

TWN-5213

R00C.5_0222

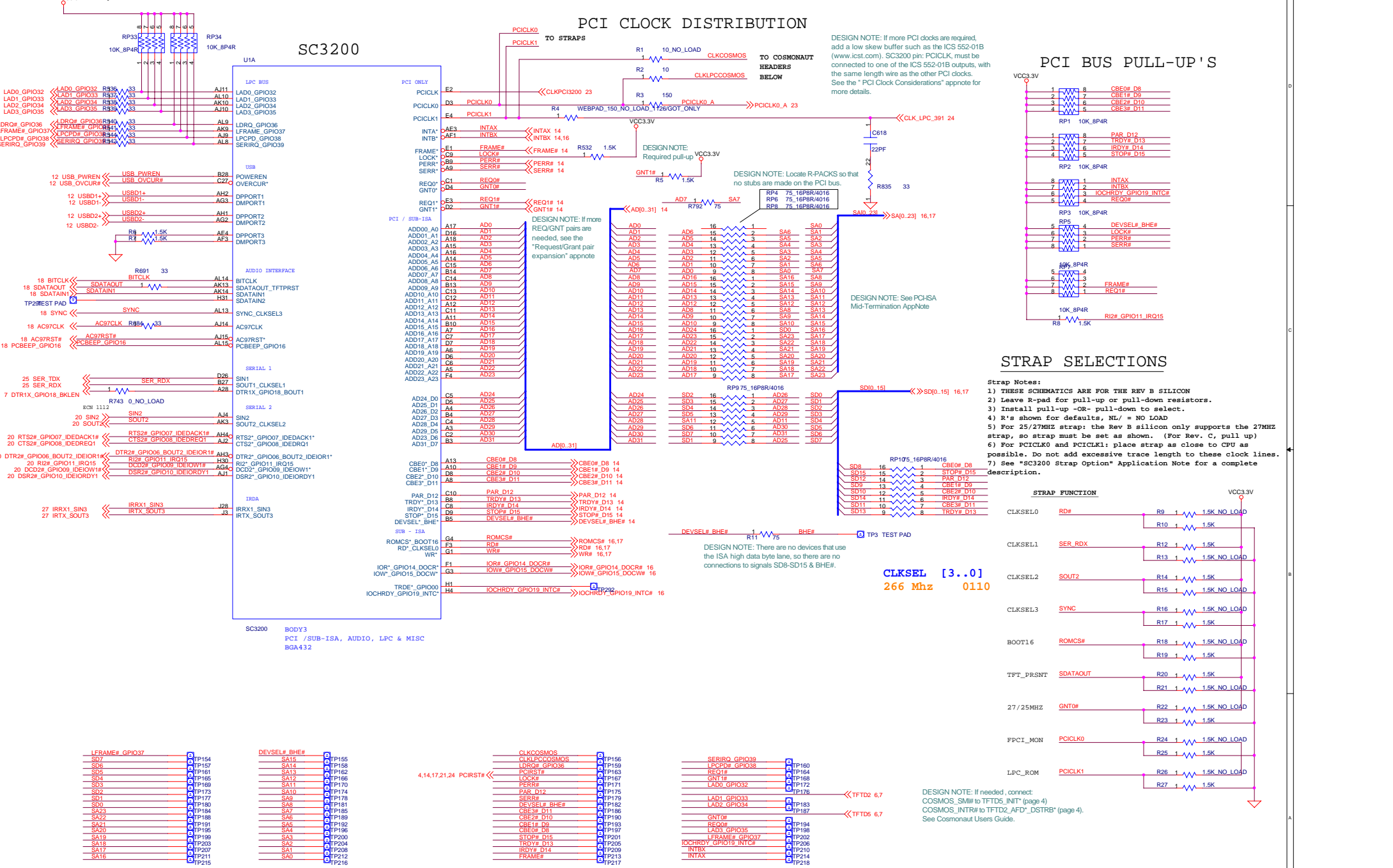
P01-INDEX	P16-ISA Conn for Debug
P02-BLOCK DIAGRAM	P17-BOOT_ROM & SRAM
P03-SC3200 PCI/ISA	P18-AC97 LM4549
P04-SC3200 SDRAM I/F	P19-Audio Amplifer & conn
P05-SC3200 POWER&GND	P20-SERIAL_PORT
P06-SC3200 TFT LCD I/F & IDE	P21-LPC_PC87591&EC
P07-LVDS & BACKLIGHT	P22-
P08-IDE I/F FOR DEBUG	P23-CLOCK &FIX HOLE
P09-COMPACT FLASH	P24-PC87391 FOR FIR
P10-SYSTEM POWER	P25-TOUCH SCREEN CONTROL
P11-SDRAM OM BOARD	P26-BATTERY & CHARGER
P12-USB PORT	P27-CONNECTOR
P13-VGA PORT	P28-NOTE
P14-CARD BUS PCI1420	
P15-PCI_SLOTX2&TPS2216	

R00A	05/31
R00B	08/01
R00C	09/20
R00C.2	10/19
R00C.3	12/11
R00C.4	12/19
R00C.5	02/22

HARRY W.LIAO
HARRY W.LIAO
HARRY W.LIAO
HARRY W.LIAO
HARRY W.LIAO
HARRY W.LIAO
HARRY W.LIAO

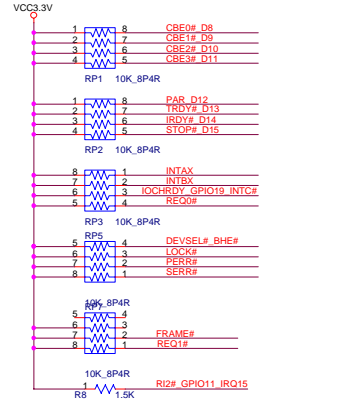
Title		
INDEX		
Size	Document Number	Rev
A	TWN-5213 HARRY W.LIAO	R00C.5
Date:	星期五, 二月 22, 2002	Sheet 1 of 28

SC3200 INTERFACES: PCI/SUB-ISA, LPC, AUDIO, DOC, PCI CLOCKS; STRAP OPTIONS, PCI BUS PULL-UPS, COSMONAUT HEADERS



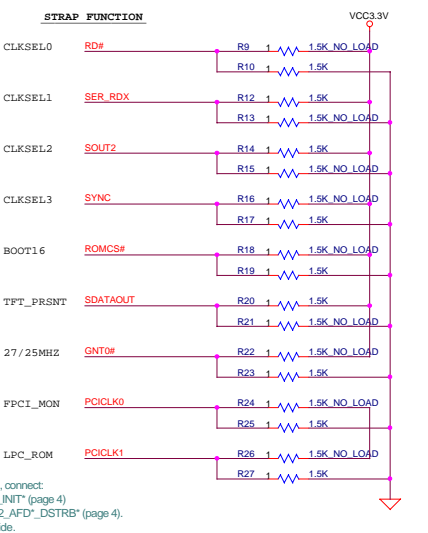
DESIGN NOTE: If more PCI clocks are required, add a low skew buffer such as the ICS 552-01B (www.icst.com). SC3200 pin: PCICLK0 must be connected to one of the ICS 552-01B outputs, with the same length wire as the other PCI clocks. See the "PCI Clock Considerations" appnote for more details.

PCI BUS PULL-UP'S



STRAP SELECTIONS

- Strap Notes:**
- 1) THESE SCHEMATICS ARE FOR THE REV B SILICON
 - 2) Leave R-pad for pull-up or pull-down resistors.
 - 3) Install pull-up -OR- pull-down to select.
 - 4) R's shown for defaults, NL/ = NO LOAD
 - 5) For 25/27MHZ strap: the Rev B silicon only supports the 27MHZ strap, so strap must be set as shown. (For Rev. C, pull up)
 - 6) For PCICLK0 and PCICLK1: place strap as close to CPU as possible. Do not add excessive trace length to these clock lines.
 - 7) See "SC3200 strap Option" Application Note for a complete description.



CLKSEL [3..0]
266 Mhz 0110

DESIGN NOTE: If needed, connect: COSMOS_SMI# to TFTD2_INIT# (page 4) COSMOS_INTR# to TFTD2_AFD#_DSTRB# (page 4). See Cosmonaut Users Guide.

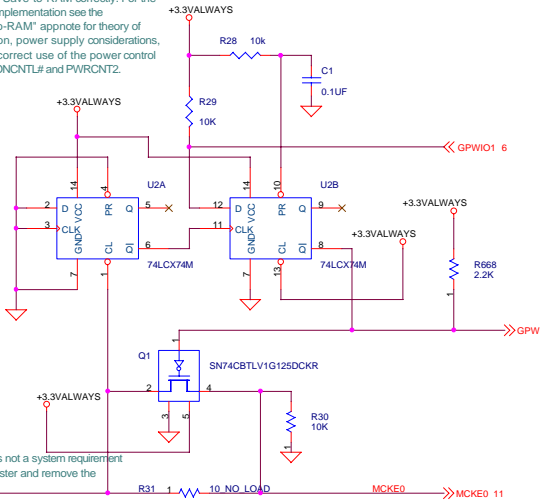
Title			SC3200 PCI/ISA
Size	Document Number	Rev	
C	TWN-5213	HARRY W/LIAO	
Date:	Rev:	Sheet	of
02/22/2002		3	28

SC3200 INTERFACES: MEMORY, 32KHZ AND 27MHZ OSCILLATORS

DESIGN NOTE: GPWIO0 and GPWIO1 are also connected to the Ethernet controller and the Compact Flash connector respectively. These GPWIO's are not expected to be shared. If Save-To-Ram is being used and either the Ethernet controller and the Compact Flash connector is also being used this conflict must be resolved. Contact your field service representative if your design has this issue.

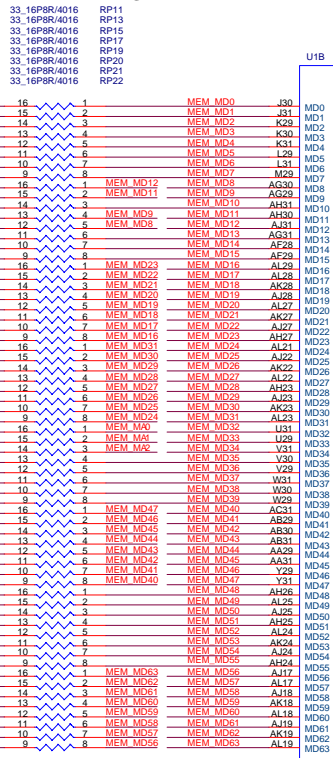
SAVE-TO-RAM

DESIGN NOTE: This schematic does not have the power supply implementation that supports Save-to-RAM correctly. For the optimal implementation see the "Save-to-RAM" appnote for theory of operation, power supply considerations, and the correct use of the power control signals: ONCNTL# and PWRCNTZ.



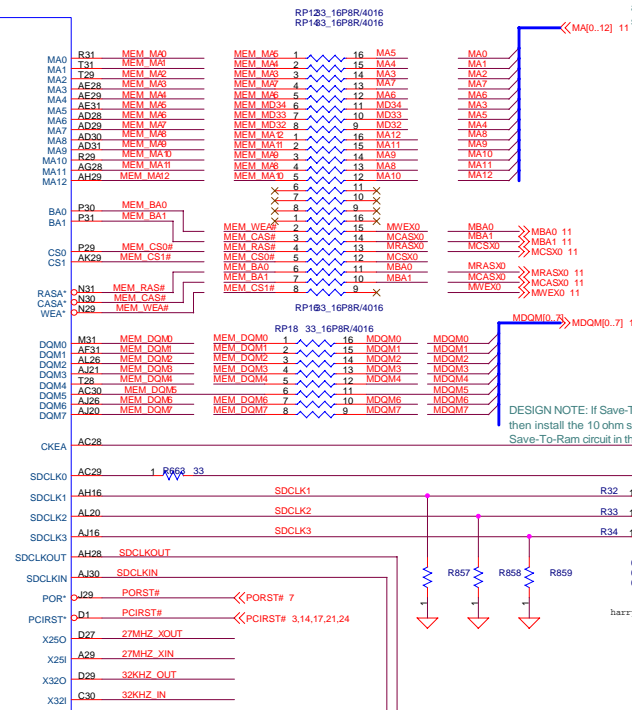
DESIGN NOTE: If Save-To-Ram is not a system requirement then install the 10 ohm series resistor and remove the Save-To-Ram circuit in the box.

