Wistron Confidential

MV

2008/05/15 REV :-1

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: *Karia*		
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KARIA DISCRETE BLOCK DIAGRAM

Project code : 91.4V901.001
PCB P/N :
Revision : MV

SYSTEM DC/DC SC471AML	
INPUTS	OUTPUTS
B+	VGA_CORE 45

SYSTEM DC/DC TPS51120	
INPUTS	OUTPUTS
B+	+5VALW 7A +3VALW 6A 46

SYSTEM DC/DC TPS5116	
INPUTS	OUTPUTS
B+	+1.8V 7A 47 +0.9V 1A

SYSTEM DC/DC SC412A	
INPUTS	OUTPUTS
B+	+1.5VS 3A 50 +1.05VM 13A 48

CHARGER BQ27470	
INPUTS	OUTPUTS
BATT_A BATT_B	BATT 18V 3.0A 5V 100mA 51

CPU DC/DC ISL6260A	
INPUTS	OUTPUTS
B+	+VCC_CORE 0.844~1.3V 44A 43

PCB LAYER
L1: Signal 1
L2: GND
L3: Signal 2
L4: Signal 3
L5: GND
L6: VCC
L7: Signal 4
L8: Signal 5
L9: GND
L10: Signal 6

CLK GEN
SLG8SP553 16

Intel CPU
Penryn 5,6,7

HOST BUS
FSB 667/800/1067MHz

VRAM 0 58
VRAM 1 58
GDDR 3

DDRII 800 Slot 0 14
DDRII 800 Slot 1 15
DDRII 667/800 Channel A
DDR II 667/800 Channel B

Cantiga PM
AGTL+ CPU I/F
DDR Memory I/F
INTEGRATED GRAHPICS
LVDS, CRT I/F
8,9,10,11,12,13

PCIE x 16

ATI
M82-SCE
52,53,54,55,56,57

RGB CRT
LVDS

CRT 17
LCD 18

Smart Card ISO7816 37
1394 37
SD/MMC 37

Ricoh 5C835
CardReader
36,37

PCI

DMI x4
Controller link 0

INTEL
ICH9-M
12 USB 2.0/1.1 ports
ETHERNET (10/100/1000Mb)
High Definition Audio
Serial Peripheral I/F
ACPI 1.1
LPC I/F
4 SATA
PCI/PCI BRIDGE
19,20,21,22,23

SMBus

Thermal Sensor EMC2103 39
Accelerometer LIS302DLTR 24

Fingerprinter AES2810B 38
CAMERA 38
Blue Tooth
USB x 3 28

USB 2.0

HDD Cnn SATA 24
ODD Cnn 24

SATA
SATA

LPC Bus
SPI

RJ45 CONN 26
Intel Ninevah-MM (BOAZ) 10/100/1000 25
GLCI

RJ11 CONN 31
MODEM MDC V1.5 31
HD Audio

INTERNAL MIC
AUDIO CODEC
ADI 1984A

MIC IN
Headphone
PRE-AMP TLV2462

SPEAKER
OP AMP TI 6041A

PCIE+USB 2.0
C-LINK
PCIE x 2

TI2231
Express Card 54
Mini-Card*2 802.11abg/n WWAN 27

Flash ROM 32Mb x 1(AMT) 29
SPI

KBC
SMSC KBC1091 30

Tauch Pad 31
Int. KB 31
Capacitive Button 38

TPM SLB9635TT 29
SMSC Super I/O LPC47N217 40

DOCK
PCIE*2 PS2 SATA*1 USB*2 Serial Port Parallel Port LINE IN/Out RJ45/RJ11 VGA DVI-D

<Variant Name>

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Discrete PV
03/11/08:
- Page 51 - Change R118 to 287K ohm from Vox information.
- Page 43 - Change R582.2 to +3VALW from +3VS to power U89.39 (3V3)
- Page 45 - Change R232 to NO INSTALL
- Page 30 - Remove D48, connect signal directly to ADP_PRES, and uninstall R558
- Page 27 - Reserve a 1u 0603 cap (NO INSTALL) on MC2_DISALBE (same as MC1_DISABLE)
- Page 19 - Add a 0 ohm series on PLT_RST# at U113.4
- Page 33 - Add a 0 ohm series on PM_PWROK_R at R175.2
- Page 13 - Uninstall BGA_CRACK circuit: U115, U116, R740, R744, R801, & R802
- Page 23 - Uninstall BGA_CRACK circuit: U117, U118, R803, R804, R805, & R806
- Page 39 - Change R710 (SHDN_SEL) to 15K 1% to use Internal Diode for H/W critical shutdown
- Page 57 - Add a discharging FET (gate connect to Q15.D) on 3.3V_DELAY at Q42.D
- Page 25 - May require a discharging FET for +3VM_LAN at Q39.D
- Page 32 - May need to change RGB q-switches power to +5VALW or +5VS (depending on wavy impact)
- Page 51 - Change R97 to 33K from 1.27K
- Page 41 - Change DAUGTH1 pin 52 and pin 54 to +5VS from +5VALW
- Page 41 - Remove ICH_SMB_CLK/DATA from DAUGTH1 pin 32 and 34

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Title
Change Notes List

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Voltage Rails

o MEANS ON x MEANS OFF

State \ power plane	+BB LDO3 LDO5	+3VALW +5VALW	+1.8V +5V +0.9V	+5VS +3VS +1.8VS +1.5VS +VGA_CORE +CPU_CORE +VCCP	+3VM +1.05VM	CLOCK
S0	O	O	O	O	O	O
S3/M1	O	O	O	X	O	O
S3	O	O	O	X	O	O
S5 S4/AC	O	O	X	X	O	O
S5 S4/Battery only	O	X	X	X	X	X
S5 S4/AC & Battery don't exist	X	X	X	X	X	X

PCI Devices

EXTERNAL	IDSEL#	REQ/GNT#	PIRQ
Cardreader&1394	AD25	2	G,E

PCIE Devices

DEVICE	NUMBER	CHANNEL
UWB(no support)	1	1
WLAN	1	2
EXPRESS CARD	1	3
WWLAN	1	4
DOCKING	1	5
GIGA LAN	1	6

IRQ	Device
0	System Timer
1	Keyboard
2	N/A
3	Serial port (COM2) ,LAN/Modem
4	Serial port (COM1)
5	Audio/VGA
6	~~Floppy~~
7	Parallel port
8	System CMOS/Real-time clock
9	Microsoft ACPI
10	N/A,Modem,LAN
11	Mass storage control/PCI simple communication control
12	synactic PS2 port GlidePAD
13	Numeric Data Process
14	Primary IDE interface ,HDD
15	Secondary IDE interface ,CD-ROM
16	Mobile Intel Crestline Express Chipset Family Microsoft UAA Bus Drive for High Definition Audio Intel 82801H (ICH9 Family) PCI Express Root Port -27D0 Broadcom NetXtreme Gigabit Ethernet
17	Intel 82801H (ICH9 Family) PCI Express Root Port -27D2 Broadcom 802.11b/g WLAN Intel 82801H (ICH9 Family) USB Universal Host Control
18	Intel 82801H (ICH9 Family) USB Universal Host Control Richo R5C835 Integrates FlashMedia Control Richo R5C835 Gemcore based SmartCard Control
19	Intel 82801H (ICH9 Family) PCI Express Root Port -27D6 Intel 82801H (ICH9 Family) USB Universal Host Control
20	Intel 82801H (ICH9 Family) USB Universal Host Control Intel 82801H (ICH9 Family) USB2 Enhanced Host Control
21	Intel 82801H (ICH9 Family) USB Universal Host Control
22	SDA Standard Compliant SD Host Control
23	HP Mobile Data Protection Sensor

USB PORT	*Device*
0	*USB1*
1	*Free*
2	*EX-P*
3	*WLAN*
4	*USB2*
5	*USB3*
6	*BLUETOOTH*
7	*WWAN*
8	*FignerPrint*
9	*Dock1*
10	*WEBCAM*
11	*DOCK2*

Symbols	Description
DY/DUMMY	No install
1KR2J	Resistor 1K ohm ,Size 0402 ,5%
1KR3F	Resistor 1K ohm ,Size 0603 ,1%
GP	ROHS parts
NC	Pin no connect to anything
1U16V2ZY-2GP	Caps 1U ,Size 0402 Y5V
2D2U6D3V3MX	Caps 2.2U ,Size 0603 X5R

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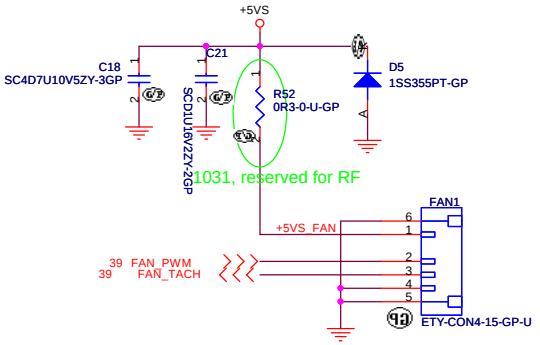
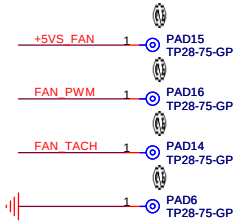
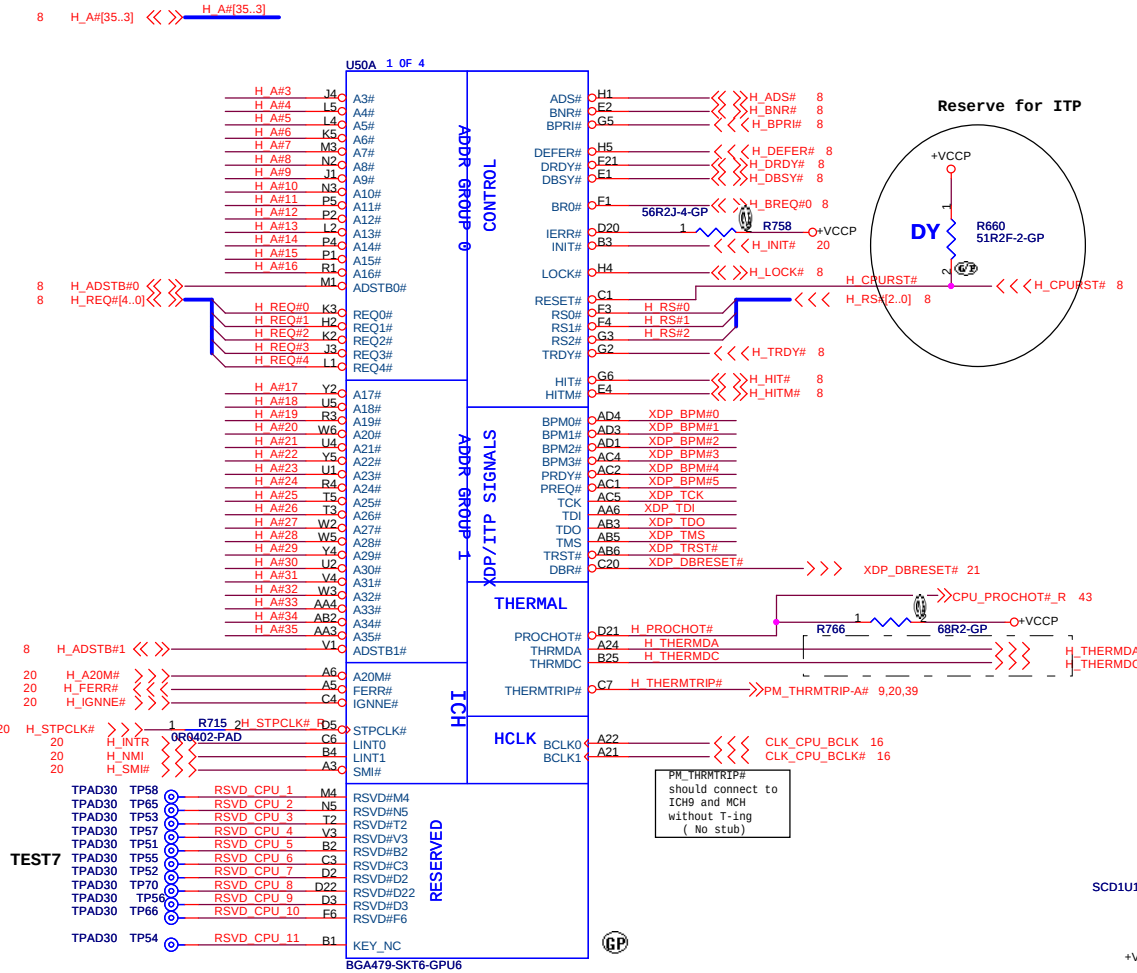
4 WIRE PWM Fan Control circuit





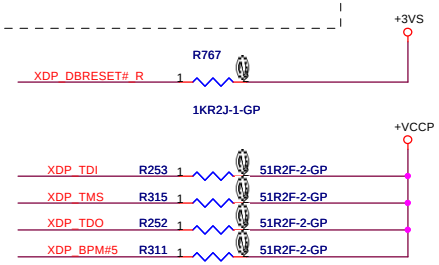
1 TDI
2 TMS
3 TRST#
4 NC
5 TCK
6 NC
7 TDO
8 BCLK#
9 BCLK
10 GND
11 FBO
12 RESET#
13 BPM5#
14 GND
15 BPM4#
16 GND
17 BPM3#
18 GND
19 BPM2#
20 GND
21 BPM1#
22 GND
23 BPM0#
24 DBA#
25 DBR#
26 VCC
27 VCC
28 VCC

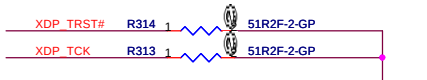


H_THERMDA, H_THERMDC routing together,
Trace width / Spacing = 10 / 10 mil

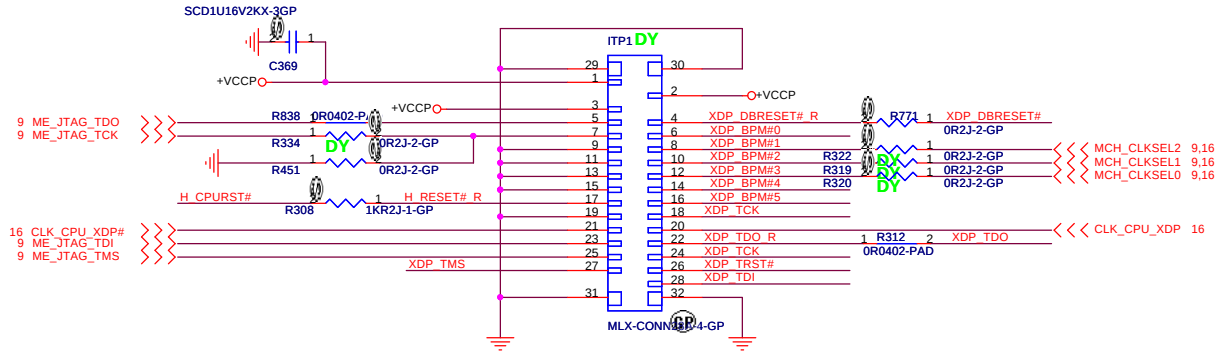
Reserve for ITP

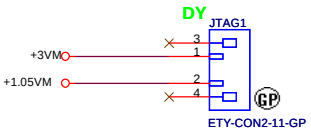
layout note : R7,R10 Pull near cpu





ITP Connector





<Variant Name>

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Title: **CPU (1 of 2)**

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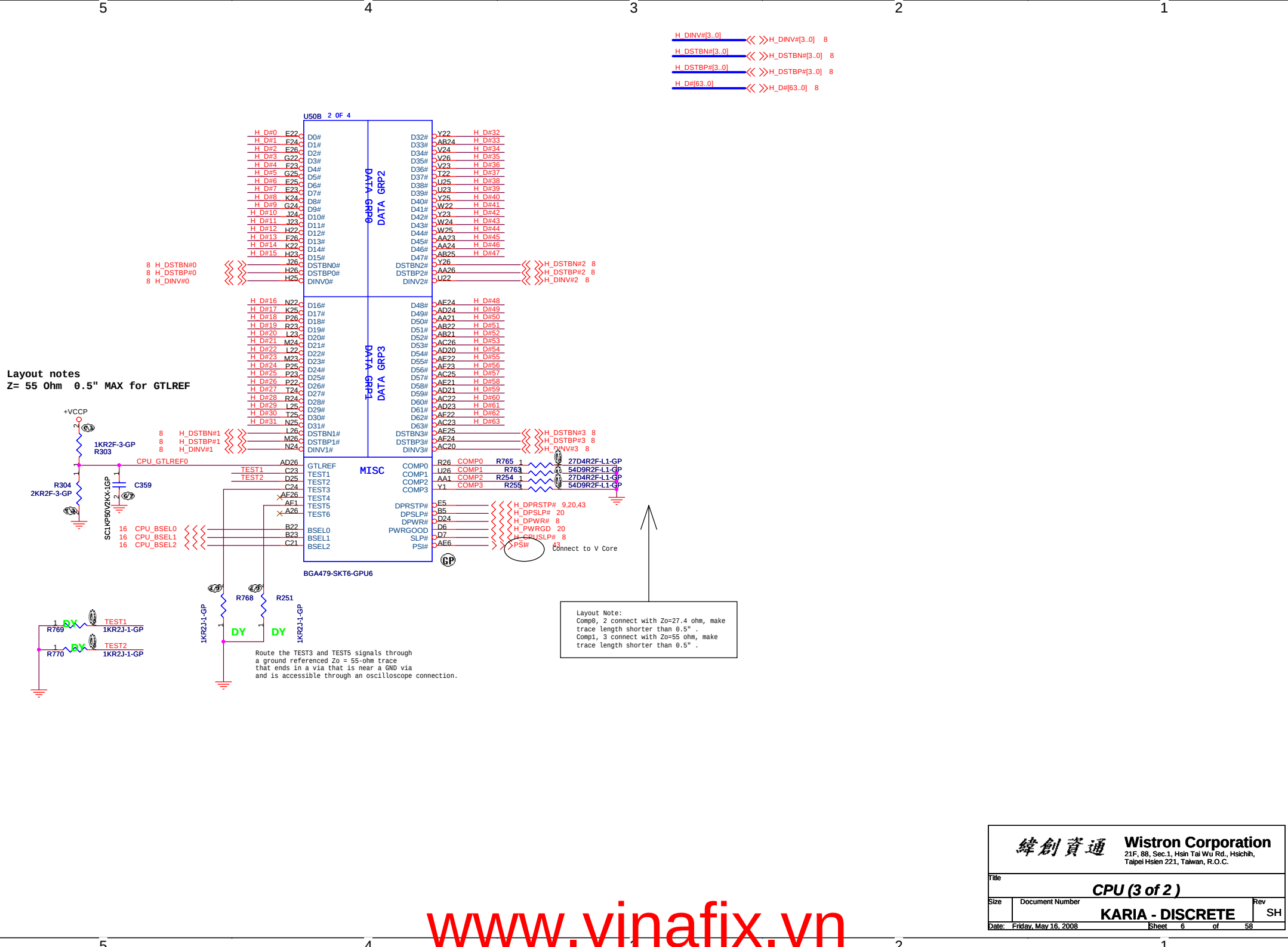

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Title: ***CPU (3 of 2)***

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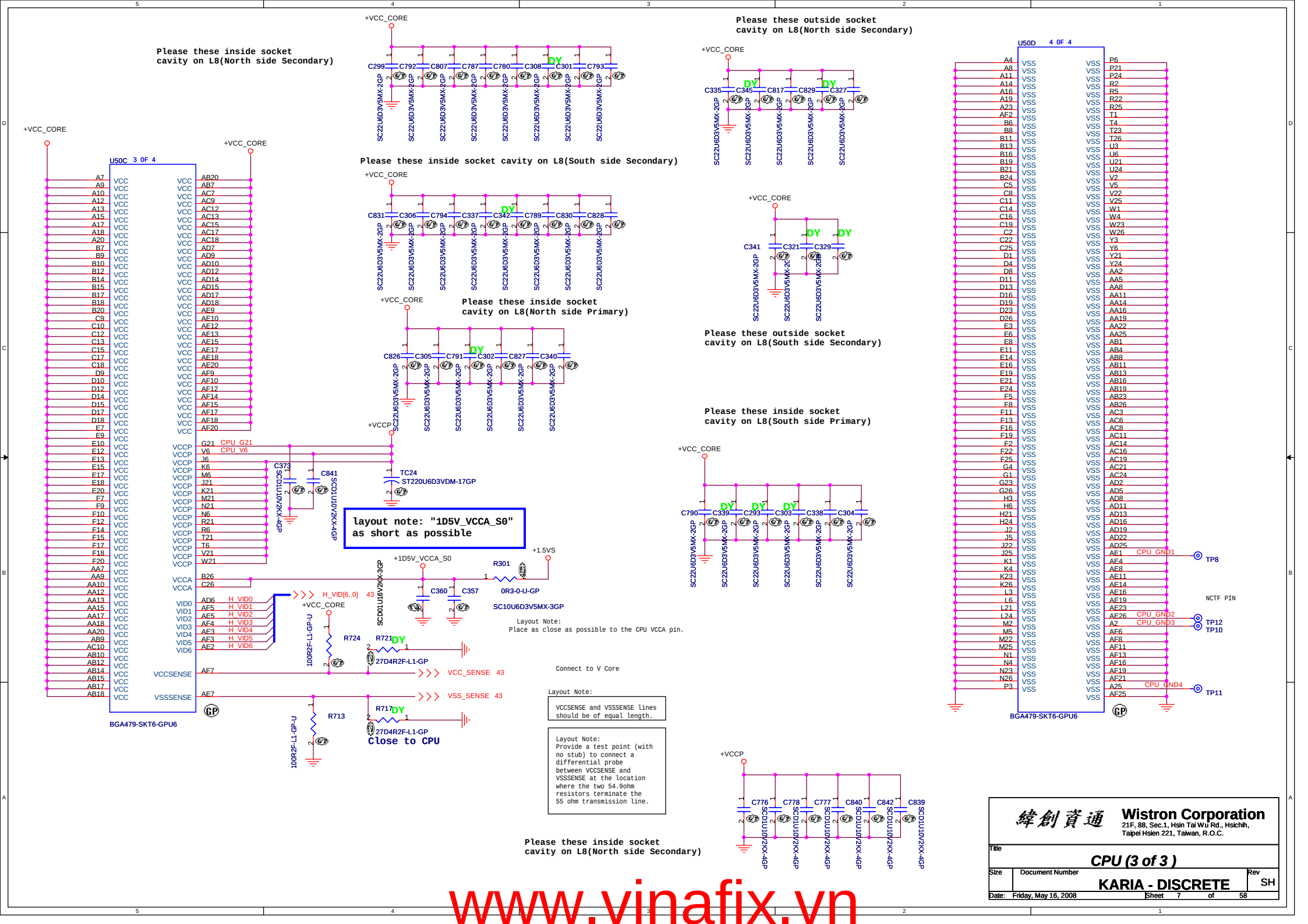
Please these inside socket cavity on L8(North side Secondary)
Please these inside socket cavity on L8(South side Secondary)
Please these inside socket cavity on L8(North side Primary)
Please these outside socket cavity on L8(North side Secondary)
Please these outside socket cavity on L8(South side Secondary)
Please these inside socket cavity on L8(South side Primary)
Please these inside socket cavity on L8(North side Secondary)
U50C 3 OF 4
U50D 4 OF 4
BGA479-SKT6-GPU6
layout note: "1D5V_VCCA_S0" as short as possible
Layout Note: Place as close as possible to the CPU VCCA pin.
Connect to V Core
Layout Note: VCCSENSE and VSSSENSE lines should be of equal length.
Layout Note: Provide a test point (with no stub) to connect a differential probe between VCCSENSE and VSSSENSE at the location where the two 54.9ohm resistors terminate the 55 ohm transmission line.
Close to CPU
NCTF PIN
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CPU (3 of 3)
KARIA - DISCRETE
Friday, May 16, 2008
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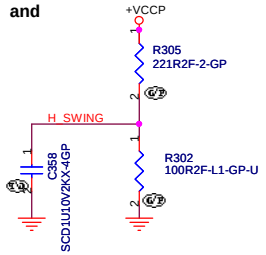
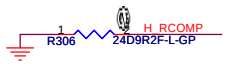
H_SWING routing Trace width and Spacing use 10 / 20 mil

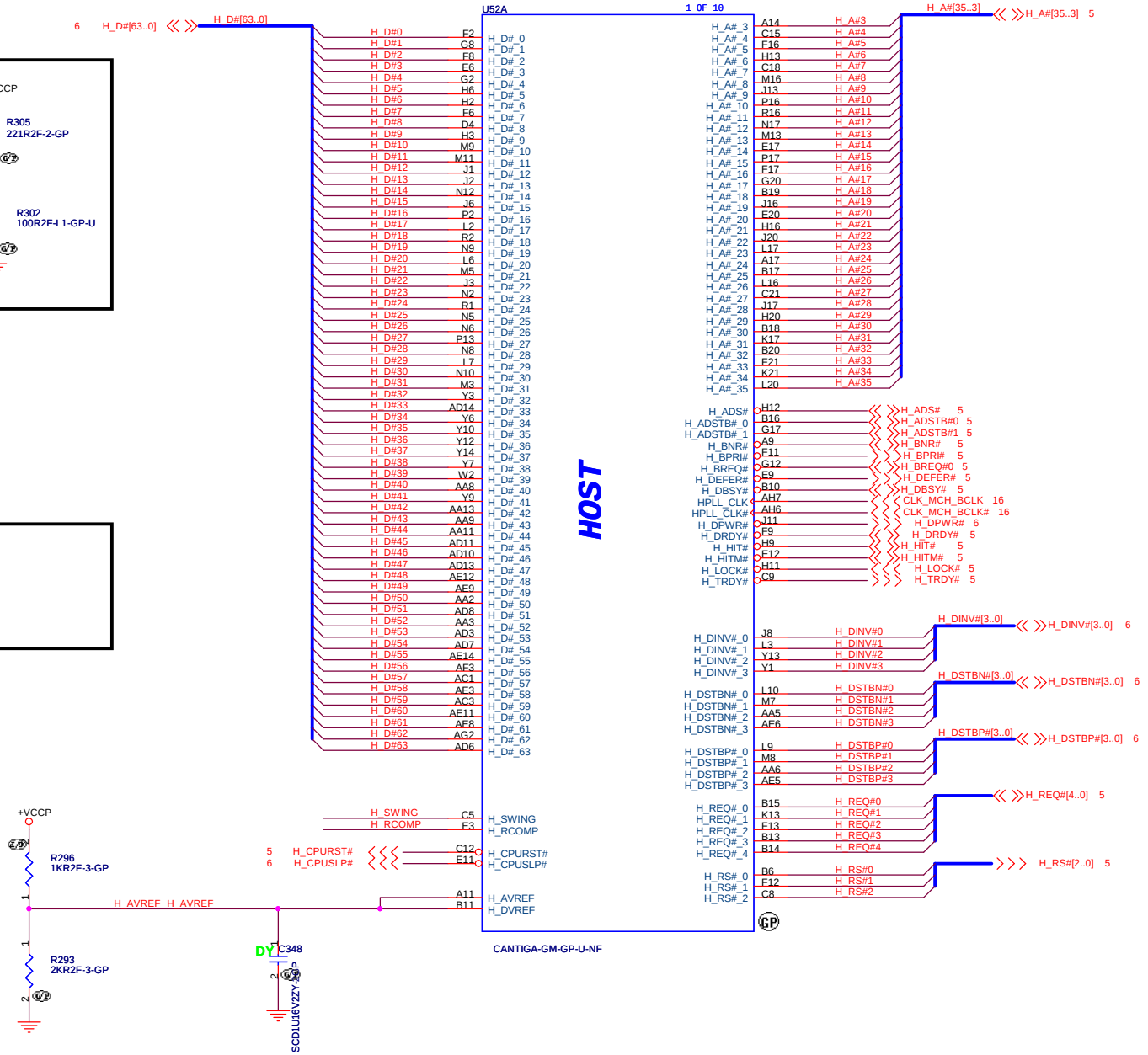
H_SWING Resistors and Capacitors close MCH 500 mil (MAX)



H_RCOMP routing Trace width and Spacing use 10 / 20 mil



Place them near to the chip (< 0.5")



<Variant Name>

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Title: Cantiga (1 of 6)

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Strap Pin Table

CFG[2:0] FSB Freq select	000 = FSB 1067MHz 010 = FSB 800MHz 011 = FSB 667MHz Others = Reserved
CFG4:3; 8; 11; 14:15; 17; 18	Reserved
CFG5 (DMI select)	Low = DMI x 2 High = DMI x 4 *
CFG6 (ITPM Host Interface)	High = The ITPM Host Interface is disabled * Low = The ITPM Host Interface is enabled
CFG7 (Intel Management Engine Crypto Strap)	Low = Intel Management Engine Crypto Transport Layer Security (TLS) cipher site with no confidentiality High = Intel Management Engine Crypto TLS Cipher suite with confidentiality *
CFG9 (PCIE Graphics Lane)	Low = Reverse Lanes, 15->0, 14->1 etc... High = Normal operation:Lane Numbered in Order *
CFG10 (PCIE Loopback enable)	Low = Enabled High = Disabled *
CFG12 (ALLZ)	Low = ALLZ mode Enabled High = Disabled *
CFG13 (XOR)	Low = XOR mode Enabled High = Disabled *
CFG16 (FSB Dynamic ODT)	Low = Dynamic ODT Disabled High = Dynamic ODT Enabled *
CFG19 (DMI Lane Reversal)	Low = Noraml operation: Lane Numbered in Order * High = Reverse Lanes DMI x 4 mode[MCH->ICH]: (0->3, 2->1, 1->2 and 0->3) DMI x 2 mode[MCH->ICH]: (3->0, 2->1)
CFG20 (Digital Display Port (SDVO/DP /iHDMI) Concurrent with PCIE)	Low = Only Digital Display Port (SDVO/iHDMI) or PCIE is operational * High = Digital Display Port (SDVO/DP/iHDMI) and PCIE are operating simulatneously via the PEG port
SDVO_CTRLDATA (SDVO Present)	Low = No SDVO Card Present * High = SDVO Card Present
L_DDC_DATA (Local Flat Panel (LFP) Present)	Low = LFP Disabled * High = LFP Card Present; PCIE disabled
DDPC_CTRLDATA (Digital Display Present)	Low = DisplayPort Disabled * High = DisplayPort Device Present

Place the 49D9 Ohm resistor within 500 mils (1.27 mm) of the (G)MCH.
49.9 OHM PN:64.49R95.6DL

