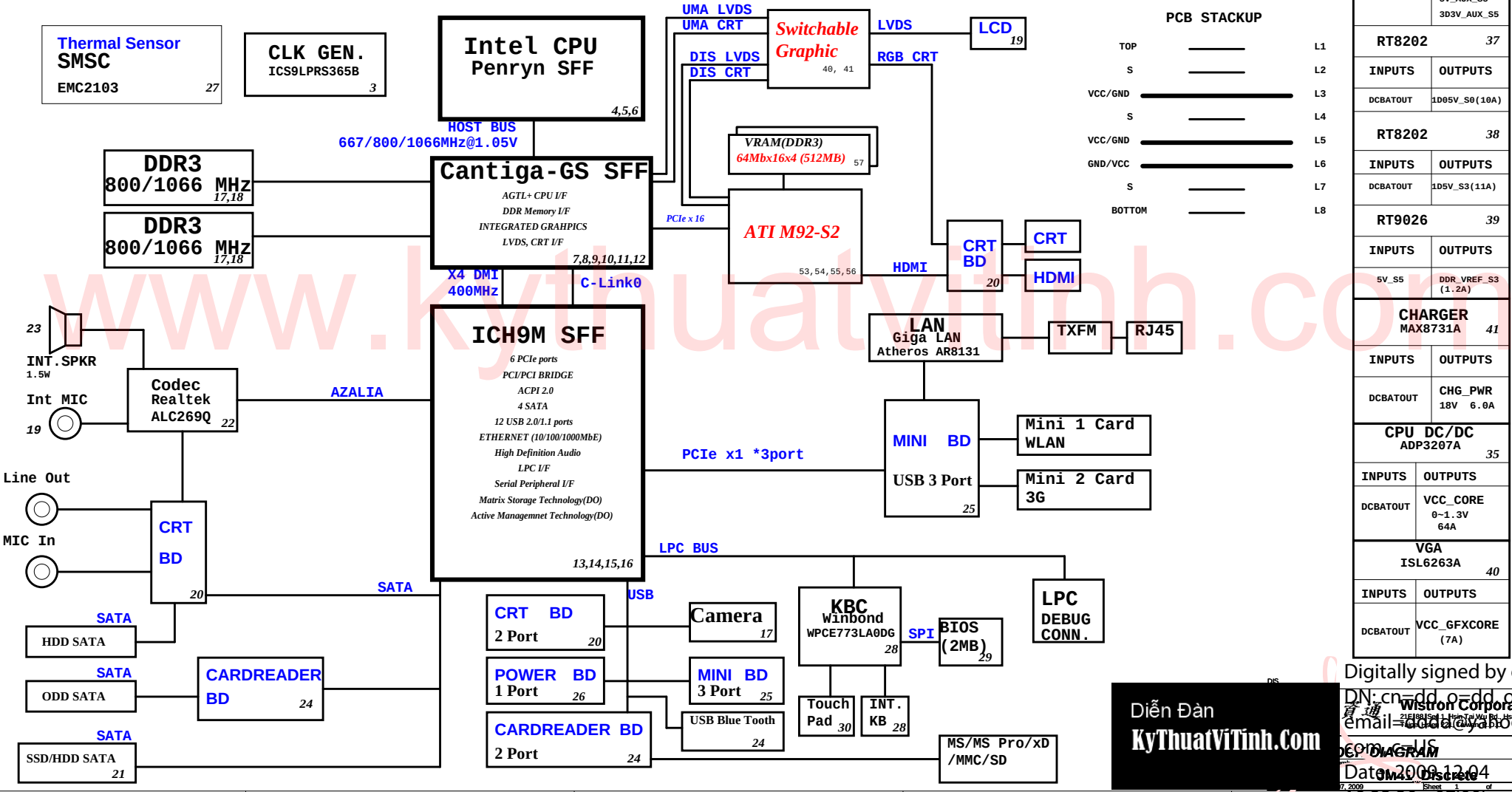
JM41/JM51 Discrete Block Diagram

Project code: 91.4CQ01.001
PCB P/N : 48.4CQ01.0SB
REVISION : 08274-1



PCB STACKUP

TOP	L1
S	L2
VCC/GND	L3
S	L4
VCC/GND	L5
GND/VCC	L6
S	L7
BOTTOM	L8

SYSTEM DC/DC TPS51125 36

INPUTS	OUTPUTS
DCBATOUT	5V_S5(6A) 3D3V_S5(5A) 5V_AUX_S5 3D3V_AUX_S5

RT8202 37

INPUTS	OUTPUTS
DCBATOUT	1D05V_S0(10A)

RT8202 38

INPUTS	OUTPUTS
DCBATOUT	1D5V_S3(11A)

RT9026 39

INPUTS	OUTPUTS
5V_S5	DDR_VREF_S3 (1.2A)

CHARGER MAX8731A 41

INPUTS	OUTPUTS
DCBATOUT	CHG_PWR 18V 6.0A

CPU DC/DC ADP3207A 35

INPUTS	OUTPUTS
DCBATOUT	VCC_CORE 0~1.3V 64A

VGA ISL6263A 40

INPUTS	OUTPUTS
DCBATOUT	VCC_GFXCORE (7A)

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BLOCK DIAGRAM
Size: A3 | Date: Tuesday, December 08, 2009 | Sheet 1 of 48
JM41 Discrete | Rev -1

ICH9M Functional Strap Definitions

Signal	Usage/When Sampled	Comment
HDA_SDOUT	XOR Chain Entrance/ PCIE Port Config1 bit1, Rising Edge of PWROK	Allows entrance to XOR Chain testing when TP3 pulled low.When TP3 not pulled low at rising edge of PWROK,sets bit1 of RPC.PC(Config Registers: offset 224h). This signal has weak internal pull-down
HDA_SYNC	PCIE config1 bit0, Rising Edge of PWROK.	This signal has a weak internal pull-down. Sets bit0 of RPC.PC(Config Registers:Offset 224h)
GNT2#/ GPIO53	PCIE config2 bit2, Rising Edge of PWROK.	This signal has a weak internal pull-up. Sets bit2 of RPC.PC2(Config Registers:Offset 0224h)
GPIO20	Reserved	This signal should not be pulled high.
GNT1#/ GPIO51	ESI Strap (Server Only) Rising Edge of PWROK	ESI compatible mode is for server platforms only. This signal should not be pulled low for desttop and mobile.
GNT3#/ GPIO55	Top-Block Swap Override. Rising Edge of PWROK.	Sampled low:Top-Block Swap mode(inverts A16 for all cycles targeting FWH BIOS space). Note: Software will not be able to clear the Top-Swap bit until the system is rebooted without GNT3# being pulled down.
GNT0#: SPI_CS1#/ GPIO58	Boot BIOS Destination Selection 0:1. Rising Edge of PWROK.	Controllable via Boot BIOS Destination bit (Config Registers:Offset 3410h:bit 11:10). GNT0# is MSB, 01-SPI, 10-PCI, 11-LPC.
SPI_MOSI	Integrated TPM Enable, Rising Edge of CLPWROK	Sample low: the Integrated TPM will be disabled. Sample high: the MCH TPM enable strap is sampled low and the TPM Disable bit is clear, the Integrated TPM will be enable.
GPIO49	DMI Termination Voltage, Rising Edge of PWROK.	The signal is required to be low for desktop applications and required to be high for mobile applications.
SATALED#	PCI Express Lane Reversal. Rising Edge of PWROK.	Signal has weak internal pull-up. Sets bit 27 of MPC.LR(Device 28:Function 0:Offset D8)
SPKR	No Reboot. Rising Edge of PWROK.	If sampled high, the system is strapped to the "No Reboot" mode(ICH9 will disable the TCO Timer system reboot feature). The status is readable via the NO REBOOT bit.
TP3	XOR Chain Entrance. Rising Edge of PWROK.	This signal should not be pull low unless using XOR Chain testing.
GPIO33/ HDA_DOCK _EN#	Flash Descriptor Security Override Strap Rising Edge of PWROK	Sampled low:the Flash Descriptor Security will be overridden. If high,the security measures will be in effect.This should only be enabled in manufacturing environments using an external pull-up resister.

ICH9M Integrated Pull-up and Pull-down Resistors

SIGNAL	Resistor Type/Value
CL_CLK[1:0]	PULL-UP 20K
CL_DATA[1:0]	PULL-UP 20K
CL_RST0#	PULL-UP 20K
DPRSLPVR/GPIO16	PULL-DOWN 20K
ENERGY_DETECT	PULL-UP 20K
HDA_BIT_CLK	PULL-DOWN 20K
HDA_DOCK_EN#/GPIO33	PULL-UP 20K
HDA_RST#	PULL-DOWN 20K
HDA_SDIN[3:0]	PULL-DOWN 20K
HDA_SDOUT	PULL-DOWN 20K
HDA_SYNC	PULL-DOWN 20K
GLAN_DOCK#	The pull-up or pull-down active when configured for native GLAN_DOCK# functionality and determined by LAN controller
GNT[3:0]#/GPIO[55,53,51]	PULL-UP 20K
GPIO[20]	PULL-DOWN 20K
GPIO[49]	PULL-UP 20K
LDA[3:0]#/FHW[3:0]#	PULL-UP 20K
LAN_RXD[2:0]	PULL-UP 20K
LDRQ[0]	PULL-UP 20K
LDRQ[1]/GPIO23	PULL-UP 20K
PME#	PULL-UP 20K
PWRBTN#	PULL-UP 20K
SATALED#	PULL-UP 15K
SPI_CS1#/GPIO58/CLGPIO6	PULL-UP 20K
SPI_MOSI	PULL-DOWN 20K
SPI_MISO	PULL-UP 20K
SPKR	PULL-DOWN 20K
TACH_[3:0]	PULL-UP 20K
TP[3]	PULL-UP 20K
USB[11:0][P,N]	PULL-DOWN 15K

Cantiga chipset and ICH9M I/O controller Hub strapping configuration

Pin Name	Strap Description	Configuration
CFG[2:0]	FSB Frequency Select	000 = FSB1067 011 = FSB667 010 = FSB800 others = Reserved
CFG[4:3] CFG8 CFG[15:14] CFG[18:17]	Reserved	
CFG5	DMI x2 Select	0 = DMI x2 1 = DMI x4 (Default)
CFG6	iTPM Host Interface	0= The iTPM Host Interface is enabled(Note2) **1=The iTPM Host Interface is disalbed(default)**
CFG7	Intel Management engine Crypto strap	0 = Transport Layer Security (TLS) cipher suite with no confidentiality **1 = TLS cipher suite with confidentiality (default)**
CFG9	PCIE Graphics Lane	0 = Reverse Lanes,15->0,14->1 ect.. **1= Normal operation(Default):Lane Numbered in order**
CFG10	PCIE Loopback enable	0 = Enable (Note 3) **1= Disabled (default)**
CFG[13:12]	XOR/ALL	00 = Reserve 10 = XOR mode Enabled 01 = ALLZ mode Enabled (Note 3) **11 = Disabled (default)**
CFG16	FSB Dynamic ODT	0 = Dynamic ODT Disabled **1 = Dynamic ODT Enabled (Default)**
CFG19	DMI Lane Reversal	**0 = Normal operation(Default): Lane Numbered in Order** 1 = Reverse Lanes DMI x4 mode[MCH -> ICH]:(3->0,2->1,1->2and0->3) DMI x2 mode[MCH -> ICH]:(3->0,2->1)
CFG20	Digital Display Port (SDVO/DP/iHDMI) Concurrent with PCIe	**0 = Only Digital Display Port or PCIE is operational (Default)** 1 =Digital display Port and PCIe are operting simulataneously via the PEG port
SDVO_CTRLDATA	SDVO Present	**0 =No SDVO Card Present (Default)** 1 = SDVO Card Present
L_DDC_DATA	Local Flat Panel (LFP) Present	**0 = LFP Disabled (Default)** 1= LFP Card Present; PCIE disabled

NOTE:
1. All strap signals are sampled with respect to the leading edge of the (G)MCH Power OK (PWROK) signal.
2. iTPM can be disabled by a 'Soft-Strap' option in the Flash-decriptor section of the Firmware. This 'Soft-Strap' is activated only after enabling iTPM via CFG6. Only one of the CFG10/CFG/12/CFG13 straps can be enabled at any time.

DIS

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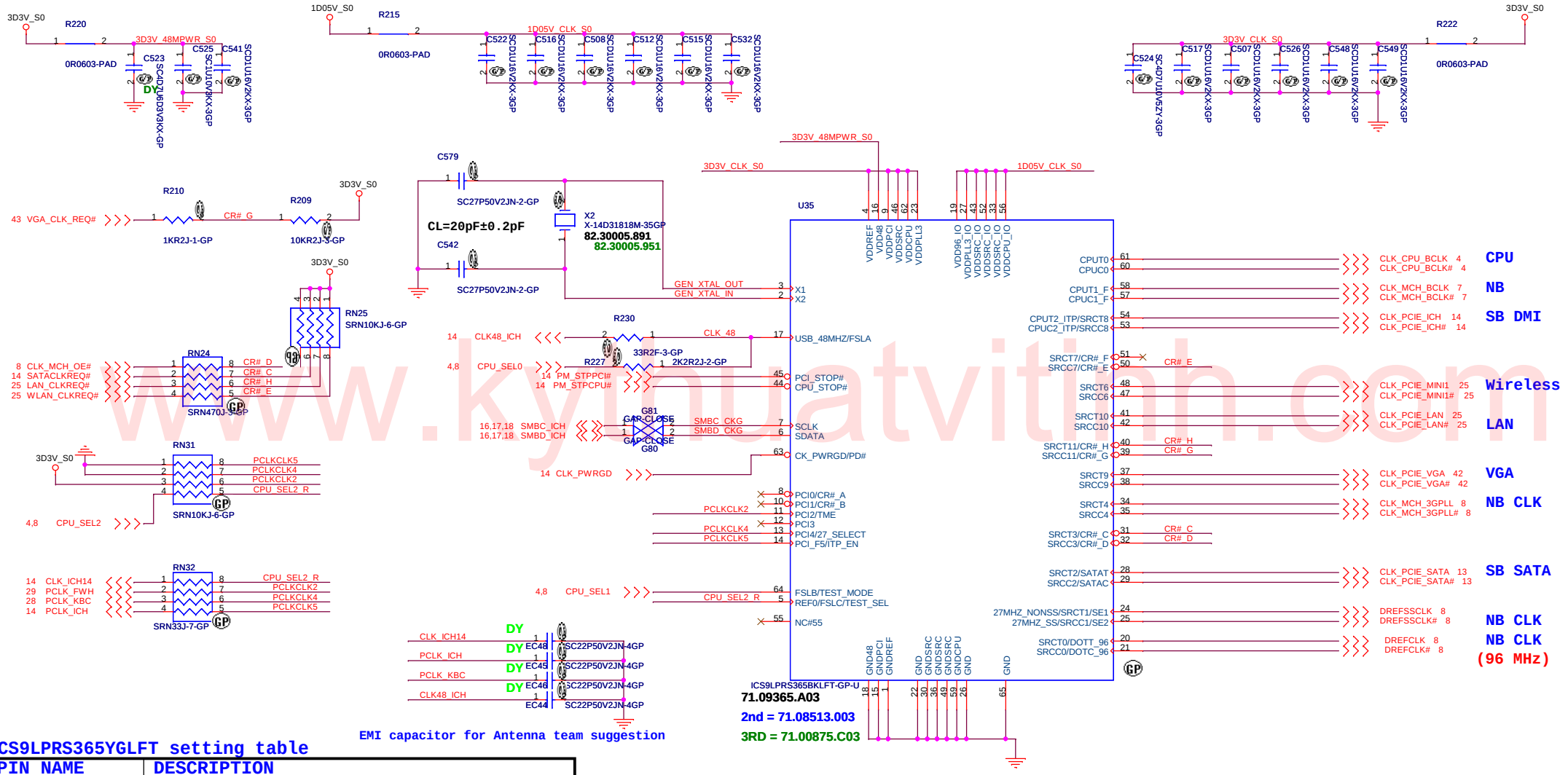
Title: Reference

Size: A3 | Document Number: JM41 Discrete | Rev: -1

Date: Monday, April 06, 2009 | Sheet 2 of 48



ICS9LPRS365YGLFT setting table

PIN NAME	DESCRIPTION
PCI0/CR#_A	Byte 5, bit 7 0 = PCI0 enabled (default) 1= CR#_A enabled. Byte 5, bit 6 controls whether CR#_A controls SRC0 or SRC2 pair Byte 5, bit 6 0 = CR#_A controls SRC0 pair (default), 1= CR#_A controls SRC2 pair
PCI1/CR#_B	Byte 5, bit 5 0 = PCI1 enabled (default) 1= CR#_B enabled. Byte 5, bit 6 controls whether CR#_B controls SRC1 or SRC4 pair Byte 5, bit 4 0 = CR#_B controls SRC1 pair (default) 1= CR#_B controls SRC4 pair
PCI2/TME	0 = Overclocking of CPU and SRC Allowed 1 = Overclocking of CPU and SRC NOT allowed
PCI3	
PCI4/27M_SEL	0 = Pin17 as SRC-1, Pin18 as SRC-1#, Pin13 as DOT96, Pin14 as DOT96# 1 = Pin17 as 27MHz, Pin 18 as 27MHz_SS, Pin13 as SRC-0, Pin14 as SRC-0#
PCI_F5/ITP_EN	0 =SRC8/SRC8# 1 = ITP/ITP#
SRCT3/CR#_C	Byte 5, bit 3 0 = SRC3 enabled (default) 1= CR#_C enabled. Byte 5, bit 2 controls whether CR#_C controls SRC0 or SRC2 pair Byte 5, bit 2 0 = CR#_C controls SRC0 pair (default), 1= CR#_C controls SRC2 pair

PIN NAME	DESCRIPTION
SRCC3/CR#_D	Byte 5, bit 1 0 = SRC3 enabled (default) 1= CR#_D enabled. Byte 5, bit 0 controls whether CR#_D controls SRC1 or SRC4 pair Byte 5, bit 0 0 = CR#_D controls SRC1 pair (default) 1= CR#_D controls SRC4 pair
SRCC7/CR#_E	Byte 6, bit 7 0 = SRC7# enabled (default) 1= CR#_F controls SRC6
SRCT7/CR#_F	Byte 6, bit 6 0 = SRC7 enabled (default) 1= CR#_F controls SRC8
SRCC11/CR#_G	Byte 6, bit 5 0 = SRC11# enabled (default) 1= CR#_G controls SRC9
SRCT11/CR#_H	Byte 6, bit 4 0 = SRC11 enabled (default) 1= CR#_H controls SRC10

SEL2 FSC	SEL1 FSB	SEL0 FSA	CPU	FSB
1	0	1	100M	X
0	0	1	133M	533M
0	1	1	166M	667M
0	1	0	200M	800M
0	0	0	266M	1067M

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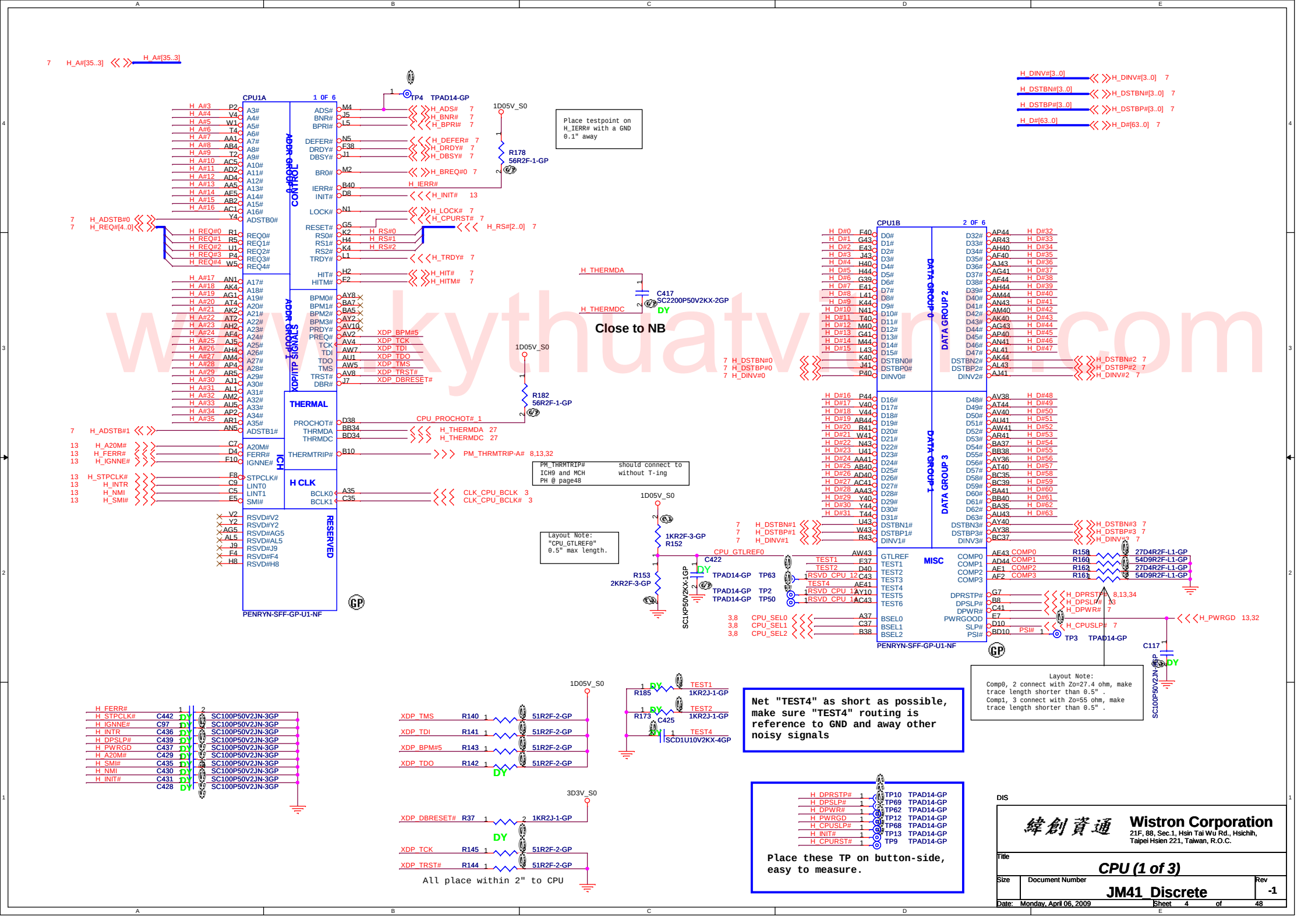
Title: Clock Generator

