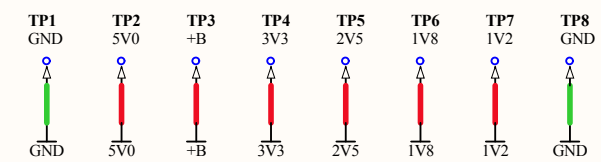
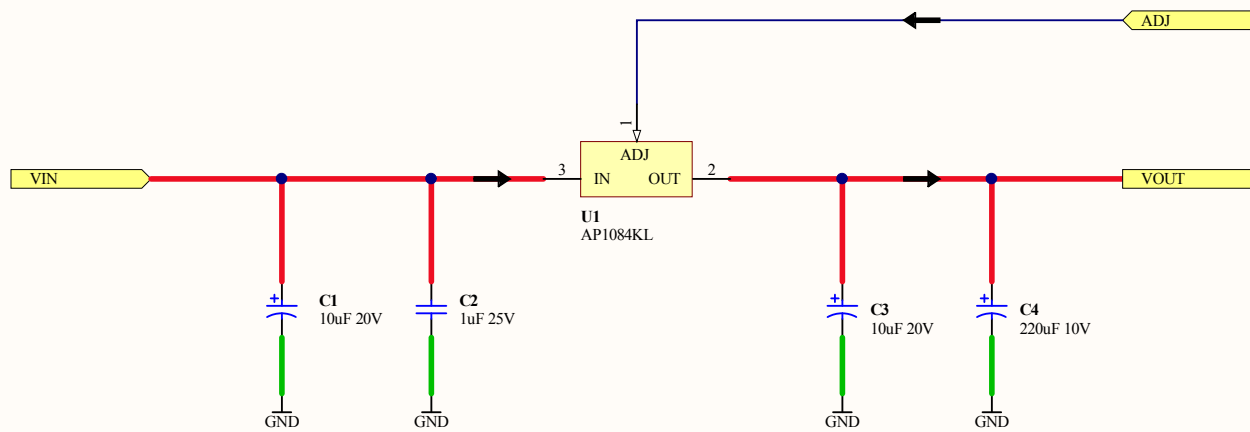



**GROUND TEST POINTS**



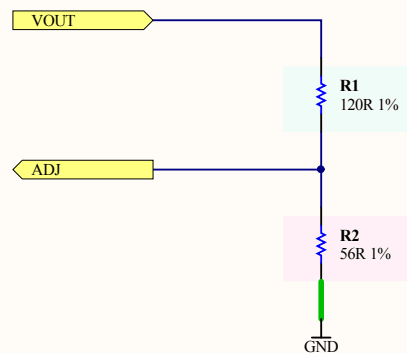
**POWER TEST POINTS**

Sheet Title <b>NB3000 POWER SUPPLIES</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:44 PM	Sheet 2 of 81	
File: PSU.SchDoc			



Sheet Title <b>PSU AP1084KL ADJ</b>			<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:44 PM	Sheet 3 of 81		
File: PSU_1084_ADJ.SchDoc				

## 1.8V Output



$$V_{out} = V_{REF} \left\{ 1 + \frac{R2}{R1} \right\} + I_{ADJ} R2$$

$$V_{REF} = 1.25v$$

$$I_{ADJ} = 55\mu A (0.000055)$$

▲ Calculation for 1.8V;

$$= 1.25V \times (1 + R2/R1) + 0.000055 \times R2$$

$$= 1.25V \times (1 + 56/120) + 0.000055 \times 56$$

$$= 1.25V \times 1.47 + 0.00308$$

$$= 1.83641V$$

Sheet Title **PSU AP1084KL 1V8**

Project Title **NB3000AL - Altera**

Size: A4

Assy: D-820-0053

Revision: 02

Date: 1/02/2010

Time: 1:34:44 PM

Sheet 4 of 81

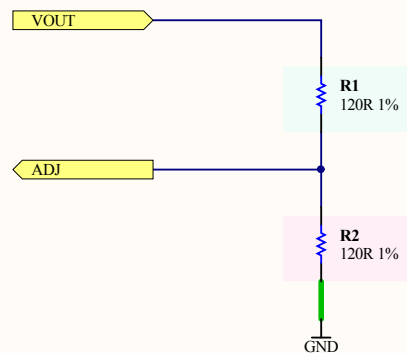
File: PSU\_1084SET\_1V8.SchDoc

*Altium Limited*  
3 Minna Close  
Belrose  
NSW 2085  
Australia





## 2.5V Output



$$V_{out} = V_{REF} \left\{ 1 + \frac{R_2}{R_1} \right\} + I_{ADJ} R_2$$

$$V_{REF} = 1.25v$$

$$I_{ADJ} = 55\mu A (0.000055)$$

▲ Calculation for 2.5V;

$$= 1.25V \times (1 + R_2/R_1) + 0.000055 \times R_2$$

$$= 1.25V \times (1 + 120/120) + 0.000055 \times 120$$

$$= 1.25V \times 2 + 0.0066$$

$$= 2.50066V$$

Sheet Title **PSU AP1084KL SET TO 2V5**

Project Title **NB3000AL - Altera**

Size: A4

Assy: D-820-0053

Revision: 02

Date: 1/02/2010

Time: 1:34:44 PM

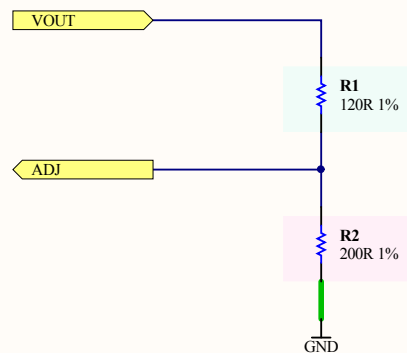
Sheet 5 of 81

File: PSU\_1084SET\_2V5.SchDoc

*Altium Limited*  
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Belrose  
NSW 2085  
Australia



### 3.3V Output



$$V_{out} = V_{REF} \left\{ 1 + \frac{R2}{R1} \right\} + I_{ADJ}R_2$$

$$V_{REF} = 1.25v$$

$$I_{ADJ} = 55\mu A (0.000055)$$

▲ Calculation for 3.3V;

$$= 1.25V \times (1 + R2/R1) + 0.000055 \times R2$$

$$= 1.25V \times (1 + 200/120) + 0.000055 \times 200$$

$$= 1.25V \times 2.67 + 0.011$$

$$= 3.34433V$$

Sheet Title **PSU AP1084KL SET TO 3V3**

Project Title **NB3000AL - Altera**

Size: A4

Assy: D-820-0053

Revision: 02

Date: 1/02/2010

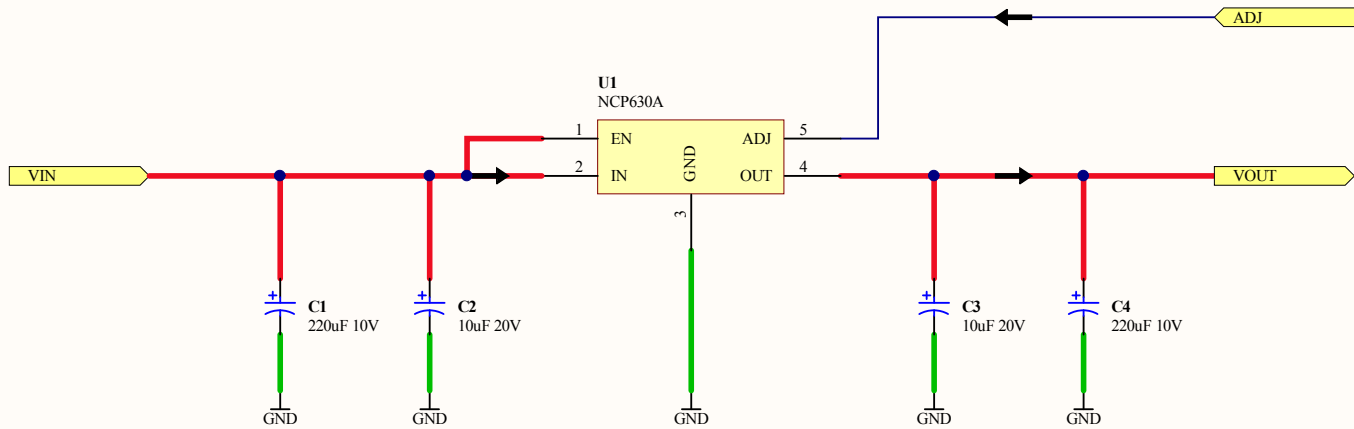
Time: 1:34:44 PM

Sheet 6 of 81

File: PSU\_1084SET\_3V3.SchDoc

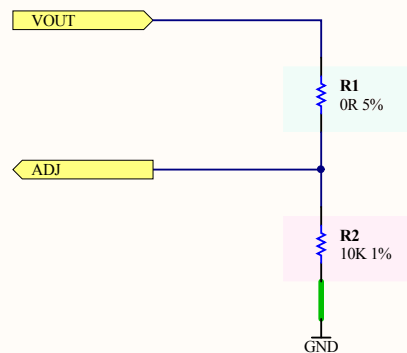
*Altium Limited*  
3 Minna Close  
Belrose  
NSW 2085  
Australia





Sheet Title <b>PSU NCP630A ADJ</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:44 PM	Sheet 7 of 81	
File: PSU NCP630 ADJ.SchDoc			

## 1.2V Output



$$V_{out} = V_{REF} \left\{ 1 + \frac{R1}{R2} \right\} + I_{ADJ} R_2$$

$$V_{REF} = 1.216v$$

$$I_{ADJ} = 40nA (0.000000040)$$

▲ Calculation for 1.2V;  
 = 1.216V x (1+R1/R2) + 0.000000040 x R2  
 = 1.216V x (1+0/10000) + 0.000000040 x 10000  
 = 1.216V x 1 + 0.0004  
 = 1.2164V

Sheet Title **PSU NCP630A SET TO 1V2**

Project Title **NB3000AL - Altera**

Size: **A4**

Assy: **D-820-0053**

Revision: **02**

Date: **1/02/2010**

Time: **1:34:44 PM**

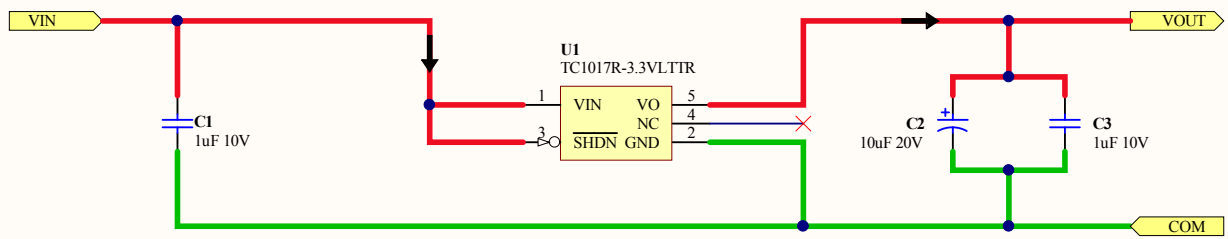
Sheet **8** of **81**


File: **PSU NCP630SET 1V2.SchDoc**

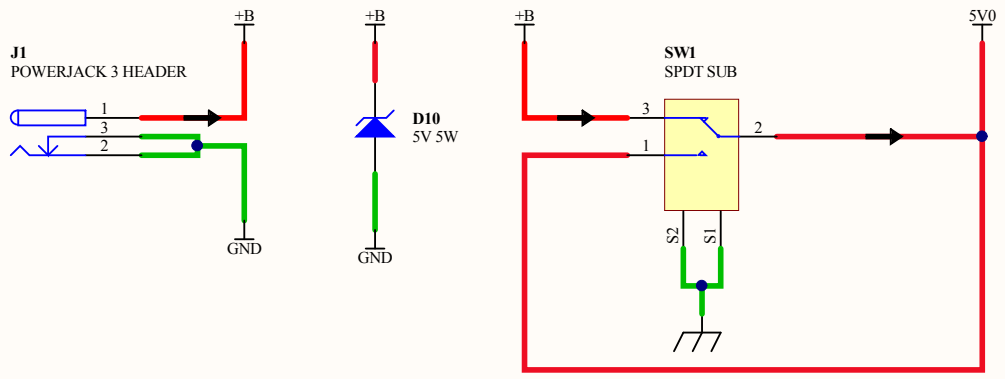
*Altium Limited*  
 3 Minna Close  
 Belrose  
 NSW 2085  
 Australia




**3V3**  
**150mA**  
**50uVRMS**

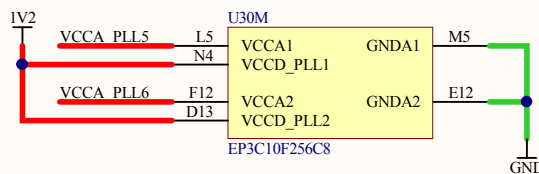
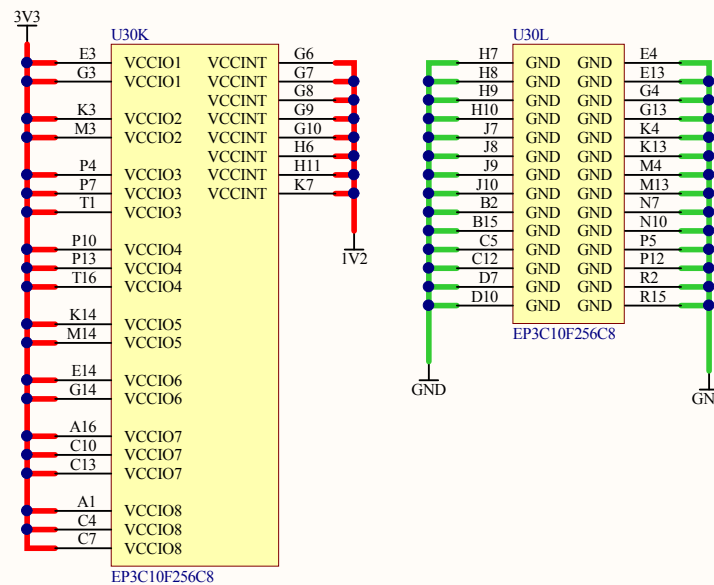
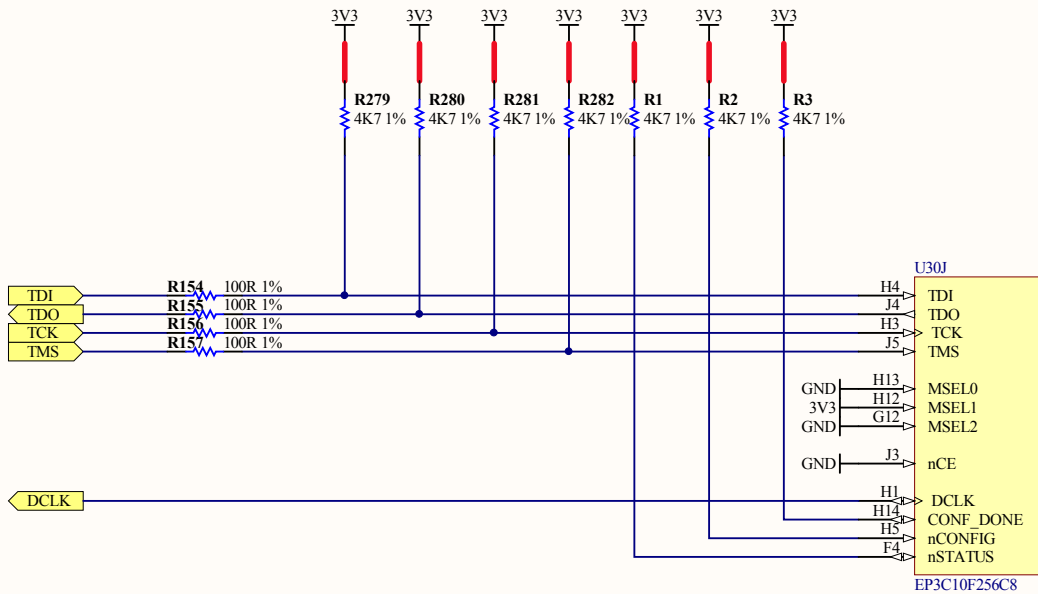
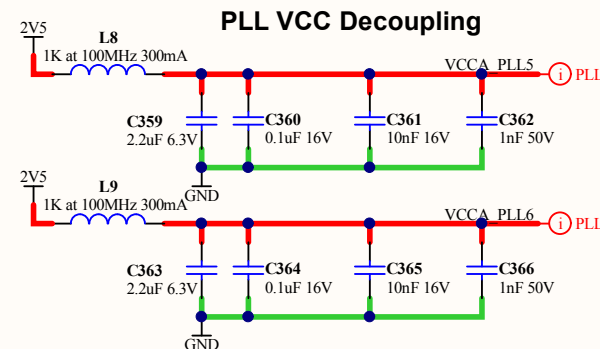
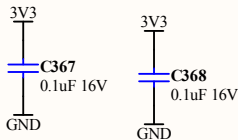


Sheet Title <b>PSU TC1017R 3V3</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:44 PM</b>	Sheet <b>9</b> of <b>81</b>	
File: <b>PSU TC1017R 3V3.SchDoc</b>			



Sheet Title <b>Power Jack &amp; Switch</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:44 PM</b>	Sheet <b>10</b> of <b>81</b>	
File: <b>PWJACK+SWITCH.SchDoc</b>			

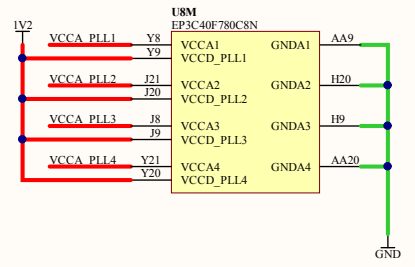
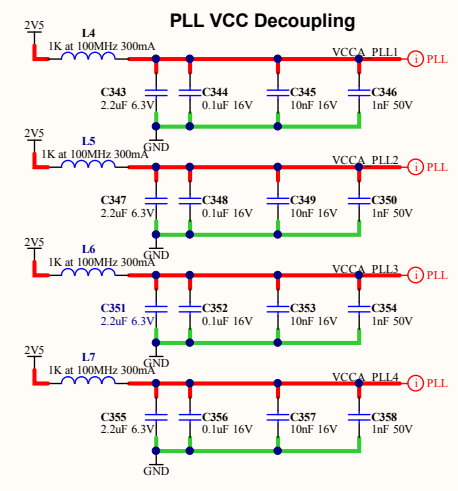
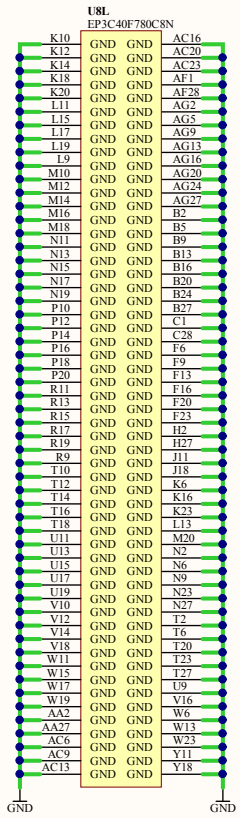
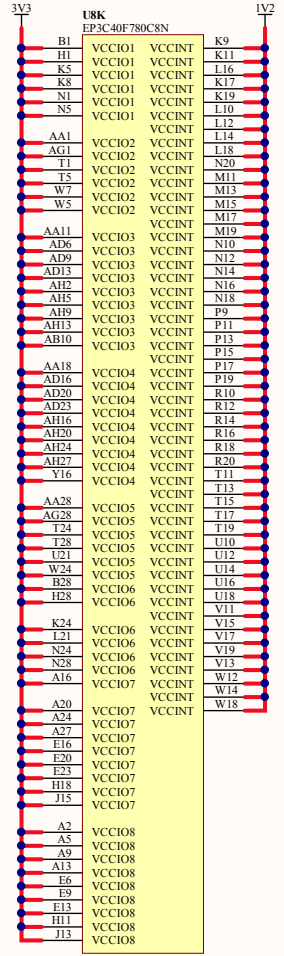
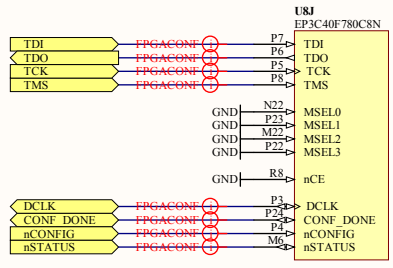


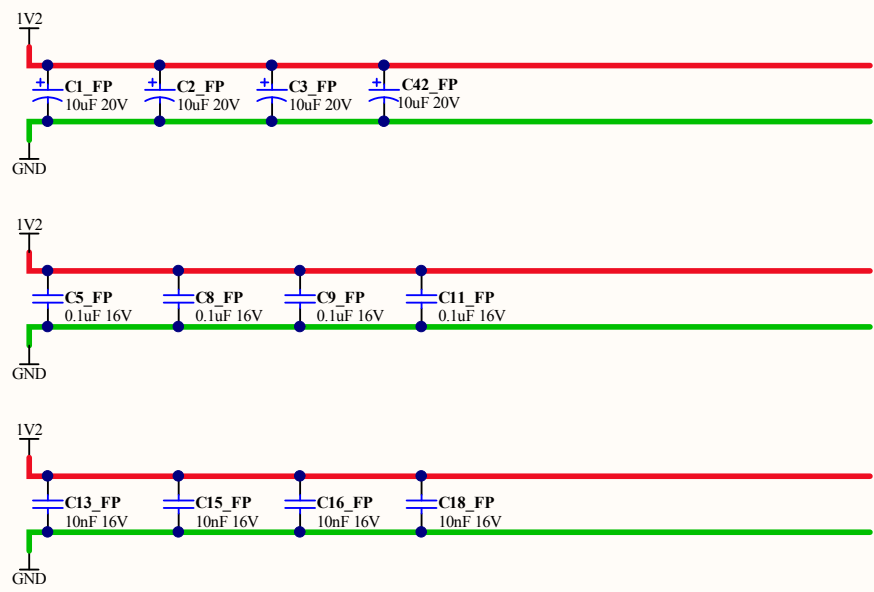


Sheet Title <b>Host FPGA Pwr and Programming</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:45 PM	Sheet 12 of 81		
File: HOST FPGA NonIO.SchDoc				