FSB setting

CFG 5, 7, 9, 10, 12, 13, 16, 19, 20
Teenah = 4.02K
Cantiga = 2.2K

Only one of the CFG10/CFG12/CFG13 straps can be enabled at any time

CANTIGA-GM-GP-U-NF

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Title: Cantiga (2 of 6)
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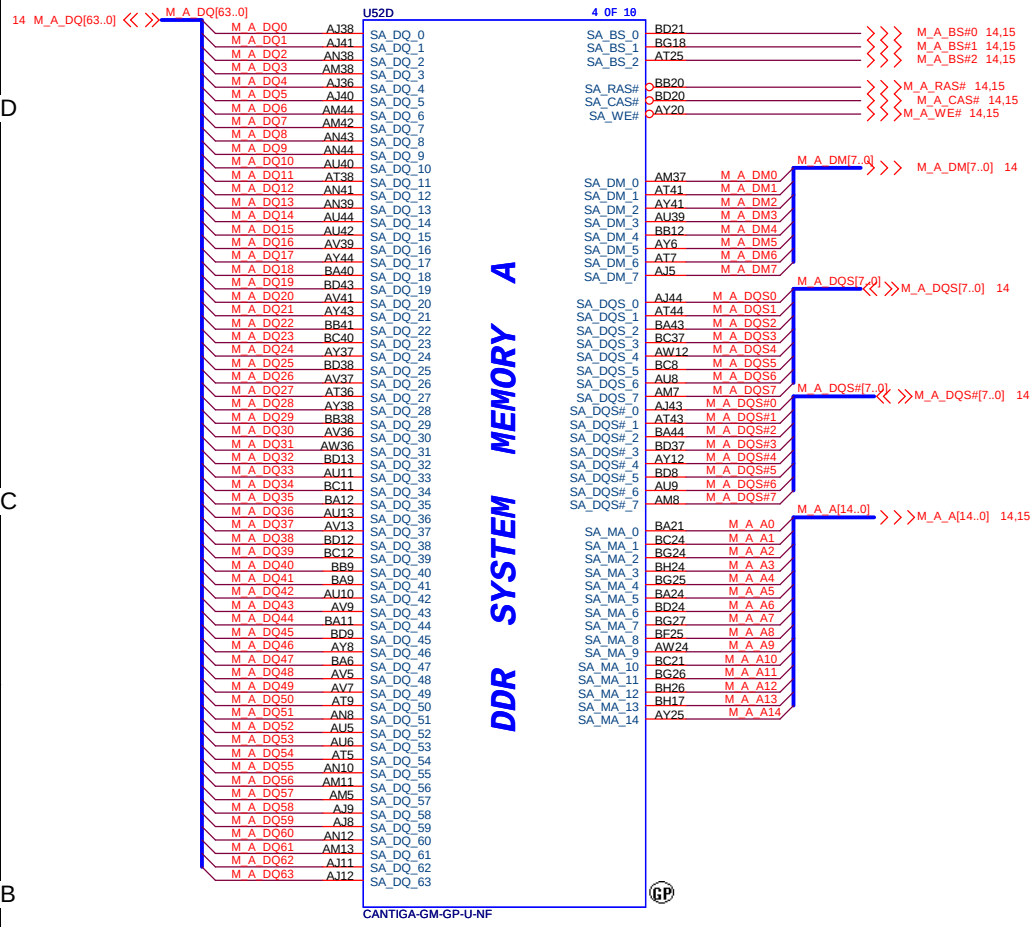

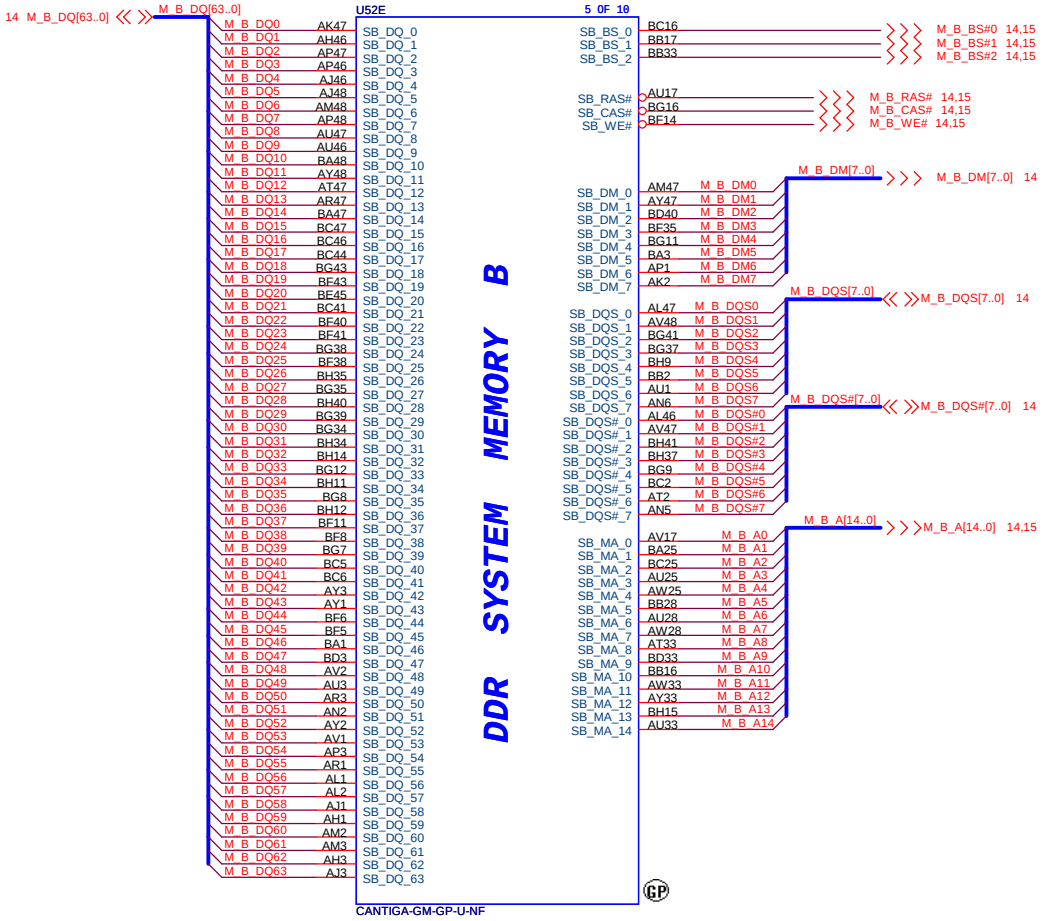

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Title	***Cantiga (3 of 6)***
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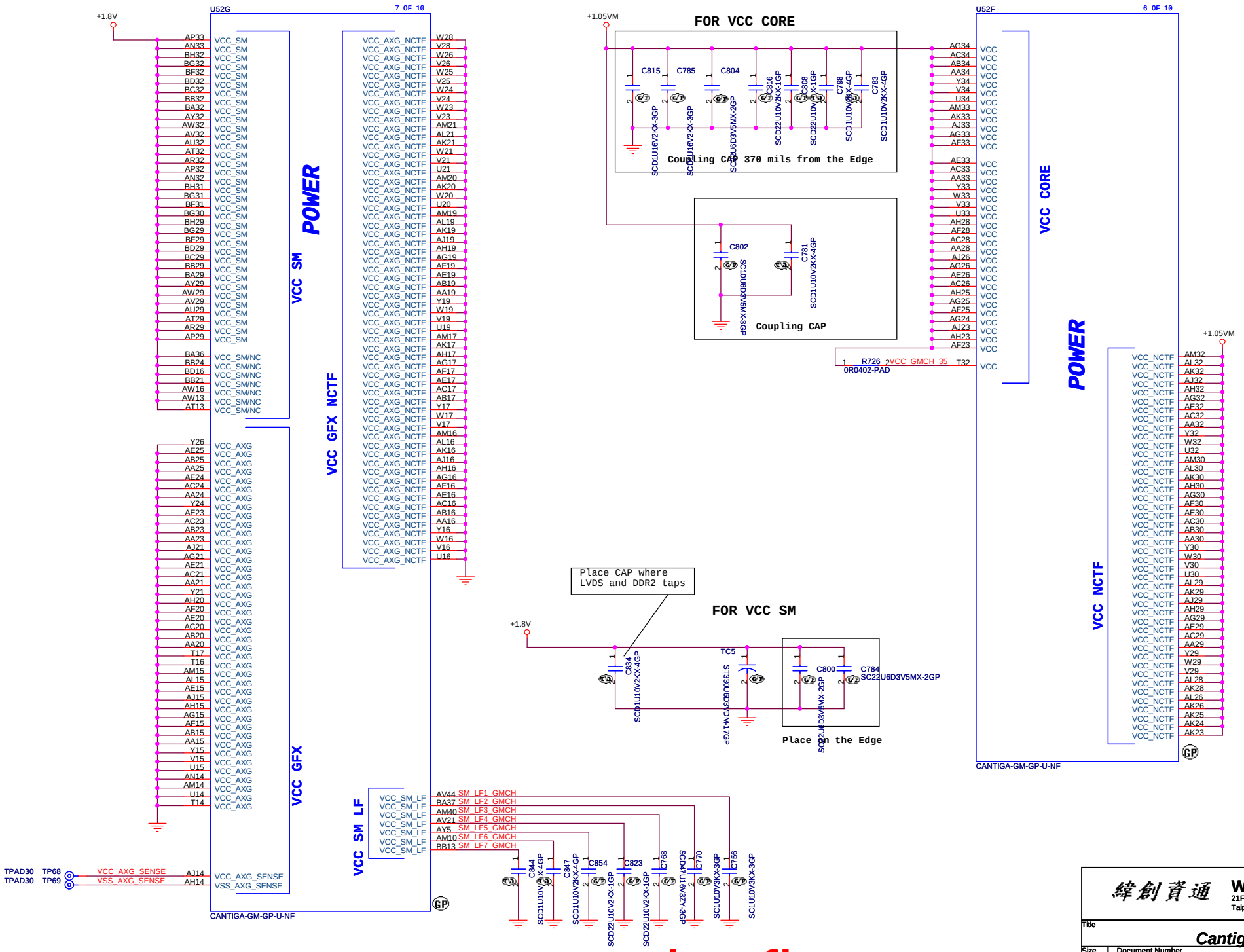

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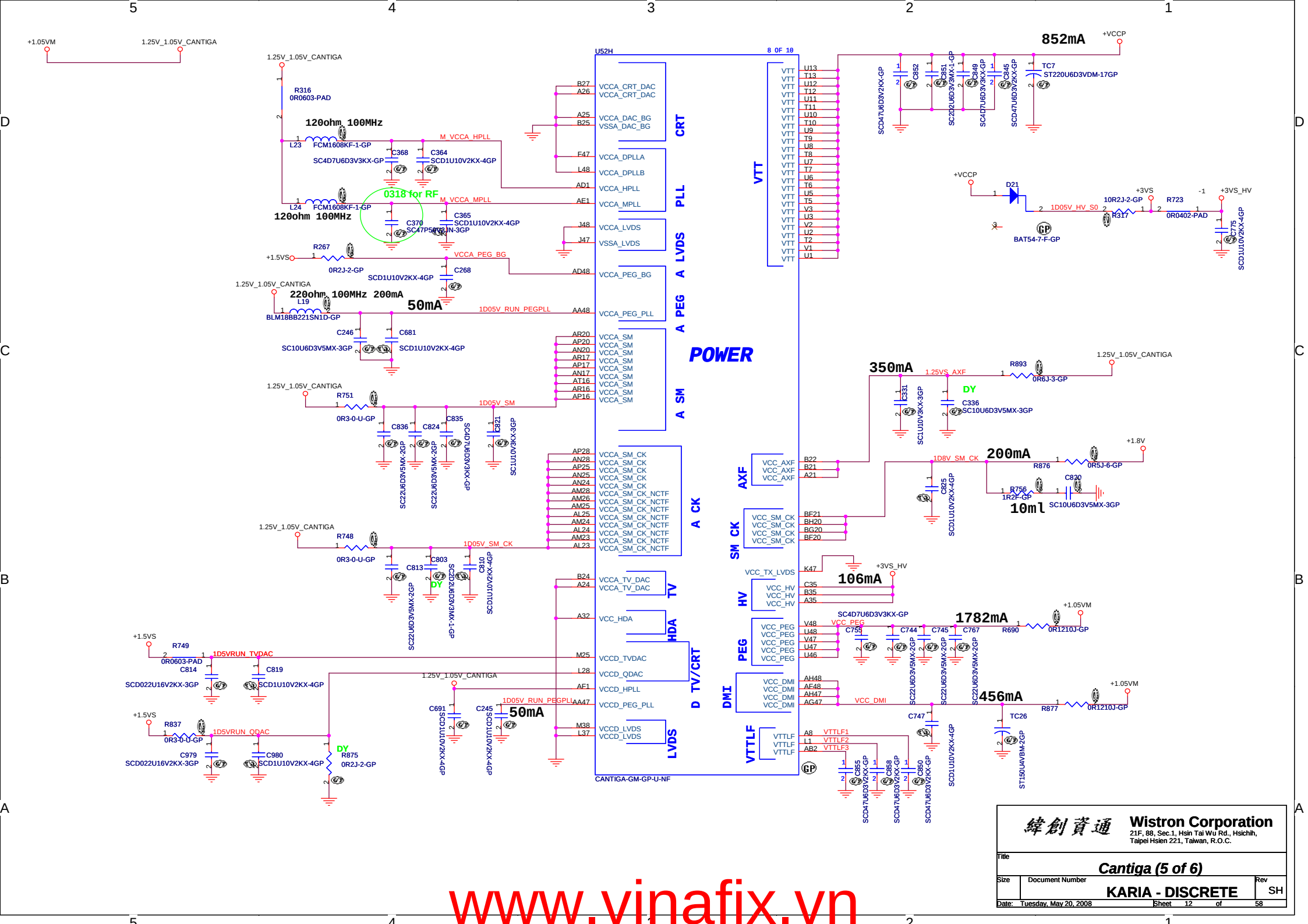

Company	Wistron Corporation
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Title	Cantiga (5 of 6)
Size	
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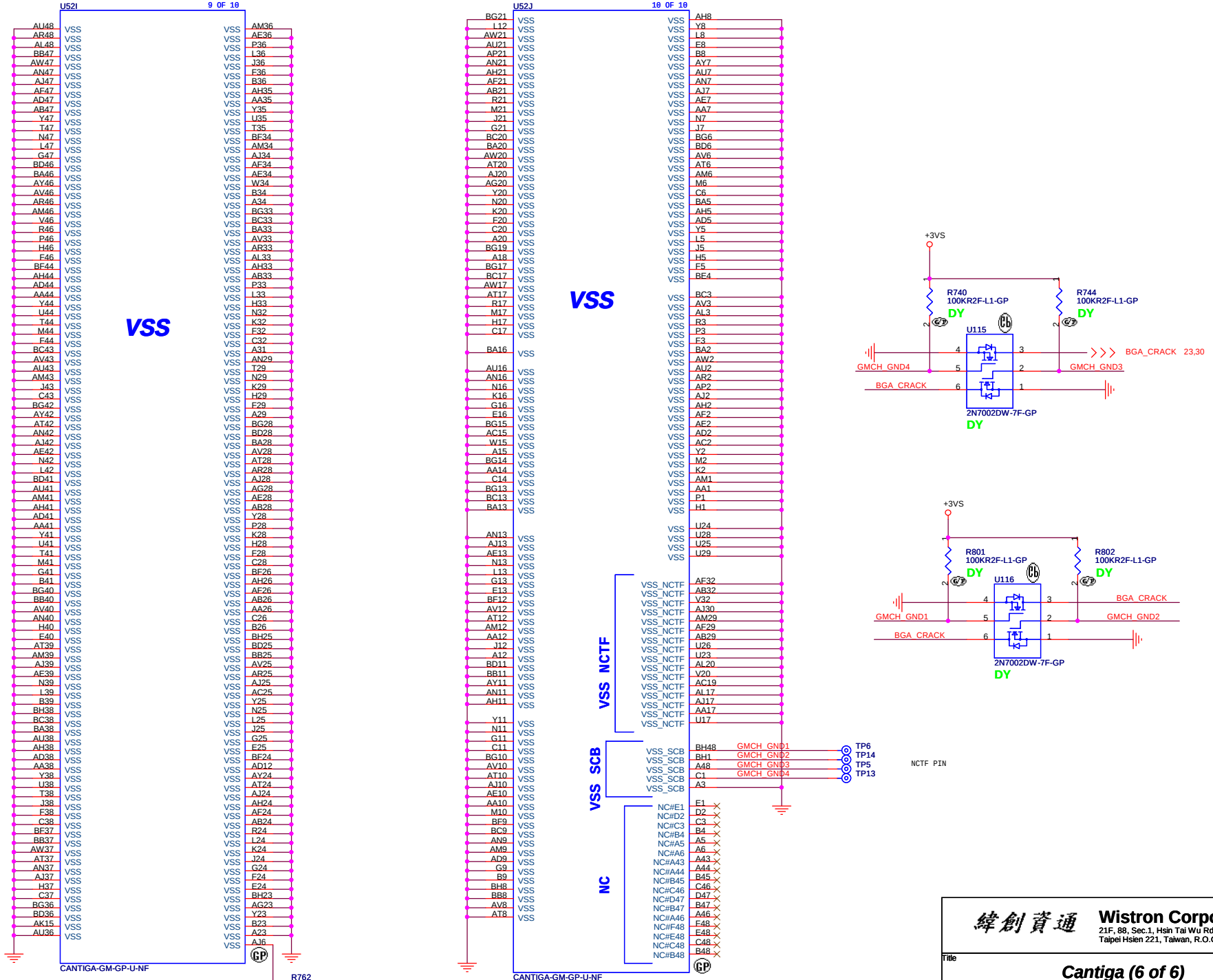

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Title: Cantiga (6 of 6)

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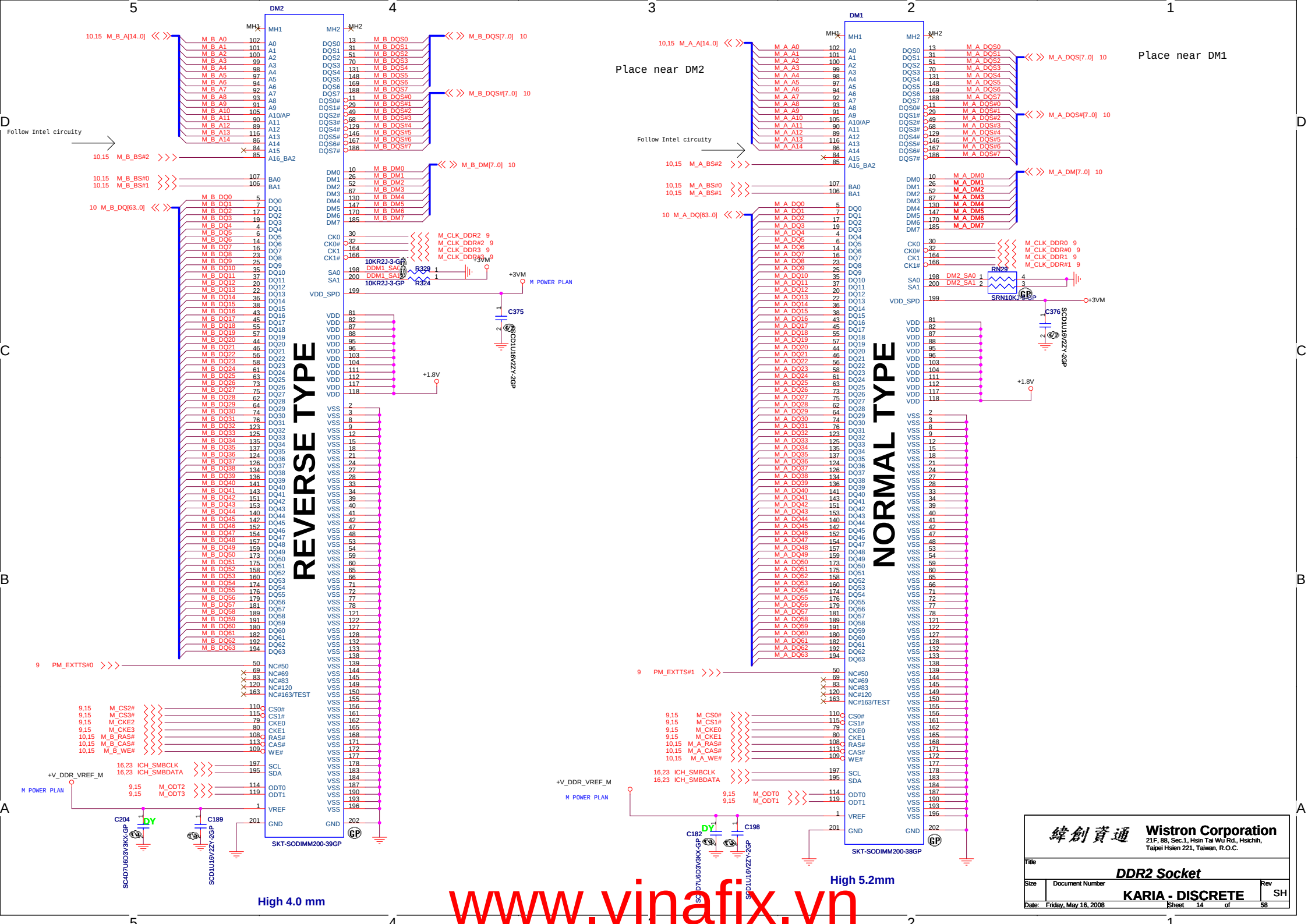

PARALLEL TERMINATION

Put decap near power(0.9V) and pull-up resistor

+0.9V

RN18 SRN56J-5-GP
M_A_A14
M_A_A11
M_A_A7
M_CKE1 9,14

RN44 SRN56J-5-GP
M_B_BS#1 10,14
M_B_RAS# 10,14
M_CS2# 9,14
M_ODT2 9,14

RN26 SRN56J-5-GP
M_B_A13
M_ODT1 9,14
M_CS1# 9,14

RN43 SRN56J-5-GP
M_B_A6
M_B_A4
M_B_A2
M_B_A0

RN21 SRN56J-5-GP
M_A_A1
M_A_A3
M_A_A5
M_A_A8

RN24 SRN56J-5-GP
M_A_CAS# 10,14
M_A_WE# 10,14
M_A_BS#0 10,14
M_A_A10

RN23 SRN56J-5-GP
M_B_A8
M_A_BS#1 10,14
M_A_RAS# 10,14
M_CS0# 9,14

RN42 SRN56J-5-GP
M_B_A14
M_B_A11
M_B_A7
M_CKE3 9,14

RN25 SRN56J-5-GP
M_A_A13
M_B_A5
M_B_A3
M_ODT0 9,14

RN19 SRN56J-5-GP
M_A_A9
M_A_A12
M_A_BS#2 10,14
M_CKE0 9,14

RN28 SRN56J-5-GP
M_B_CAS# 10,14
M_CS3# 9,14
M_ODT3 9,14

RN27 SRN56J-5-GP
M_B_A1
M_B_A10
M_B_BS#0 10,14
M_B_WE# 10,14

RN20 SRN56J-5-GP
M_CKE2 9,14
M_B_BS#2 10,14
M_B_A12
M_A_A6

RN22 SRN56J-5-GP
M_A_A4
M_A_A2
M_A_A0
M_B_A9

M_A_A[14..0] → M_A_A[14..0] 10,14
M_B_A[14..0] → M_B_A[14..0] 10,14

Decoupling Capacitor

Put decap near power(0.9V) and pull-up resistor

+0.9V

C322 C356 C284 C343 C346 C838 C806 C774 C316 C279 C760 C252 C753 C294
C772 C287 C350 C275 C286 C347 C253 C282 C251 C285 C832 C309 C277
SCD1U16V2ZY-2GP

Place these Caps near DM1

+1.8V
C811 C330 C361 C818 C786 TC17 SE330U2D5VDM-LGP
C812 C843 C833 C805
SC2D2U6D3V3MX-1-GP
SCD1U16V2ZY-2GP

Place the Cap near MCH

+1.8V
TC1 SE330U2D5VDM-LGP

Place these Caps near DM2

+1.8V
C311 C328 C334 C344 C297 TC23 SE330U2D5VDM-LGP
C771 C315 C314 C822
SC2D2U6D3V3MX-1-GP
SCD1U16V2ZY-2GP

緯創資通 **Wistron Corporation**
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Taipei Hsien 221, Taiwan, R.O.C.

Title: ***DDR2 Termination Resistor***

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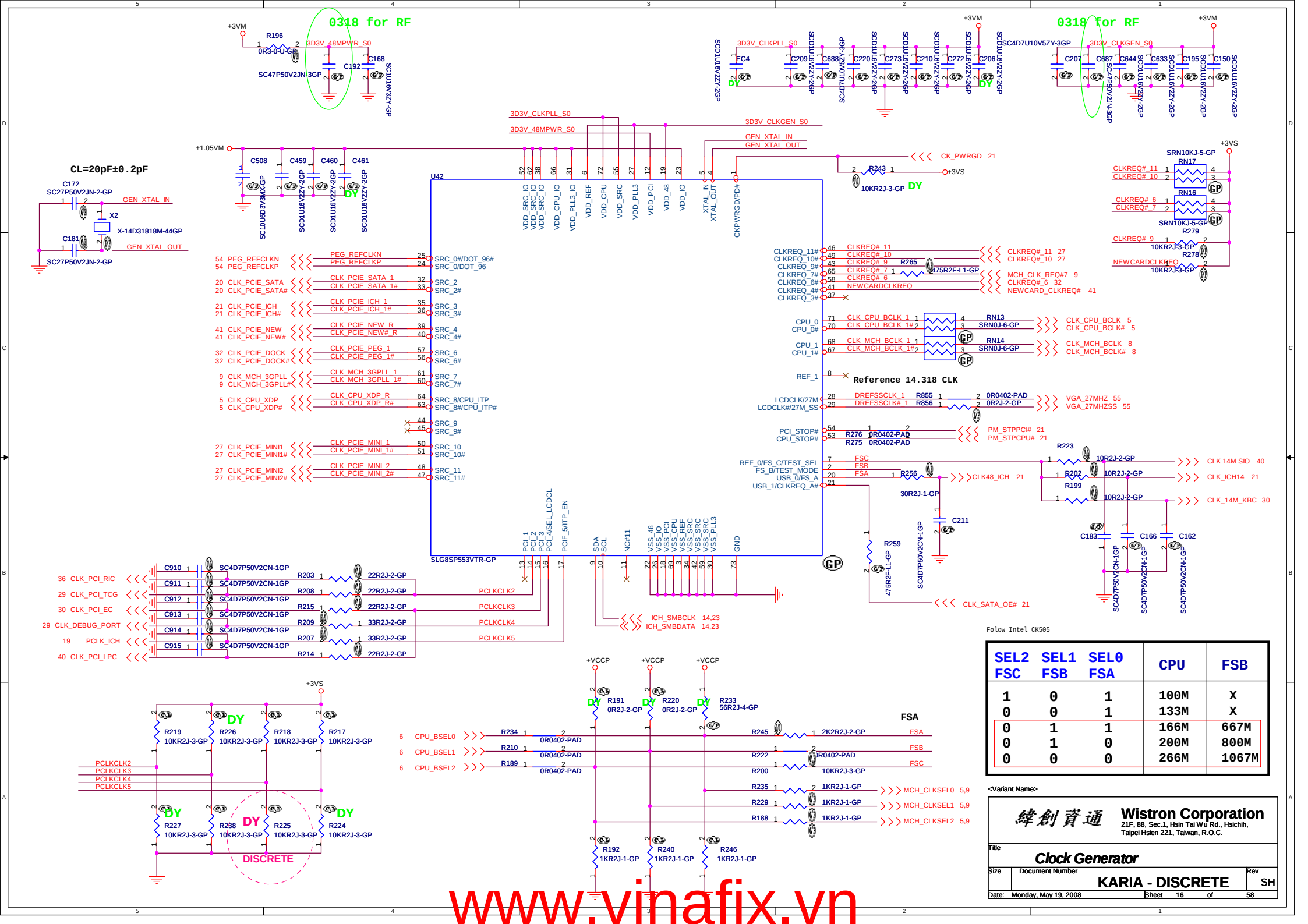
0318 for RF
0318 for RF
CL=20pF±0.2pF
U42
SLG8SP553VTR-GP
Reference 14.318 CLK
Folow Intel CK505
SEL2 FSC | SEL1 FSB | SEL0 FSA | CPU | FSB
1 | 0 | 1 | 100M | X
0 | 0 | 1 | 133M | X
0 | 1 | 1 | 166M | 667M
0 | 1 | 0 | 200M | 800M
0 | 0 | 0 | 266M | 1067M
<Variant Name>
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
Clock Generator
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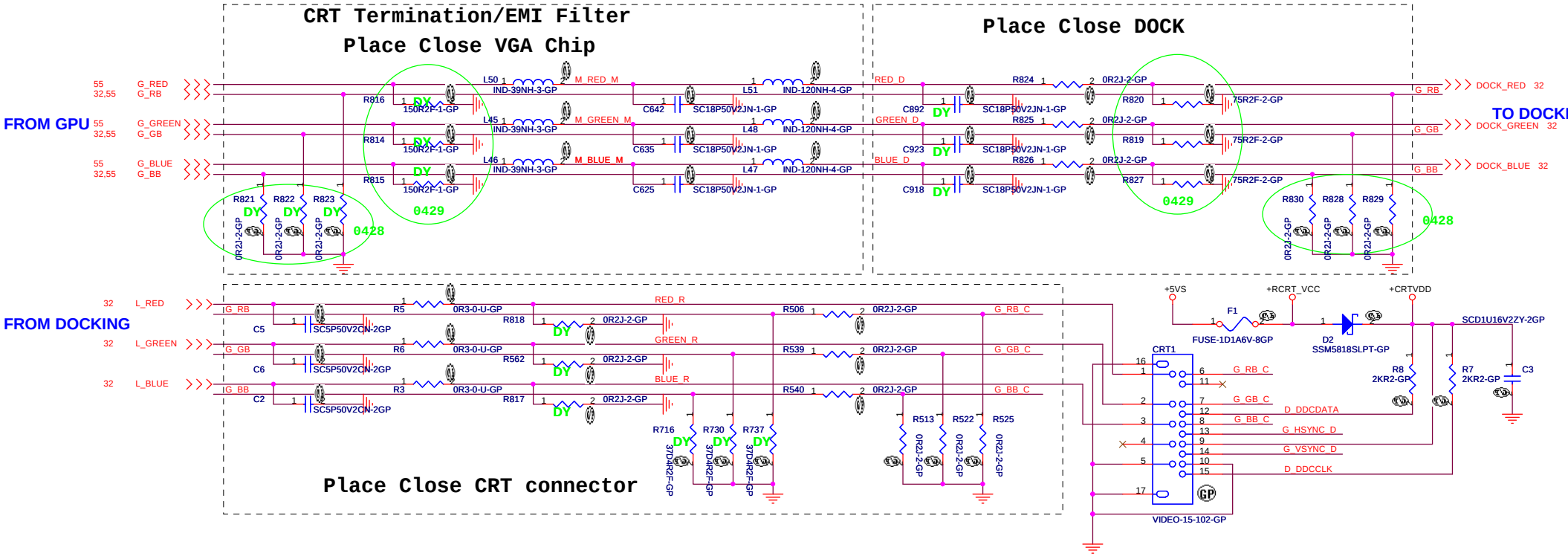
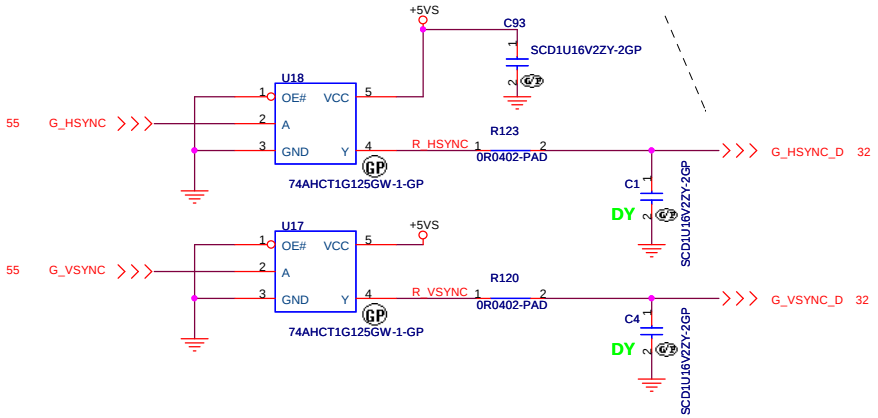
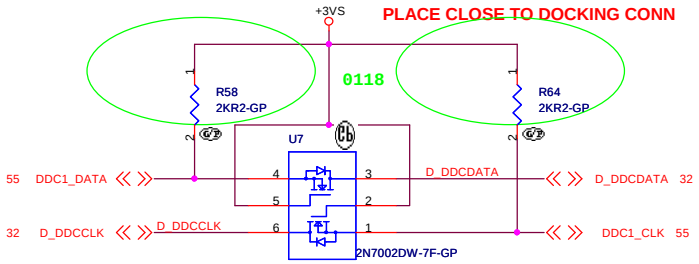
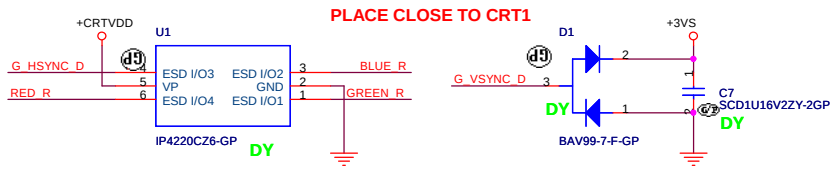
CRT



Layout Note : HSYNC & VSYNC SHOULD BE ROUTED TO DOCK CRT CONN. ,THEN TO SYSTEM CRT CONN.







緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: **CRT CONNECTOR**

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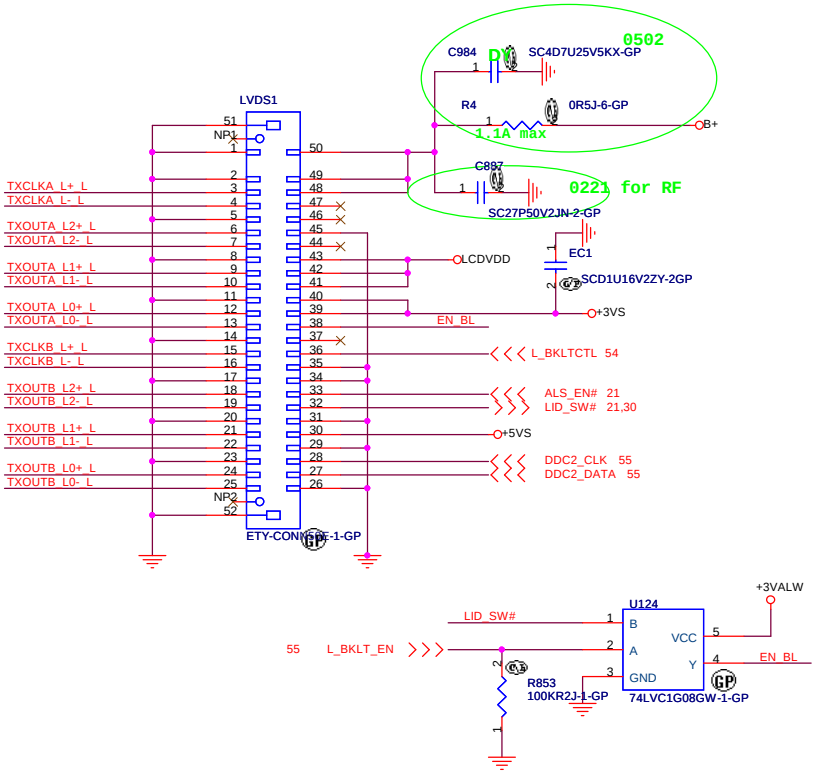
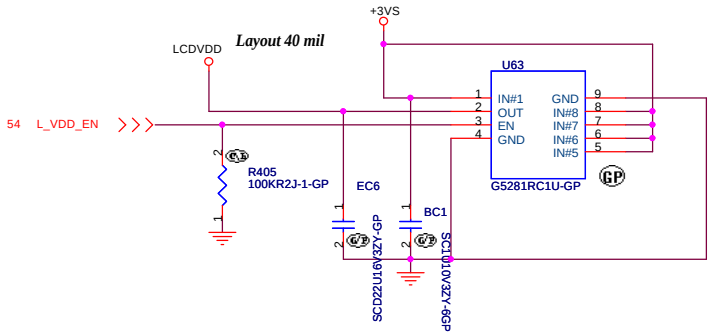
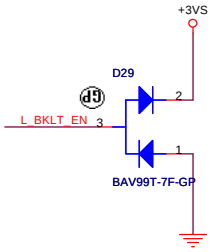
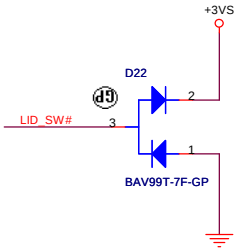
LVDS CONN

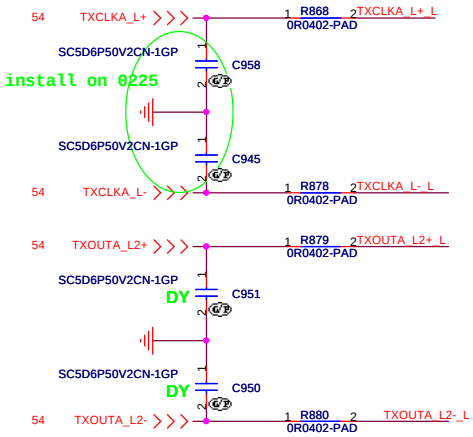


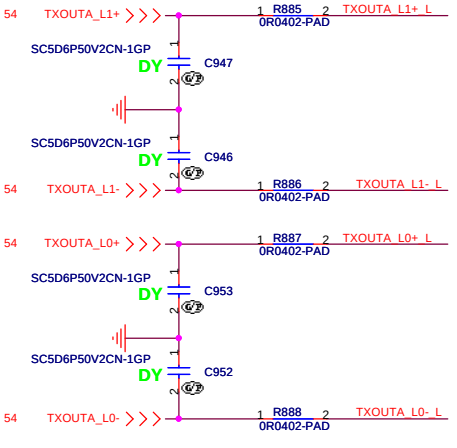
LCD POWER CIRCUIT

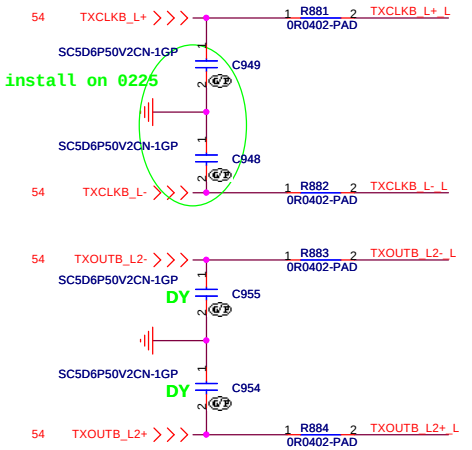


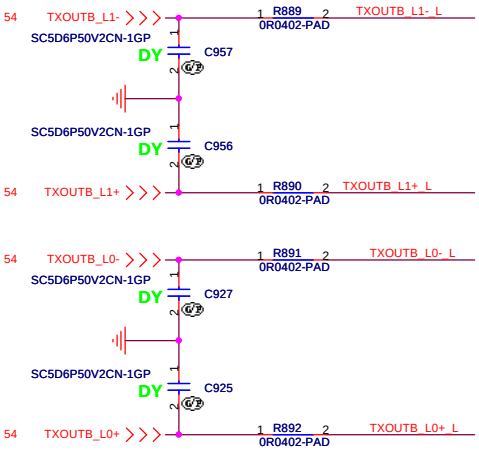












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Taipei Hsien 221, Taiwan, R.O.C.

Title: *LCD CONN.*		
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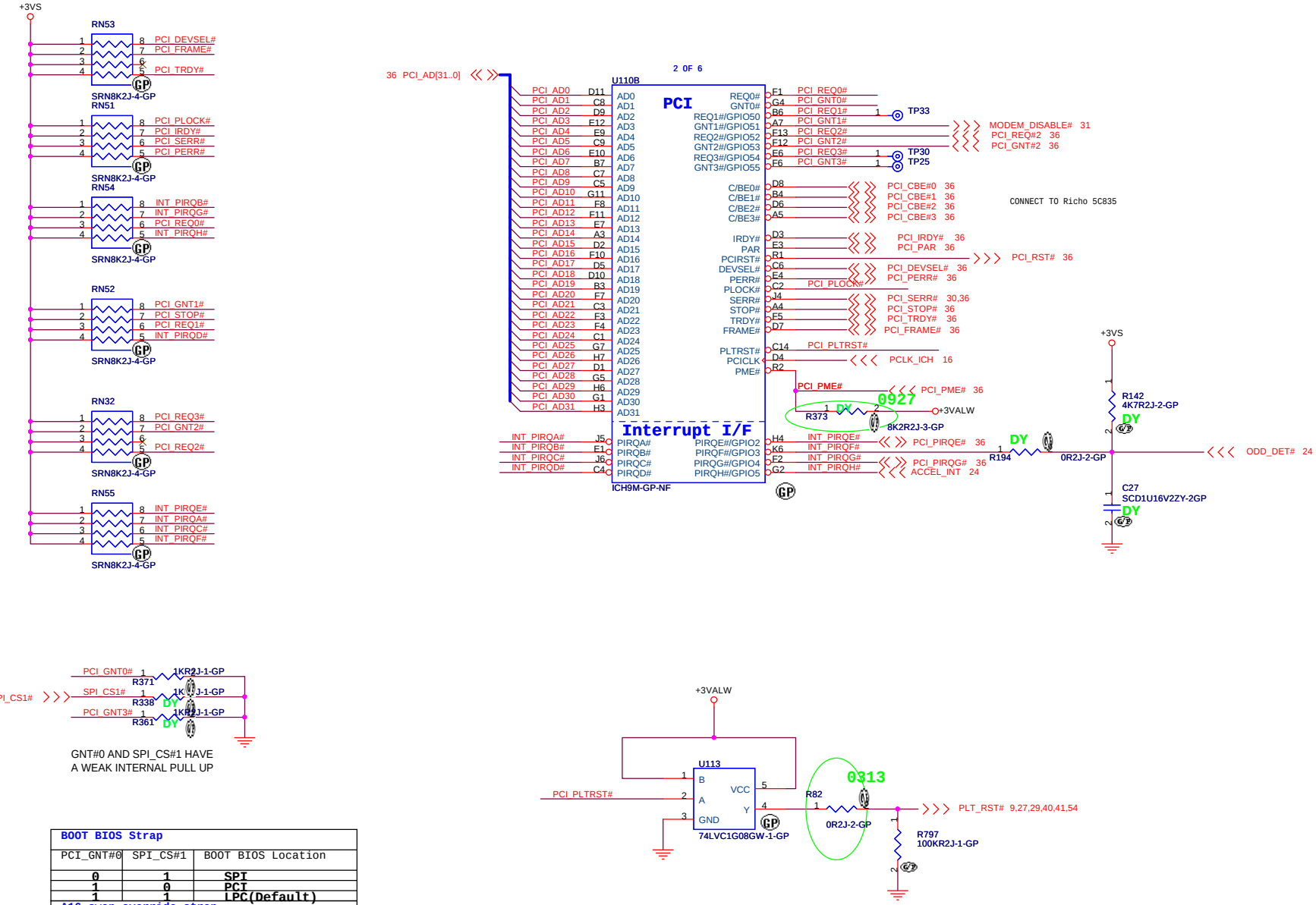

BOOT BIOS Strap		
PCI_GNT#0	SPI_CS#1	BOOT BIOS Location
0	1	SPI
1	0	PCI
1	1	LPC(Default)
A16 swap override strap		
PCI_GNT#3	low = A16 swap override enable high = default	

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ICH9-M (1 of 5)

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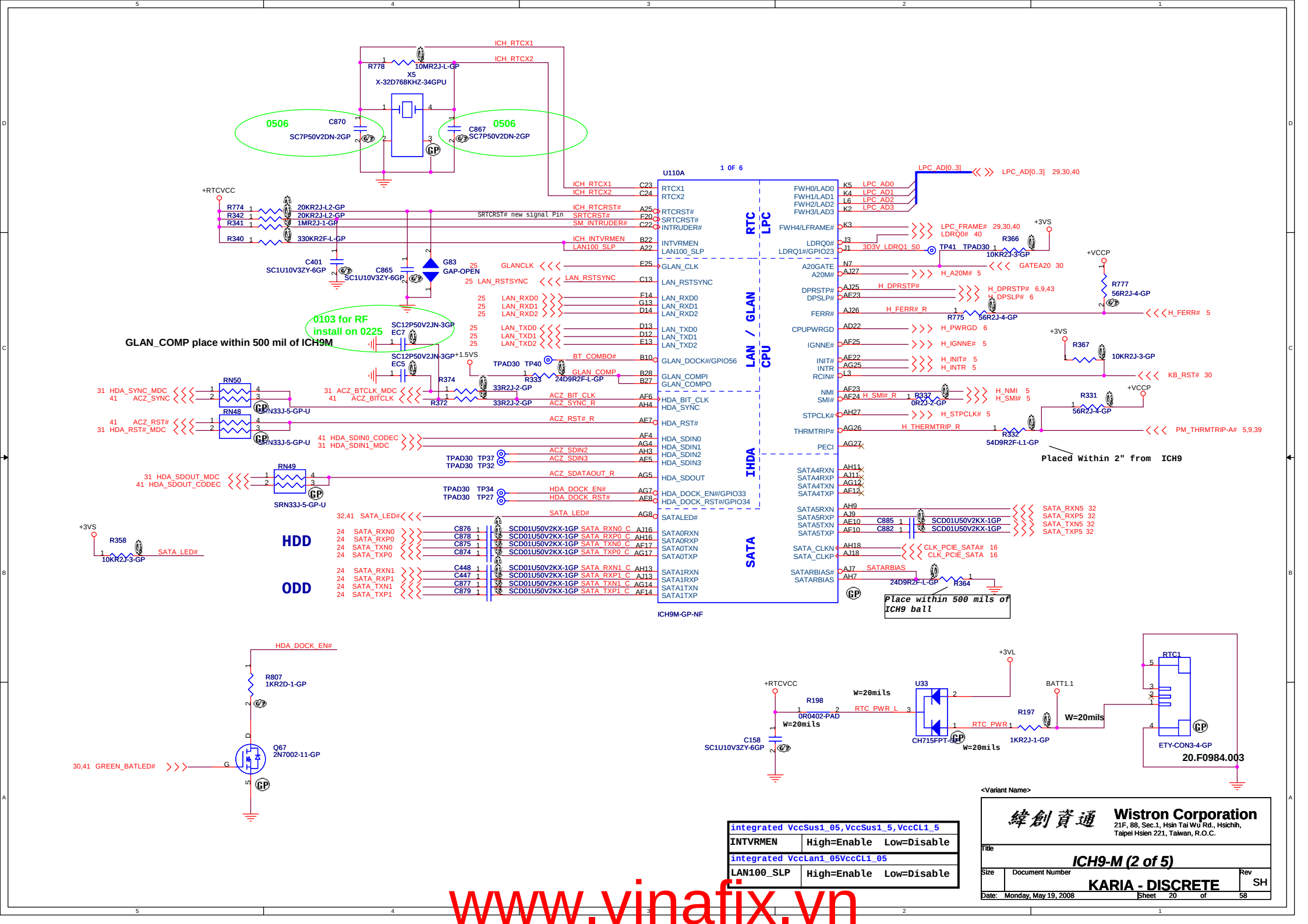

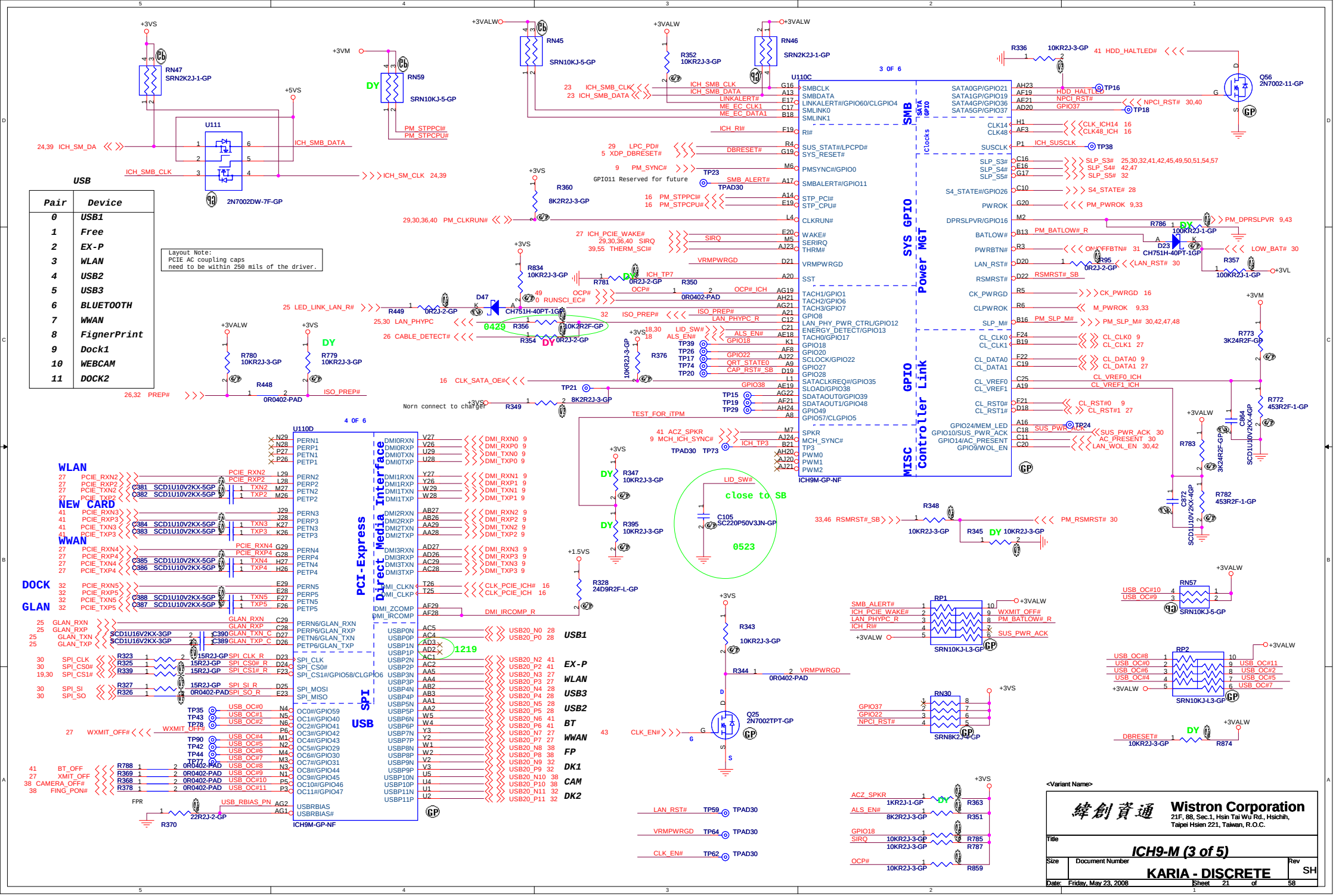

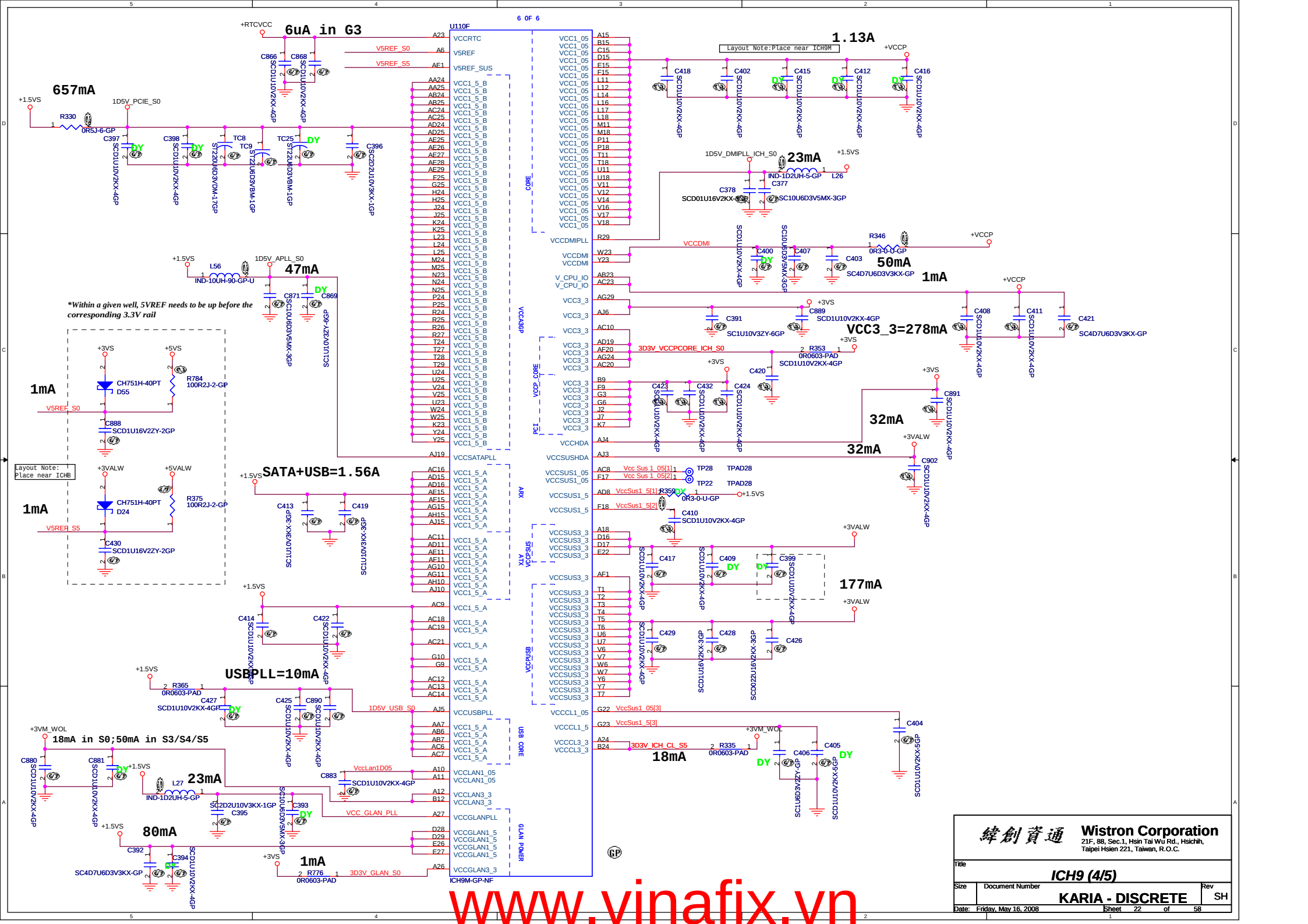
6 OF 6
U110F
ICH9M-GP-NF
6uA in G3
657mA
1.13A
Layout Note:Place near ICH9M
23mA
47mA
50mA
1mA
VCC3_3=278mA
*Within a given well, 5VREF needs to be up before the corresponding 3.3V rail
SATA+USB=1.56A
USBPLL=10mA
18mA in S0;50mA in S3/S4/S5
80mA
32mA
32mA
177mA
18mA
Layout Note: Place near ICH8
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
ICH9 (4/5)
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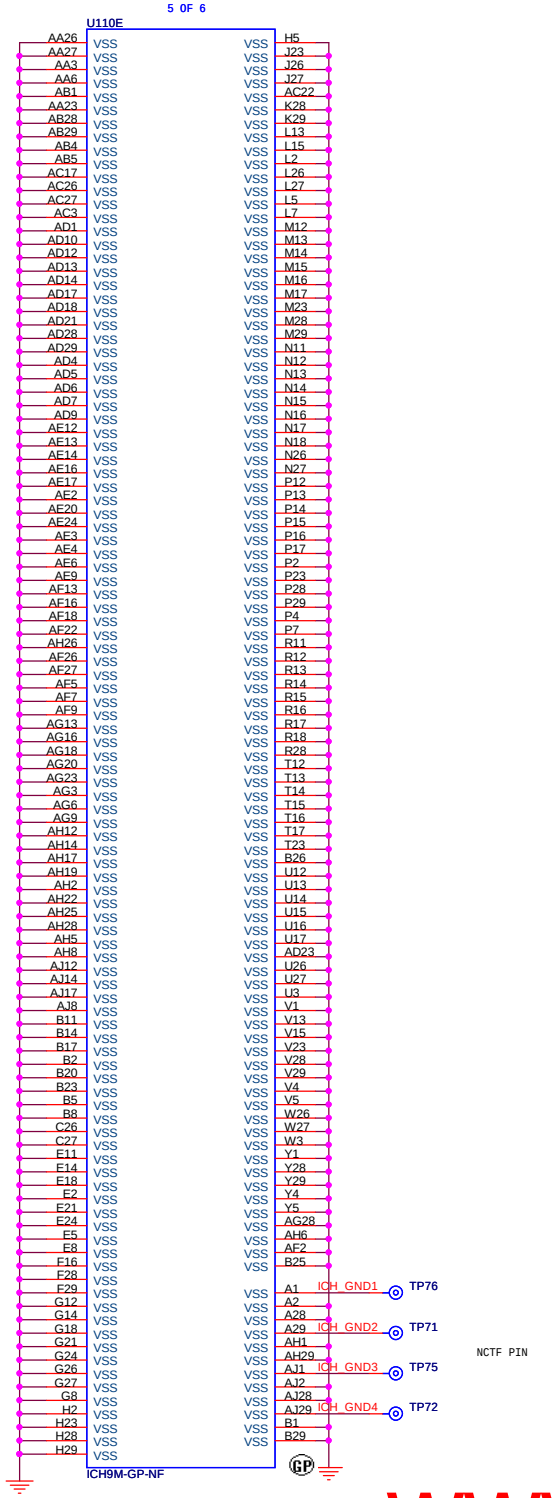
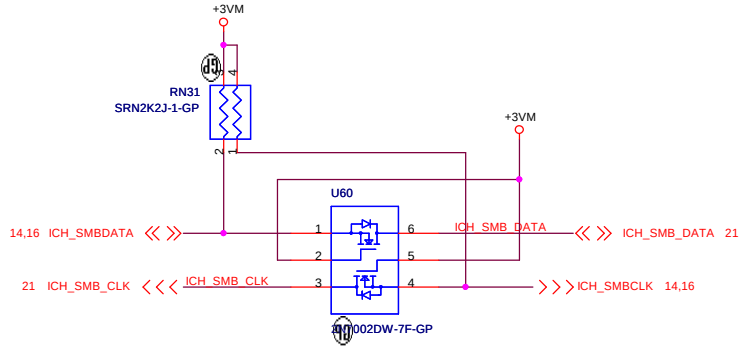
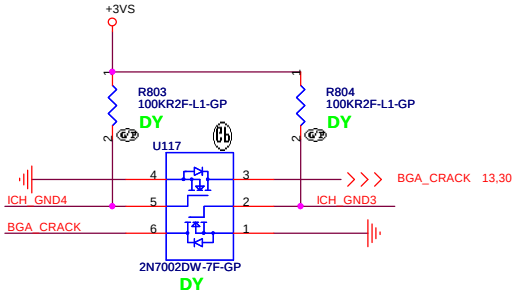
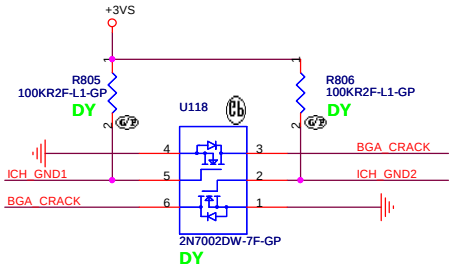




Q13 & Q14 connect SMLINK and SMBUS in S) for SMBus 2.0 compliance

SMBUS





Wistron Corporation
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Title: ICH9-M (5 of 5)

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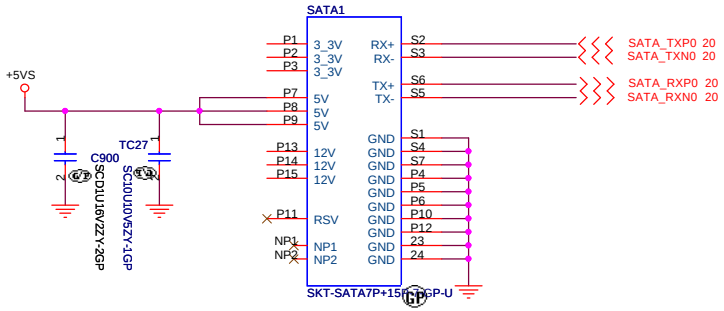
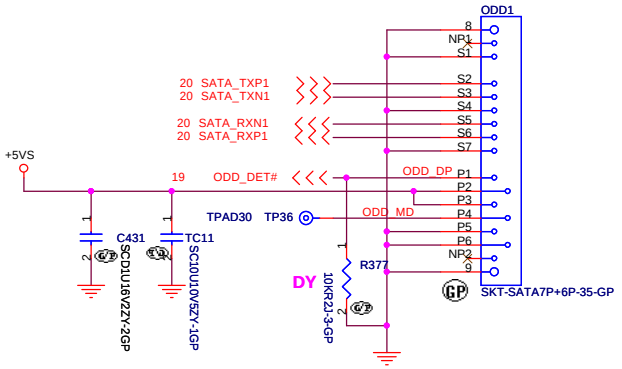
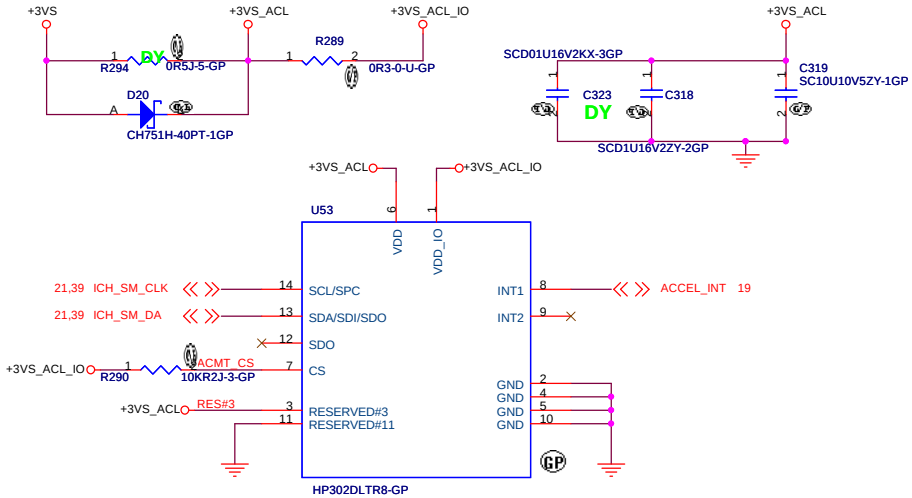
SATA HD Connector



ODD Connector



ACCELEROMETER



Must be placed in the center of the system

<Variant Name>

緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title: ***HDD/ODD/ACCELEROMETER***