Size	Document Number	Rev
	JM41_Discrete	-1

Date: Monday, April 06, 2009 Sheet 3 of 48


CPU1A
1 OF 6
ADDR GROUP 0
ADDR GROUP 1
CONTROL
XDP/ITP SIGNALS
THERMAL
H CLK
RESERVED
PENRYN-SFF-GP-U1-NF
TP4 TPAD14-GP
1D05V_S0
R178 56R2F-1-GP
R182 56R2F-1-GP
Place testpoint on H_IERR# with a GND 0.1" away
H_THERMDA
H_THERMDC
C417 SC2200P50V2KX-2GP
DY
Close to NB
CPU_PROCHOT# 1
PM_THRMTRIP# should connect to ICH9 and MCH PH @ page48
CPU1B
2 OF 6
DATA GROUP 0
DATA GROUP 1
DATA GROUP 2
DATA GROUP 3
MISC
Layout Note: "CPU_GTLREF0" 0.5" max length.
1KR2F-3-GP R152
R153 2KR2F-3-GP
SC1KP50V2KX-1GP
CPU_GTLREF0
C422
TPAD14-GP TP63
TPAD14-GP TP2
TPAD14-GP TP50
CPU_SEL0
CPU_SEL1
CPU_SEL2
R158 27D4R2F-L1-GP
R160 54D9R2F-L1-GP
R162 27D4R2F-L1-GP
R161 54D9R2F-L1-GP
H_DPRSTP# 8,13,34
H_DPSLP# 13
H_DPWR# 7
H_CPUSLP# 7
H_PWRGD 13,32
TP3 TPAD14-GP
C117
SC100P50V2JN-3GP
Layout Note:
Comp0, 2 connect with Zo=27.4 ohm, make trace length shorter than 0.5" .
Comp1, 3 connect with Zo=55 ohm, make trace length shorter than 0.5" .
H_FERR# C442 SC100P50V2JN-3GP
H_STPCLK# C97 SC100P50V2JN-3GP
H_IGNNE# C436 SC100P50V2JN-3GP
H_INTR C439 SC100P50V2JN-3GP
H_DPSLP# C437 SC100P50V2JN-3GP
H_PWRGD C429 SC100P50V2JN-3GP
H_A20M# C435 SC100P50V2JN-3GP
H_SMI# C430 SC100P50V2JN-3GP
H_NMI C431 SC100P50V2JN-3GP
H_INIT# C428 SC100P50V2JN-3GP
XDP_TMS R140 51R2F-2-GP
XDP_TDI R141 51R2F-2-GP
XDP_BPM#5 R143 51R2F-2-GP
XDP_TDO R142 51R2F-2-GP
R185 1KR2J-1-GP TEST1
R173 1KR2J-1-GP TEST2
C425 SCD1U10V2KX-4GP TEST4
Net "TEST4" as short as possible, make sure "TEST4" routing is reference to GND and away other noisy signals
XDP_DBRESET# R37 1KR2J-1-GP
XDP_TCK R145 51R2F-2-GP
XDP_TRST# R144 51R2F-2-GP
All place within 2" to CPU
Place these TP on button-side, easy to measure.
TP10 TPAD14-GP
TP69 TPAD14-GP
TP62 TPAD14-GP
TP12 TPAD14-GP
TP68 TPAD14-GP
TP13 TPAD14-GP
TP9 TPAD14-GP
DIS
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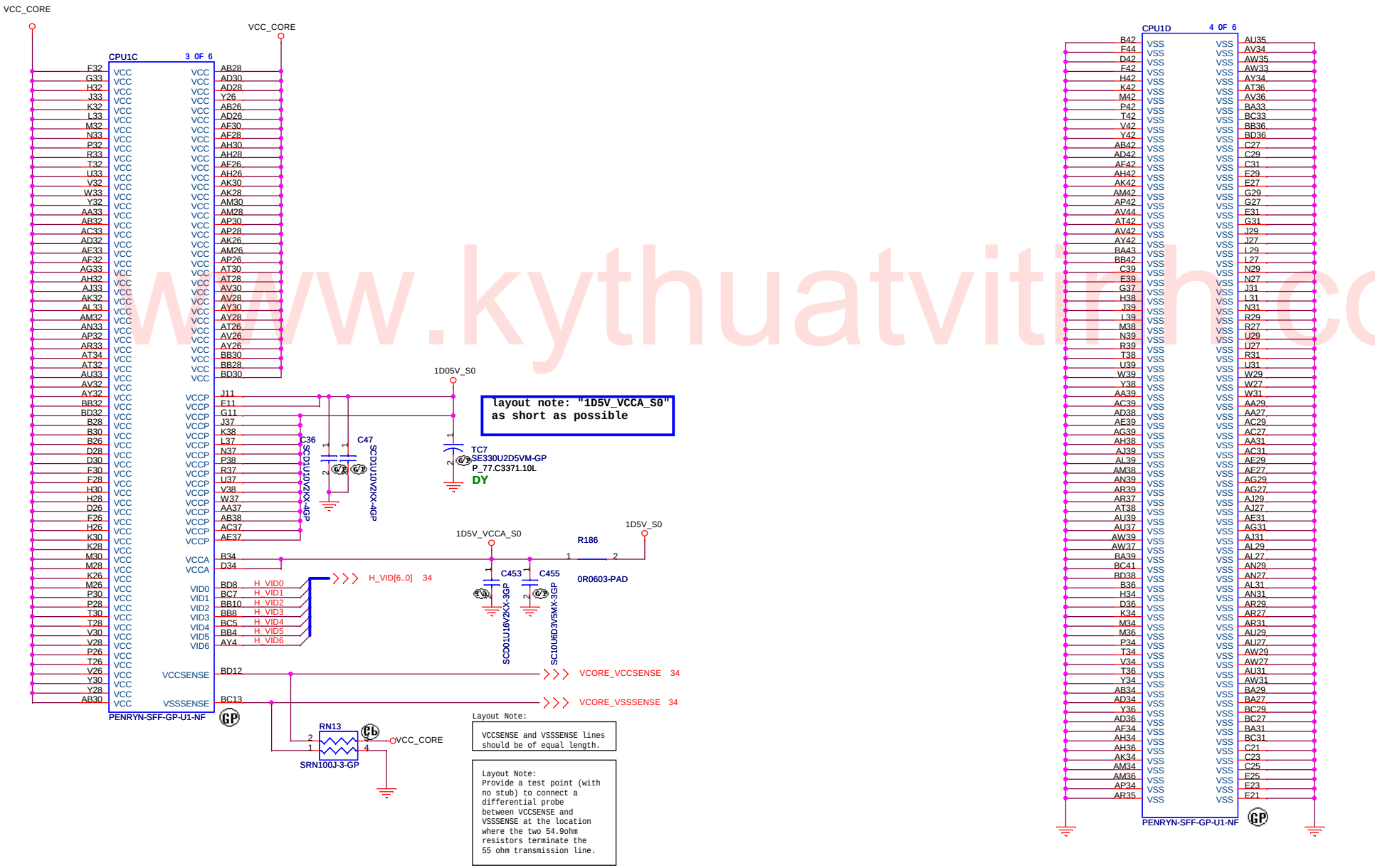
Title
CPU (1 of 3)
Size
Document Number
JM41_Discrete
Rev
-1
Date: Monday, April 06, 2009
Sheet 4 of 48



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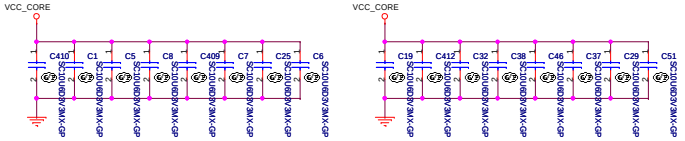
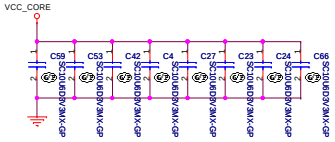
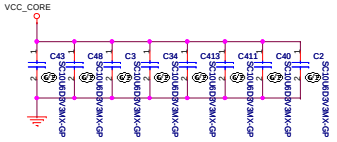
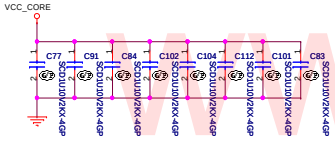
Title	***CPU (2 of 3)***
Size	Document Number: **JM41_Discrete** — Rev: -1
Date: Monday, April 06, 2009	Sheet 5 of 48

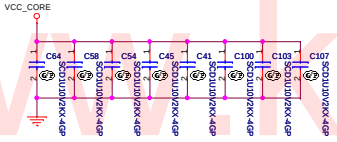
Place these inside socket
cavity on L8(North side Secondary)

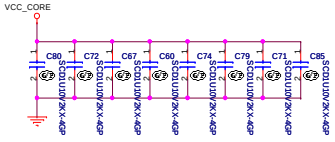


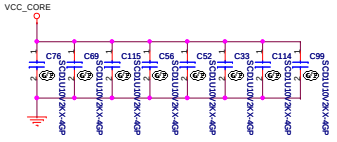




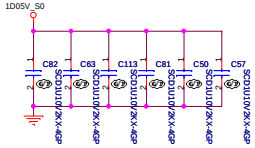


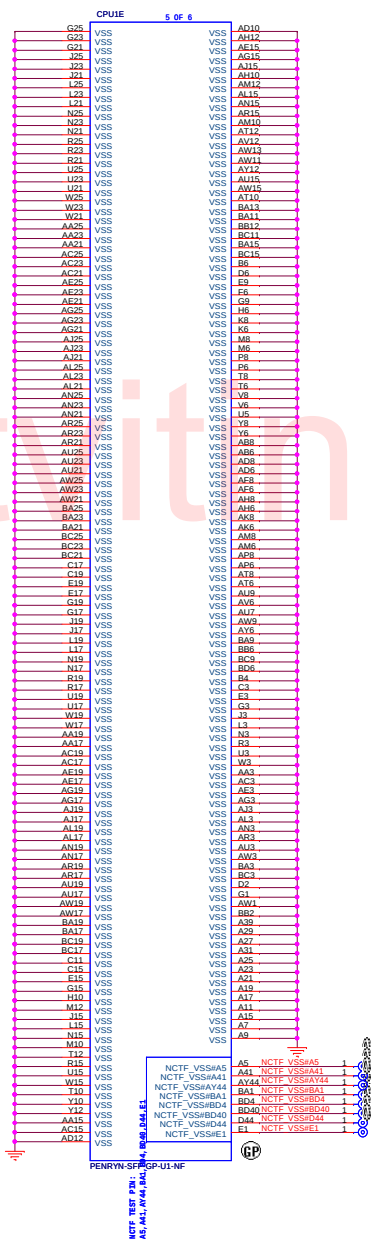


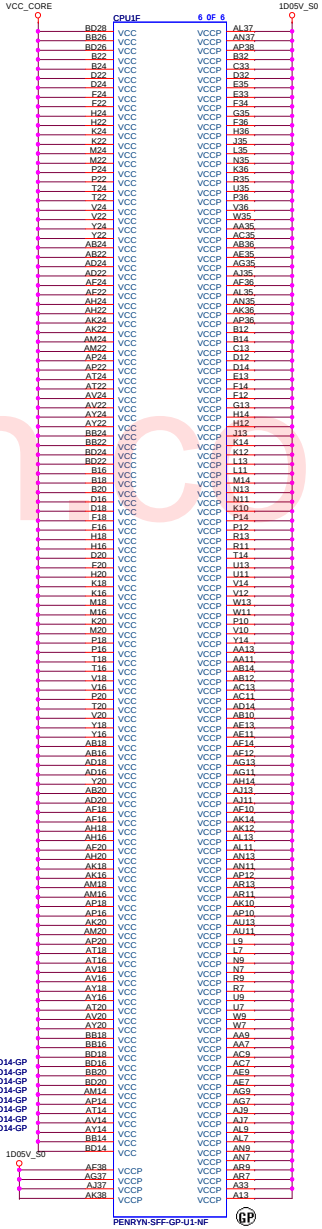




Place these inside socket
cavity on L8(North side Secondary)







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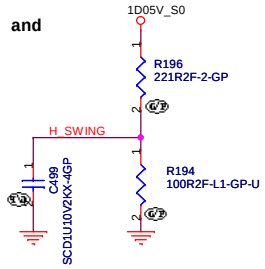
Title	CPU (3 of 3)	
Size	Document Number: JM41_Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 8 of 48	

H_SWING routing Trace width and Spacing use 10 / 20 mil

H_SWING Resistors and Capacitors close MCH 500 mil (MAX)



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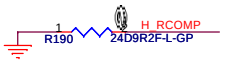
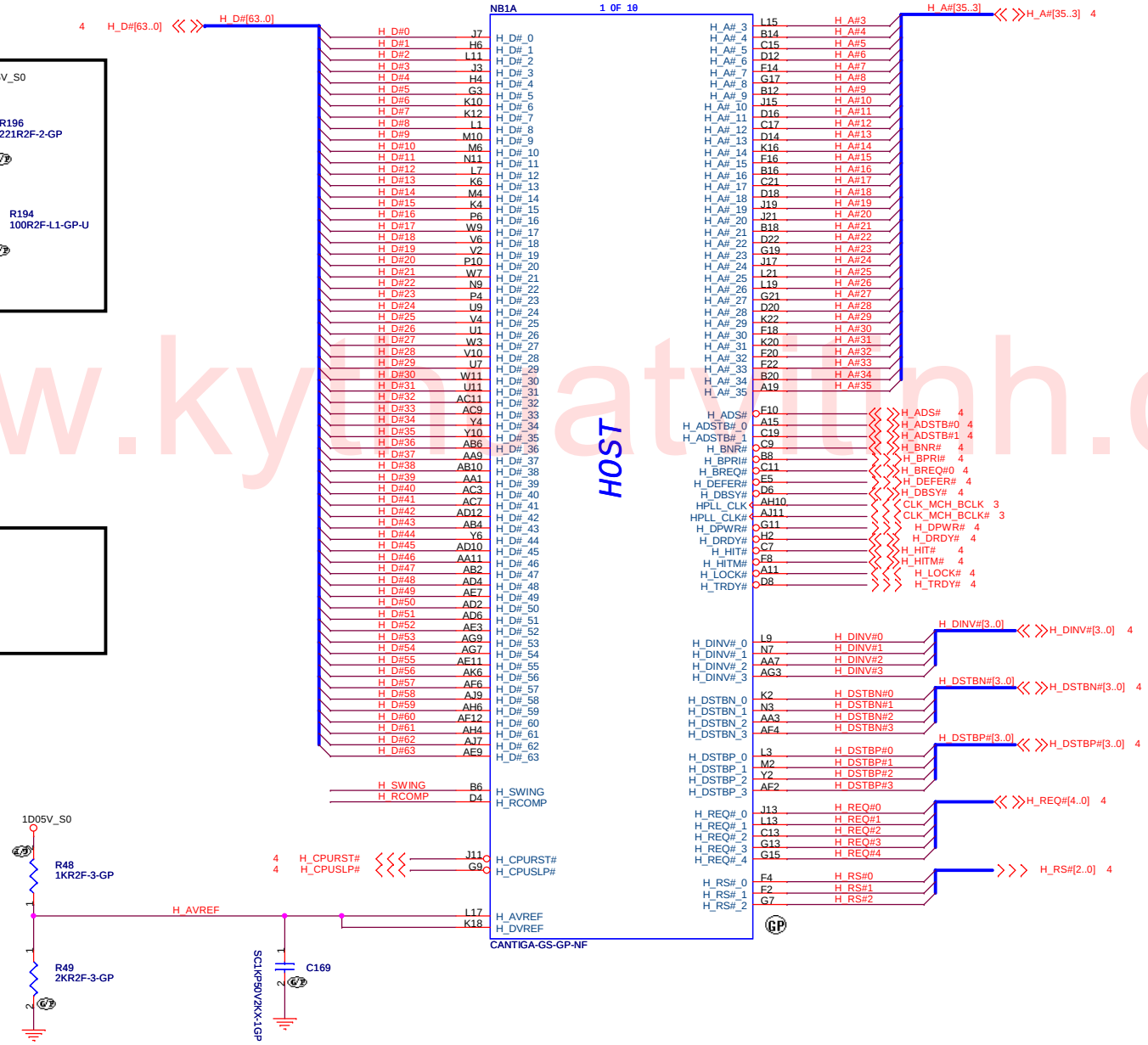


Place them near to the chip (< 0.5")



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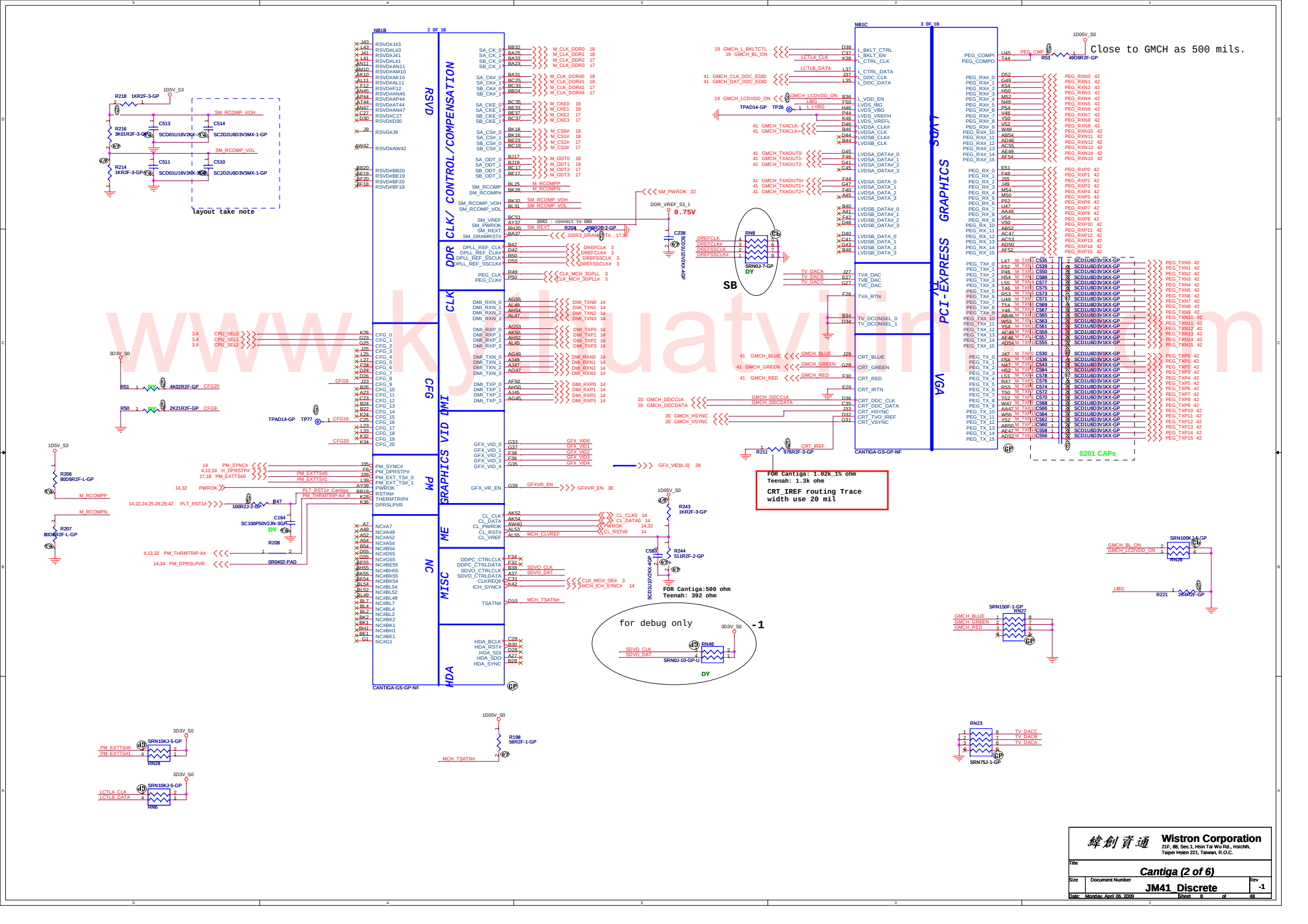
Title: ***Cantiga (1 of 6)***

