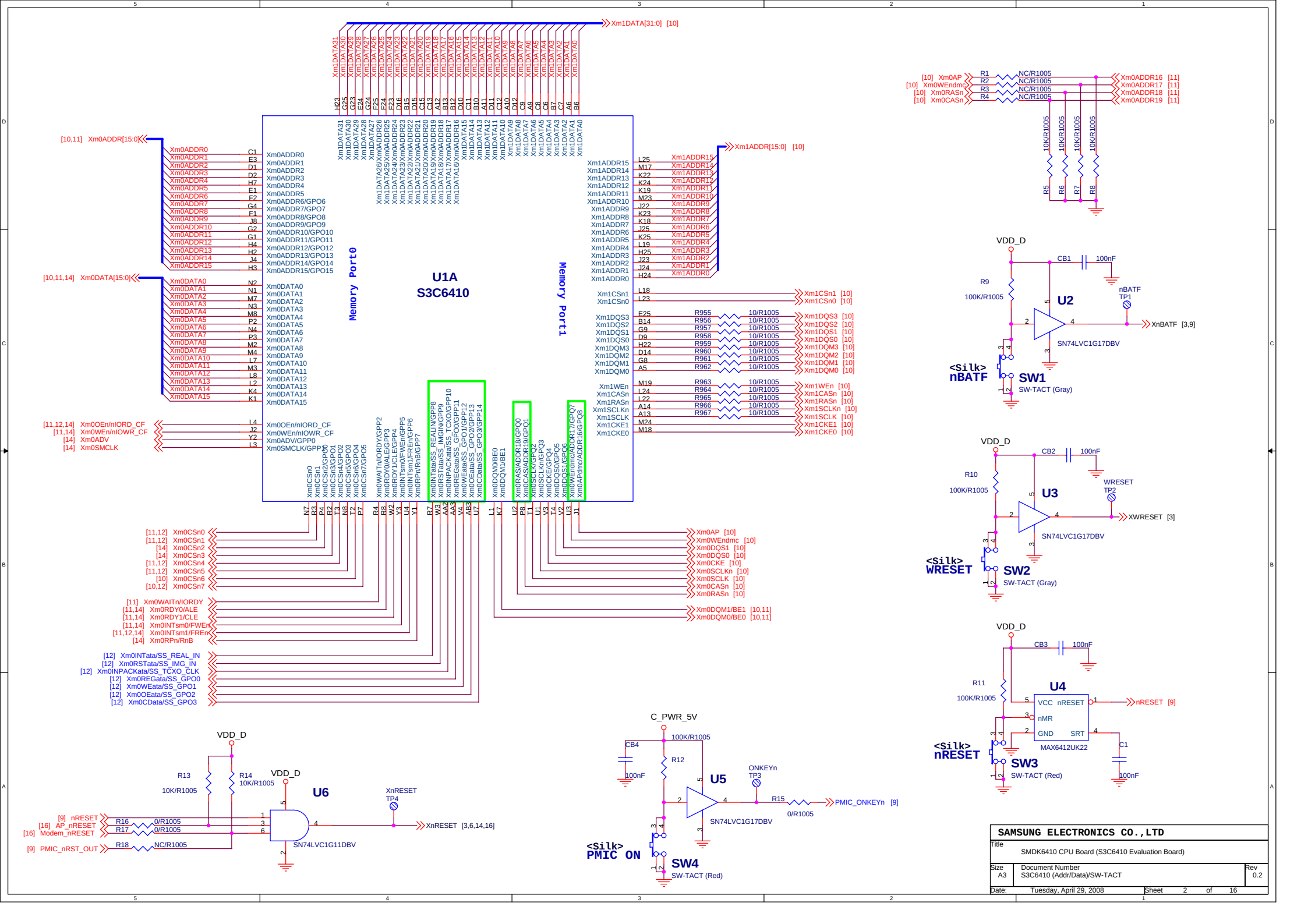
U : Component or Regurator IC
C : Capacitor
CB : Capacitor Bypass
CT : Capacitor Tantal
CTB : Capacitor Tantal Bypass
J : Jumper
JB : CPU or Base connector
JP : Jumper Power
R : Resistor
RA : Resistor Array
RP : Resistor Power
VR : Variable Resistor
L : Inductor
FB : Ferrite Bead
OSC : Oscillator
X : X-tal (Crystal)
Q : Transistor or FET
D : Diode
ZD : Zener Diode
LED : LED Diode
SW : SWitch Tact/Push
CON : CONnector
CFG : ConFiGure switch (DIP/Slide)
TP : Test Point (SMD)
TPH : Test Point Hole (Through Hole)
MTH: Mount Through Hole
MOD : MODule Interface connector

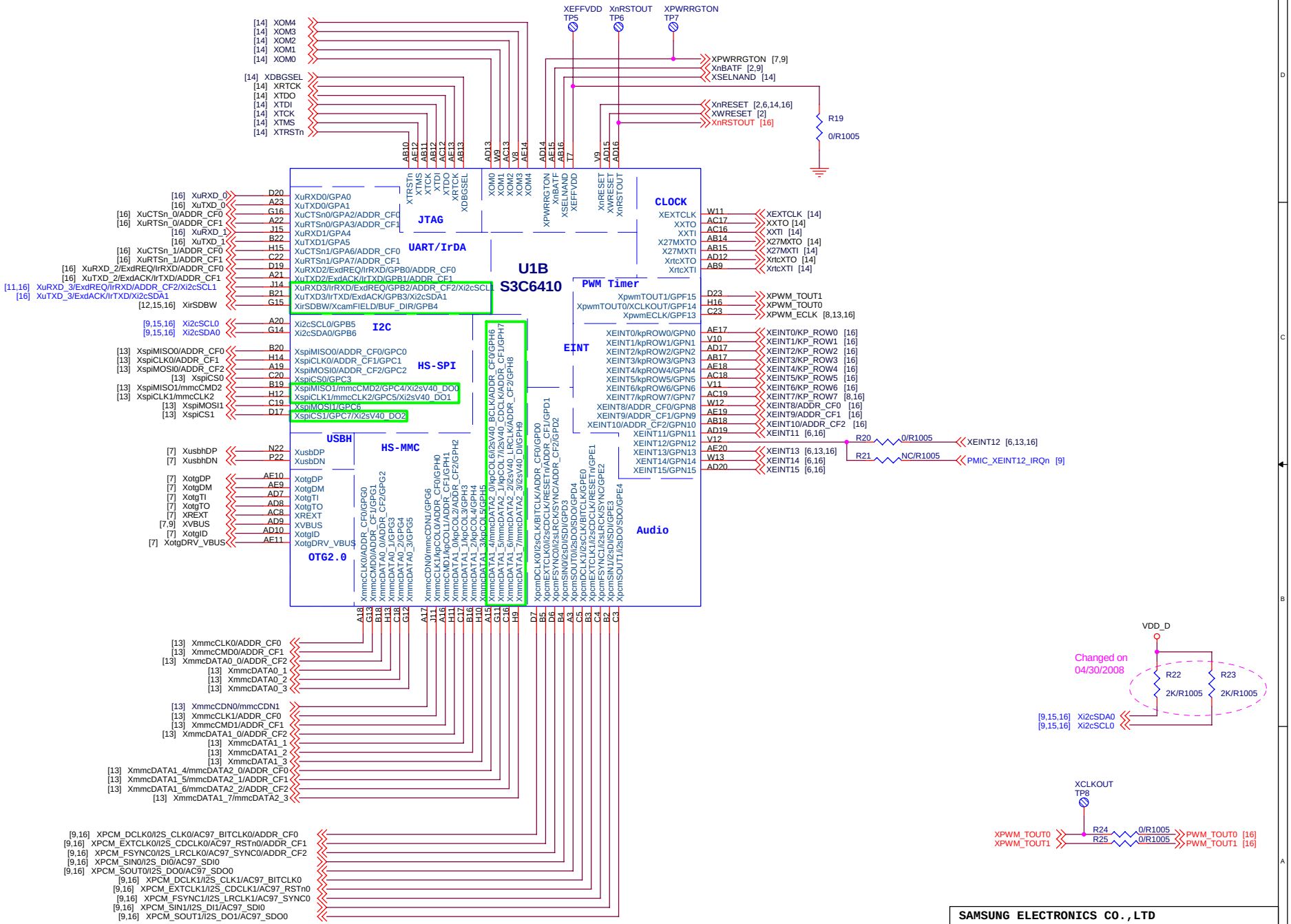
SAMSUNG ELECTRONICS CO.,LTD

Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)

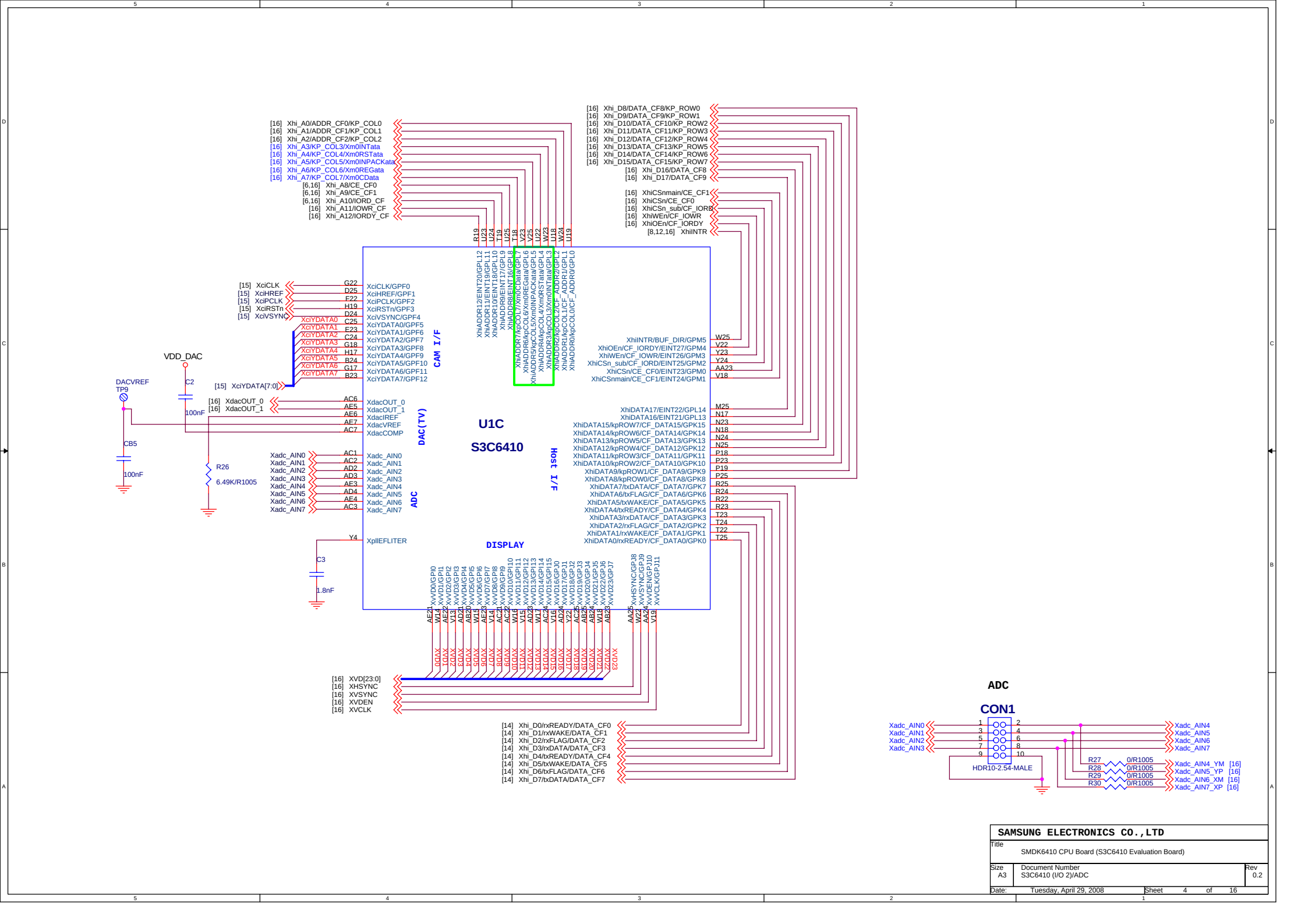
Size: A3 | Document Number: Revision History | Rev: 0.2