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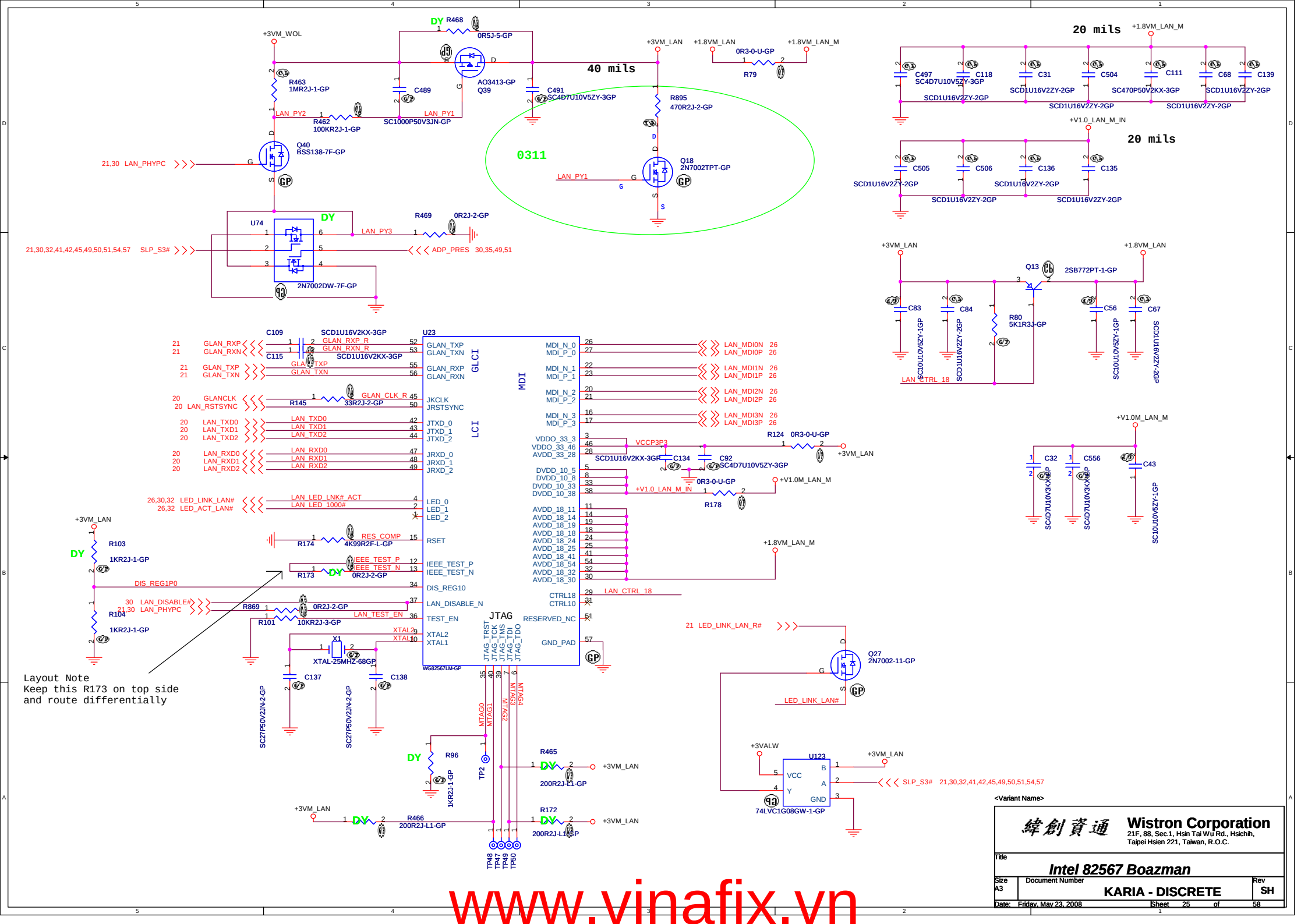
Layout Note
Keep this R173 on top side
and route differentially
20 mils
40 mils
20 mils
0311
U23
JTAG
MDI
GLCI
LCI
Q40 BSS138-7F-GP
Q18 2N7002TPT-GP
Q13 2SB772PT-1-GP
Q27 2N7002-11-GP
U74 2N7002DW-7F-GP
U123 74LVC1G08GW-1-GP
X1 XTAL-25MHZ-68GP
AO3413-GP Q39
SC1000P50V3JN-GP
SC470P50V2KX-3GP
SCD1U16V2ZY-2GP
SCD1U16V2KX-3GP
SC4D7U10V5ZY-3GP
SC10U10V5ZY-1GP
SC4D7U10V3KX-3GP
SC27P50V2JN-2-GP
WG82567LM-GP
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
Intel 82567 Boazman
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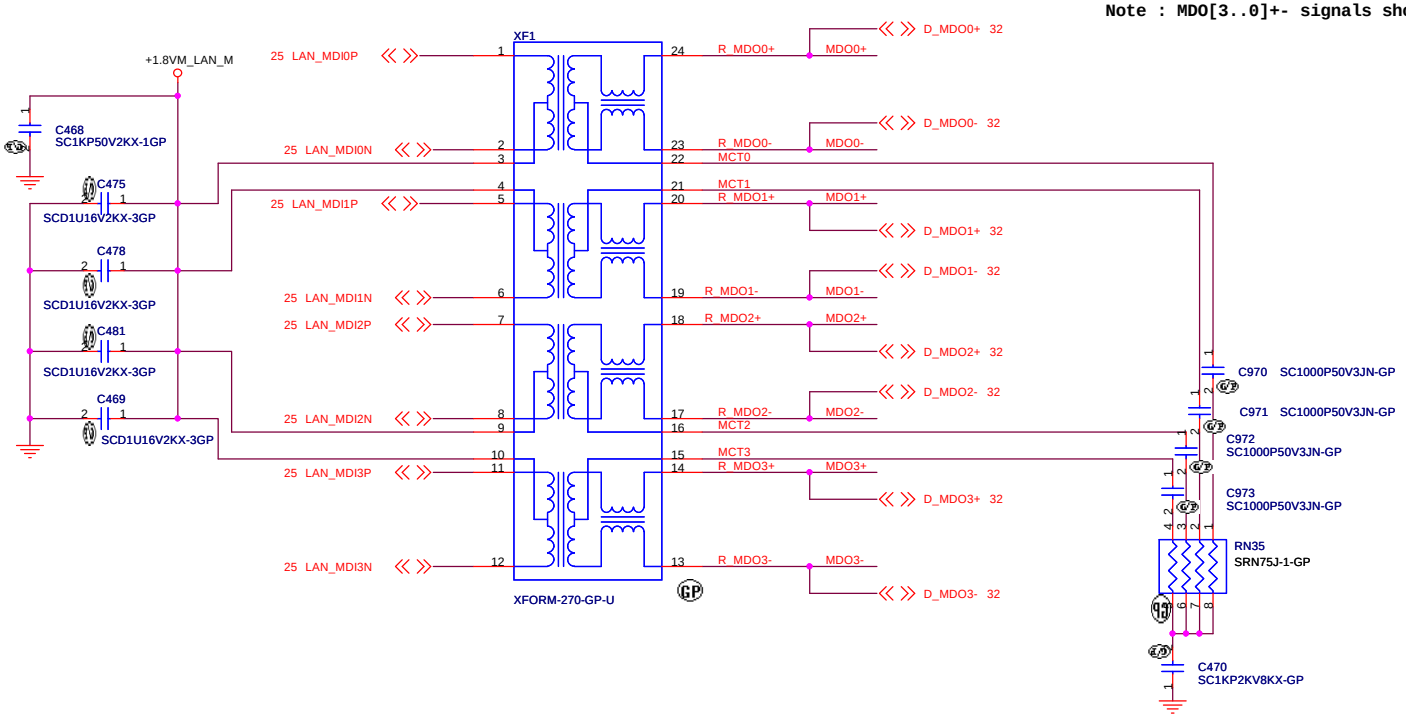
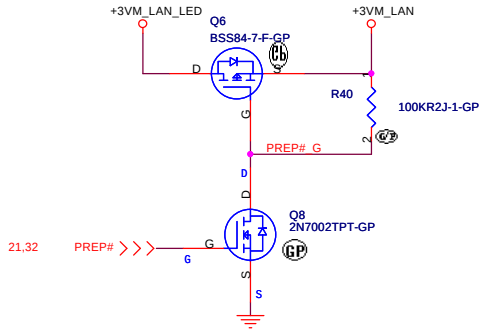
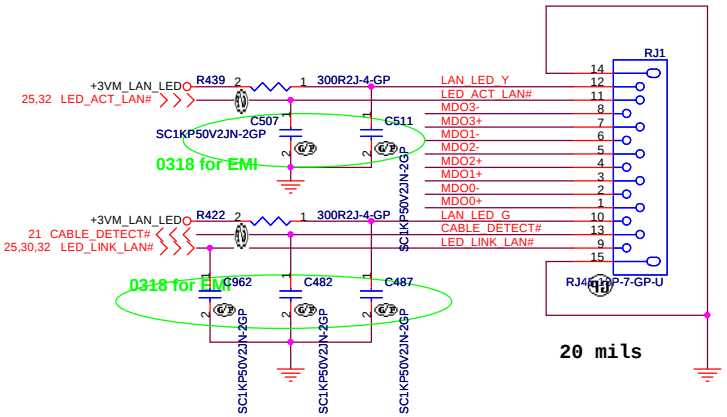
Note : MDO[3..0]+- signals should route to RJ45 first then to DOCK CONN .



LAN ENERGY DET





<Variant Name>

緯創資通 Wistron Corporation
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Title: Magnetic & RJ45

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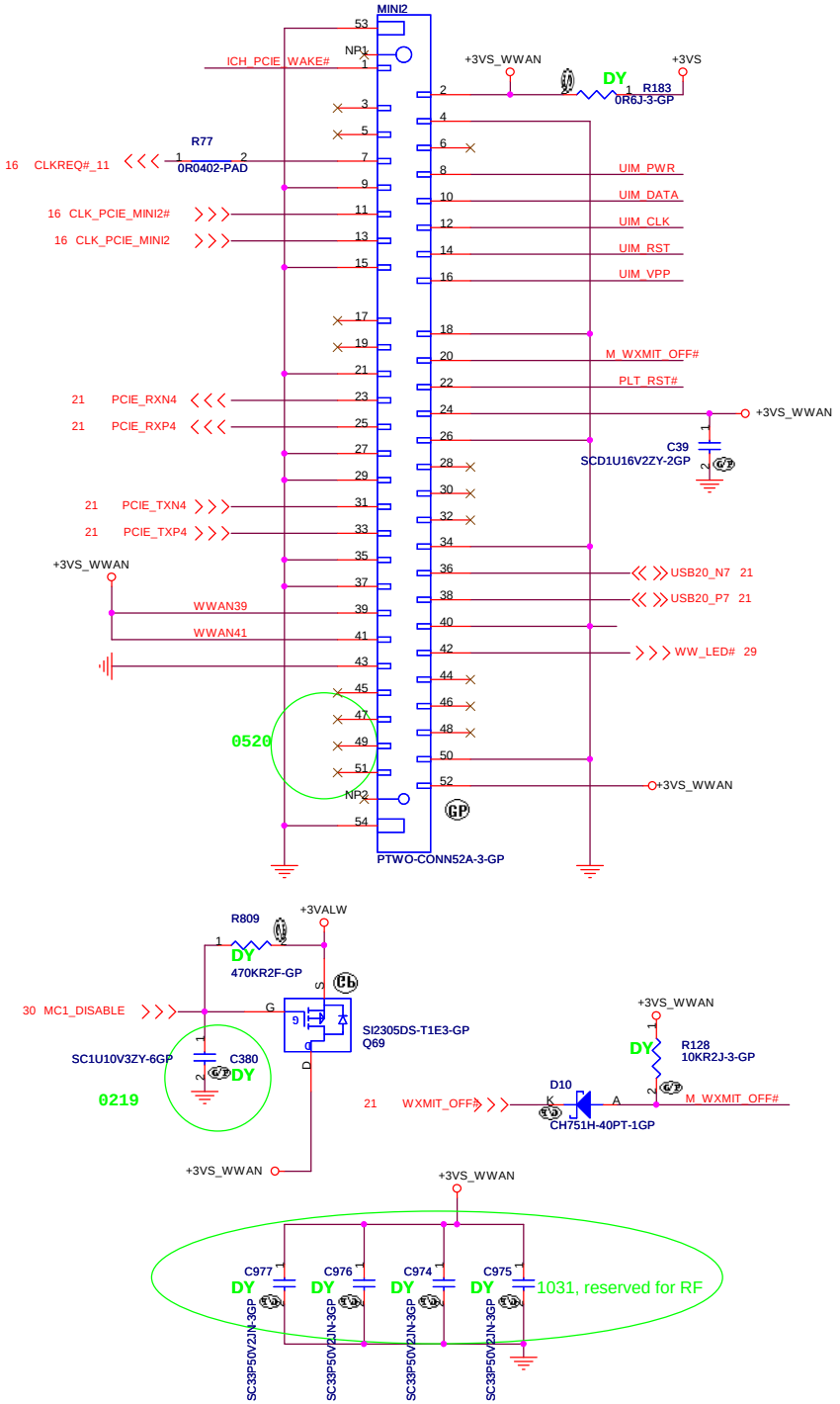
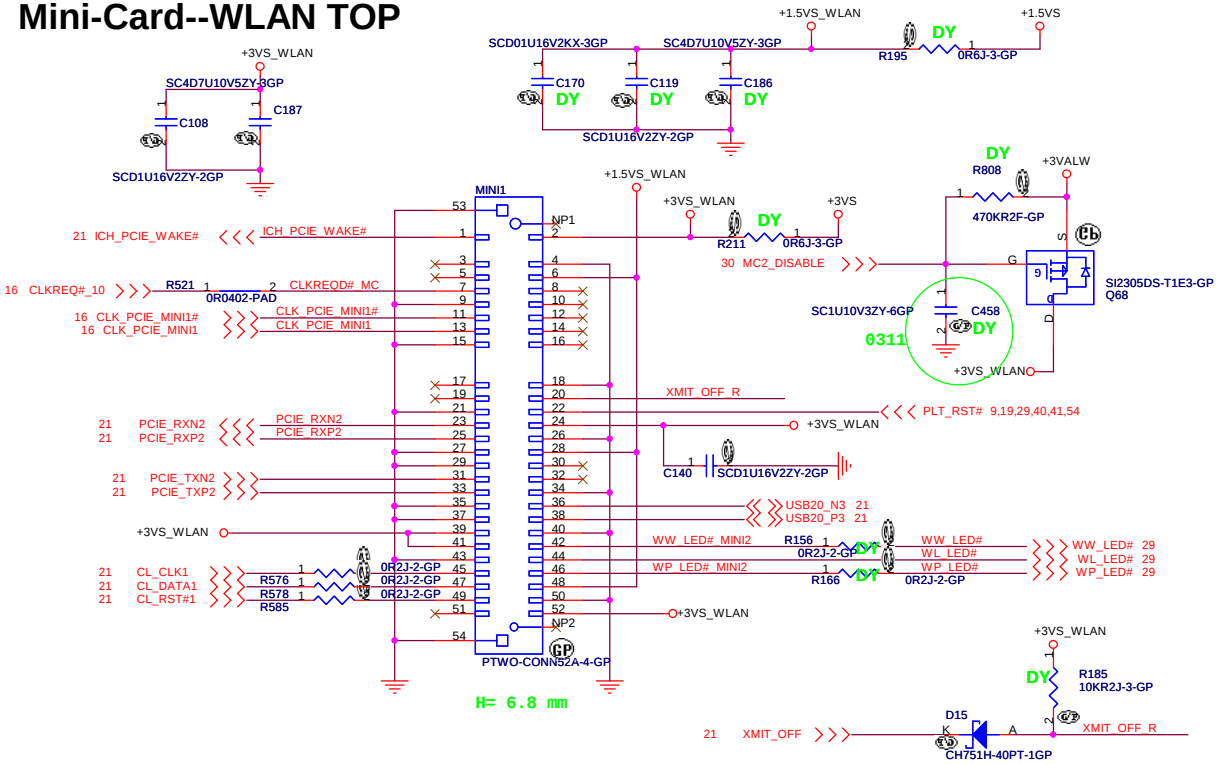
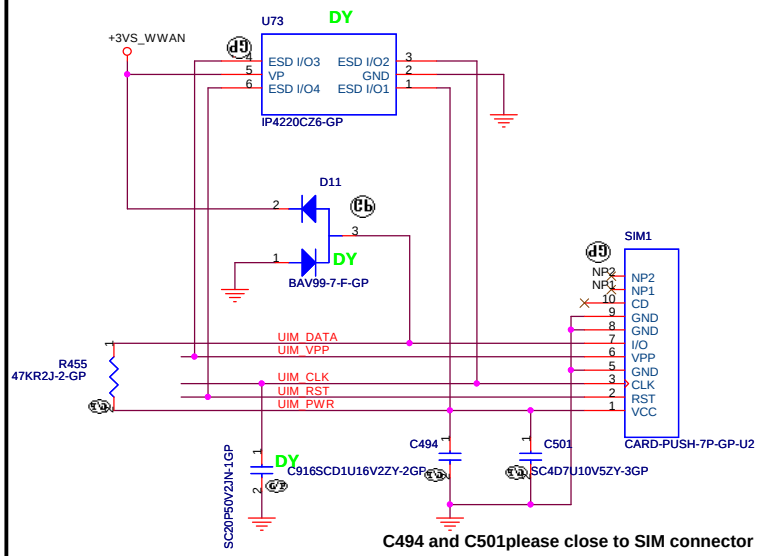
Mini-Card--WWAN BOTTOM



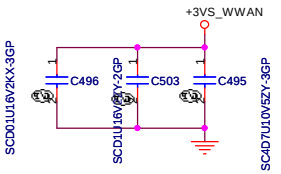
Mini-Card--WLAN TOP



Sim-Card Connector



C494 and C501please close to SIM connector



ACCELEROMETER moves to Page 24

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: **Mini-Card connectors**

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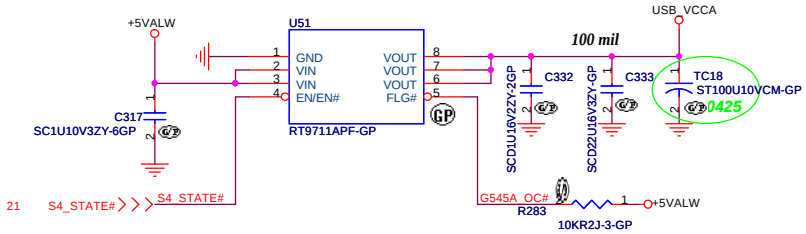

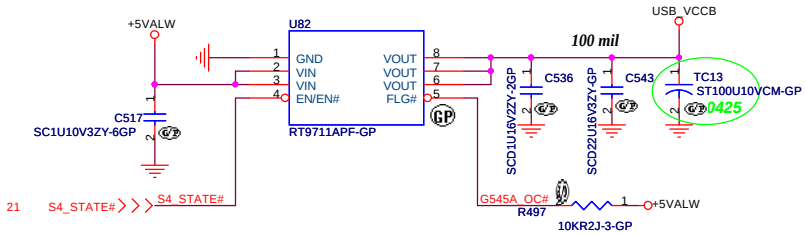

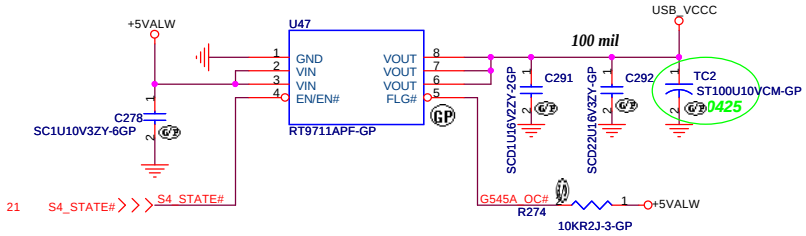

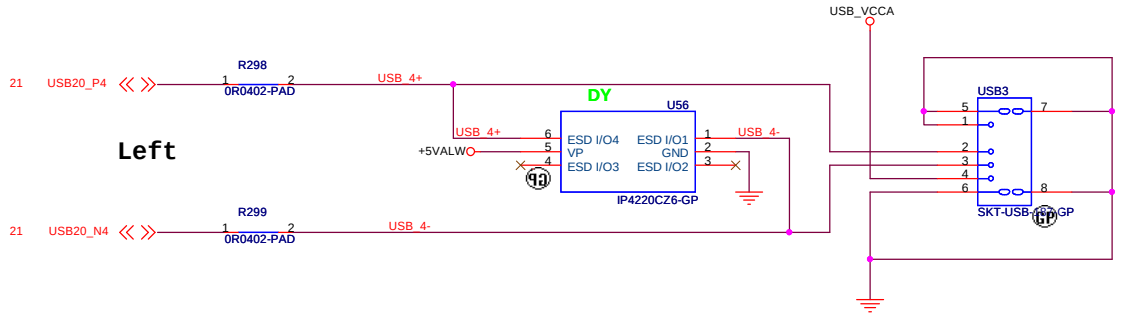

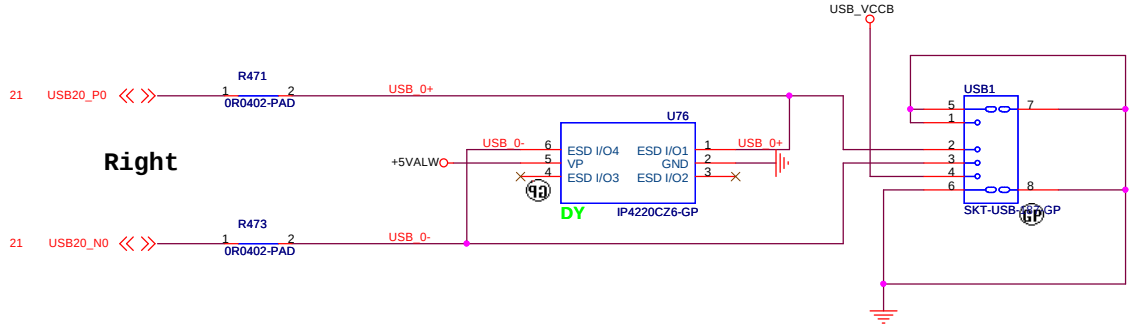

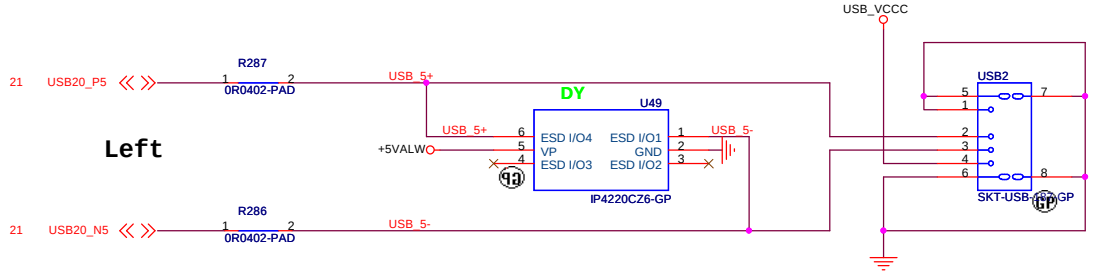

<variant_name>

緯創資通 Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title: **USB Connector**

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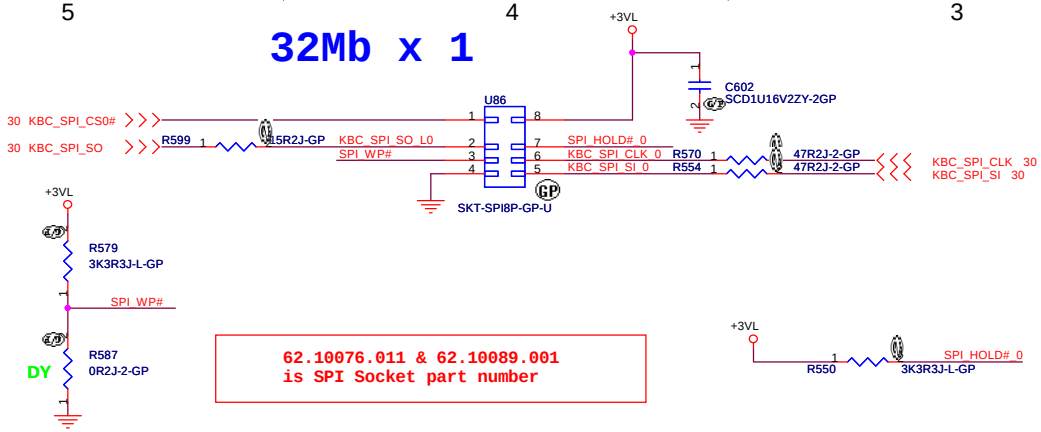
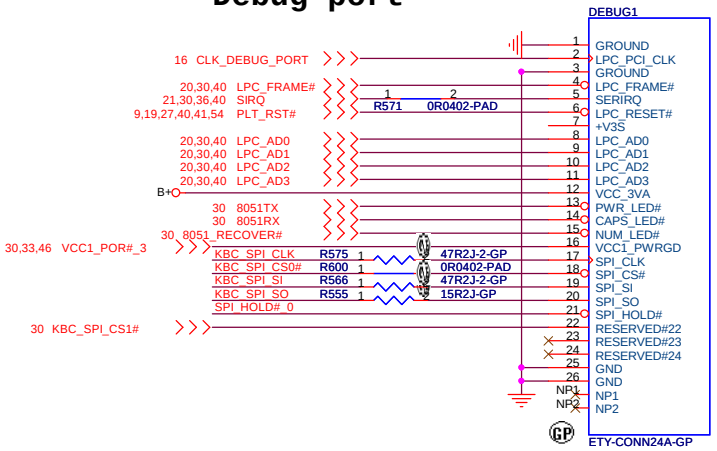
32Mb x 1



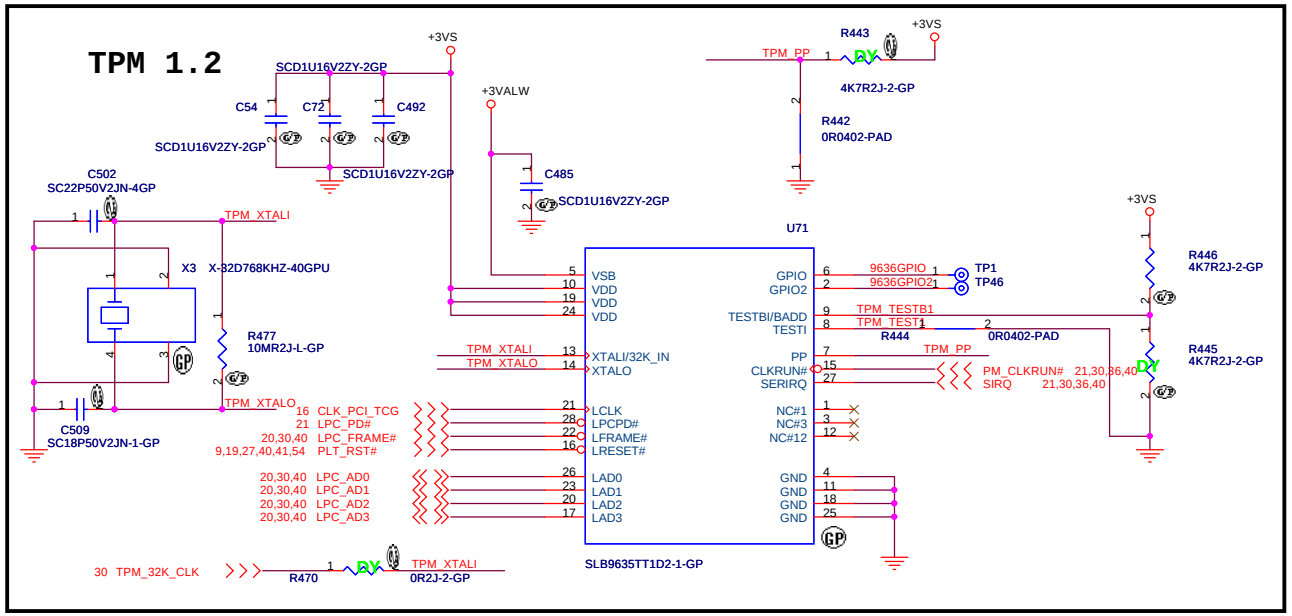
32M SPI
> 72.25325.A01 MXIC MX25L3205D
32M SPI
> 72.26321.A01 IC FEROM AT26DF321-SU, by Atmel

Debug port

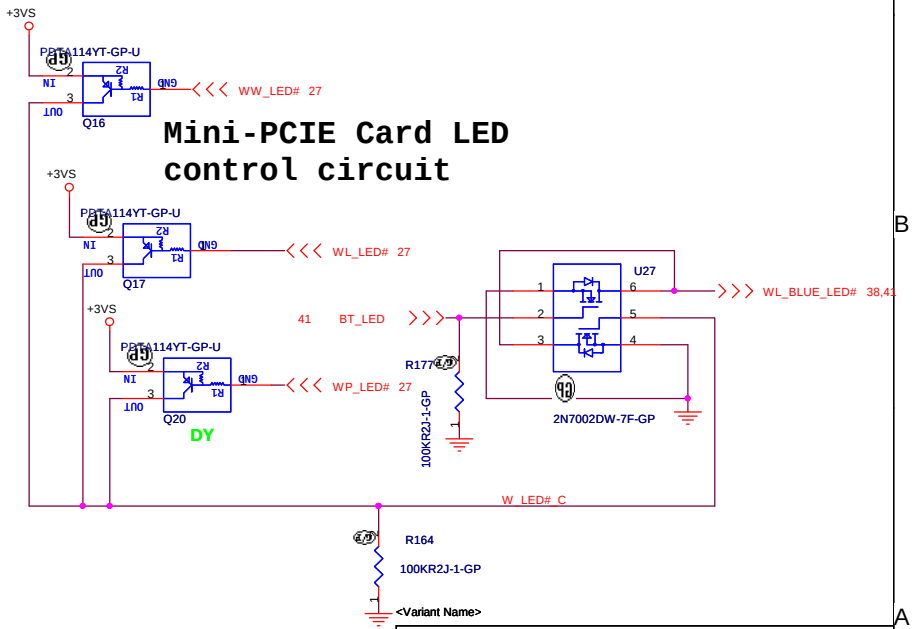


Keep traces of SPI as short as possible and keep trace spacing close to 7mils to any other signal (basically follow specs).