Size | Document Number: **JM41 Discrete** | Rev: -1

Date: Monday, April 06, 2009 | Sheet 7 of 48


NB1B
2 OF 10
RSVD
CLK/ CONTROL/COMPENSATION
DDR
CLK
CFG
DMI
GRAPHICS VID
PM
ME
MISC
NC
HDA
CANTIGA-GS-GP-NF
NB1C
3 OF 10
LVDS
PCI-EXPRESS
GRAPHICS
VGA
CANTIGA-GS-GP-NF
Close to GMCH as 500 mils.
0201 CAPs
SB
layout take note
FOR Cantiga: 1.02k_1% ohm
Teenah: 1.3k ohm
CRT_IREF routing Trace
width use 20 mil
FOR Cantiga:500 ohm
Teenah: 392 ohm
for debug only
-1
DDR_VREF_S3_1
0.75V
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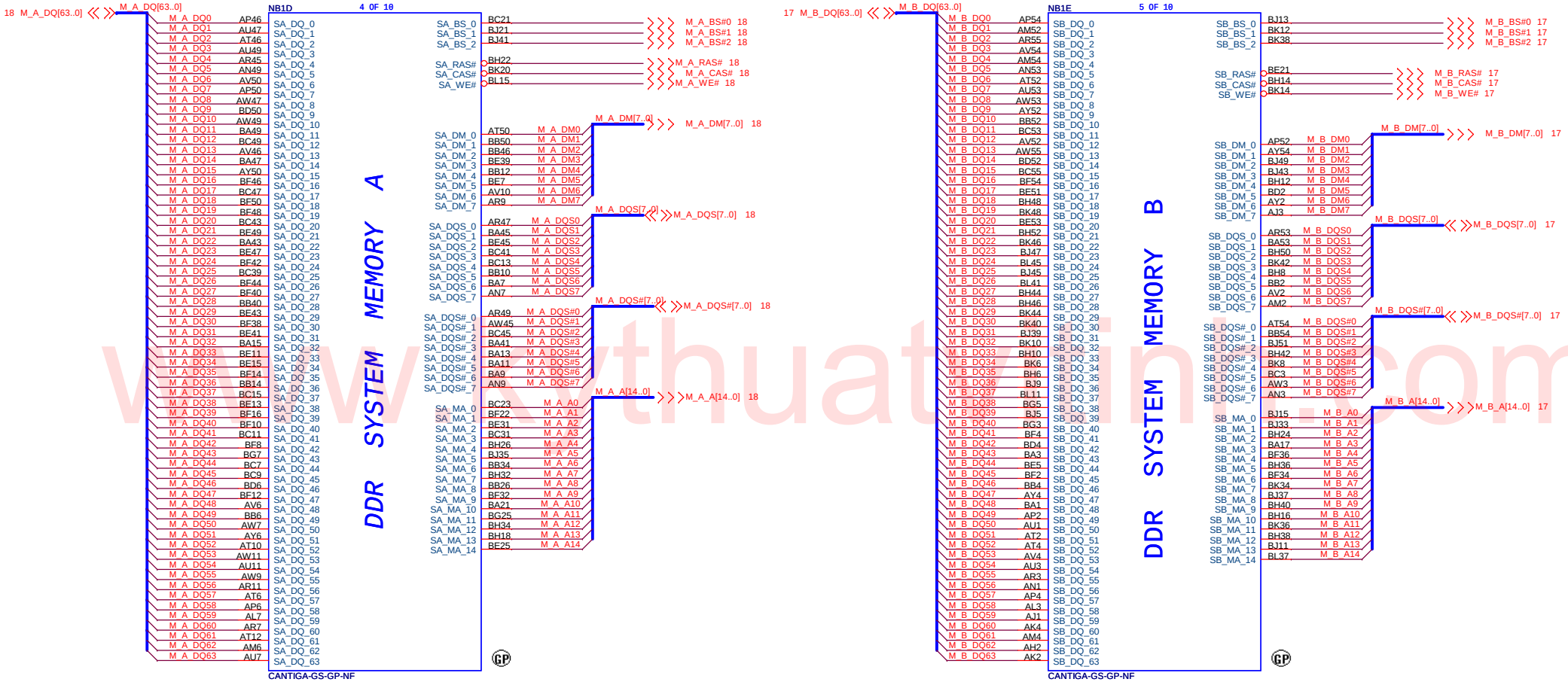
Cantiga (2 of 6)
JM41_Discrete
-1
Monday, April 06, 2009
Sheet 8 of 48



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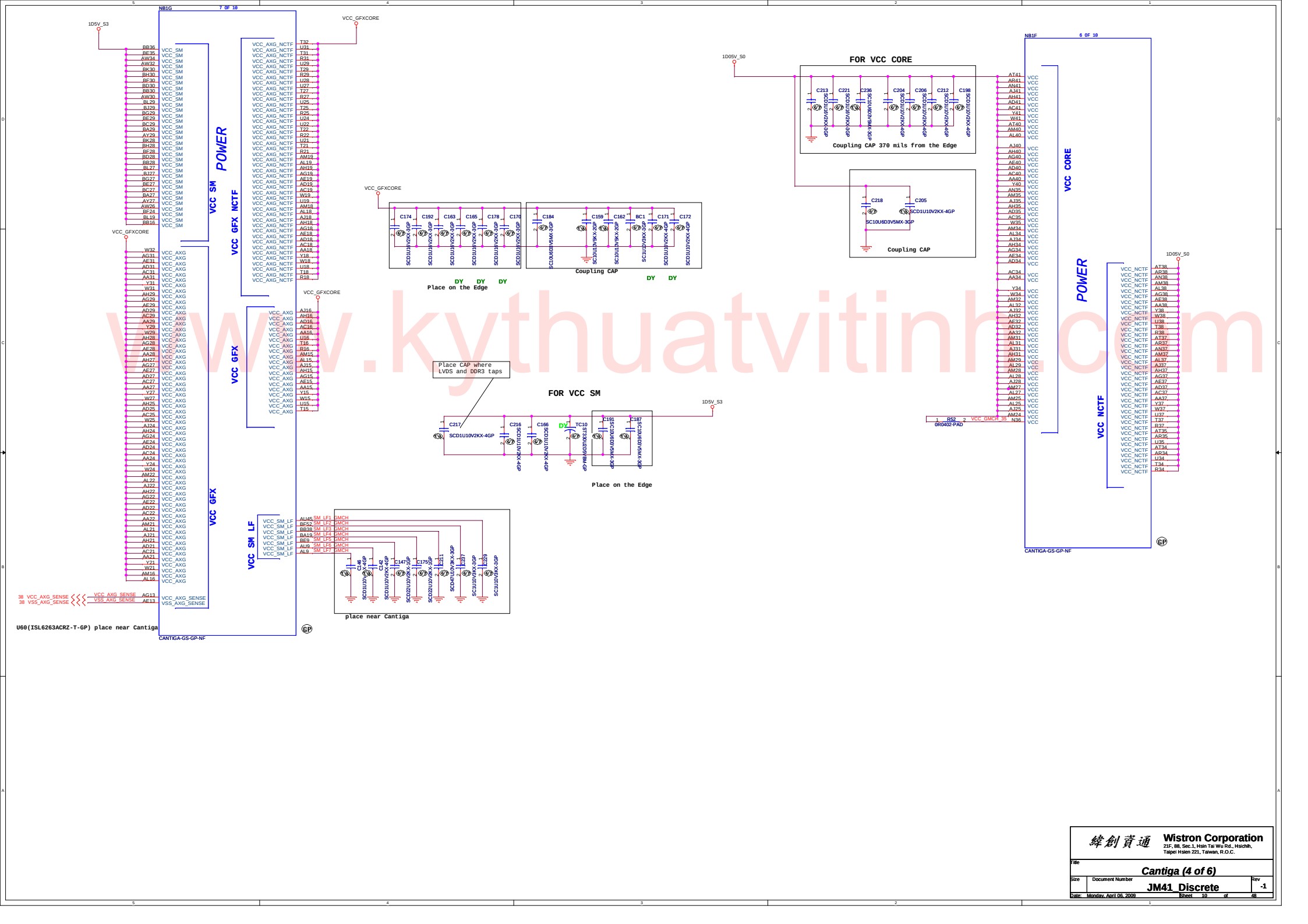
Title	***Cantiga (3 of 6)***	
Size	Document Number **JM41_Discrete**	Rev -1
Date: Monday, April 06, 2009	Sheet 9 of 48	



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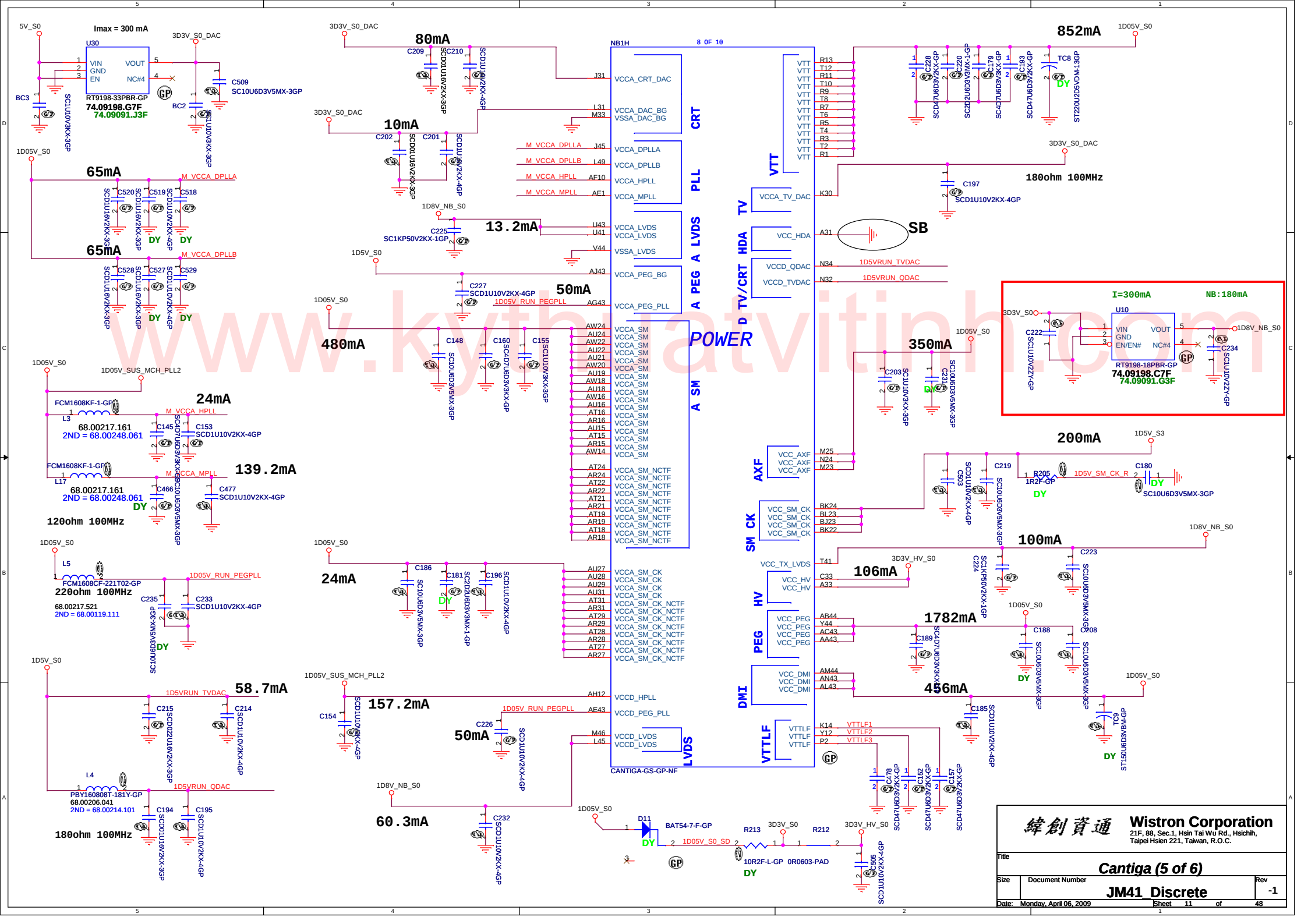
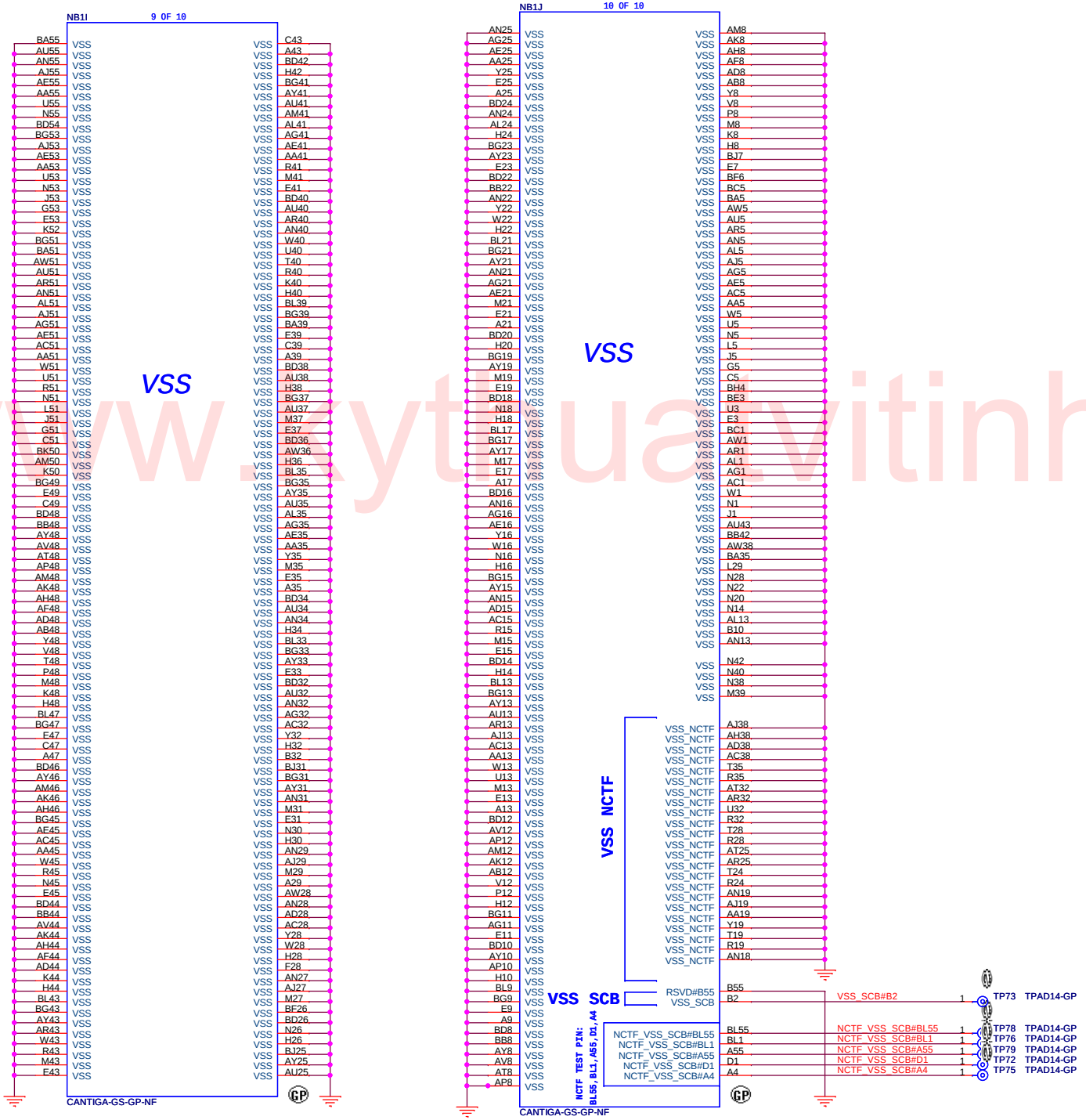
Size	Document Number: JM41_Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 10 of 48	



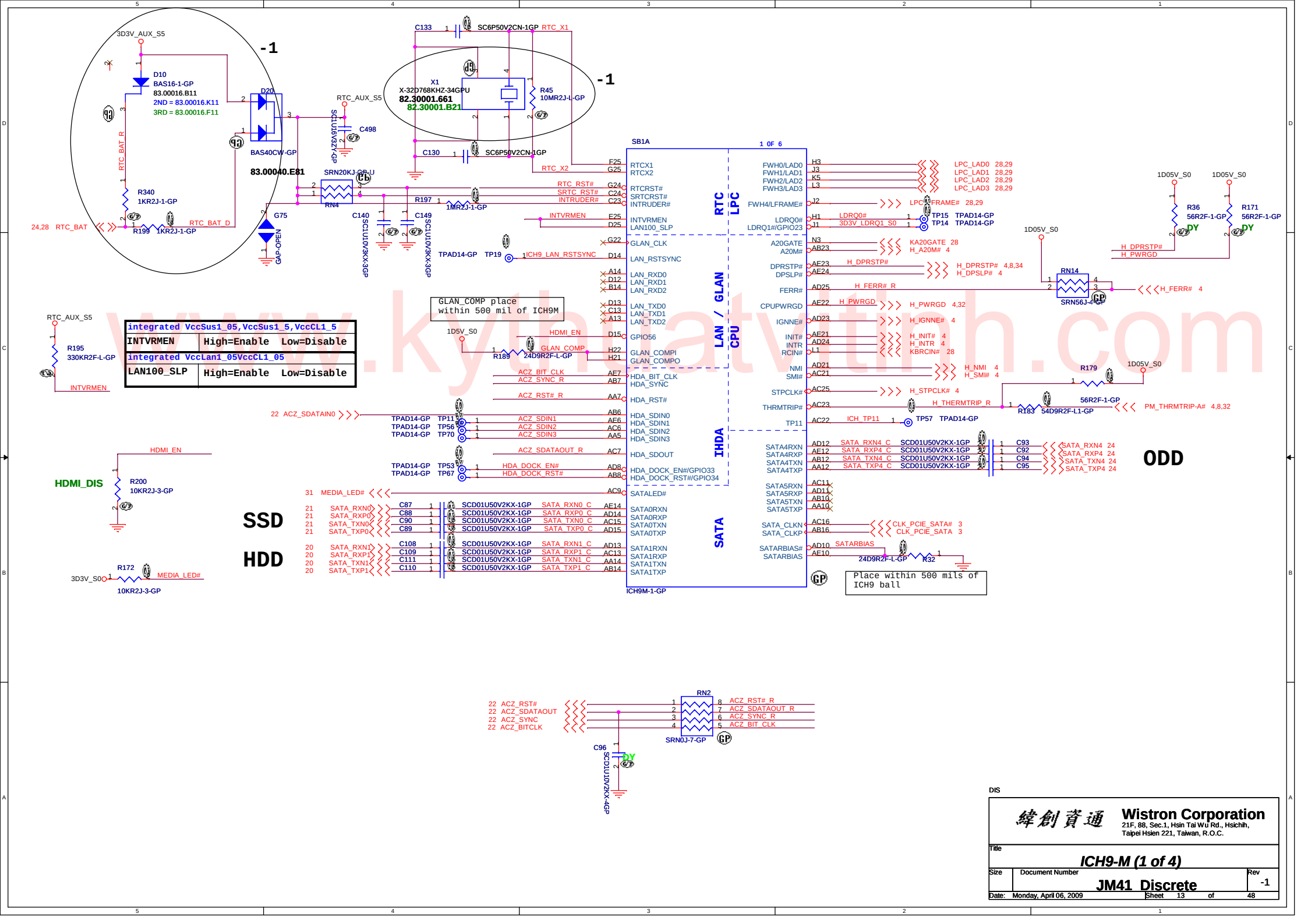


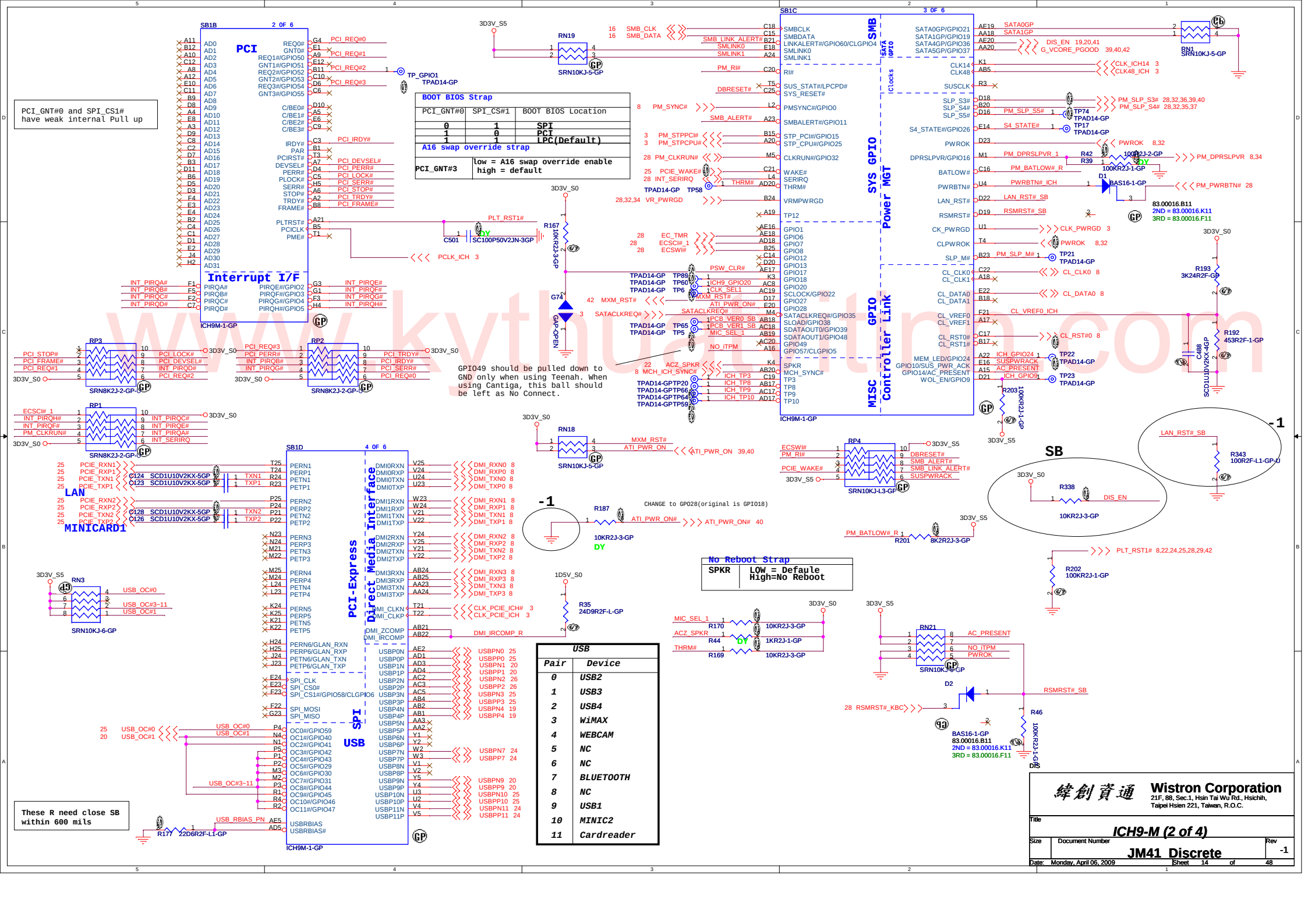
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