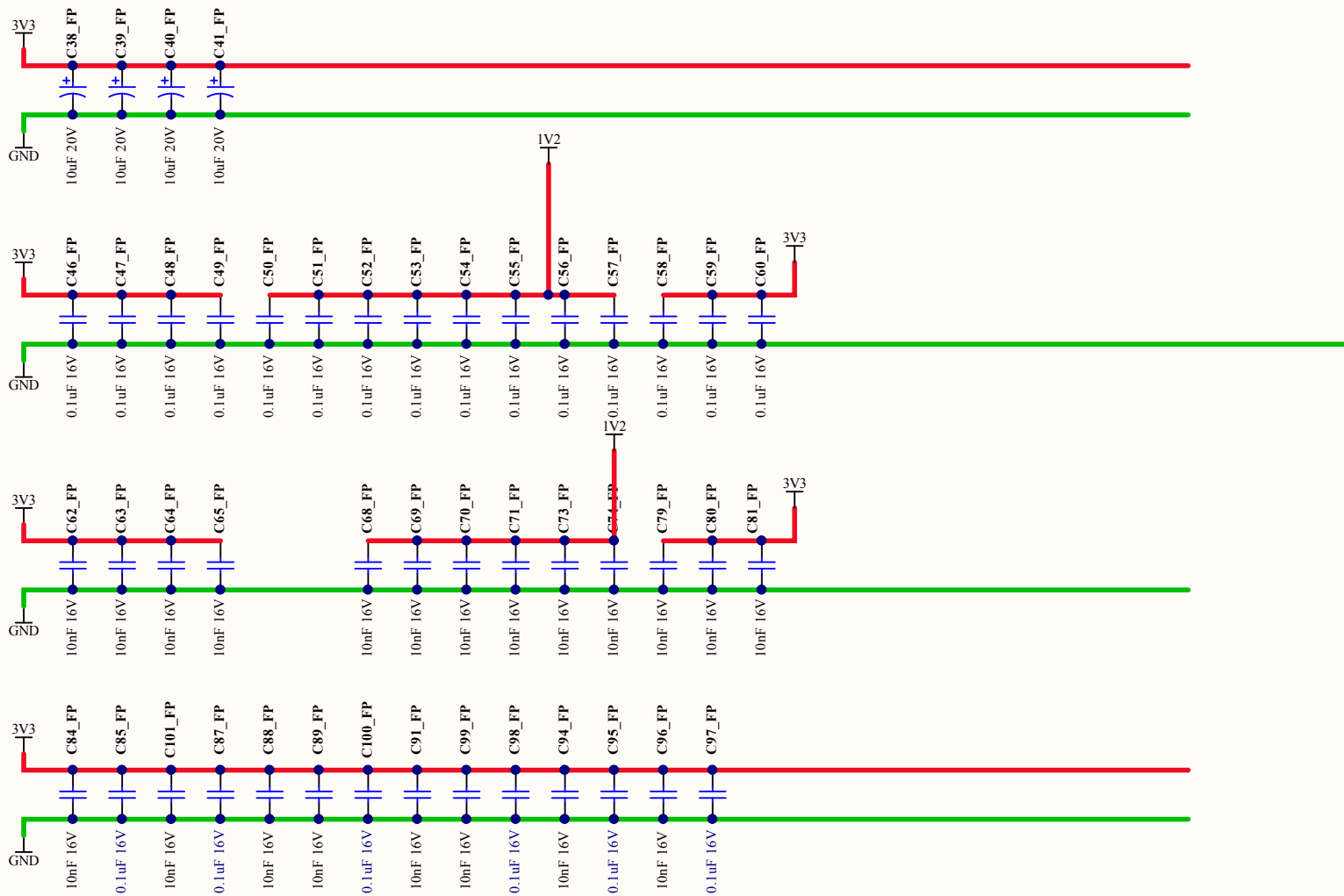






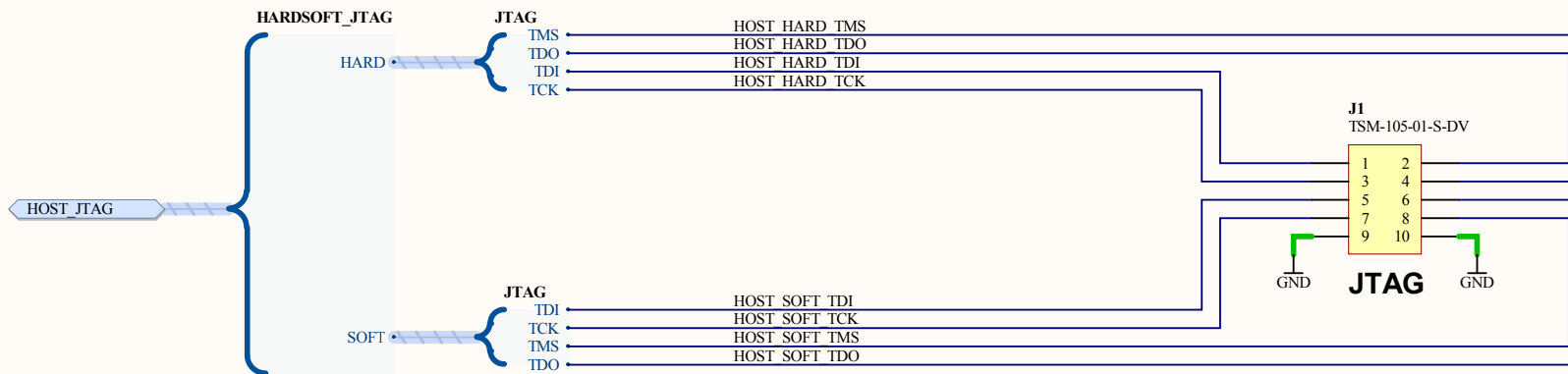


Sheet Title <b>FPGA Bypass 1V2</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:45 PM</b>	Sheet <b>15</b> of <b>81</b>	
File: <b>FPGA Bypass 1V2.SCHDOC</b>			

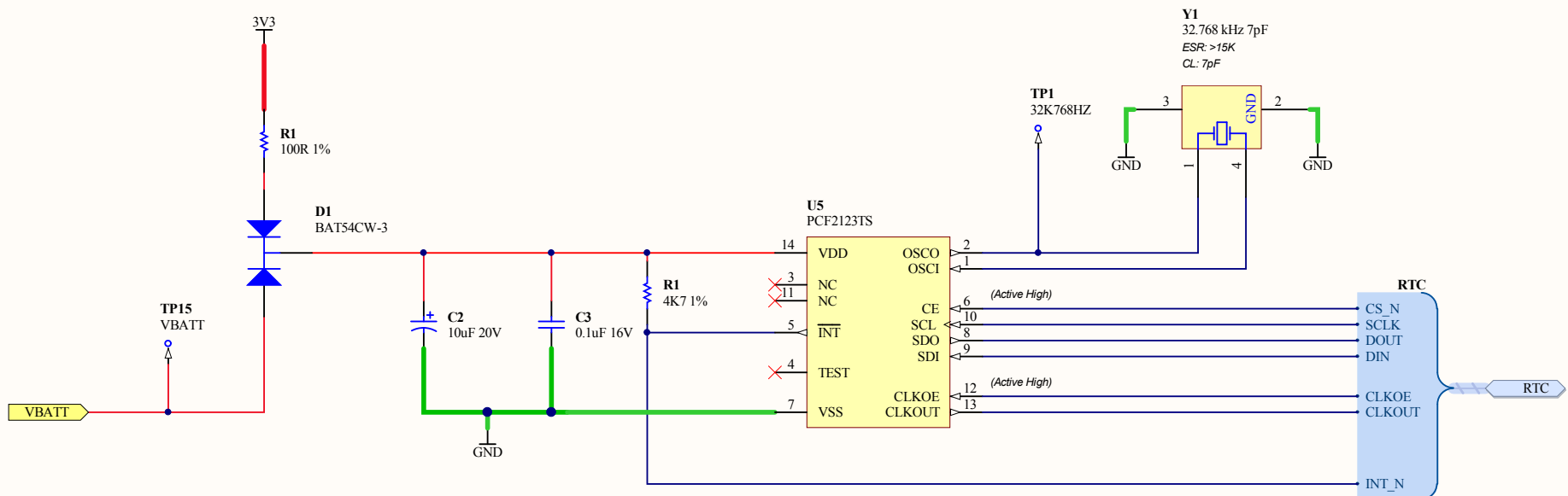


▲ The FPGA bypass capacitors are physically grouped as 10nF and 100nF pairs on all major accessible power pins on the FPGA.

Sheet Title <b>FPGA Bypass 3V3</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:45 PM	Sheet 16 of 81	
File: FPGA Bypass 3V3.SCHDOC			



Sheet Title <b>Local MCU Debug Connector</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>	Sheet <b>17</b> of <b>81</b>	
File: <b>HOST_JTAG.SchDoc</b>			



Sheet Title <b>SPI Real Time Clock</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>	Sheet <b>18</b> of <b>81</b>	
File: <b>CLK_PCF2123_RTC.SchDoc</b>			

1

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A

A

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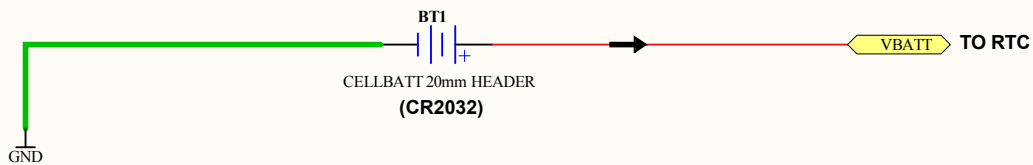
B


C

C

D

D



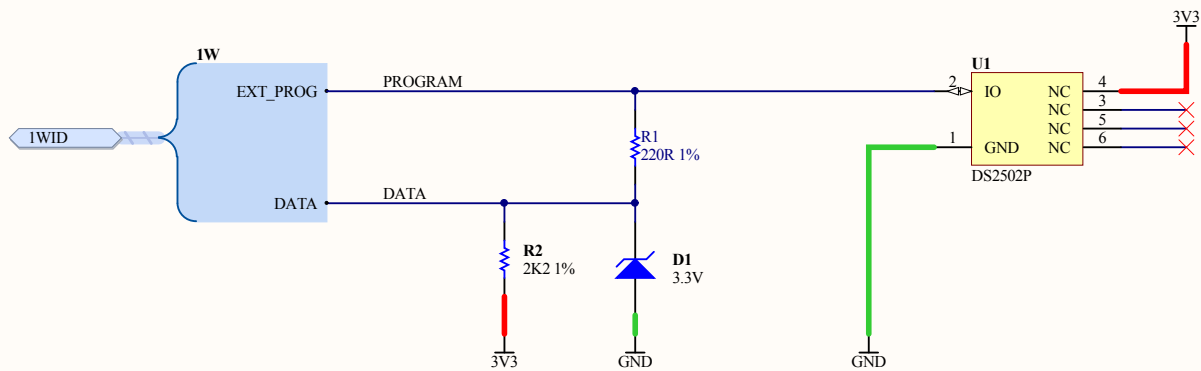
Sheet Title <b>Lithium Battery Holder - CR2032</b>			<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>		
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>	Sheet <b>19</b> of <b>81</b>		
File: <b>CON_BATT_COIN.SchDoc</b>				


1

2

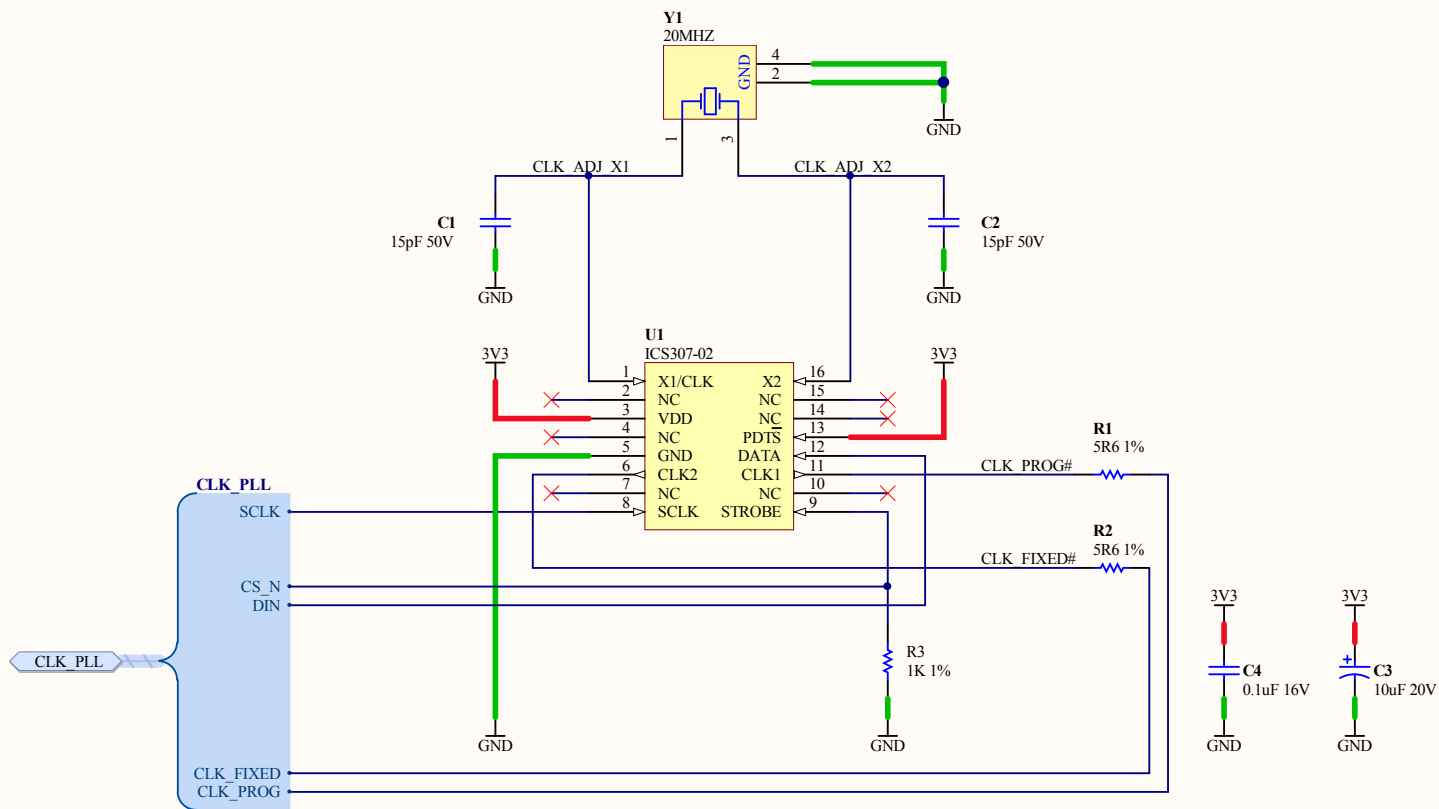
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4

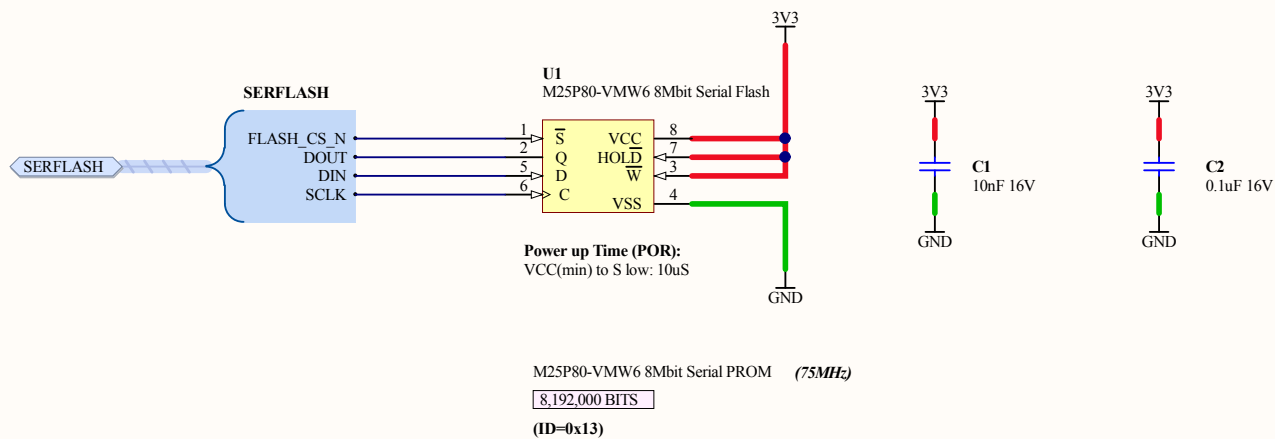


Sheet Title <b>Protected 1-Wire EPROM</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:46 PM	Sheet 20 of 81	
File: 1WB_DS2502_ID.SchDoc			

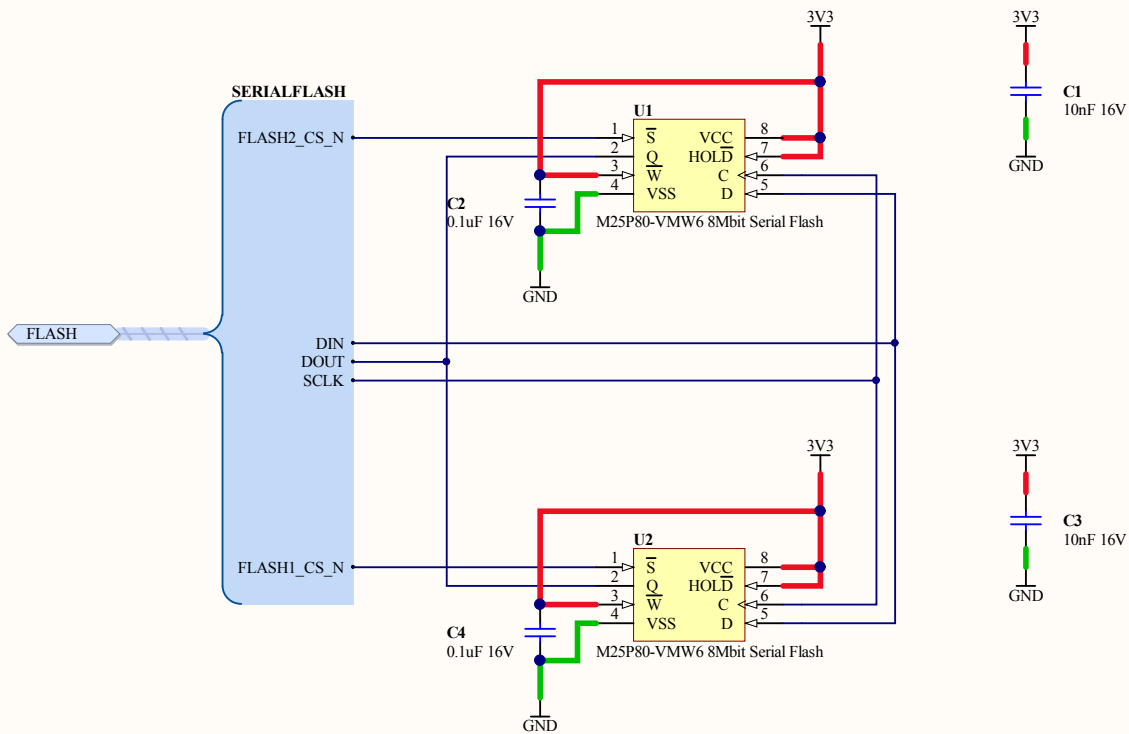




Sheet Title <b>Programmable SPI Clock</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>	Sheet <b>21</b> of <b>81</b>	
File: <b>CLK ICS307-02 PLL.SchDoc</b>			

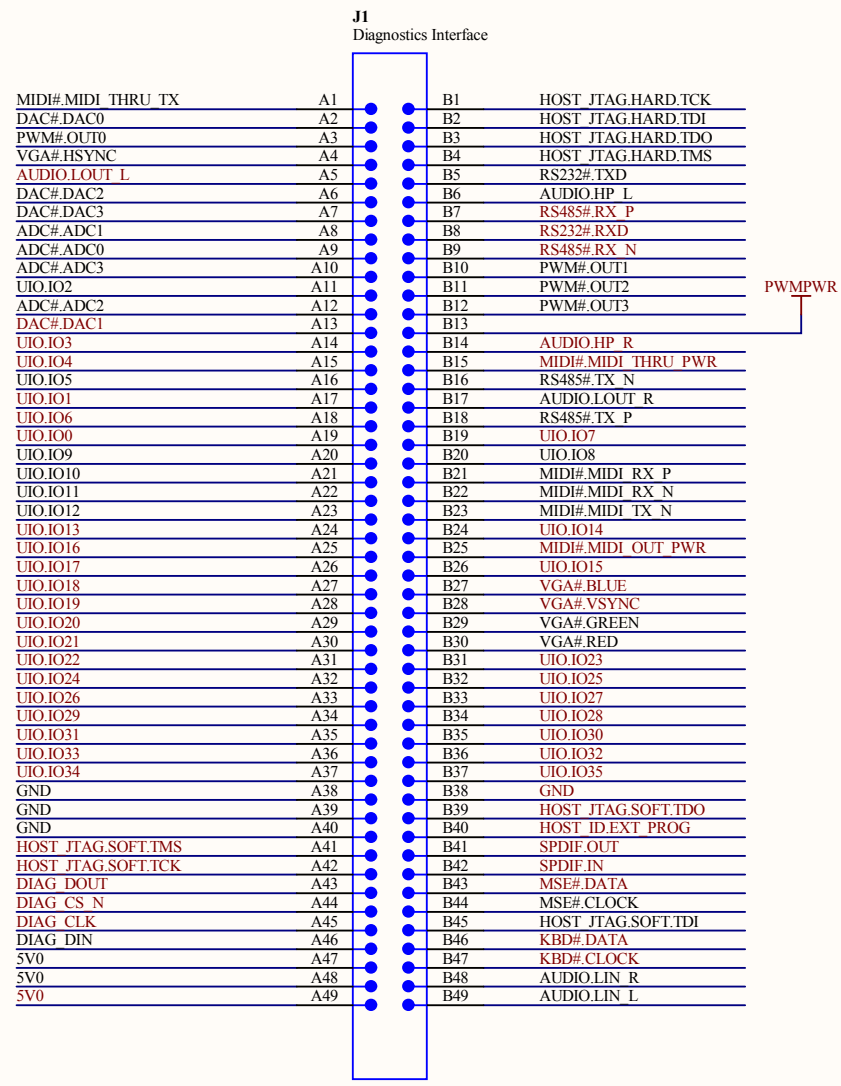
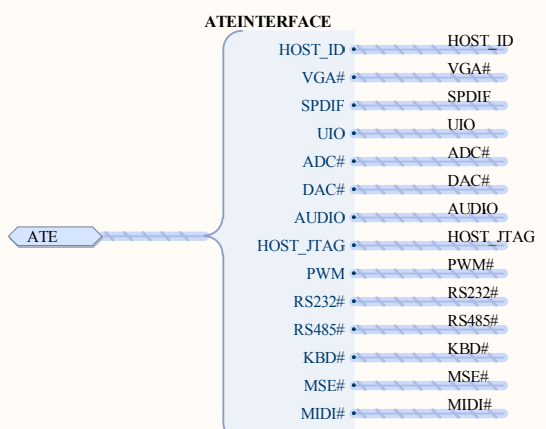
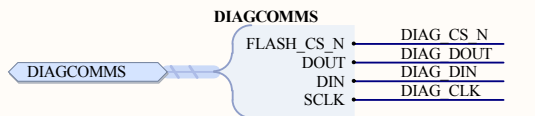


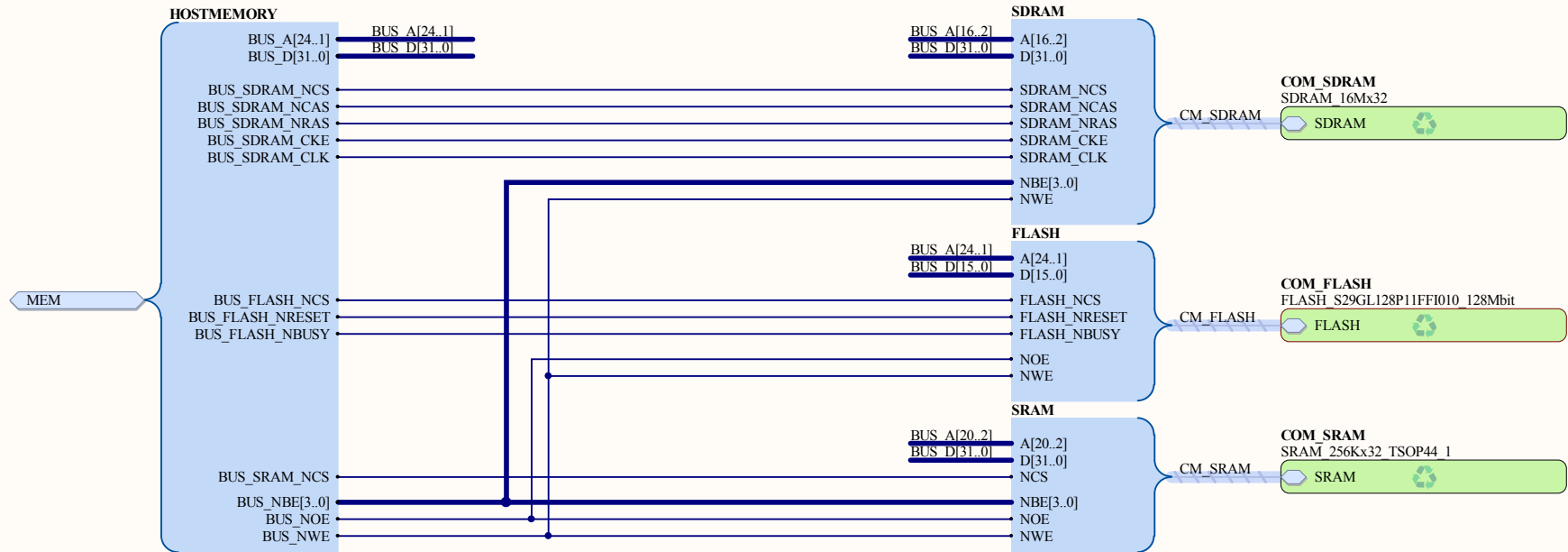
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Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:46 PM	Sheet 22 of 81	
File: FLASH M25PX0 SPI 8Mbit.SchDoc			



