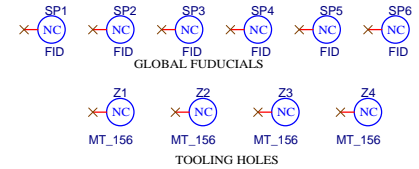


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NOTES:

1. ALL RESISTOR VALUES ARE IN OHMS AND IN THE 0603 SIZE UNLESS OTHERWISE NOTED
2. ALL RESISTOR VALUES ARE 5% UNLESS OTHERWISE NOTED
3. ALL CAPACITORS ARE RATED IN uFARADS AND IN THE 0603 SIZE UNLESS OTHERWISE NOTED
4. ALL CAPACITORS ARE RATED AT 50 VDC OR HIGHER UNLESS OTHERWISE NOTED
5. LAST USED: SEE N0E25001.SCH FOR THE MASTER USED LIST

** = Do Not Populate



NS7520 USB Reference Design

(This design has not been built and tested)

REVISIONS

03/14/03	xxxxxxx	REV A
04/15/03	xxxxxxx	REV B
07/21/03	xxxxxxx	REV C
08/22/03	xxxxxxx	REV D
04/10/04	xxxxxxx	REV E

SHEET DESCRIPTION

SH. #	REV.	DESCRIPTION
1	E	Cover Sheet
2	D	NS7520, LED's, ID Jumpers
3	B	Flash & SDRAM
4	A	Intel 10/100Base-TX
5	C	USB Netchip 2890 (Device)
6	A	Power Supplies

REF SCHxxxxxxx

DESIGNER: Don Stone

BOARD REV NOTES

SHEET REV NOTES

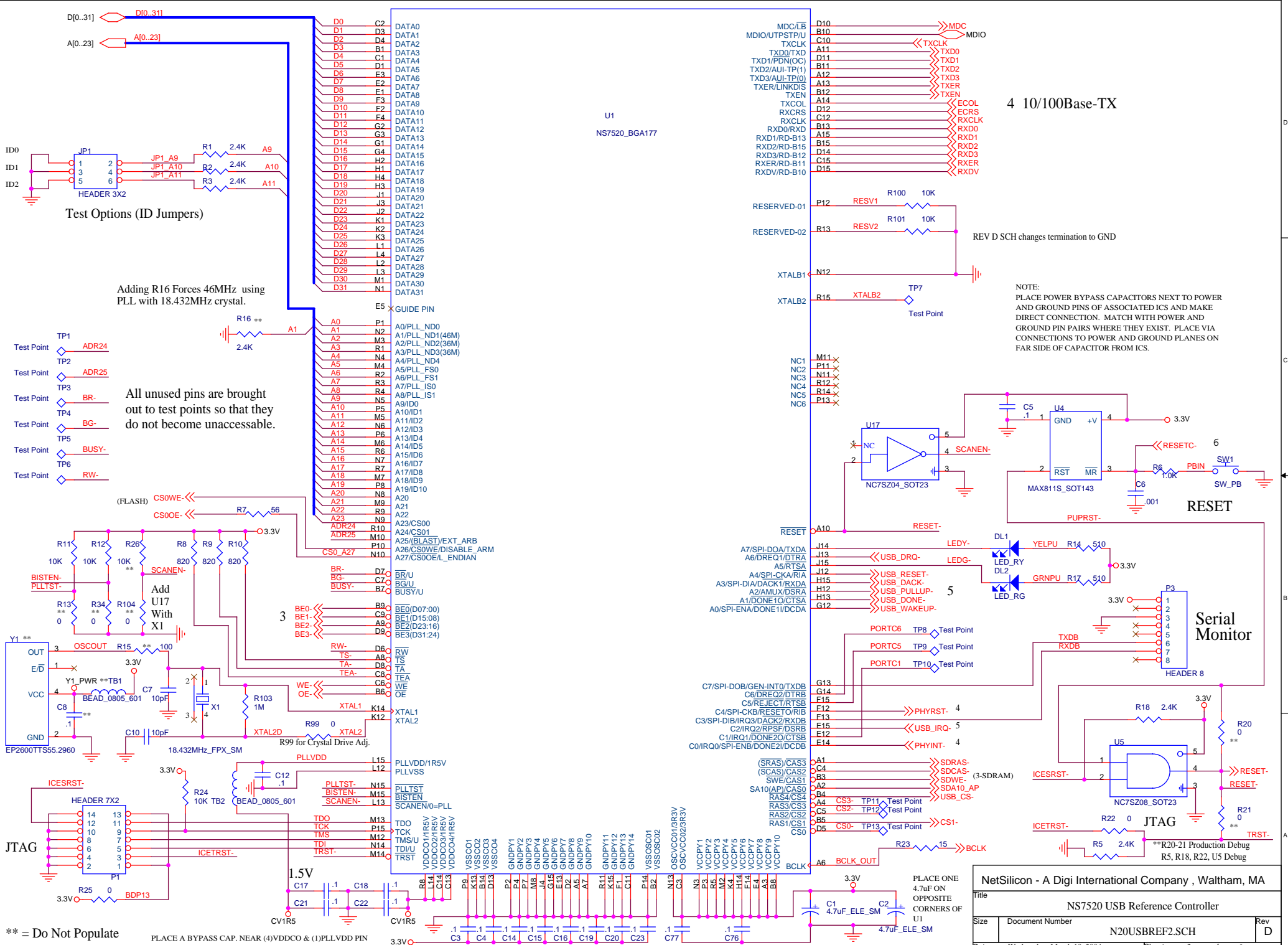
- Sh.2 Rev B Changes C13 to R5-2.4K, and Rotates P1
- Sh.2 Rev C Adds 1/2 BCLK ERRATA fix (U17).
- Sh.2 Rev D changes NS7520 N12, P12, & R13 termination
- Sh.3 Rev B: Added Flash disable.
- Sh.5 Rev B: Updated USB circuit for compliance.