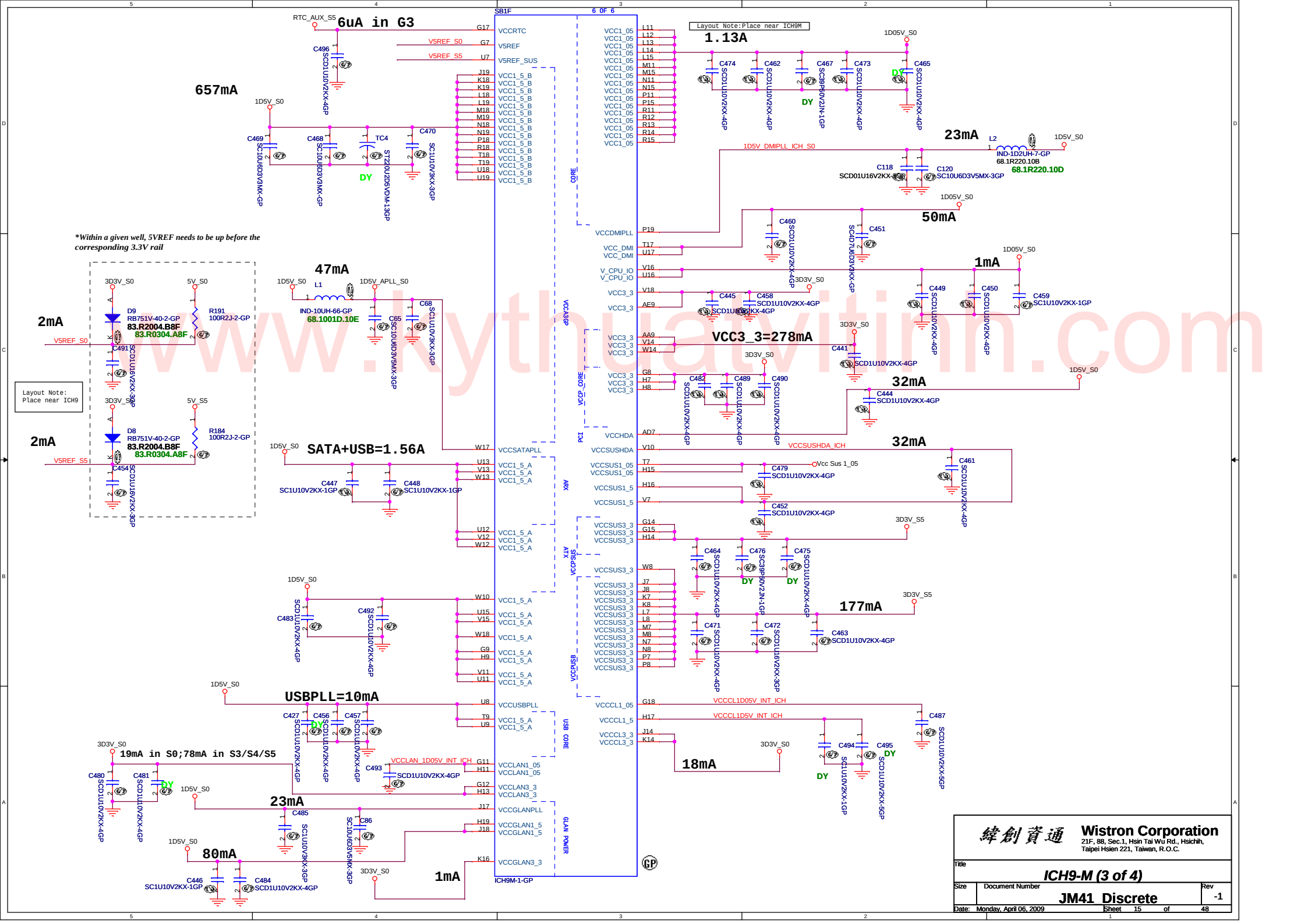
Title: Cantiga (6 of 6)

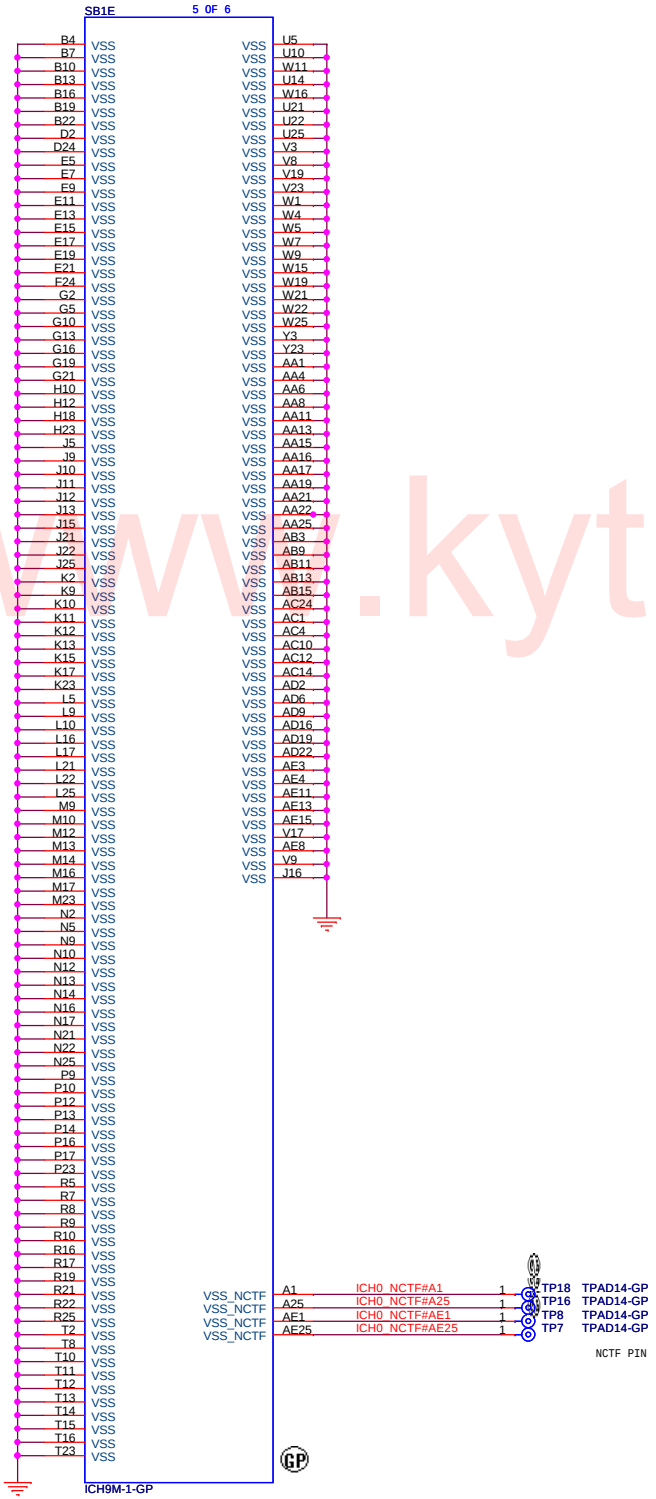
Size | Document Number: JM41_Discrete | Rev: -1

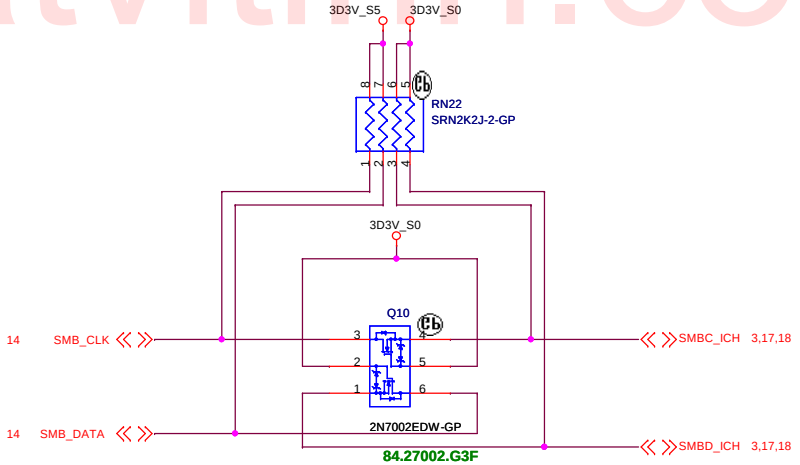
Date: Monday, April 06, 2009 | Sheet 12 of 48




PCI_GNT#0 and SPI_CS1# have weak internal Pull up
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
GPIO49 should be pulled down to GND only when using Teenah. When using Cantiga, this ball should be left as No Connect.
No Reboot Strap
SPKR | LOW = Defaule High=No Reboot
USB
Pair | Device
0 | USB2
1 | USB3
2 | USB4
3 | WiMAX
4 | WEBCAM
5 | NC
6 | NC
7 | BLUETOOTH
8 | NC
9 | USB1
10 | MINIC2
11 | Cardreader
These R need close SB within 600 mils
SB
LAN
MINICARD1
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
ICH9-M (2 of 4)
JM41 Discrete
Monday, April 06, 2009







SMBUS

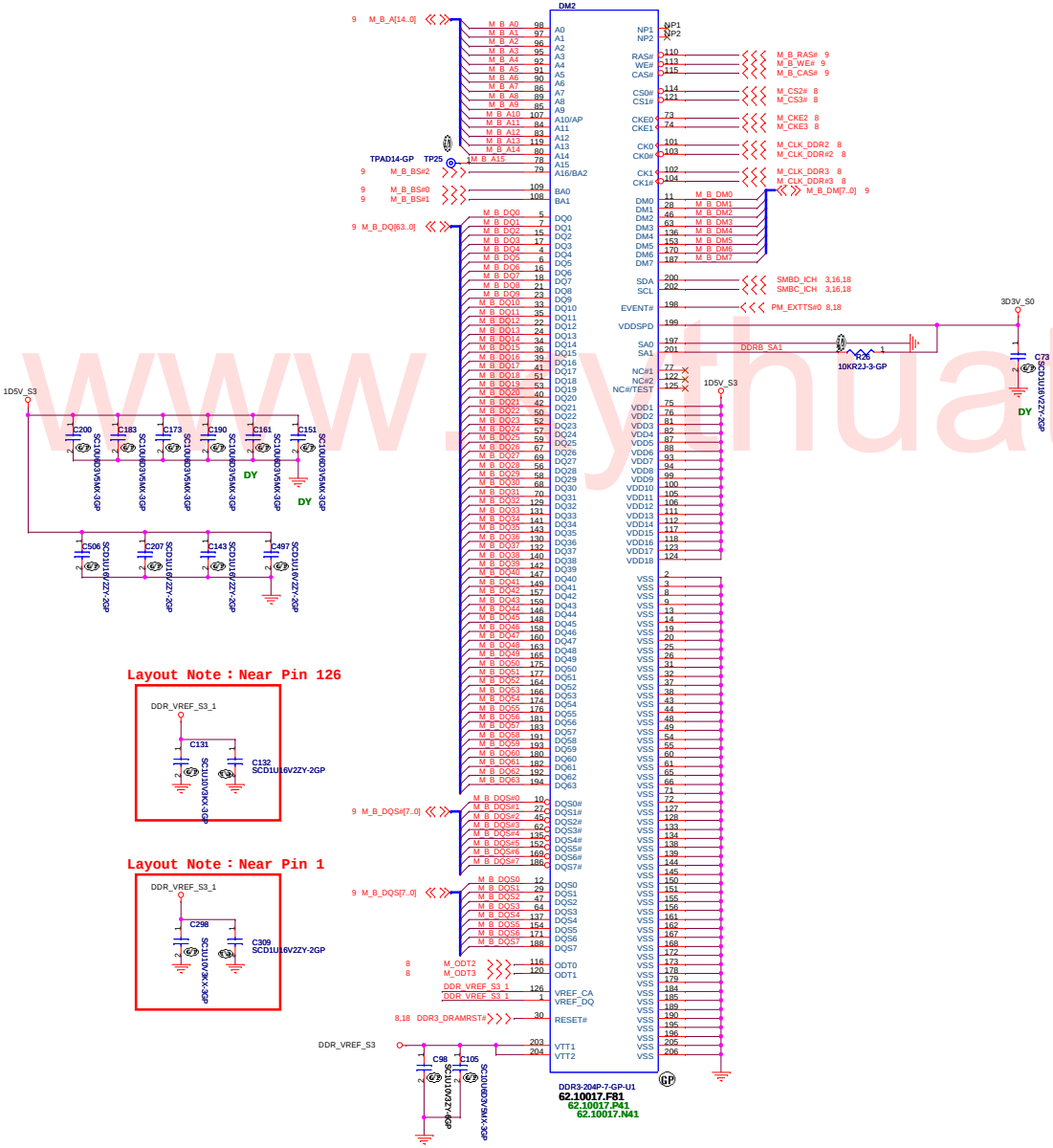
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: *ICH9-M (4 of 4)*

Size | Document Number: JM41_Discrete | Rev: -1

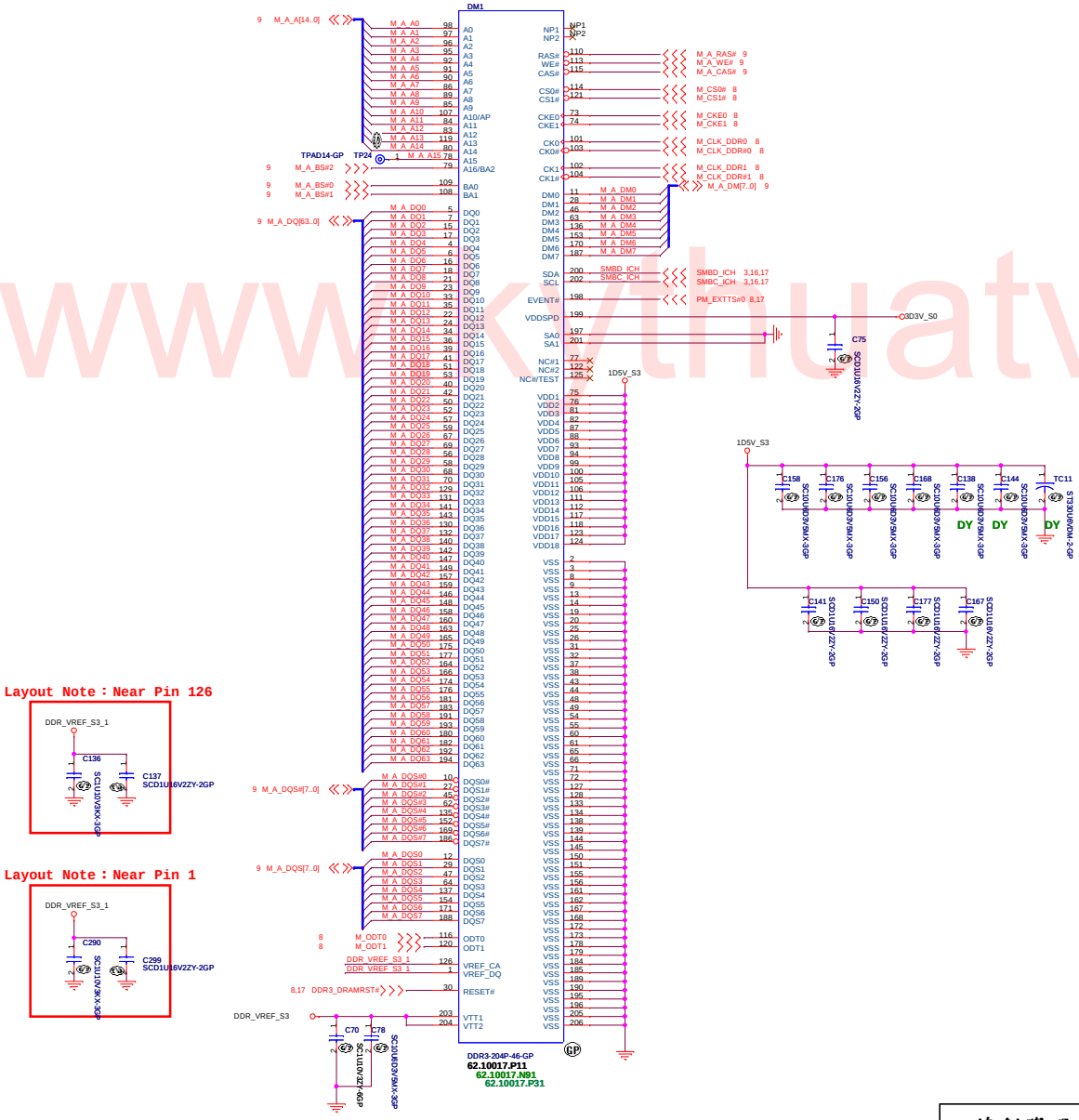
Date: Monday, April 06, 2009 | Sheet 16 of 48

DDR3 SOCKET_1



緯創資通	Wistron Corporation	21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	DDR3 Socket1	
Size	Document Number: JM41 Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 17 of 48	

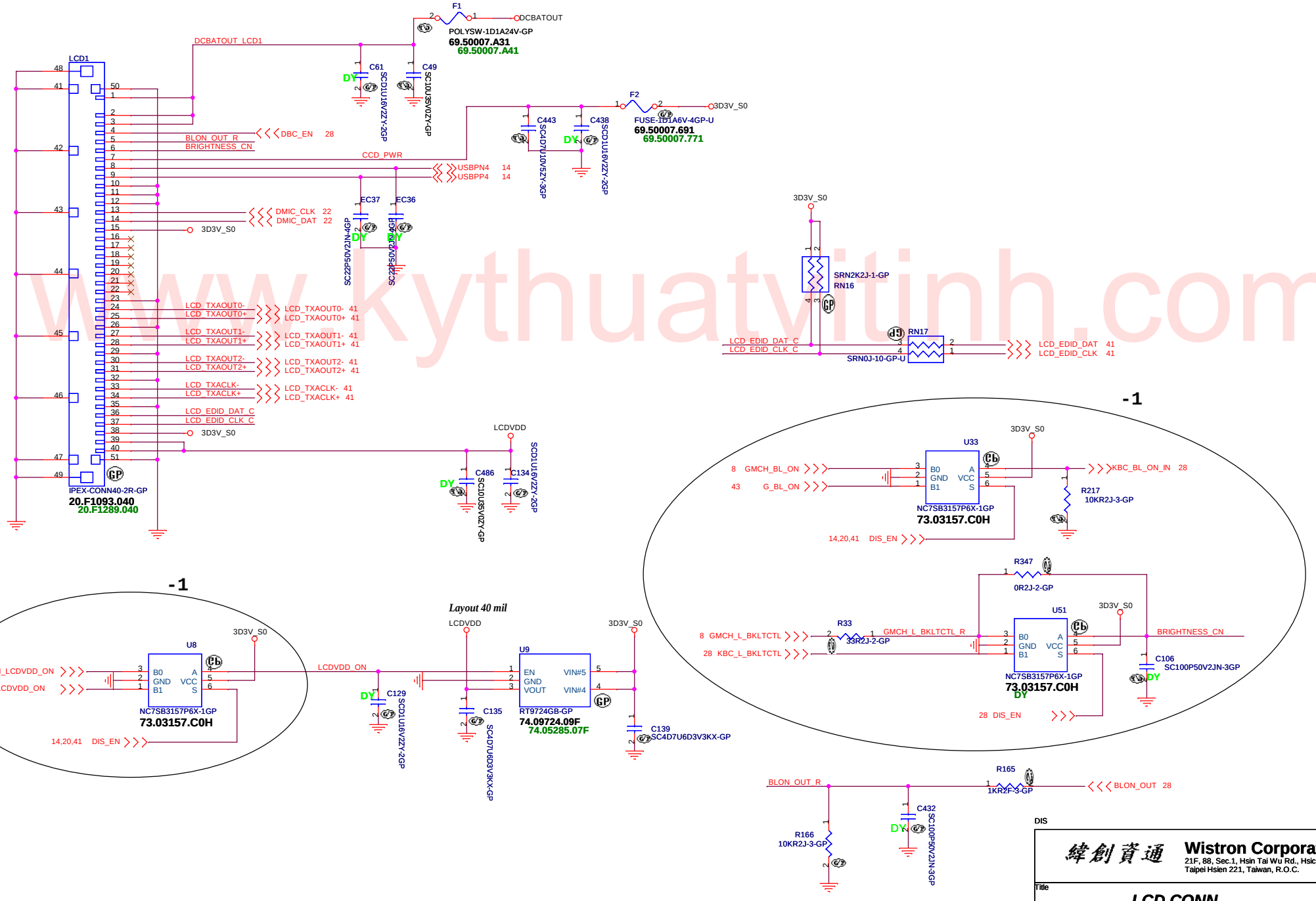
DDR3 SOCKET_2



緯創資通	Wistron Corporation	21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	DDR3 Socket2	
Size	Document Number: JM41_Discrete	Rev: -1
Date: Thursday, April 09, 2009	Sheet 18 of 48	

LCD/CCD CONN

Internal MIC



DIS

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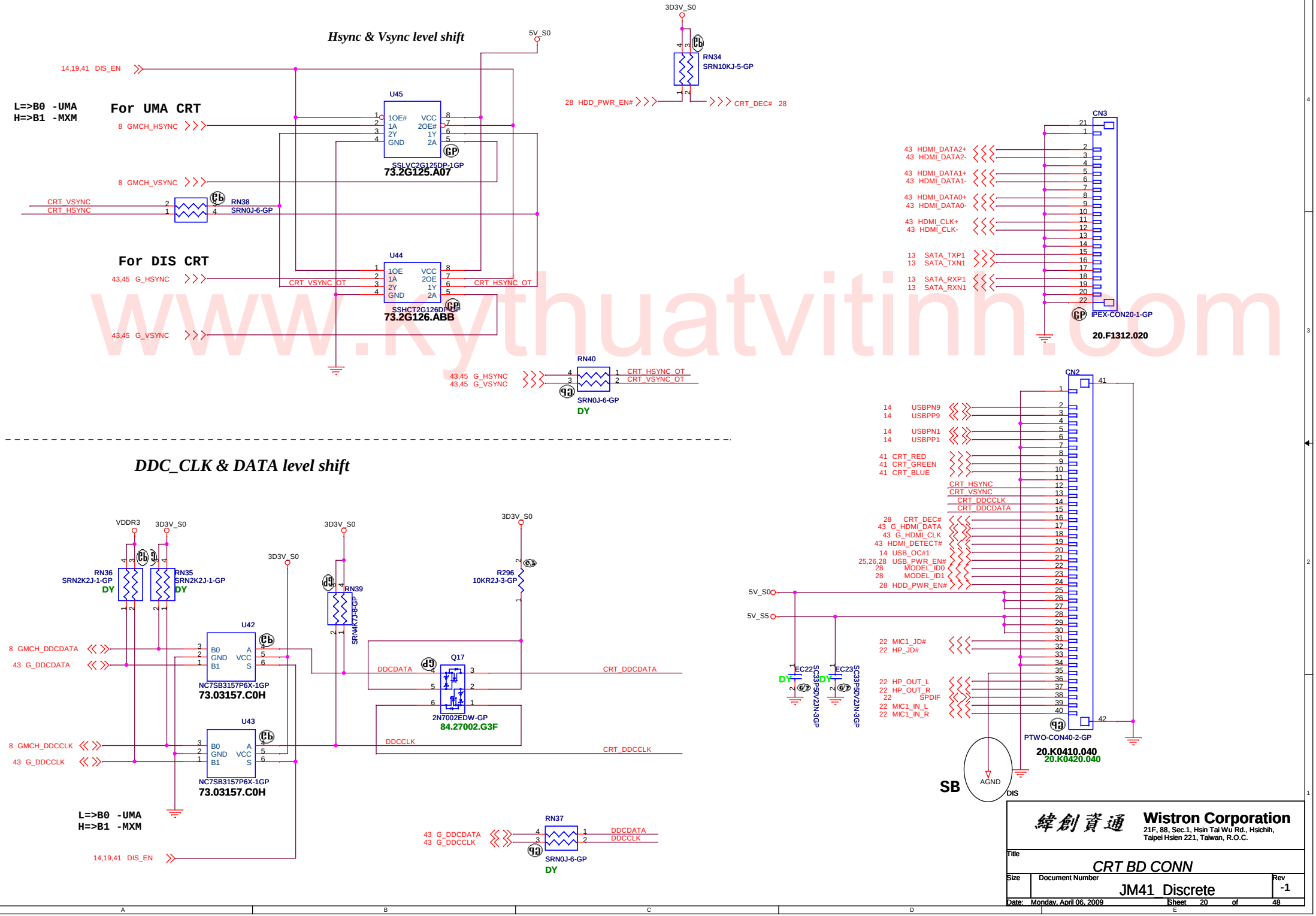
Taipei Hsien 221, Taiwan, R.O.C.