Sheet Title <b>USER - Dual Serial Flash Memory</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>		Revision: <b>02</b>
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>		Sheet <b>23</b> of <b>81</b>
File: <b>FLASHSPI M25PX0.SchDoc</b>			





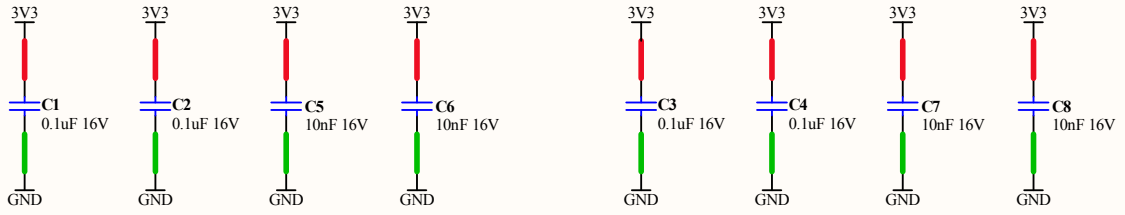
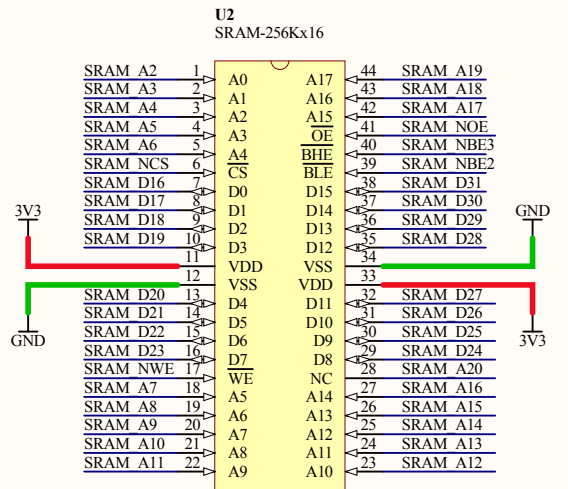
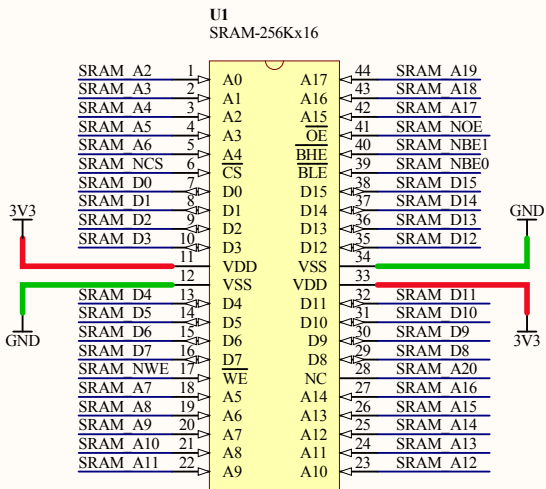
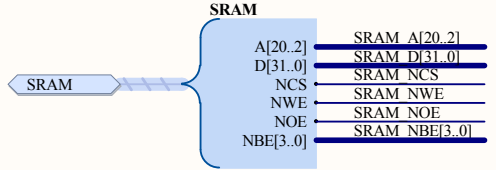


**Common-Bus Memory Block**

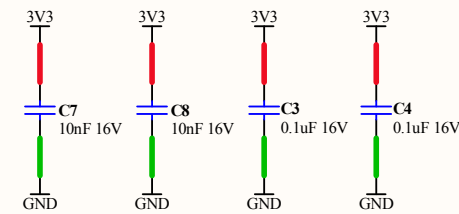
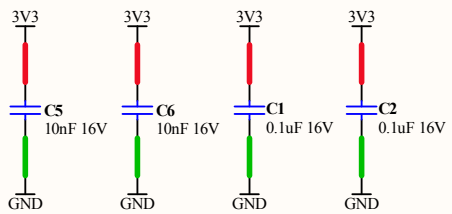
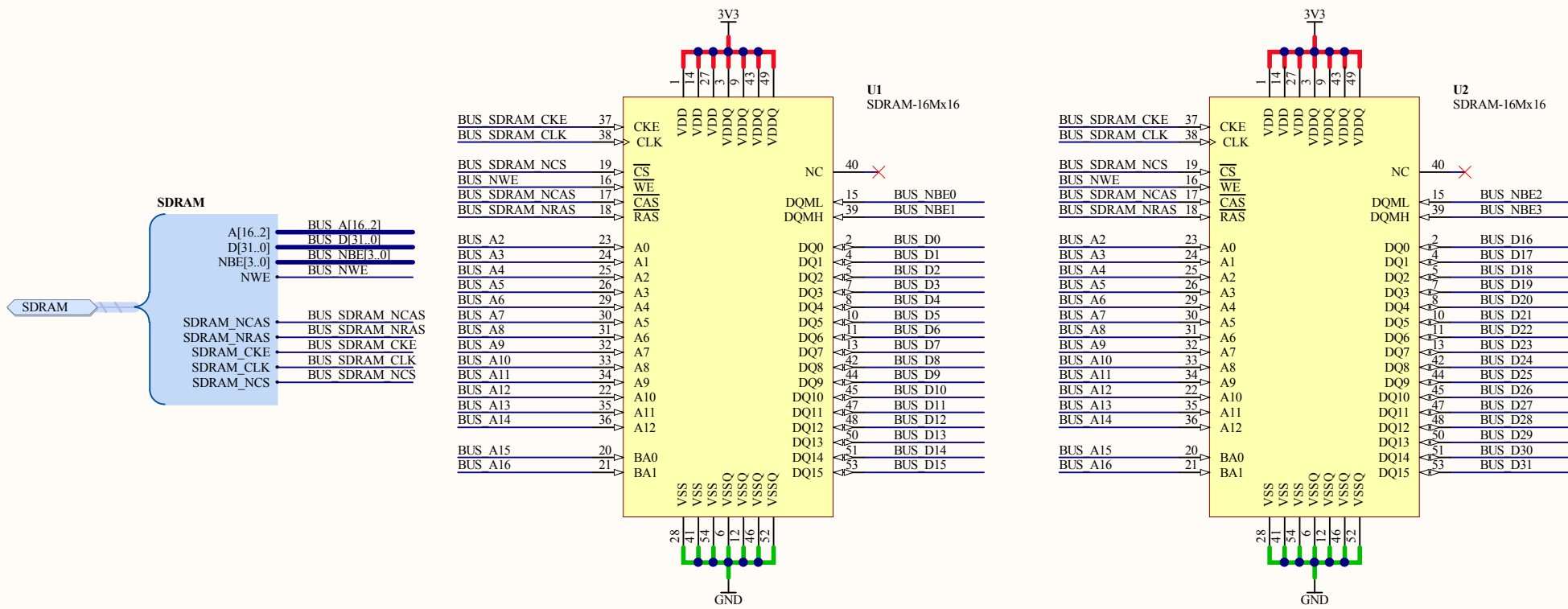
256K x 32-bit SRAM (1 MByte)  
 16M x 32-Bit SDRAM (64 MByte)  
 8M x 16-Bit Flash (16 MByte)

Sheet Title <b>Common-Bus Memory Block</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:46 PM	Sheet 25 of 81		
File: CommonMemory.SchDoc				

A18 is connected so that 512KBx16 device can be fitted



Sheet Title <b>256K x 32 SRAM - TSOP44 x 2</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>		
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>	Sheet <b>26</b> of <b>81</b>		
File: <b>SRAM 256Kx32 TSOP44 1.SchDoc</b>				



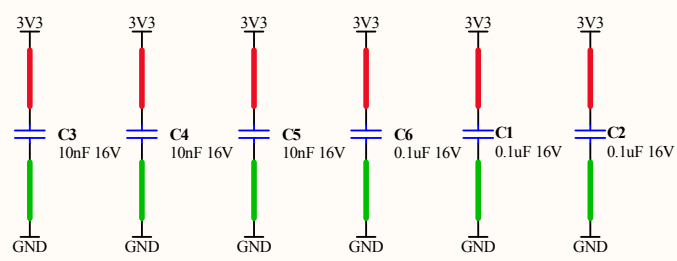
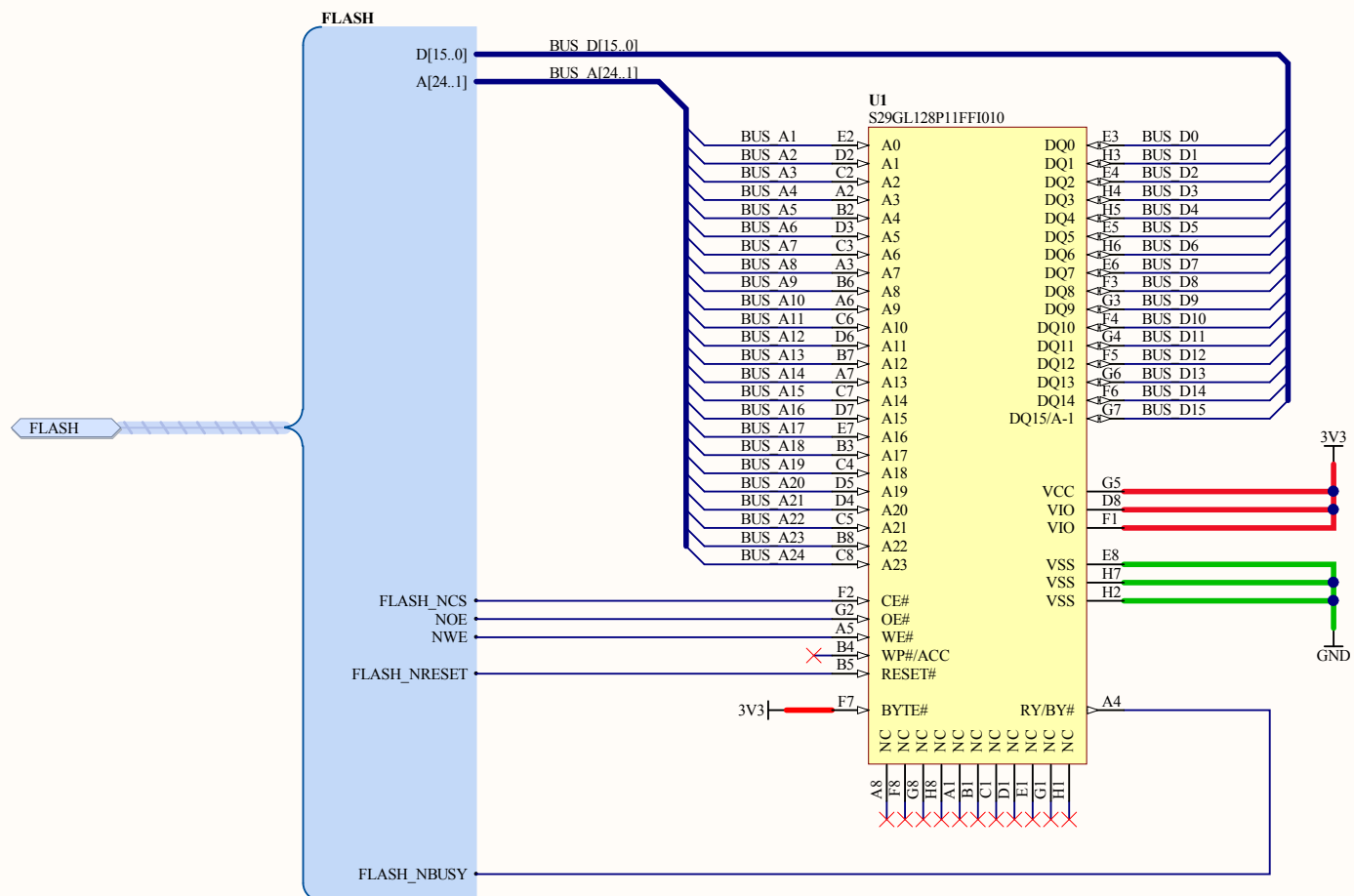
Sheet Title <b>16M x 32 SDRAM TSOP54 x 2</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:46 PM	Sheet 27 of 81	
File: SDRAM 16Mx32.SchDoc			

A

B

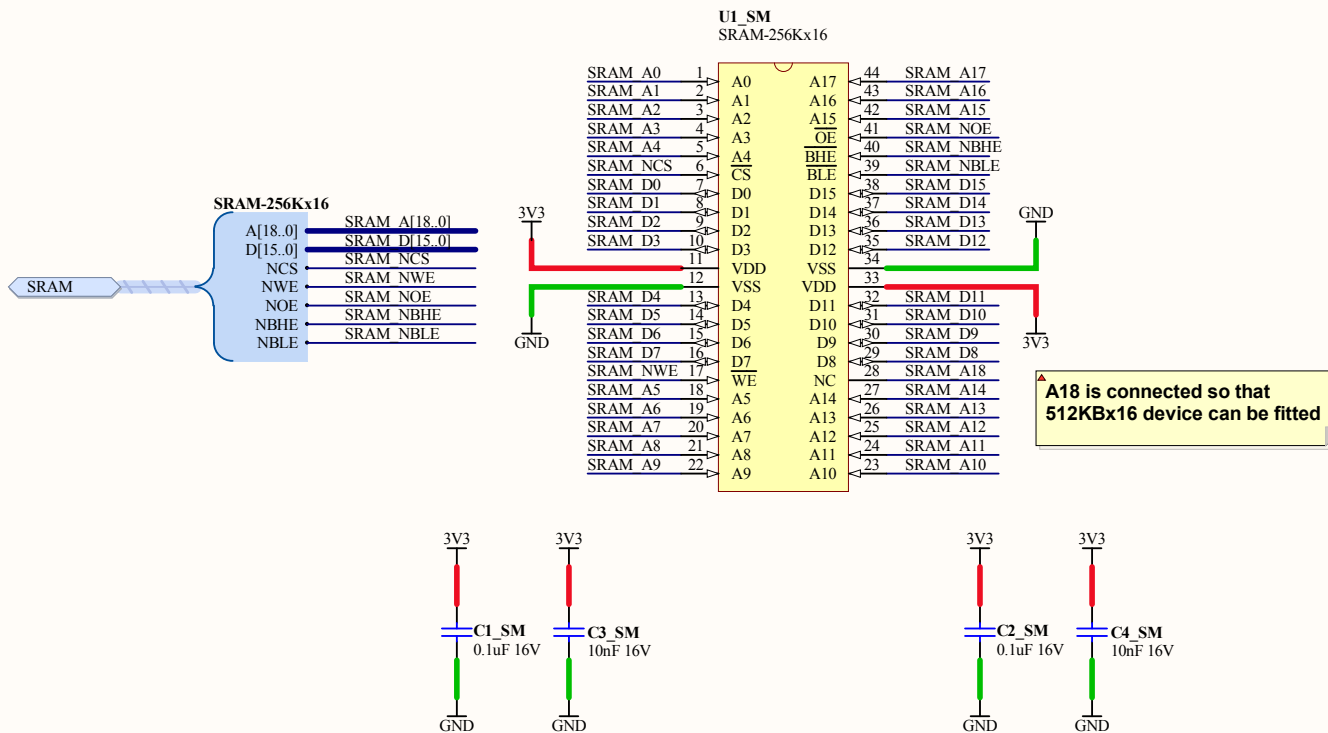
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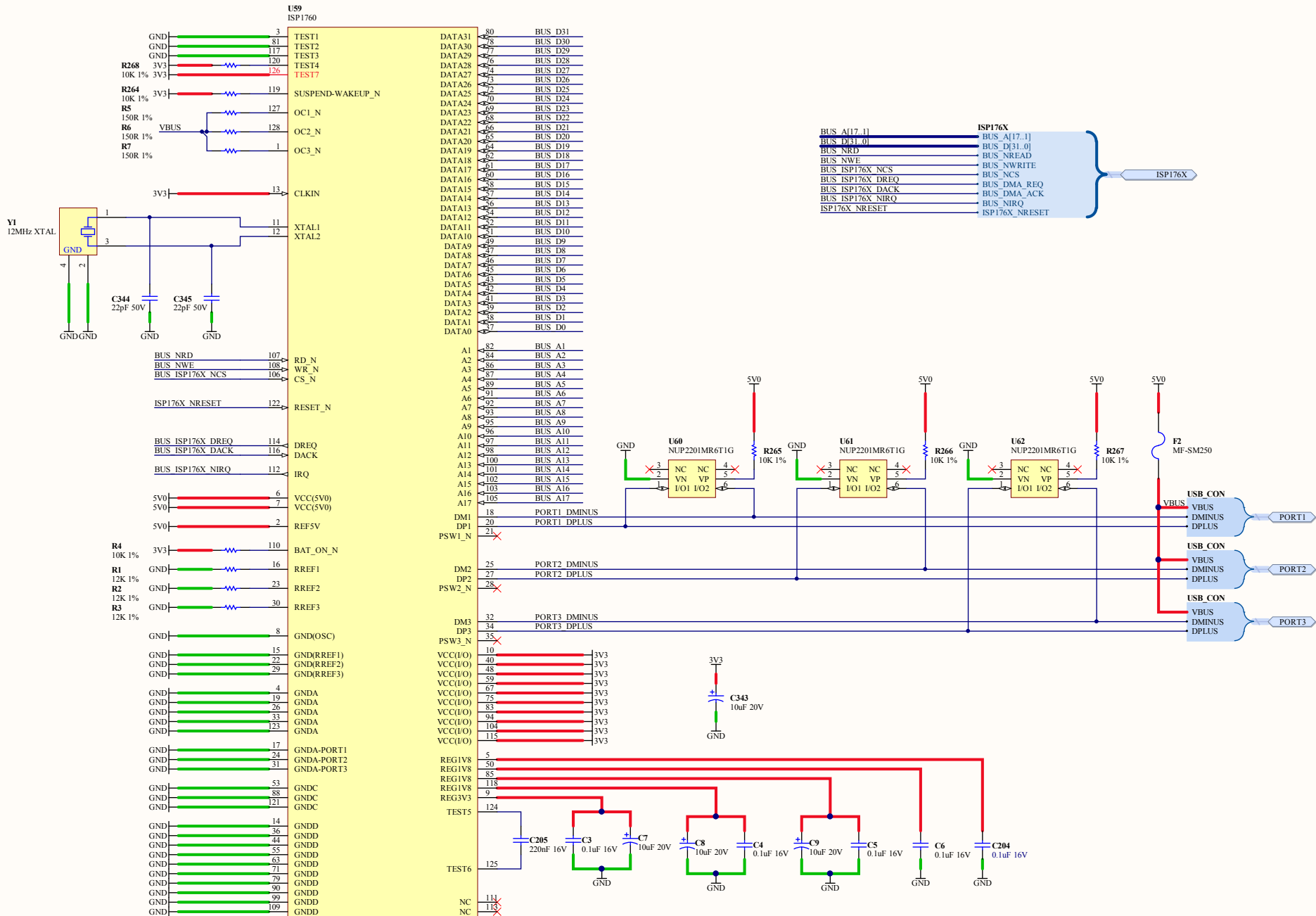


Sheet Title <b>128M-bit Flash Memory (BGA)</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:46 PM	Sheet 28 of 81	
File: FLASH_S29GL128P11FF1010_128Mbit.SchDoc			





Sheet Title <b>256K x 16-Bit SRAM</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>	Sheet <b>29</b> of <b>81</b>	
File: <b>SRAM 256Kx16 TSOP44.SchDoc</b>			



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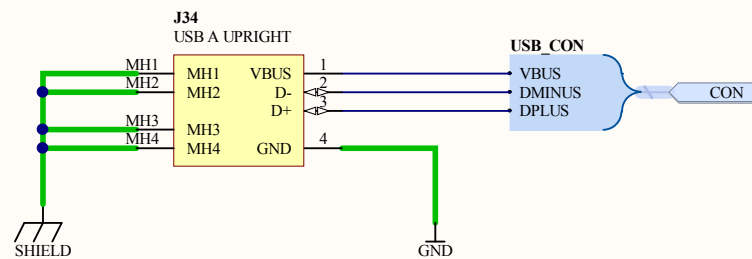
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C

C

D

D



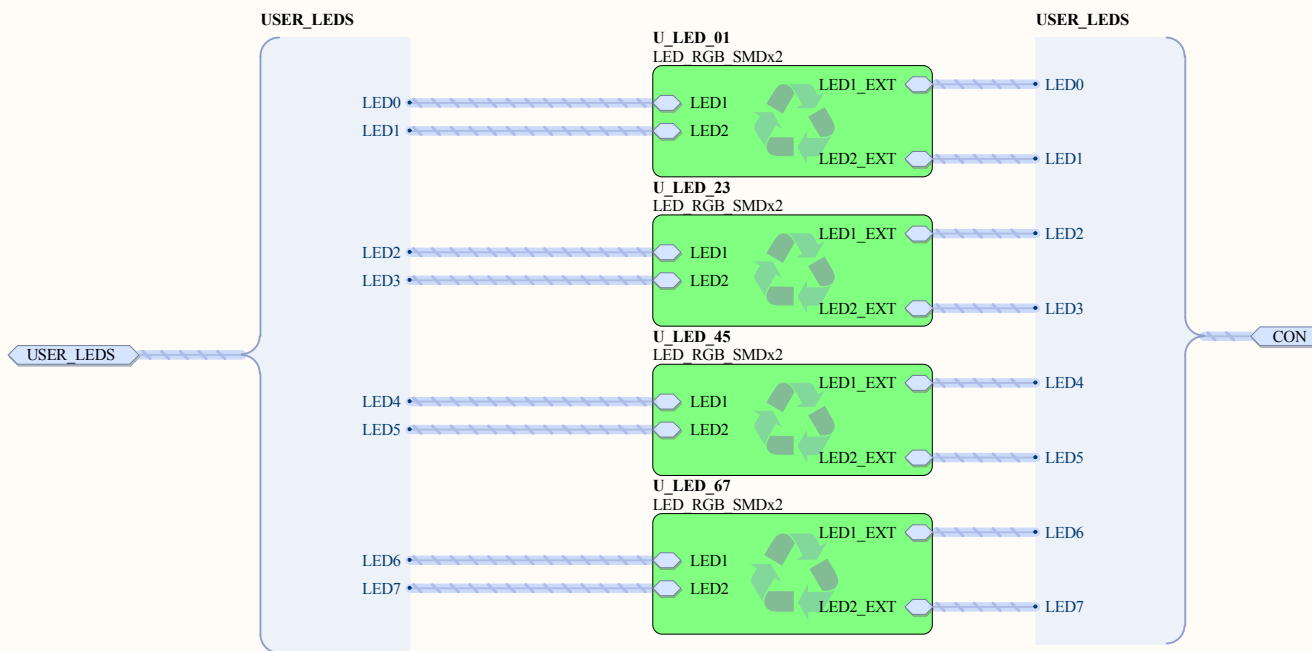
Sheet Title <b>USBA RA Upright Connector</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:46 PM	Sheet 31 of 81	
File: CON USBA RA UPRIGHT.SchDoc			