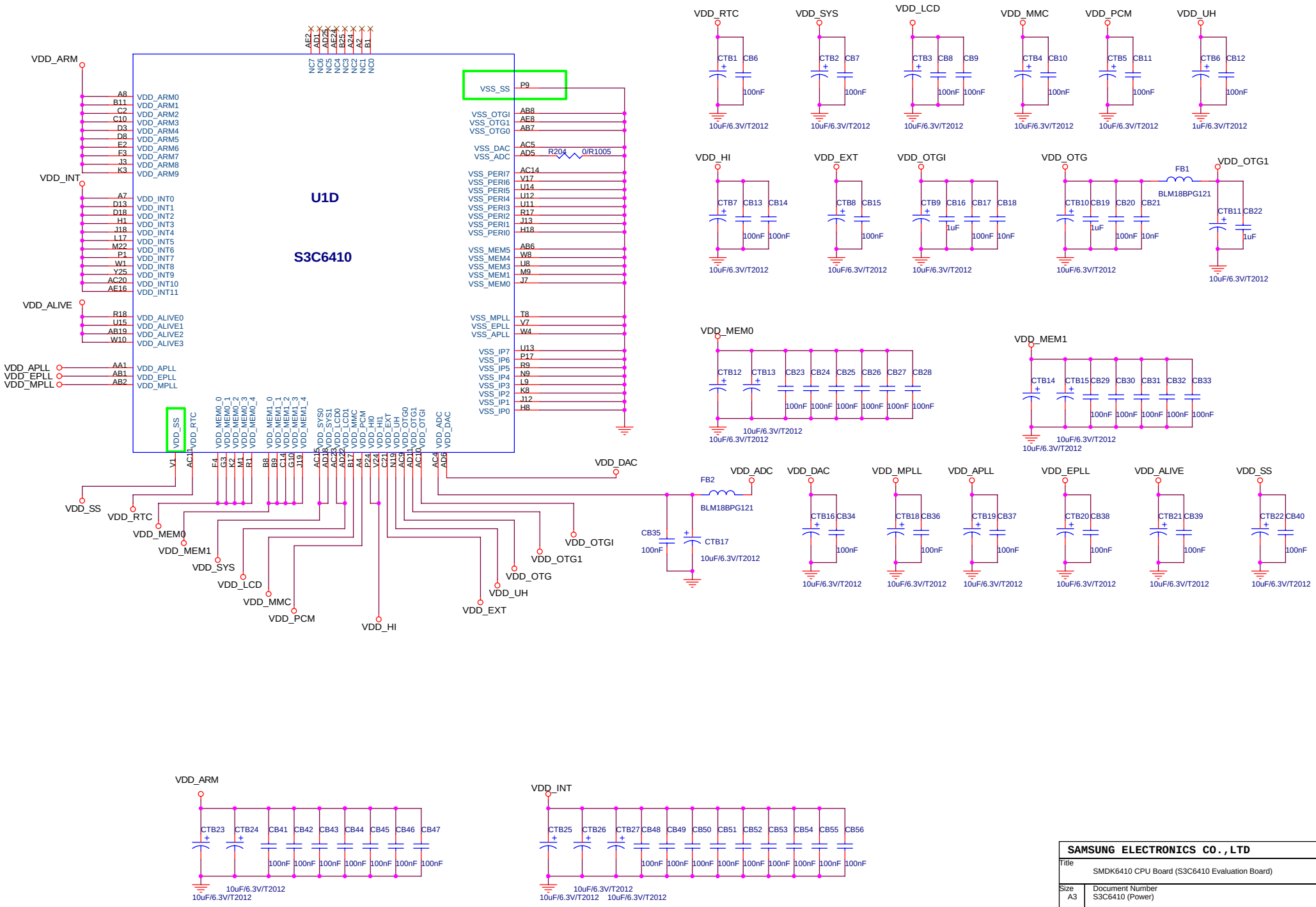
Date: Wednesday, April 30, 2008 | Sheet 1 of 16