Title	LCD CONN	
Size	Document Number: JM41_Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 19 of 48	



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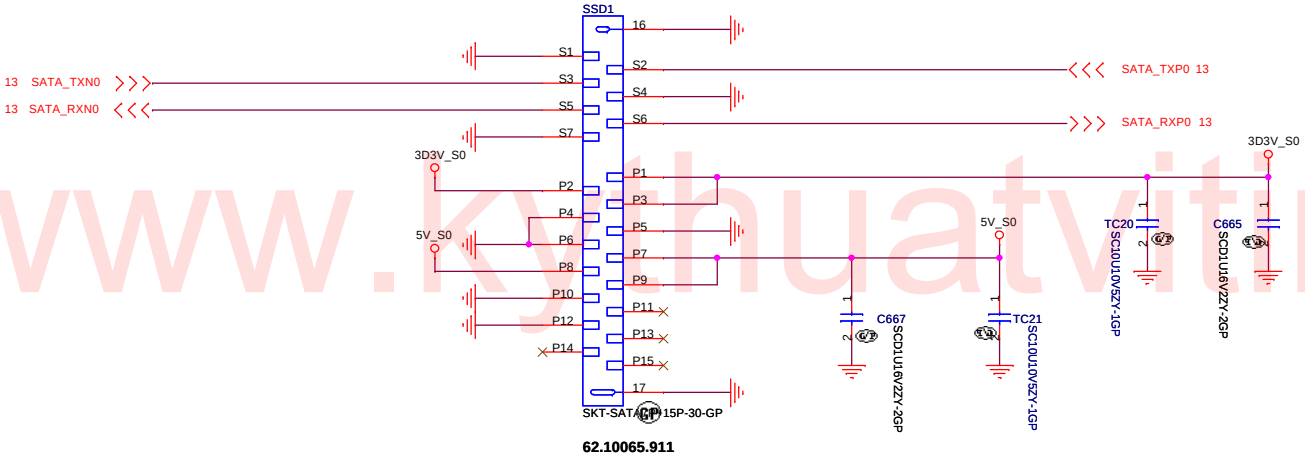
Title	CRT BD CONN	
Size	Document Number: JM41_Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 20 of 48	

SSD SATA Connector



DIS

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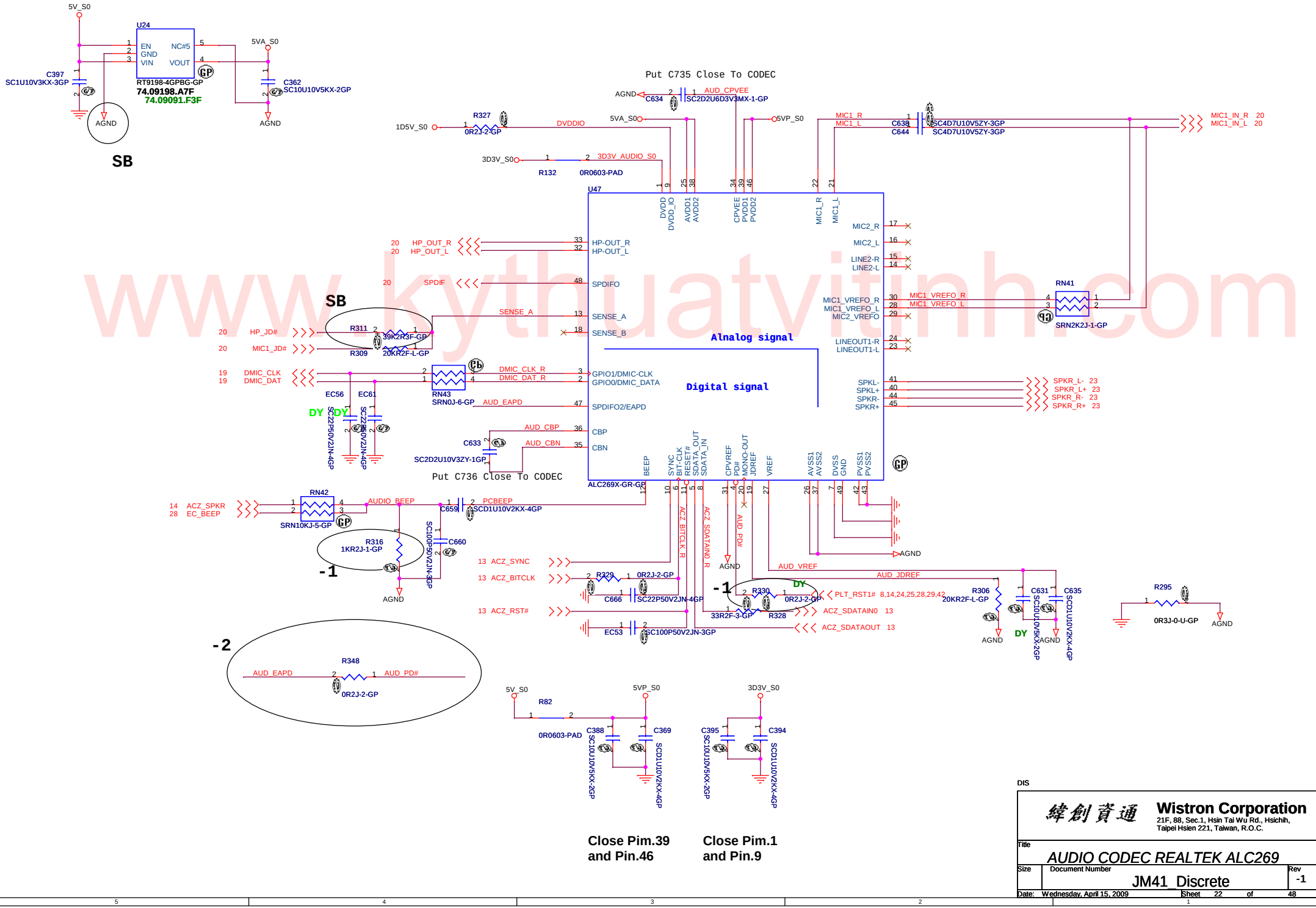
Title: *HDD CONN*		
Size	Document Number: JM41 Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 21 of 48	



DIS

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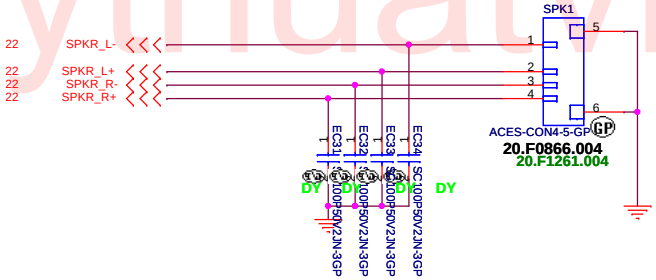
Title: *AUDIO CODEC REALTEK ALC269*

Size	Document Number	Rev
	JM41_Discrete	-1

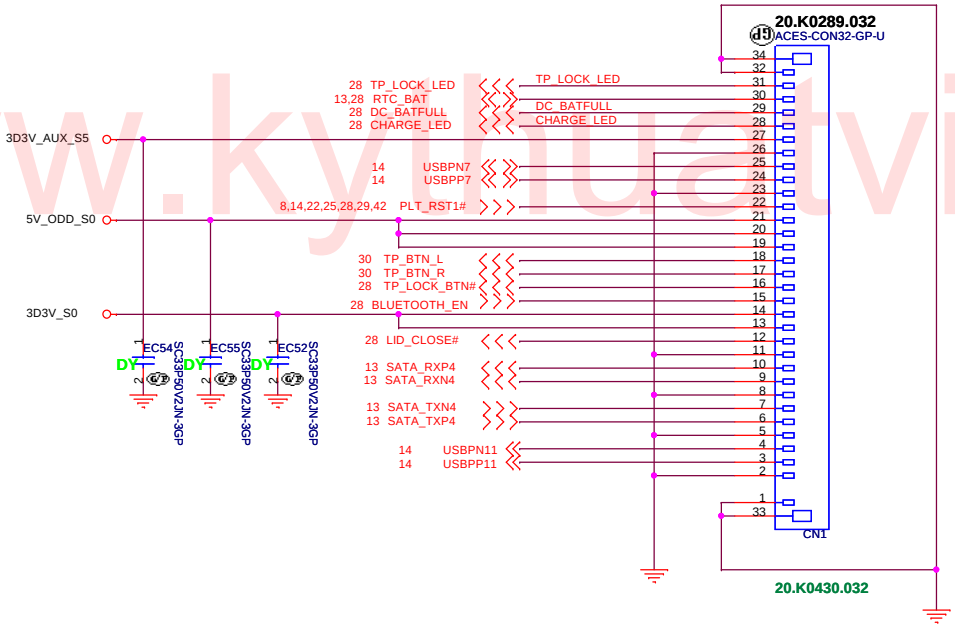
Date: Wednesday, April 15, 2009 Sheet 22 of 48

Internal Speaker



DIS

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: *AUDIO JACK*		
Size	Document Number: JM41_Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 23 of 48	



DIS

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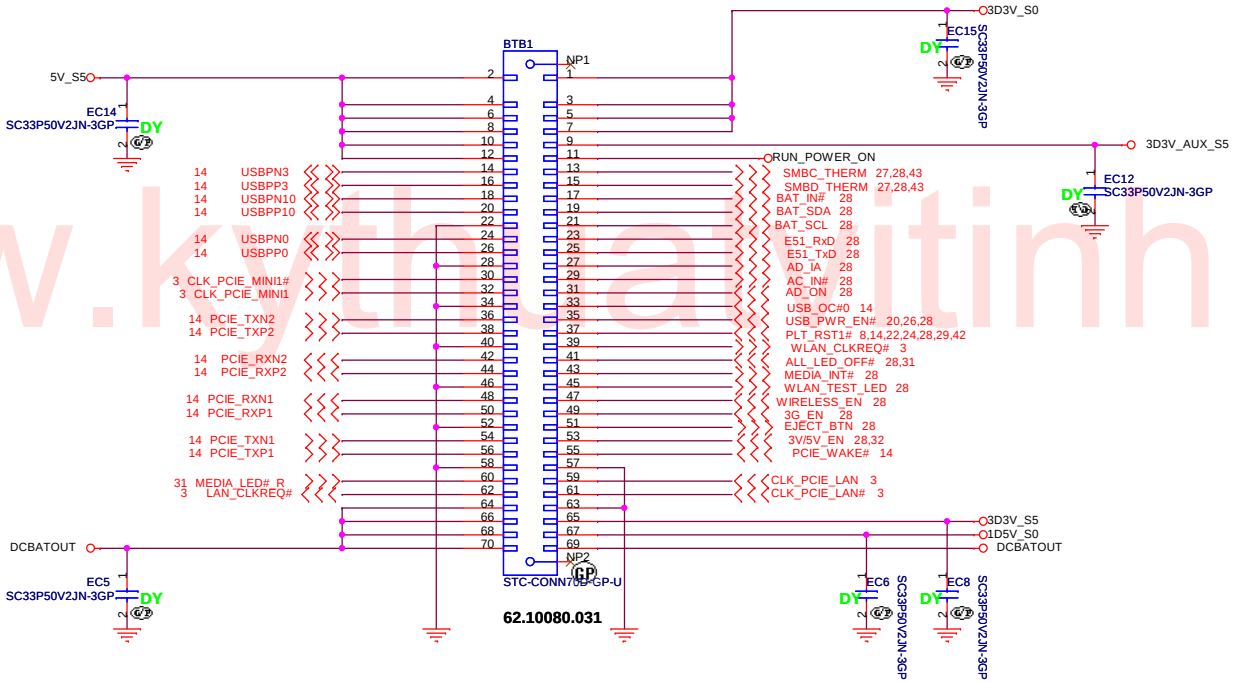
Taipei Hsien 221, Taiwan, R.O.C.

Title: CARDREADER BD CONN

Size	Document Number	Rev
	JM41_Discrete	-1

Date: Thursday, April 09, 2009 Sheet 24 of 48



DIS

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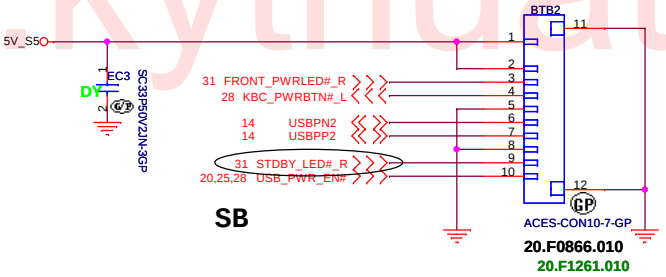
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***MINI BD CONN***

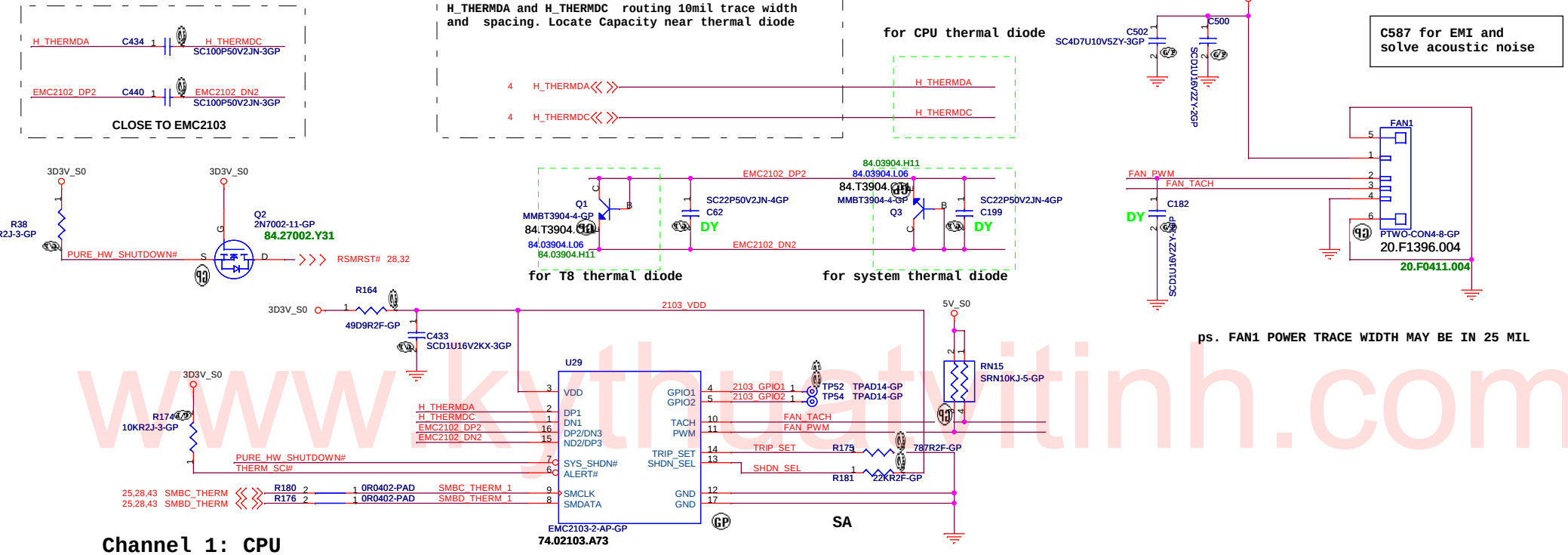
Size	Document Number	Rev
A3	JM41_Discrete	-1

Date: Monday, April 06, 2009 Sheet 25 of 48



DIS

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: ***POWER BUTTON CONN***		
Size: A3	Document Number: JM41_Discrete	Rev: -1
Date: Monday, April 06, 2009	Sheet 26 of 48	



Channel 1: CPU
Channel 2: Palmrest
Channel 3: T8

SHDN SEL

PULL UP RESISTOR	MODE OF OPERATION
<=4.7K OHM	EXTERNAL DIODE 1 SIMPLE MODE-BETA COMPENSATION DISABLED,REC DISABLED
6.8K OHM	EXTERNAL DIODE 1 DIODE MODE-BETA COMPENSATION DISABLED,REC ENABLED
10K OHM	EXTERNAL DIODE 1 TRANSISTOR MODE-BETA COMPENSATION ENABLED,REC ENABLED
15K OHM	INTERNAL DIODE
22K OHM	EXTERNAL DIODE 2 TRANSISTOR MODE-BETA COMPENSATION ENABLED,REC ENABLED
>=33K OHM	EXTERNAL DIODE 1 TRANSISTOR MODE-BETA COMPENSATION ENABLED,REC ENABLED

TRIP SET

Ttrip(degree)	RSET(1%)
85	562
86	604
87	649
88	698
89	750
90	787
91	845
92	909
93	953
94	1020
95	1100