R-PACKS



SC3200

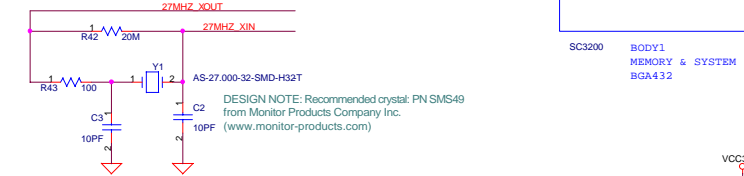
R-PACKS



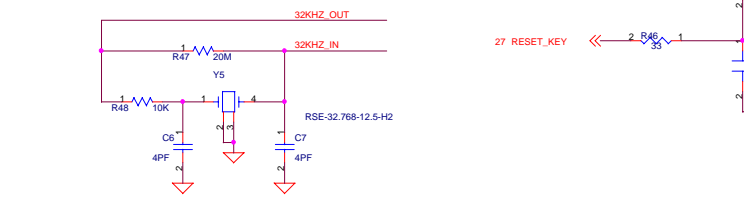
11 MD[0..63] <- MD0..63

U1B

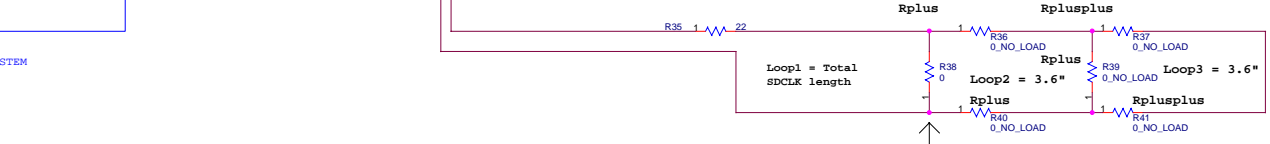
MDQM0..7 MDQM[0..7] 11



27MHZ OSCILLATOR



32KHZ OSCILLATOR

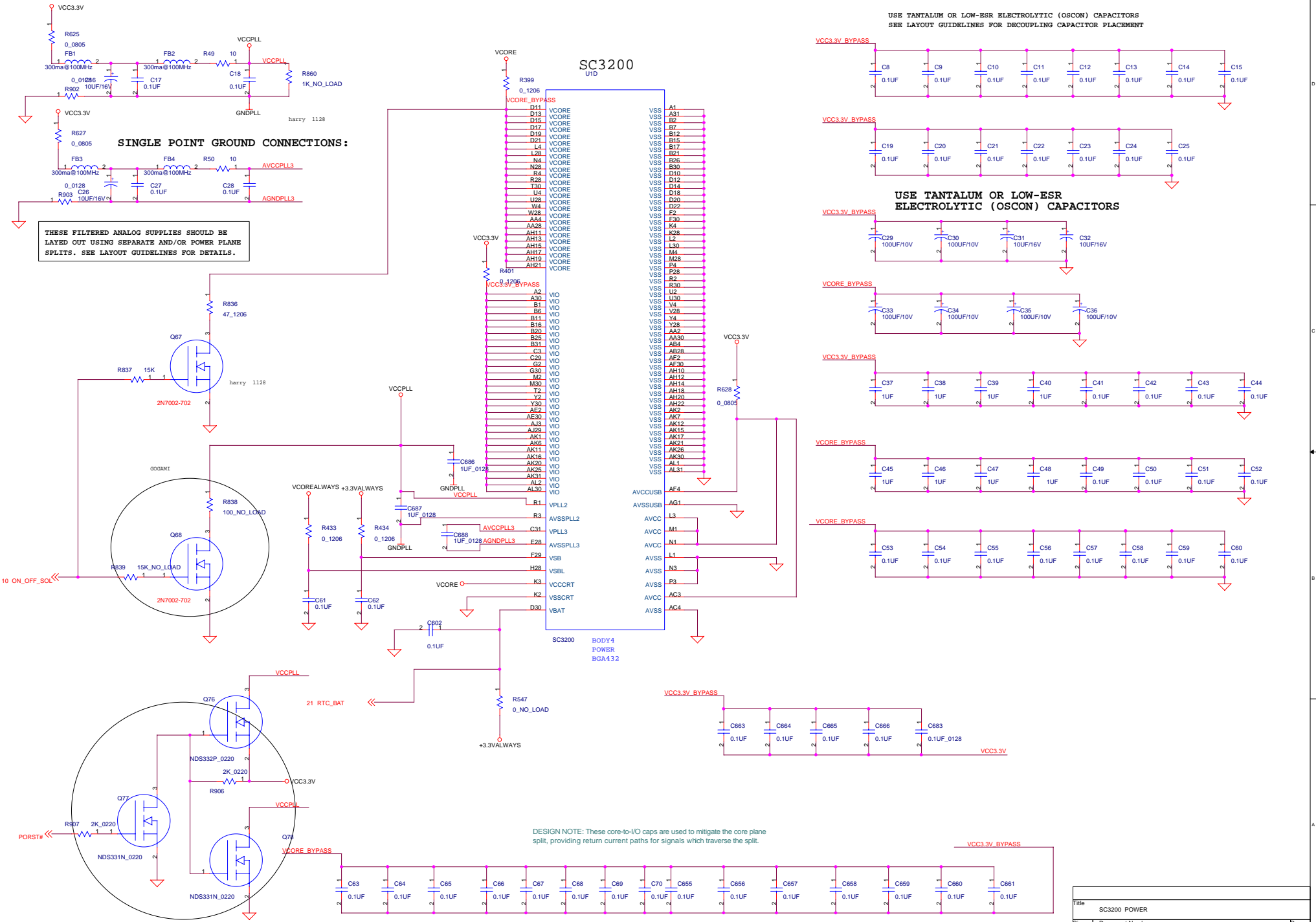


DESIGN NOTE: For more information regarding SDCLK routing see the "Layout Guidelines" appnote.
SODIMM total loop length is SDCLK + 2.5"
DIMM total loop length is SDCLK + 3.1"
On Board memory total loop length is SDCLK + 0"

- DEFAULT IS TOTAL SDCLK LENGTH
- TO ADD-500ps TO LOOP TIME: REMOVE DEFAULT RESISTOR AND POPULATE THE "Rplus" RESISTORS.
- TO ADD -1000ps TO LOOP TIME: REMOVE DEFAULT RESISTOR AND POPULATE "Rplusplus" RESISTORS.

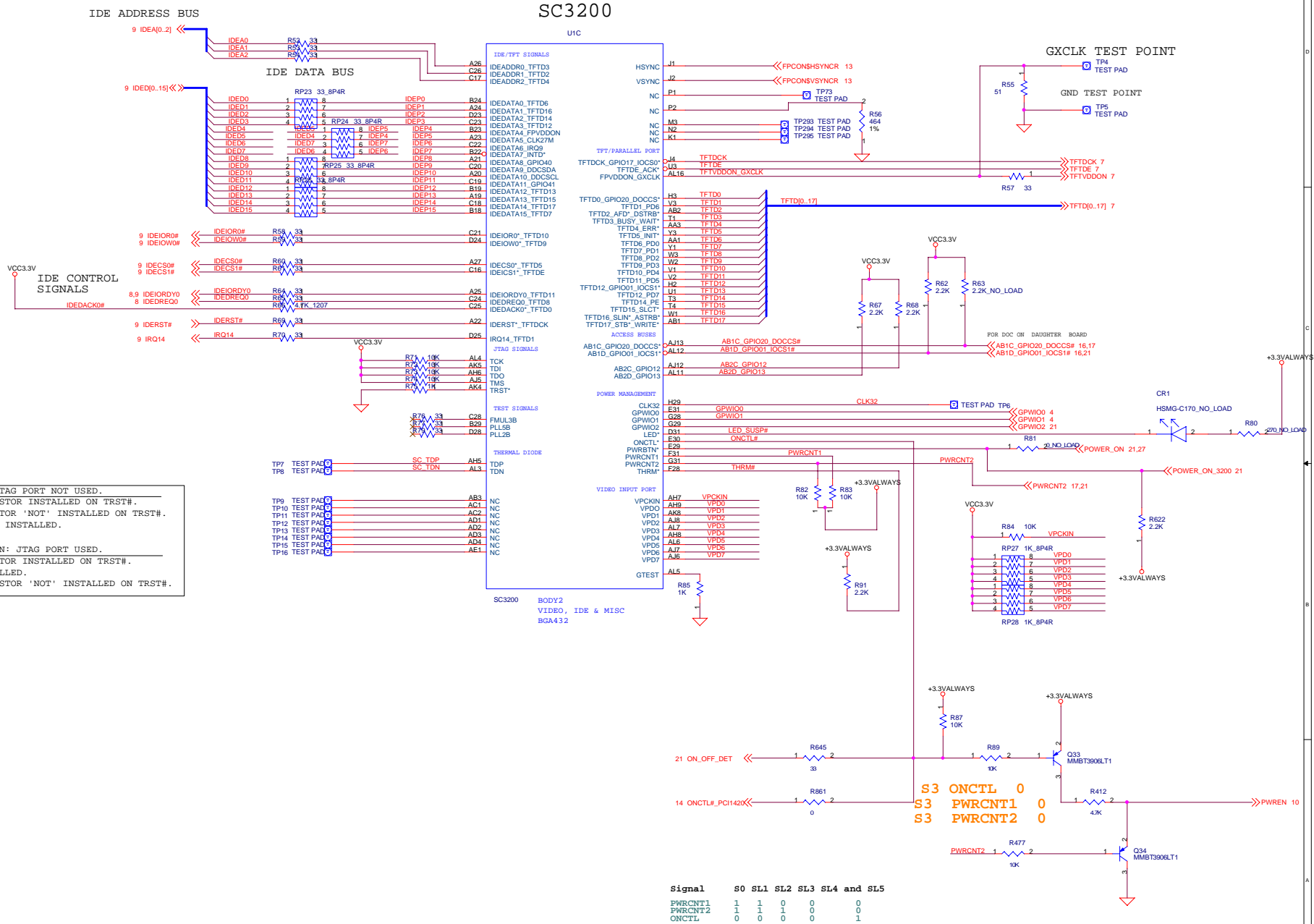
Title		SDRAM	
Size	Document Number	TWN-5213 HARRY W/LIAO	
C		Rev	
Date:	Rev	Sheet	4 of 28

SC3200 INTERFACES: POWER; DECOUPLING CAPS, BATTERY HEADER



Title			SC3200 POWER
Size	Document Number	Rev	
C	TWN-5213	HARRY W/LIAO	
Date:	2002.11.22	Sheet	5 of 28

SC3200 INTERFACES: TFT (NO PARALLEL), IDE, POWER MANAGEMENT, JTAG (WITH HEADER), ACCESS BUS 1/2, CRT; TEMP SENSOR



DEFAULT CONFIGURATION: JTAG PORT NOT USED.

- 1) 1K OHM PULL DOWN RESISTOR INSTALLED ON TRST#.
- 2) 10K OHM PULL UP RESISTOR 'NOT' INSTALLED ON TRST#.
- 3) DIODES ON TRST# 'NOT' INSTALLED.

ALTERNATIVE CONFIGURATION: JTAG PORT USED.

- 1) 10K OHM PULL UP RESISTOR INSTALLED ON TRST#.
- 2) DIODES ON TRST# INSTALLED.
- 3) 1K OHM PULL-DOWN RESISTOR 'NOT' INSTALLED ON TRST#.

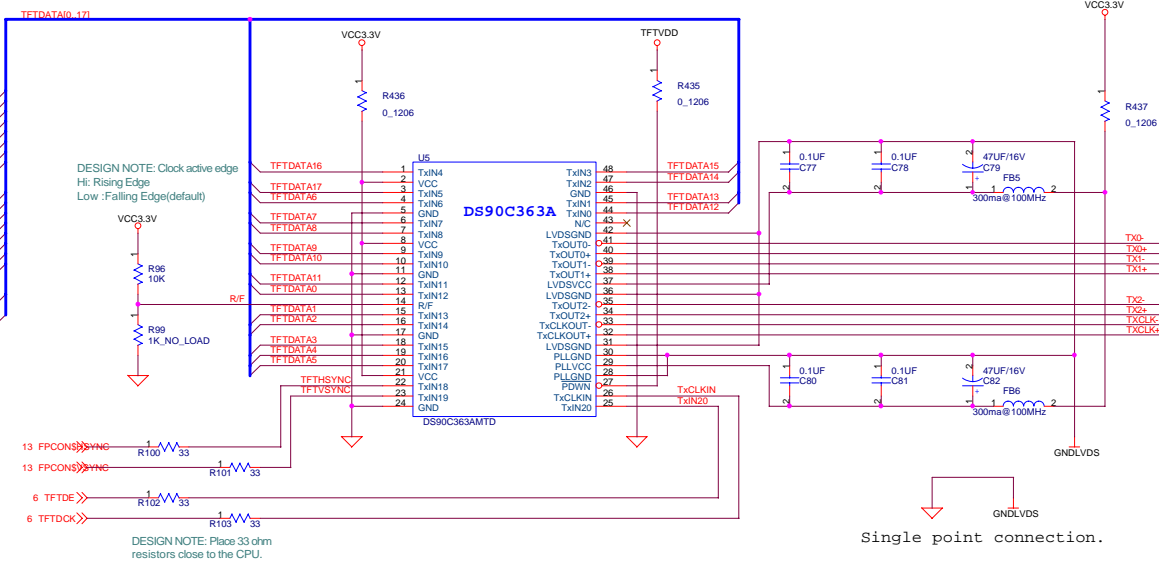
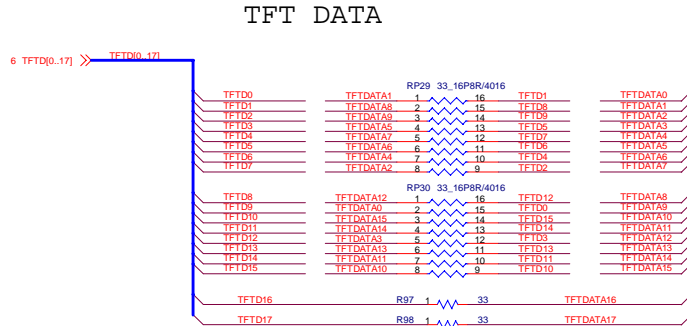
LVDS TFT: CONTROLLER, INVERTER, AND CONNECTOR.

```

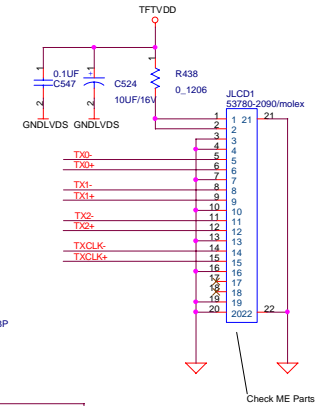
TFT DATA BUS LINES/CONNECTIONS
TFTDATA[17..12] : R5..R0 : TxIN[5..0]
TFTDATA[11..6] : G5..G0 : TxIN[11..6]
TFTDATA[5..0] : B5..B0 : TxIN[17..12]
    
```