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Title
NS7520 USB Reference COVER SHEET

Size B	Document Number N20USBREF1.SCH	Rev E
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Date: Wednesday, March 10, 2004 Sheet 1 of 6



Test Options (ID Jumpers)

Adding R16 Forces 46MHz using PLL with 18.432MHz crystal.

All unused pins are brought out to test points so that they do not become inaccessible.

4 10/100Base-TX

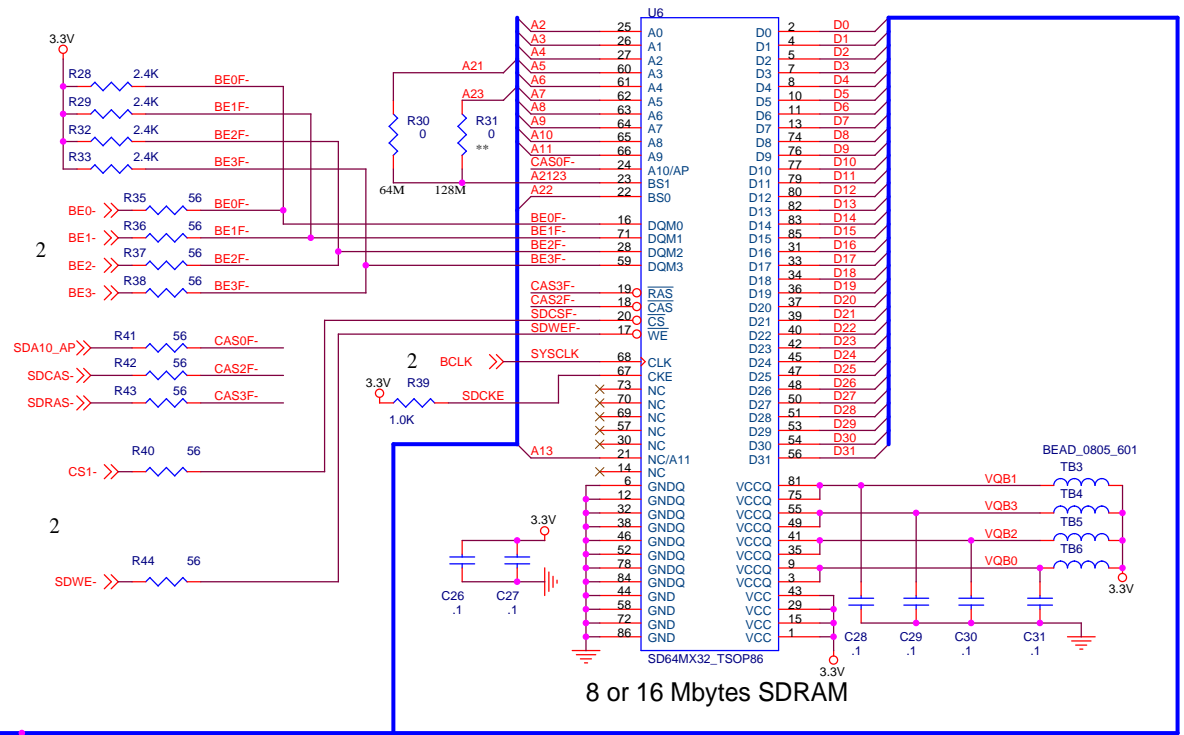
NOTE: PLACE POWER BYPASS CAPACITORS NEXT TO POWER AND GROUND PINS OF ASSOCIATED ICs AND MAKE DIRECT CONNECTION. MATCH WITH POWER AND GROUND PIN PAIRS WHERE THEY EXIST. PLACE VIA CONNECTIONS TO POWER AND GROUND PLANES ON FAR SIDE OF CAPACITOR FROM ICs.