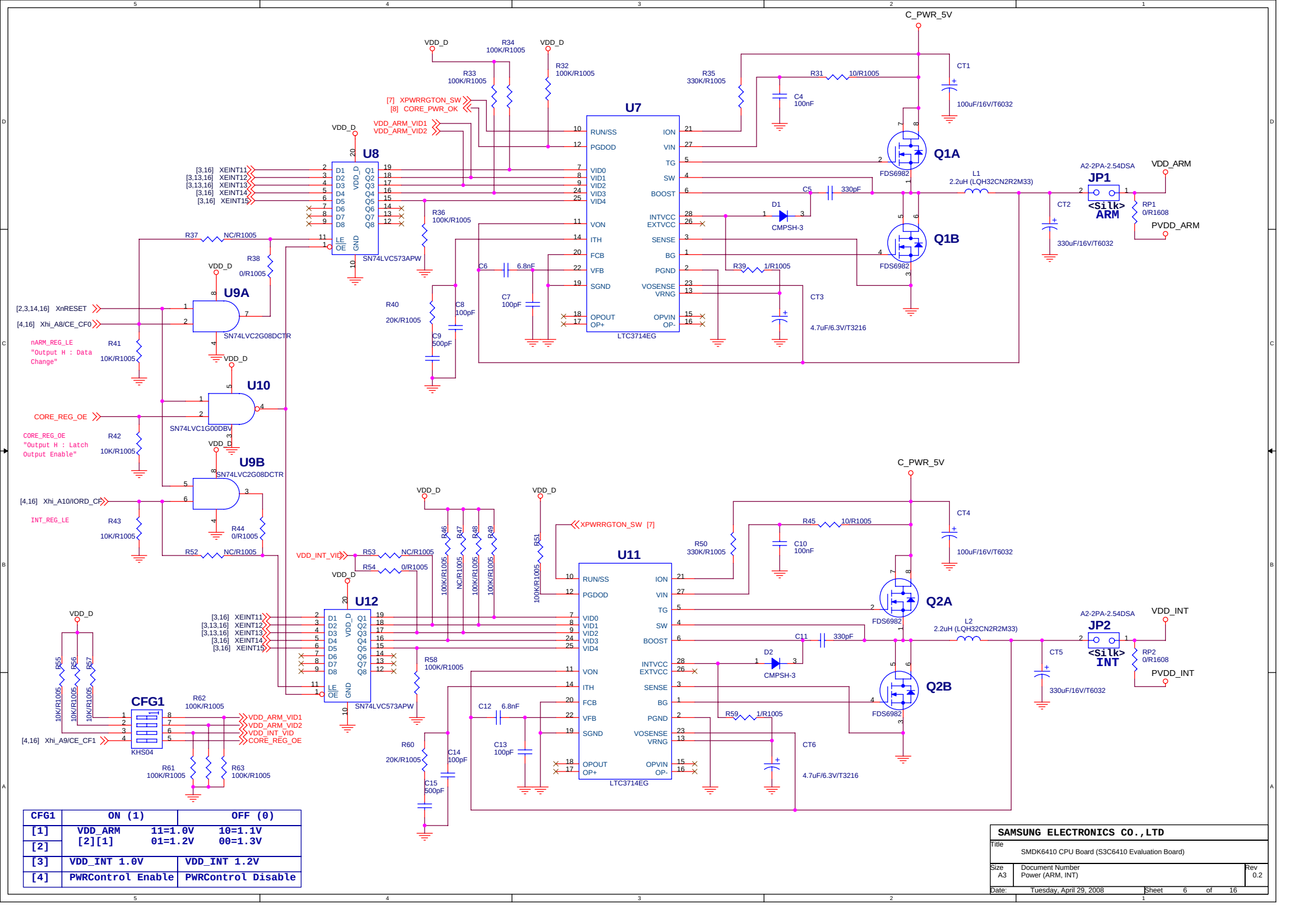

U1A
S3C6410
Memory Port0
Memory Port1
Xm1DATA[31:0] [10]
[10,11] Xm0ADDR[15:0]
[10,11,14] Xm0DATA[15:0]
Xm1ADDR[15:0] [10]
[11,12,14] Xm0OEn/nIORD_CF
[11,14] Xm0WEn/nIOWR_CF
[14] Xm0ADV
[14] Xm0SMCLK
Xm1CSn1 [10]
Xm1CSn0 [10]
Xm1DQS3 [10]
Xm1DQS2 [10]
Xm1DQS1 [10]
Xm1DQS0 [10]
Xm1DQM3 [10]
Xm1DQM2 [10]
Xm1DQM1 [10]
Xm1DQM0 [10]
Xm1WEn [10]
Xm1CASn [10]
Xm1RASn [10]
Xm1SCLKn [10]
Xm1SCLK [10]
Xm1CKE1 [10]
Xm1CKE0 [10]
[11,12] Xm0CSn0
[11,12] Xm0CSn1
[14] Xm0CSn2
[14] Xm0CSn3
[11,12] Xm0CSn4
[11,12] Xm0CSn5
[10] Xm0CSn6
[10,12] Xm0CSn7
Xm0AP [10]
Xm0WEndmc [10]
Xm0DQS1 [10]
Xm0DQS0 [10]
Xm0CKE [10]
Xm0SCLKn [10]
Xm0SCLK [10]
Xm0CASn [10]
Xm0RASn [10]
[11] Xm0WAITn/IORDY
[11,14] Xm0RDY0/ALE
[11,14] Xm0RDY1/CLE
[11,14] Xm0INTsm0/FWEn
[11,12,14] Xm0INTsm1/FREn
[14] Xm0RPn/RnB
Xm0DQM1/BE1 [10,11]
Xm0DQM0/BE0 [10,11]
[12] Xm0INTata/SS_REAL_IN
[12] Xm0RSTata/SS_IMG_IN
[12] Xm0INPACKata/SS_TCXO_CLK
[12] Xm0REGata/SS_GPO0
[12] Xm0WEata/SS_GPO1
[12] Xm0OEata/SS_GPO2
[12] Xm0CData/SS_GPO3
[10] Xm0AP
[10] Xm0WEndmc
[10] Xm0RASn
[10] Xm0CASn
Xm0ADDR16 [11]
Xm0ADDR17 [11]
Xm0ADDR18 [11]
Xm0ADDR19 [11]
NC/R1005
10K/R1005
VDD_D
CB1 100nF
R9 100K/R1005
U2
nBATF
TP1
XnBATF [3,9]
SN74LVC1G17DBV
<Silk> nBATF
SW1
SW-TACT (Gray)
CB2 100nF
R10 100K/R1005
U3
WRESET
TP2
XWRESET [3]
SN74LVC1G17DBV
<Silk> WRESET
SW2
SW-TACT (Gray)
CB3 100nF
R11 100K/R1005
U4
VCC nRESET
nMR
GND SRT
MAX6412UK22
C1 100nF
nRESET [9]
<Silk> nRESET
SW3
SW-TACT (Red)
[9] nRESET
[16] AP_nRESET
[16] Modem_nRESET
[9] PMIC_nRST_OUT
R13 10K/R1005
R14 10K/R1005
R16 0/R1005
R17 0/R1005
R18 NC/R1005
U6
SN74LVC1G11DBV
XnRESET
TP4
XnRESET [3,6,14,16]
C_PWR_5V
CB4 100nF
R12 100K/R1005
U5
ONKEYn
TP3
R15 0/R1005
PMIC_ONKEYn [9]
SN74LVC1G17DBV
<Silk> PMIC ON
SW4
SW-TACT (Red)
SAMSUNG ELECTRONICS CO.,LTD
Title
SMDK6410 CPU Board (S3C6410 Evaluation Board)
Size A3
Document Number S3C6410 (Addr/Data)/SW-TACT
Rev 0.2
Date: Tuesday, April 29, 2008
Sheet 2 of 16



SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: S3C6410 (I/O 1)	Rev: 0.2
Date: Tuesday, April 29, 2008	Sheet 3 of 16	

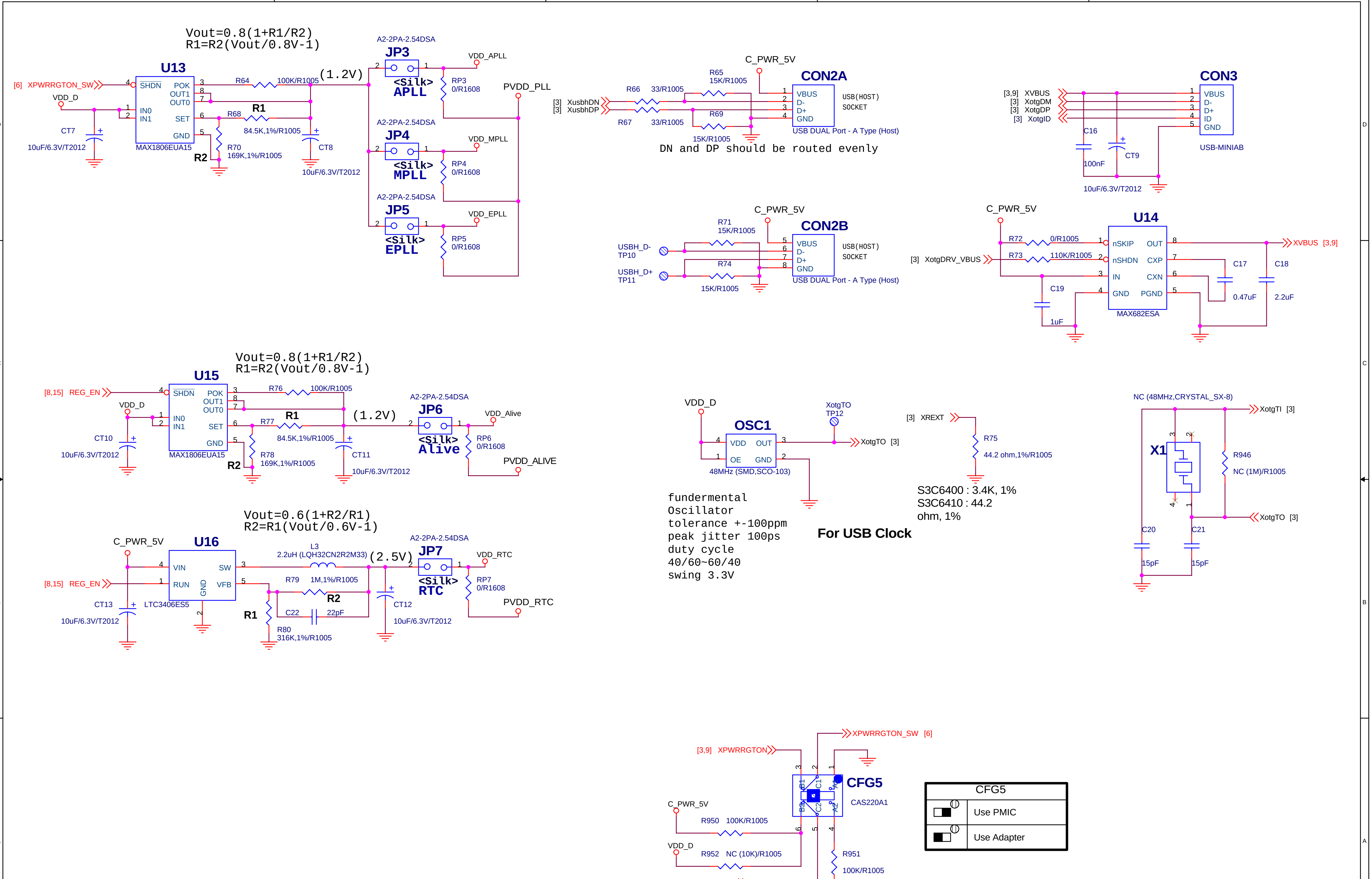

U1C
S3C6410
CAM I/F
DAC(TV)
ADC
HOST I/F
DISPLAY
VDD_DAC
DACVREF
TP9
C2
100nF
CB5
100nF
R26
6.49K/R1005
C3
1.8nF
Y4
XpllEFLITER
ADC
CON1
HDR10-2.54-MALE
R27 0/R1005
R28 0/R1005
R29 0/R1005
R30 0/R1005
SAMSUNG ELECTRONICS CO.,LTD
Title
SMDK6410 CPU Board (S3C6410 Evaluation Board)
Size A3
Document Number S3C6410 (I/O 2)/ADC
Rev 0.2
Date: Tuesday, April 29, 2008
Sheet 4 of 16


U1D
S3C6410
VDD_ARM
VDD_INT
VDD_ALIVE
VDD_APLL
VDD_EPLL
VDD_MPLL
VDD_SS
VDD_RTC
VDD_MEM0
VDD_MEM1
VDD_SYS
VDD_LCD
VDD_MMC
VDD_PCM
VDD_HI
VDD_EXT
VDD_UH
VDD_OTG
VDD_OTG1
VDD_OTGI
VDD_DAC
VDD_ADC
R204 0/R1005
FB1 BLM18BPG121
FB2 BLM18BPG121
10uF/6.3V/T2012
100nF
1uF
1uF/6.3V/T2012
SAMSUNG ELECTRONICS CO.,LTD
Title
SMDK6410 CPU Board (S3C6410 Evaluation Board)
Size A3
Document Number S3C6410 (Power)
Rev 0.2
Date: Tuesday, April 29, 2008
Sheet 5 of 16



CFG1	ON (1)	OFF (0)
[1]	VDD_ARM [2][1] 11=1.0V 01=1.2V	10=1.1V 00=1.3V
[2]		
[3]	VDD_INT 1.0V	VDD_INT 1.2V
[4]	PWRControl Enable	PWRControl Disable

SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: Power (ARM, INT)	Rev: 0.2
Date: Tuesday, April 29, 2008	Sheet 6 of 16	