TPM 1.2



Mini-PCIE Card LED control circuit



緯創資通 Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title: TPM/BIOS/24 DEBUG PORT

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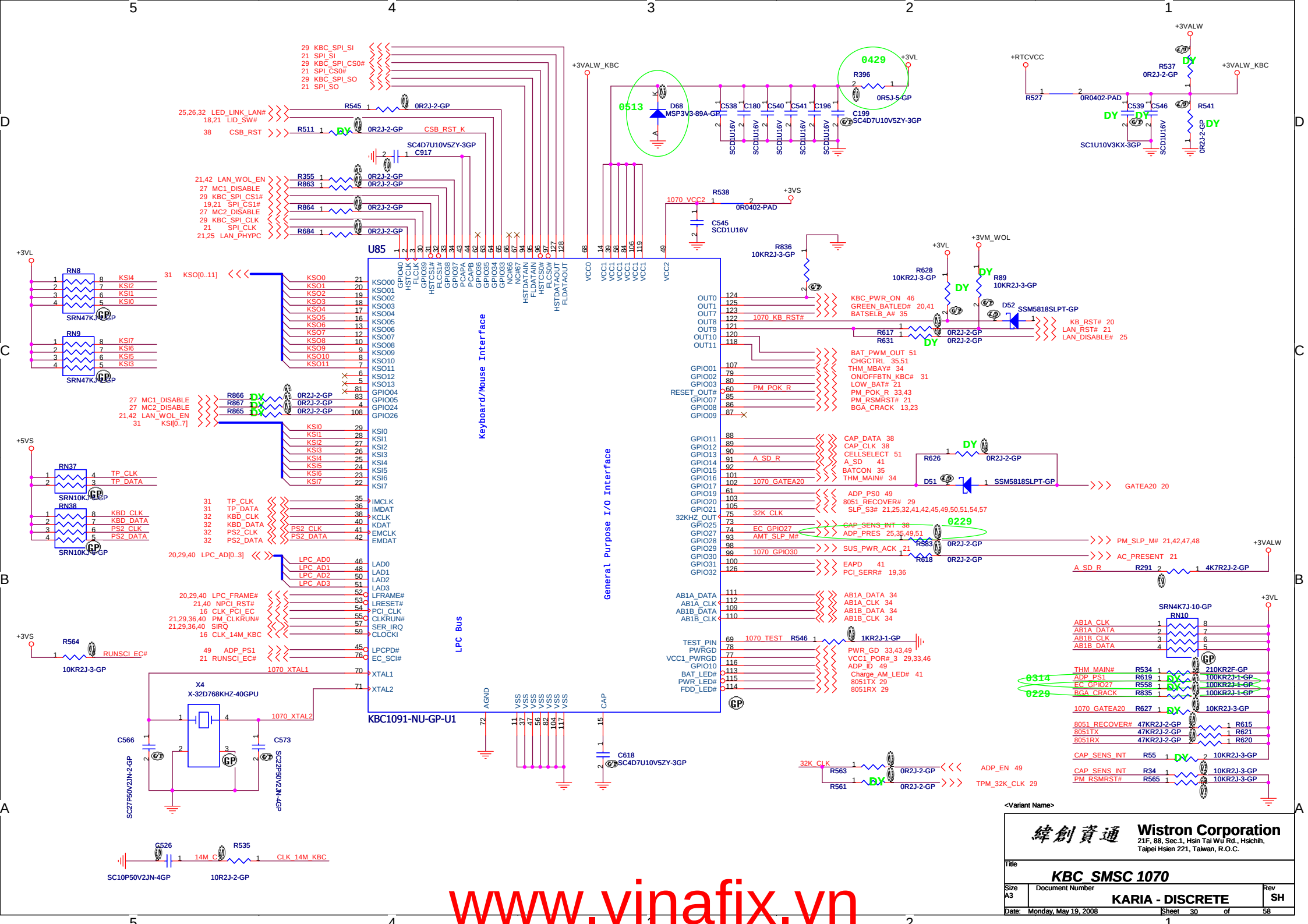
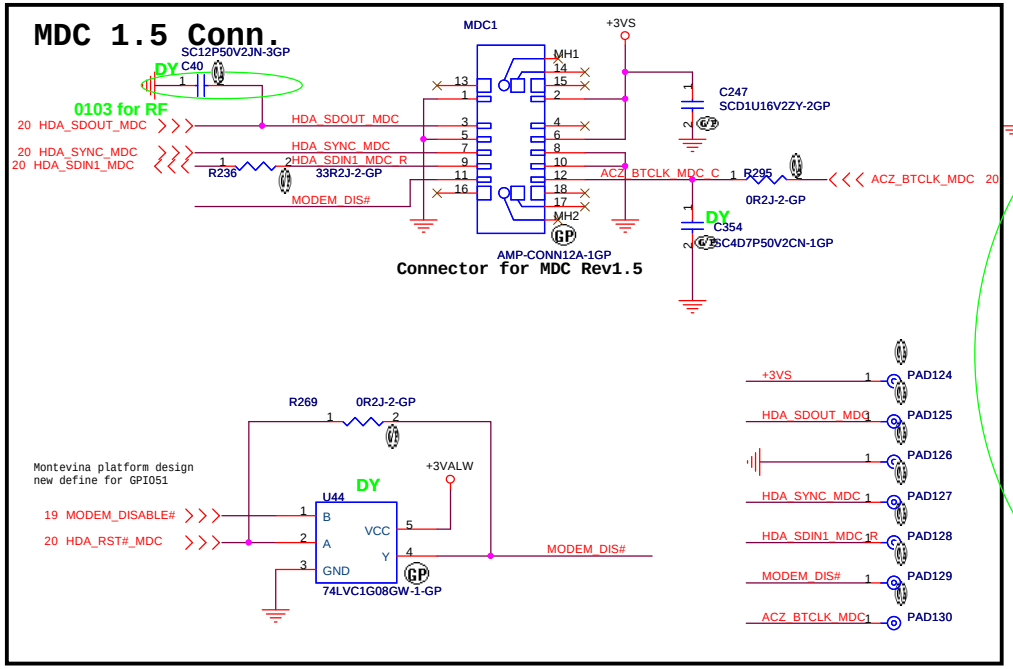
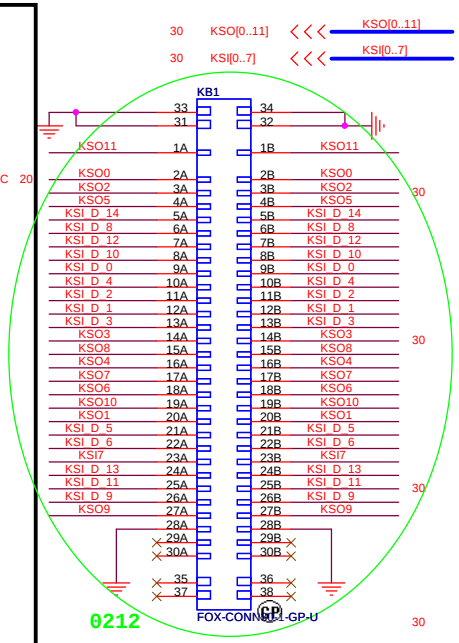
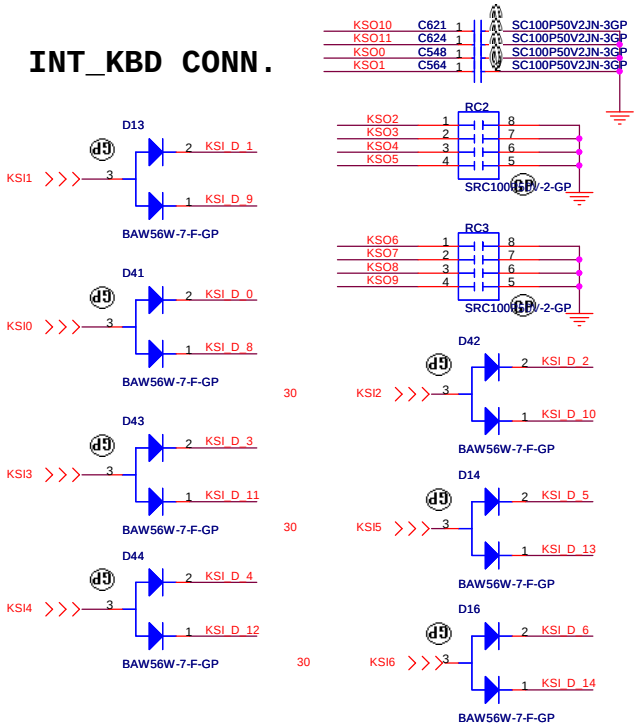

U85
KBC1091-NU-GP-U1
Keyboard/Mouse Interface
General Purpose I/O Interface
LPC Bus
SRN47KJ-4GP
SRN10KJ-4GP
SRN4K7J-10-GP
X4
X-32D768KHZ-40GPU
SSM5818SLPT-GP
MSP3V3-89A-GP
SC4D7U10V5ZY-3GP
SCD1U16V
SC1U10V3KX-3GP
SC27P50V2JN-2GP
SC22P50V2JN-4GP
SC10P50V2JN-4GP
0R2J-2-GP
0R0402-PAD
0R5J-5-GP
10KR2J-3-GP
1KR2J-1-GP
4K7R2J-2-GP
47KR2J-2-GP
210KR2F-GP
100KR2J-1-GP
0429
0513
0314
0229
www.vinafix.vn
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
KBC_SMSC 1070
KARIA - DISCRETE
Monday, May 19, 2008

MDC 1.5 Conn.

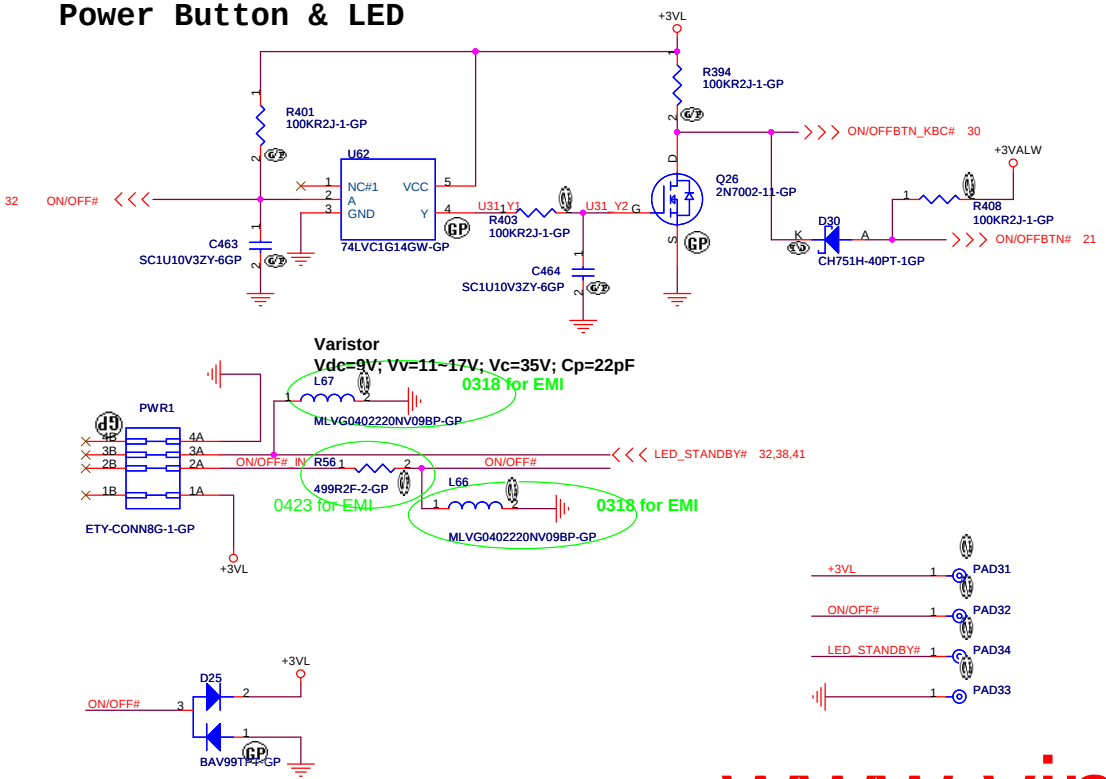




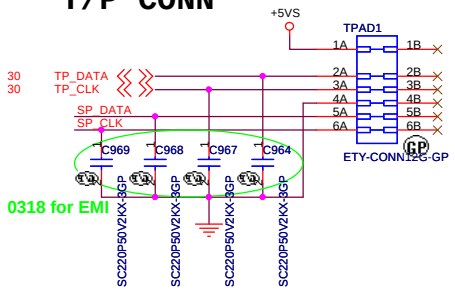
INT_KBD CONN.



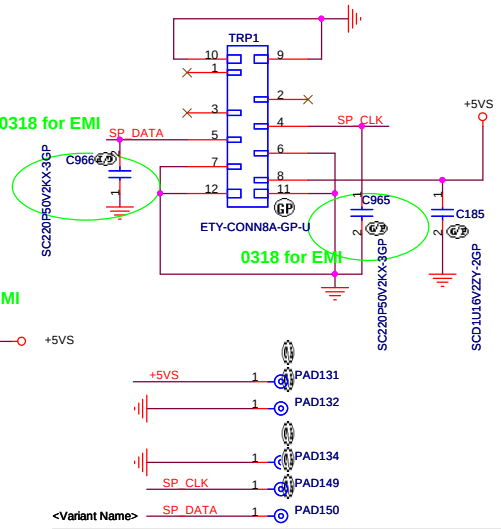
Power Button & LED



T/P CONN



TrackPoint



緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***MDC/KBD/ON OFF/T.P.***

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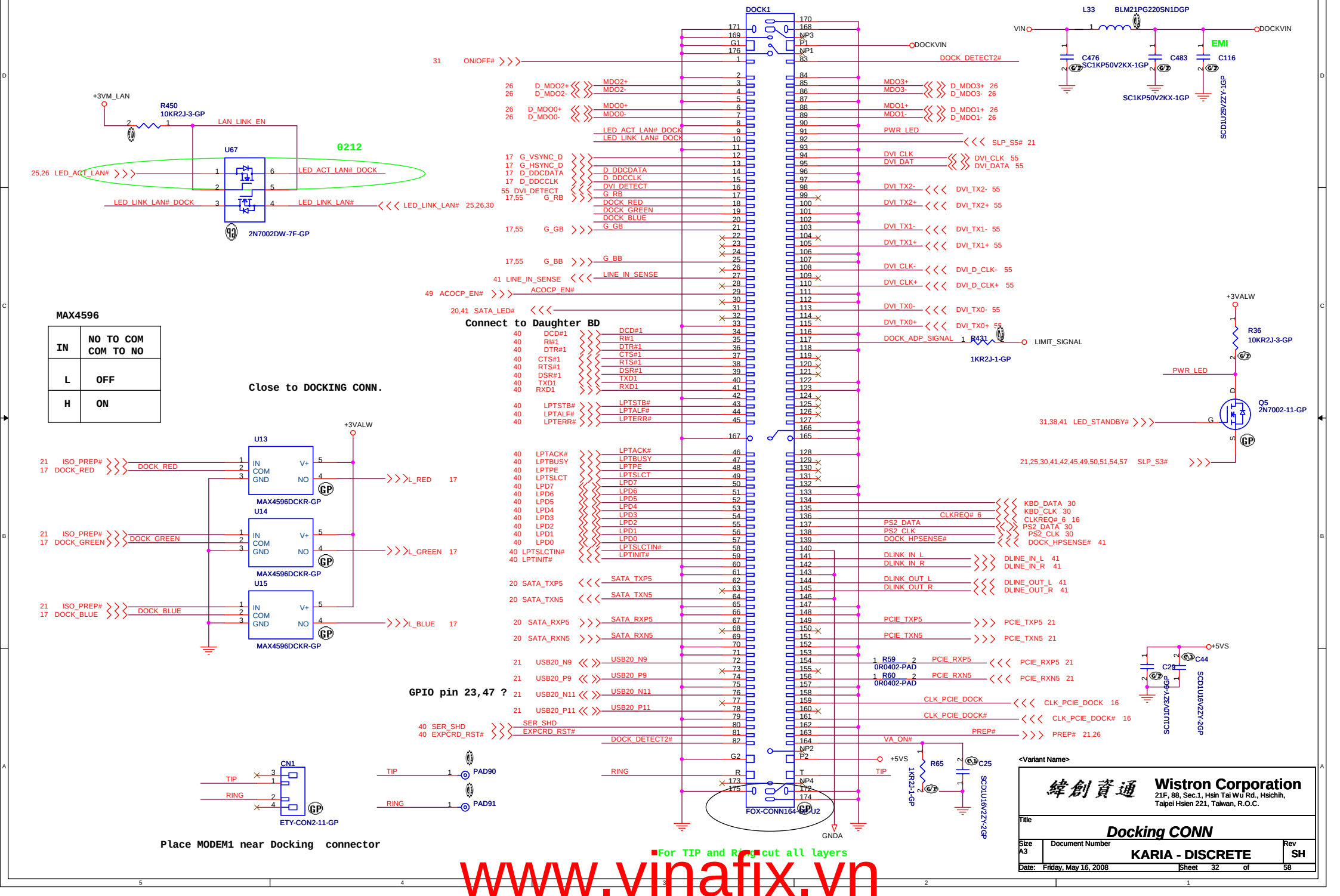
A3	KARIA - DISCRETE	SH

Date: Tuesday, May 20, 2008 Sheet 31 of 58

Docking CONN. 164 PIN

current rating 6A



■For TIP and Ring■cut all layers

<Variant Name>

緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: **Docking CONN**

Size	Document Number	Rev
A3	KARIA - DISCRETE	SH

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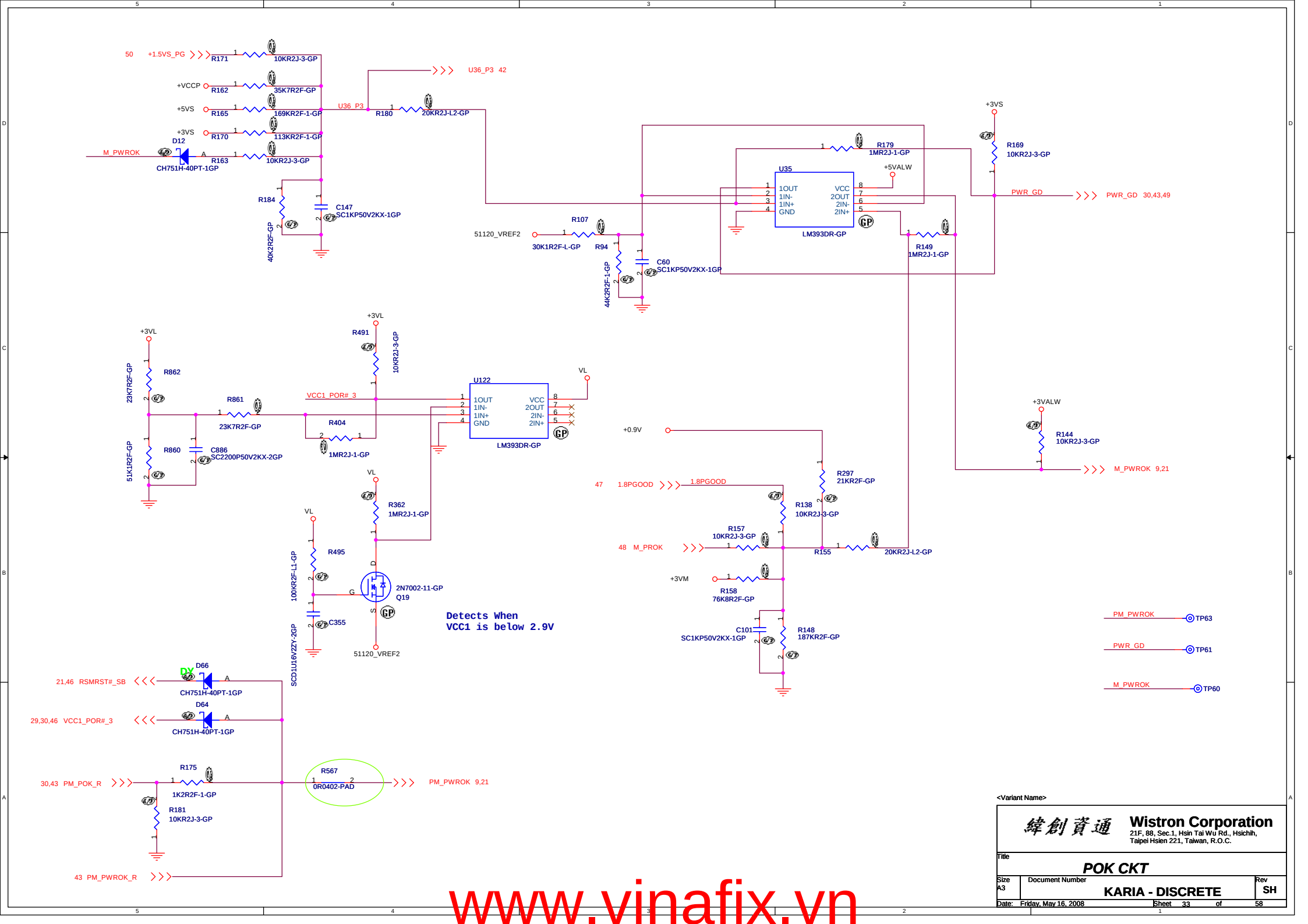

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: POK CKT

Size: A3 | Document Number: KARIA - DISCRETE | Rev: SH

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Adaptor in to generate DCBATOUT

Current Rating 6 A

0423

DCIN1

SKT-JACK-190-GP

LIMIT_SIGNAL

ADPIN

VIN

D67 PASSMJ27APT-GP

C10 SC1KP50V2KX-1GP

R11 15KR2J-1-GP

BC2 SC1KP50V2KX-1GP DY

MAIN BATTERY CONNECTOR

Current Rating 6 A

BATT_A

0318 for EMI

C37 SC1KP50V2KX-1GP

BAT1

SYN-CON8-6-GP-U1

D57 BAV99-5-GP

D58 BAV99-5-GP

+3VL

R71 100R2J-2-GP

R66 100R2J-2-GP

AB1A_DATA 30

AB1A_CLK 30

AB1A_DATA_C

AB1A_CLK_C

OCP_ADJ_C

R61 1KR2J-1-GP

C33 SC100P50V2JN-3GP EMI

C36 SC100P50V2JN-3GP EMI

C38 SC220P50V2KX-3GP DY

C28 SC220P50V2KX-3GP DY

C19 SC100P50V2JN-3GP EMI

PIN 5 Voltage Feedback Circuit

D59 BAV99-5-GP

VL

R454 69K8R2F-GP

R453 100KR2F-L1-GP

R457 150KR2F-L-GP

R460 294KR3F-1-GP

49 OCP_ADJ

Q37 MMBT3906-3-GP

Q33 2N7002-11-GP

R440 220KR2F-GP

THM_MAIN# 30

CAPS name EMI It Reserve for EMI

BATT_A PAD115

AB1A_DATA_C PAD116

AB1A_CLK_C PAD117

OCP_ADJ_C PAD118

PAD119

BAY BATTERY CONNECTOR

Current Rating 6 A

BATT_B

0318 for EMI

C102 SCD1U25V2ZY-1GP

C518 SCD01U50V2ZY-1GP

BAT2

SYN-CON8-6-GP

D60 BAV99-5-GP

D62 BAV99-5-GP

+3VL

AB1B_DATA_C

AB1B_CLK_C

THM_MBAY#_C

R116 100R2J-2-GP

R105 100R2J-2-GP

R111 210KR2F-GP

R112 1KR2J-1-GP

AB1B_DATA 30

AB1B_CLK 30

THM_MBAY# 30

C77 SC100P50V2JN-3GP EMI

C80 SC100P50V2JN-3GP EMI

C73 SC100P50V2JN-3GP EMI

D61 BAV99-5-GP

C82 SC220P50V2KX-3GP

C65 SC220P50V2KX-3GP DY

C78 SC220P50V2KX-3GP DY

BATT_B PAD120

AB1B_DATA_C PAD121

AB1B_CLK_C PAD122

THM_MBAY#_C PAD123

<Variant Name>

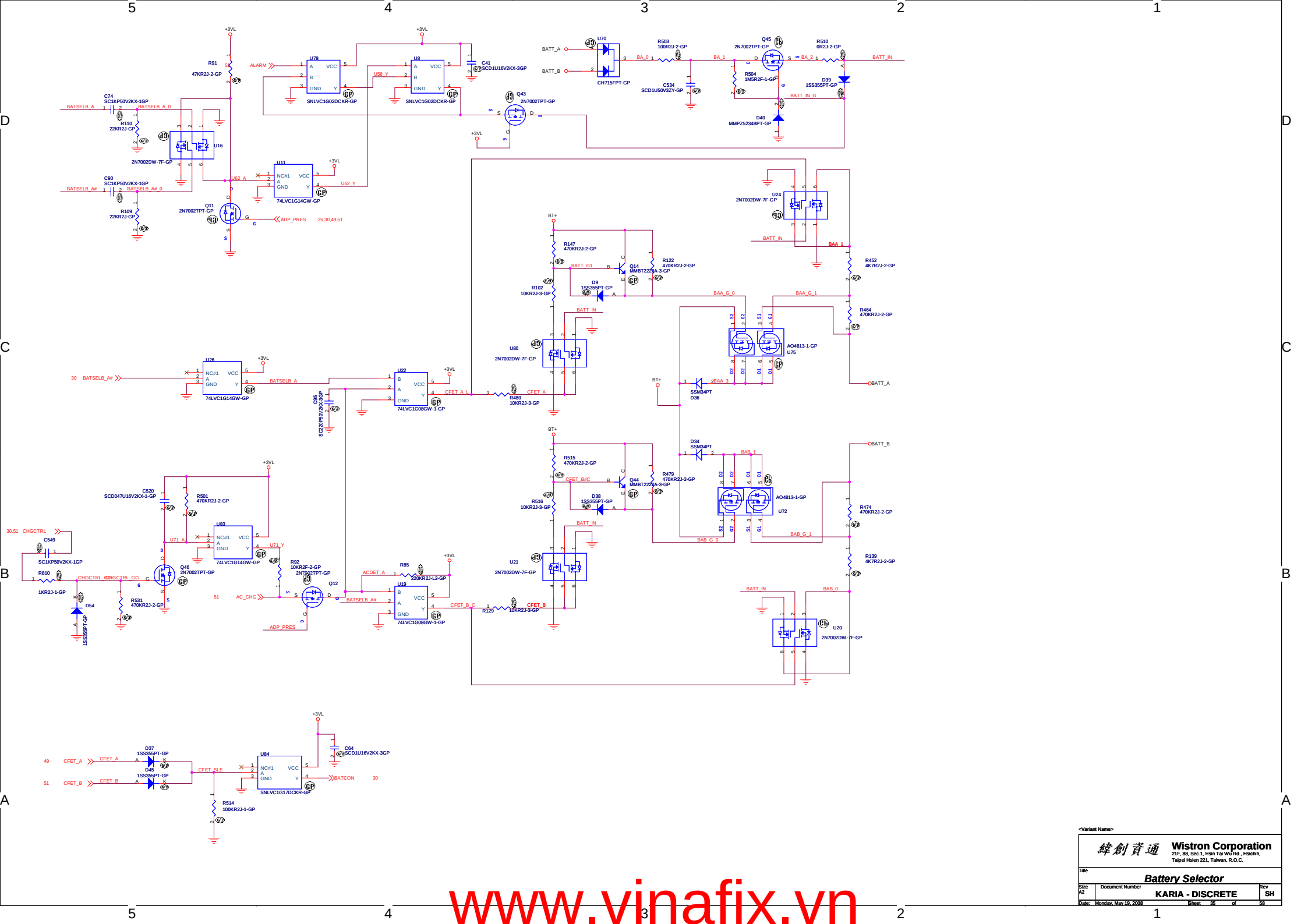
緯創資通 Wistron Corporation

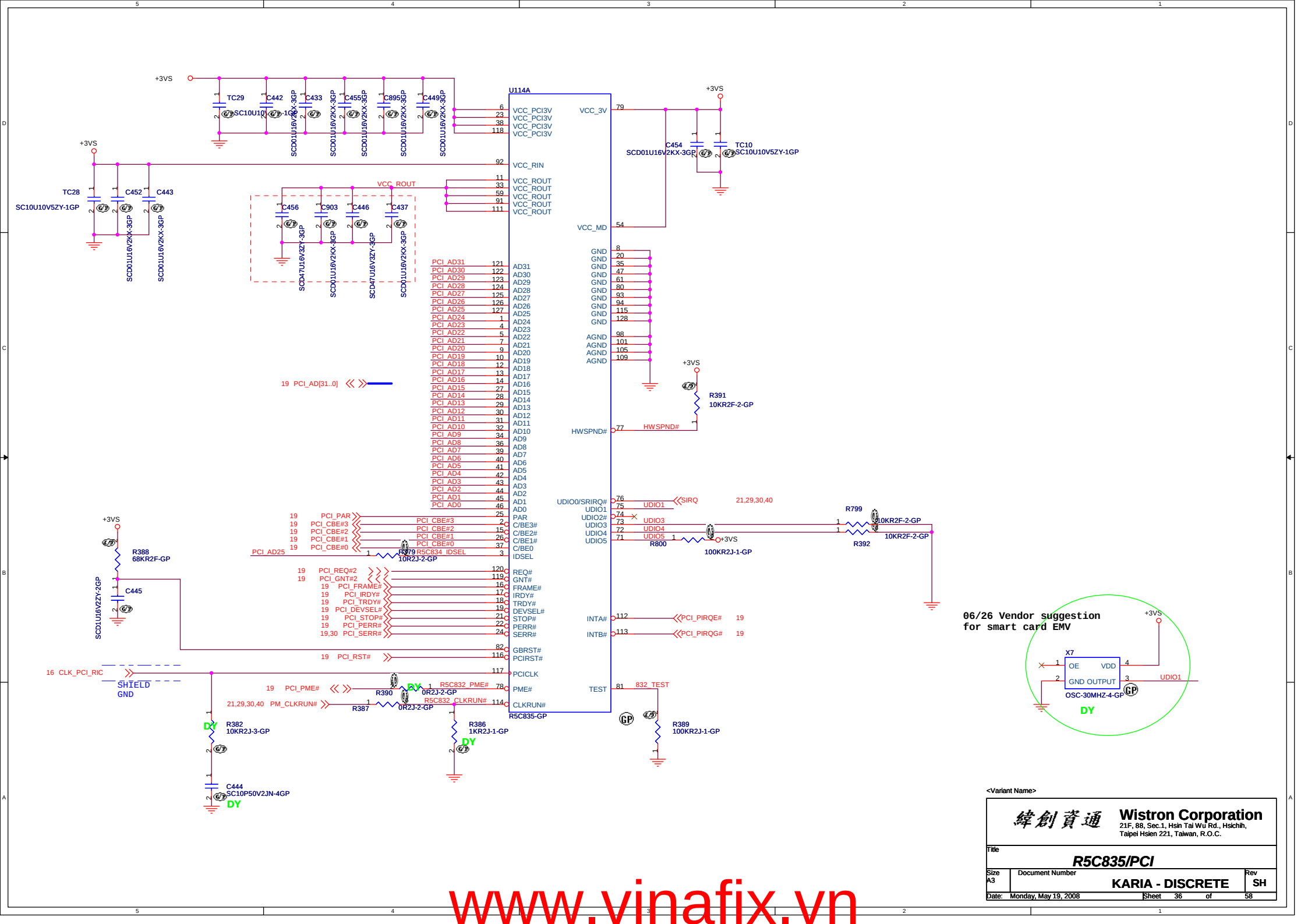
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

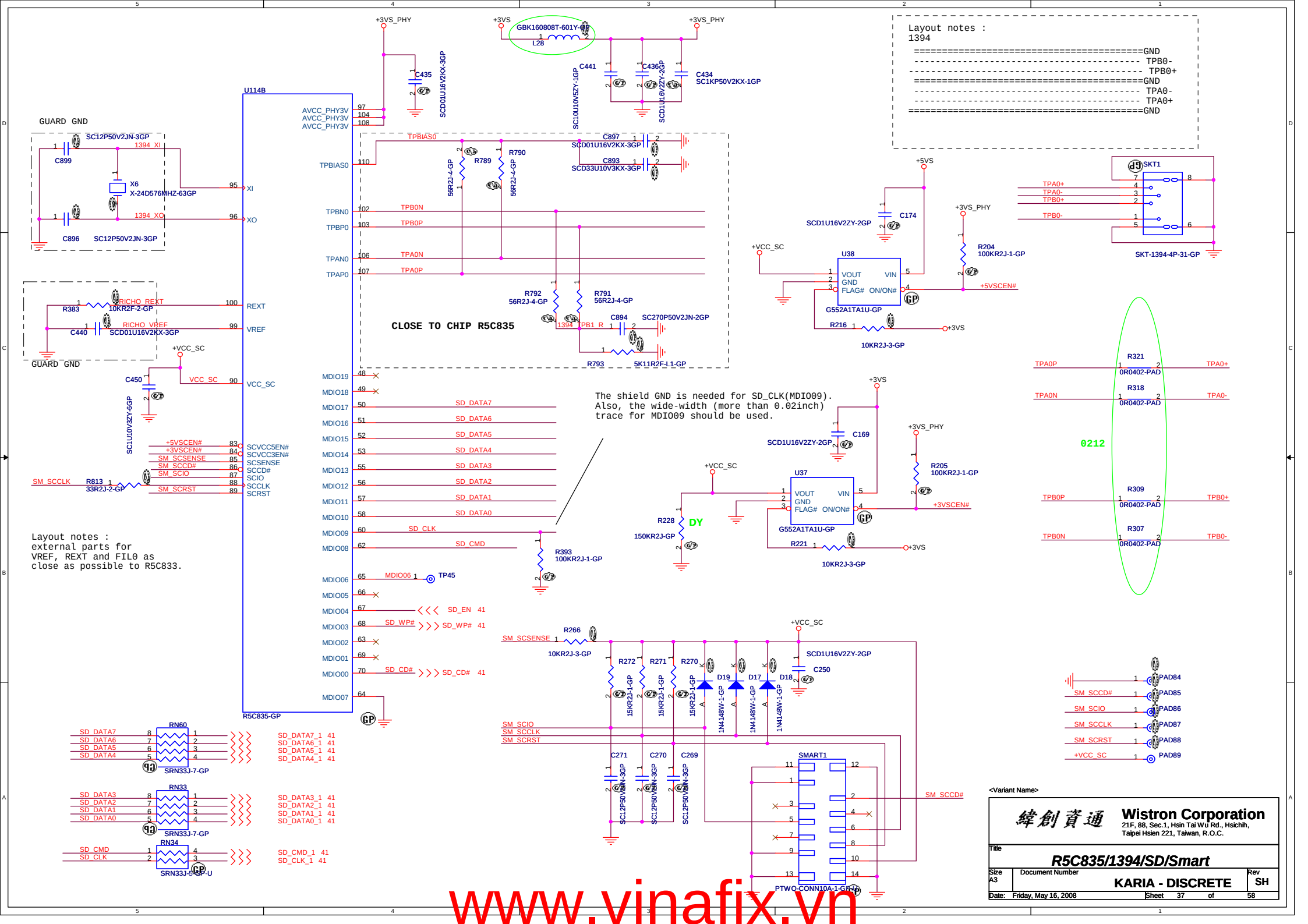
Title: DC & BATTERT CONN.