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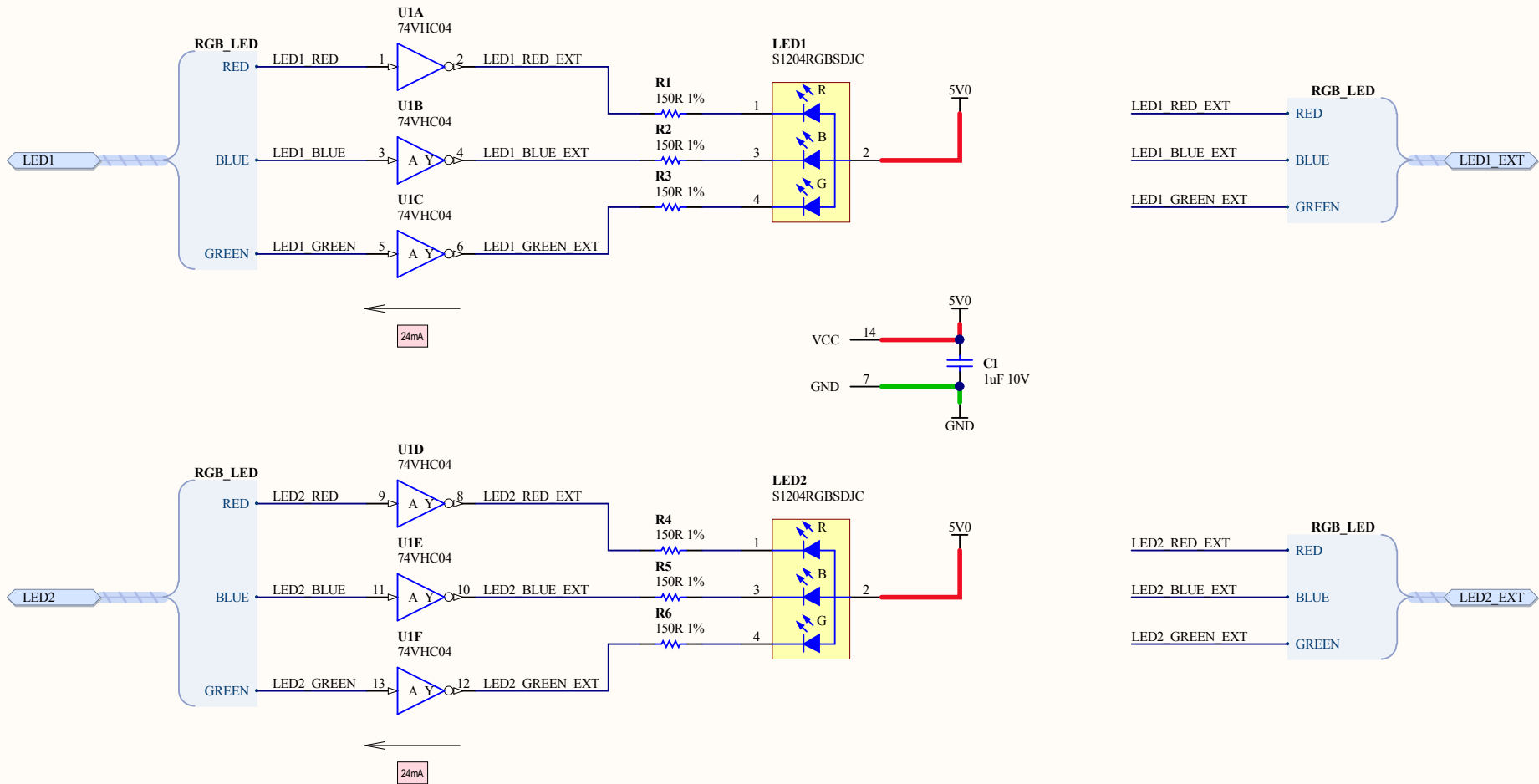
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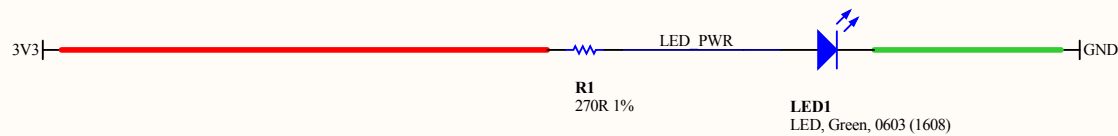


Sheet Title <b>Visual Indicators Top</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:46 PM</b>	Sheet <b>32</b> of <b>81</b>	
File: <b>LED_RGB_SMDx8.SCHDOC</b>			

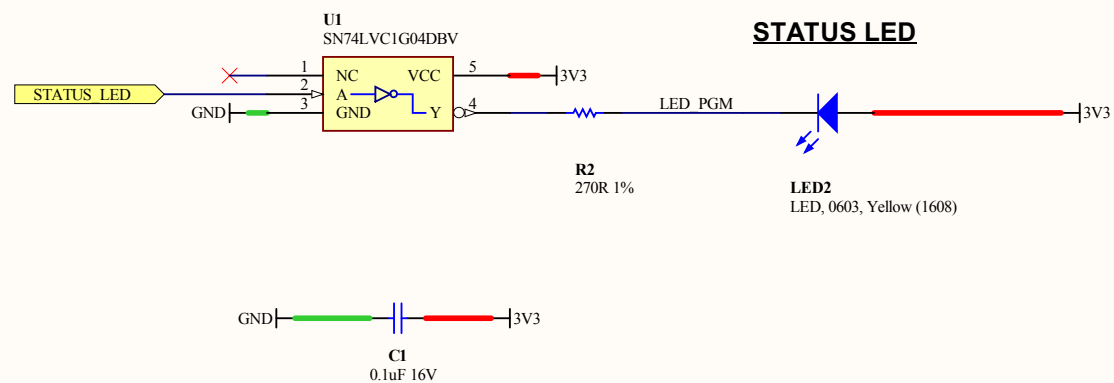


Sheet Title <b>Visual Indicators</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 33 of 81		
File: LED_RGB_SMDx2.SCHDOC				

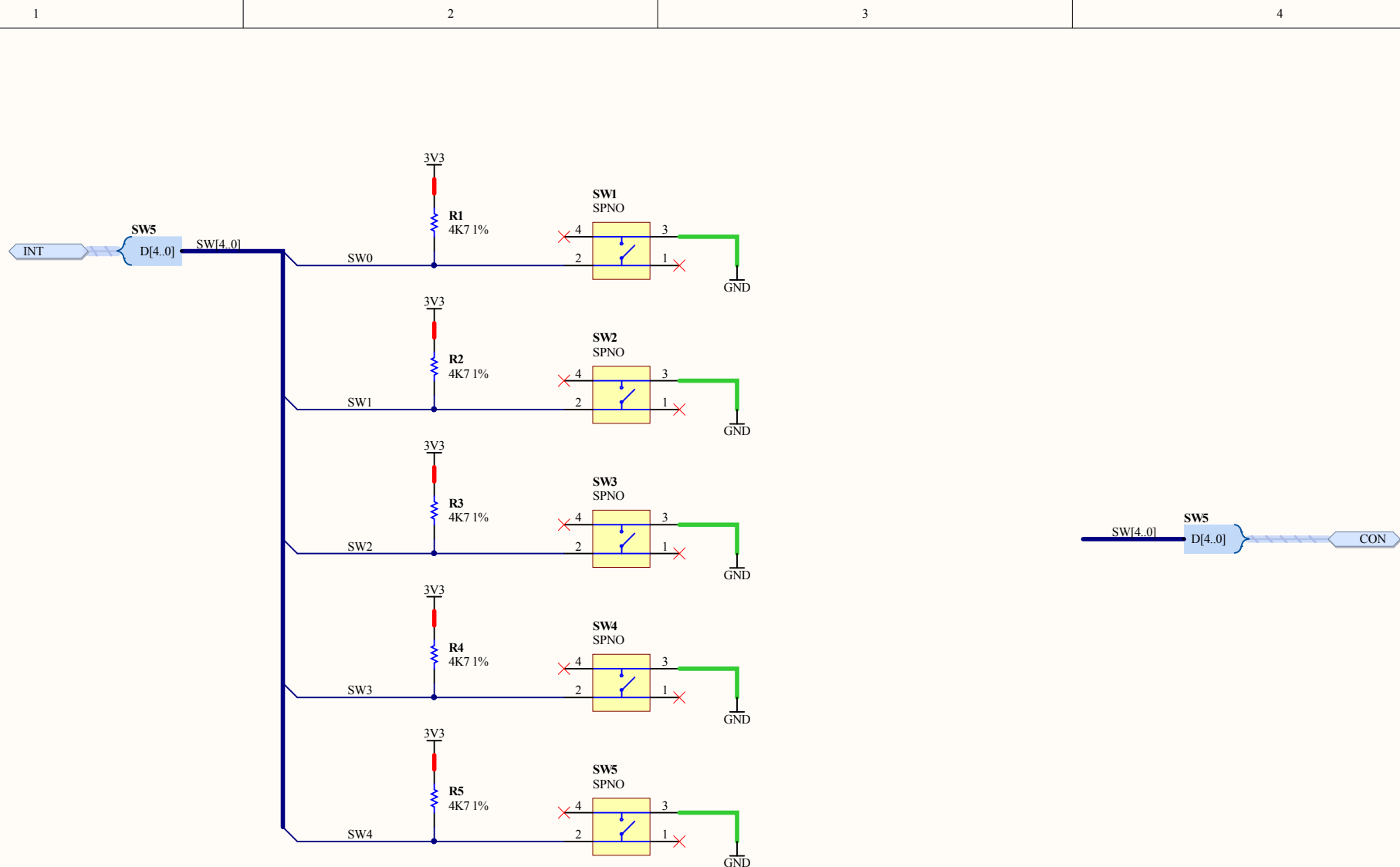
### POWER LED



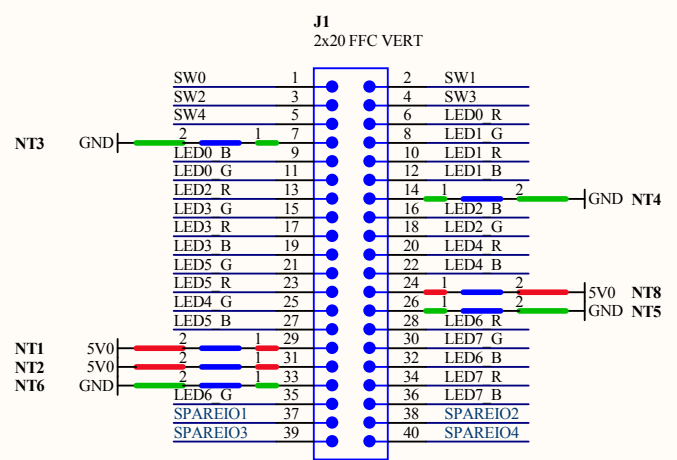
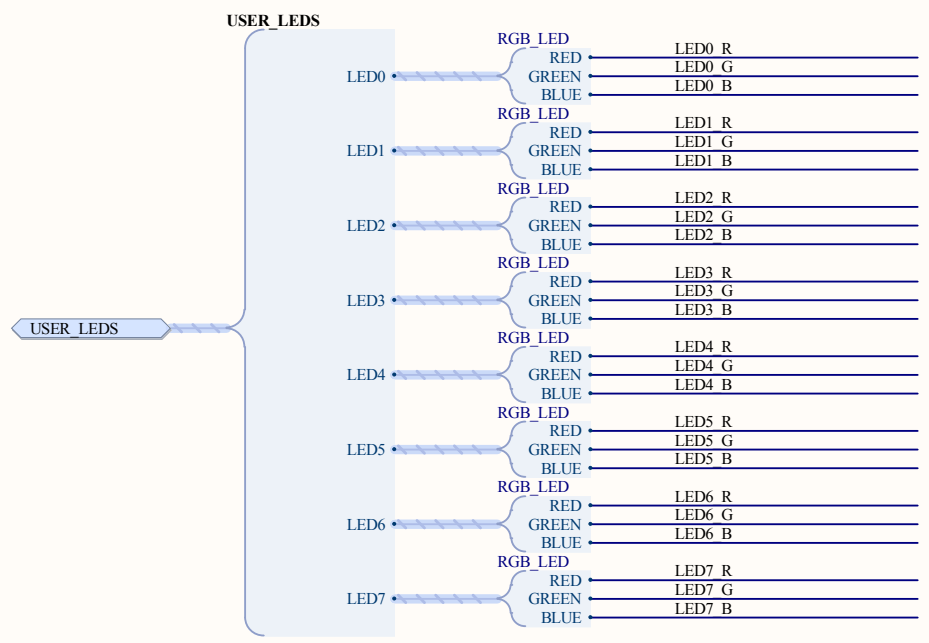
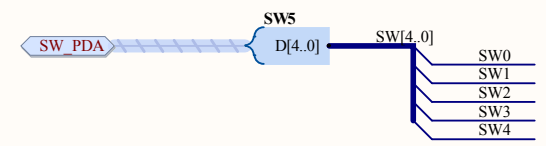
### STATUS LED



Sheet Title <i>User FPGA Status LEDs</i>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <i>NB3000AL - Altera</i>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 34 of 81	
File: DB_LEDS_0603.SchDoc			

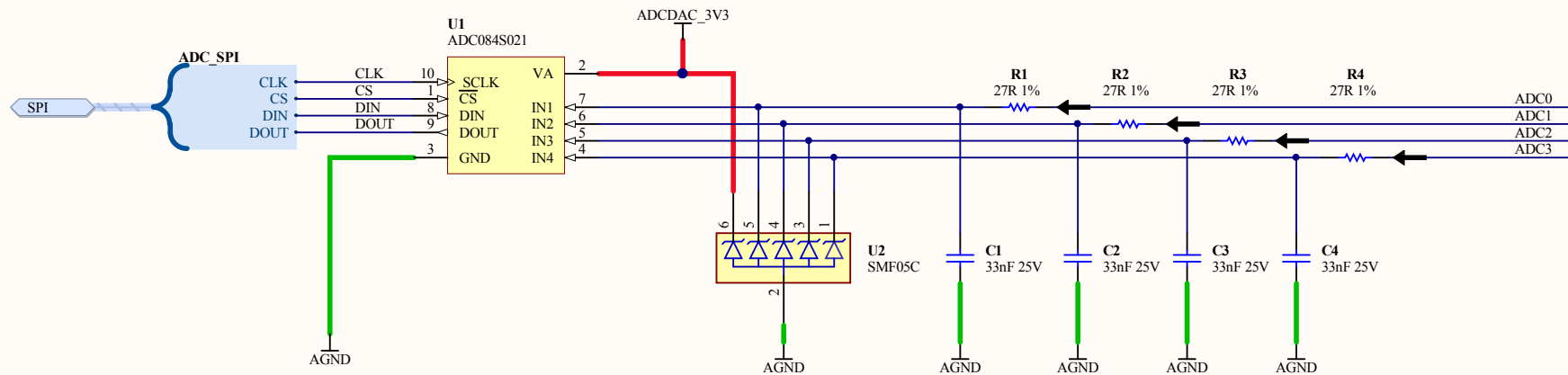


Sheet Title <b>PDA-Style 5 x SPNO Switch</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 35 of 81	
File: SW_PB_SPNOx5_SMD.SCHDOC			



Sheet Title <b>LED and Button Ext. Connector</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 36 of 81		
File: CON NB3000 LEDKB.SCHDOC				





**ADC maximum sample rate:**

**8 bit @ 200Ksps**

**Maximum sample rate (nyquist) : 100kHz**

**0.012890625v = 1 bit (3V3 ref) resolution**

**Low Pass Input filter Calculations:**

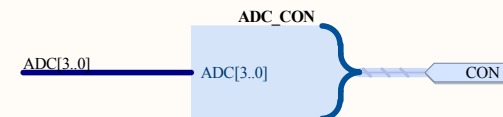
**R = 27 Ohms**

**C = 33nF (0.033uF)**

$$f_c = \frac{1}{2\pi RC} \text{ Hz} = \frac{1}{6.38 \times 27 \times 33^{-9}}$$

$$= 178715.6777$$

= Corner frequency rolloff (Knee) of ~ 178kHz



Sheet Title <b>ADC084S021 8-Bit ADC IC</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 37 of 81	
File: ADC_ADC084S021_SPI.SchDoc			

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A

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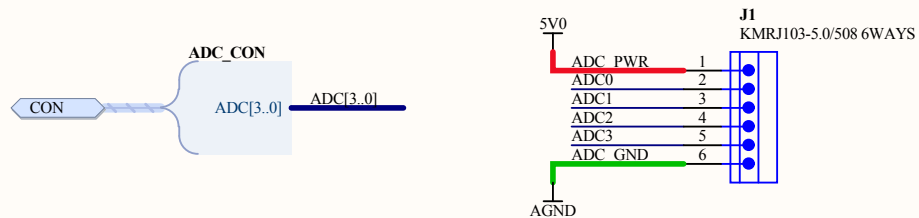
B


C

C

D

D



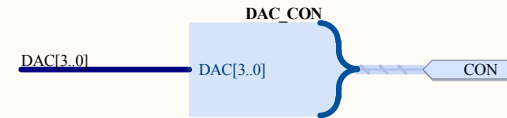
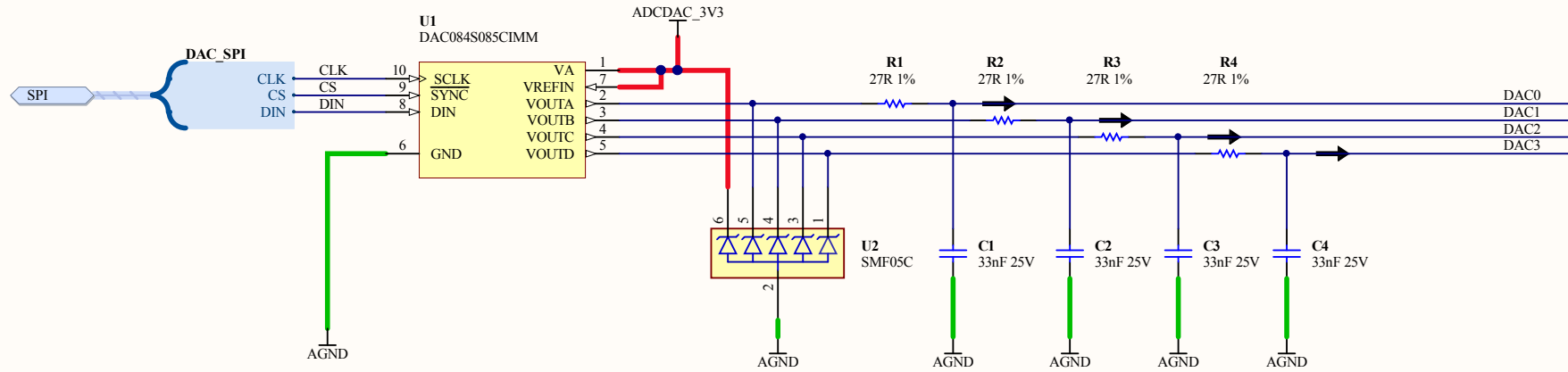
Sheet Title <b>Screw Header For ADC</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>38</b> of <b>81</b>	
File: <b>CON_ADCx4_KMRJIO3_5MM_6WAY.SchDoc</b>			

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Sheet Title <b>DAC084S085 8-bit DAC IC</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 39 of 81	
File: DAC DAC084S085 SPI.SchDoc			

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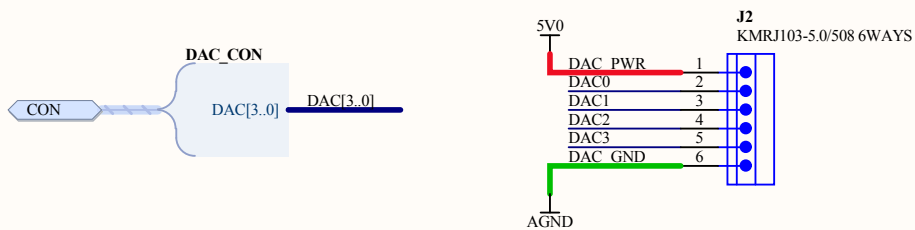
B


C

C

D

D



Sheet Title <b>Screw Header For DAC</b>			<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>		
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>40</b> of <b>81</b>		
File: <b>CON DACx4 KMRJIO3 5MM 6WAY.SchDoc</b>				

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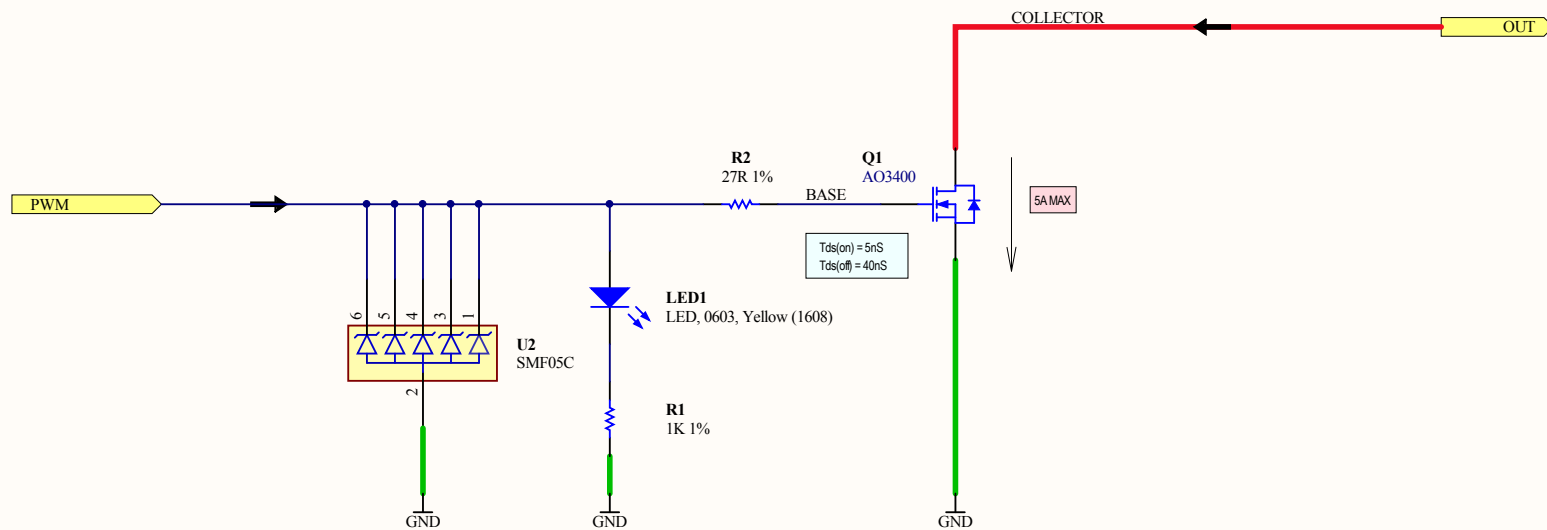
Sheet Title <b>PWM x 4</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>41</b> of <b>81</b>	
File: <b>PWM 5.8A 30V X4.SchDoc</b>			


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Sheet Title <b>PWM 30V/4A</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>42</b> of <b>81</b>	
File: <b>PWM 5.8A 30V.SchDoc</b>			

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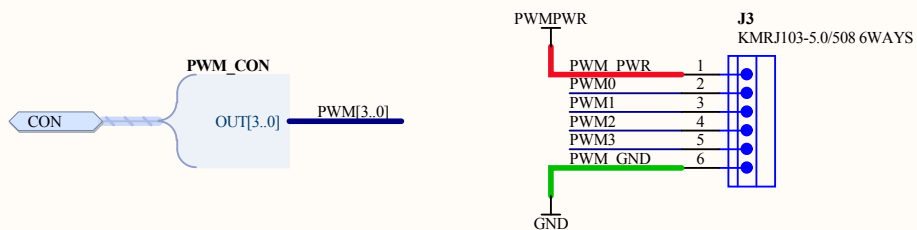
B


C

C

D

D



Sheet Title <b>Screw Header For Power PWM</b>			<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>		
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>43</b> of <b>81</b>		
File: <b>CON PWMx4 KMRJIO3 5MM 6WAY.SchDoc</b>				