NetSilicon - A Digi International Company, Waltham, MA			
Title: NS7520 USB Reference Controller			
Size	Document Number	Rev	
	N20USBREF2.SCH	D	
Date:	Wednesday, March 10, 2004	Sheet	2 of 6

** = Do Not Populate

PLACE A BYPASS CAP. NEAR (4)VDDCO & (1)PLLVDD PIN

PLACE ONE 4.7uF ON OPPOSITE CORNERS OF U1



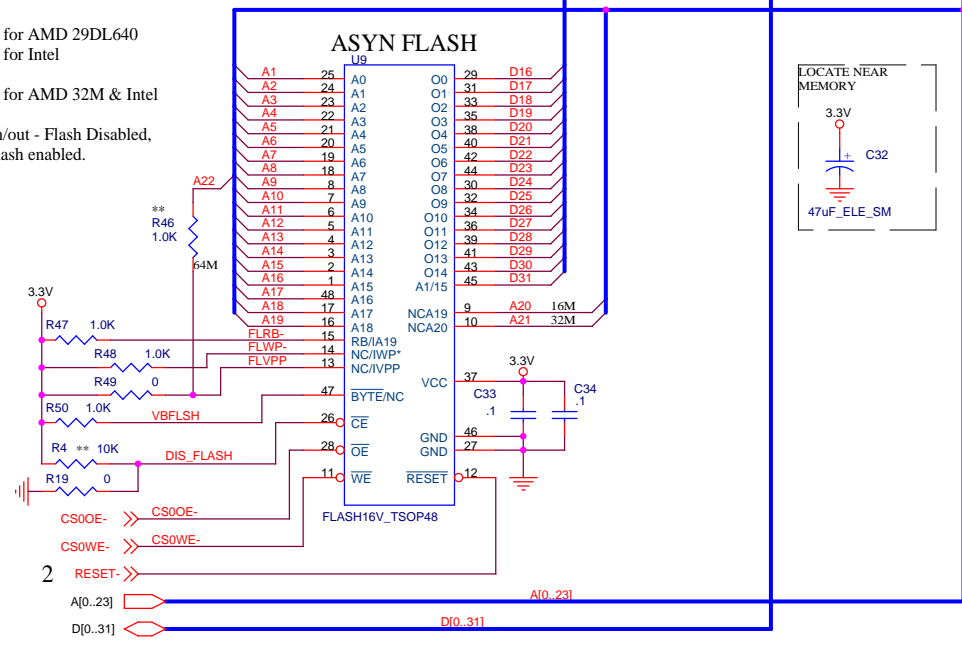
ACTIVE to READ or WRITE delay (tRCD) of 15ns is required to operate SDRAM at 55MHz with no wait state.