Size: A3 | Document Number: KARIA - DISCRETE | Rev: SH

Date: Friday, May 16, 2008 | Sheet 34 of 58


Battery Selector
Wistron Corporation
KARIA - DISCRETE
Monday, May 19, 2008
www.vinafix.vn




Layout notes :
1394
GND
TPB0-
TPB0+
GND
TPA0-
TPA0+
GND
U114B
R5C835-GP
CLOSE TO CHIP R5C835
The shield GND is needed for SD_CLK(MDIO09).
Also, the wide-width (more than 0.02inch)
trace for MDIO09 should be used.
Layout notes :
external parts for
VREF, REXT and FIL0 as
close as possible to R5C833.
0212
SMART1
PTWO-CONN10A-1-GP
SKT1
SKT-1394-4P-31-GP
G552A1TA1U-GP
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
R5C835/1394/SD/Smart
KARIA - DISCRETE
Friday, May 16, 2008
37
58
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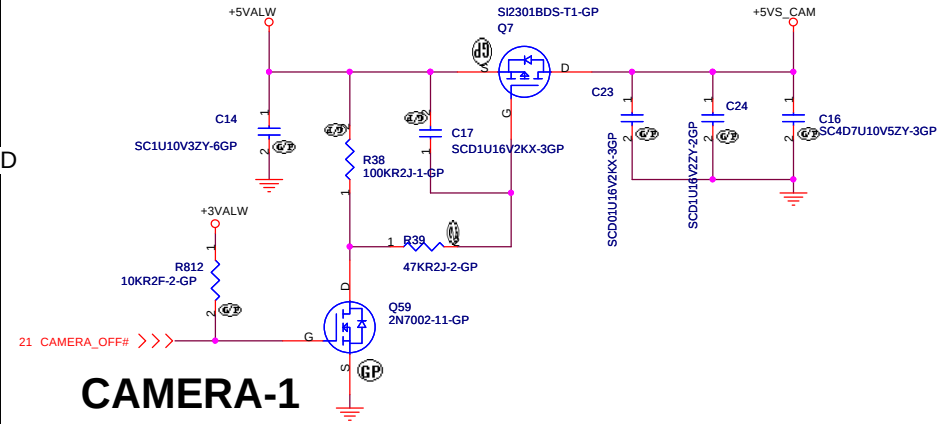
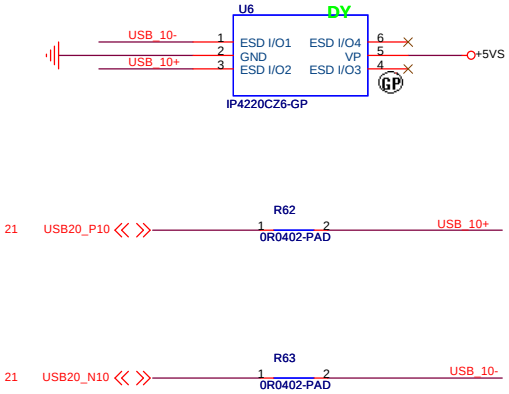
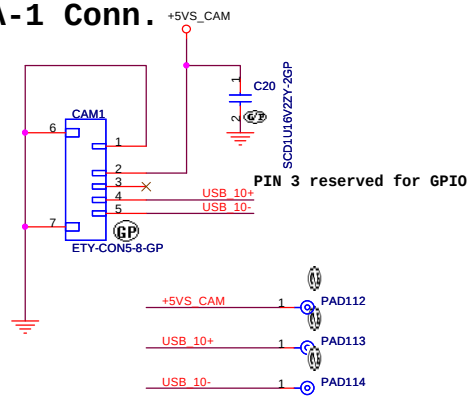
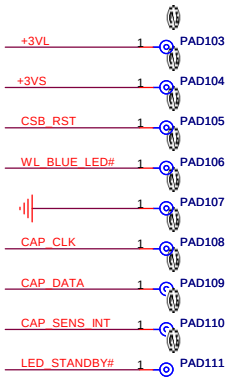
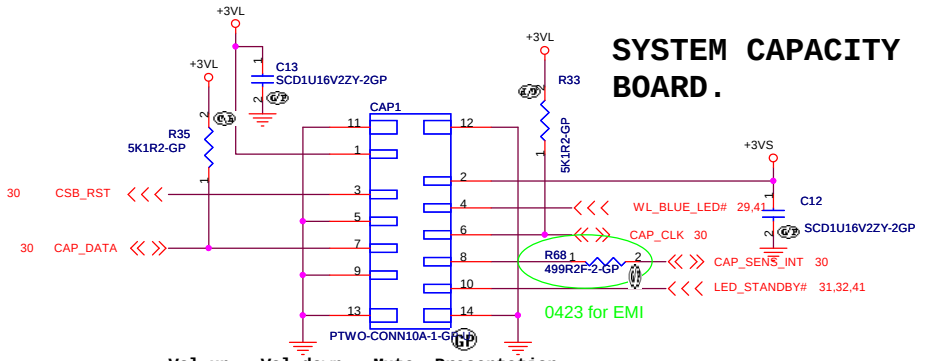




CAMERA-1 Conn.

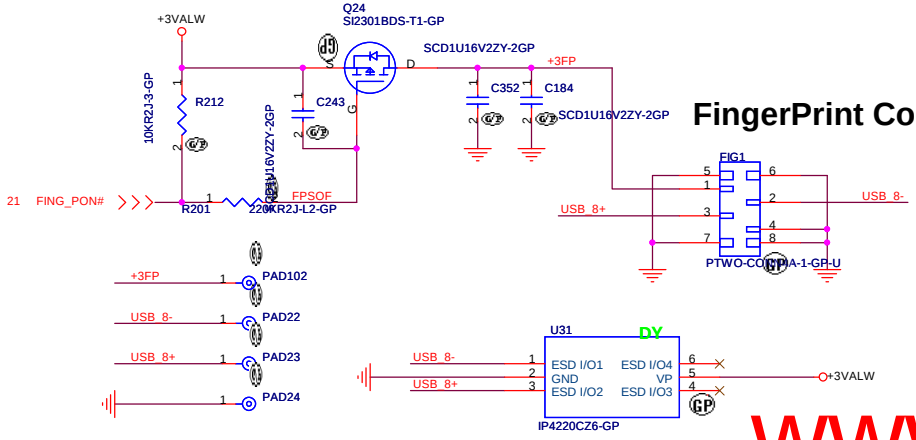




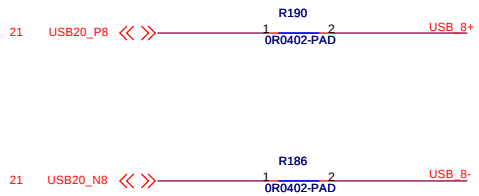


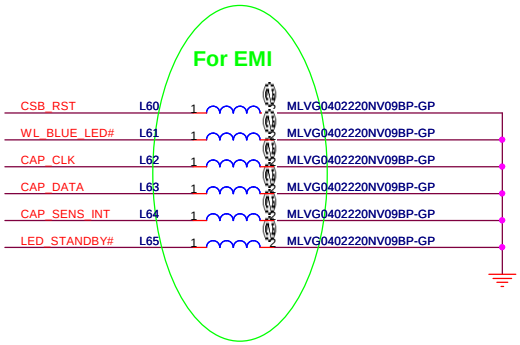
SYSTEM CAPACITY BOARD.

FingerPrint



FingerPrint Conn.





<Variant Name>

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: Camera/W-COM

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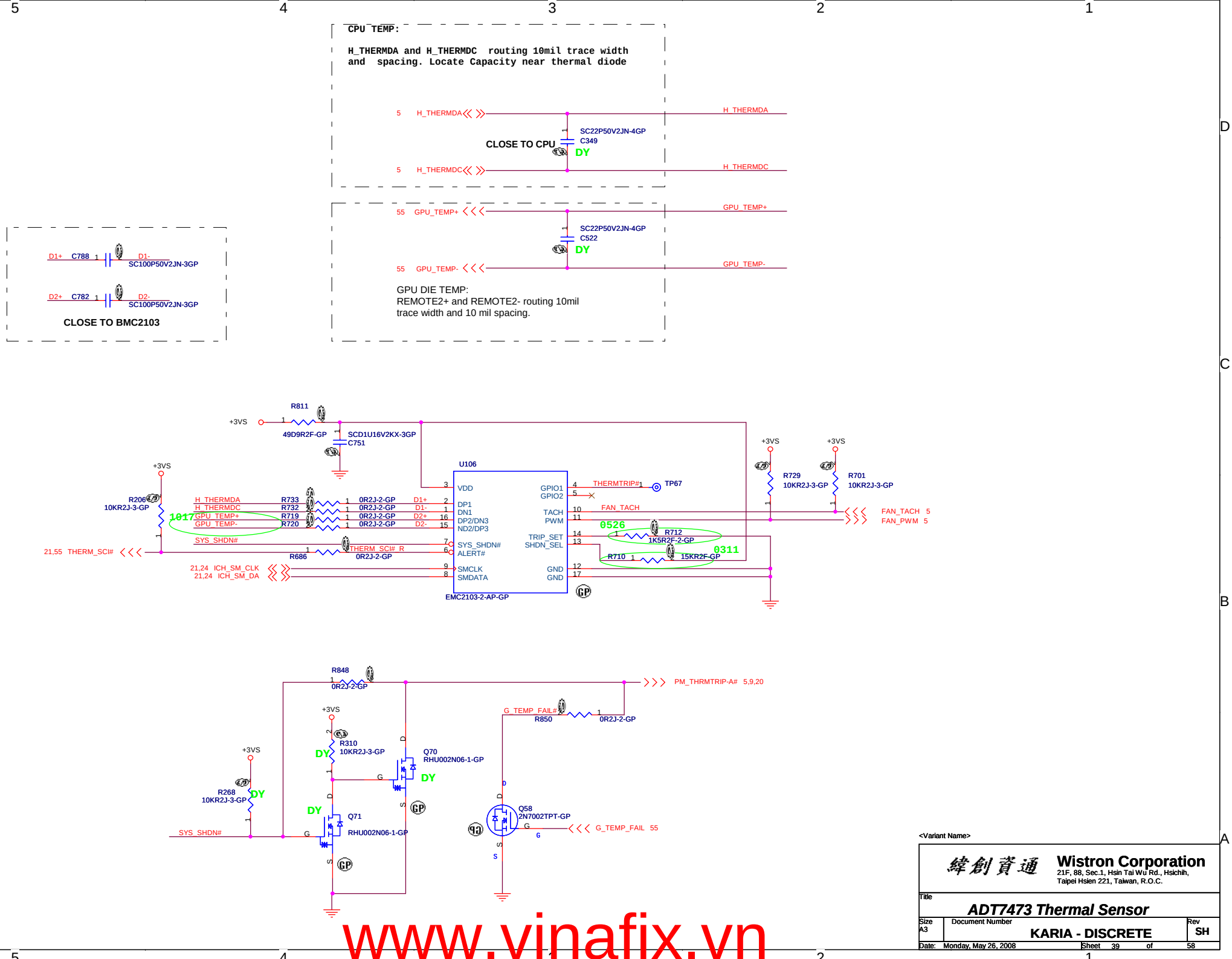

<Variant Name>

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ADT7473 Thermal Sensor

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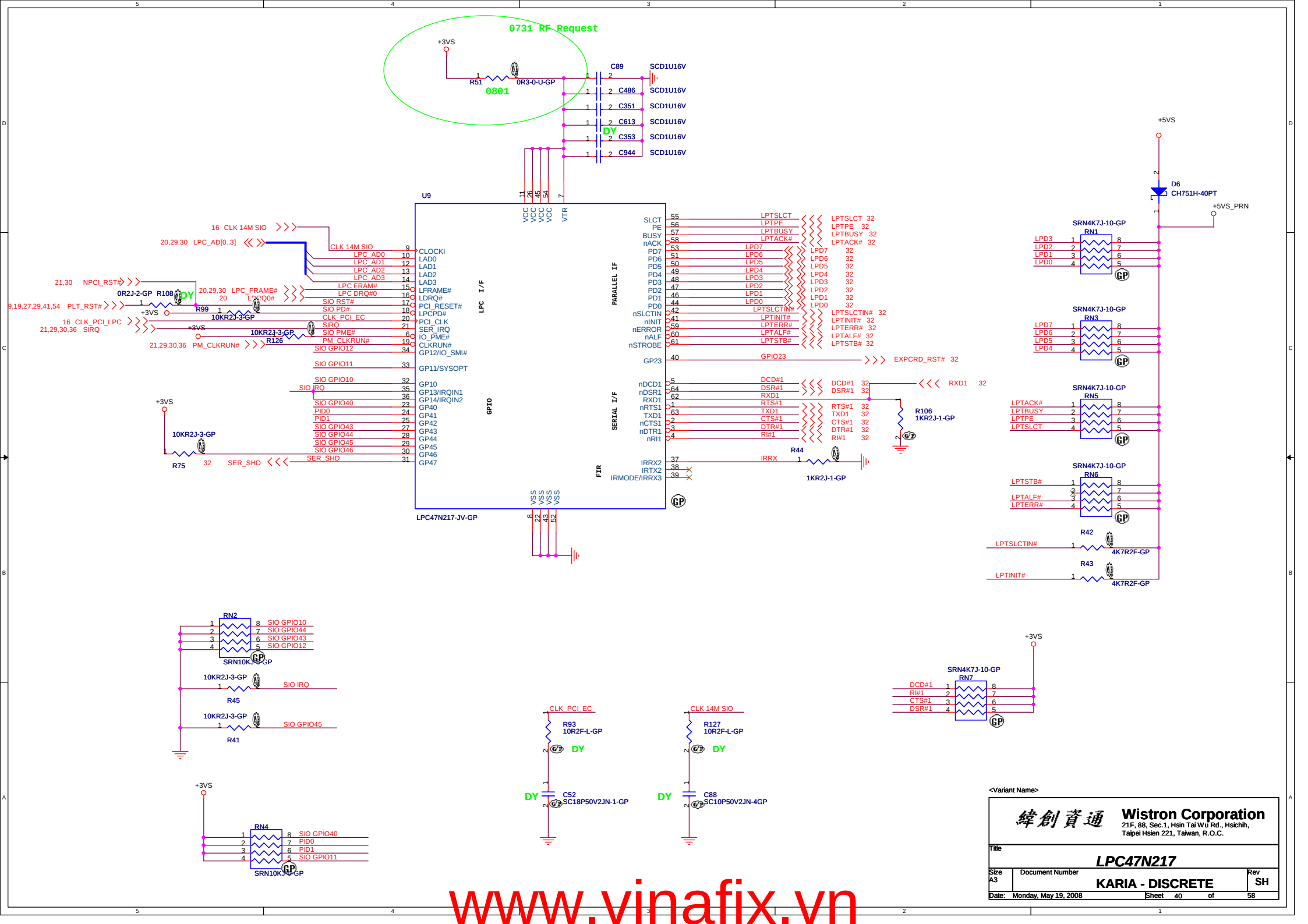
0731 RF Request
0801
U9
LPC47N217-JV-GP
LPC I/F
GPIO
PARALLEL IF
SERIAL I/F
FIR
+3VS
+5VS
+5VS_PRN
DY
R51 0R3-0-U-GP
C89 SCD1U16V
C486 SCD1U16V
C351 SCD1U16V
C613 SCD1U16V
C353 SCD1U16V
C944 SCD1U16V
D6 CH751H-40PT
SRN4K7J-10-GP
RN1
RN3
RN5
RN6
RN7
RN2
RN4
SRN10KJ-GP
R108 0R2J-2-GP
R99 10KR2J-3-GP
R126 10KR2J-3-GP
R75 10KR2J-3-GP
R106 1KR2J-1-GP
R44 1KR2J-1-GP
R42 4K7R2F-GP
R43 4K7R2F-GP
R45 10KR2J-3-GP
R41 10KR2J-3-GP
R93 10R2F-L-GP
R127 10R2F-L-GP
C52 SC18P50V2JN-1-GP
C88 SC10P50V2JN-4GP
16 CLK 14M SIO
20,29,30 LPC_AD[0..3]
21,30 NPCI_RST#
20,29,30 LPC_FRAME#
9,19,27,29,41,54 PLT_RST#
16 CLK_PCI_LPC
21,29,30,36 SIRQ
21,29,30,36 PM_CLKRUN#
32 SER_SHD
CLOCKI
LAD0
LAD1
LAD2
LAD3
LFRAME#
LDRQ#
PCI_RESET#
LPCPD#
PCI_CLK
SER_IRQ
IO_PME#
CLKRUN#
GP12/IO_SMI#
GP11/SYSOPT
GP10
GP13/IRQIN1
GP14/IRQIN2
GP40
GP41
GP42
GP43
GP44
GP45
GP46
GP47
IRRX2
IRTX2
IRMODE/IRRX3
SLCT
PE
BUSY
nACK
PD7
PD6
PD5
PD4
PD3
PD2
PD1
PD0
nSLCTIN
nINIT
nERROR
nALF
nSTROBE
GP23
nDCD1
nDSR1
RXD1
nRTS1
TXD1
nCTS1
nDTR1
nRI1
VCC
VTR
VSS
LPTSLCT
LPTPE
LPTBUSY
LPTACK#
LPTSLCTIN#
LPTINIT#
LPTERR#
LPTALF#
LPTSTB#
GPIO23
EXPCRD_RST# 32
DCD#1
DSR#1
RTS#1
TXD1
CTS#1
DTR#1
RI#1
IRRX
RXD1 32
SIO GPIO10
SIO GPIO11
SIO GPIO12
SIO GPIO40
SIO GPIO43
SIO GPIO44
SIO GPIO45
SIO GPIO46
SIO IRQ
SIO RST#
SIO PD#
SIO PME#
PID0
PID1
CLK_PCI_EC
CLK 14M SIO
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC FRAM#
LPC DRQ#0
CLK_PCI_EC
SIRQ
PM_CLKRUN#
SER_SHD
LPD7
LPD6
LPD5
LPD4
LPD3
LPD2
LPD1
LPD0
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Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
Title
LPC47N217
Size A3
Document Number
KARIA - DISCRETE
Rev SH
Date: Monday, May 19, 2008
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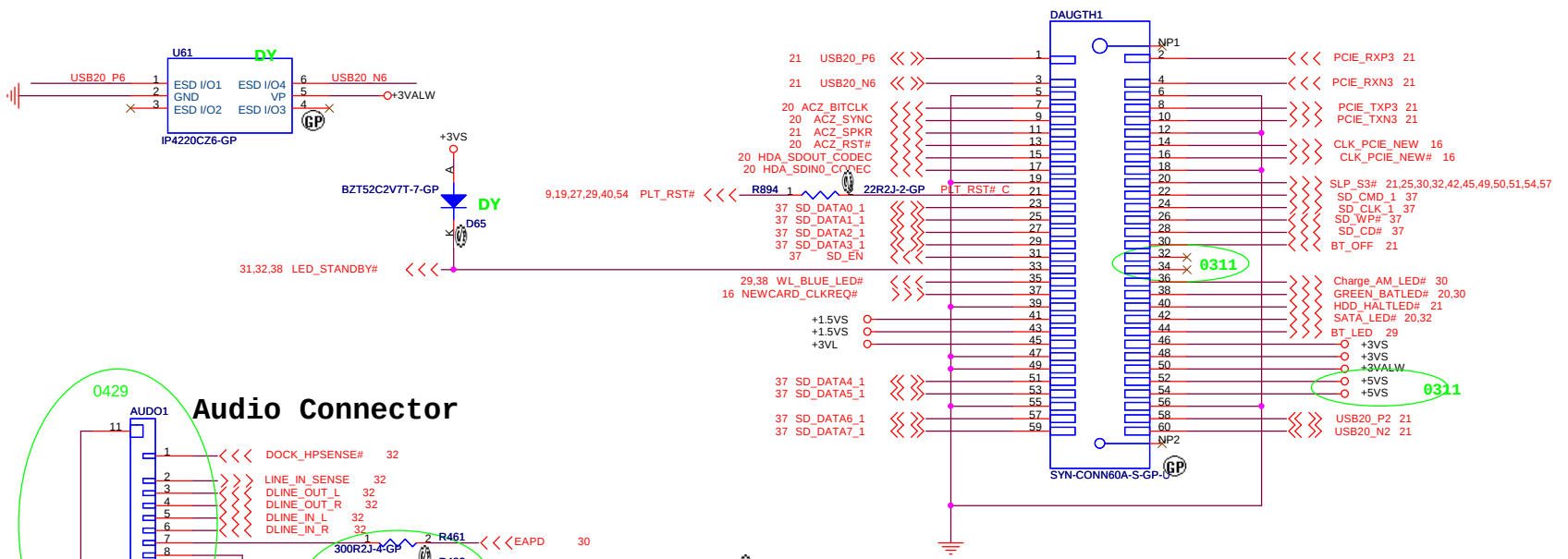
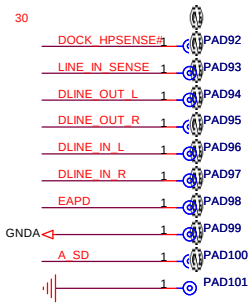
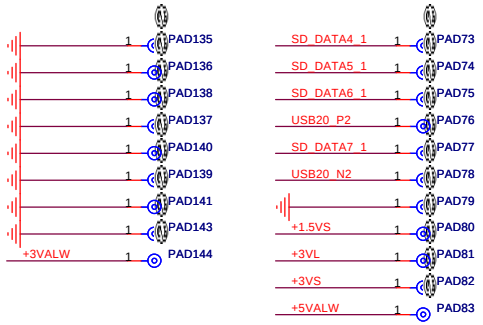
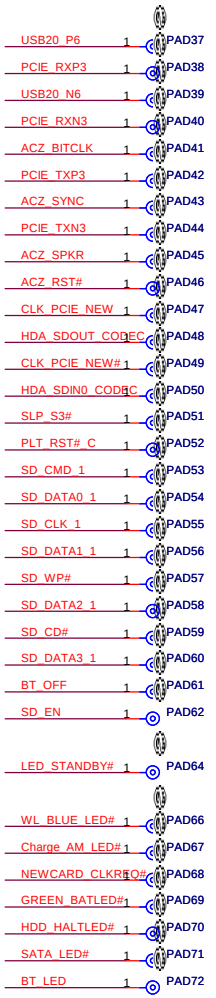
Daughter Board Connector

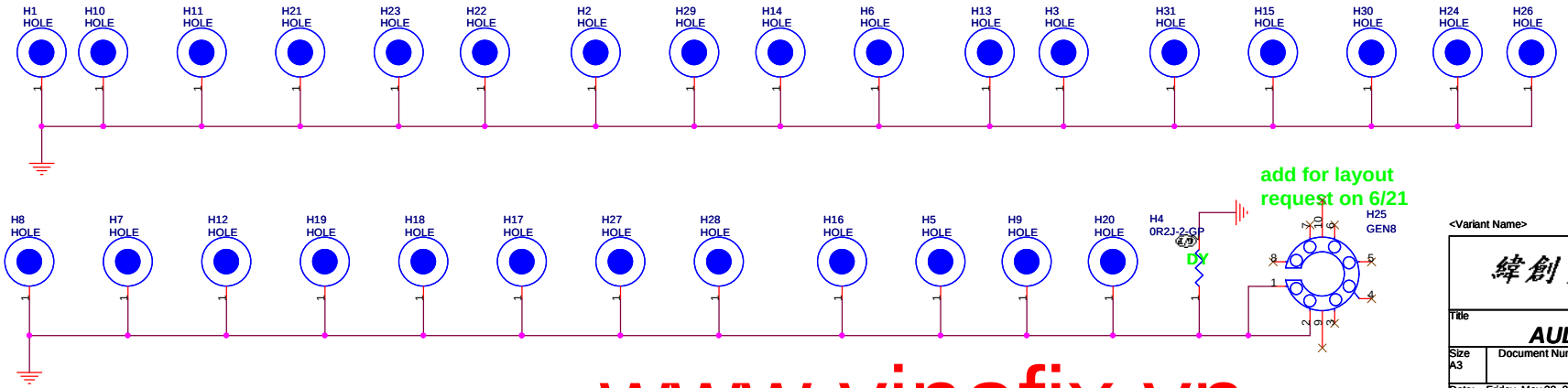


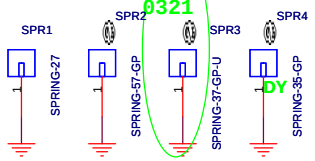
Audio Connector











add for layout request on 6/21

H10,H5 P/N: 34.4V908.001
H27,H28 P/N: 34.4V909.001
H9,H13 P/N:34.4V907.001
H21 P/N:34.4V910.001

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: AUDO/Daughter Connector

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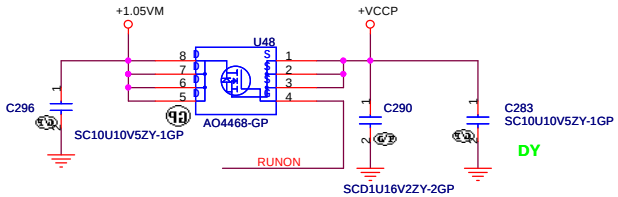
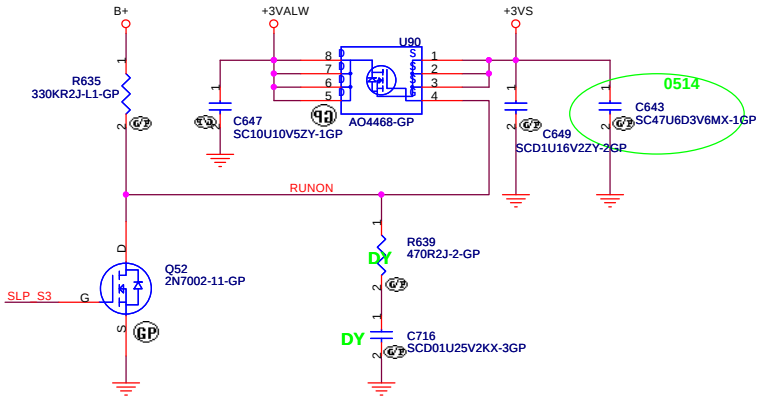
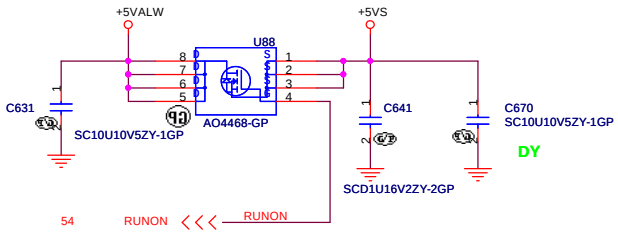
+1.05VM to +VCCP Transfer



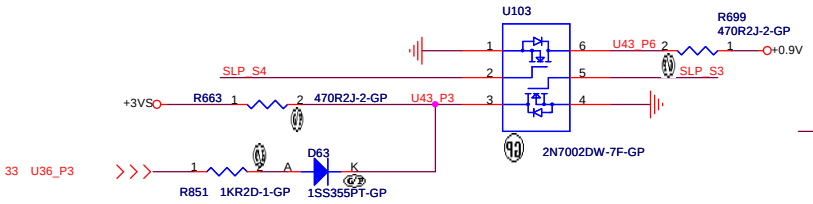
+3VALW to +3VS Transfer



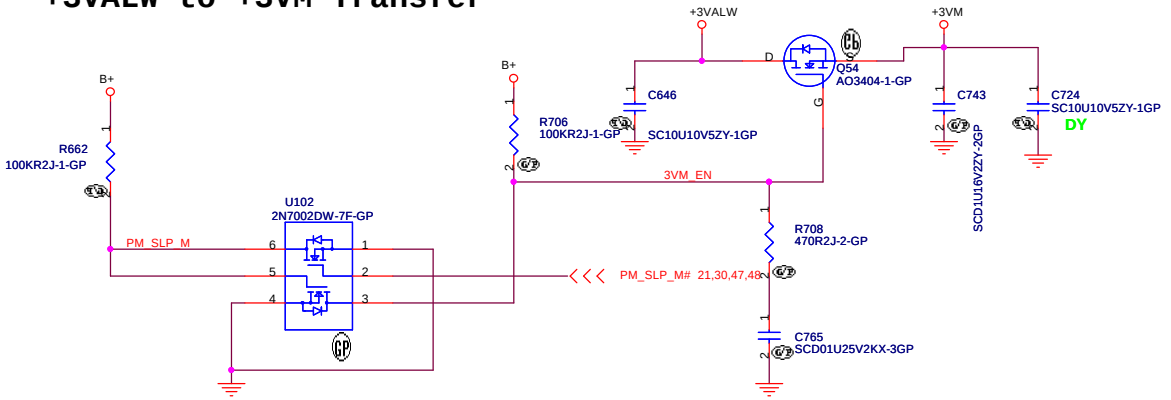
+5VALW to +5VS Transfer



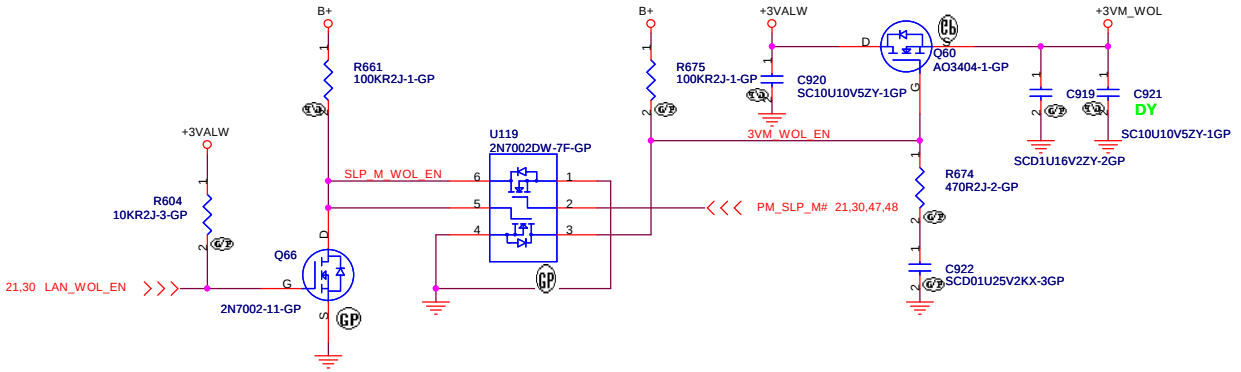
Discharge circuit-1



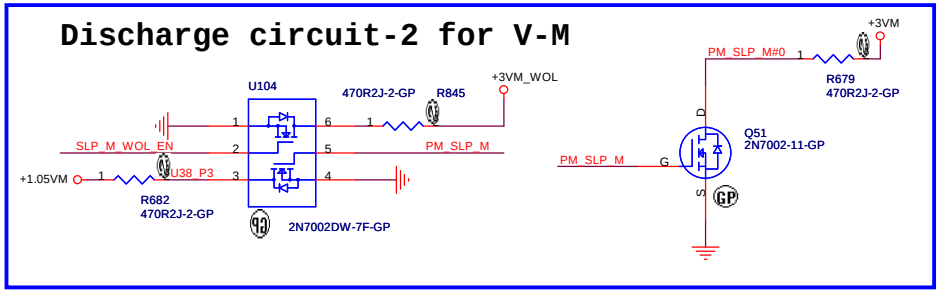
+3VALW to +3VM Transfer

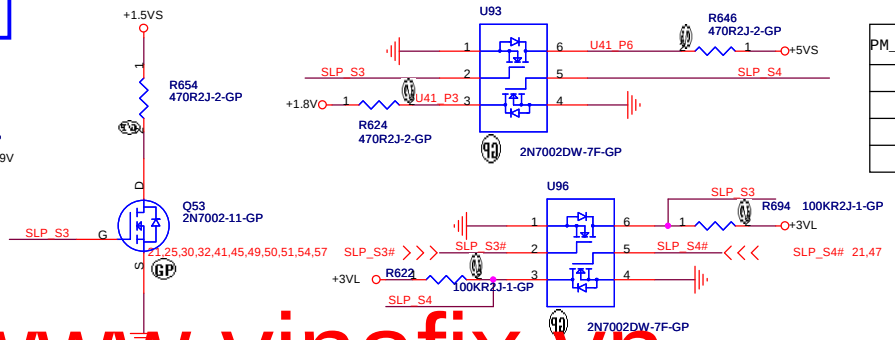


+3VALW to +3VM_WOL



Discharge circuit-2 for V-M





PM_SLP_M#	LAN_WOL_EN	+3VM_WOL	+3VM	SYSTEM STATE
0	0	0V	0V	Moff / No WOL
0	1	3.3V	0V	Legacy WOL/ Moff
1	0	3.3V	3.3V	M1
1	1	3.3V	3.3V	M1