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A

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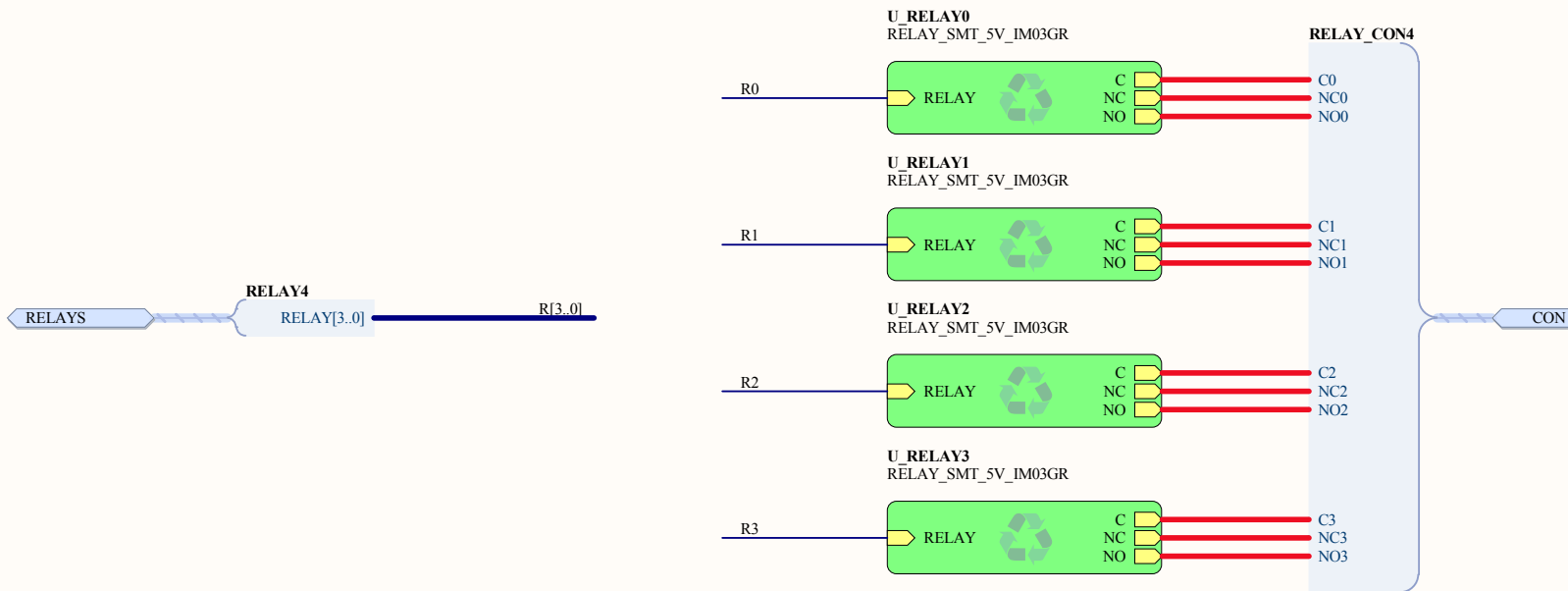
B

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D



Sheet Title <b>Power Control x4</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 44 of 81	
File: RELAY X4 IM03GR.SchDoc			

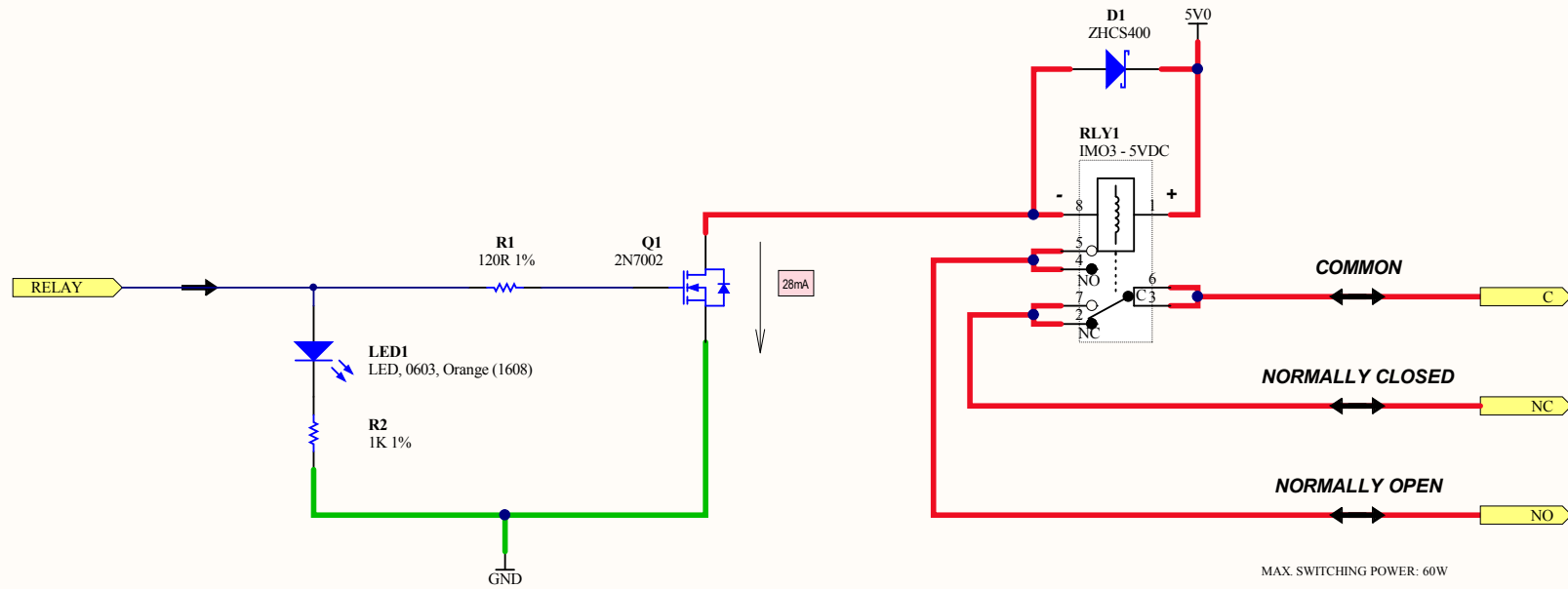
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Sheet Title <b>Power Control</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 45 of 81	
File: RELAY_SMT_5V_IMO3GR.SchDoc			

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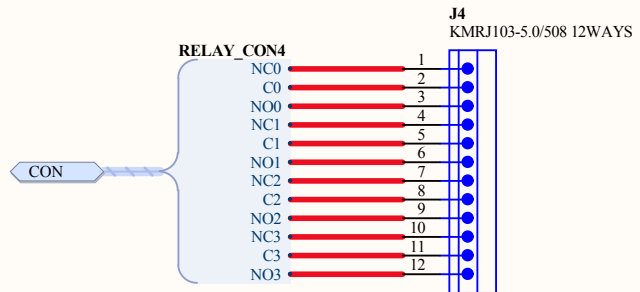
B


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C

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D



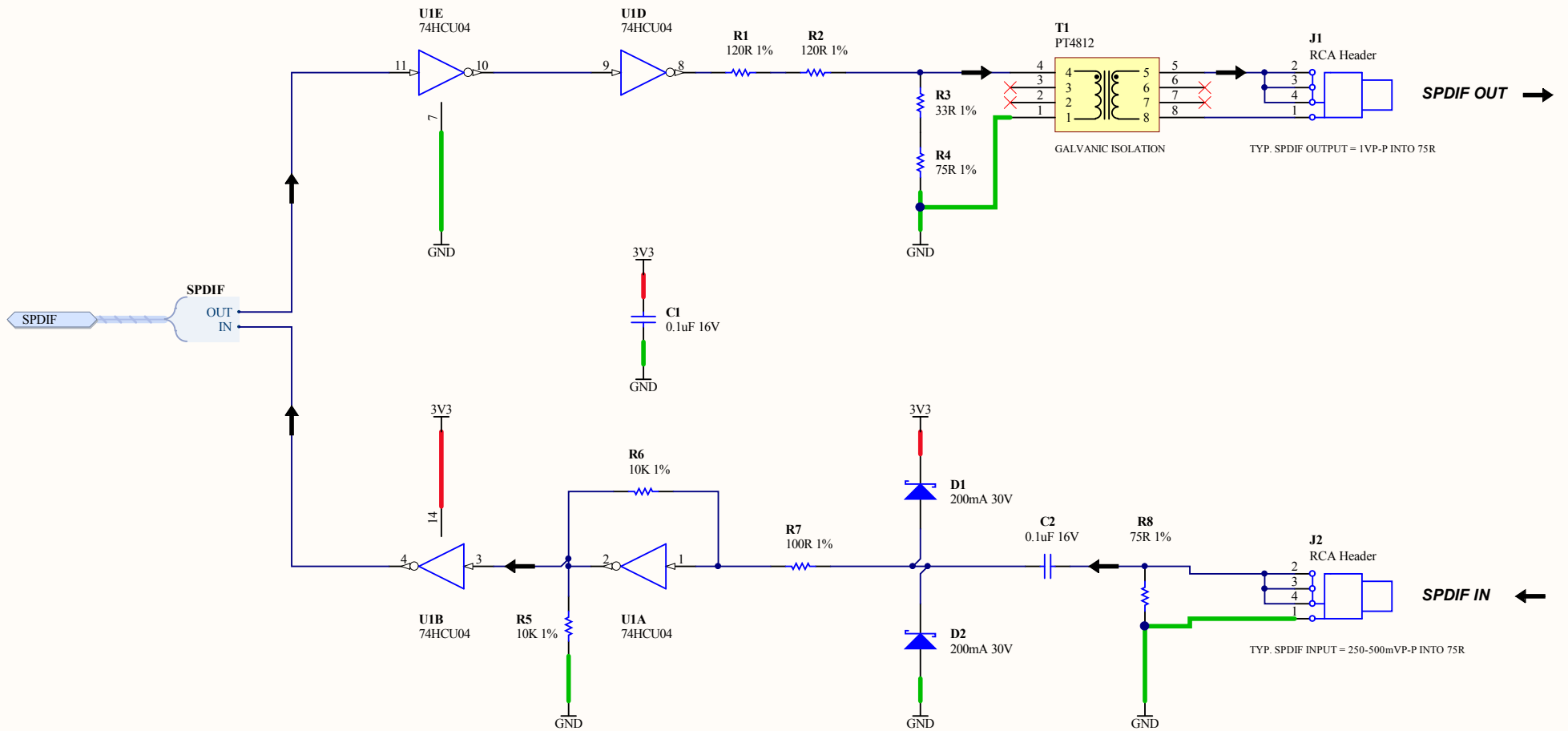
Sheet Title <b>Screw Header For Relays</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>46</b> of <b>81</b>	
File: <b>CON_RELAYx4_KMRJIO3_5MM_12WAY.SchDoc</b>			

1

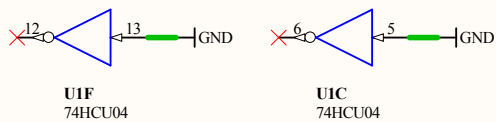
2

3

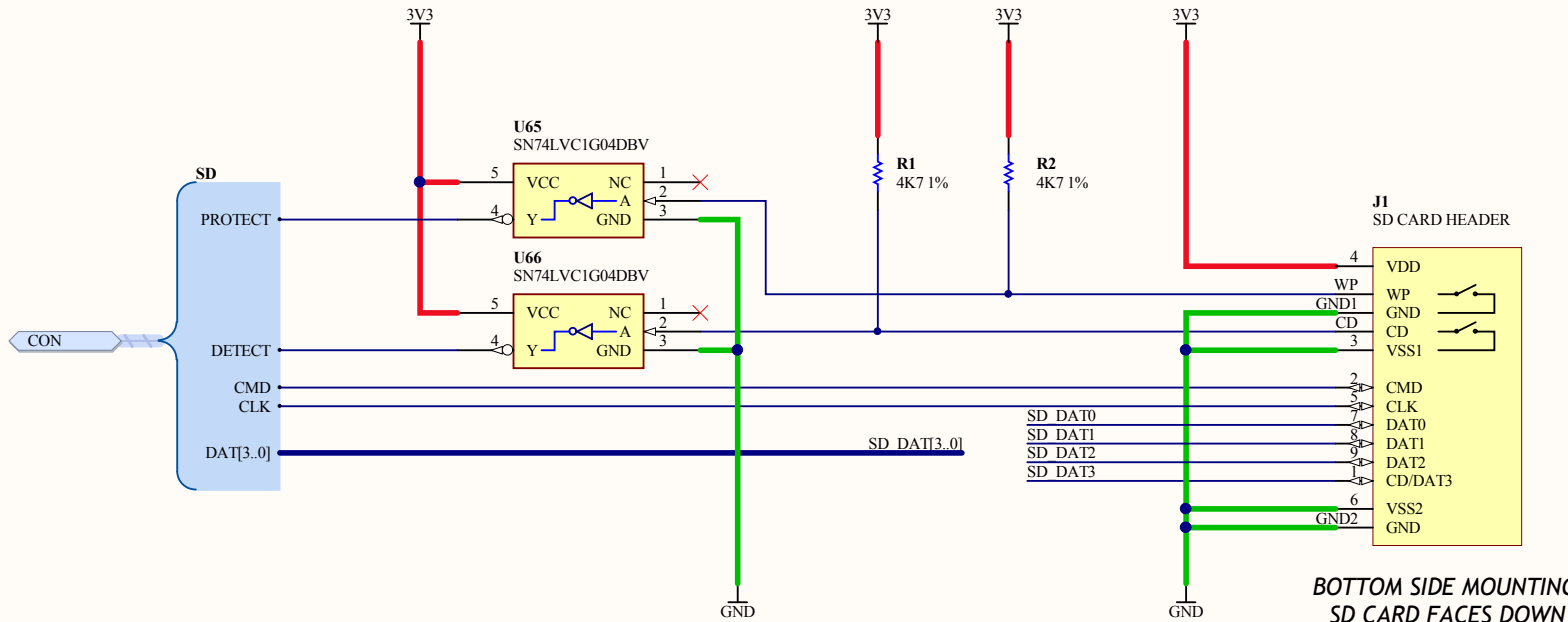
4



NOTE:  
INVERTER MUST BE UNBUFFERED (U TYPE)




Sheet Title <b>S/SPDIF RCA IN/OUT</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>47</b> of <b>81</b>	
File: <b>CON SPDIF INOUT A.SchDoc</b>			



**BOTTOM SIDE MOUNTING  
SD CARD FACES DOWN**

**WRITE PROTECT (PIN WP):**  
 PROTECTED (LOCKED): OPEN - FLOATING  
 UNPROTECTED (UNLOCKED): WP CONNECTED TO GND

**CARD DETECT (PIN CD):**  
 CARD REMOVED: OPEN - FLOATING  
 CARD INSERTED: CONNECTED TO GND

Sheet Title <b>SD-CARD</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 48 of 81		
File: CON_SD_KSDC012551.SchDoc				

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A

A

B

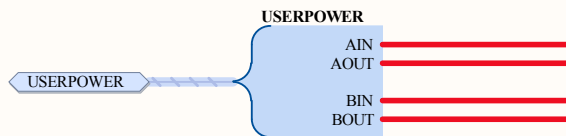
B

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C

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USER HEADER  
POWER LOOPBACK

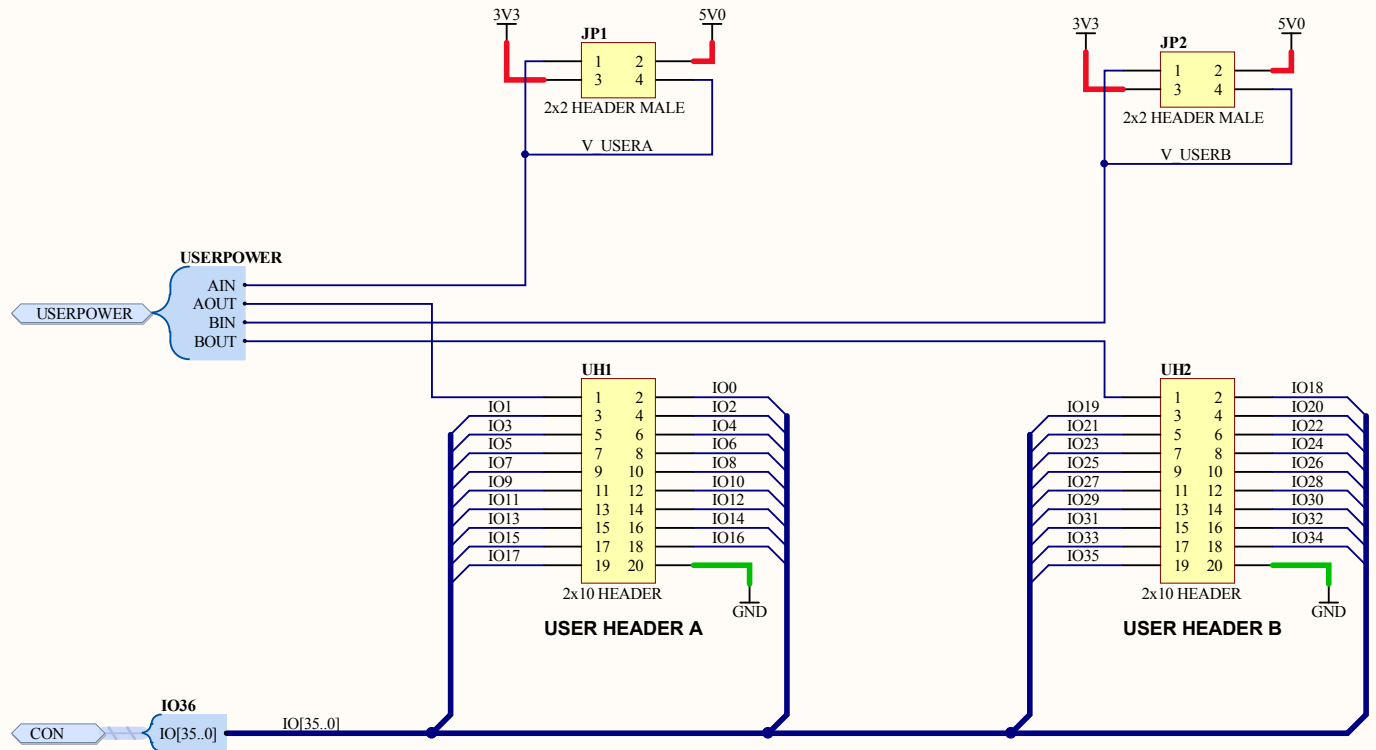
Sheet Title <b>USER IO Power Loopback</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 49 of 81	
File: USERPWR.SchDoc			

1

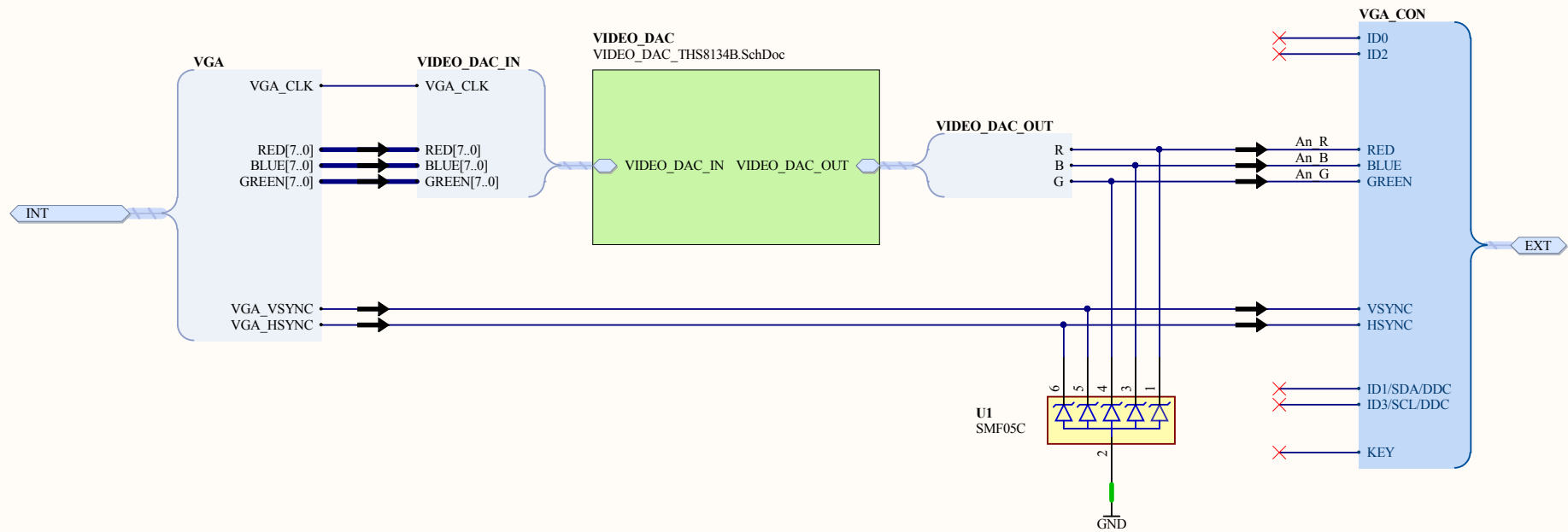
2

3

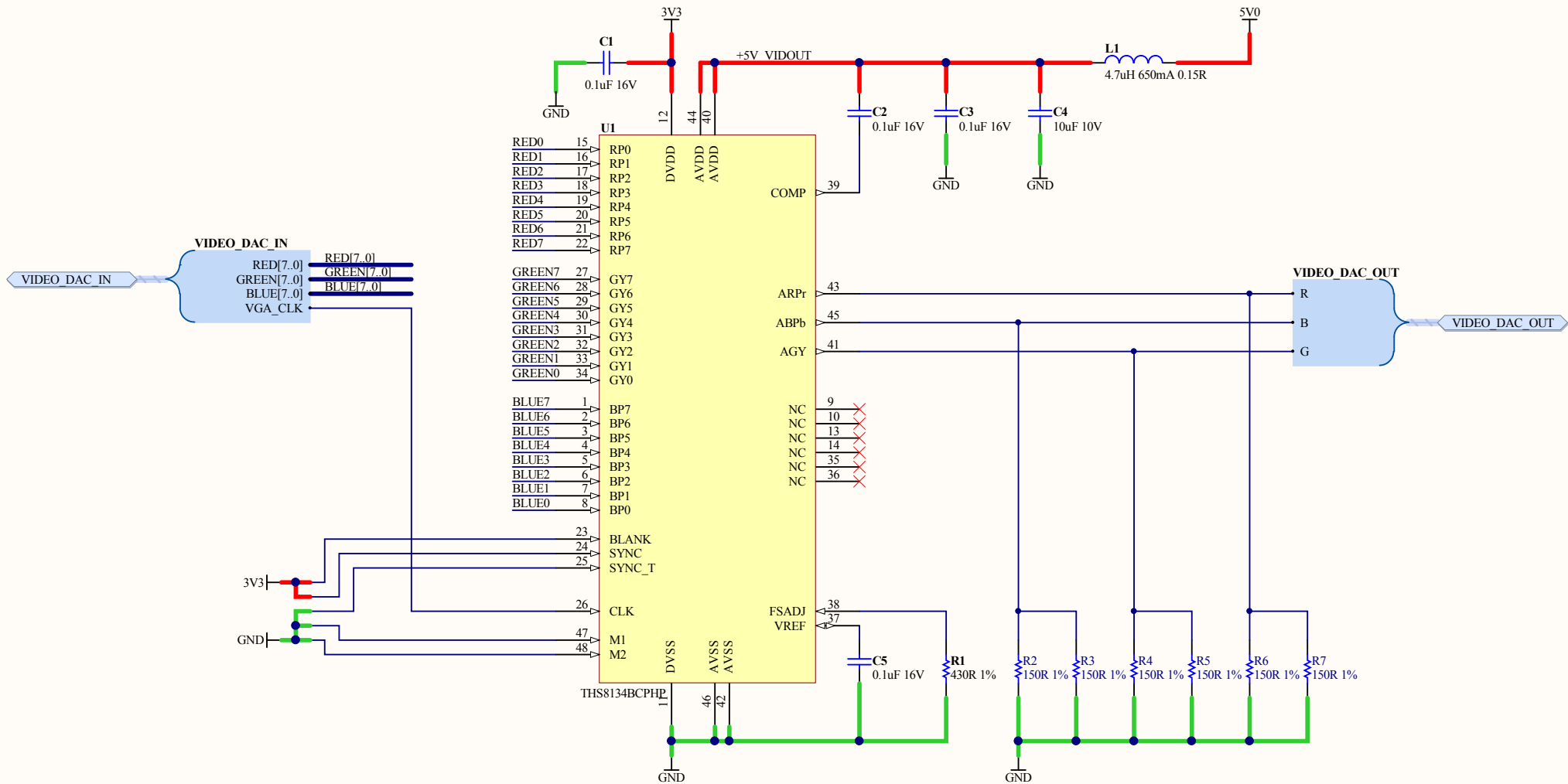
4



Sheet Title <b>36-Way User I/O Headers</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:47 PM	Sheet 50 of 81	
File: CON USER 20WBOXHDDRAMEX2.SCHDOC			