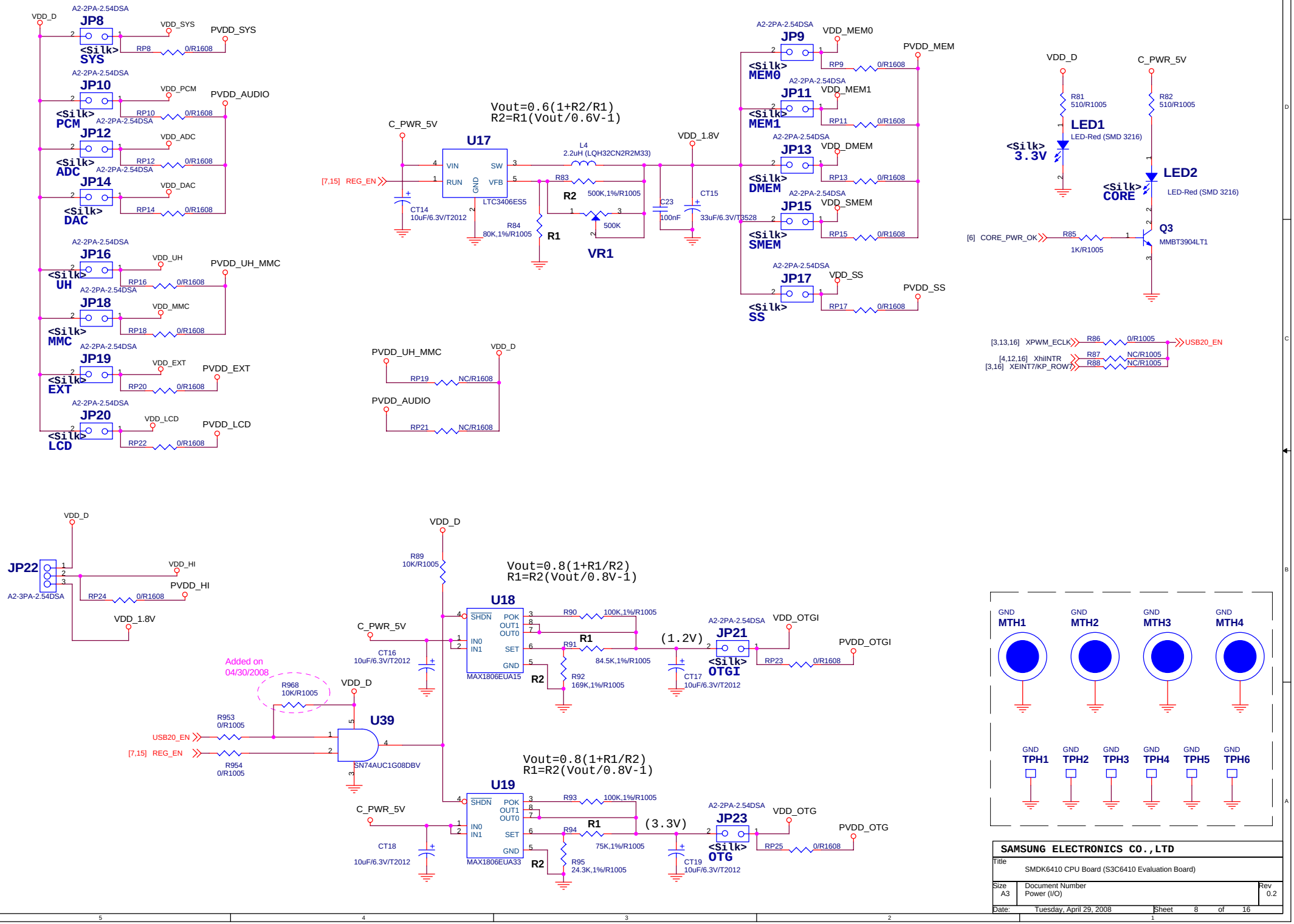
Vout=0.8(1+R1/R2)
R1=R2(Vout/0.8V-1)
U13
MAX1806EUA15
[6] XPWRRGTON_SW
VDD_D
CT7 10uF/6.3V/T2012
R64 100K/R1005
(1.2V)
R68 84.5K,1%/R1005
R1
R2
R70 169K,1%/R1005
CT8 10uF/6.3V/T2012
A2-2PA-2.54DSA
JP3 <Silk> APLL
RP3 0/R1608
VDD_APLL
PVDD_PLL
JP4 <Silk> MPLL
RP4 0/R1608
VDD_MPLL
JP5 <Silk> EPLL
RP5 0/R1608
VDD_EPLL
C_PWR_5V
CON2A
USB(HOST) SOCKET
USB DUAL Port - A Type (Host)
[3] XusbhDN
[3] XusbhDP
R65 15K/R1005
R66 33/R1005
R67 33/R1005
R69 15K/R1005
DN and DP should be routed evenly
CON3
USB-MINIAB
[3,9] XVBUS
[3] XotgDM
[3] XotgDP
[3] XotgID
C16 100nF
CT9 10uF/6.3V/T2012
CON2B
USBH_D- TP10
USBH_D+ TP11
R71 15K/R1005
R74 15K/R1005
U14
MAX682ESA
[3] XotgDRV_VBUS
R72 0/R1005
R73 110K/R1005
C19 1uF
C17 0.47uF
C18 2.2uF
XVBUS [3,9]
Vout=0.8(1+R1/R2)
R1=R2(Vout/0.8V-1)
U15
MAX1806EUA15
[8,15] REG_EN
CT10 10uF/6.3V/T2012
R76 100K/R1005
R77 84.5K,1%/R1005
R78 169K,1%/R1005
CT11 10uF/6.3V/T2012
JP6 <Silk> Alive
RP6 0/R1608
VDD_Alive
PVDD_ALIVE
OSC1
48MHz (SMD,SCO-103)
XotgTO TP12
XotgTO [3]
fundermental
Oscillator
tolerance +-100ppm
peak jitter 100ps
duty cycle
40/60~60/40
swing 3.3V
For USB Clock
[3] XREXT
R75 44.2 ohm,1%/R1005
S3C6400 : 3.4K, 1%
S3C6410 : 44.2 ohm, 1%
NC (48MHz,CRYSTAL_SX-8)
X1
XotgTI [3]
R946 NC (1M)/R1005
C20 15pF
C21 15pF
Vout=0.6(1+R2/R1)
R2=R1(Vout/0.6V-1)
U16
LTC3406ES5
CT13 10uF/6.3V/T2012
L3 2.2uH (LQH32CN2R2M33)
(2.5V)
R79 1M,1%/R1005
C22 22pF
R80 316K,1%/R1005
CT12 10uF/6.3V/T2012
JP7 <Silk> RTC
RP7 0/R1608
VDD_RTC
PVDD_RTC
XPWRRGTON_SW [6]
[3,9] XPWRRGTON
CFG5
CAS220A1
R950 100K/R1005
R952 NC (10K)/R1005
R951 100K/R1005
[8,15] REG_EN
CFG5
Use PMIC
Use Adapter

SAMSUNG ELECTRONICS CO.,LTD

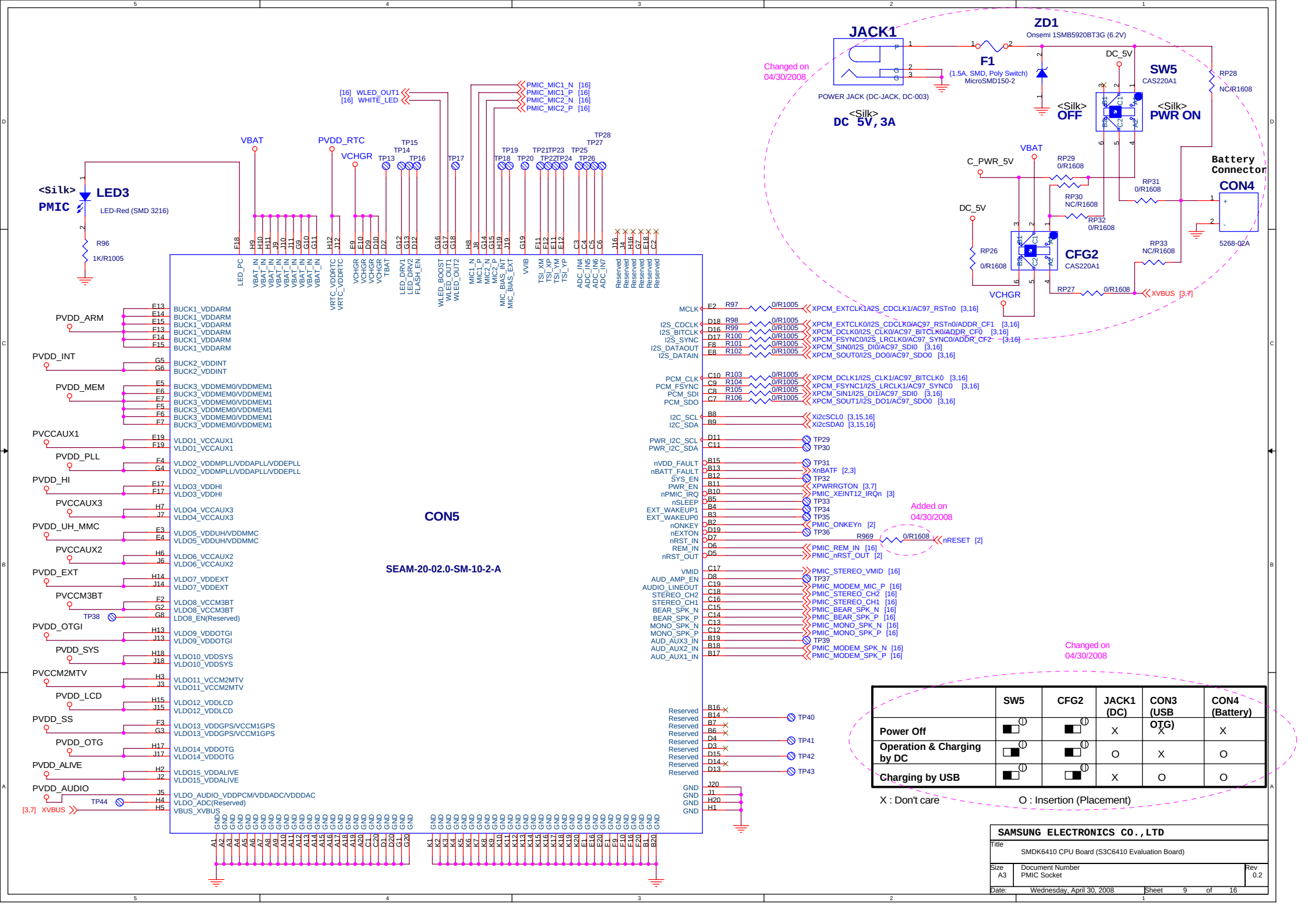
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)

Size	Document Number	Rev
A3	Power (PLL, Alive, RTC)/USB Host/USB OTG	0.2

Date: Tuesday, April 29, 2008 — Sheet 7 of 16



SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: Power (I/O)	Rev: 0.2
Date: Tuesday, April 29, 2008	Sheet 8 of 16	