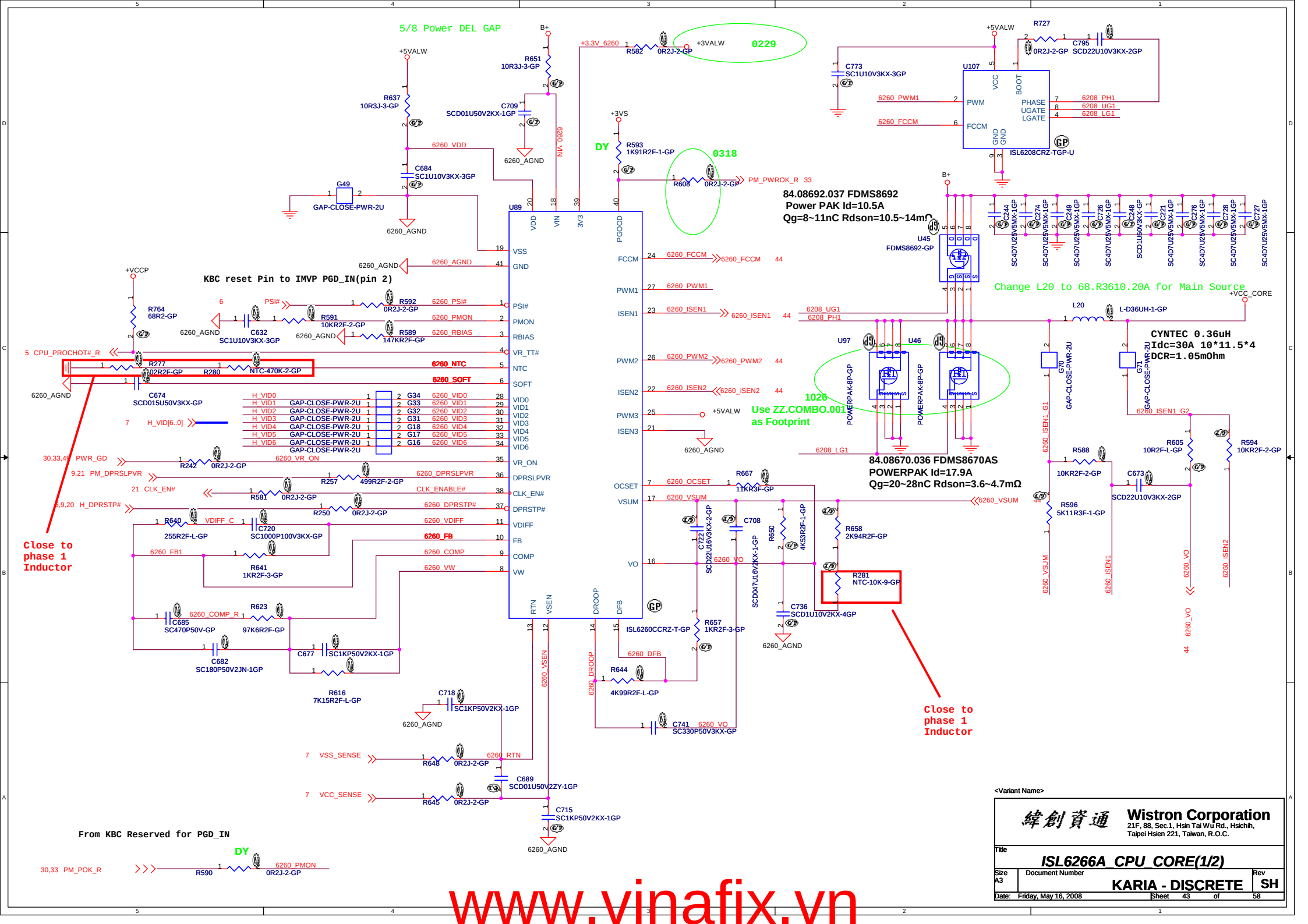
<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: DC/DC Circuit

Size: A3 | Document Number: KARIA - DISCRETE | Rev: SH

Date: Friday, May 16, 2008 | Sheet 42 of 58


5/8 Power DEL GAP
KBC reset Pin to IMVP PGD_IN(pin 2)
84.08692.037 FDMS8692
Power PAK Id=10.5A
Qg=8~11nC Rdson=10.5~14mΩ
Change L20 to 68.R3610.20A for Main Source
CYNTEC 0.36uH
Idc=30A 10*11.5*4
DCR=1.05mOhm
Use ZZ.COMBO.001
as Footprint
84.08670.036 FDMS8670AS
POWERPAK Id=17.9A
Qg=20~28nC Rdson=3.6~4.7mΩ
Close to phase 1 Inductor
Close to phase 1 Inductor
From KBC Reserved for PGD_IN
ISL6208CRZ-TGP-U
ISL6260CCRZ-T-GP
FDMS8692-GP
POWERPAK-8P-GP
L-D36UH-1-GP
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
ISL6266A_CPU_CORE(1/2)
KARIA - DISCRETE
Friday, May 16, 2008
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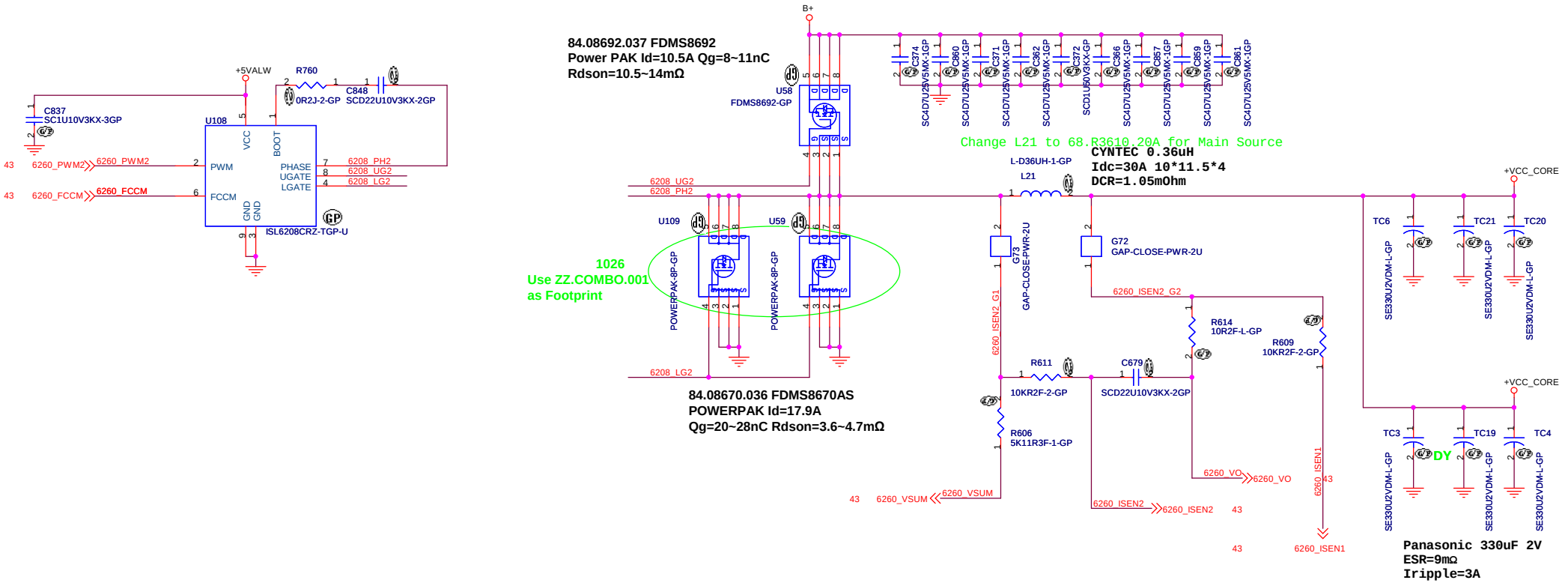

<Variant Name>

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ISL6266A_CPU_CORE(2/2)

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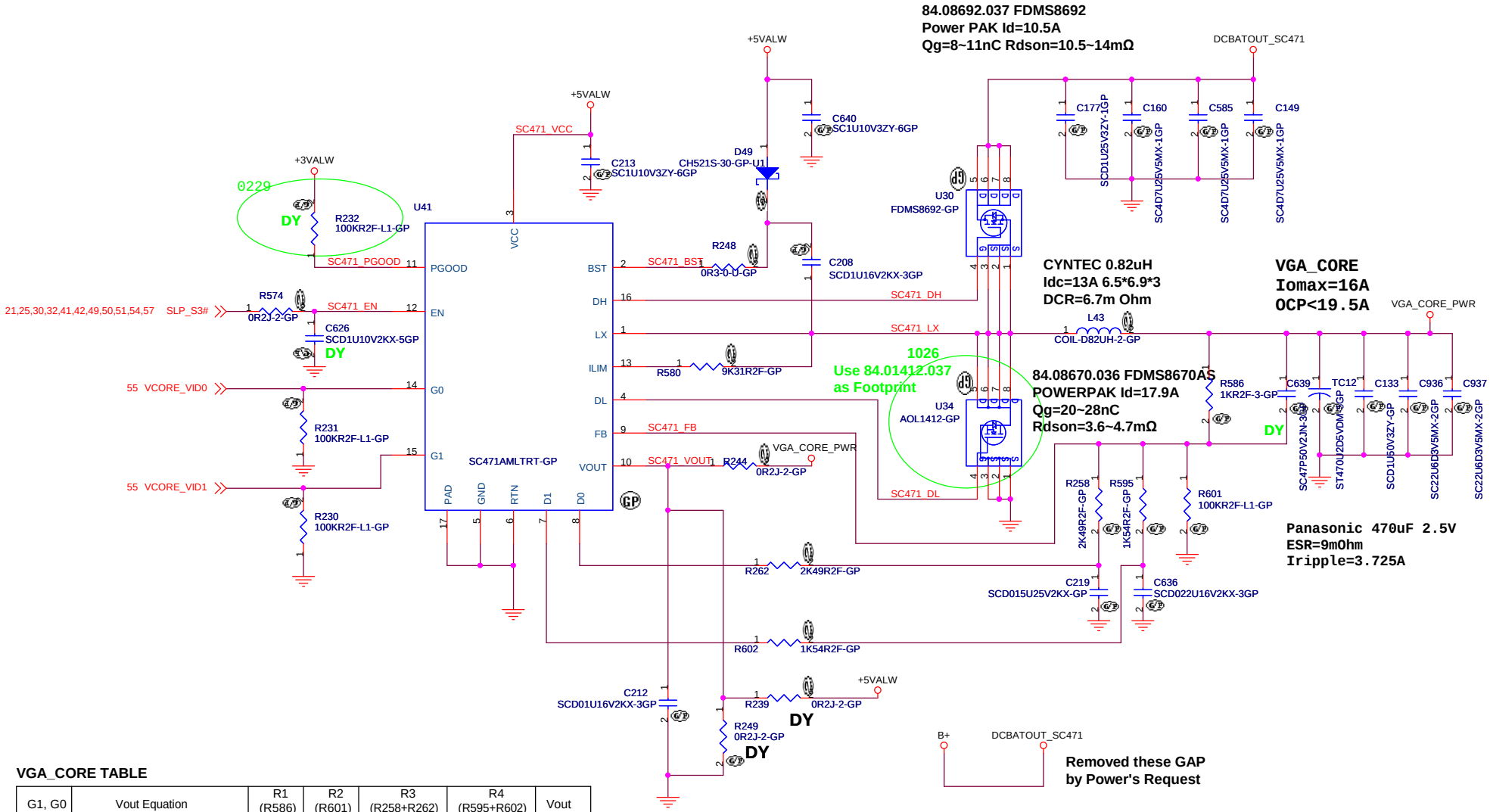


VGA_CORE TABLE

G1, G0	Vout Equation	R1 (R586)	R2 (R601)	R3 (R258+R262)	R4 (R595+R602)	Vout
(0,0)	0.75*(1+R1/R2+R1/R3+R1/R4)	1K	100K	4.98K	3.82K	1.104V
(0,1)	0.75*(1+R1/R2+R1/R4)	1K	100K		3.08K	1.001V
(1,0)	0.75*(1+R1/R2+R1/R3)	1K	100K	4.98K		0.908V
(1,1)	0.75*(1+R1/R2)	1K	100K			0.758V

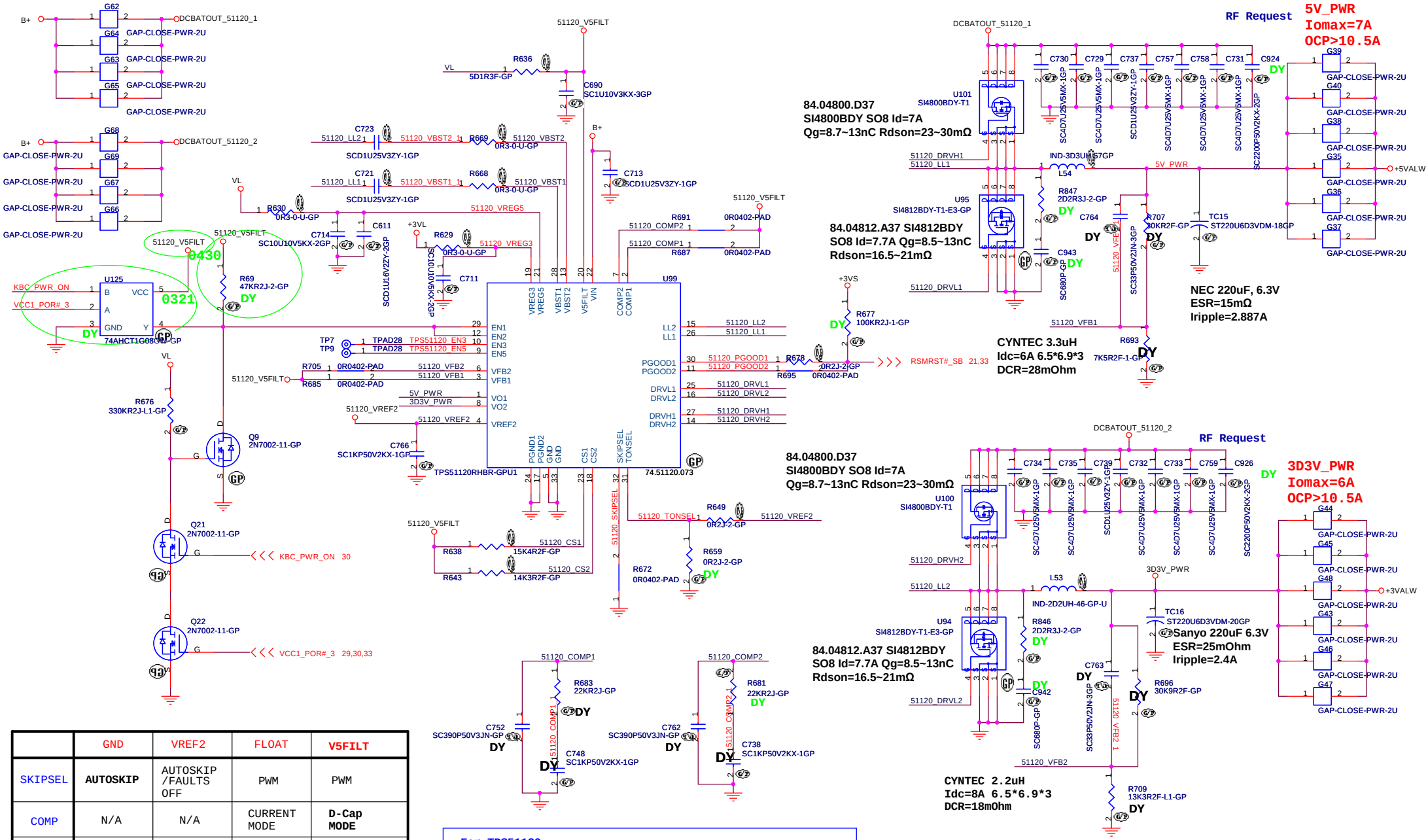
<Variant Name>

緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***SC471A_VGA CORE***

Size: B | Document Number: **KARIA - DISCRETE** | Rev: SH

Date: Friday, May 16, 2008 | Sheet 45 of 58



	GND	VREF2	FLOAT	V5FILT
SKIPSEL	**AUTOSKIP**	AUTOSKIP /FAULTS OFF	PWM	PWM
COMP	N/A	N/A	CURRENT MODE	**D-Cap MODE**
TONSEL	380k/CH1 580k/CH2	280k/CH1 430k/CH2	**220k/CH1 330k/CH2**	180k/CH1 280k/CH2
VFB1	Adjustable output (connect to the resistor divider)			**5V Fixed Output**
VFB2				**3.3V Fixed Output**
EN1,EN2	Switcher OFF		**Swithchr ON**	**Switcher ON**
EN3,EN5	LDO OFF	not use	**LDO ON**	VREG3 on (EN3 only)

For TPS51120,
Vout=5V
1. If you use a 6.8uH inductor, the minimum ESR is 70m ohm.
2. If you use a 4.7uH inductor, the minimum ESR is 48m ohm.
3. If you use a 3.3uH inductor, the minimum ESR is 34m ohm.

Vout=3.3V
1. If you use a 4.7uH inductor, the minimum ESR is 51m ohm.
2. If you use a 3.3uH inductor, the minimum ESR is 36m ohm.
3. If you use a 2.5uH inductor, the minimum ESR is 27m ohm.

<Variant Name>

緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: **TPA51120 +5VALW +3VALW**

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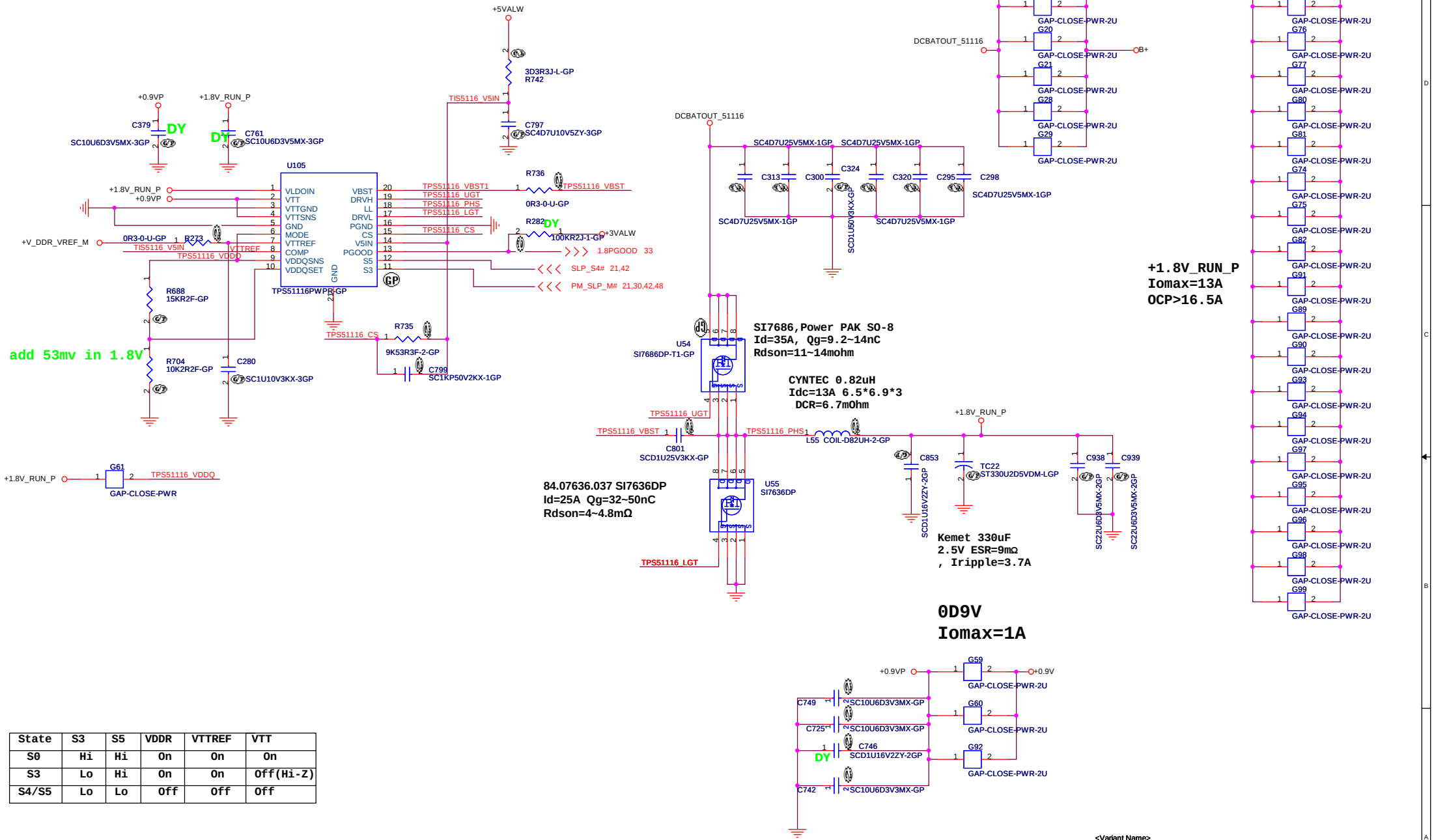
TI TPS51116 for 1D8V and 0D9V



State	S3	S5	VDDR	VTTREF	VTT
S0	Hi	Hi	On	On	On
S3	Lo	Hi	On	On	Off(Hi-Z)
S4/S5	Lo	Lo	Off	Off	Off

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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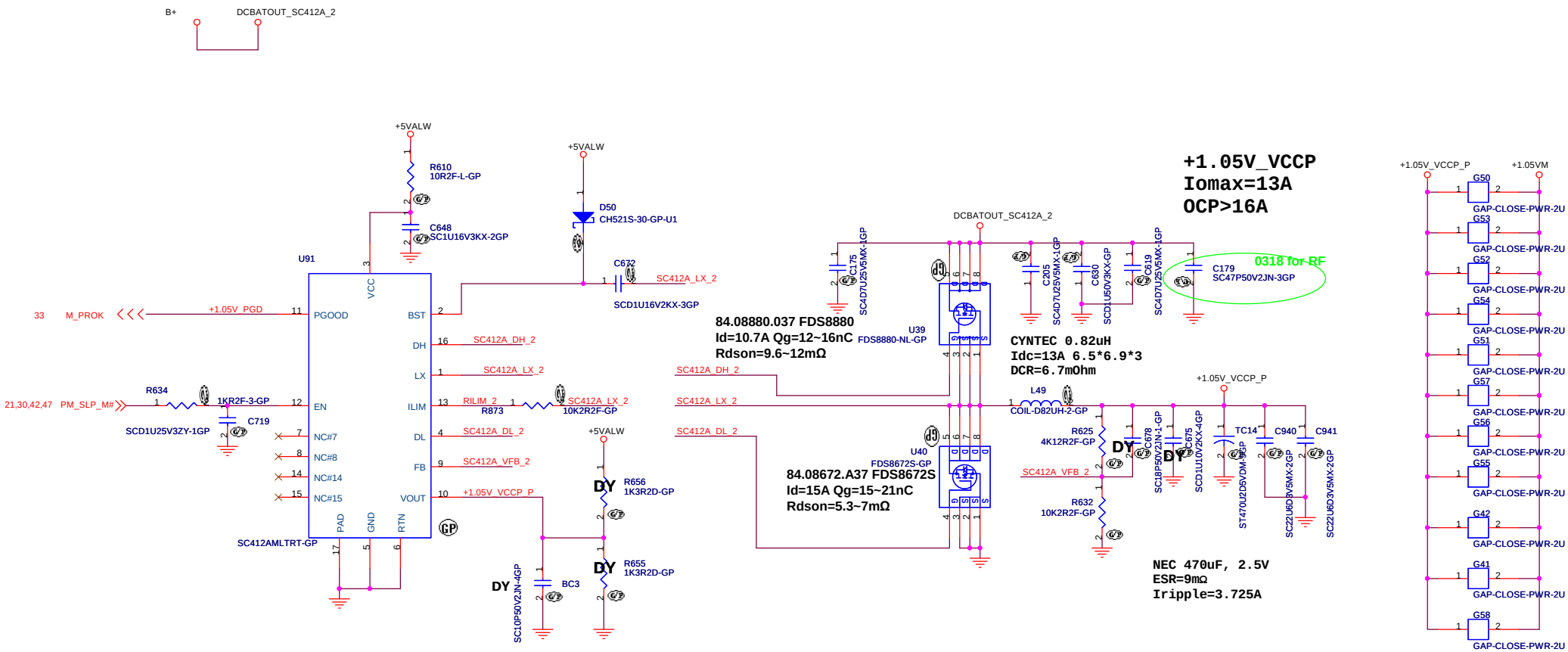
Title: TPS51116 1D8V/0D9V

Size: A3 | Document Number: KARIA - DISCRETE | Rev: SH

Date: Friday, May 16, 2008 | Sheet 47 of 58



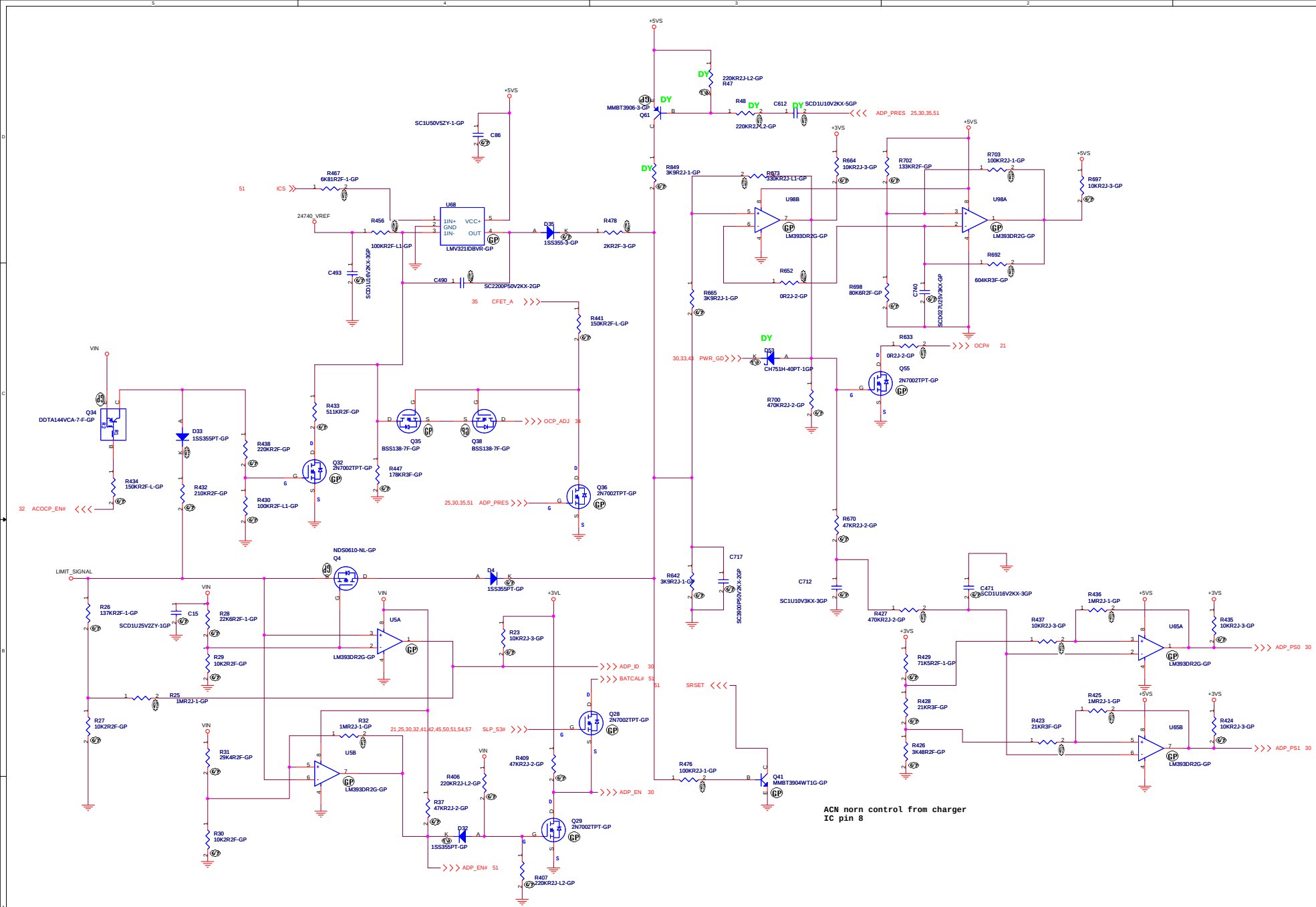
<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: SC412A +1.05VM

Size	Document Number	Rev
A3	KARIA - DISCRETE	SH

Date: Friday, May 16, 2008 Sheet 48 of 58



<Variant Name>

Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title: ADP OCP

Size: A2 | Document Number: KARIA - DISCRETE | Rev: SH

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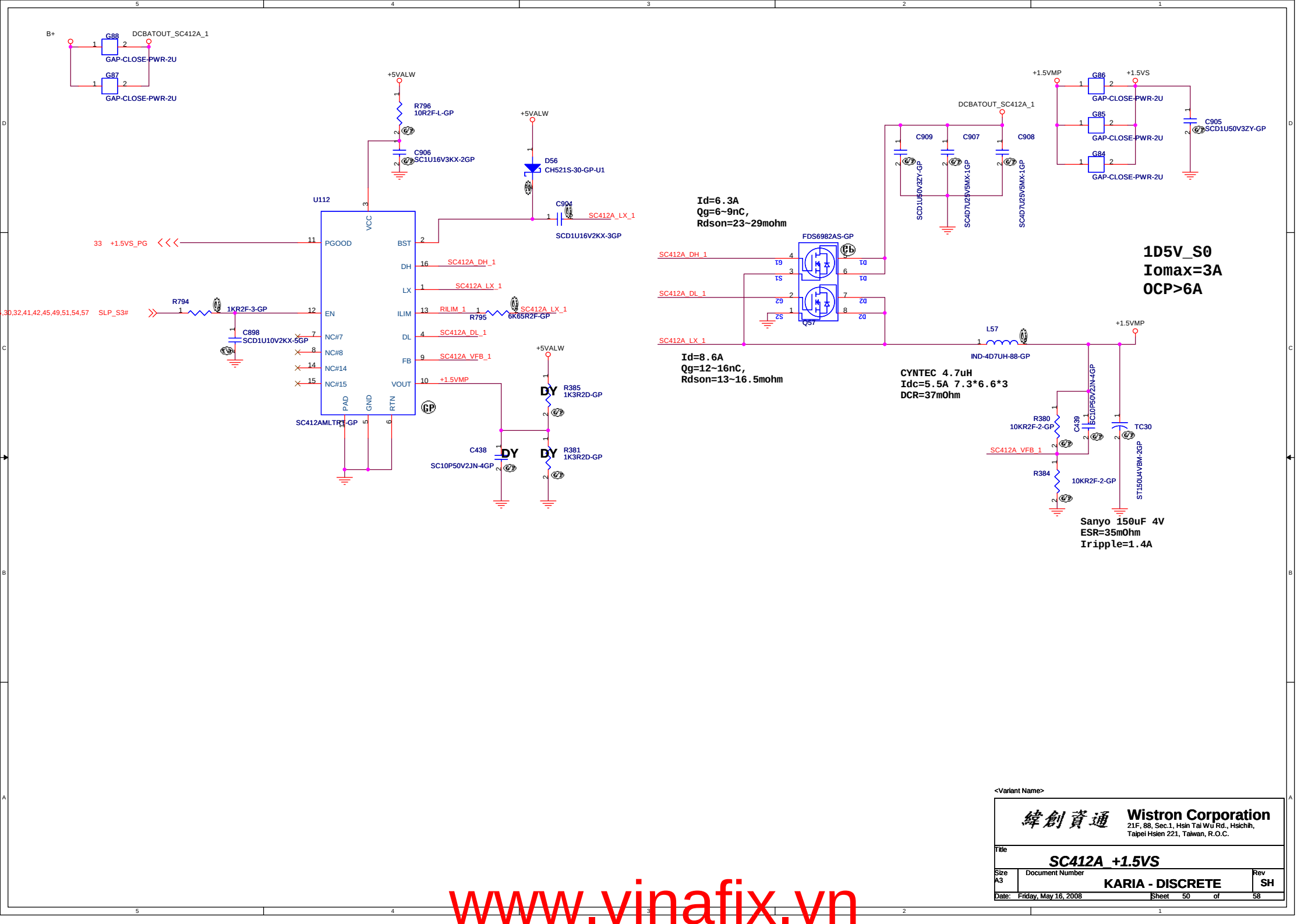