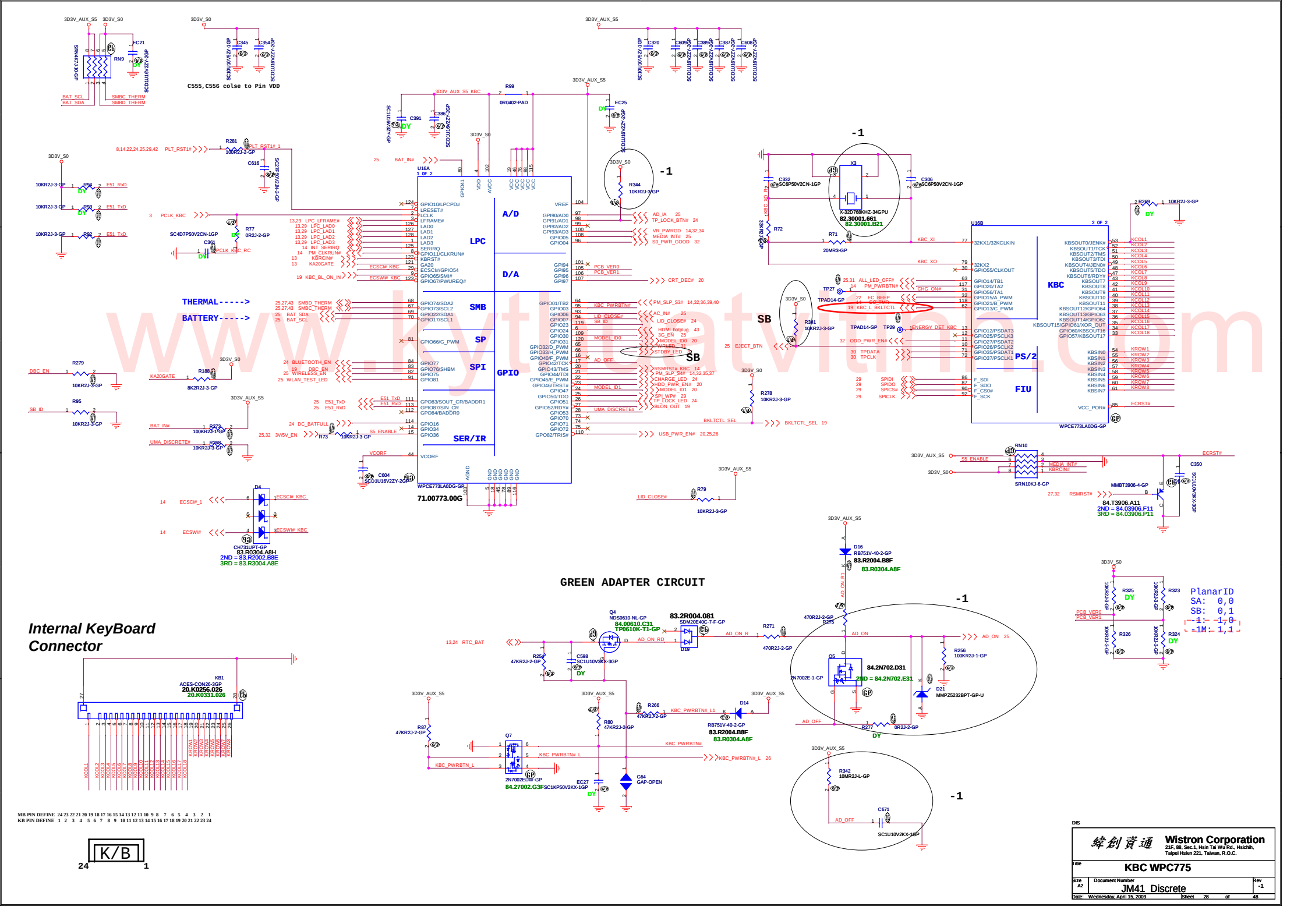
DIS

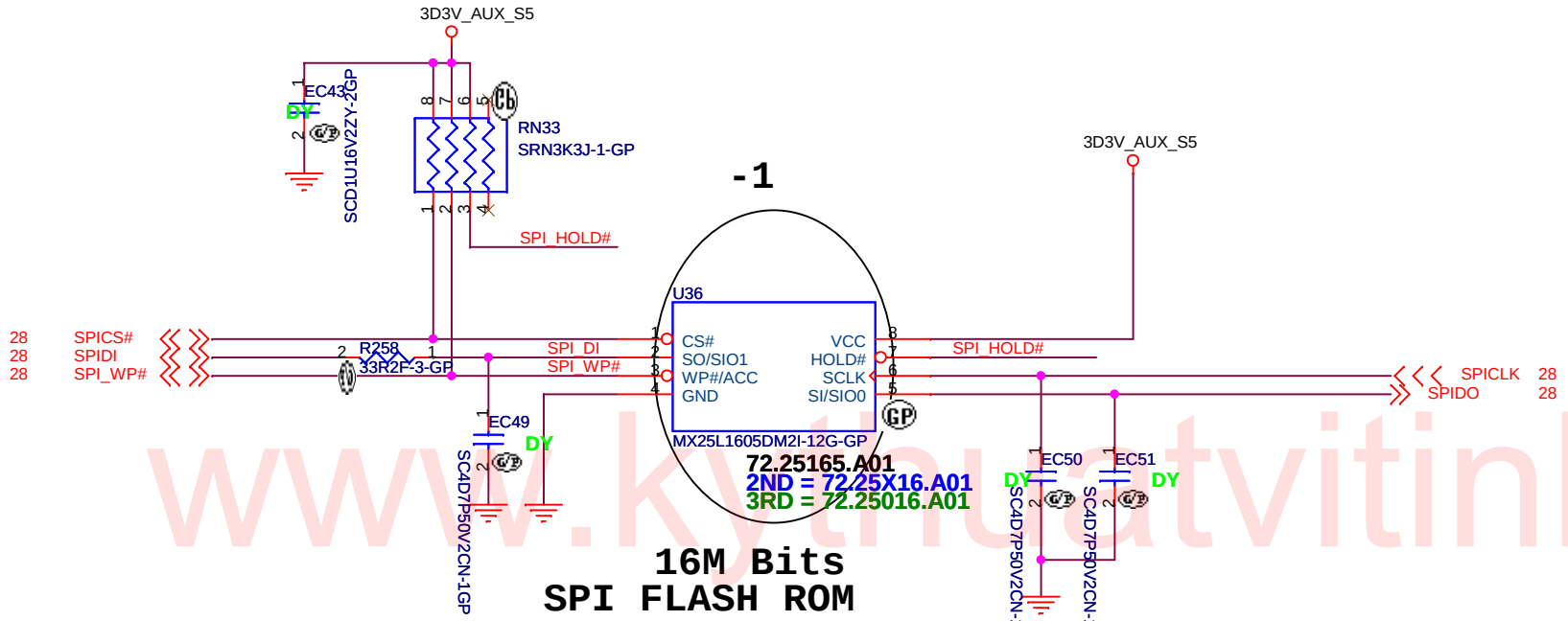
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: Thermal/Fan Controllor

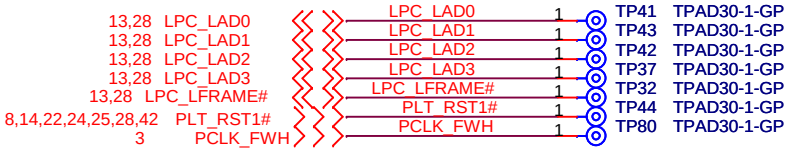
Size | Document Number: JM41 Discrete | Rev: -1

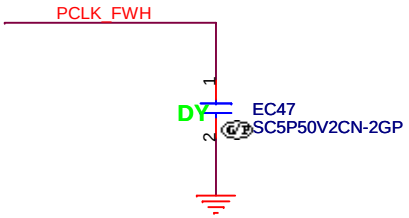
Date: Monday, April 06, 2009 | Sheet 27 of 48


C555,C556 colse to Pin VDD
THERMAL ------>
BATTERY ------>
A/D
D/A
SMB
SP
SPI
SER/IR
LPC
GPIO
SB
U16A
WPCE773LA0DG-GP
71.00773.00G
KBC
PS/2
FIU
U16B
WPCE773LA0DG-GP
GREEN ADAPTER CIRCUIT
Internal KeyBoard Connector
KB1
ACES-CON26-3GP
20.K0256.026
20.K0331.026
X3
X-32D768KHZ-34GPU
82.30001.661
82.30001.B21
20MR3-GP
SRN10KJ-6-GP
CH731UPT-GP
83.R0304.A8H
2ND = 83.R2002.B8E
3RD = 83.R3004.A8E
MMBT3906-4-GP
84.T3906.A11
2ND = 84.03906.F11
3RD = 84.03906.P11
D16
RB751V-40-2-GP
83.R2004.B8F
83.R0304.A8F
D14
RB751V-40-2-GP
83.R2004.B8F
83.R0304.A8F
Q4
NDS0610-NL-GP
84.00610.C31
TP0610K-T1-GP
83.2R004.081
SDM20E40C-7-F-GP
Q5
84.2N702.D31
2ND = 84.2N702.E31
2N7002E-1-GP
Q7
2N7002EDW-GP
84.27002.G3F
D21
MMPZ5232BPT-GP-U
G64
GAP-OPEN
PlanarID
SA: 0,0
SB: 1,0
-1: 1,1
-1M: 1,1
MB PIN DEFINE 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
KB PIN DEFINE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
K/B
24 1
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.
KBC WPC775
Size A2
Document Number JM41 Discrete
Rev -1
Date: Wednesday, April 15, 2009
Sheet 28 of 48



GOLDEN FINGER FOR DEBUG BOARD





DIS

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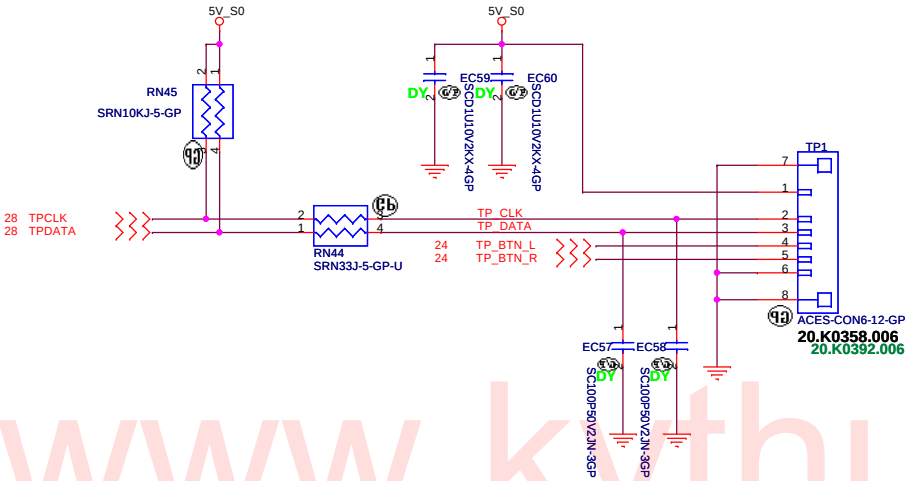
Taipei Hsien 221, Taiwan, R.O.C.

Title: ***BIOS***

Size	Document Number	Rev
	JM41_Discrete	-1

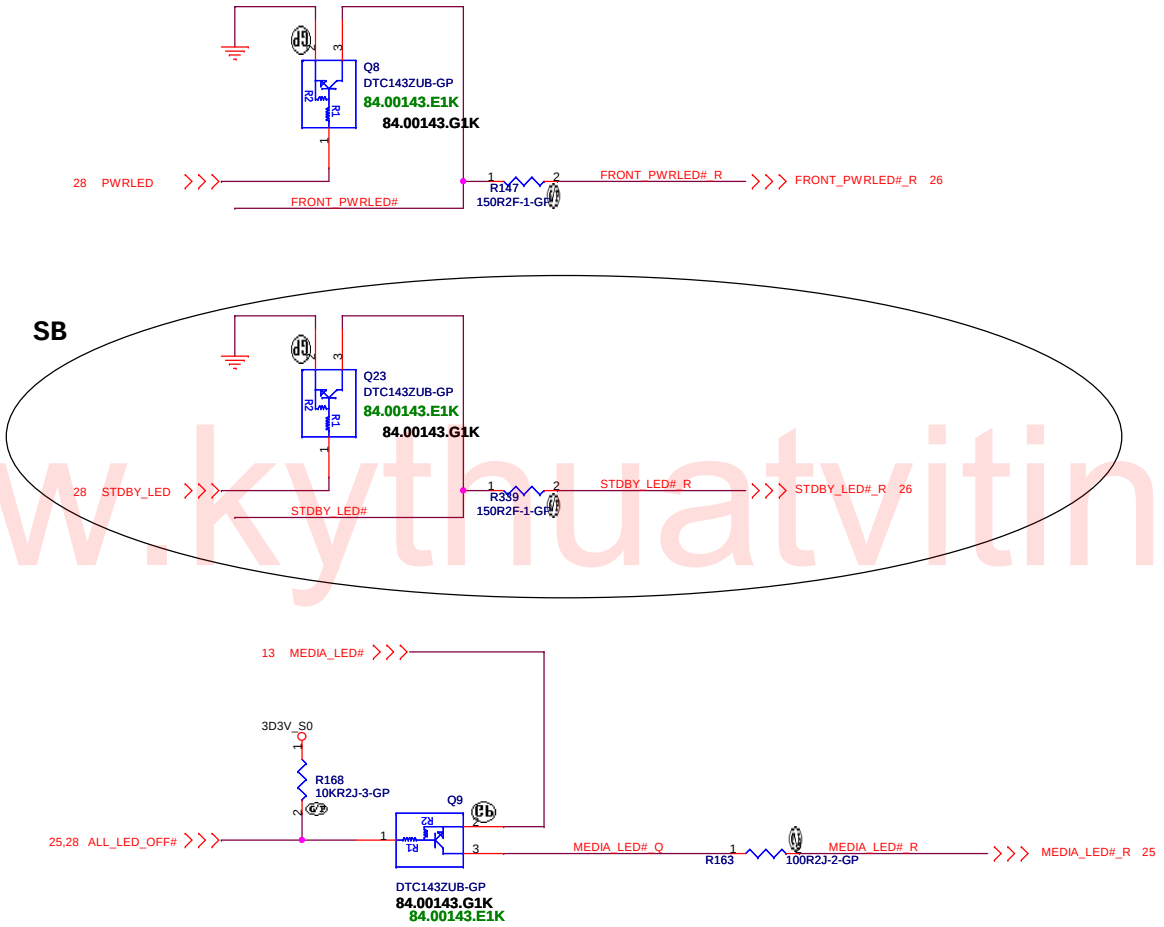
Date: Monday, April 06, 2009 Sheet 29 of 48

TOUCH PAD



DIS

緯創資通	**Wistron Corporation** 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	*Touch PAD*
Size / Document Number	JM41_Discrete / Rev -1
Date: Thursday, April 09, 2009	Sheet 30 of 48



DIS

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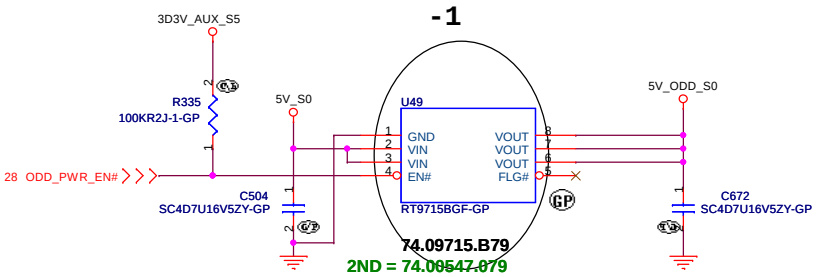
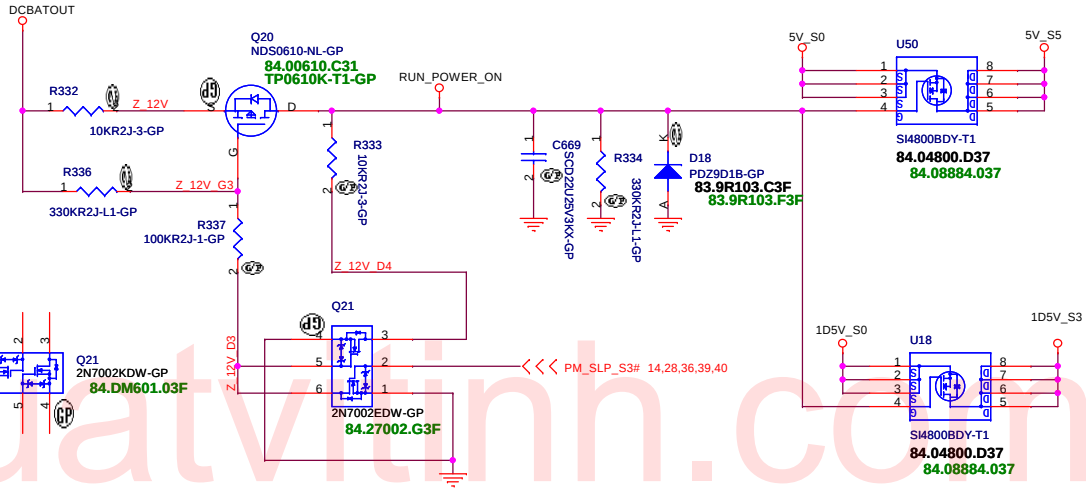
Taipei Hsien 221, Taiwan, R.O.C.

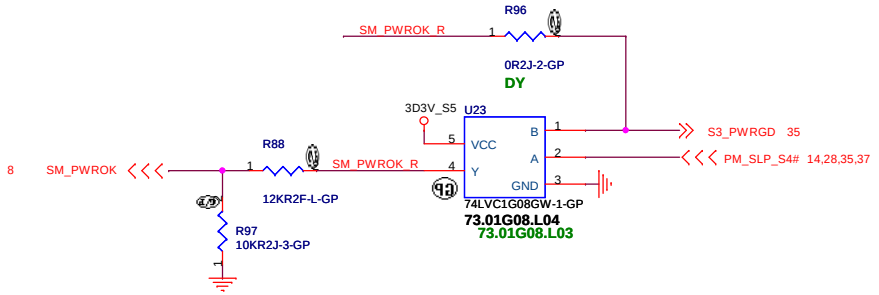
Title	**LED**	
Size	Document Number **JM41_Discrete**	Rev **-1**
Date: Monday, April 06, 2009	Sheet 31 of 48	

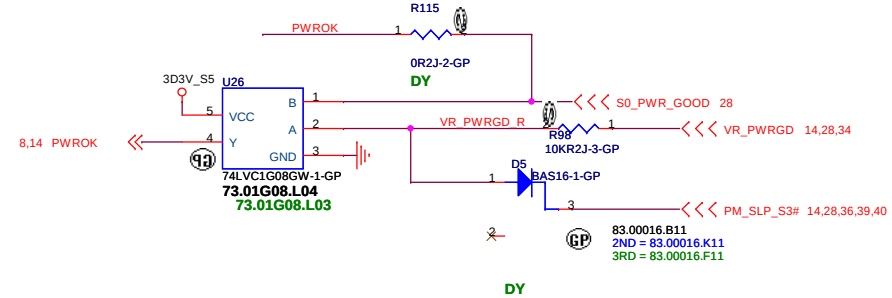
ODD Power

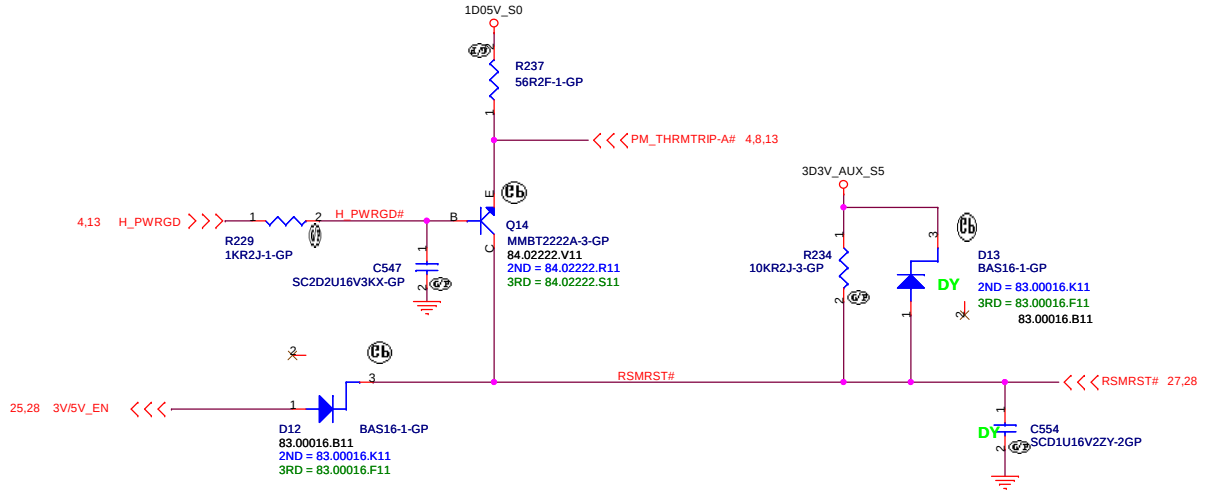


Run Power









DIS

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: RUN & ODD POWER		
Size	Document Number: JM41_Discrete	Rev: -1
Date: Wednesday, April 15, 2009	Sheet 32 of 48	

CPU_CORE
ISL6261A

VID0
VID1
VID2
VID3
VID4
VID5
VID6

CPUCORE_ON

VCC_SENSE
VSS_SENSE

DCBATOUT_6261A
5V_S0
3D3V_S0

VID Setting
VID0(I / 3.3V)
VID1(I / 3.3V)
VID2(I / 3.3V)
VID3(I / 3.3V)
VID4(I / 3.3V)
VID5(I / 3.3V)
VID6(I / 3.3V)

Input Signal
EN (I / 3.3V)

Voltage Sense
VSEN(I / Vcore)
RGND(I / Vcore)

Input Power
VCC(I)
VCC(I)
VCC(I)

Output Signal
PGOOD

VR_PWROK

Output Power
VCC_CORE_PWR(O)

VCC_CORE(Imax=18A)

RT8202 1D05V_S0

DCBATOUT_8202_1D05V
PM_SLP_S3#

VIN
EN
1D5V(O)
PGOOD

1D05V_S0 (10A)
CPUCORE_ON

RT8202 1D5V_S3

DCBATOUT_8202_1D5V
PM_SLP_S4#

VIN
EN
1D5V(O)
PGOOD

1D5V_S3 (11A)
CPUCORE_ON

GFX_CORE
ISL6263A

VID0
VID1
VID2
VID3
VID4

5V_S0
DCBATOUT_6263A

PM_SLP_S3#
GFXVR_EN

VCC_AXG_SENSE
VSS_AXG_SENSE

VID Setting
VID0(I / 3.3V)
VID1(I / 3.3V)
VID2(I / 3.3V)
VID3(I / 3.3V)
VID4(I / 3.3V)

Input Power
VDD
VIN

Input Signal
VR_ON

Voltage Sense
VSEN(I / Vcore)
RGND(I / Vcore)

Output Signal
PGOOD

CPUCORE_ON

Output Power
VGFXCORE (O)

VCC_GFXCORE(7A)

RT9026 0D9V_S0

5V_S5
1D5V_S3
PM_SLP_S4#

VIN
VLDOIN
S3
S5
VTT
VTTREF

0D75V_S3 (1.2A)
0D75V_S3_1

Charger MAX8731A

CHG_ON#
24750_CELLS

AD+

Input Signal
CHGEN#
CELLS

Input Power
ACN

Output Signal
ACGOOD#
SRSET

Output Power
VOUT (O)
VOUT (O)

AC_IN#
AD_IA

BT+
DCBATOUT

TPS51125
5V/3D3V

DCBATOUT_51125

S5_ENABLE

ALW_PWRGD_3V_5V

Input Power
VIN

Input Signal
EN0

Output Signal
PGOOD

Output Power
5V(O)
3D3V(O)
5V(O)
3D3V(O)

5V_S5 (6A)
3D3V_S5 (5A)
5V_AUX_S5
3D3V_AUX_S5

Adapter

AD_OFF
AD_JK
5V_AUX_S5

Input Signal
(I)

Input Power
VCC(I)
VCC(I)

Output Signal
(O)

Output Power
VCC(O)

AD_IN#
AD+

DIS

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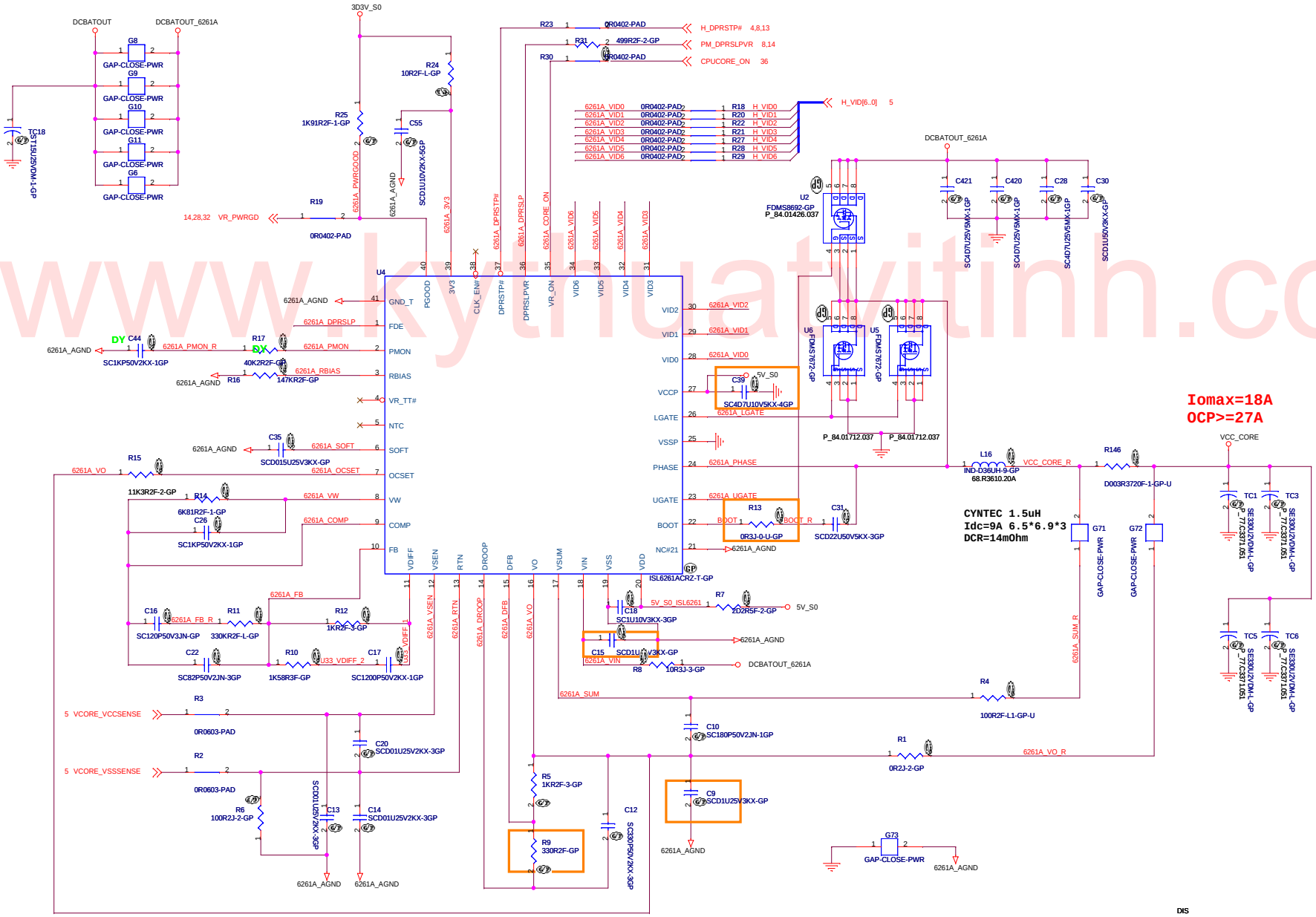
Taipei Hsien 221, Taiwan, R.O.C.