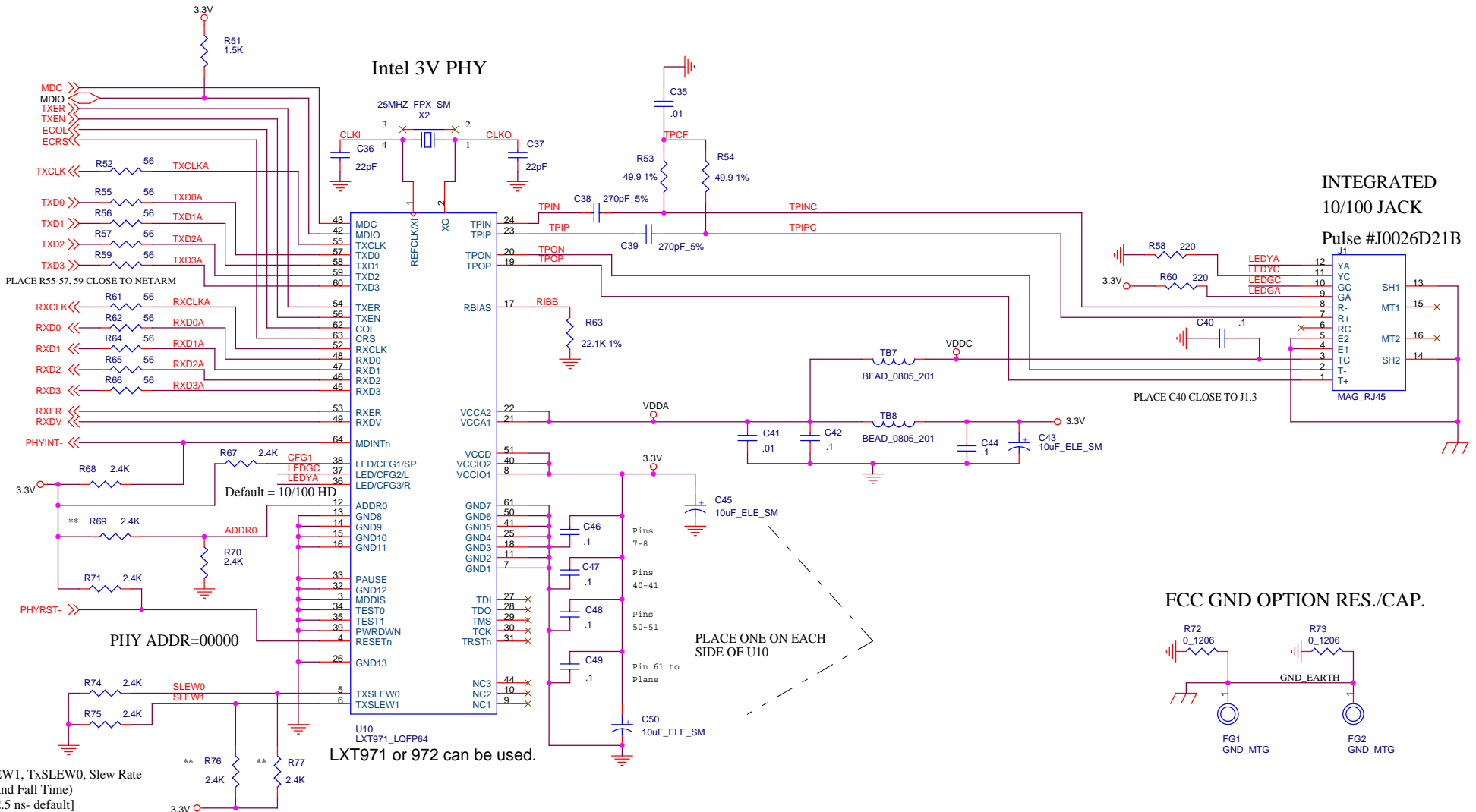
1- 8 Mbytes Flash

R46: Add for AMD 29DL640
R49: Add for Intel

R48: Add for AMD 32M & Intel

R4/R19 in/out - Flash Disabled,
out/in - Flash enabled.





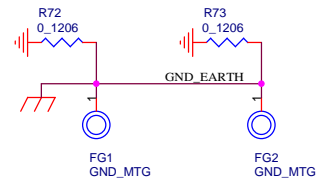
TxSLEW1, TxSLEW0, Slew Rate
(Rise and Fall Time)
0, 0, [2.5 ns- default]
0, 1, [3.1 ns]
1, 0, [3.7 ns]
1, 1, [4.3 ns]