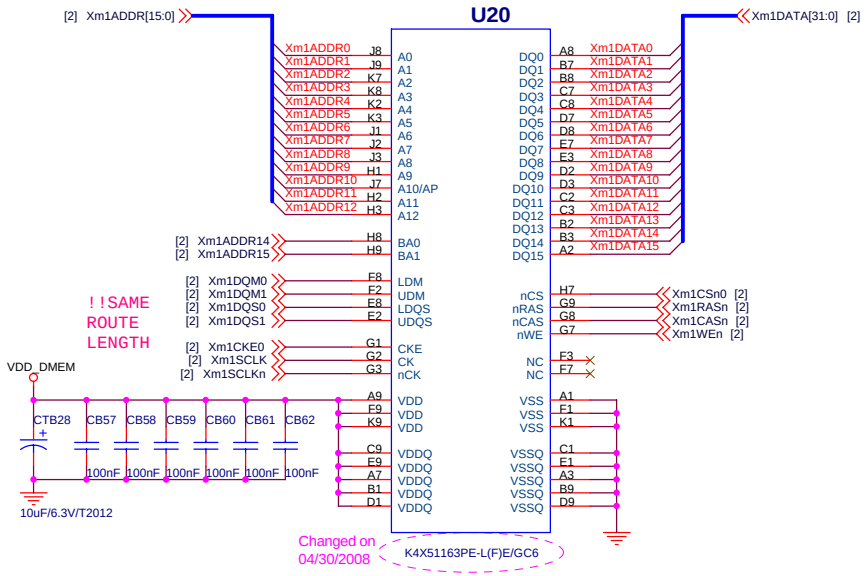


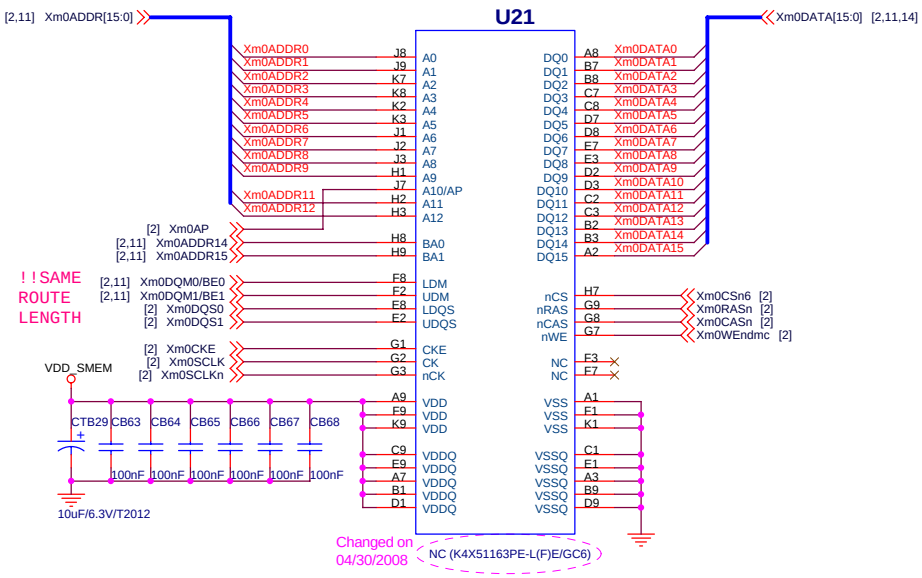
	SW5	CFG2	JACK1 (DC)	CON3 (USB OTG)	CON4 (Battery)
Power Off			X	X	X
Operation & Charging by DC			O	X	O
Charging by USB			X	O	O

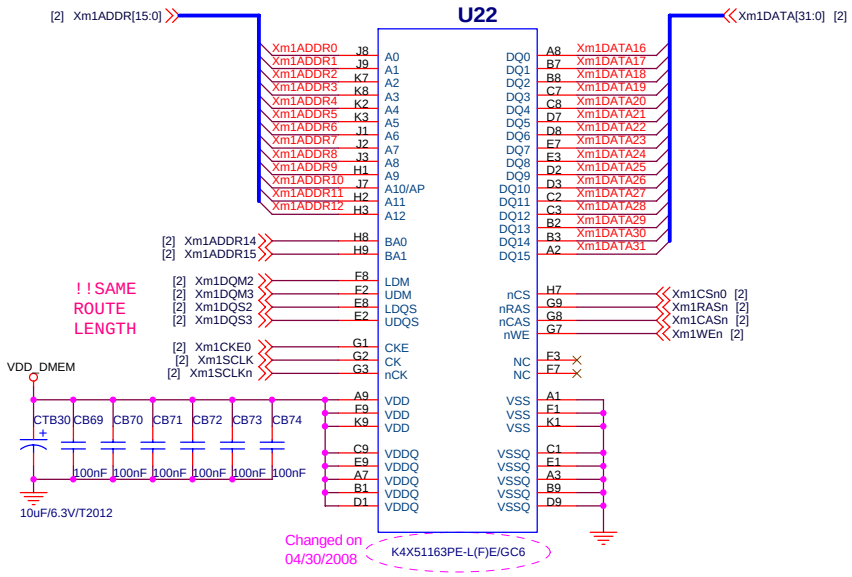
X : Don't care

O : Insertion (Placement)

SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: PMIC Socket	Rev: 0.2
Date: Wednesday, April 30, 2008	Sheet 9 of 16	