Title: Power Sequence Logic

Size: B | Document Number: JM41_Discrete | Rev: -1

Date: Monday, April 06, 2009 | Sheet 33 of 48



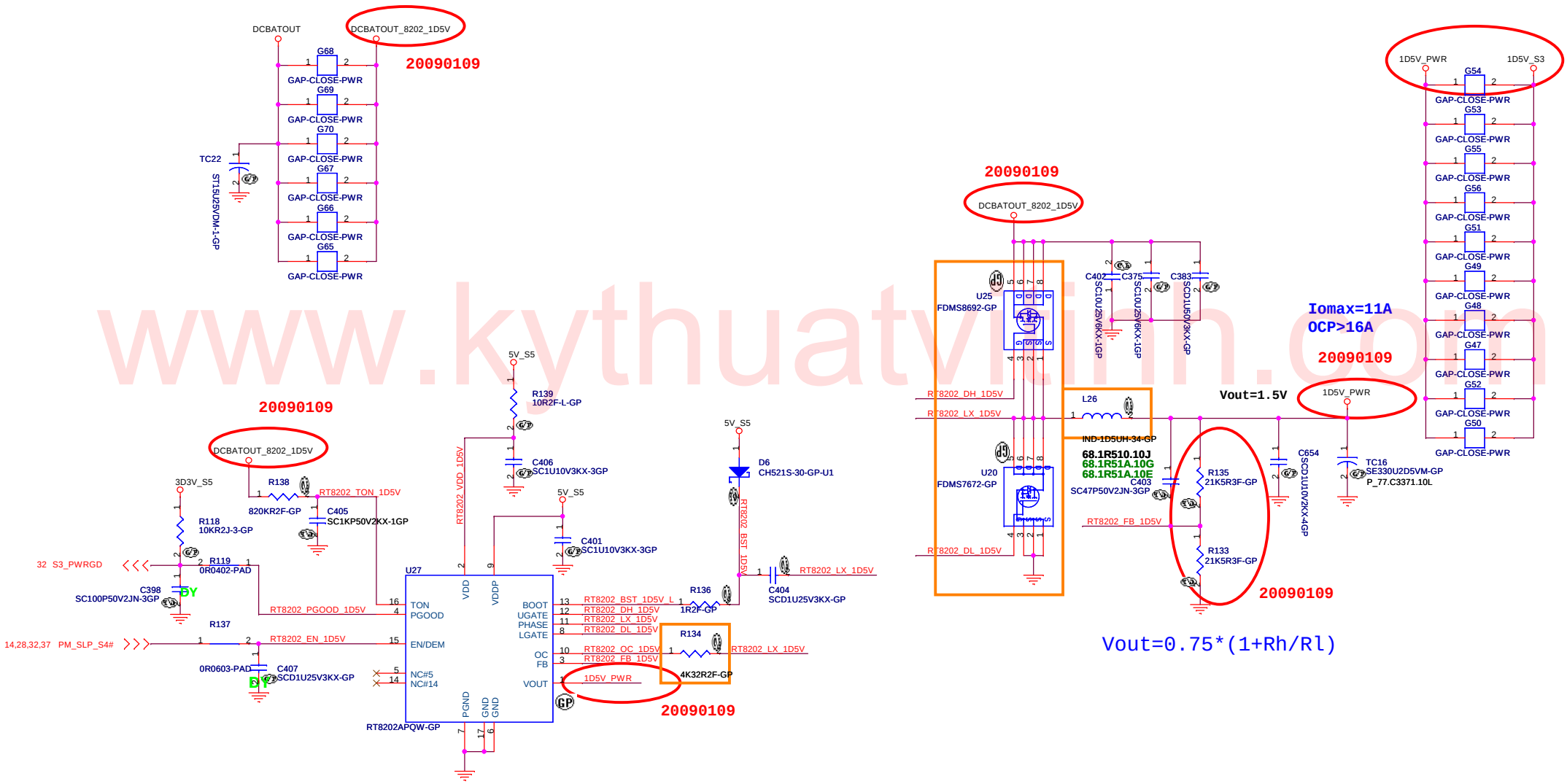
DIS

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

Title: ISL6261A CPU CORE

Size	Document Number	Rev
Custom	JM41 Discrete	-1

Date: Monday, April 06, 2009 Sheet 34 of 48



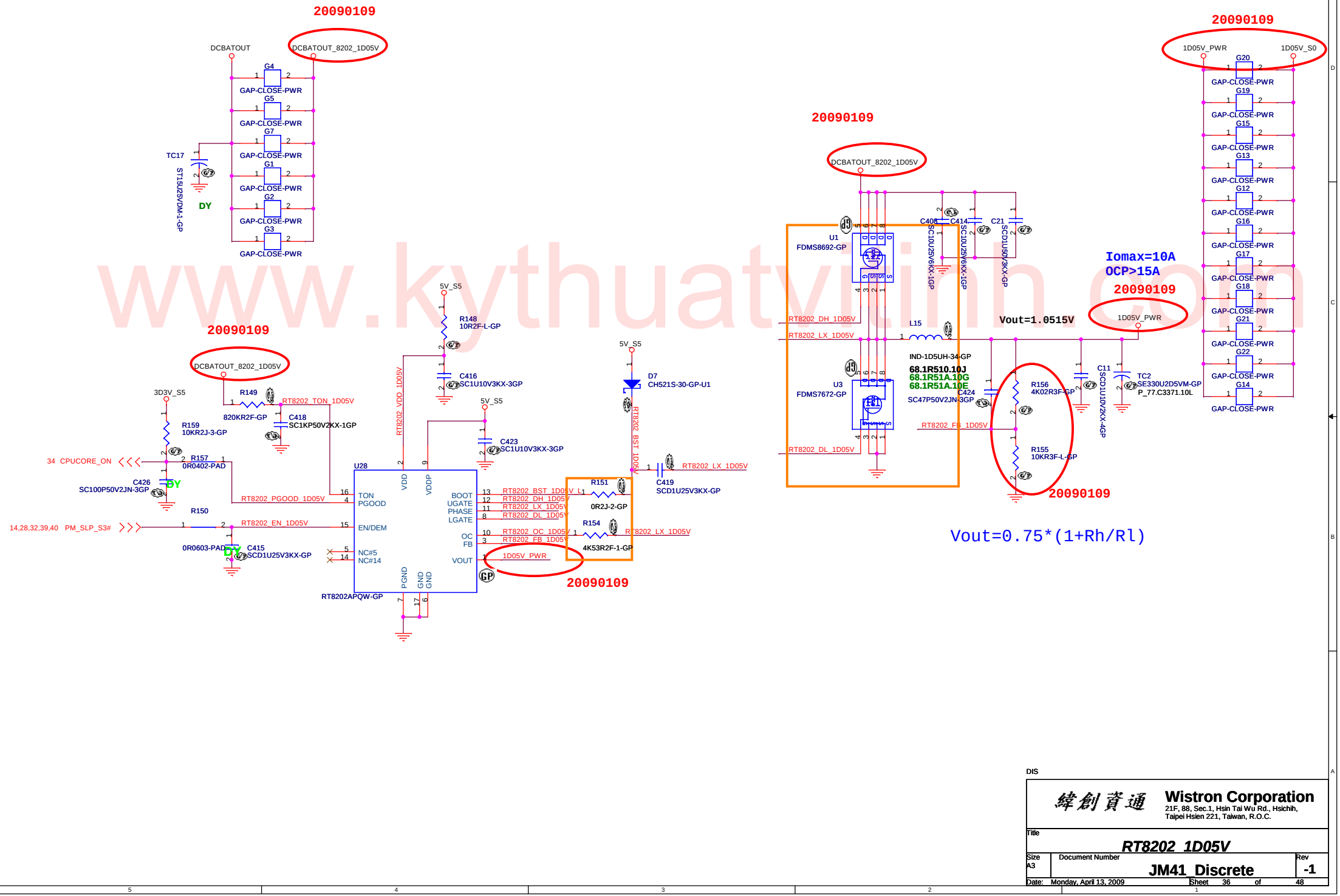
DIS

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

Title: RT8202_1D5V

Size	Document Number	Rev
A3	JM41_Discrete	-1

Date: Monday, April 13, 2009 Sheet 35 of 48



DIS

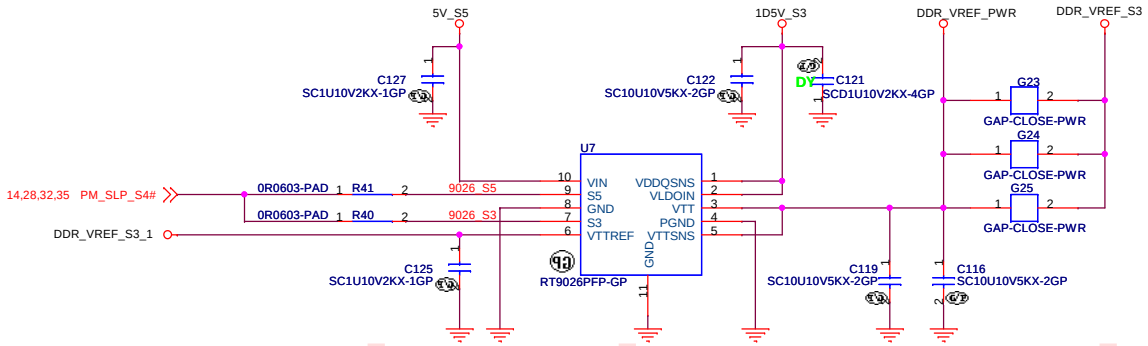
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: RT8202_1D05V

Size	Document Number	Rev
A3	JM41_Discrete	-1

Date: Monday, April 13, 2009 Sheet 36 of 48

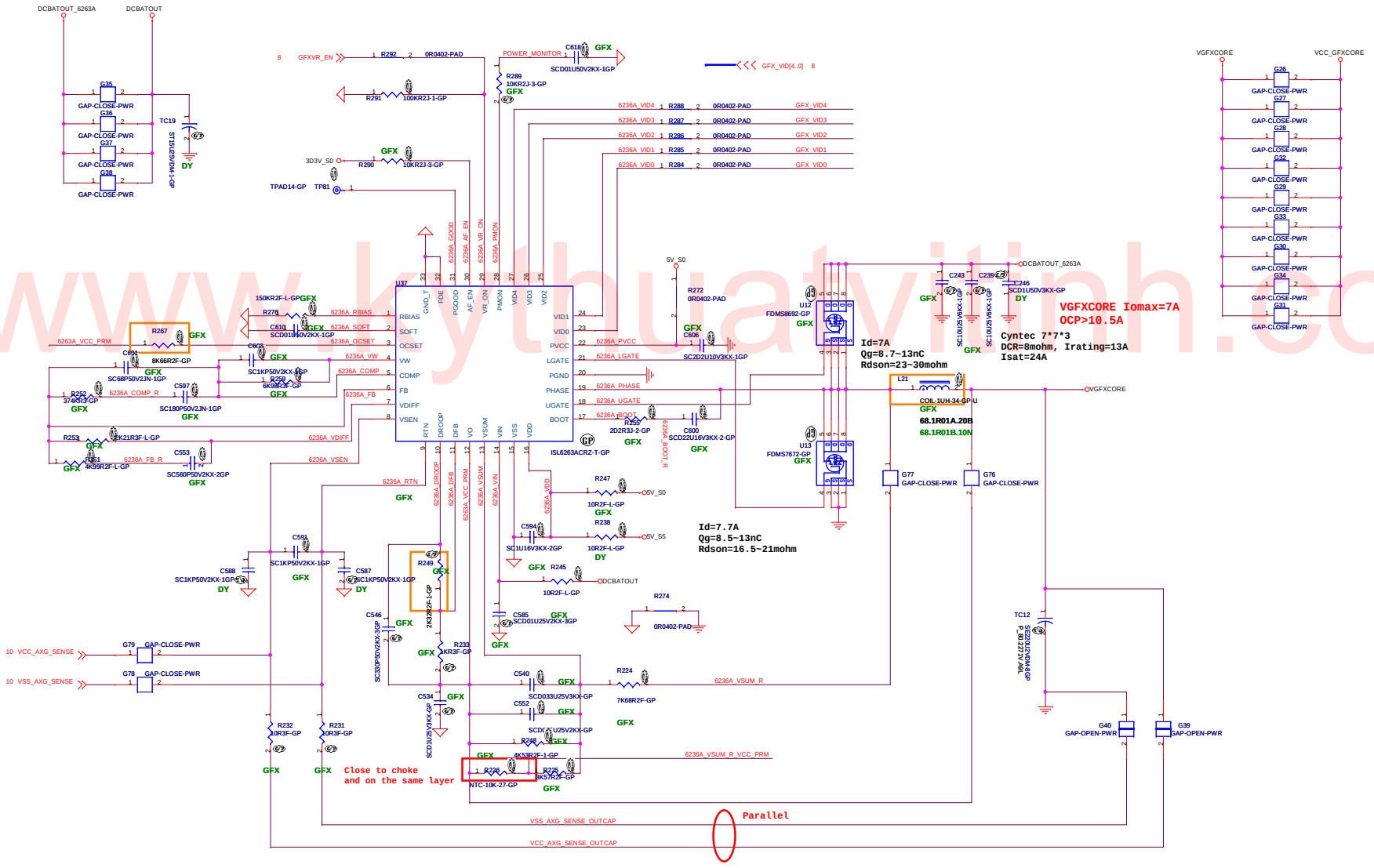
Iomax=1.2A
OCP>2A



DIS

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

Title	RT9026_0D75V	
Size A3	Document Number JM41_Discrete	Rev -1
Date: Monday, April 06, 2009	Sheet 37 of 48	



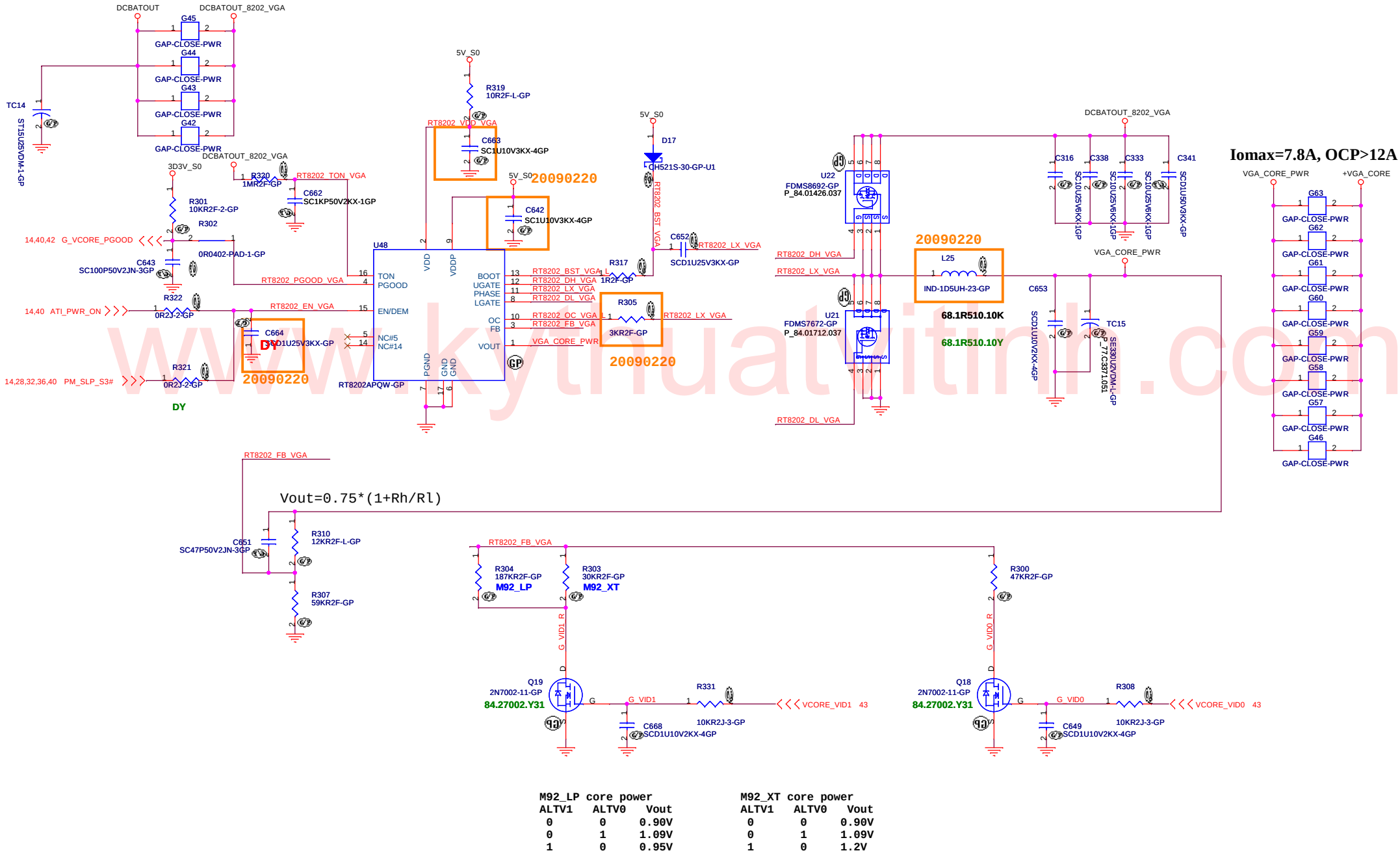
DIS

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

Title: ISL6263A_GFX CORE

Size	Document Number	Rev
A2	JM41_Discrete	-1

Date: Monday, April 06, 2009 Sheet 38 of 48



M92_LP core power

ALTV1	ALTV0	Vout
0	0	0.90V
0	1	1.09V
1	0	0.95V

M92_XT core power

ALTV1	ALTV0	Vout
0	0	0.90V
0	1	1.09V
1	0	1.2V

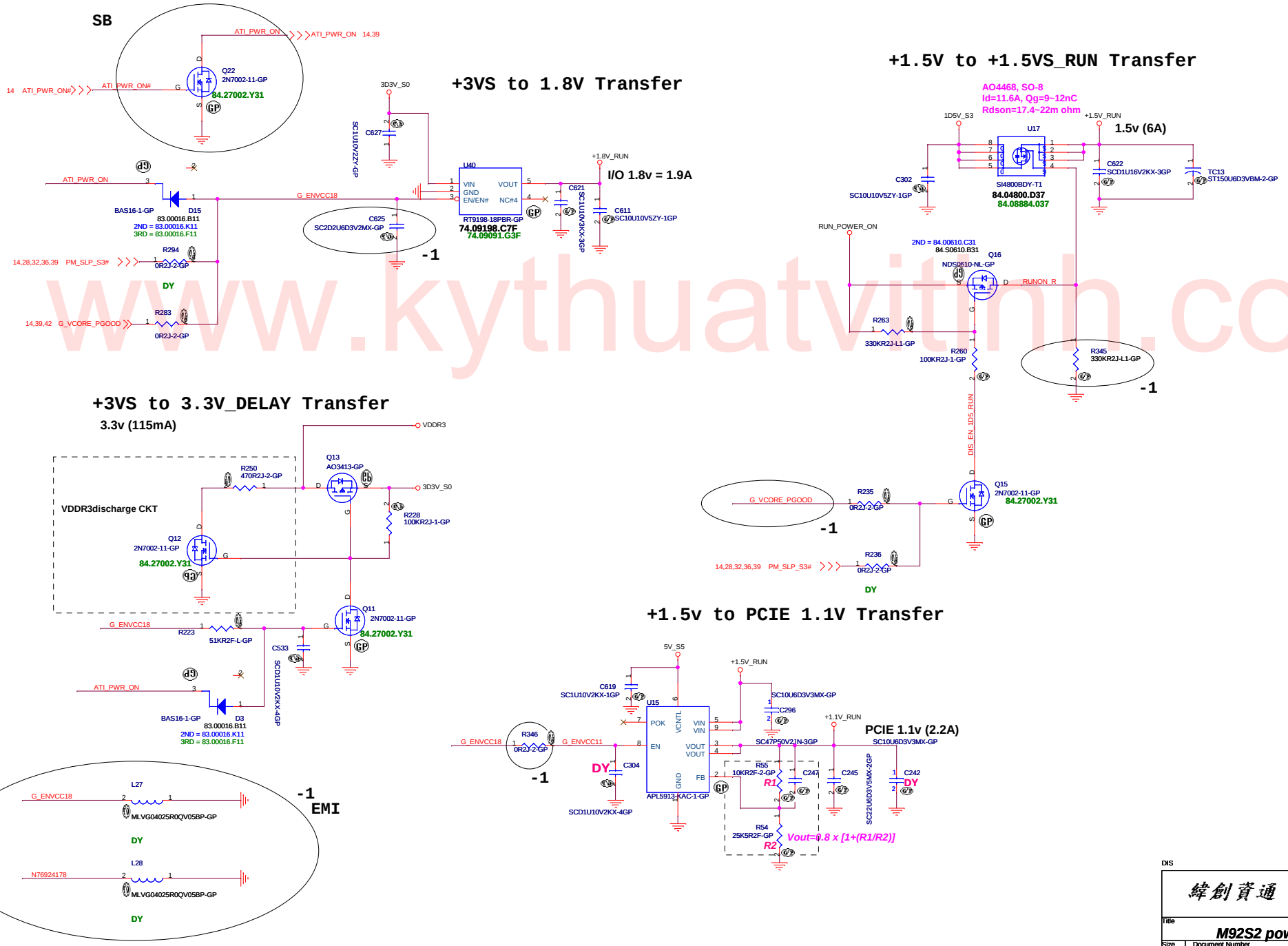
DIS

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

Title: **RT8202A VGA CORE**

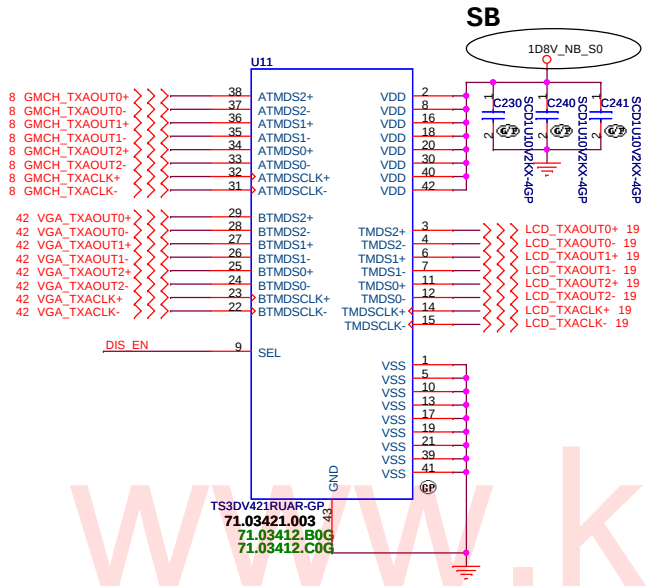
Size: A3 | Document Number: **JM41 Discrete** | Rev: -1