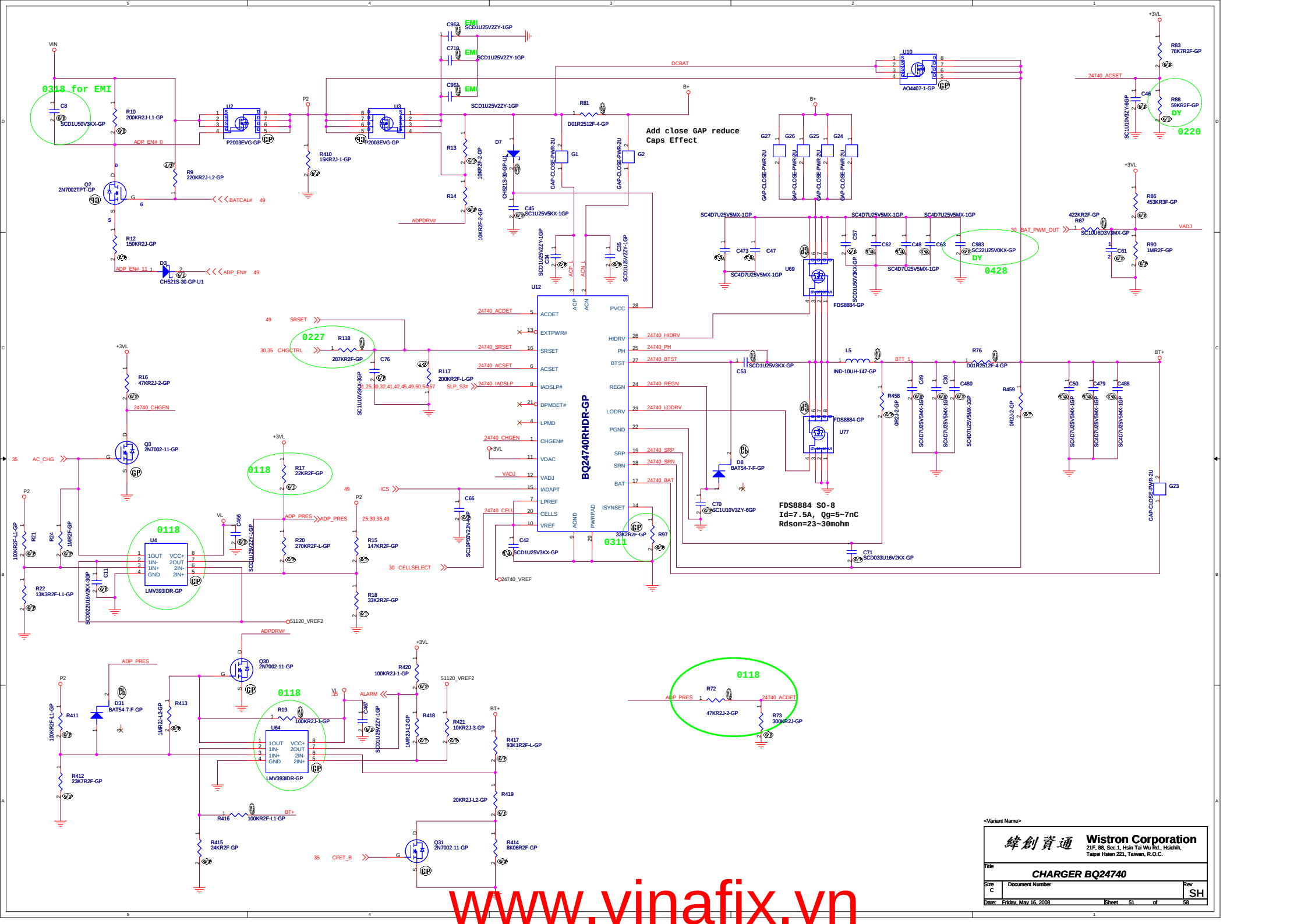
<Variant Name>

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: SC412A_+1.5VS

Size: A3 | Document Number: KARIA - DISCRETE | Rev: SH

Date: Friday, May 16, 2008 | Sheet 50 of 58


0318 for EMI
Add close GAP reduce Caps Effect
FDS8884 SO-8
Id=7.5A, Qg=5~7nC
Rdson=23~30mohm
BQ24740RHDR-GP
LMV393IDR-GP
0118
0227
0311
0428
0220
DY
EMI
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21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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CHARGER BQ24740
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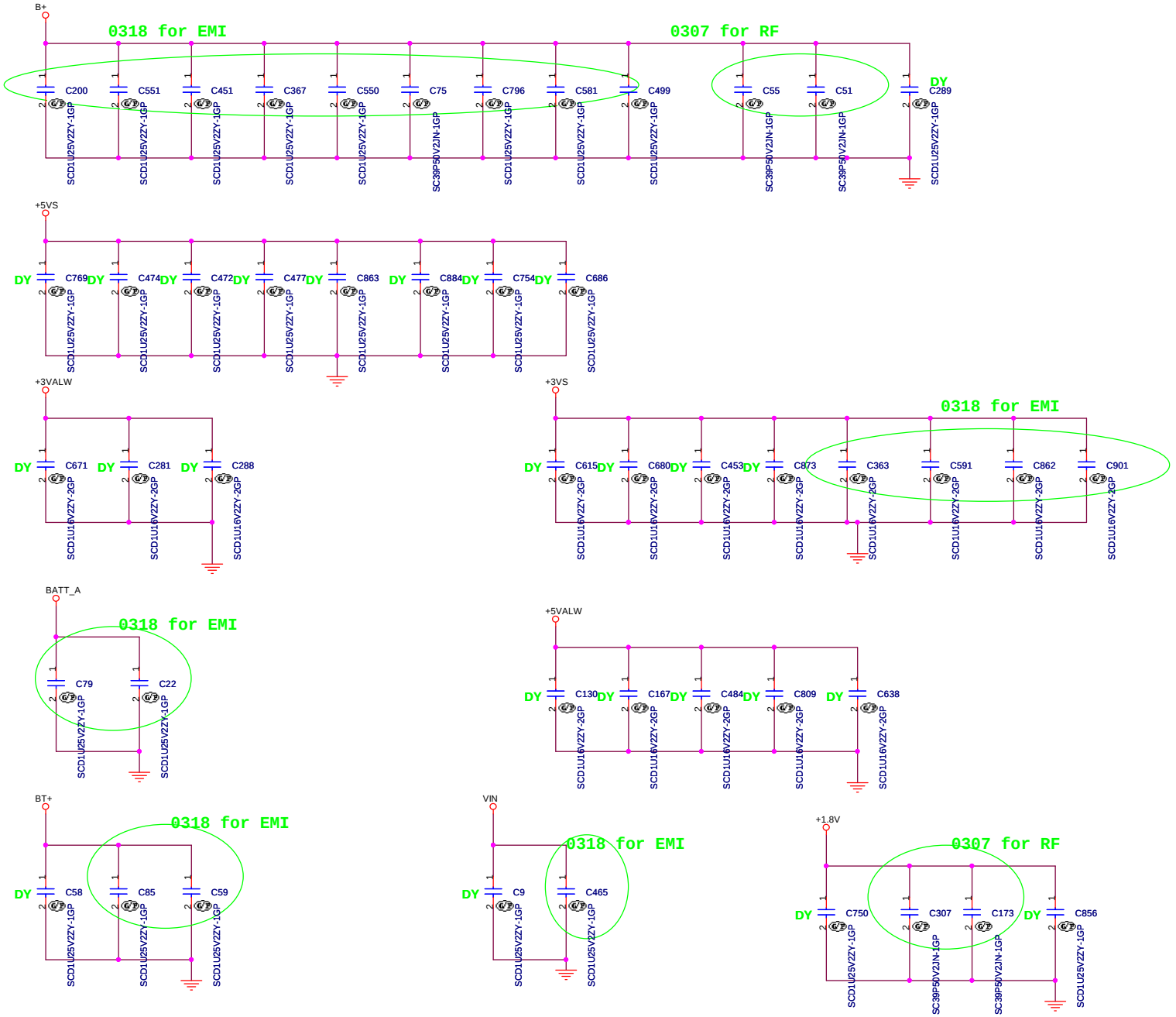

<Variant Name>

緯創資通 Wistron Corporation
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Title: EMI CAPS

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A3		SH

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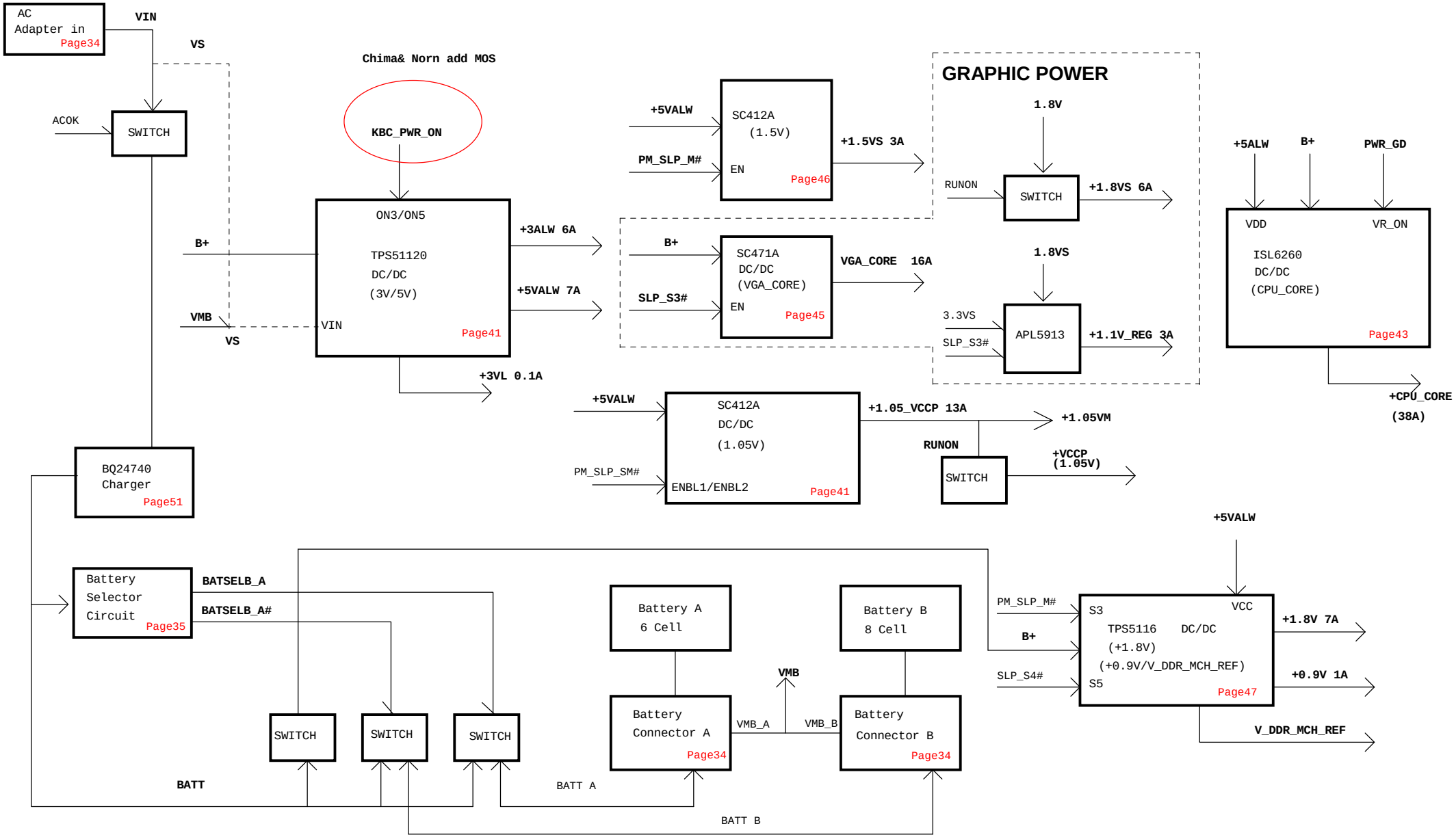

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title: Power Block Diagram

Size	Document Number	Rev
A3	KARIA - DISCRETE	SH

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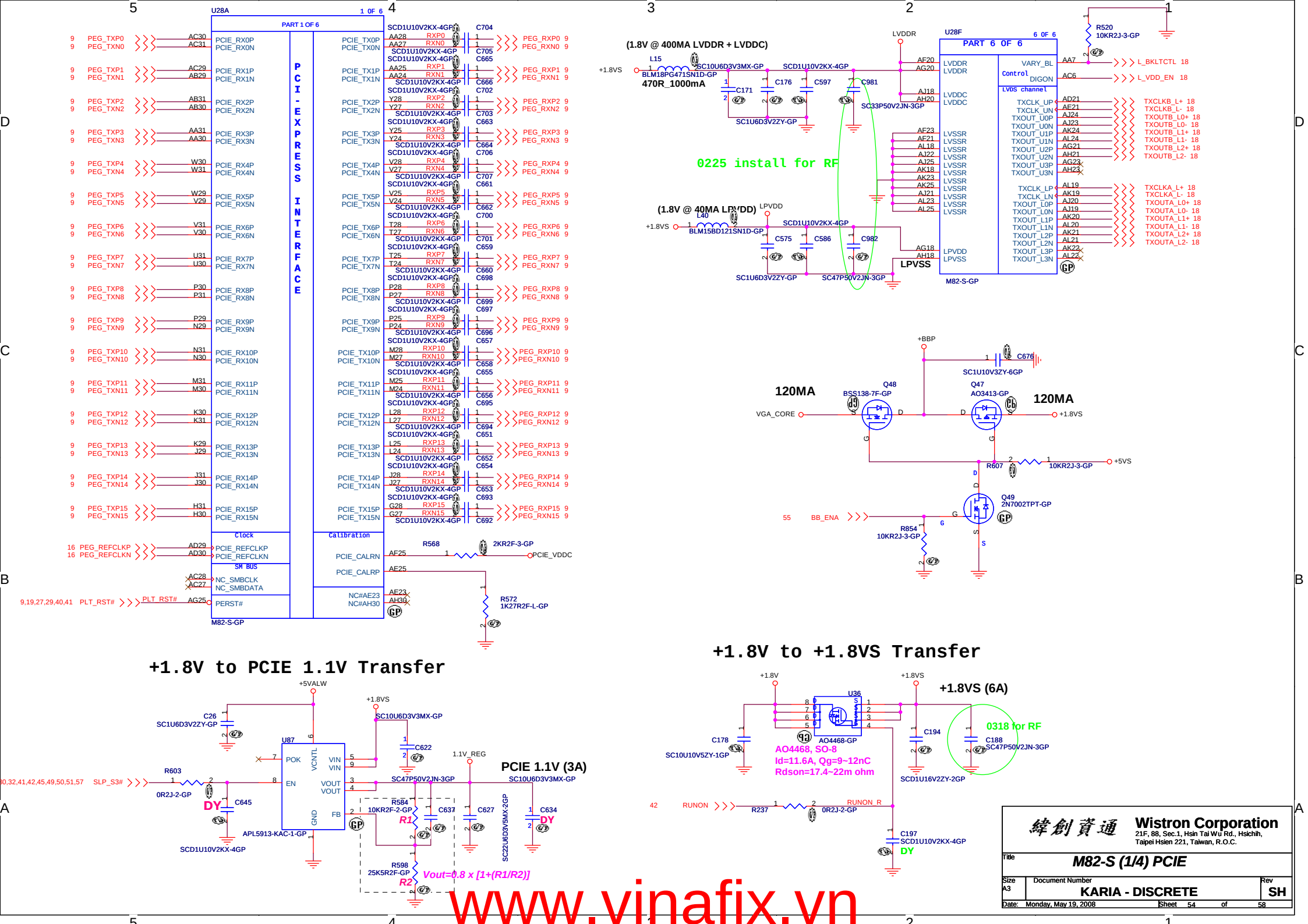

+1.8V to PCIE 1.1V Transfer

+1.8V to +1.8VS Transfer

Wistron Corporation	緯創資通
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title	M82-S (1/4) PCIE
Size A3	Document Number KARIA - DISCRETE
Rev	SH
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CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

0 = DON'T INSTALL RES
1 = INSTALL 10K RES
NA = NOT APPLICABLE

STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	M82-SCE
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING	1
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED	1
BIF_DEBUG_ACCESS	GPIO4	DEBUG SIGNALS MUXED OUT	0
BIF_AUDIO_EN	GPIO8	ENABLE HD AUDIO (M8x)	1
BIF_GEN2_EN_A	GPIO5	ALLOW EITHER PCIE 2.5GT/s OR 5GT/s OPERATION	1
ROM ID CFG(3:0)	GPIO[13:11,9]	SERIAL ROM TYPE OR MEMORY APERTURE SIZE SELECT	X X X X
BIOS_ROM_EN	GPIO_22_ROMCSB	DISABLE EXTERNAL BIOS ROM	NA
VIP_DEVICE_STRAP_ENA	VSYNC	IGNORE VIP DEVICE STRAPS	0
BIF_VGA DIS	PSYNC	VGA ENABLED	0
BIF_HDMI_EN	HSYNC	HDMI ENABLE	1

VRID_[3..0]

GDDR3 64bit 0 0 0 0 / 0 1 0 1 / 1 0

00 -->8M*32
01 -->16M*32
10 -->32M*32

00 -->Qimonda
01 -->Samsung

VRAM Configuration	Install Resistors	
Samsung 16x32MB	R134, R125, R119, R114	<-- Default
Samsung 32x32MB	R131, R121, R119, R114	
Qimonda 16x32MB	R134, R125, R119, R113	
Qimonda 32x32MB	R131, R121, R119, R113	

VRAM ID

Aperture Config PIN	M82SCE GPIO	Strapping Resistor	64MB VRAM	128MB VRAM	256MB VRAM
CONFIG 0	GPIO_11	R597	0	0	1
CONFIG 1	GPIO_12	R831	1	0	0
CONFIG 2	GPIO_13	R832	0	0	0
CONFIG 3	GPIO_9	TP88	X	X	X

Un-install to disable HD-Audio function

VREFG = VDDR4.5(1.8V) / 3=0.6V
PLACE VREF DIVIDER AND CAP CLOSE TO ASIC

VOLTAGE DIVIDER TO MAKE XTALIN VOLTAGE LEVEL OF 1.8V

PULLUP POWER RAIL MUST BE UP BEFORE CORE POWER RAIL

PLACE THESE CAPACITOR CLOSE TO CONNECTOR

PLACE THESE RESISTORS CLOSE TO DIFF. PAIRS AND AVOID STUBS TO ALL DIFF. TRACES.

MINIMIZE THE DISTANCE BETWEEN THESE RES. AND 100nF AC CAPS

Route RB, GB and BB as differential complement of R, G, and B signals to VGA connector and docking connector

3.3V TO 5V LEVEL SHIFT LOGIC REQUIRED:
M82-S: DDC1 & 2 (DDC3 & 4 ARE 5V TOLERATNCE)

PULLUP POWER RAIL MUST BE UP BEFORE CORE POWER RAIL

<Variant Name>

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

Title: M82-S (2/4) I/O

Size: Custom | Document Number: KARIA - DISCRETE | Rev: SH

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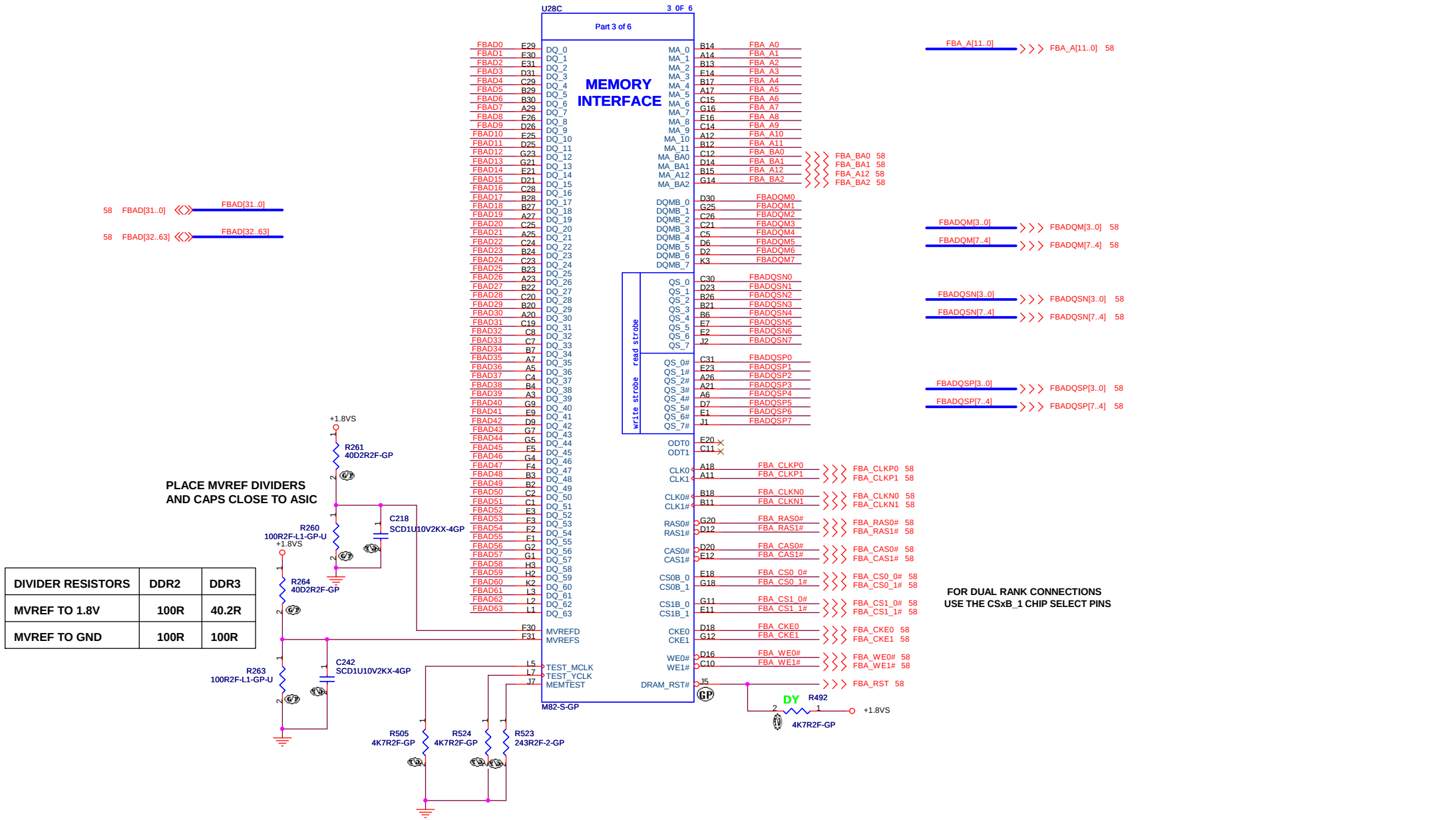

DIVIDER RESISTORS	DDR2	DDR3
MVREF TO 1.8V	100R	40.2R
MVREF TO GND	100R	100R

<Variant Name>

緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: M82-S (3/4) VRAM Interface

Size: A3 | Document Number: KARIA - DISCRETE | Rev: SH

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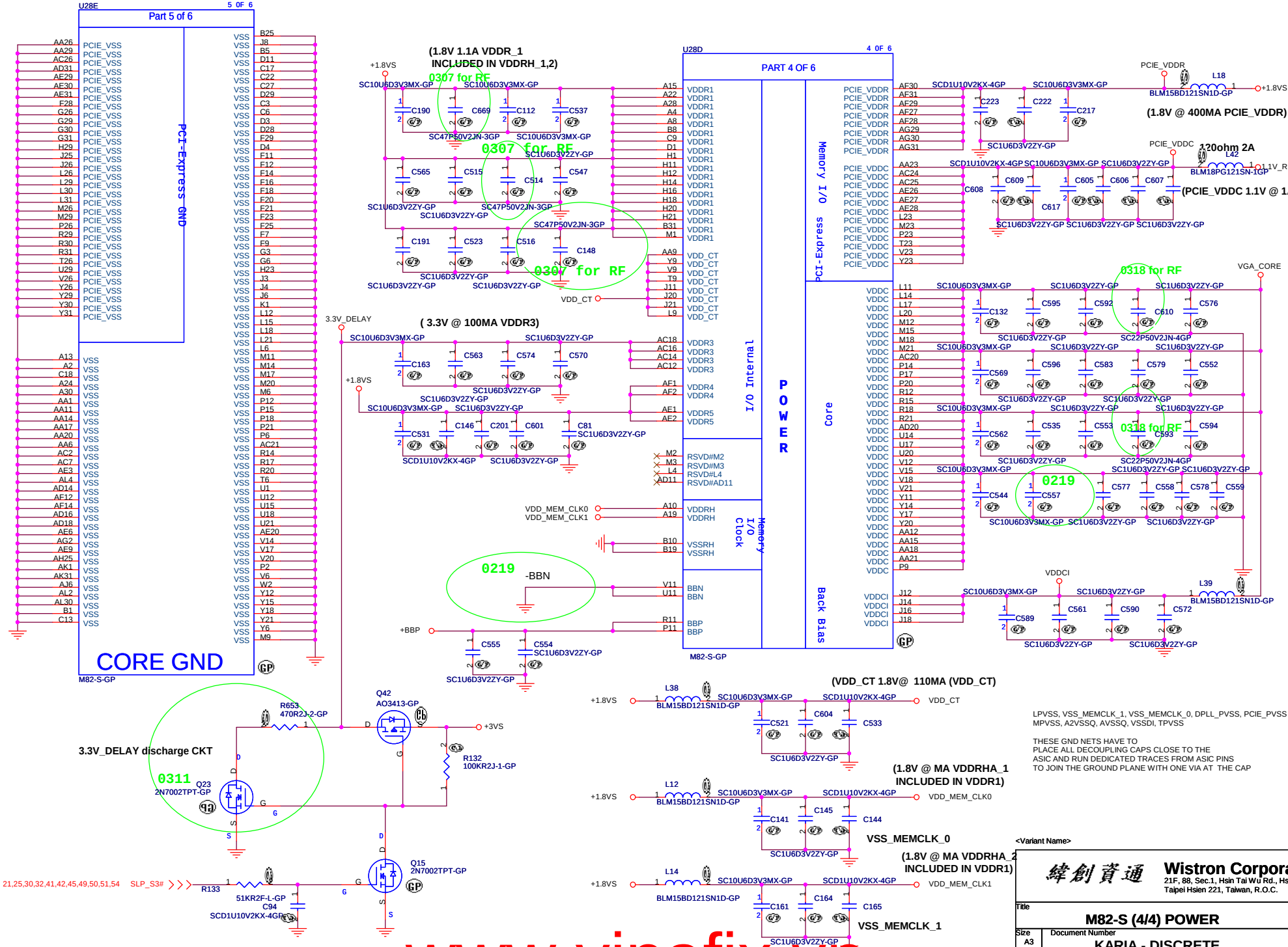

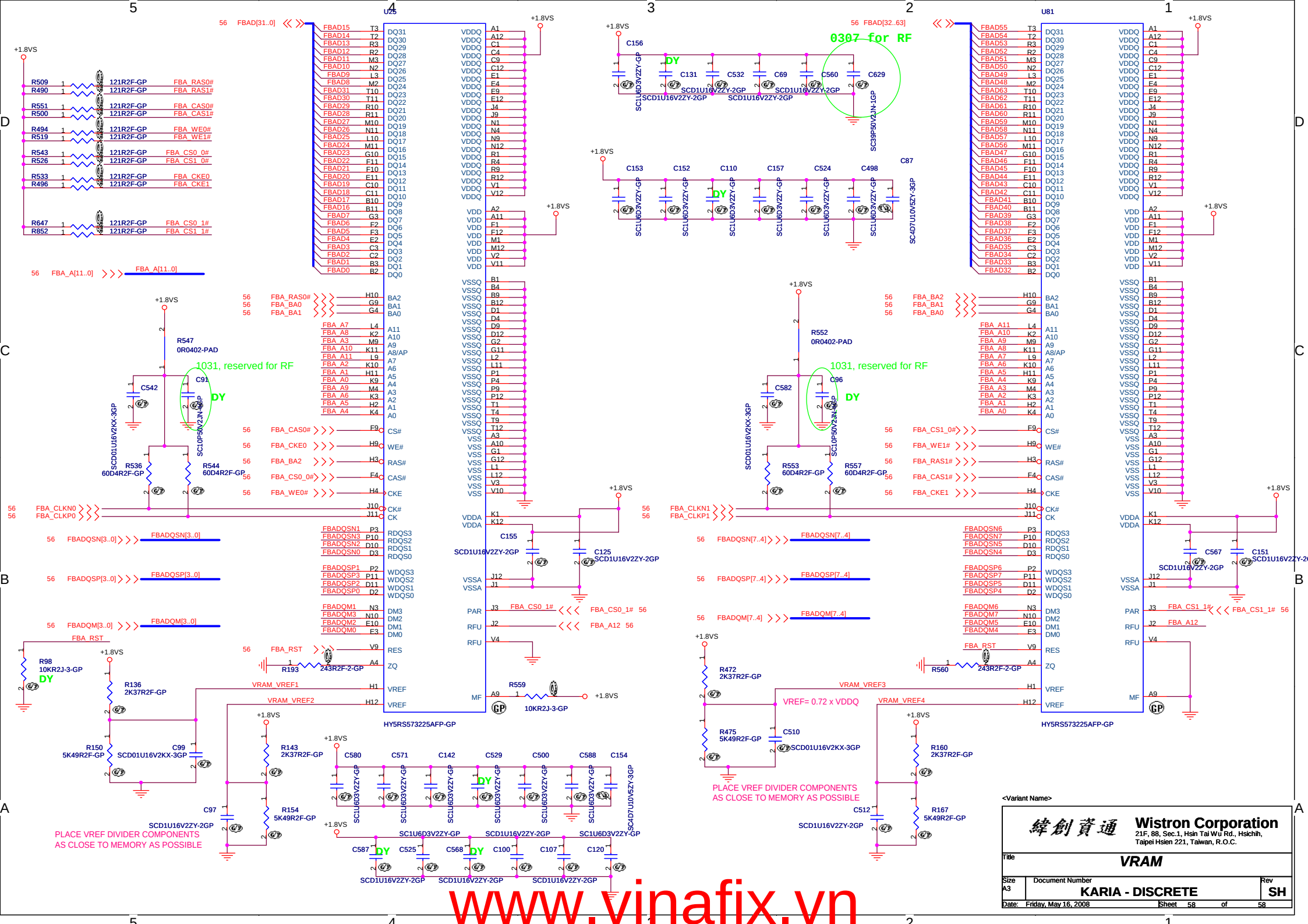
U25
U81
HY5RS573225AFP-GP
0307 for RF
1031, reserved for RF
1031, reserved for RF
DY
PLACE VREF DIVIDER COMPONENTS AS CLOSE TO MEMORY AS POSSIBLE
PLACE VREF DIVIDER COMPONENTS AS CLOSE TO MEMORY AS POSSIBLE
VREF= 0.72 x VDDQ
<Variant Name>
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title
VRAM
Size A3
Document Number
KARIA - DISCRETE
Rev SH
Date: Friday, May 16, 2008
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