LVDS TFT CONVERTER/TRANSMITTER

TFT DATA



GENERIC TFT LVDS CONNECTOR

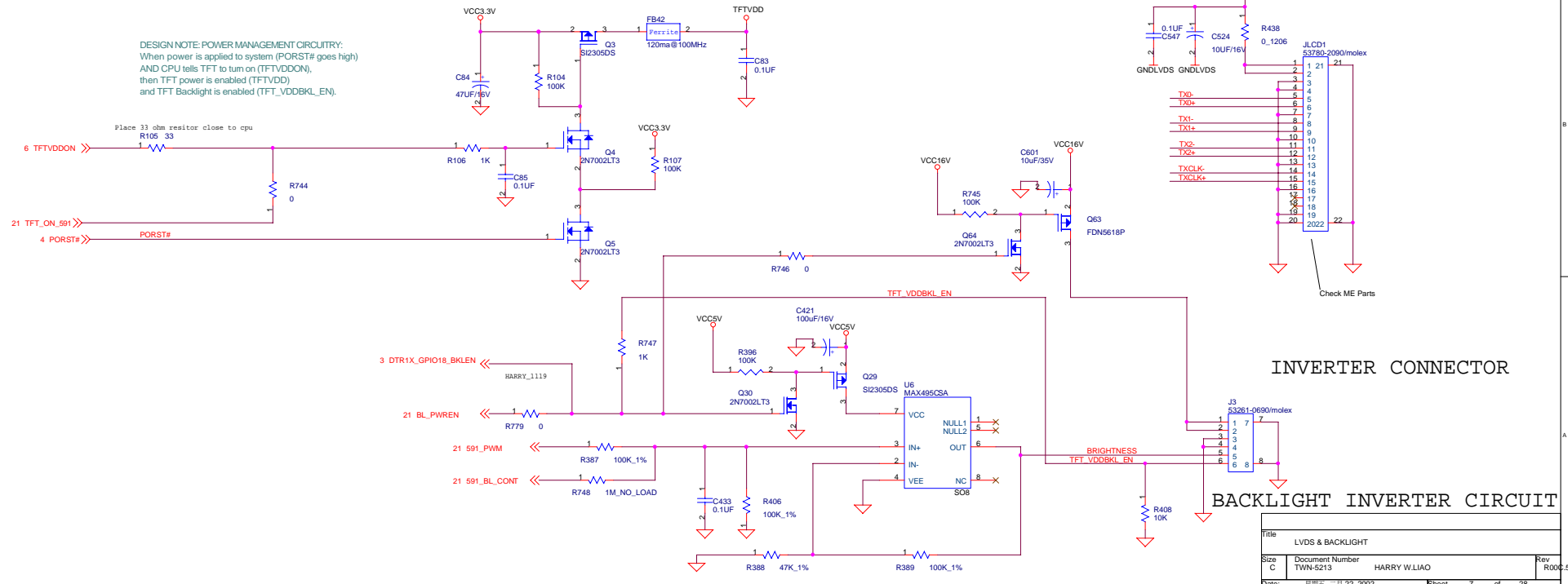


INVERTER CONNECTOR

BACKLIGHT INVERTER CIRCUIT

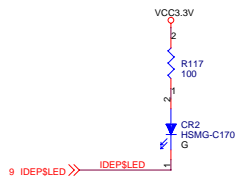
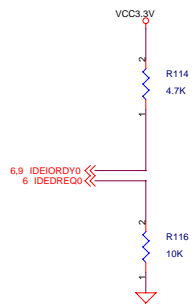
DESIGN NOTE: POWER MANAGEMENT CIRCUITRY:
 When power is applied to system (PORST# goes high) AND CPU tells TFT to turn on (TFTVDDON), then TFT power is enabled (TFTVDD) and TFT Backlight is enabled (TFT_VDDBKL_EN).

Place 33 ohm resistor close to cpu



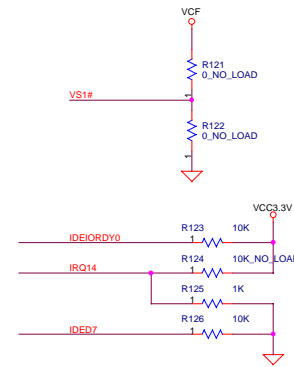
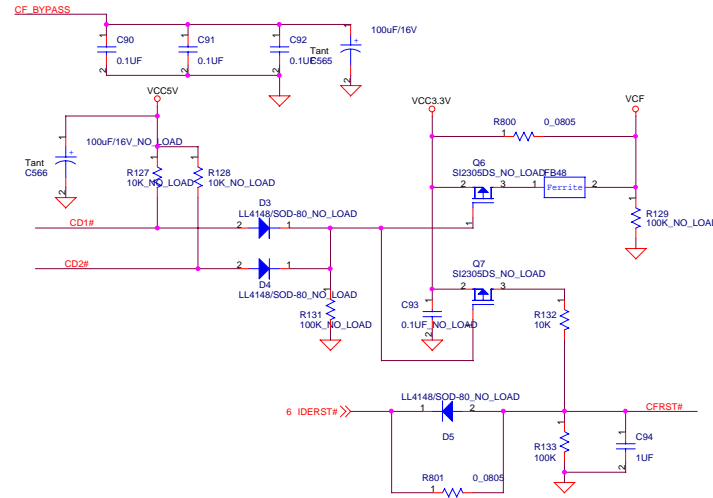
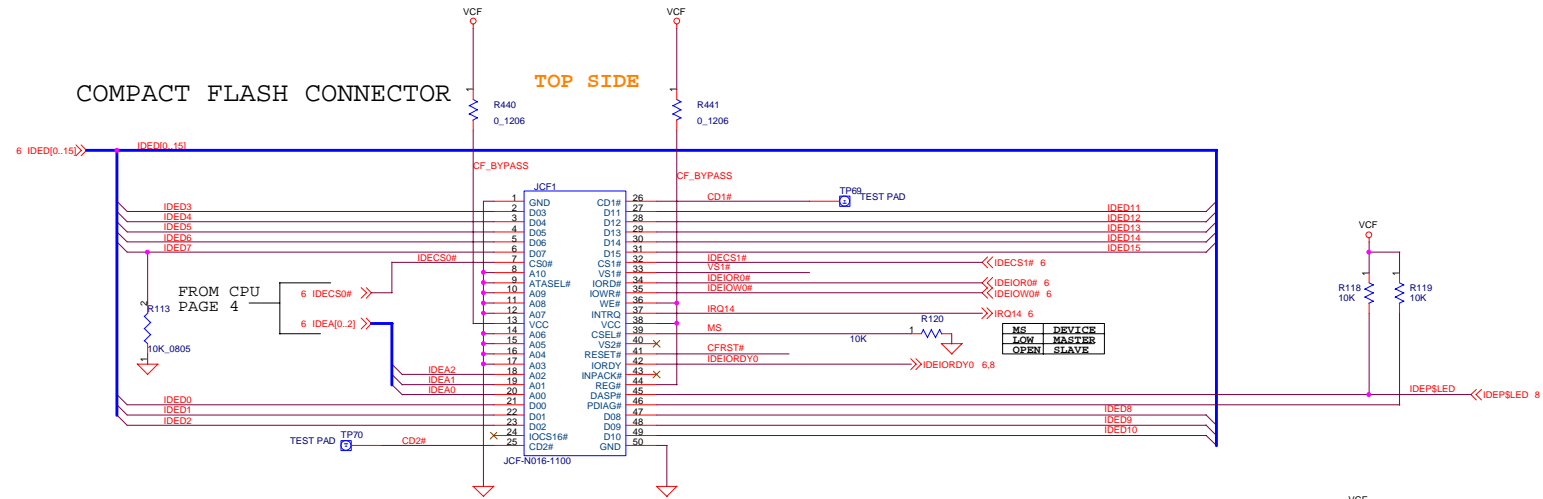
Title			LVDS & BACKLIGHT
Size	Document Number	TWN-5213 HARRY W.LIAO	
C	Rev	R000	
Date:	2002.11.22	Sheet	7 of 28

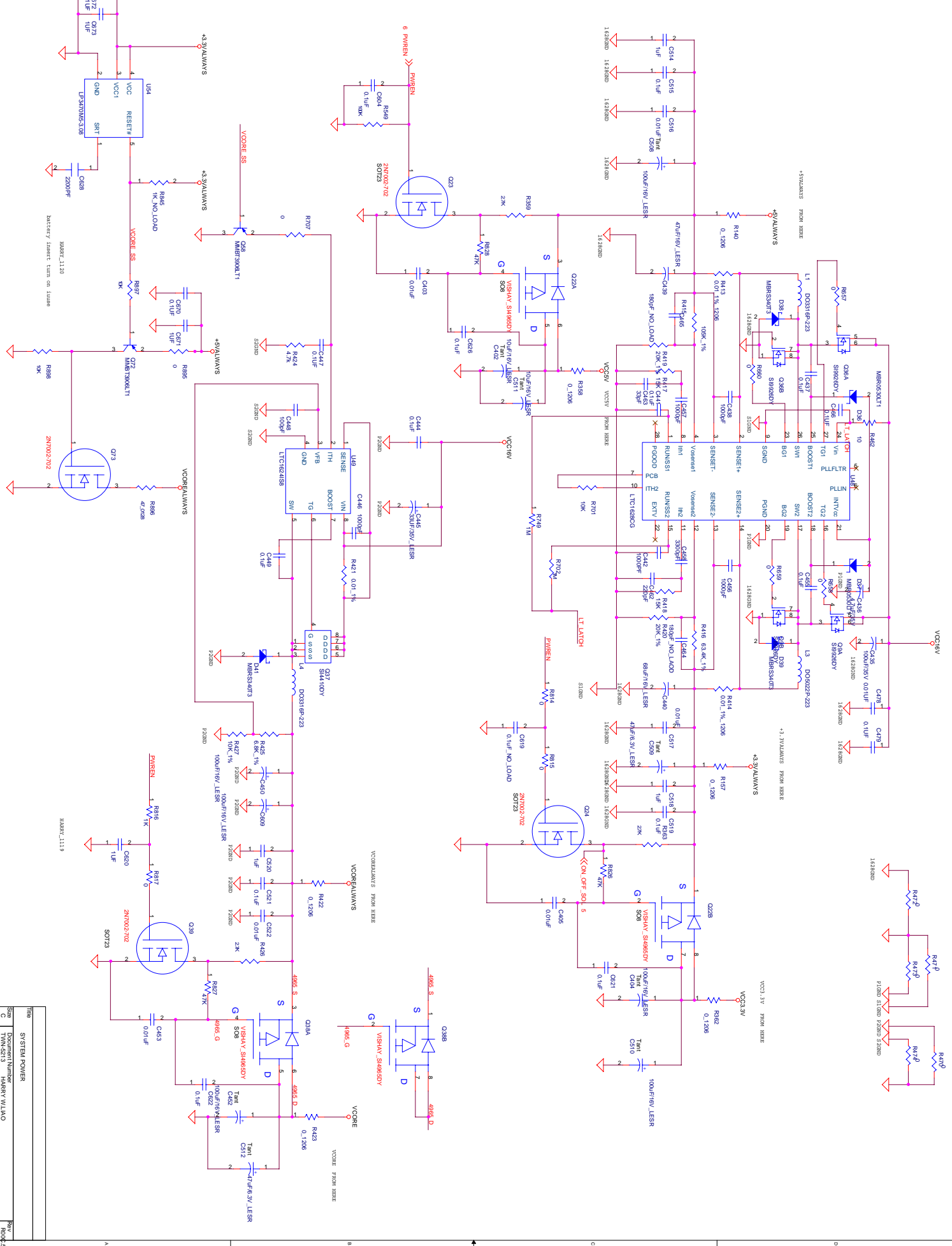
IDE: IDE INTERFACE AND CONNECTORS.



Title		
IDE I/F FOR DEBUG		
Size	Document Number	Rev
C	TWN-5213 HARRY W.LIAO	R0002
Date:	2002年11月22日	Sheet 8 of 28

COMPACT FLASH:

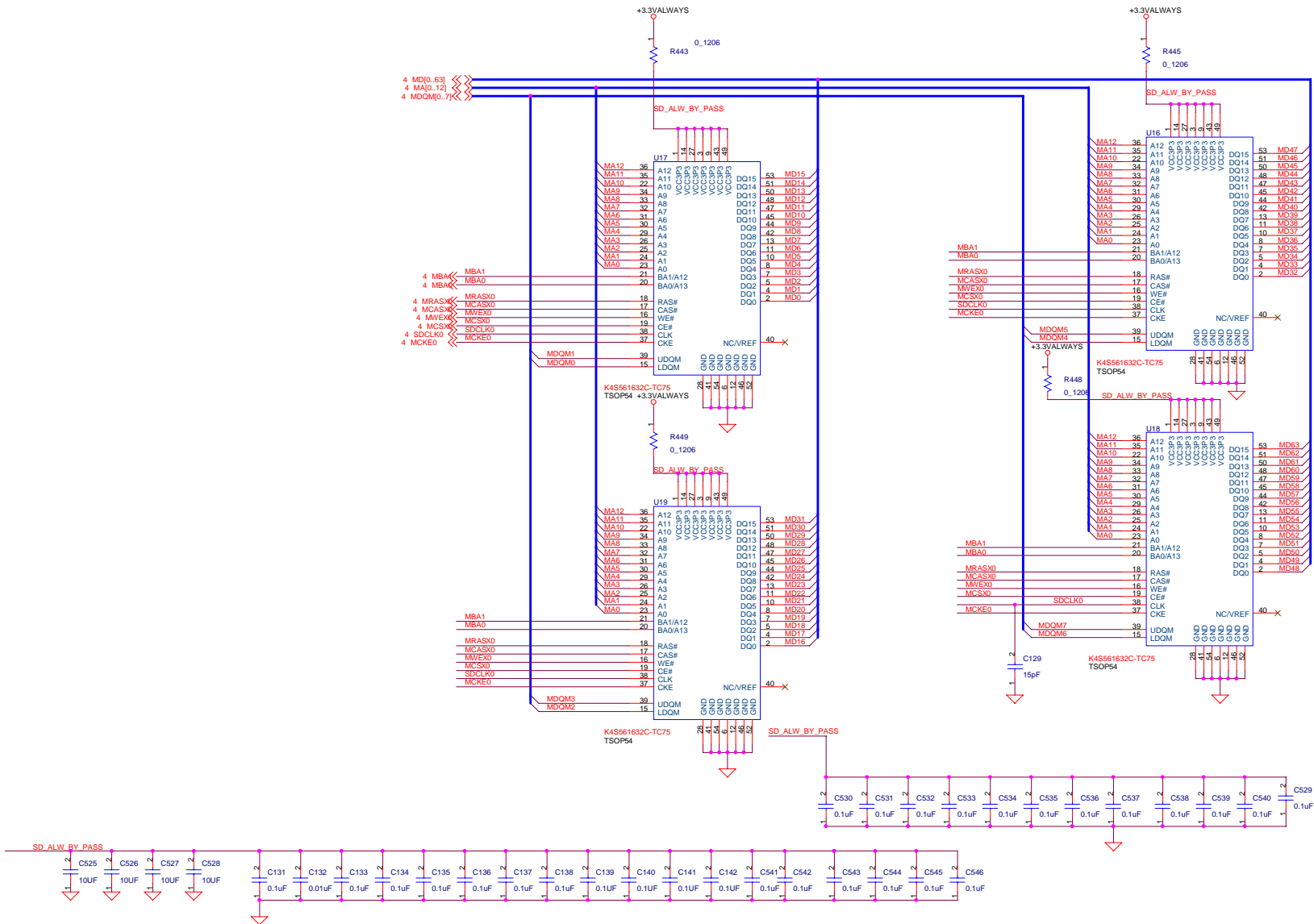




Item	Description	
1	U54	USB Controller
2	M1	Microcontroller
3	Q23	Boost Converter
4	Q22A, Q22B	Buck Converter
5	Q21	Buck Converter
6	Q20	Buck Converter
7	Q19	Buck Converter
8	Q18	Buck Converter
9	Q17	Buck Converter
10	Q16	Buck Converter
11	Q15	Buck Converter
12	Q14	Buck Converter
13	Q13	Buck Converter
14	Q12	Buck Converter
15	Q11	Buck Converter
16	Q10	Buck Converter
17	Q9	Buck Converter
18	Q8	Buck Converter
19	Q7	Buck Converter
20	Q6	Buck Converter
21	Q5	Buck Converter
22	Q4	Buck Converter
23	Q3	Buck Converter
24	Q2	Buck Converter
25	Q1	Buck Converter

SYSTEM POWER
Document Number: HW-5213
HARRY WILLIAMS
Date: 11-22-2002

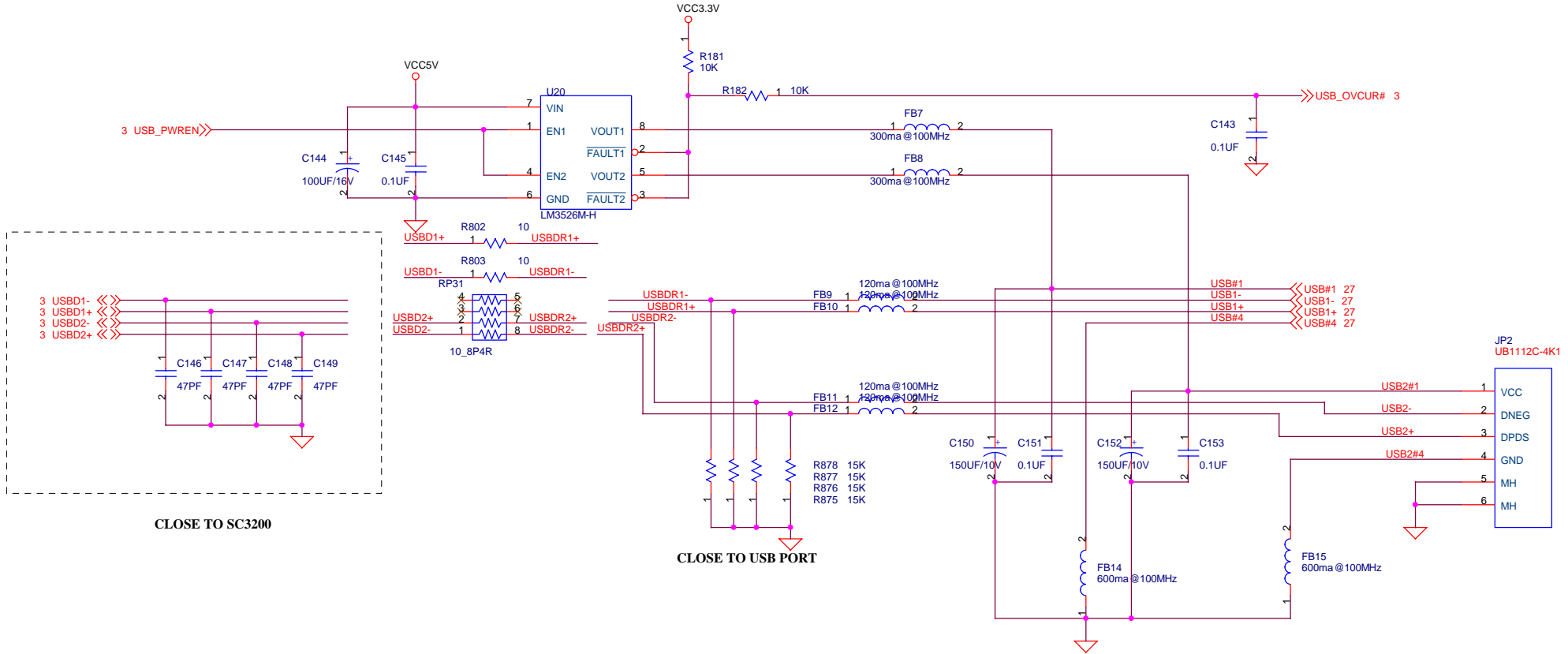
WEBPAD 16X16 K4S561632C-TC75



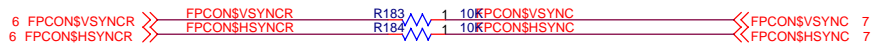
Title			SDRAM
Size	Document Number	Rev	
C	TWN-5213	HARRY W.LIAO	
Date:	2002年11月22日	Sheet	11 of 28

USB: INTERFACE AND CONNECTOR

USB INTERFACE



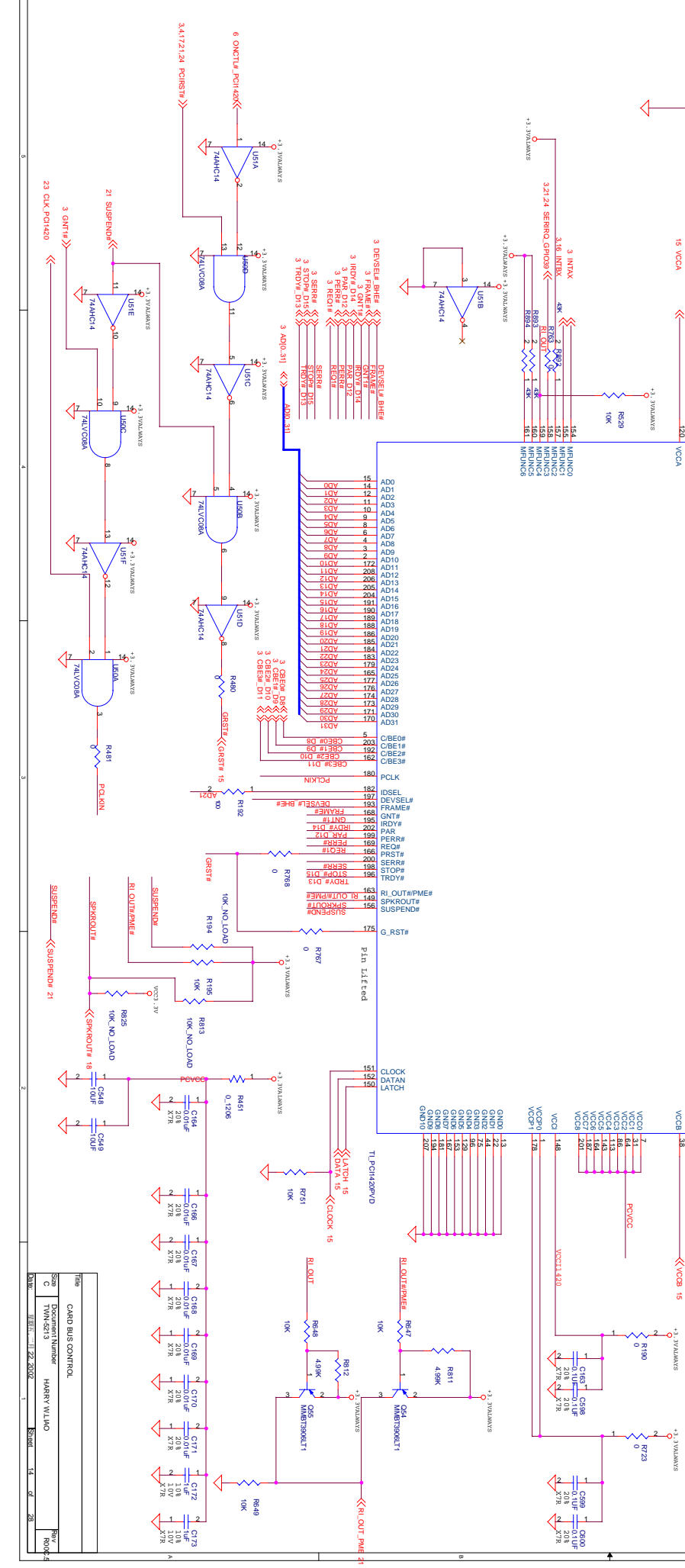
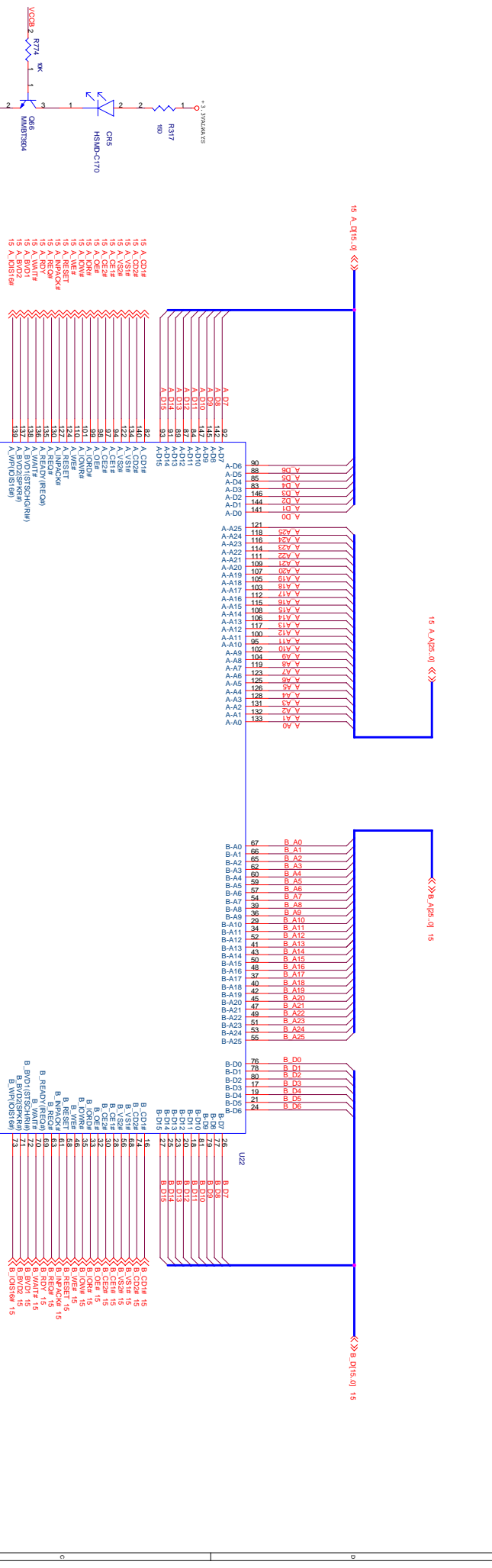
Title		
USB PORT		
Size	Document Number	Rev
B	TWN-5213 HARRY W.LIAO	R000.5
Date:	星期五, 二月 22, 2002	Sheet 12 of 28