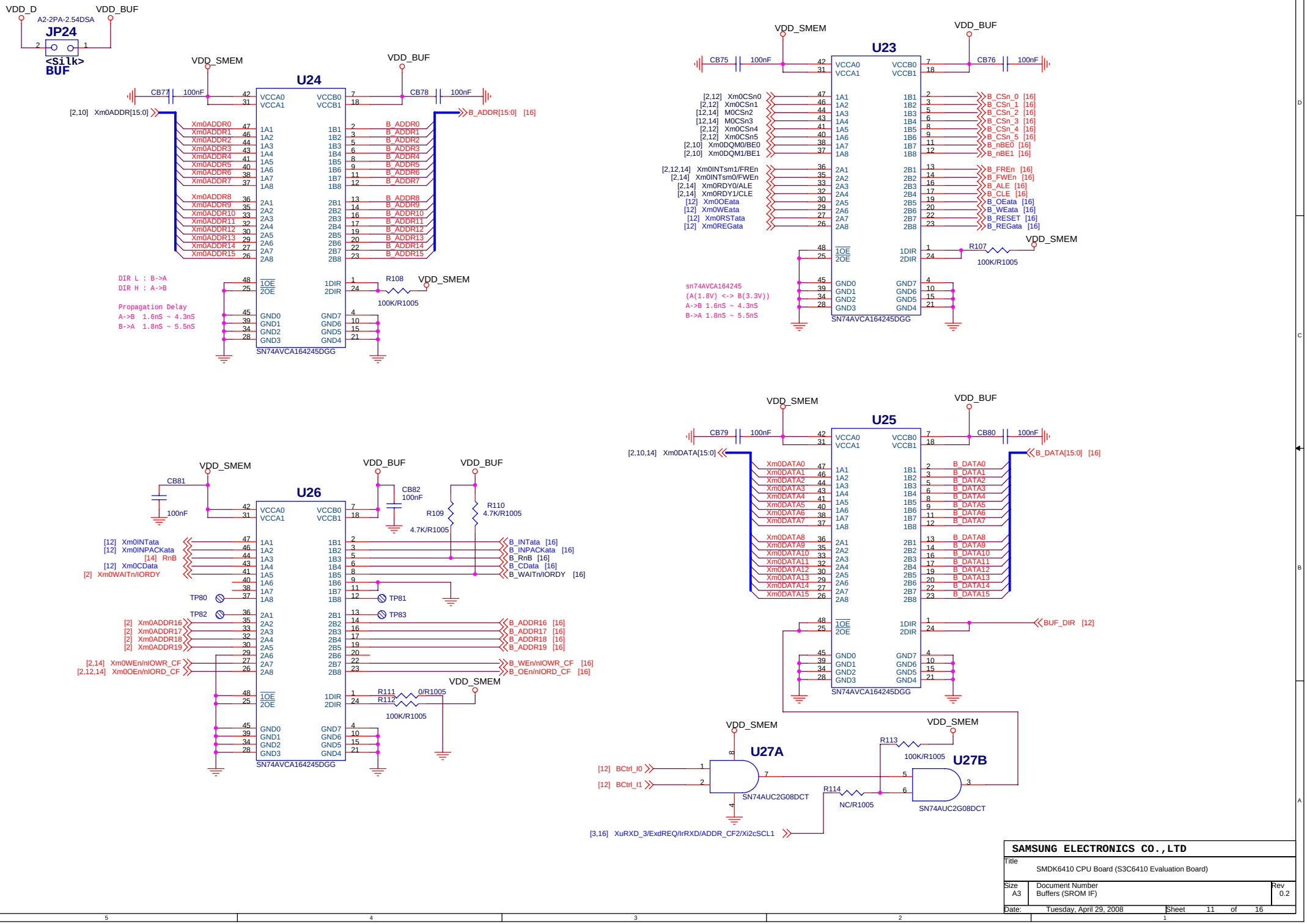




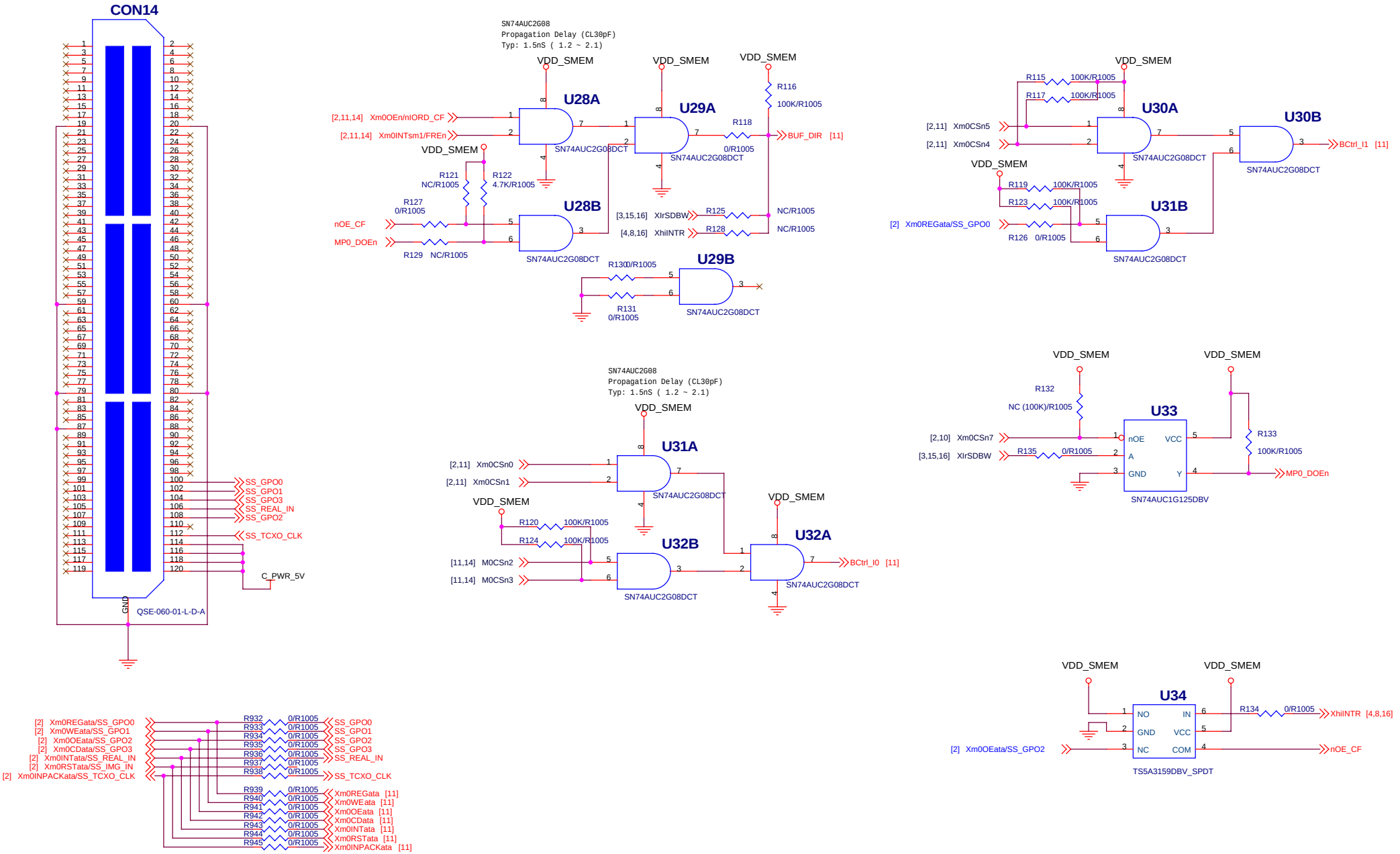
Just Only PADS on Lines

[2] Xm1ADDR0	TP45	M1A0	[2,11] Xm0ADDR0	TP46	M0A0
[2] Xm1DATA0	TP47	M1D0	[2,11,14] Xm0DATA0	TP48	M0D0
[2] Xm1CKE0	TP49	M1CKE0	[2] Xm0CKE	TP50	M0CKE0
[2] Xm1CKE1	TP51	M1CKE1	[2] Xm0SCLK	TP52	M0SCLK
[2] Xm1SCLK	TP53	M1SCLK	[2] Xm0SCLKn	TP54	M0SCLKn
[2] Xm1SCLKn	TP55	M1SCLKn	[2] Xm0WEndmc	TP56	M0WEn
[2] Xm1WEn	TP57	M1WEn	[2] Xm0CASn	TP58	M0CASn
[2] Xm1CASn	TP59	M1CASn	[2] Xm0RASn	TP60	M0RASn
[2] Xm1RASn	TP61	M1RASn	[2,11] Xm0DQM0/BE0	TP62	M0DQM0
[2] Xm1DQM0	TP63	M1DQM0	[2,11] Xm0DQM1/BE1	TP64	M0DQM1
[2] Xm1DQM1	TP65	M1DQM1	[2] Xm0DQS0	TP66	M0DQS0
[2] Xm1DQM2	TP67	M1DQM2	[2] Xm0DQS1	TP68	M0DQS1
[2] Xm1DQM3	TP69	M1DQM3	[2] Xm0AP	TP70	M0AP
[2] Xm1DQS0	TP71	M1DQS0	[2,12] Xm0CSn7	TP72	M0CSn7
[2] Xm1DQS1	TP73	M1DQS1	[2,11] Xm0ADDR10	TP74	Xm0A10
[2] Xm1DQS2	TP75	M1DQS2			
[2] Xm1DQS3	TP76	M1DQS3			
[2] Xm1CSn1	TP77	M1CSn1	[2] Xm1CSn0	TP78	Xm1CSn0
[2] Xm1ADDR13	TP79	Xm1A13			

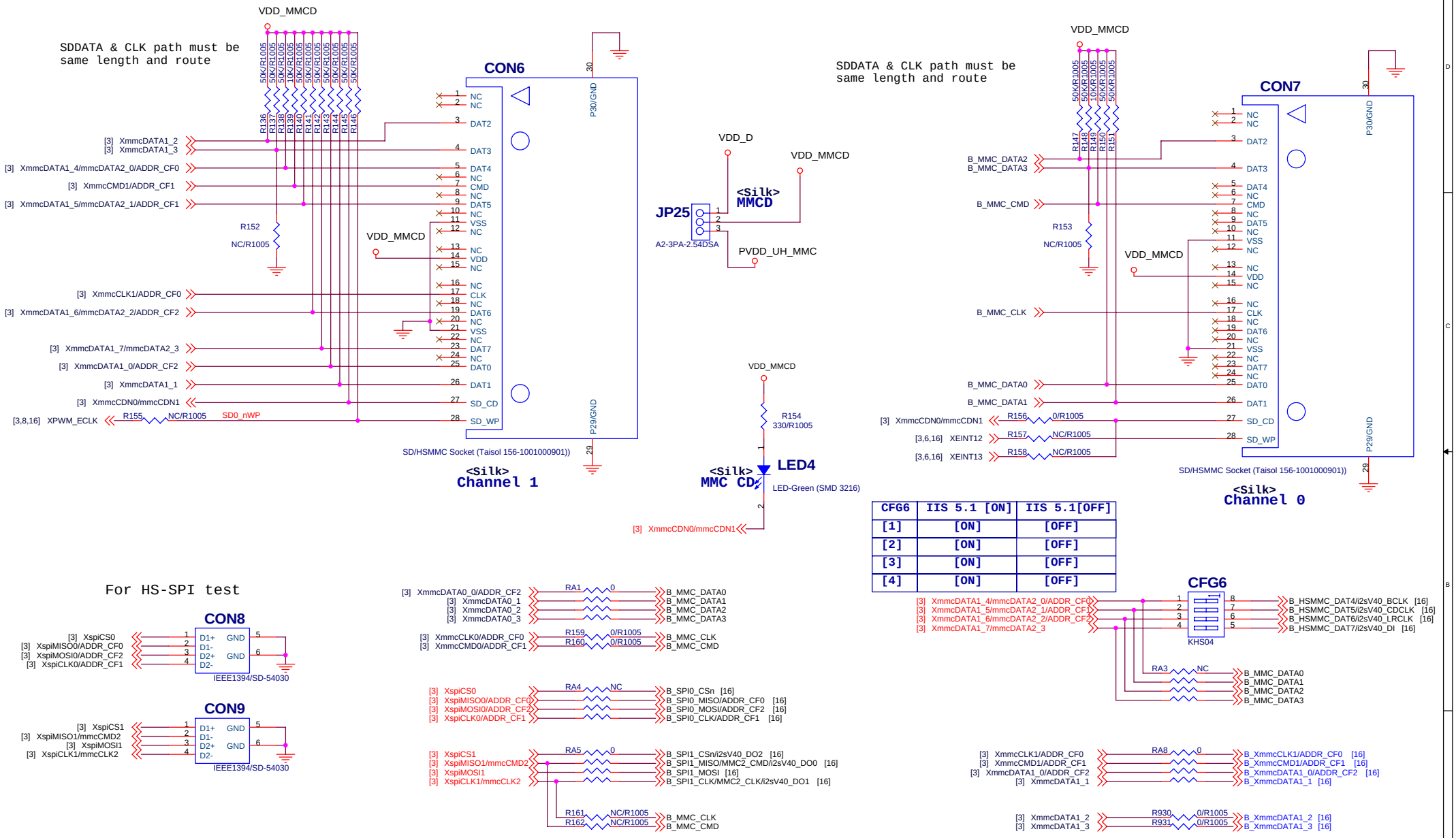
SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: Memory (mDDR)	Rev: 0.2
Date: Wednesday, April 30, 2008	Sheet 10 of 16	



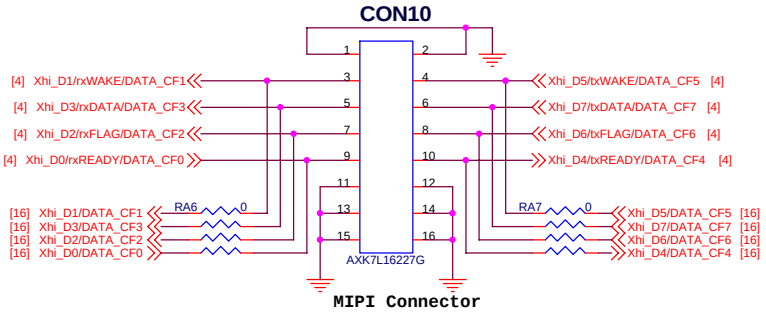
SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: Buffers (SROM IF)	Rev: 0.2
Date: Tuesday, April 29, 2008	Sheet 11 of 16	

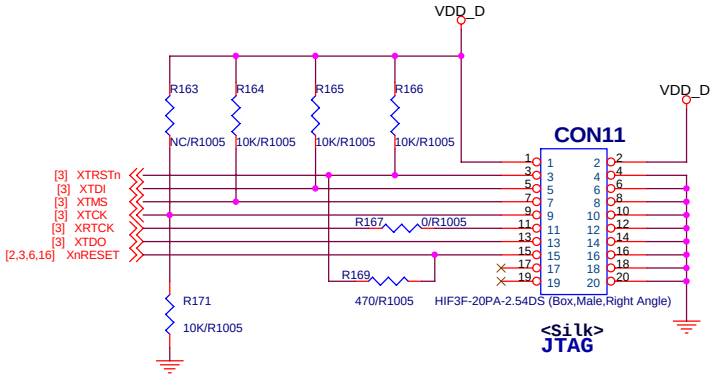


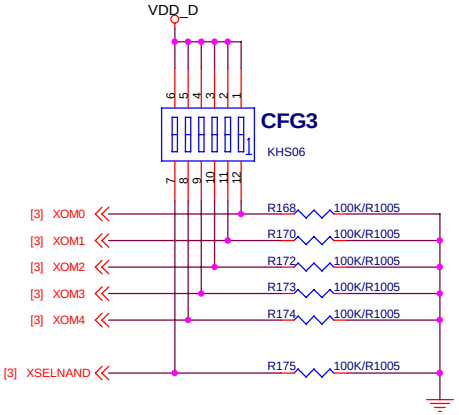
SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: Buffers Control (SROM IF)/GPS	Rev: 0.2
Date: Tuesday, April 29, 2008	Sheet 12 of 16	