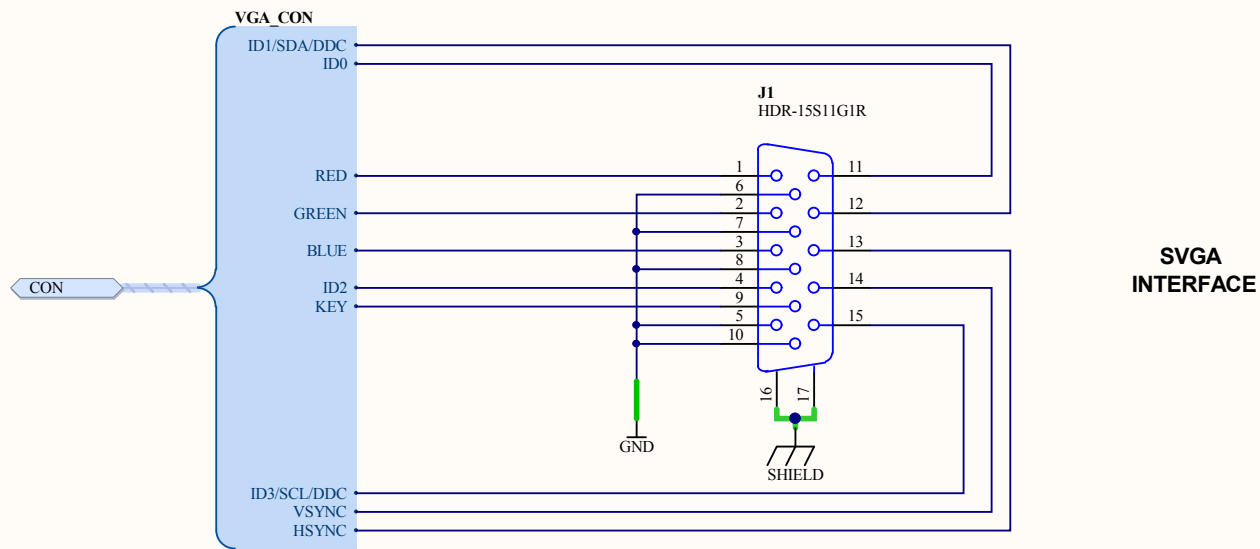



Sheet Title <b>VGA Output</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>		
Date: <b>1/02/2010</b>	Time: <b>1:34:47 PM</b>	Sheet <b>51</b> of <b>81</b>		
File: <b>VGA_OUT.SCHDOC</b>				

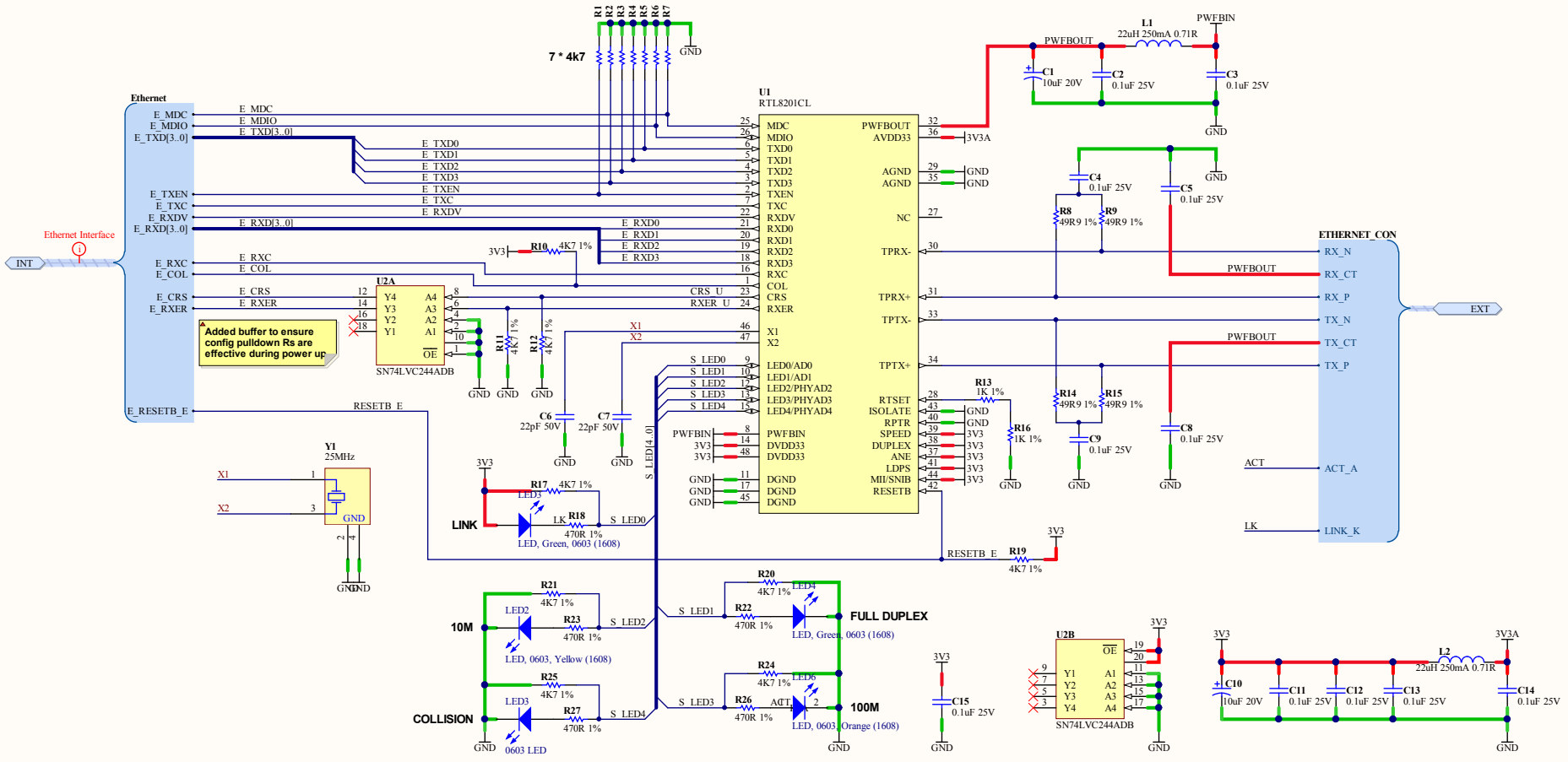


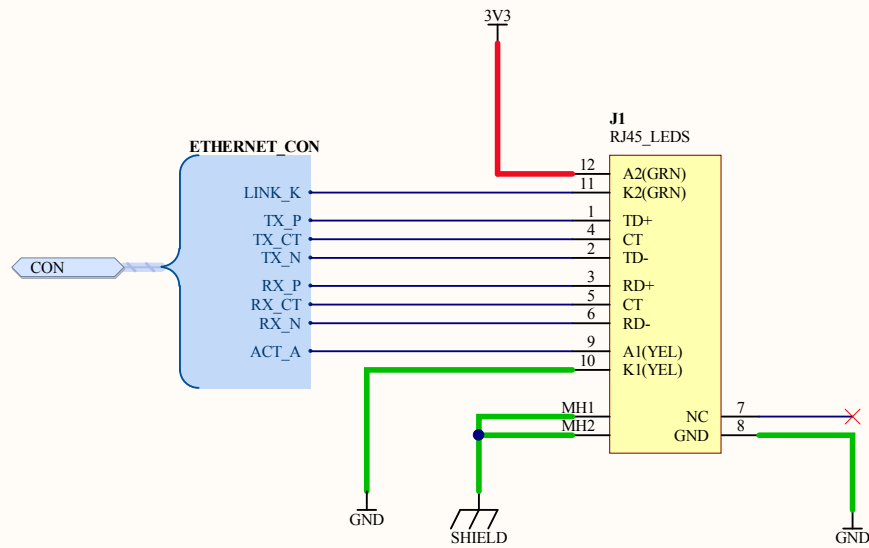
Sheet Title <b>Video DAC</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 52 of 81	
File: VIDEO_DAC_THS8134B.SchDoc			




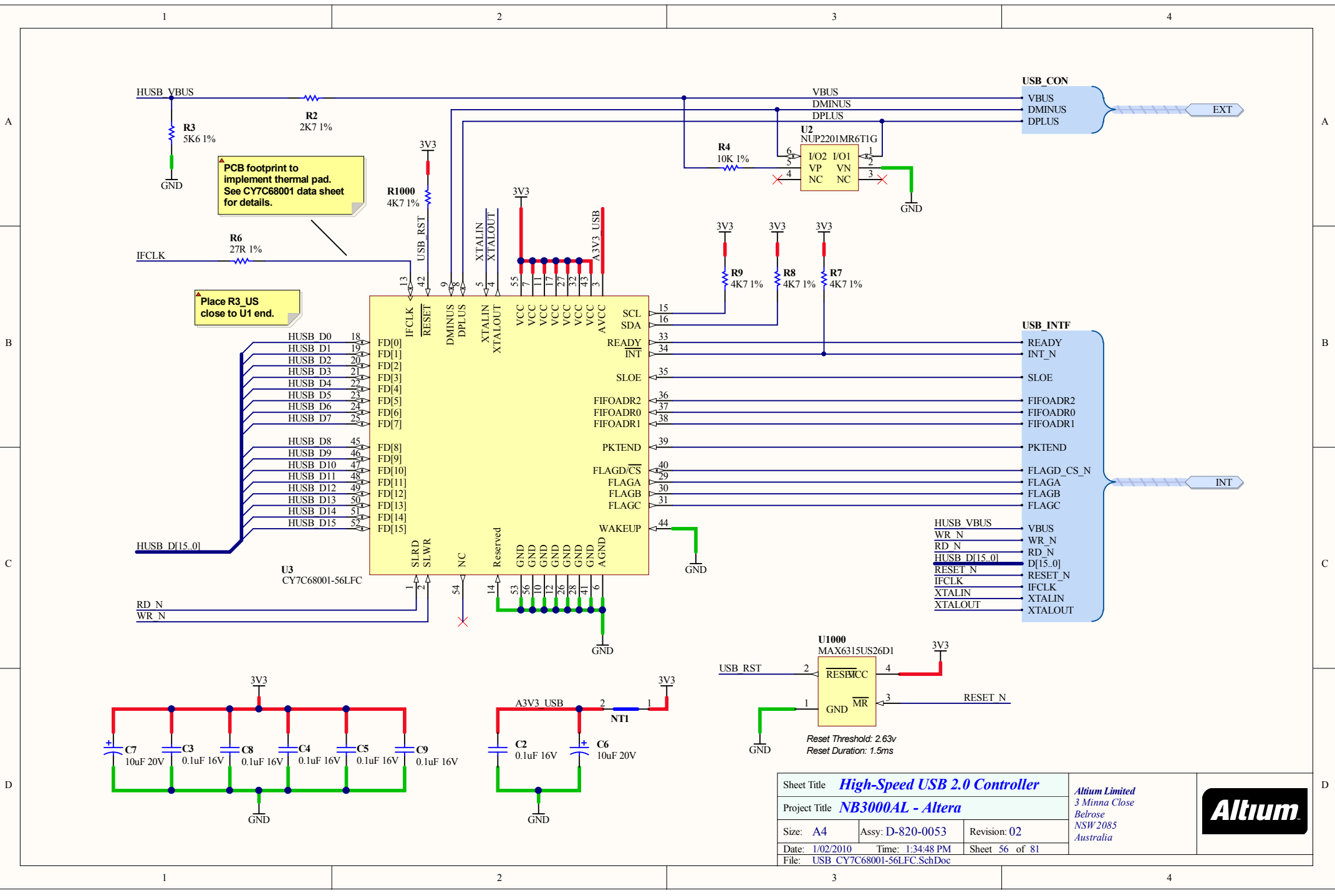


Sheet Title <b>Video Out Connector</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>53</b> of <b>81</b>	
File: <b>CON_VGA_DB15.SCHDOC</b>			

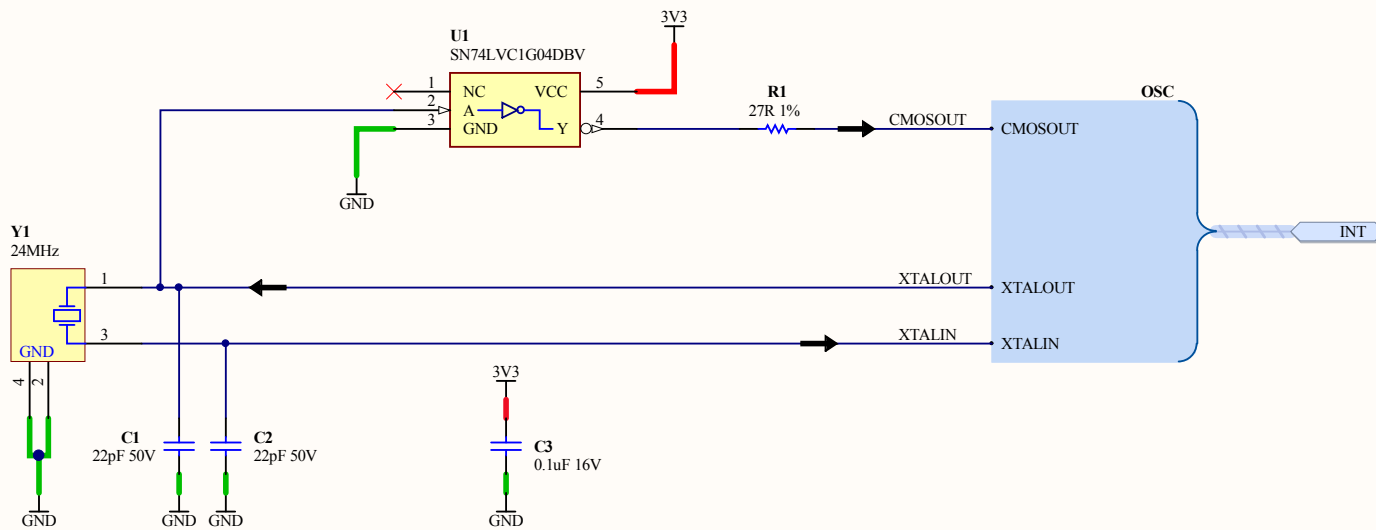




Sheet Title <b>Ethernet Connector</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 55 of 81	
File: CON ETHERNET RJ45 LEDES.SchDoc			



Sheet Title <b>High-Speed USB 2.0 Controller</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 56 of 81	
File: USB CY7C68001-56LFC.SchDoc			



Sheet Title <b>24MHz Oscillator</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>57</b> of <b>81</b>	
File: <b>OSC 24MHZ.SchDoc</b>			

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A

A

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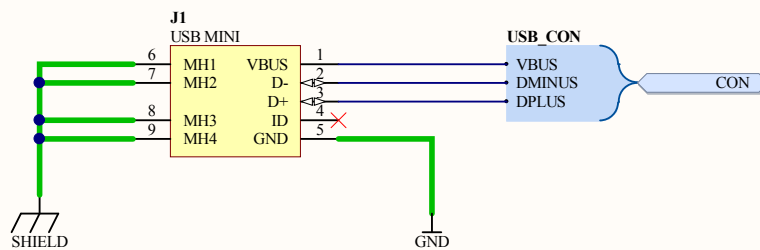
B


C

C

D

D



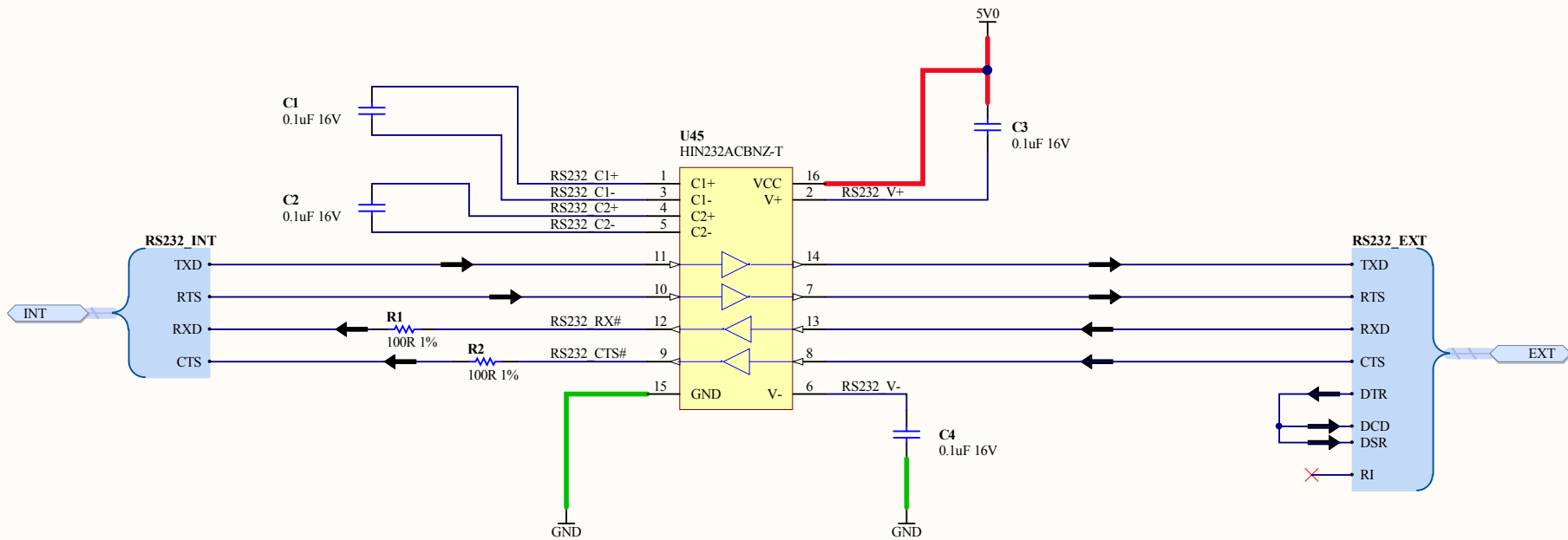
Sheet Title <b>USB 2.0 Type B Connector</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>58</b> of <b>81</b>	
File: <b>CON MINI USBB RA KME04-USBMU03A01-1.SchDoc</b>			


1

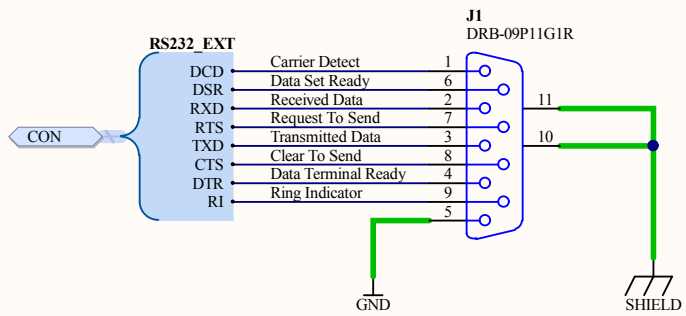
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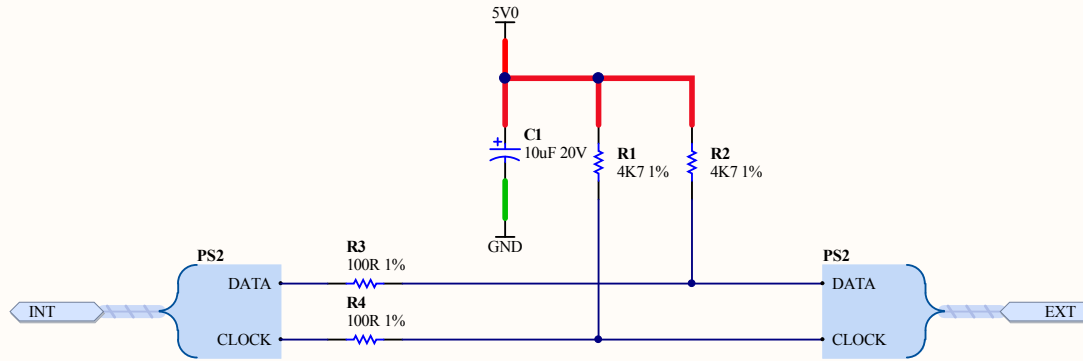
Sheet Title <b>RS232 Communication IC</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 59 of 81	
File: RS232 HIN232.SchDoc			




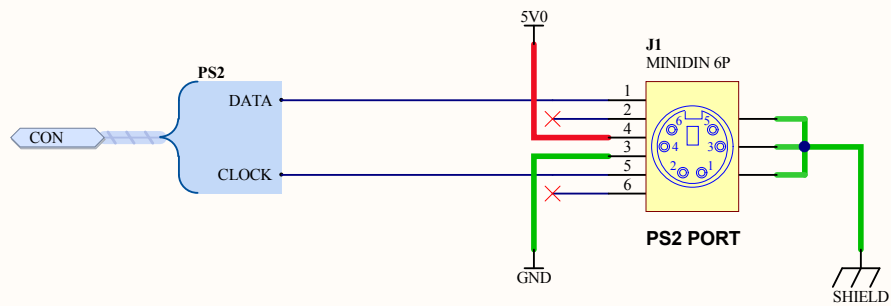
▲ RS232 DB-9 Male Connector  
EIA-574 Standard


Sheet Title <b>RS232-DCE DB9</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 60 of 81	
File: CON RS232DCE DB9 TH.SchDoc			



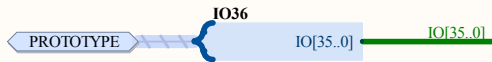


Sheet Title <b>PC PS2</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>61</b> of <b>81</b>	
File: <b>PC PS2.SchDoc</b>			



Sheet Title <b>PS2 MINIDIN6F Connector (Black)</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>62</b> of <b>81</b>	
File: <b>CON PS2PORT MINIDIN6F BLACK.SchDoc</b>			

PROTOTYPE



IO35	B32
IO34	A32
IO33	H32
IO32	H31
IO31	H30
IO30	H29
IO29	H28
IO28	H27
IO27	H26
IO26	H25
IO25	H24
IO24	H23
IO23	H22
IO22	H21
IO21	H20
IO20	H19
IO19	H18
IO18	H17
IO17	H16
IO16	H15
IO15	H14
IO14	H13
IO13	H12
IO12	H11
IO11	H10
IO10	H9
IO9	H8
IO8	H7
IO7	H6
IO6	H5
IO5	H4
IO4	H3
IO3	H2
IO2	H1
IO1	A1
IO0	B1

GND	1	GND
1V2	2	1V2
GND	3	GND
1V8	4	1V8
GND	5	GND
2V5	6	2V5
GND	27	GND
3V3	28	3V3
GND	29	GND
5V0	30	5V0
GND	31	GND
+B	32	B+

Sheet Title <b>User Prototyping Area</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 63 of 81	
File: PROTOTYPE A.SchDoc			