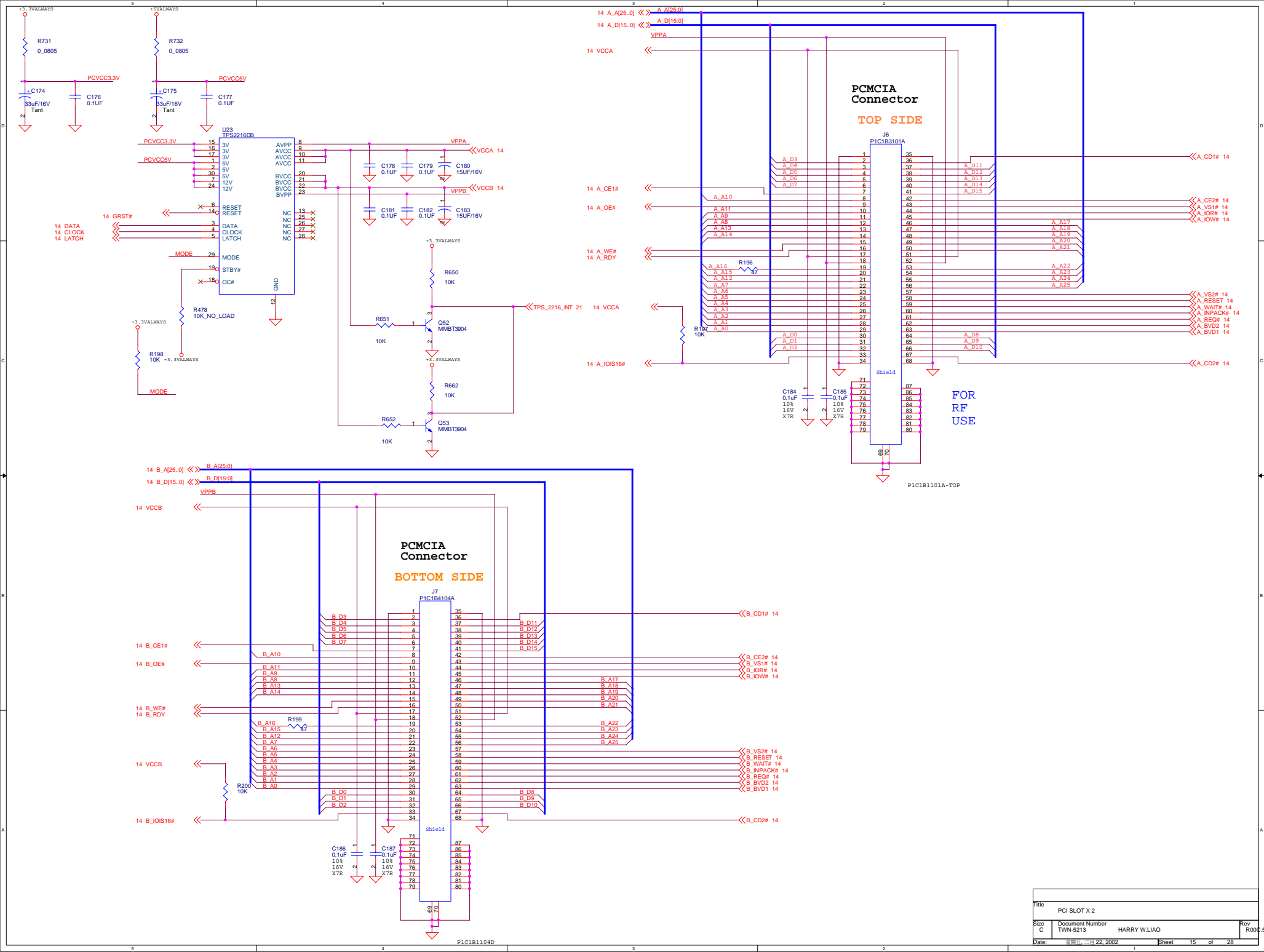
PLACE NEAR PROCESSOR

MUST BUFFER IF TRYING TO DRIVE BOTH FP AND CRT
 IF ONLY DRIVING ONE, NO BUFFER REQUIRED

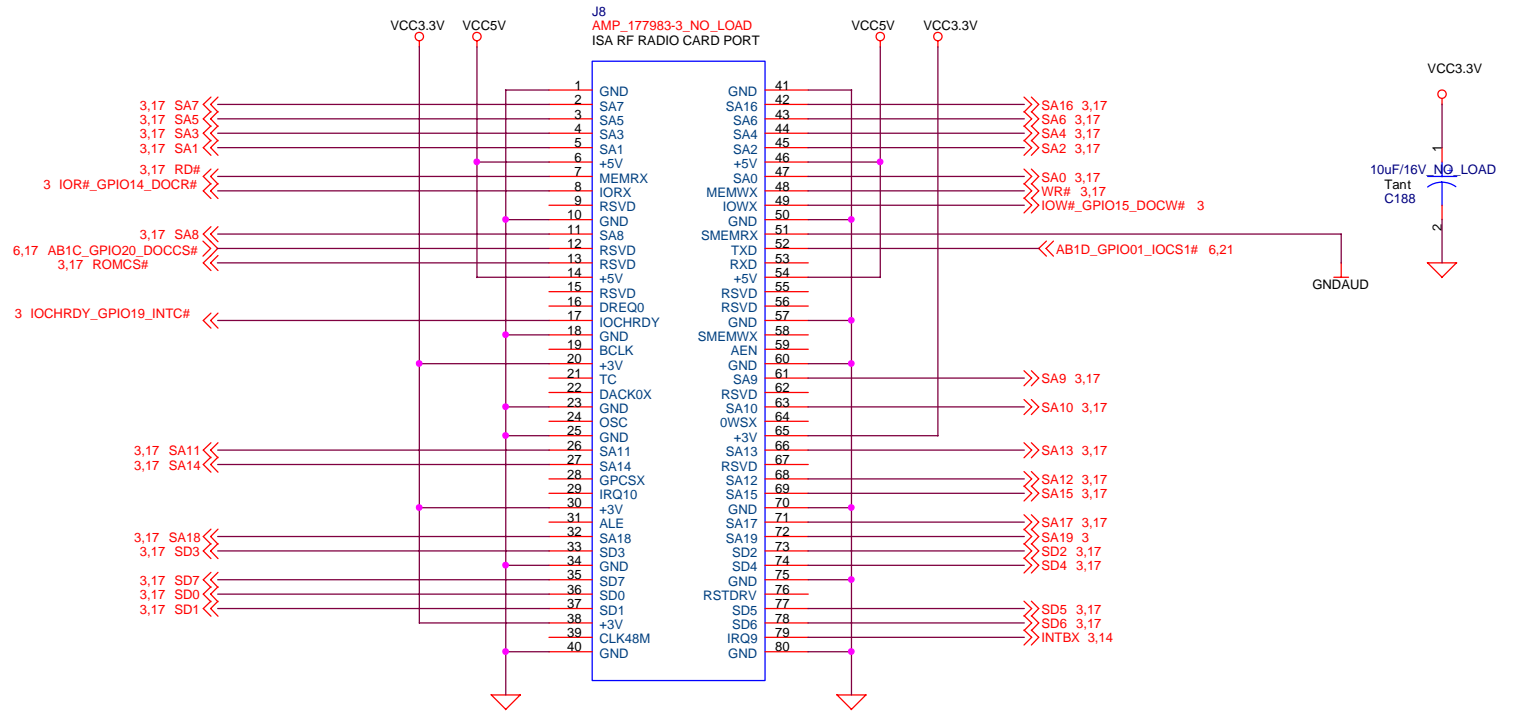
Title			
VGA CONNECTOR FOR DEBUG			
Size	Document Number	Rev	
B	TWN-5213 HARRY W.LIAO	R000.5	
Date:	星期五, 二月 22, 2002	Sheet	13 of 28



Item	Value
Part Number	TMN-5213
Revision	1.0
Date	11/22/2002
Author	HARRY WILCO
Checked	
Drawn	
Scale	1:1
Sheet	14 of 28



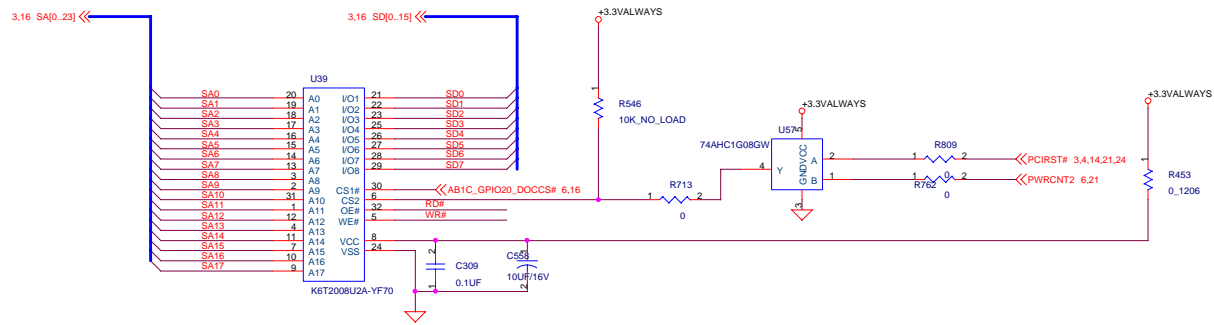
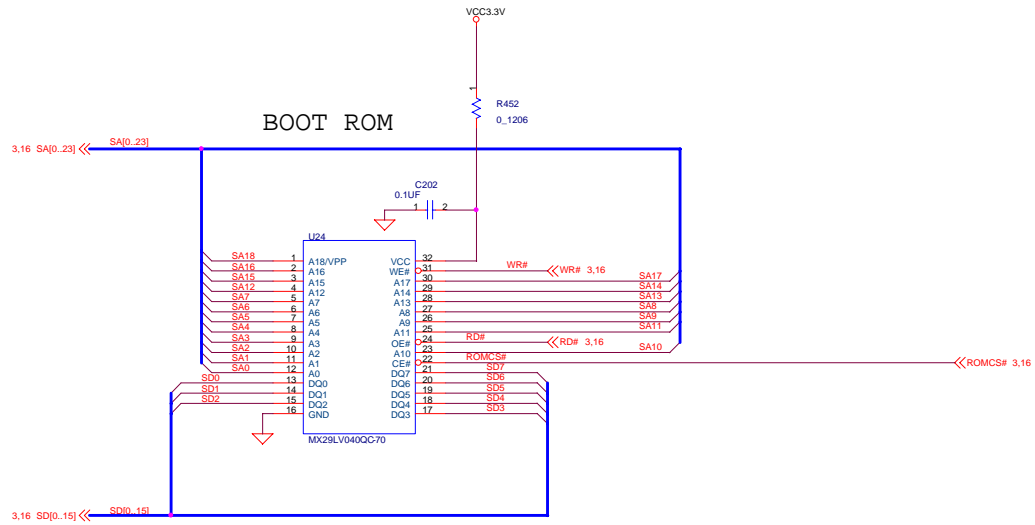
Title			PCI SLOT X 2
Size	Document Number	Rev	
C	TWN-5213	HARRY W.LIAO	
Date:	2002年11月22日	Sheet	15 of 28



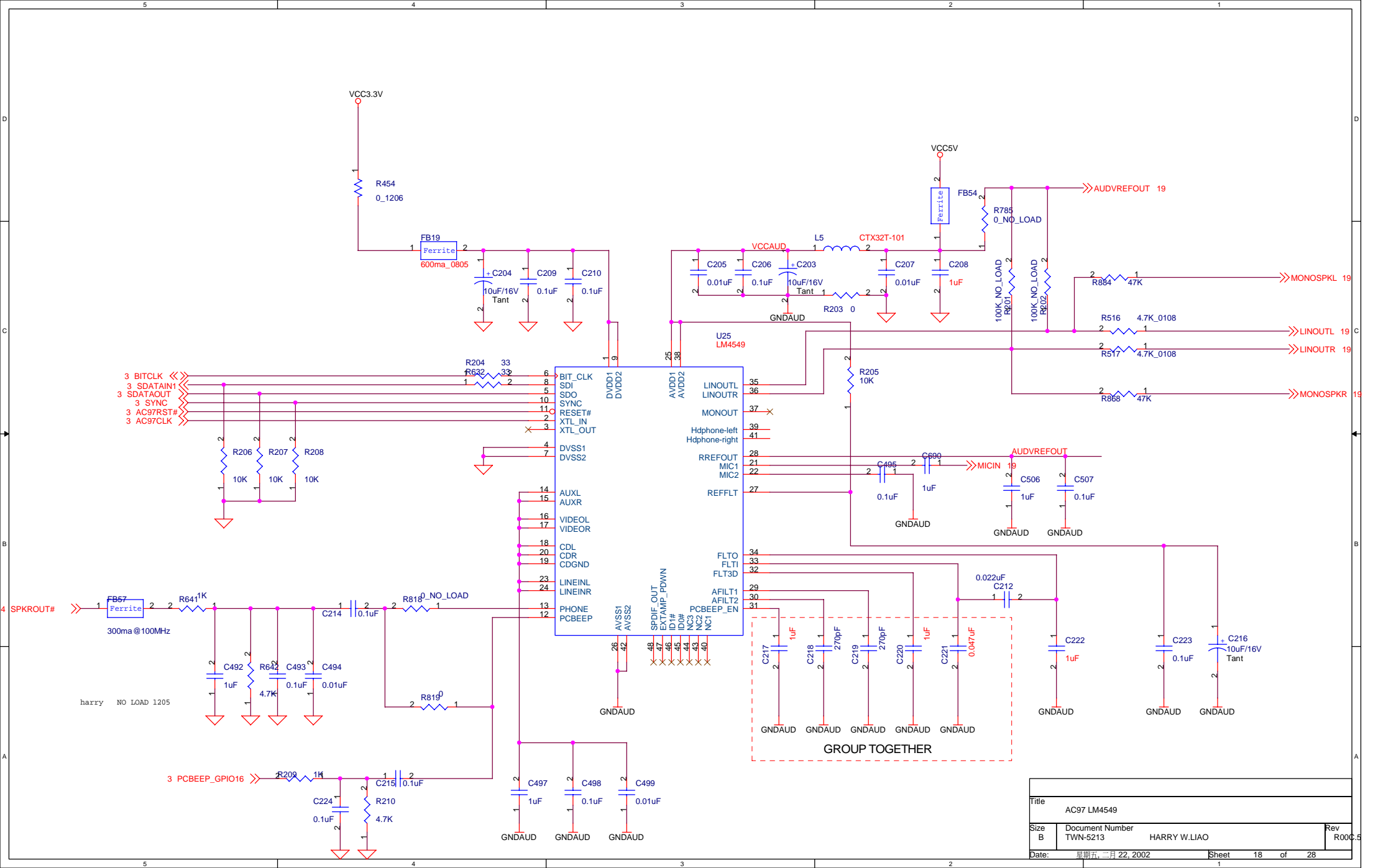
FOR DEBUG PORT80

Title			
ISA FOR PORT 80			
Size	Document Number	Rev	
B	TWN-5213	HARRY W.LIAO	R000.5
Date:	星期五, 二月 22, 2002	Sheet	16 of 28