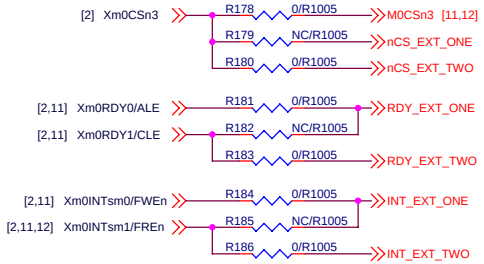


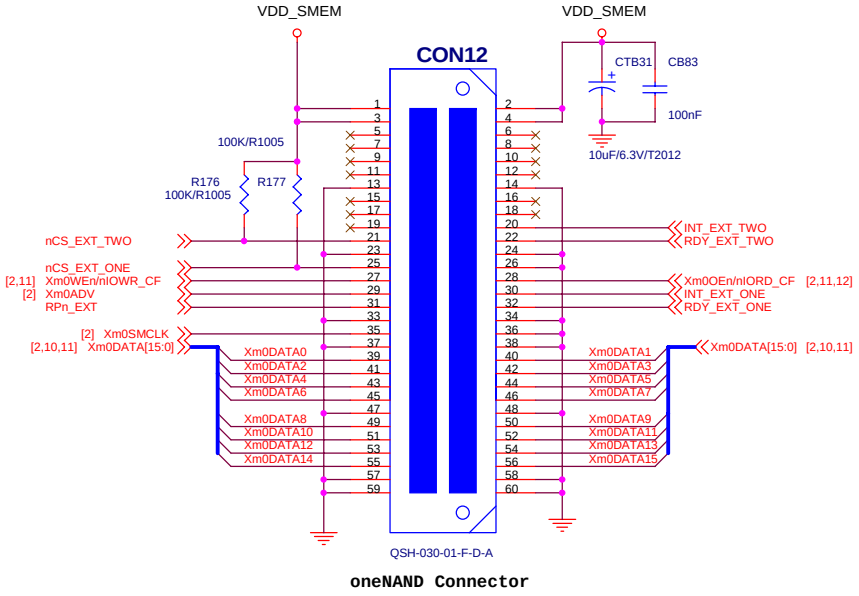
CFG6	IIS 5.1 [ON]	IIS 5.1[OFF]
[1]	[ON]	[OFF]
[2]	[ON]	[OFF]
[3]	[ON]	[OFF]
[4]	[ON]	[OFF]





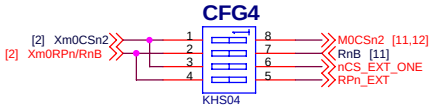




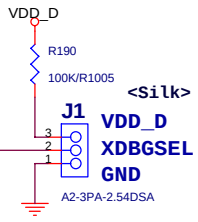


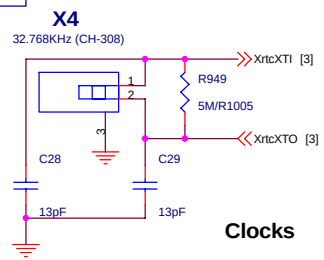
CFG3						
Booting Mode	[6]	[5]	[4]	[3]	[2]	[1]
NAND, 512/3 cycle	1	0	0	0	0	
NAND, 512/4 cycle	1	0	0	0	1	
ANAND, 2K/4 cycle	1	0	0	1	0	
ANAND, 2K/5 cycle	1	0	0	1	1	
NOR/SROM	x	0	1	0		
OneNAND	0	0	1	1	0	
Modem	x	0	1	1	1	
Internal ROM	x	1	1	1	1	

ON
: EXTCLK
0:8bit
1:16bit
OFF
:XTI

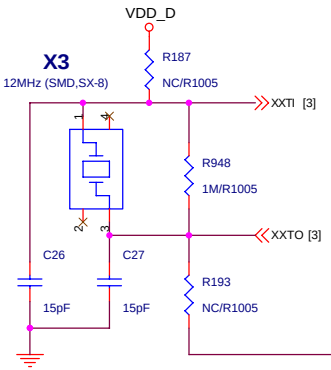


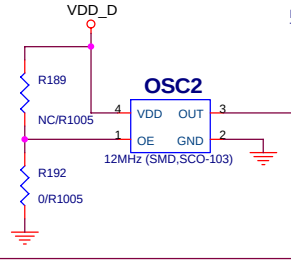
CFG4	NAND/ONENAND
[1,2]: ON [3,4]: OFF	NANDC(CS2)
[1,2]: OFF [3,4]: ON	OneNANDC(CS2)

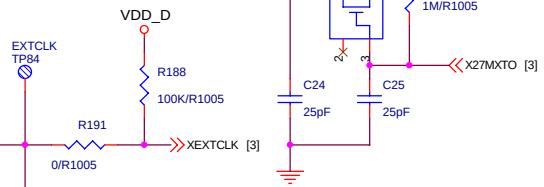




Clocks







SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: oneNAND/MIPI/JTAG/CLK	Rev: 0.2
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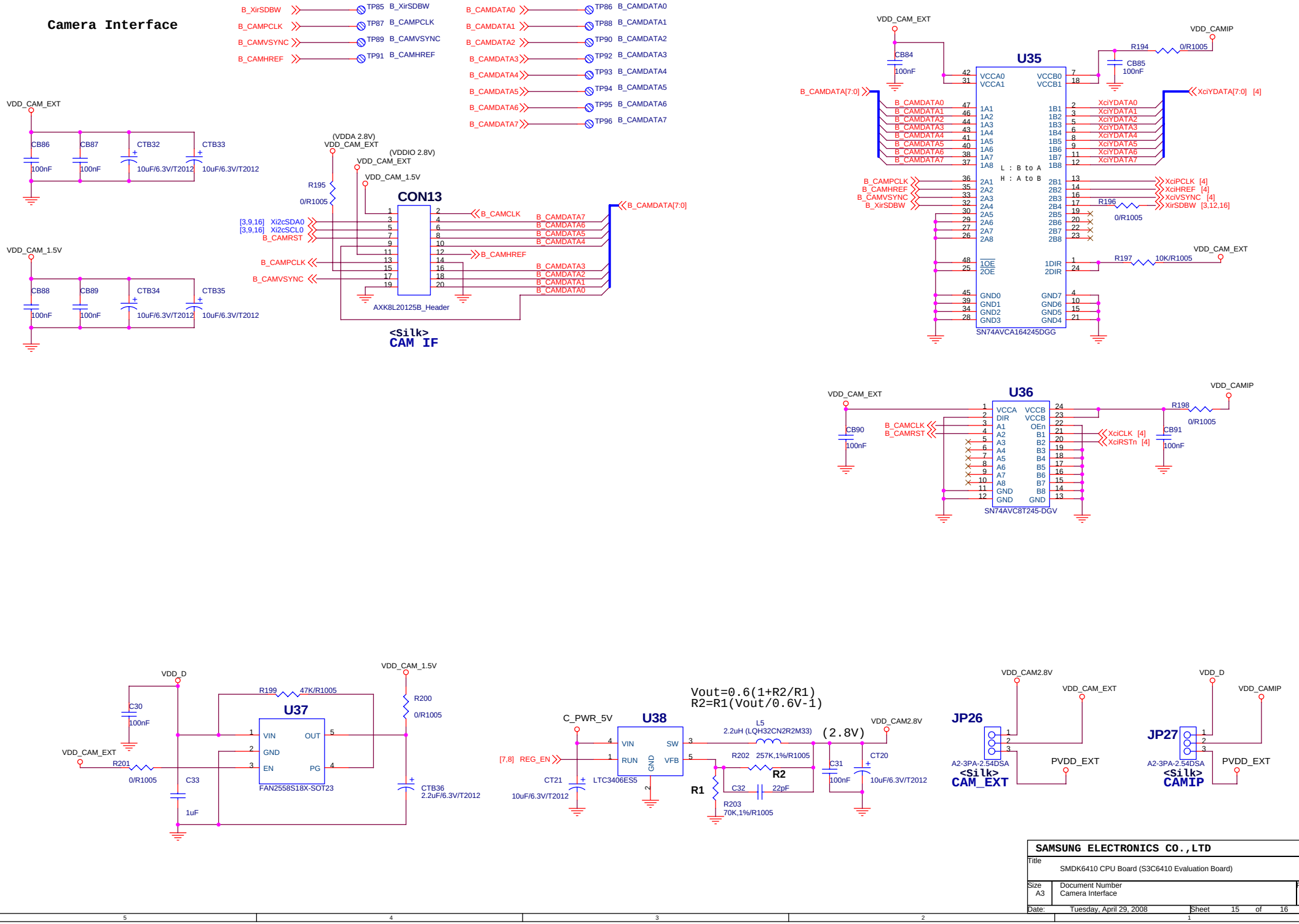
Camera Interface