** R76 2.4K
** R77 2.4K

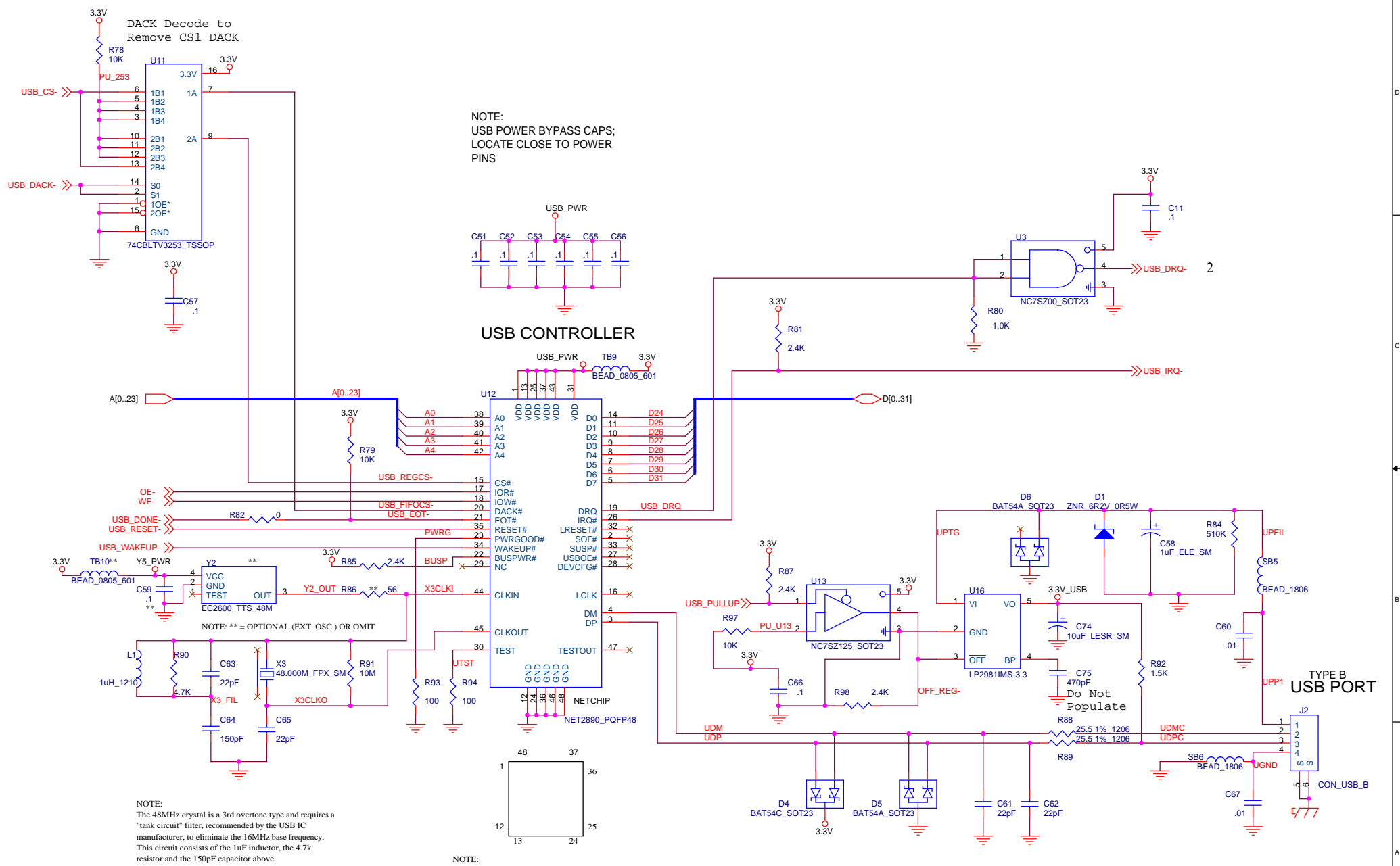
LXT971 or 972 can be used.

PLACE ONE ON EACH SIDE OF U10

FCC GND OPTION RES./CAP.



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Title NS7520 USB Reference LXT972 10/100B-TX Intel PHY			
Size B	Document Number N20USBREF4.SCH	Rev A	
Date: Wednesday, March 10, 2004	Sheet 2	4	6