1

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A

A

B

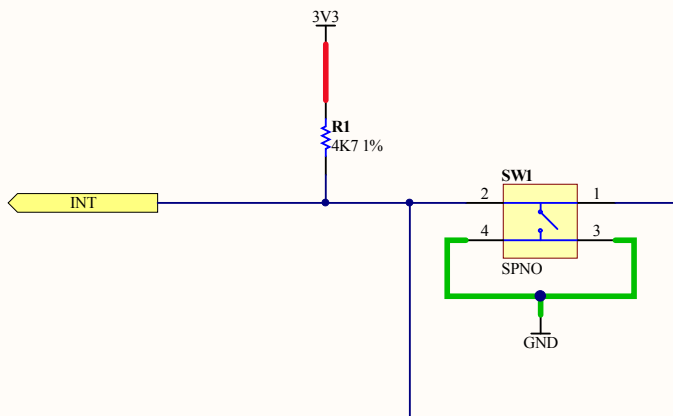
B


C

C

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D



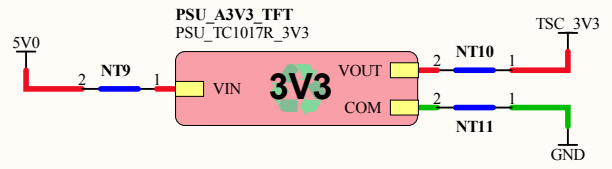
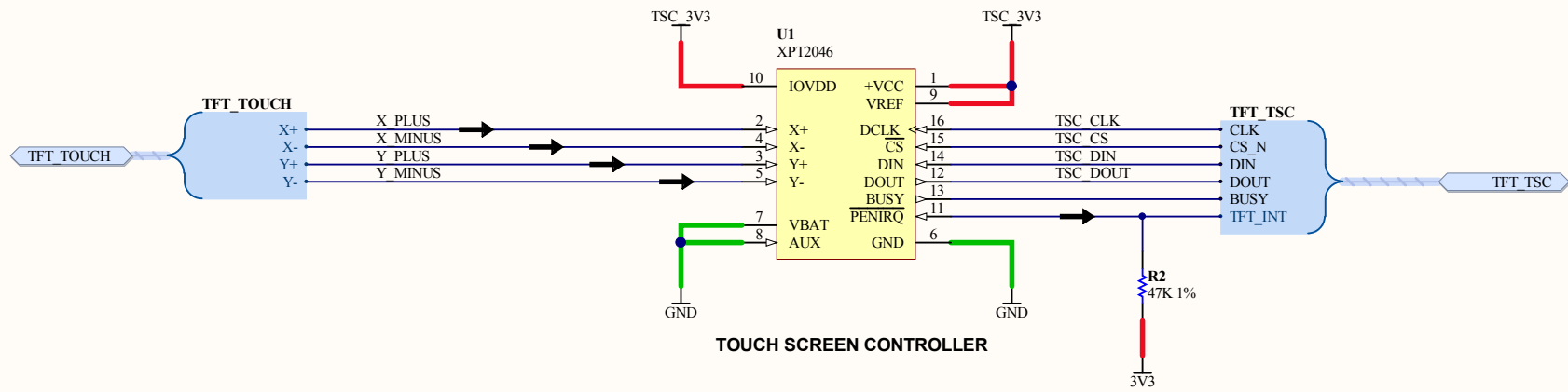
Sheet Title <b>Push Button SPNO Switch</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>64</b> of <b>81</b>	
File: <b>SW_RESET_SPNO.SCHDOC</b>			

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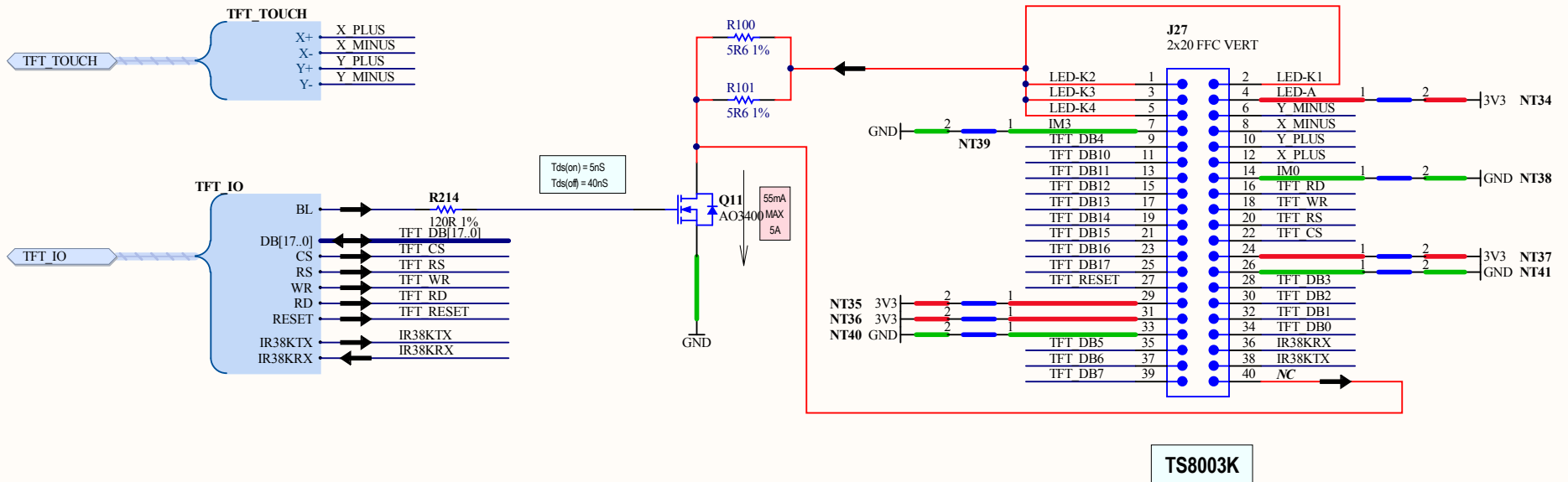
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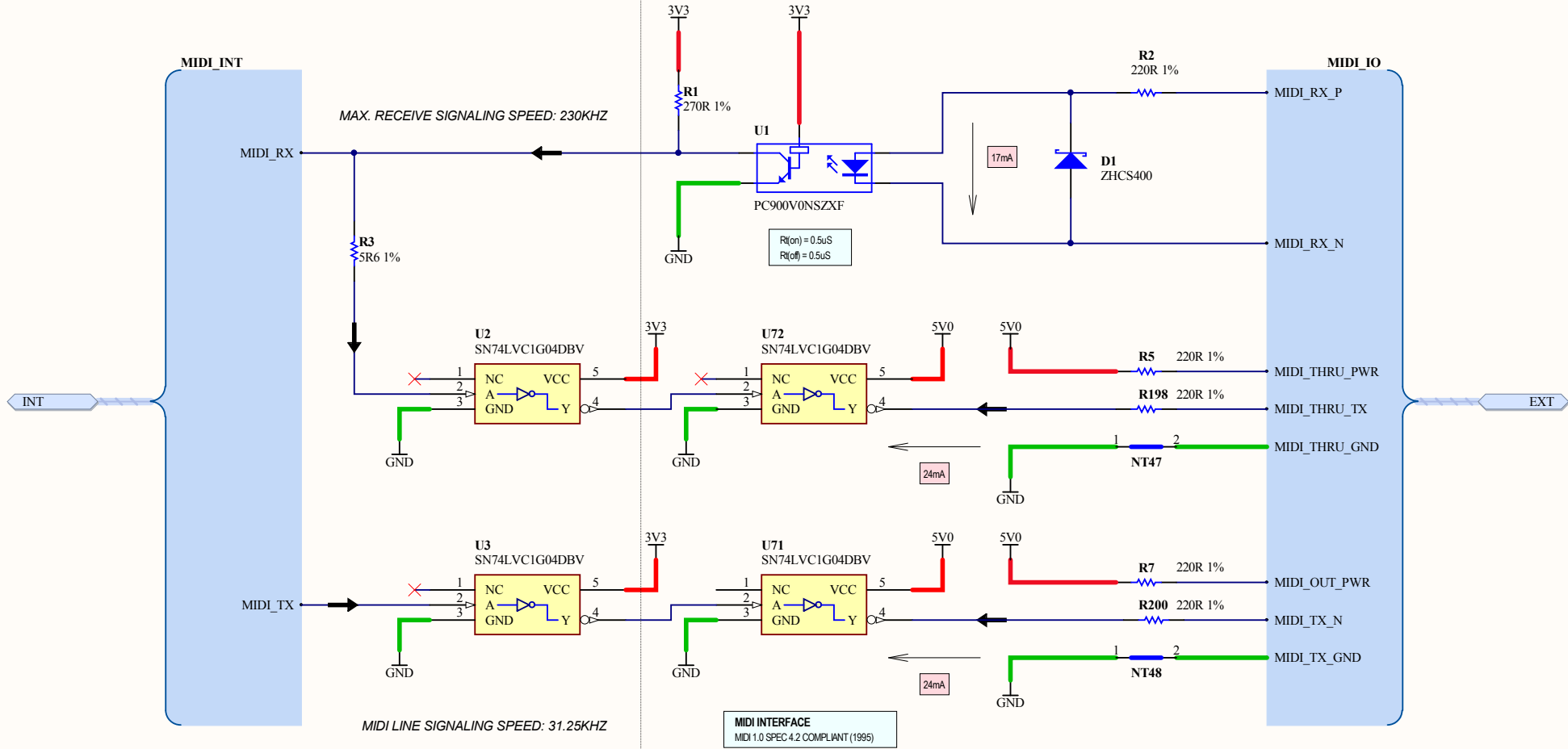
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Sheet Title <b>TFT Touchscreen Interface</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 65 of 81	
File: TSC_XPT2046.SchDoc			



Sheet Title <b>LCD Module Connector</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>		
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>66</b> of <b>81</b>		
File: <b>CON_FFC40_LCDIFT.SCHDOC</b>				



Sheet Title <b>MIDI Sub-system</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 67 of 81	
File: MIDI_FULL.SCHDOC			

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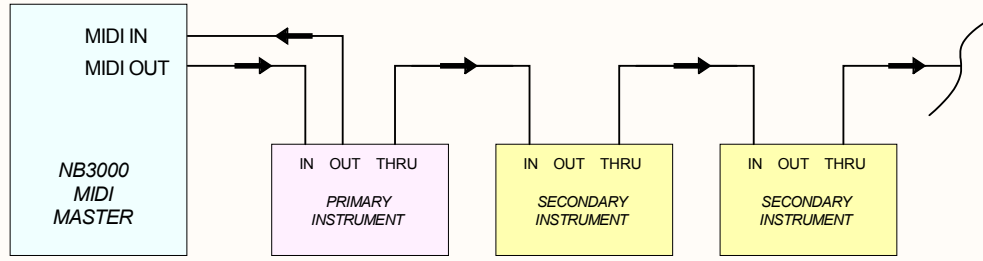
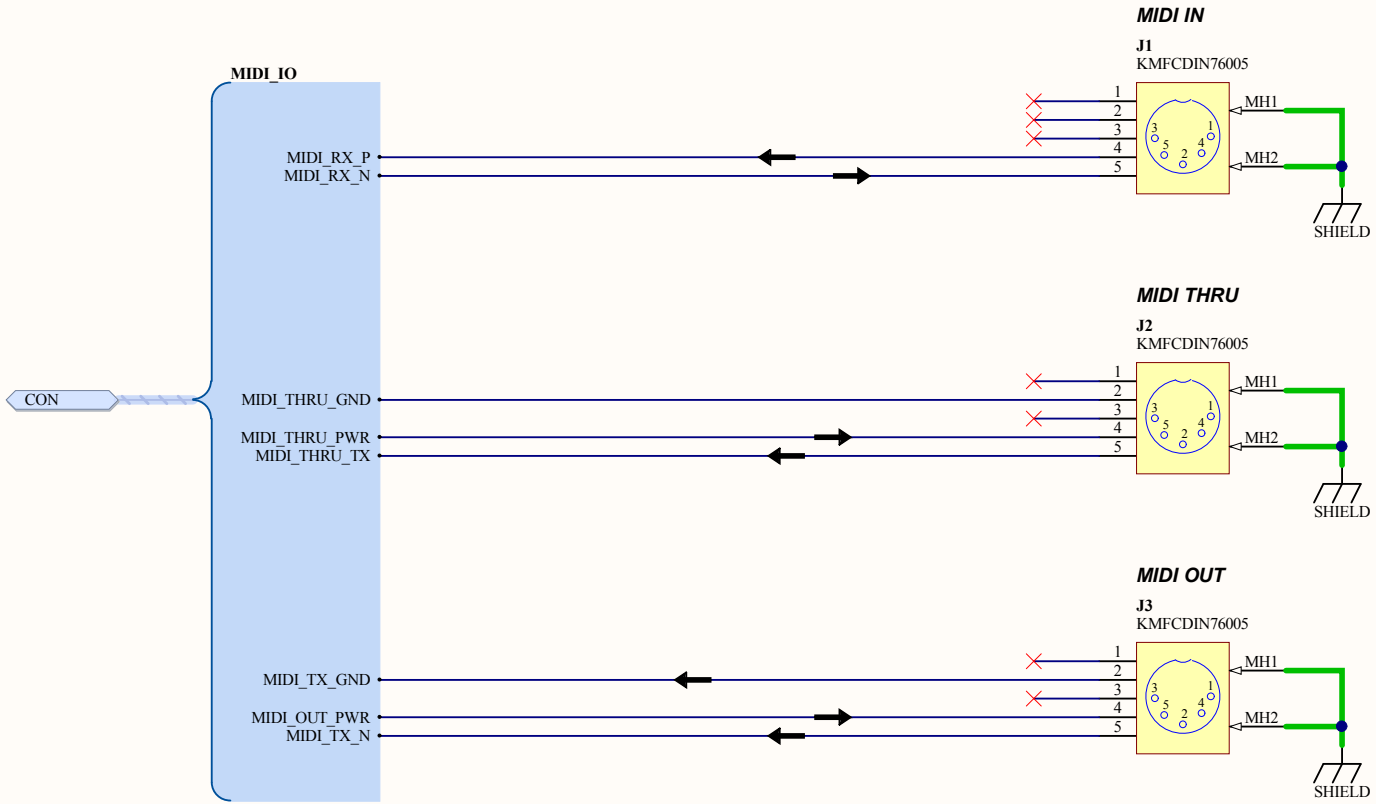
B

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D



Sheet Title <b>MIDI Connectors</b>		
Project Title <b>NB3000AL - Altera</b>		
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>
Date: <b>1/02/2010</b>	Time: <b>1:34:48 PM</b>	Sheet <b>68</b> of <b>81</b>
File: <b>CON MIDI DIN5.SCHDOC</b>		

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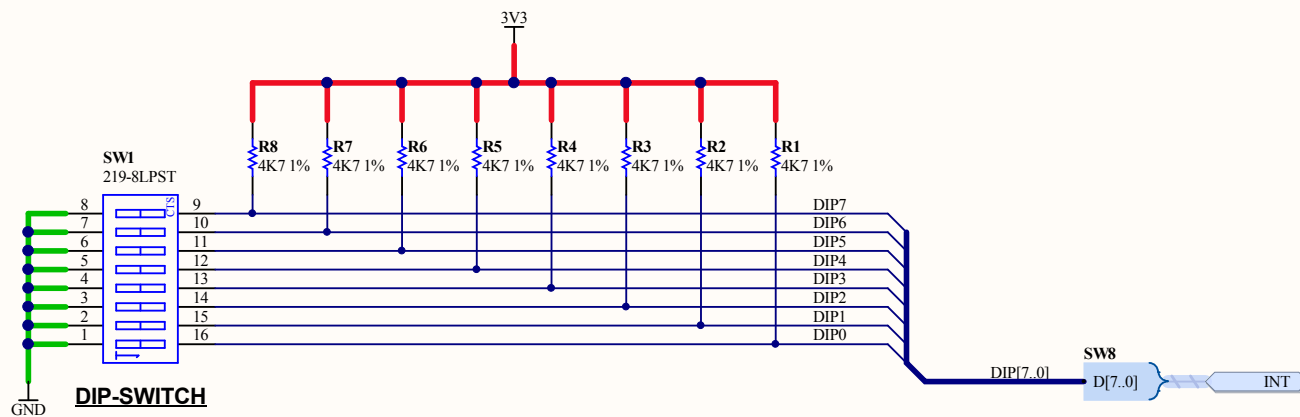
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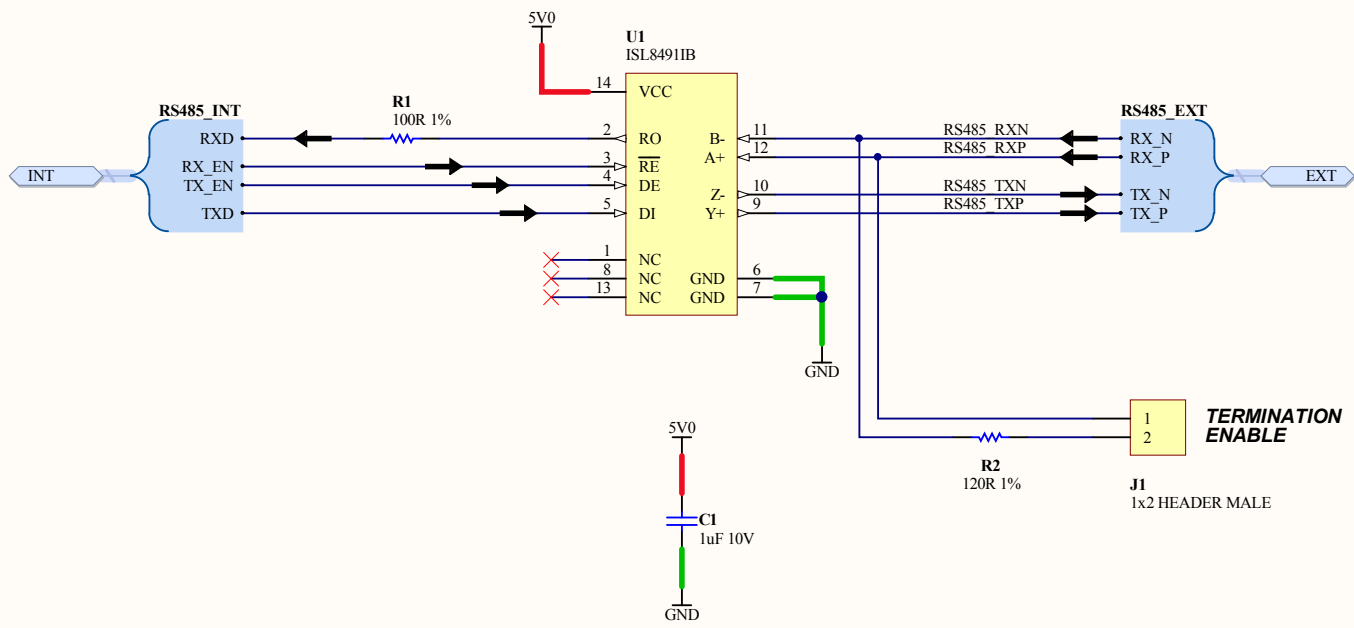
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4





Sheet Title <b>8-Way SPST DIP Switch (SMT)</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:48 PM	Sheet 69 of 81	
File: SW_DIP8 SMT.SchDoc			



Sheet Title <b>RS485 Communication IC</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 70 of 81	
File: RS485 ISL8491.SchDoc			

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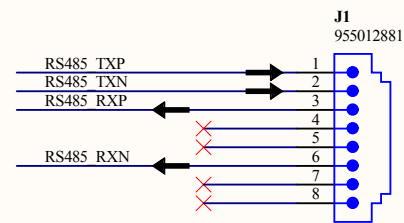
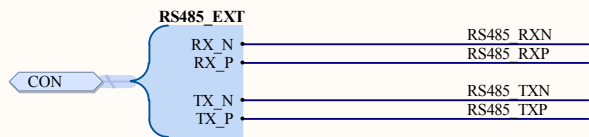
B


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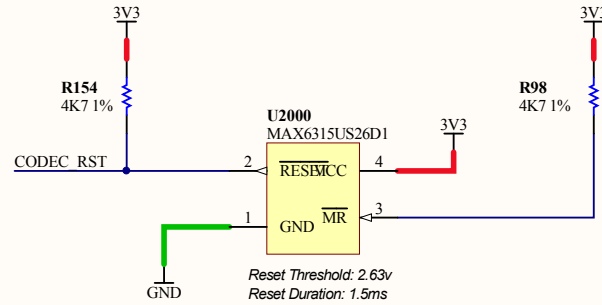
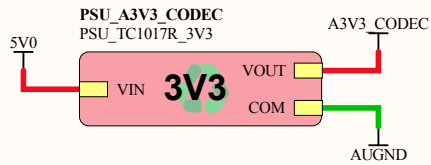
Sheet Title <b>RS485 Connector</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 71 of 81	
File: CON RS485 RJ45.SchDoc			

1

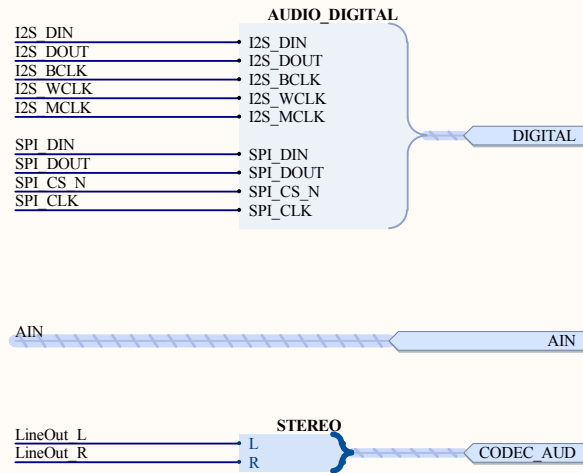
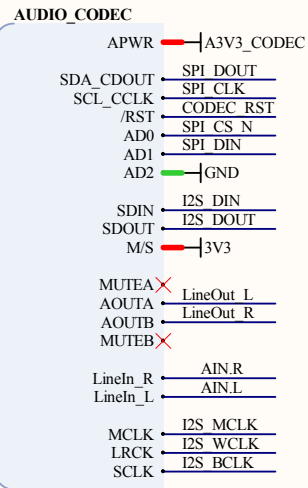
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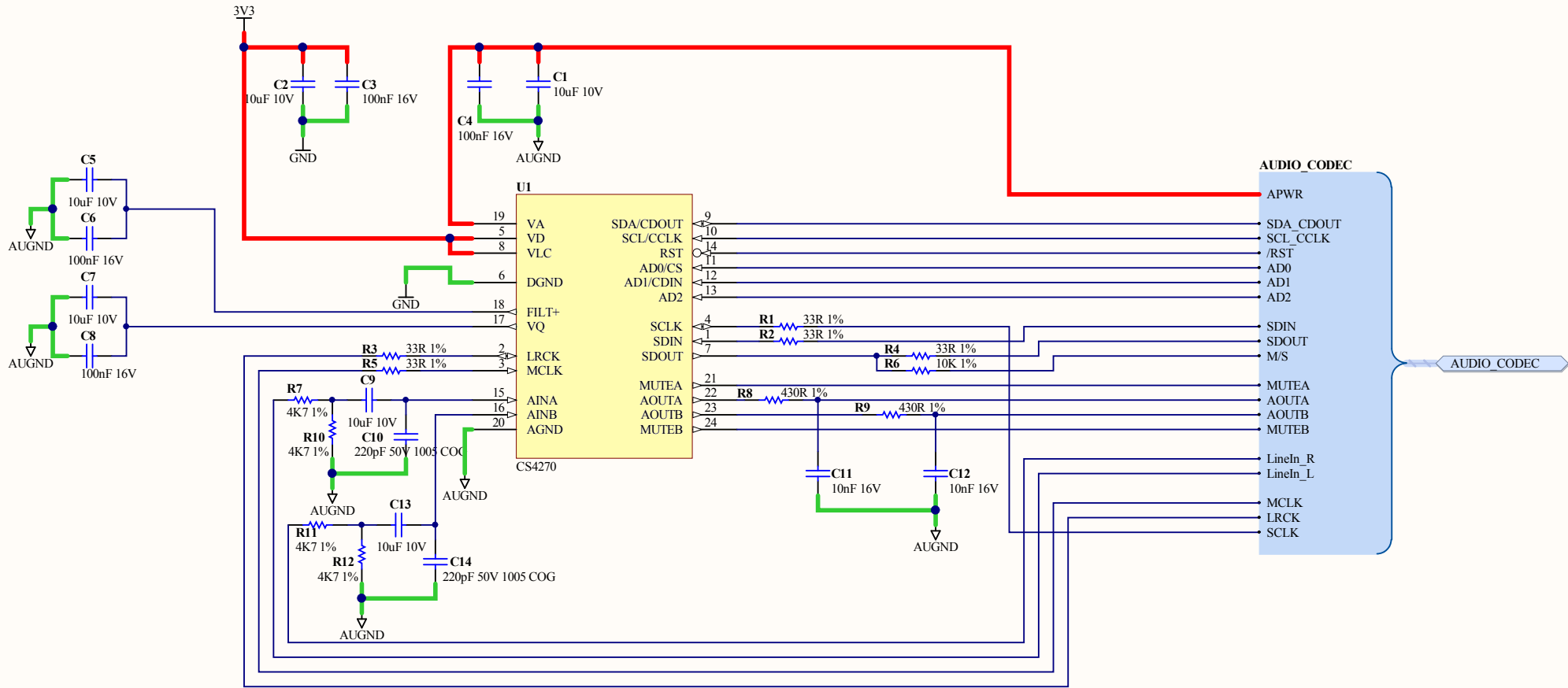
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CODEC\_CS4270  
AUDIO\_CODEC\_CS4270