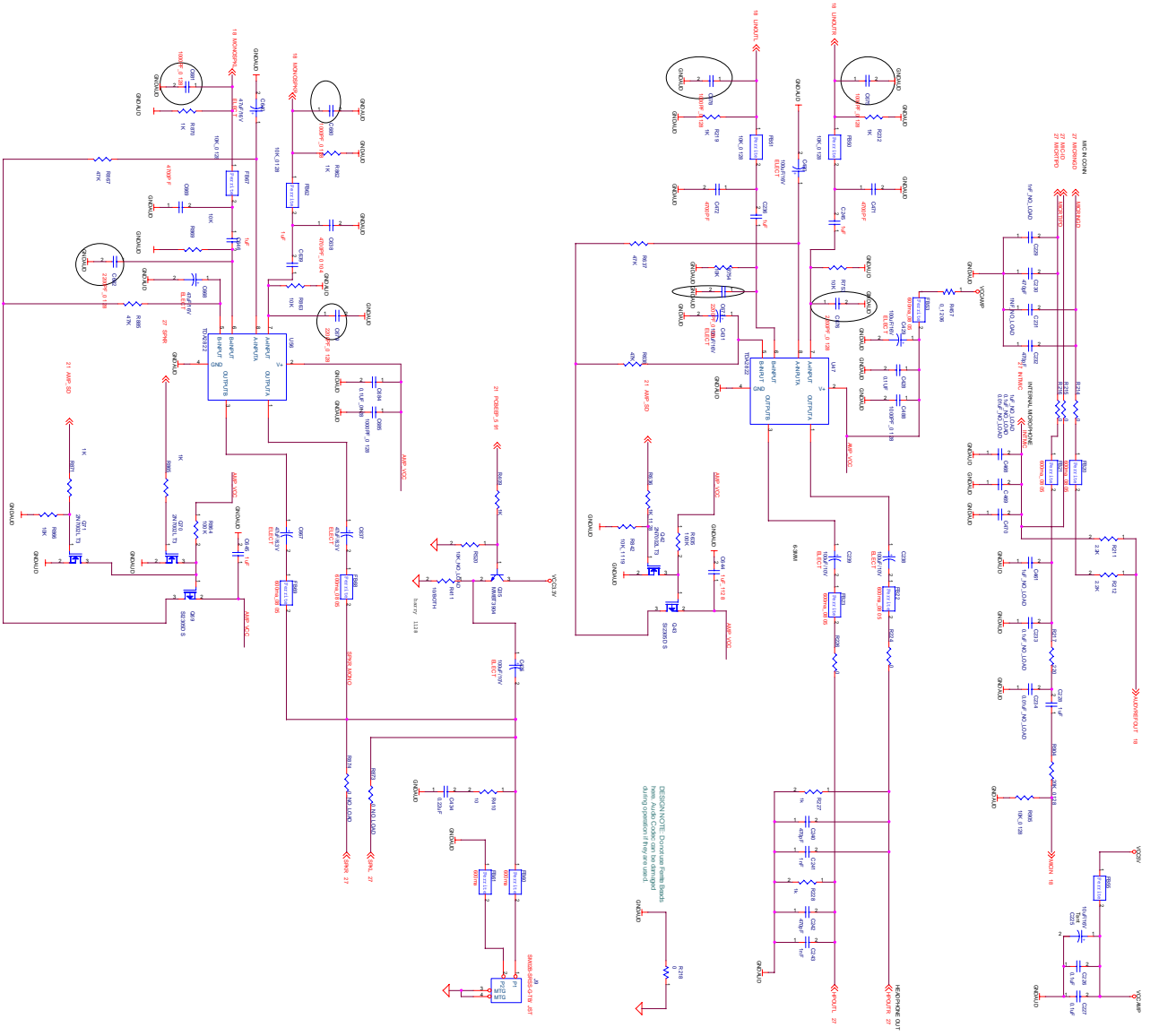
BOOT ROM + D.O.C.: ISA BOOT ROM AND DOC DEVICES, DOWSER HEADER, POLARIS HEADER



Title		
BOOT ROM & SRAM		
Size	Document Number	Rev
C	TWN-5213 HARRY W.LIAO	
Date:	2002年11月22日	Sheet 17 of 28

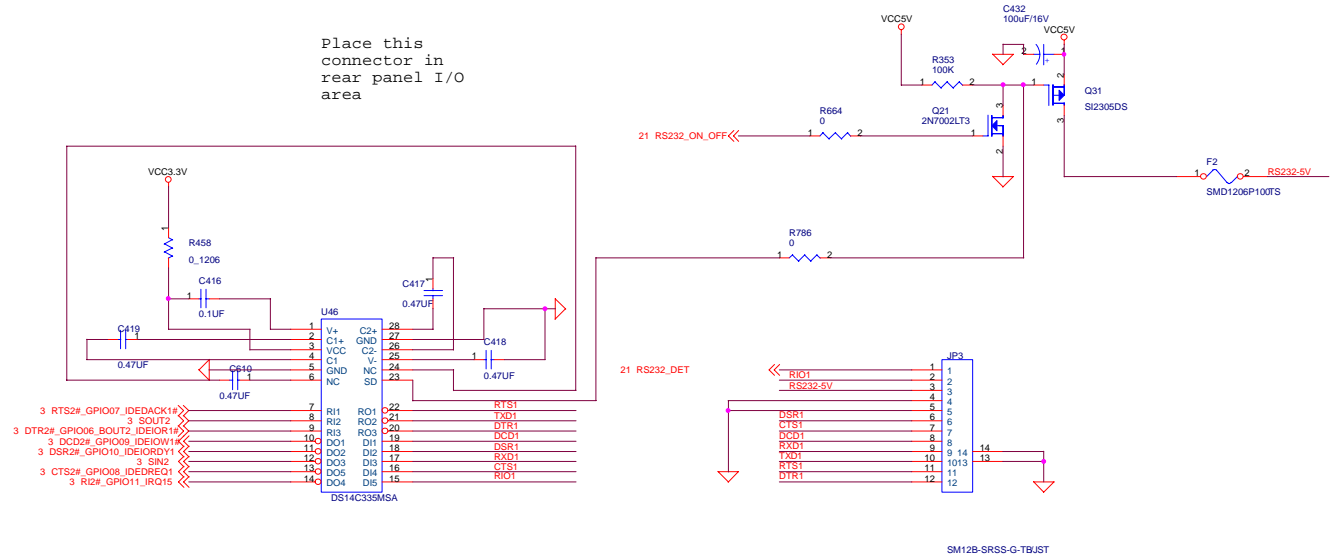


Title		
AC97 LM4549		
Size	Document Number	Rev
B	TWN-5213	R000.5
Date: 星期五, 三月 22, 2002		Sheet 18 of 28



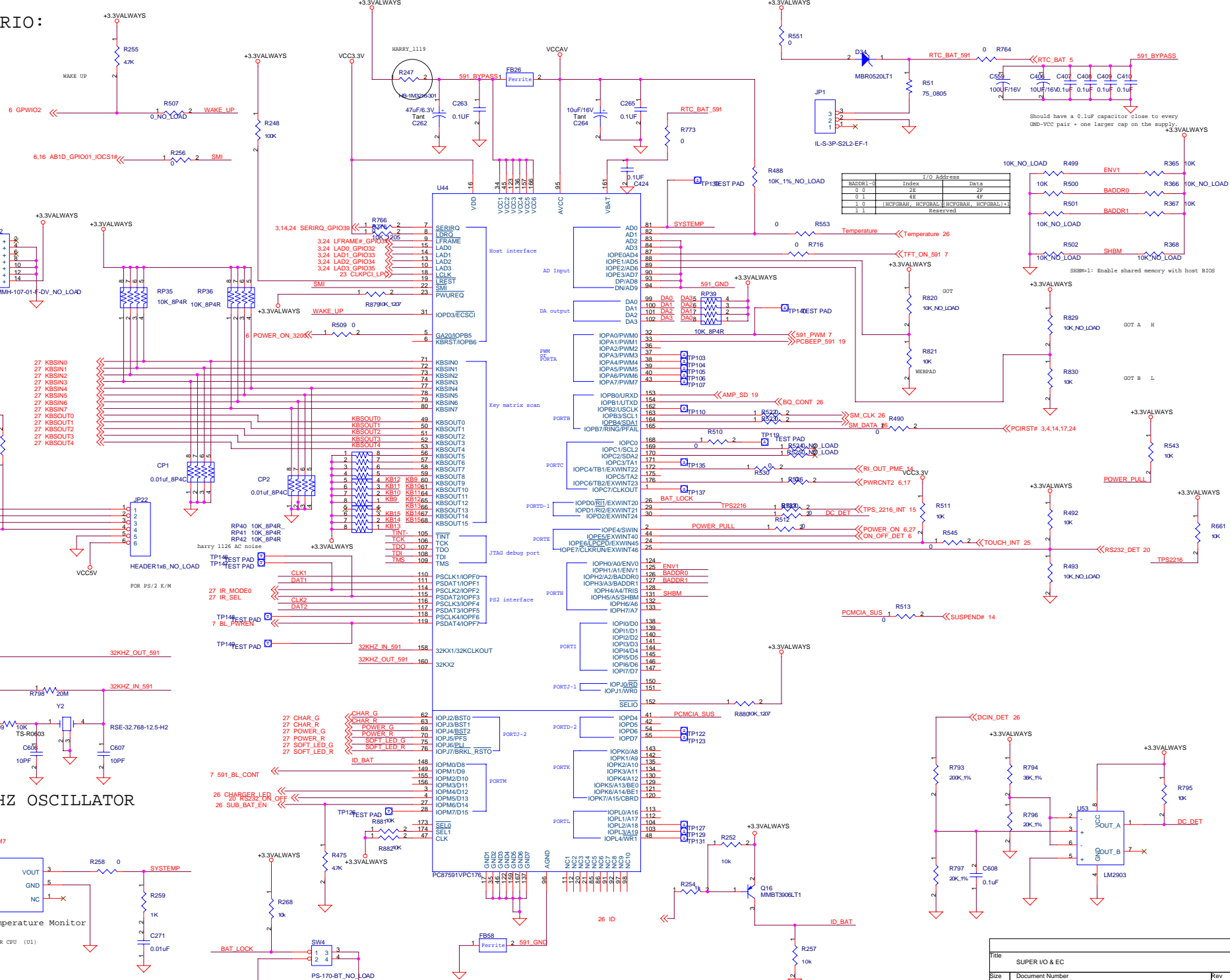
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Place this
connector in
rear panel I/O
area



Title			SERIAL PORT		
Size	Document Number	HARRY W.LIAO			Rev
C	TWN-5213				R00C.S
Date:	2002年11月22日	Sheet	20	of	28

LPC SUPERIO:

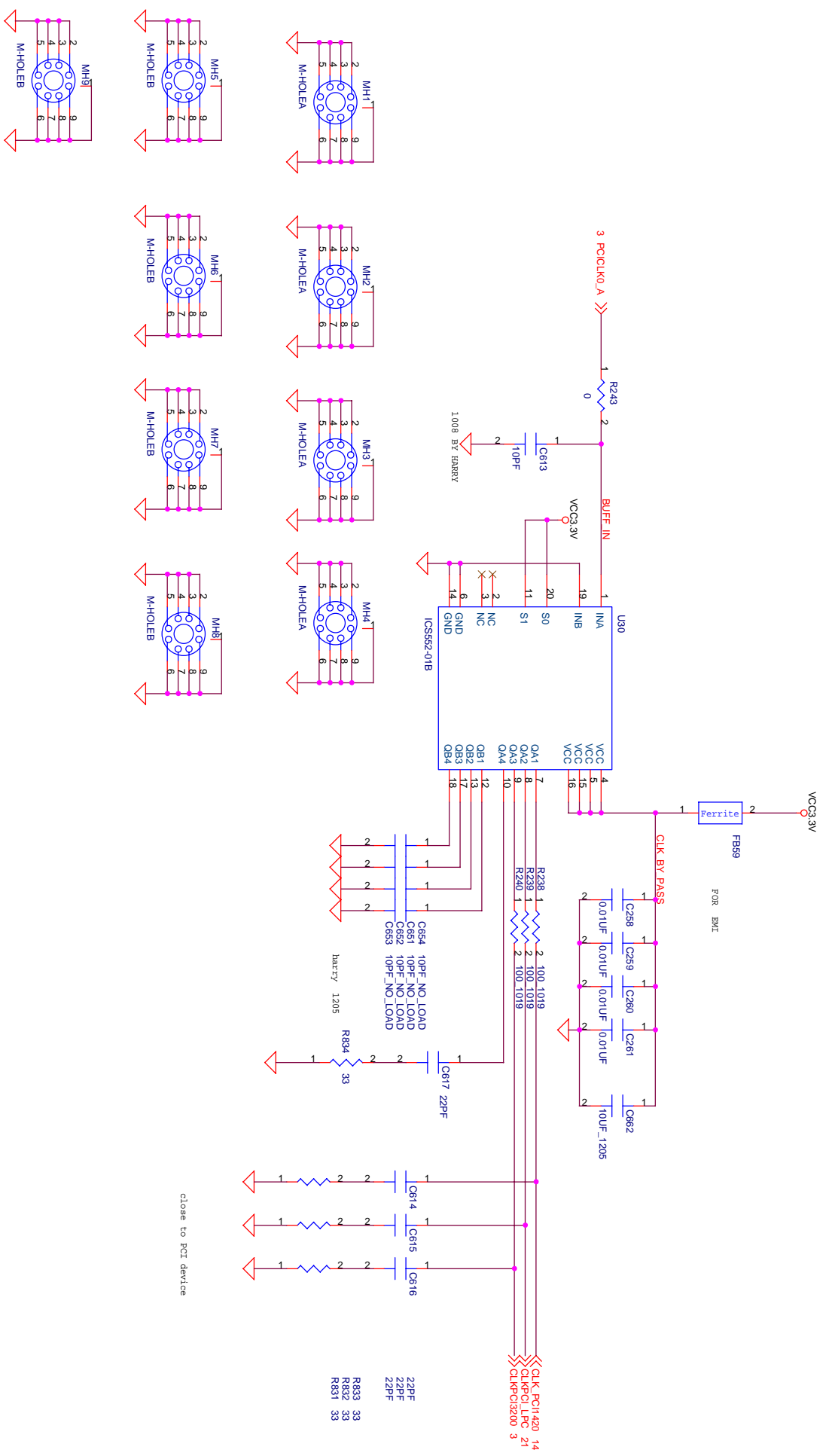


ADDR1	Index	I/O Address	Data
0	2E	2E	2E
0	4E	4E	4E
1	0	(HCPBAR, HCPGBAL, HCPHBAH, HCPGBAL)	1
1	1	Reserved	