NOTE:
 USB POWER BYPASS CAPS;
 LOCATE CLOSE TO POWER
 PINS

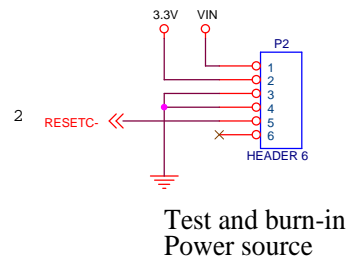
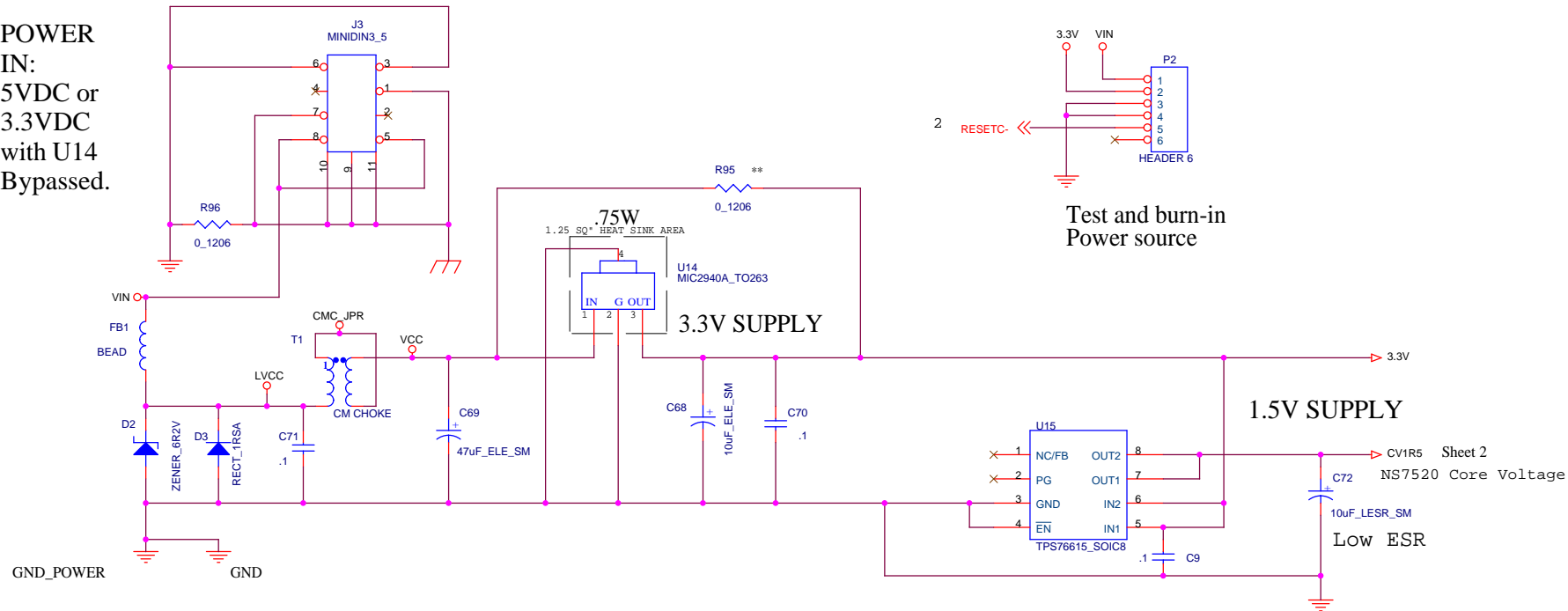
USB CONTROLLER

NOTE:
 The 48MHz crystal is a 3rd overtone type and requires a "tank circuit" filter, recommended by the USB IC manufacturer, to eliminate the 16MHz base frequency. This circuit consists of the 1uF inductor, the 4.7k resistor and the 150pF capacitor above.

NOTE:
 PLACE POWER BYPASS CAPACITORS NEXT TO POWER AND GROUND PINS OF ASSOCIATED ICs AND MAKE DIRECT CONNECTION. MATCH WITH POWER AND GROUND PIN PAIRS WHERE THEY EXIST. PLACE VIA CONNECTIONS TO POWER AND GROUND PLANES ON FAR SIDE OF CAPACITOR FROM ICs.

NetSilicon - A Digi International Company, Waltham, MA			
Title NS7520 USB Reference NetChip Device USB			
Size B	Document Number N20USBREF5.SCH	Rev B	
Date: Wednesday, March 10, 2004	Sheet 5	of	6

POWER IN:
5VDC or
3.3VDC
with U14
Bypassed.



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Title NS7520 USB Reference Power Supplies			
Size B	Document Number N20USBREF6.SCH		Rev A
Date:	Wednesday, March 10, 2004	Sheet 6	of 6