SAMSUNG ELECTRONICS CO.,LTD		
Title: SMDK6410 CPU Board (S3C6410 Evaluation Board)		
Size: A3	Document Number: Camera Interface	Rev: 0.2
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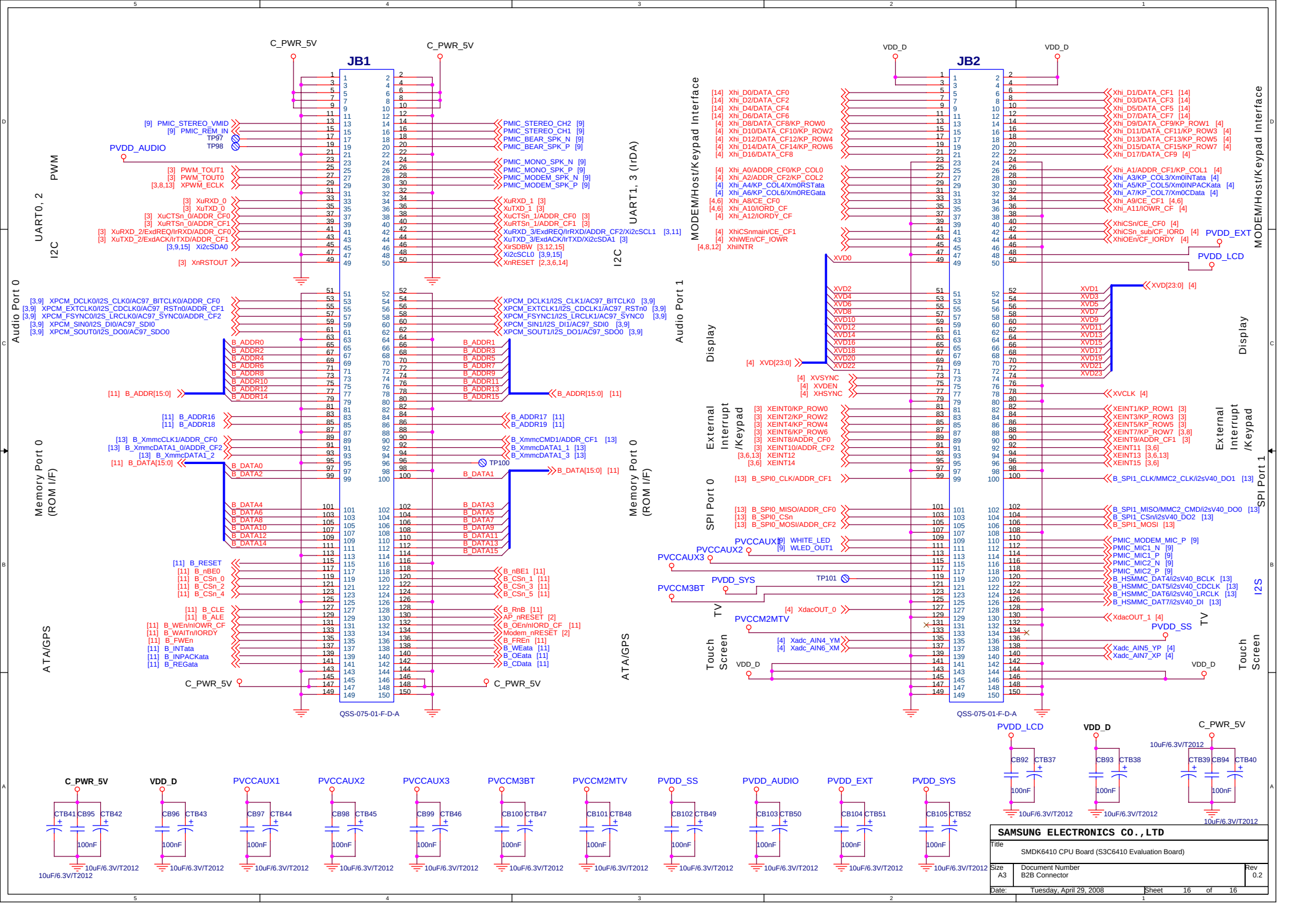
JB1
JB2
C_PWR_5V
VDD_D
PVDD_AUDIO
PVDD_EXT
PVDD_LCD
PVDD_SS
PVDD_SYS
PVCCAUX1
PVCCAUX2
PVCCAUX3
PVCCM3BT
PVCCM2MTV
TP97
TP98
TP100
TP101
QSS-075-01-F-D-A
UART0, 2 I2C
PWM
UART1, 3 (IrDA)
I2C
Audio Port 0
Audio Port 1
Memory Port 0 (ROM I/F)
ATA/GPS
MODEM/Host/Keypad Interface
Display
External Interrupt /Keypad
SPI Port 0
SPI Port 1
TV
Touch Screen
I2S
PMIC_STEREO_VMID
PMIC_REM_IN
PMIC_STEREO_CH2
PMIC_STEREO_CH1
PMIC_BEAR_SPK_N
PMIC_BEAR_SPK_P
PMIC_MONO_SPK_N
PMIC_MONO_SPK_P
PMIC_MODEM_SPK_N
PMIC_MODEM_SPK_P
PWM_TOUT1
PWM_TOUT0
XPWM_ECLK
XuRXD_0
XuTXD_0
XuCTSn_0/ADDR_CF0
XuRTSn_0/ADDR_CF1
XuRXD_2/ExdREQ/IrRXD/ADDR_CF0
XuTXD_2/ExdACK/IrTXD/ADDR_CF1
Xi2cSDA0
XnRSTOUT
XuRXD_1
XuTXD_1
XuCTSn_1/ADDR_CF0
XuRTSn_1/ADDR_CF1
XuRXD_3/ExdREQ/IrRXD/ADDR_CF2/Xi2cSCL1
XuTXD_3/ExdACK/IrTXD/Xi2cSDA1
XirSDBW
Xi2cSCL0
XnRESET
XPCM_DCLK0/I2S_CLK0/AC97_BITCLK0/ADDR_CF0
XPCM_EXTCLK0/I2S_CDCLK0/AC97_RSTn0/ADDR_CF1
XPCM_FSYNC0/I2S_LRCLK0/AC97_SYNC0/ADDR_CF2
XPCM_SIN0/I2S_DI0/AC97_SDI0
XPCM_SOUT0/I2S_DO0/AC97_SDO0
XPCM_DCLK1/I2S_CLK1/AC97_BITCLK0
XPCM_EXTCLK1/I2S_CDCLK1/AC97_RSTn0
XPCM_FSYNC1/I2S_LRCLK1/AC97_SYNC0
XPCM_SIN1/I2S_DI1/AC97_SDI0
XPCM_SOUT1/I2S_DO1/AC97_SDO0
B_ADDR0
B_ADDR2
B_ADDR4
B_ADDR6
B_ADDR8
B_ADDR10
B_ADDR12
B_ADDR14
B_ADDR1
B_ADDR3
B_ADDR5
B_ADDR7
B_ADDR9
B_ADDR11
B_ADDR13
B_ADDR15
B_ADDR[15:0]
B_ADDR16
B_ADDR18
B_ADDR17
B_ADDR19
B_XmmcCLK1/ADDR_CF0
B_XmmcDATA1_0/ADDR_CF2
B_XmmcDATA1_2
B_XmmcCMD1/ADDR_CF1
B_XmmcDATA1_1
B_XmmcDATA1_3
B_DATA[15:0]
B_DATA0
B_DATA2
B_DATA1
B_DATA4
B_DATA6
B_DATA8
B_DATA10
B_DATA12
B_DATA14
B_DATA3
B_DATA5
B_DATA7
B_DATA9
B_DATA11
B_DATA13
B_DATA15
B_RESET
B_nBE0
B_CSn_0
B_CSn_2
B_CSn_4
B_nBE1
B_CSn_1
B_CSn_3
B_CSn_5
B_CLE
B_ALE
B_WEn/nIOWR_CF
B_WAITn/IORDY
B_FWEn
B_INTata
B_INPACKata
B_REGata
B_RnB
AP_nRESET
B_OEn/nIORD_CF
Modem_nRESET
B_FREn
B_WEata
B_OEata
B_CData
Xhi_D0/DATA_CF0
Xhi_D2/DATA_CF2
Xhi_D4/DATA_CF4
Xhi_D6/DATA_CF6
Xhi_D8/DATA_CF8/KP_ROW0
Xhi_D10/DATA_CF10/KP_ROW2
Xhi_D12/DATA_CF12/KP_ROW4
Xhi_D14/DATA_CF14/KP_ROW6
Xhi_D16/DATA_CF8
Xhi_A0/ADDR_CF0/KP_COL0
Xhi_A2/ADDR_CF2/KP_COL2
Xhi_A4/KP_COL4/Xm0RSTata
Xhi_A6/KP_COL6/Xm0REGata
Xhi_A8/CE_CF0
Xhi_A10/IORD_CF
Xhi_A12/IORDY_CF
XhiCSnmain/CE_CF1
XhiWEn/CF_IOWR
XhiINTR
Xhi_D1/DATA_CF1
Xhi_D3/DATA_CF3
Xhi_D5/DATA_CF5
Xhi_D7/DATA_CF7
Xhi_D9/DATA_CF9/KP_ROW1
Xhi_D11/DATA_CF11/KP_ROW3
Xhi_D13/DATA_CF13/KP_ROW5
Xhi_D15/DATA_CF15/KP_ROW7
Xhi_D17/DATA_CF9
Xhi_A1/ADDR_CF1/KP_COL1
Xhi_A3/KP_COL3/Xm0INTata
Xhi_A5/KP_COL5/Xm0INPACKata
Xhi_A7/KP_COL7/Xm0CData
Xhi_A9/CE_CF1
Xhi_A11/IOWR_CF
XhiCSn/CE_CF0
XhiCSn_sub/CF_IORD
XhiOEn/CF_IORDY
XVD0
XVD[23:0]
XVSYNC
XVDEN
XHSYNC
XVCLK
XEINT0/KP_ROW0
XEINT2/KP_ROW2
XEINT4/KP_ROW4
XEINT6/KP_ROW6
XEINT8/ADDR_CF0
XEINT10/ADDR_CF2
XEINT12
XEINT14
XEINT1/KP_ROW1
XEINT3/KP_ROW3
XEINT5/KP_ROW5
XEINT7/KP_ROW7
XEINT9/ADDR_CF1
XEINT11
XEINT13
XEINT15
B_SPI0_CLK/ADDR_CF1
B_SPI0_MISO/ADDR_CF0
B_SPI0_CSn
B_SPI0_MOSI/ADDR_CF2
B_SPI1_CLK/MMC2_CLK/i2sV40_DO1
B_SPI1_MISO/MMC2_CMD/i2sV40_DO0
B_SPI1_CSn/i2sV40_DO2
B_SPI1_MOSI
WHITE_LED
WLED_OUT1
PMIC_MIC1_N
PMIC_MIC1_P
PMIC_MIC2_N
PMIC_MIC2_P
B_HSMMC_DAT4/i2sV40_BCLK
B_HSMMC_DAT5/i2sV40_CDCLK
B_HSMMC_DAT6/i2sV40_LRCLK
B_HSMMC_DAT7/i2sV40_DI
XdacOUT_0
XdacOUT_1
Xadc_AIN4_YM
Xadc_AIN6_XM
Xadc_AIN5_YP
Xadc_AIN7_XP
CB92
CTB37
CB93
CTB38
CTB39
CB94
CTB40
CTB41
CB95
CTB42
CB96
CTB43
CB97
CTB44
CB98
CTB45
CB99
CTB46
CB100
CTB47
CB101
CTB48
CB102
CTB49
CB103
CTB50
CB104
CTB51
CB105
CTB52
100nF
10uF/6.3V/T2012
SAMSUNG ELECTRONICS CO.,LTD
Title
SMDK6410 CPU Board (S3C6410 Evaluation Board)
Size
A3
Document Number
B2B Connector
Rev
0.2
Date:
Tuesday, April 29, 2008
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