Title		LPC SUPER I/O PC87360	
Size	Document Number	Rev	
B	TMN5213	HARRY W. LIAO	R0005
Date:	星期五, 二月 22, 2002	Sheet	22 of 28

5 4 3 2 1

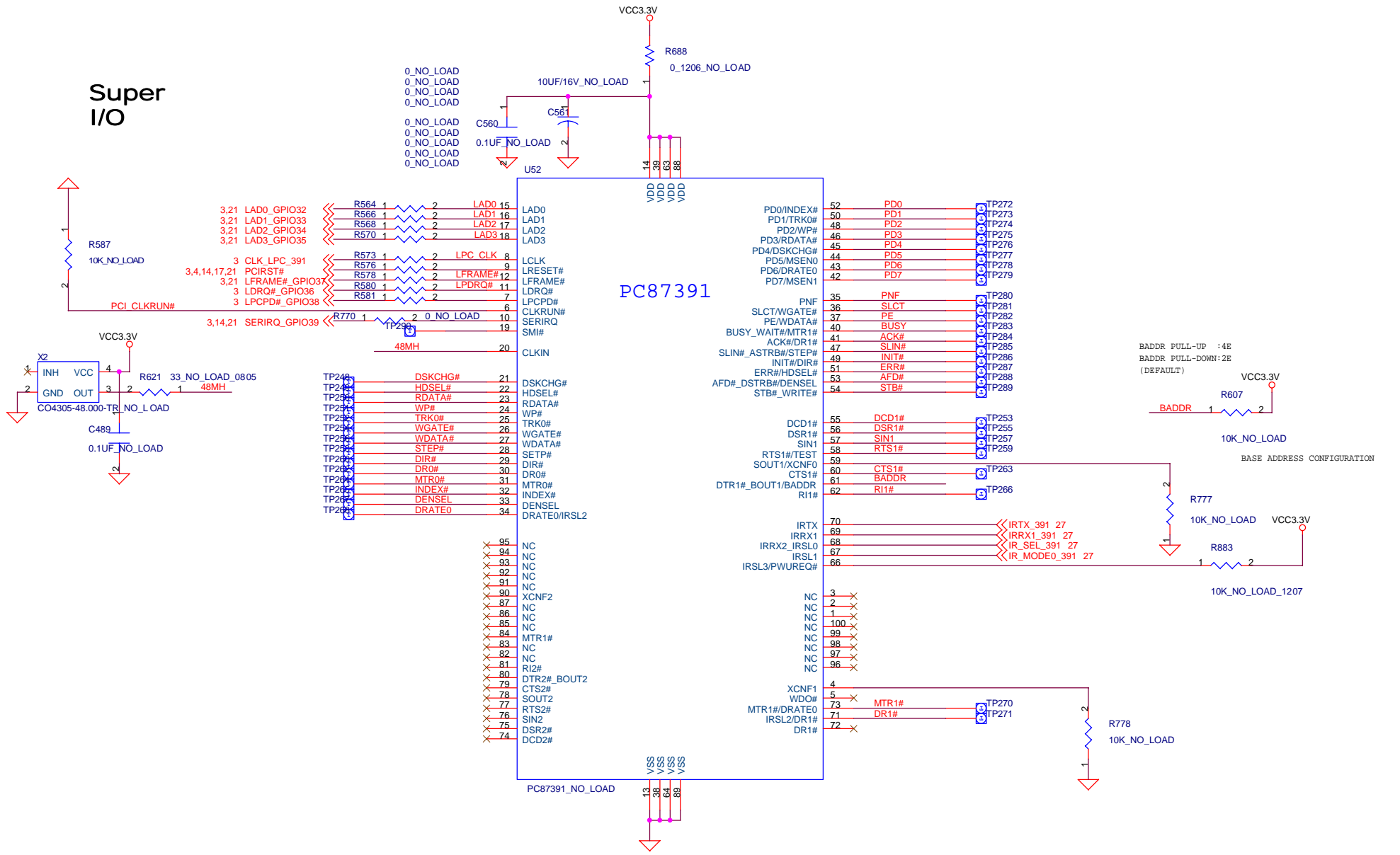
A B C D



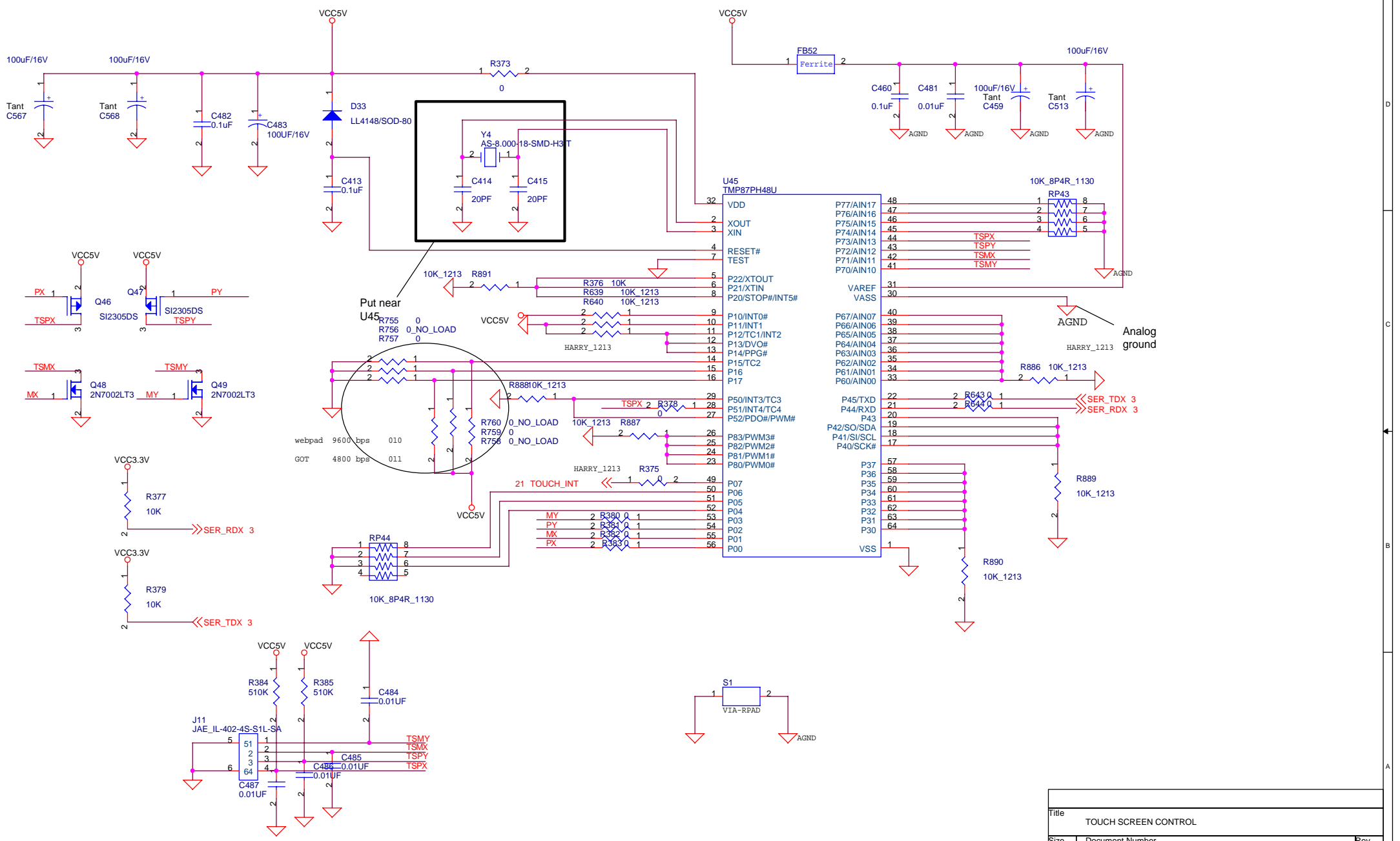
Title		CLOCK	
Size	Document Number	HARRY WLLAO	
B	TMN5213	Sheet	23 of 28
Date:	日期: 二月 22, 2002	Rev	R10005

Super I/O

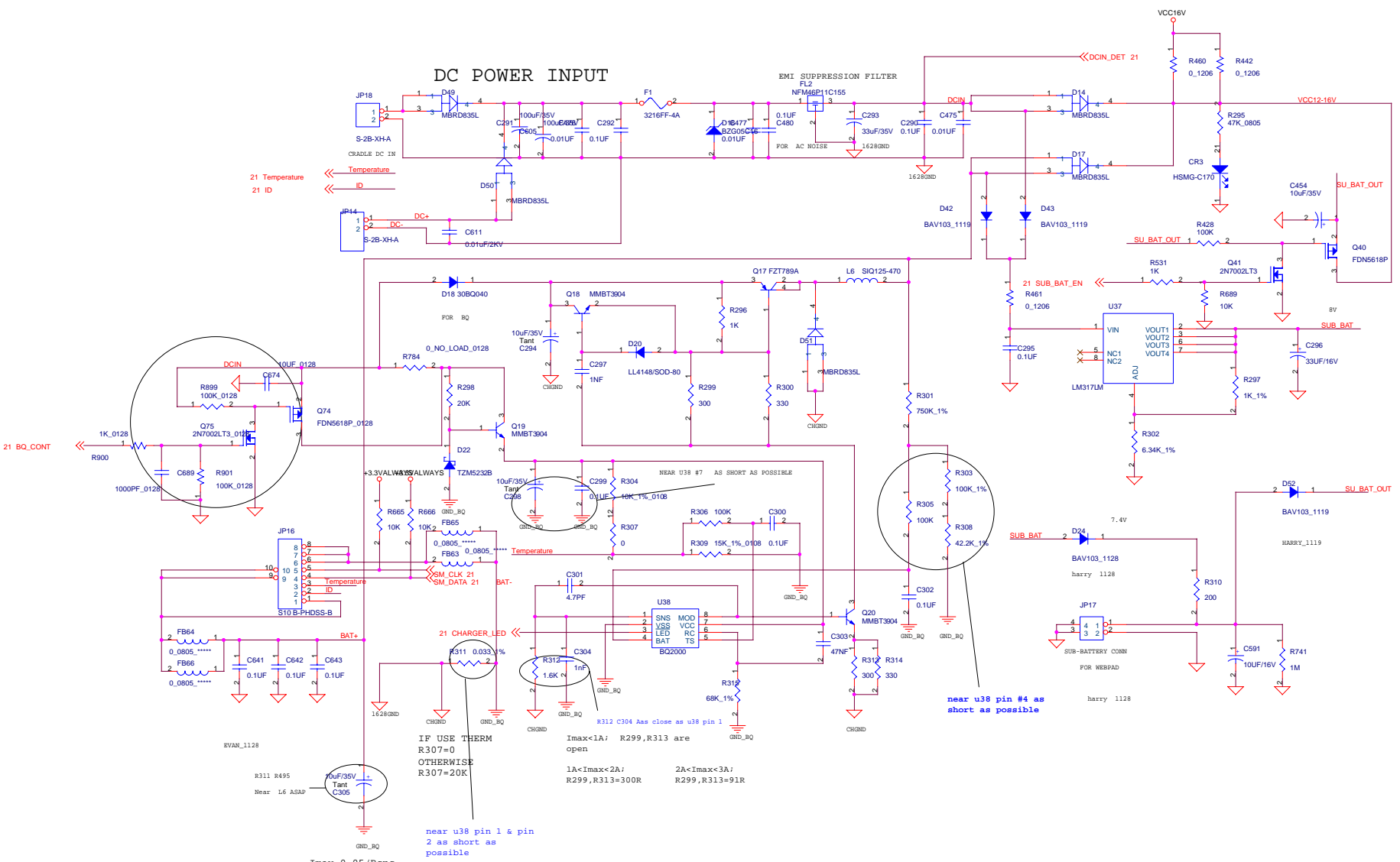
PC87391



Title		
PC87391 SUPER I/O		
Size	Document Number	Rev
B	TWN-5213 HARRY W.LIAO	R000.5
Date:	星期五, 二月 22, 2002	Sheet 24 of 28



Title			
TOUCH SCREEN CONTROL			
Size	Document Number	Rev	
B	TWN-5213	HARRY W.LIAO	R000.5
Date:	星期五, 二月 22, 2002	Sheet	25 of 28