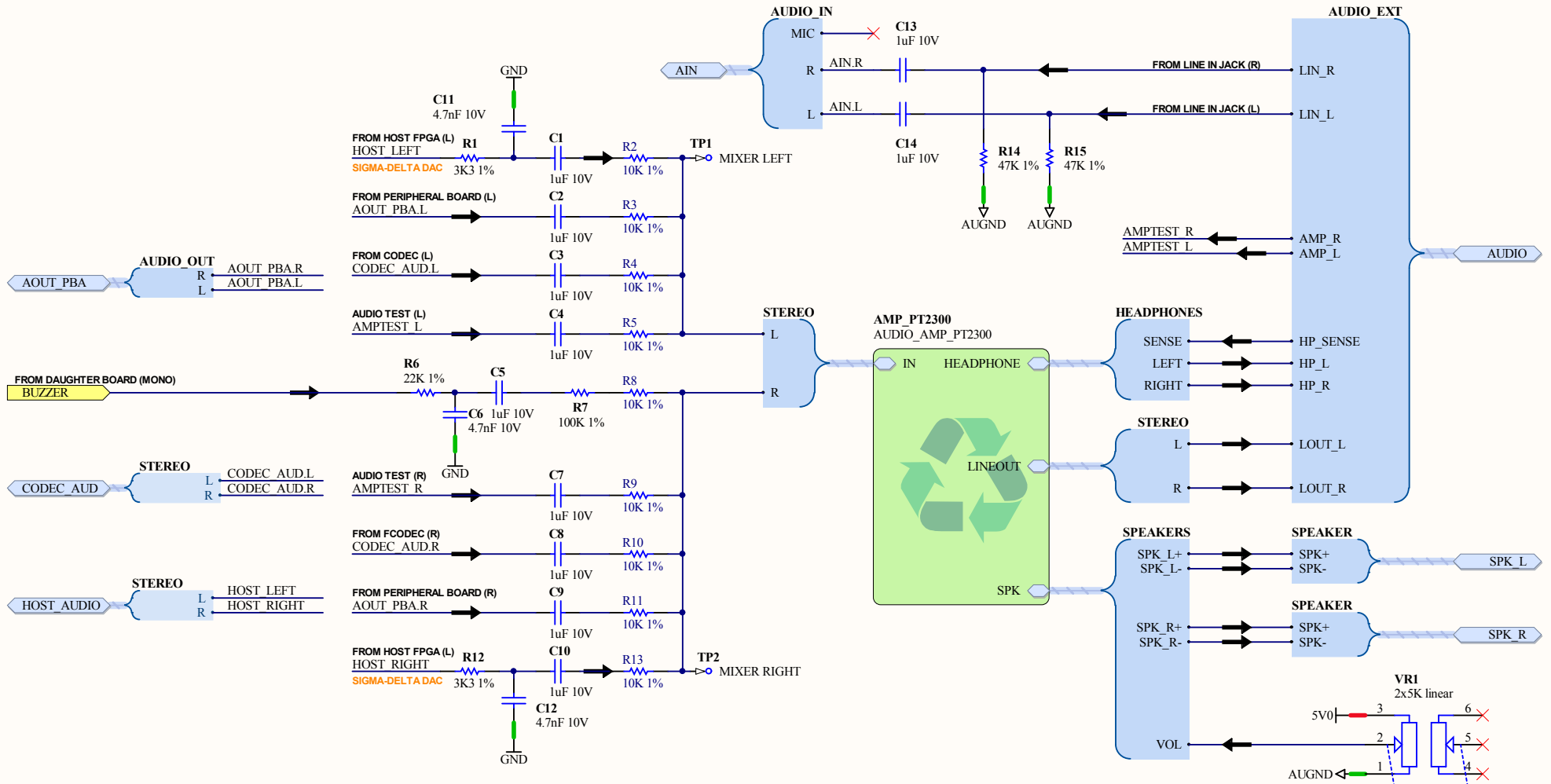
Sheet Title <b>Audio CODEC Top</b>			Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 72 of 81		
File: Audio_Codec.SchDoc				



Sheet Title <b>Audio CODEC</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 73 of 81	
File: AUDIO CODEC CS4270.SchDoc			

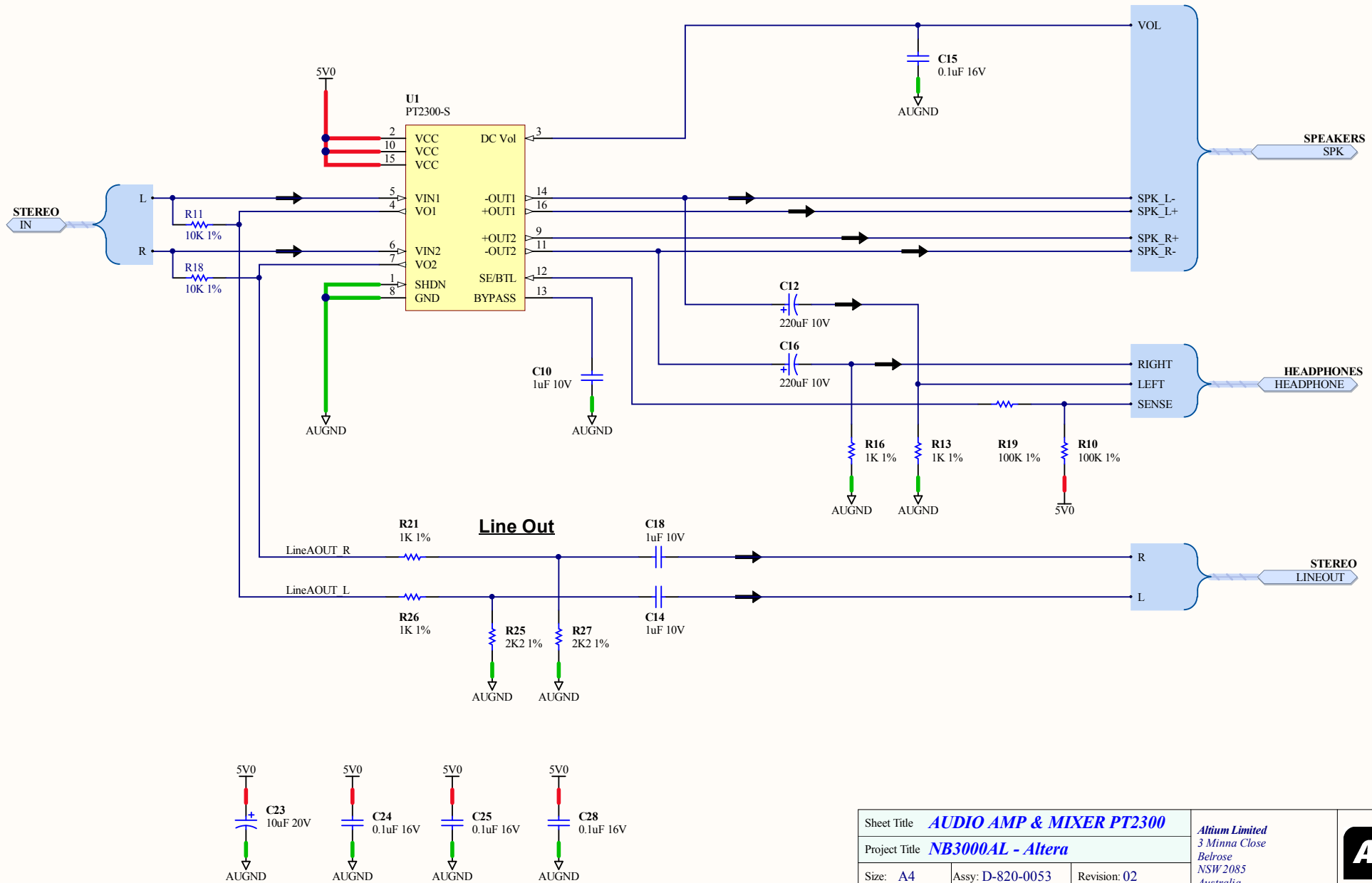
### Audio Mixer - Left Channel

### Audio Signal to Peripheral Board



### Audio Mixer - Right Channel

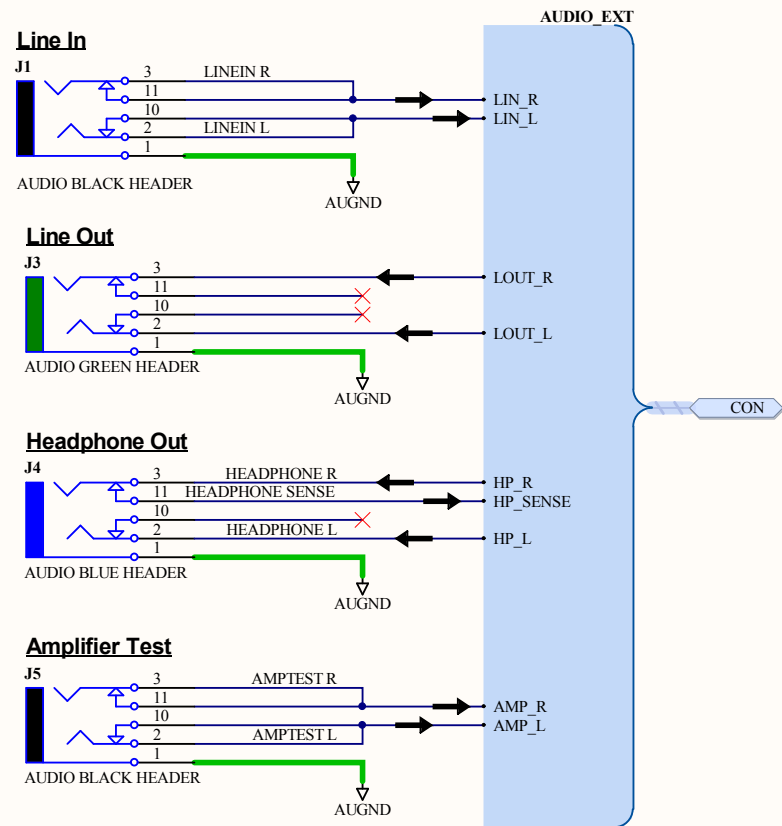
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Project Title <b>NB3000AL - Altera</b>				
Size: A4	Assy: D-820-0053	Revision: 02		
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 74 of 81		
File: AUDIO AMP NB2C.SchDoc				



Sheet Title <b>AUDIO AMP &amp; MIXER PT2300</b>		
Project Title <b>NB3000AL - Altera</b>		
Size: A4	Assy: D-820-0053	Revision: 02
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File: AUDIO AMP PT2300.SchDoc		

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 Australia





Sheet Title <b>AUDIO AC99 Interface</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:49 PM</b>	Sheet <b>76</b> of <b>81</b>	
File: <b>CON AUDIO AC99 NOMIC.SchDoc</b>			



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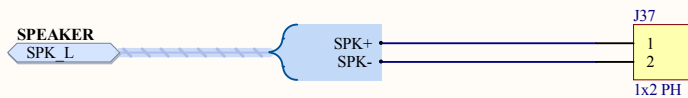
B

C

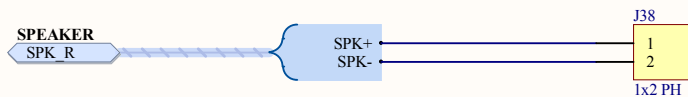
C

D


D



**External Speakers Left**



**External Speakers Right**

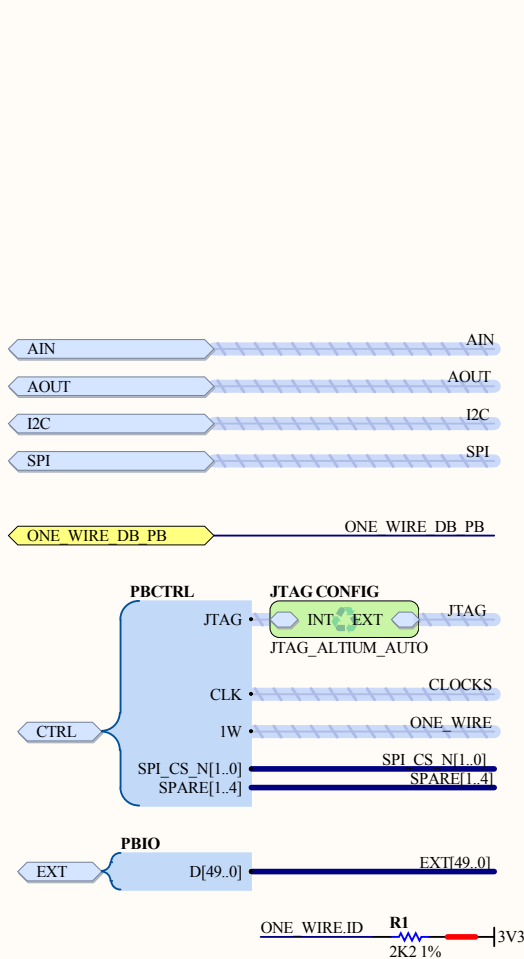
Sheet Title <b>External Speaker Connectors</b>		<i>Altium Limited</i> 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 77 of 81	
File: CON_EXT_SPK.SchDoc			

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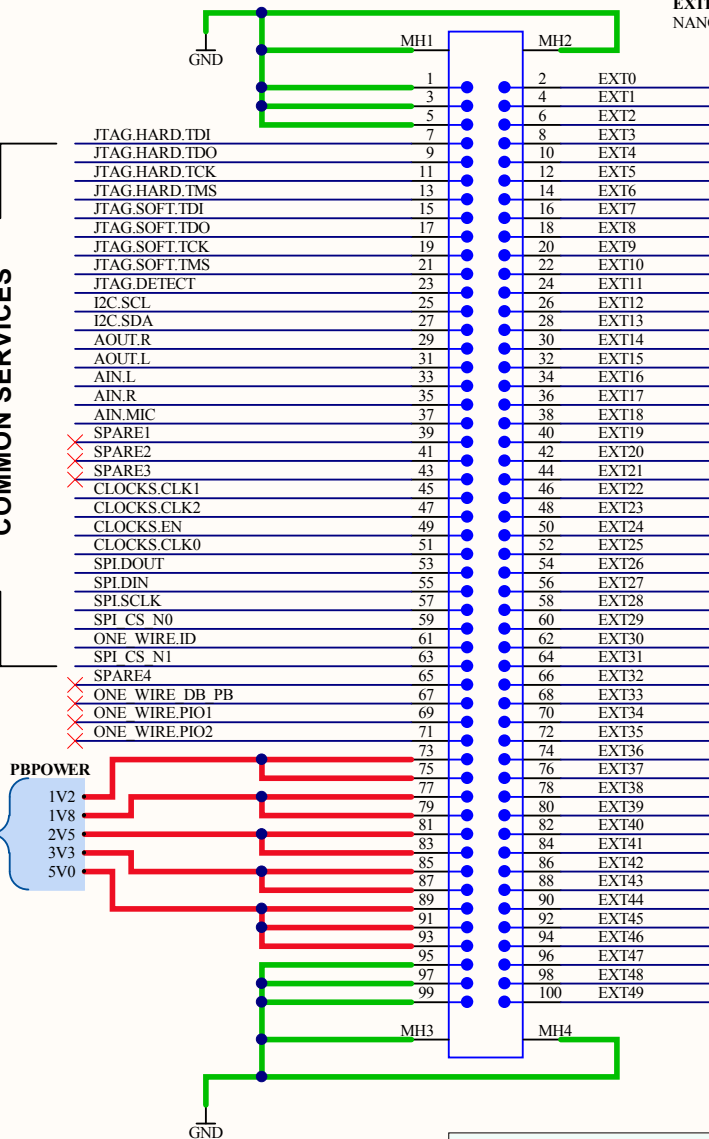
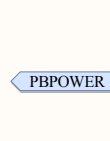
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COMMON SERVICES

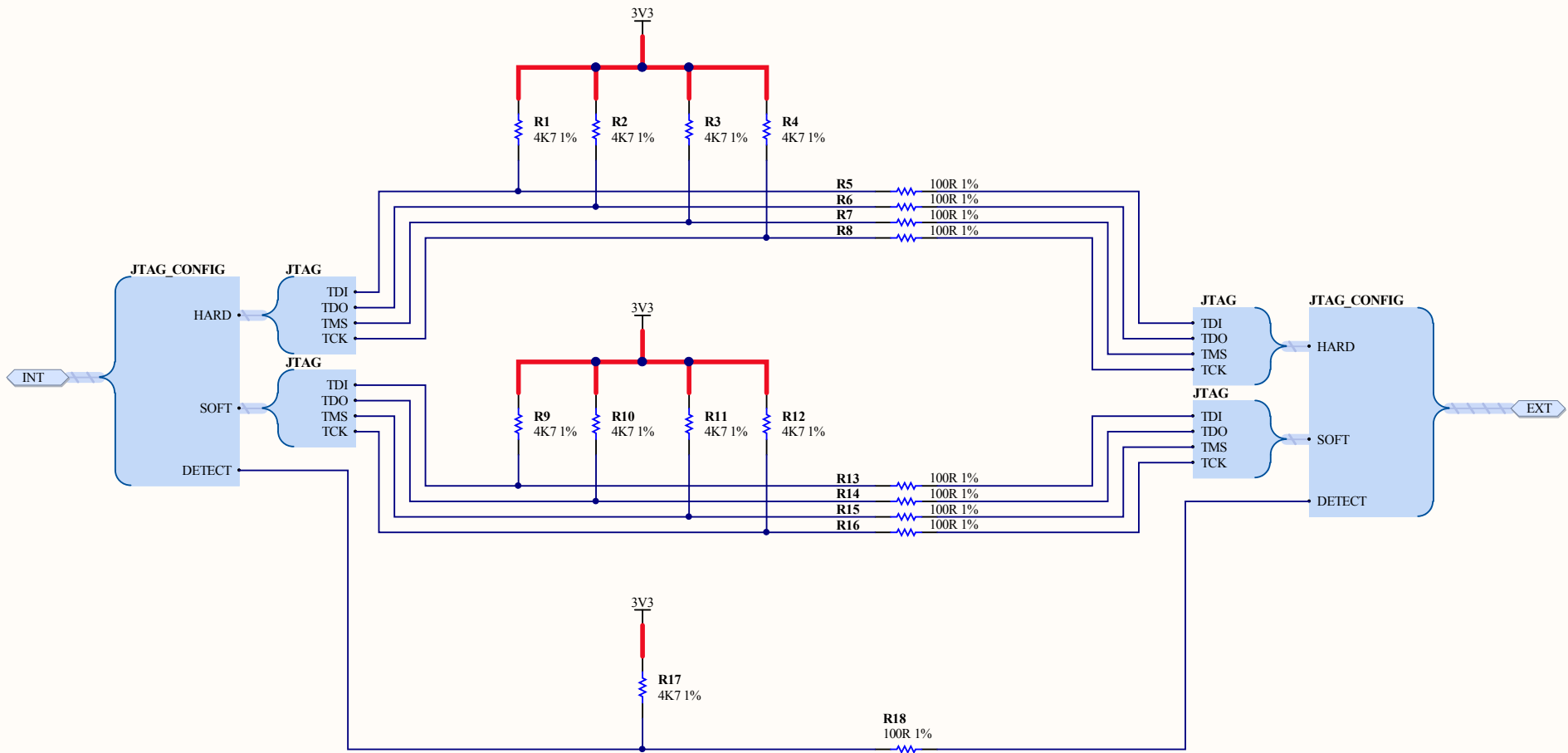



STANDARD PERIPHERAL INTERFACE

Sheet Title <b>Peripheral Board Connector</b>		
Project Title <b>NB3000AL - Altera</b>		
Size: A4	Assy: D-820-0053	Revision: 02
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 78 of 81
File: PBCON.schdoc		

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Australia





Sheet Title <b>Auto-Detect JTAG Circuit</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
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File: JTAG_ALTIUM_AUTO.SchDoc			

### Standoffs For Peripheral Board

**PB\_MH1**  
8.5mm spacer, Gold, 2xM3



**PB\_MH2**  
8.5mm spacer, Gold, 2xM3



**PB\_MH3**  
8.5mm spacer, Gold, 2xM3



**PB\_MH4**  
8.5mm spacer, Gold, 2xM3



**PB\_MH5**  
8.5mm spacer, Gold, 2xM3



### Fiducial Alignment Components

**FD1**  
Fiducial - Round



**FD2**  
Fiducial - Round



**FD3**  
Fiducial - Round



**PCB1**  
NB3000AL Blank PCB  
Printed Circuit Board (Bare)

### PCB Identifiers

**Altium Logo BOT1**  
Altium(2009)



**LOGO1**  
Nanoboard Logo



Sheet Title <b>NB3000AL Holes and Graphics</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: A4	Assy: D-820-0053	Revision: 02	
Date: 1/02/2010	Time: 1:34:49 PM	Sheet 80 of 81	
File: Mounts.SchDoc			

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A

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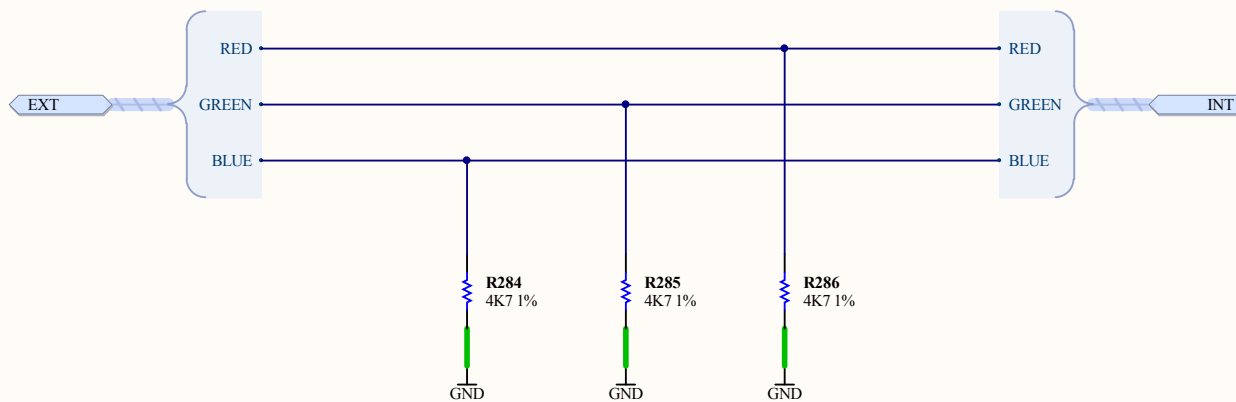
B


C

C

D

D



Sheet Title <b>Host &amp; User LEDs - Pull-Down Resistors</b>		Altium Limited 3 Minna Close Belrose NSW 2085 Australia	
Project Title <b>NB3000AL - Altera</b>			
Size: <b>A4</b>	Assy: <b>D-820-0053</b>	Revision: <b>02</b>	
Date: <b>1/02/2010</b>	Time: <b>1:34:49 PM</b>	Sheet <b>81</b> of <b>81</b>	
File: <b>PULLDNx3.SCHDOC</b>			

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