DC POWER INPUT

EMI SUPPRESSION FILTER

21 Temperature
21 ID

21 BQ_CONT

21 CHARGER_LED

near u38 pin #4 as short as possible

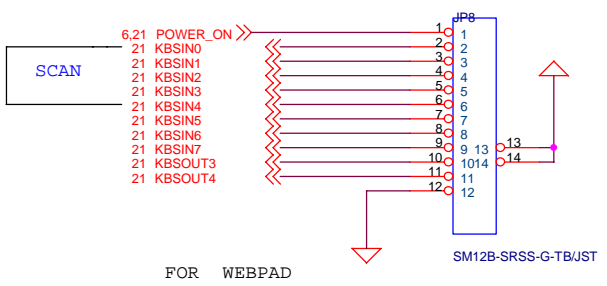
IF USE THERM
R307=0
OTHERWISE
R307=20K

near u38 pin 1 & pin 2 as short as possible

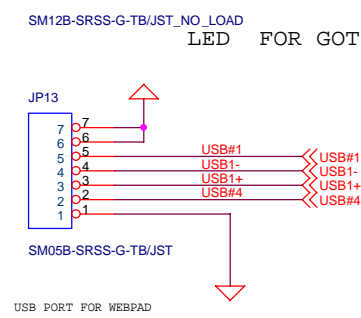
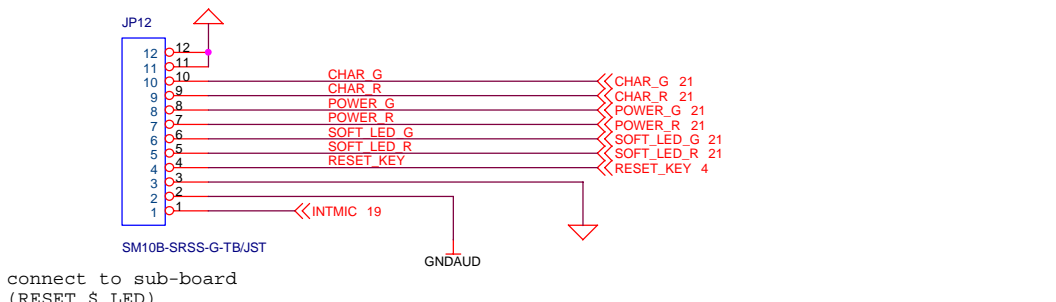
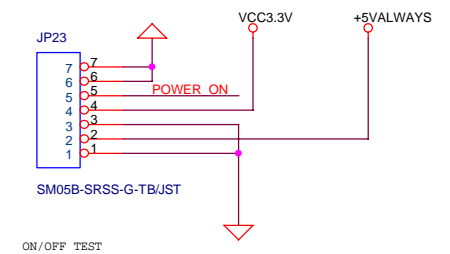
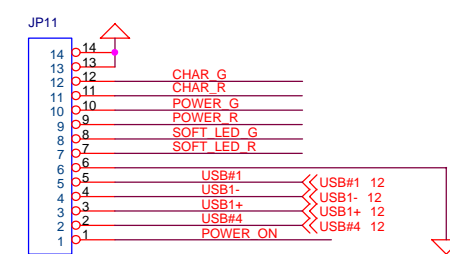
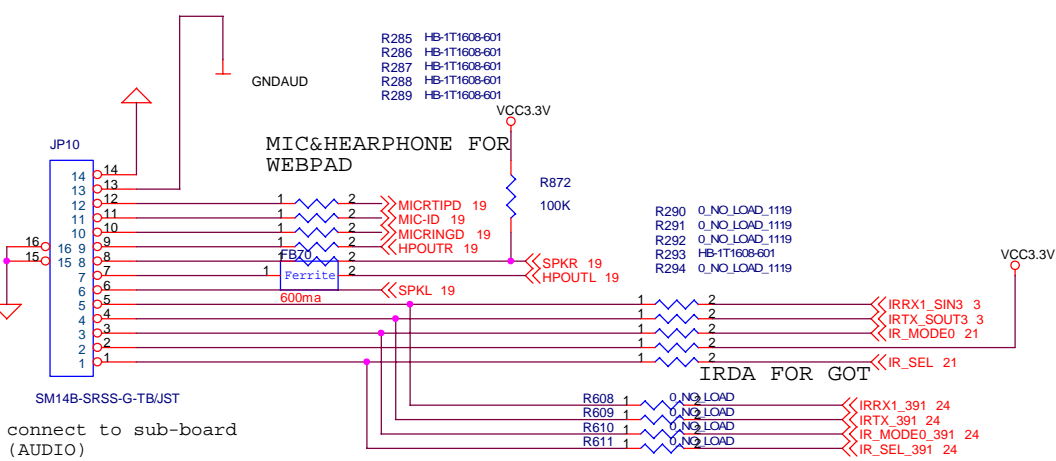
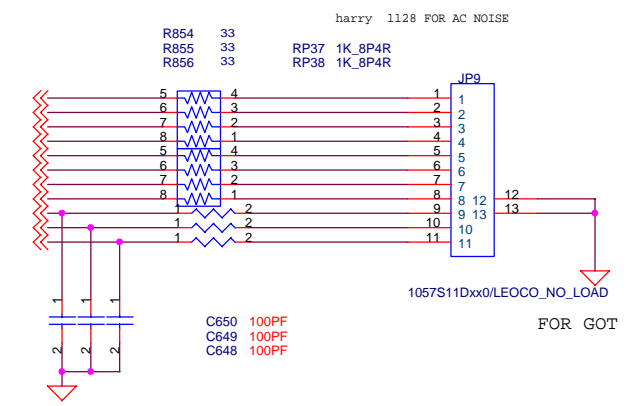
$I_{max} = 0.05 / R_{ens}$

$I_{max} < 1A$; R299, R313 are open
 $1A < I_{max} < 2A$; R299, R313 = 300R
 $2A < I_{max} < 3A$; R299, R313 = 91R

Title DC IN & CHARGER		
Size C	Document Number TWN-5213 HARRY W/LIAO	Rev R00
Date: 2002.11.22	Sheet 26	of 28



connect to sub-board
(key board)



Title		
CONNECT FOR WEBPAD & GOT		
Size	Document Number	Rev
B	TWN-5213 HARRY W.LIAO	R000.5
Date:	星期五, 二月 22, 2002	Sheet 27 of 28

-----R00C-----

PAGE 3: Add R684,R691(33_0603); R743 (0_0603)

PAGE 4: Modify R48(120k==>10k),C6,C7(12PF==>4PF)

PAGE 4: Add R668(2.2k_0603)

PAGE 5: Del R624,R626,R398,R400,R629(0_NL_0603)

PAGE 5: Modify R547(0_0603==>0_NL)

PAGE 5: Add C602(0.1uf_0603)

PAGE 6: Del R623(10k_NL_0603);R503(10k_0603)

PAGE 6: Del R653,R646(10k_0603);Q51(MMBT3906)

PAGE 6: Modify R645 (0_0603==>33_0603)

PAGE 7: Add R744,746 (0_0603);R406 (100K_0603)

PAGE 7: Add R779(0_NL_0603)

PAGE 7: Add R748(1M_NL_0603)

PAGE 7 AddR745(100k_0603);C601(10uf/35V_CC7343)

PAGE 7: Add Q64 2N7002 ,Q63 SI2305DS

PAGE 7: Change LCD connect 53780-2090/molex

PAGE 8: Modify U7,U8,U9 (SN74CBTD3861 ==>NL)

PAGE 8: Modify C562,C563,C564(100UF/16V==>NL)

PAGE 8: Modify C87,C88,C89(0.1UF==>NL);J4==>NL

PAGE 9: Modify C556(100UF/16V==>NL);C93(0.1UF==>NL)

PAGE 9: Modify R127,R128(10K==>NL)

PAGE 9: Modify D3,D4(LL4148==>NL);R131,R129(100K==>NL)

PAGE 9: Modify Q6,Q7(SI2305==>NL)

PAGE 9: Add R800 ,R801(0_0805)

PAGE 10 Add C604(0.1uf_0603);R707(0_NL);R708(10K_NL)

PAGE 10 Add Q58(MMBT3906_NL);R701(10K_0603);R702,R749(1M_0603)

PAGE 10 Add R706(0_1206)

PAGE 10 Modify R421(0.01_1%=>0.033_1%_1206)

PAGE 10 Del Q27(SI4965ADY);D44,D45 (LL4148);R533(100),R534(100K)

PAGE 10 Modify C458 (1000PF==>3300PF);C462(33PF==>220PF)

PAGE 10 Del D40(MBR0530);R550;R548(100K)

PAGE 12 Add R802,R803 (10_0603);

PAGE 14 Modify R194 (10K_0603==>NL);U51(74LVC04A==>74AHC14)

PAGE 14 Add R763(0_0603),R709(100K_1%_NL),C596(0.1UF_0603_NL)

PAGE 14 Add D48(LL4148_NL);R804(0_0603_NL);R768,R767(0_0603_NL)

PAGE 14 Modify R317(270==>150);

PAGE 14 Add R774(10K_0603),Q56(MMBT3904);R811,R812(4.99K_0603)

PAGE 14 Add R723(0_0603);C599,C600(0.1UF_0603)

PAGE 14 Del R193(10K_0603)

PAGE 15 Add R731,R732(0_0805);

PAGE 17 Modify R546(10K_0603==>NL)

PAGE 17 Add R713,R809,R762(0_0603)

PAGE 18 Add R785(0_NO_LOAD_0603)

PAGE 19 Add R753,754(10K_0603)

PAGE 19 Modify R520(10K_NO_LOAD==>10K)

PAGE 19 Del R630,C490,C491,R631,Q50

PAGE 20 Add R786(0_0603)

PAGE 21 Add R805,R806R807,R808(10K_0603)

PAGE 21 Add R787,R788,R789,R790,R791 (0_0603)

PAGE 21 Add U53(LM2903);R797,R796(20K_1%_0603)

PAGE 21 Add R793(200K_1%_0603);R794(36K_1%_0603)

PAGE 21 Add C608(0.1UF_0603);R795(10K_0603)

PAGE 25 Add R755,R756,R758(0_NO_LOAD_0603)

PAGE 25 Add R757,R759,R760(0_0603)

PAGE 25 Modify FB49==>VIA-RPAD

PAGE 26 Modify D49,D50,D51(MBRS340T3==>MBRD835L)

PAGE 26 Modify F1(RLD30P250U==>3216FF_4A)

PAGE 26 DEL D21(LL4148);ADD R784(0_0603);D23(MBRD835L)

PAGE 26 ADD R689(10K_0603);R810(47K_0603)

PAGE 26 DEL C454(100UF/16V_7343)

-----R00D-----1011

PAGE 4 Add c612 22PF_0603_NO_LOAD FOR EMI

PAGE 6 CR1 HSMG-C170==>NO_LOAD,R80 270==>NO_LOAD

PAGE 8 Modify R112 470_0805==>NO_LOAD

PAGE 10 Add R814,R816 47K_0603;R815,R817 0_0603;C620,C619 0.1UF_0603;Modify R421 0.033=>0.01_1%_1206;ADD C609 100UF/16V_LESR

PAGE 10 Modify C405 0.01UF==>0.1UF_0603;R707 0_NO_LOAD==>0_0603;R708 10K_NO_LOAD==>10K_0603;

PAGE 10 Modify Q58MMBT3906_NO_LOAD==>MMBT3906;C442 0.1UF==>1000PF_0603;C447 560PF==>0.1UF_0603

PAGE 10 Modify R512 10uf/16v_3528==>47uf/6.3v_LESR_3528

PAGE 10 Add C621,C622 47UF/16V_LESR CC6032;Modify C452, 10UF/16V_LESR==>100UF/16V_LESR CC7043

PAGE 11 DEL R444,R446,R447,R450 0.05_1%_1206;Del C130,C552C553,C554,C555 100UF/16V CC7343

PAGE 11 Modify R443,R445,R449,R448 0.05_1%_1206==>0_1206

PAGE 12 Modify RP31 27==>10_8P4R

PAGE 13 D10,D11,D12 BAV99==>NO_LOAD;FB16,FB17,FB18 HB-1T2012-121==>NO_LOAD;J5 MMT-106-02-S-H==>NO_LOAD

PAGE 13 C157,C158,C159,C160,C161,C162 33PF_0603==>NO_LOAD;R185,R186 33_0603==>NO_LOAD

PAGE 13 Q13,Q14 2N7002==>NO_LOAD;C155,C156 100PF_0603==>NO_LOAD;R187,R188,R189 75_0603==>NO_LOAD

PAGE 14 Add R813,R825 10K_0603_NO_LOAD

PAGE 16 Modify C188,C195 10UF/16V_CC3528==>NO_LOAD;C189,C190,C191,C192,C196,C197,C198,C199 0.1UF_0602==>NO_LOAD,

PAGE 16 Modify C193,C200 0.01UF_0603==>NO_LOAD;C194,C201 1NF_0603==>NO_LOAD

PAGE 19 Add R818 0_0603_NO_LOAD ,R819 0_0603

PAGE 19 Modify R520 10K_0603==>NO_LAOD,R411 10K_0603==>100;

PAGE 20 ADD C610 0.47UF_0603 ;

PAGE 23 Add R820 10K_0603 ,R821 10K_0603_NO_LOAD

PAGE 23 ADD C613 10PF_0603;C614,C615,C616,C617==>10PF_0603

PAGE 23 Add R822,R823,R824 10K_0603_NO_LOAD;C623,C624,C625 10PF_0603_NO_LOAD

PAGE 23 Add FB59 300Ma@100MHz HB-1T2012-601

PAGE 26 Add D18 30BQ040;C454 10UF/35V_7343;D52 LL4148;

PAGE 26 DEL R810 47K_0603

PAGE 26 Modify T1 CTX0_47_2P==>FL2 NFM46P11C155

Title		
UPDATE NOTE		
Size	Document Number	Rev
A	TWN-5213 HARRY W.LIAO	R00C.5
Date:	星期五, 二月 22, 2002	Sheet 28 of 28