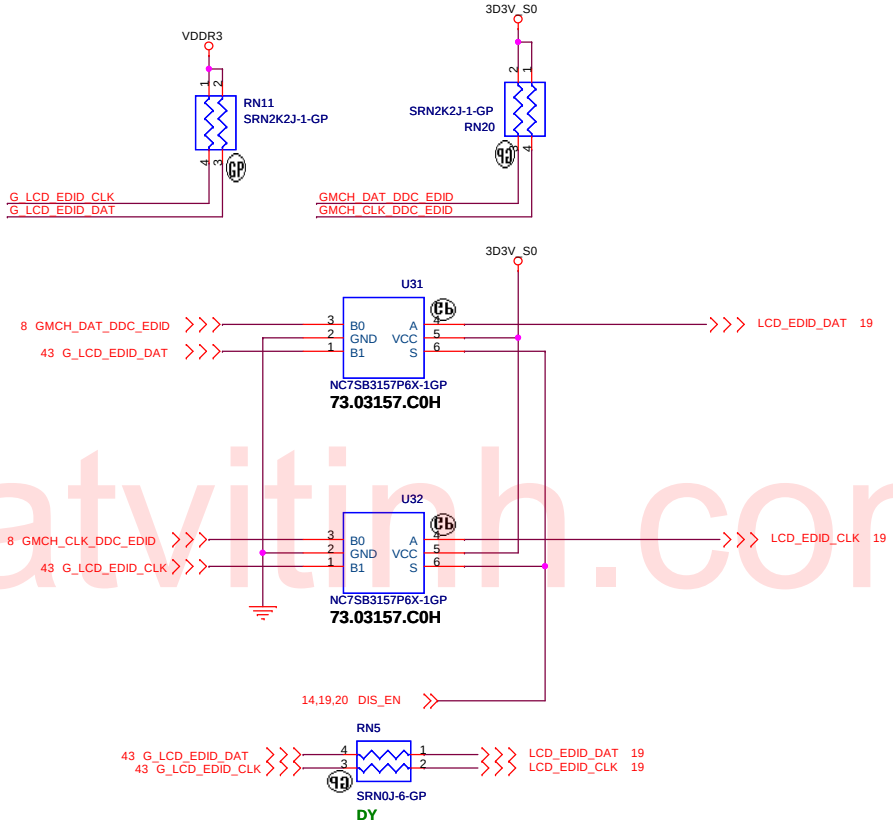
Date: Monday, April 06, 2009 | Sheet 39 of 48



DIS

緯創資通	Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title	M92S2 power	
Size: Custom	Document Number: JM41_Discrete	Rev: -1
Date: Monday, April 13, 2009	Sheet 40 of 48	

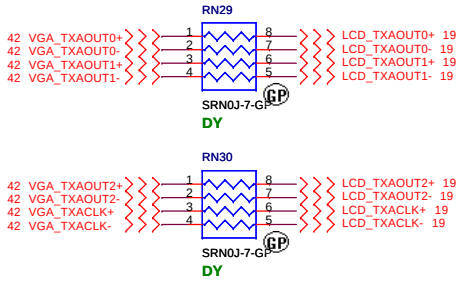


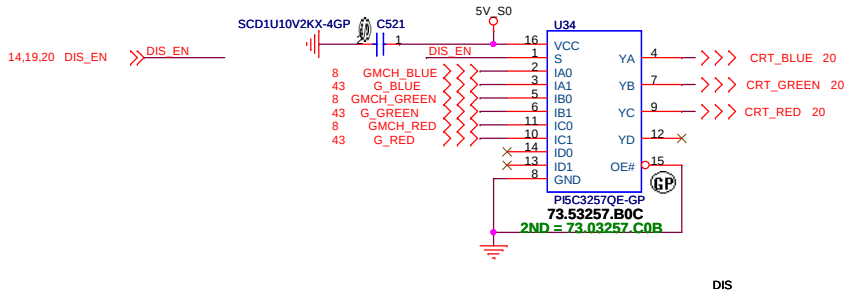


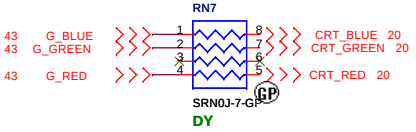
FUNCTION TABLE

SEL	FUNCTION	OUTPUT
L	TMDSn+ = ATMDSn+ TMDSn- = ATMDSn- TMDSCLK+ = ATMDSCLK+ TMDSCLK- = ATMDSCLK- BTMDSn+ = High Impedance BTMDSn- = High Impedance BTMDSCLK+ = High Impedance BTMDSCLK- = High Impedance	TMDSn+ TMDSn- TMDSCLK+ TMDSCLK-
H	TMDSn+ = BTMDSn+ TMDSn- = BTMDSn- TMDSCLK+ = BTMDSCLK+ TMDSCLK- = BTMDSCLK- ATMDSn+ = High Impedance ATMDSn- = High Impedance ATMDSCLK+ = High Impedance ATMDSCLK- = High Impedance	TMDSn+ TMDSn- TMDSCLK+ TMDSCLK-

$\overline{E}$	S	YA	YB	YC	YD	Function
H	X	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Disable
L	L	IA0	IB0	IC0	ID0	S = 0
L	H	IA1	IB1	IC1	ID1	S = 1







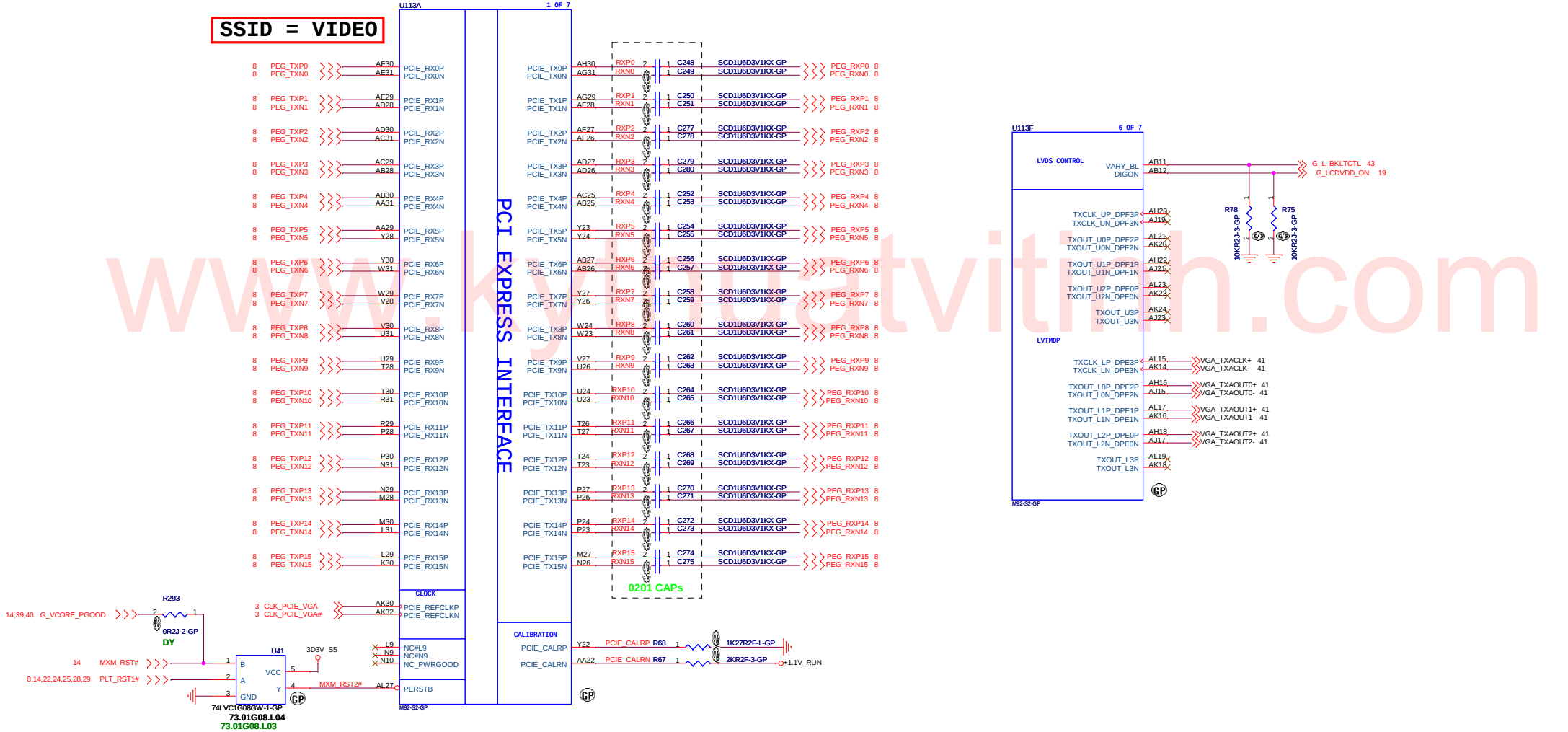
DIS

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

Title: PX_SWITCH

Size	Document Number	Rev
A3		-1

Date: Monday, April 06, 2009 Sheet 41 of 48



DIS

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

Title: VGA-PCIE/LVDS(1/4)

Size	Document Number	Rev
Custom	JM41_Discrete	-1

Date: Monday, April 06, 2009 Sheet 42 of 48

SSID = VIDEO

DVPDATA [3:0]
0100 64Mx16 Hynix
1000 64Mx16 Samsung

STRAPS	PIN	DESCRIPTION
MEM_TYPE	DVPDATA(23:20) (Internal PD)	MEMORY TYPE,MAKE AND SIZE INFO 0000 - GDDR3 16Mx32 Qimonda 0001 - GDDR3 32Mx32 Hynix 0010 - GDDR3 32Mx32 Qimonda 0011 - GDDR3 32Mx32 Samsung

HDMI(DPA)

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

CRT

(Placed between this pin and AVSSQ)

VREFG VOLTAGE DIVIDER IS (VREFG = VDDR4,5(1.8V) / 3 = .6V)

GPU DIE TEMP:
REMOTE2+ and REMOTE2- routing 10mil trace width and 10 mil spacing.

H:UMA MODE HDMI PLUG_OUT
L:UMA MODE HDMI PLUG_IN

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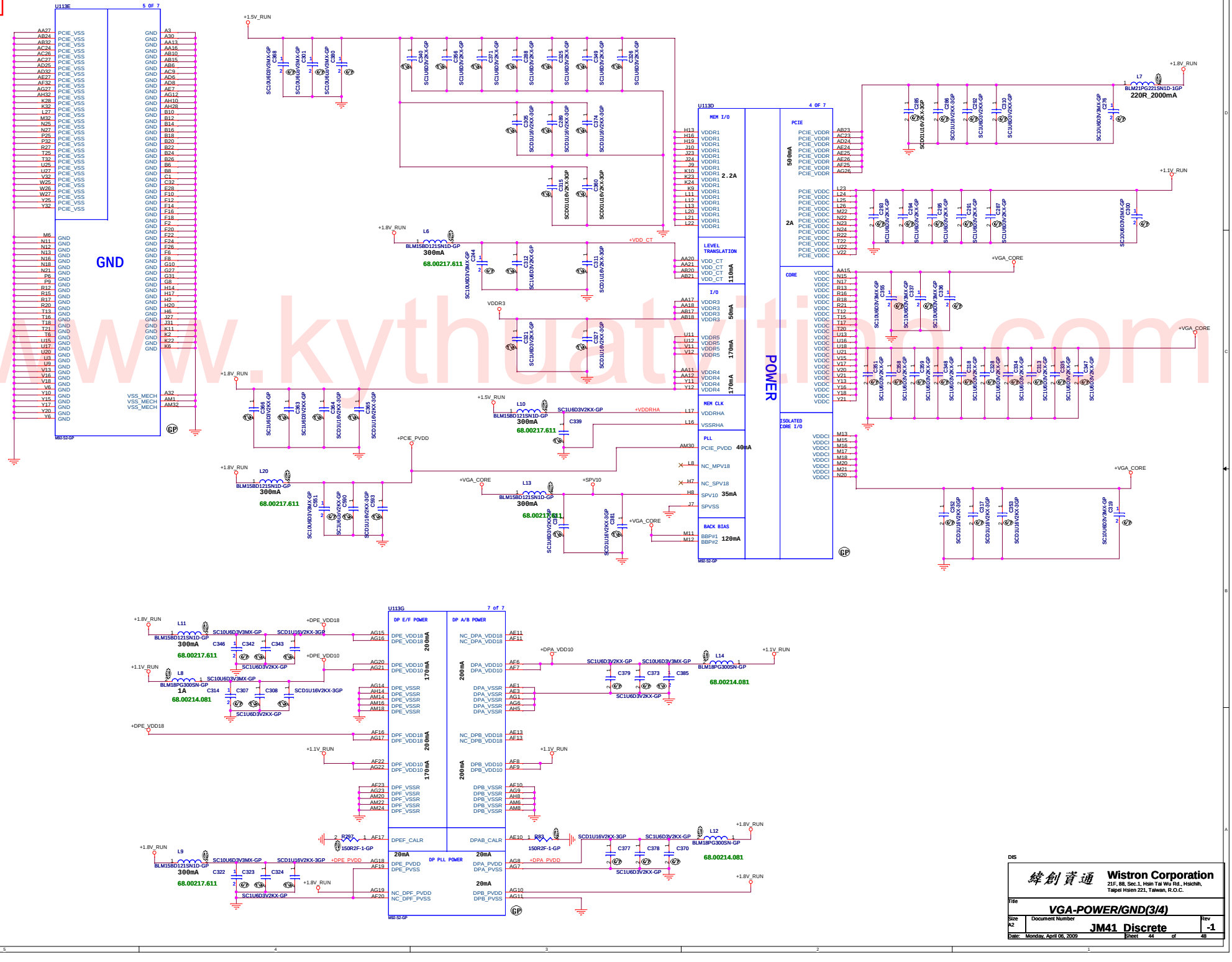
Title	VGA-TV/CRT/DP PORT(2/4)
Size C	Document Number JM41_Discrete Rev -1
Date: Monday, April 06, 2009	Sheet 43 of 48

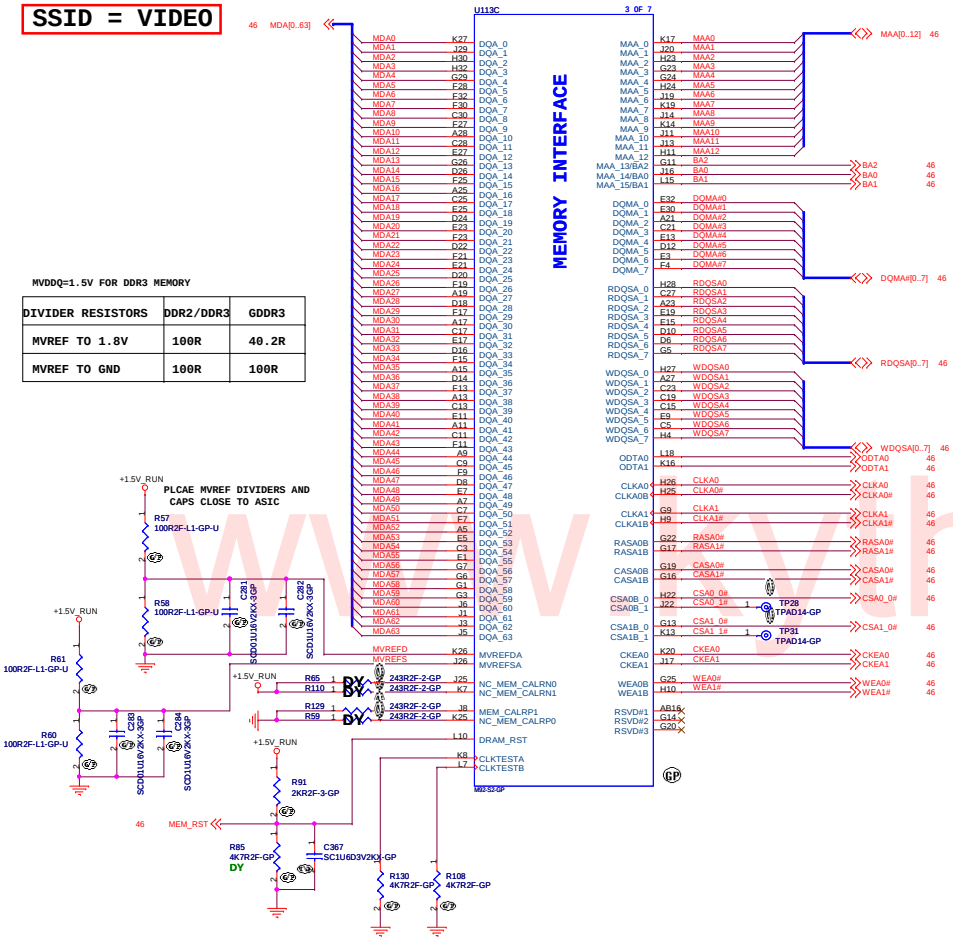
SSID = VIDEO



DIS

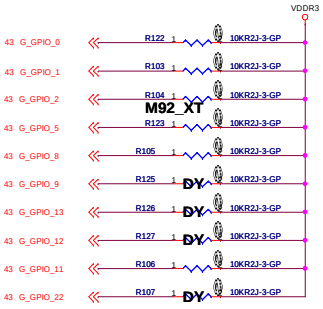
Wistron Corporation	21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	VGA-POWER/GND(3/4)
Size: A2	Document Number: JM41_Discrete
Rev	-1
Date: Monday, April 06, 2009	Sheet 44 of 48

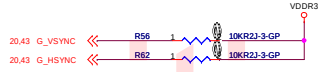
SSID = VIDEO



MVDDQ=1.5V FOR DDR3 MEMORY

DIVIDER RESISTORS	DDR2/DDR3	GDDR3
MVREF TO 1.8V	100R	40.2R
MVREF TO GND	100R	100R





ATI RESERVED CONFIGURATION STRAPS

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

GPIO3 , H2SYNC , V2SYNC

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

If BIOS_ROM_EN (GPIO22) = 0		If BIOS_ROM_EN (GPIO22) = 1		
Size of the primary memory apertures	GPIO[9,13,12,11]	Manufacturer	Part Number	GPIO[13,12,11]
128MB	x000	ST Microelectronics	M25P05A	0100
V 256MB	x001		M25P10A	0101
64MB	x010		M25P20	0101
32MB	x		M25P40	0101
512MB	x		M25P80	0101
1GB	x	Chingis (formerly PMC)	Pm25LV512A	0100
2GB	x		Pm25LV010A	0101
4GB	x			

STRAPS	PIN	DESCRIPTION
TX_PWRS_ENB (Internal PD)	GPIO0	Tansmitter Power Savings Enable 0= 50% Tx output swing V 1= Full Tx output swing
TX_DEEMPH_EN (Internal PD)	GPIO1	Transmitter De-emphasis Enable 0= Tx de-emphasis disabled V 1= Tx de-emphasis enabled
BIF_GEN2_EN_A	GPIO2	V 0 = Advertises the PCI-E device as 2.5GT/s 1 = Advertises the PCI-E device as 5GT/s
BIF_CLK_PM_EN	GPIO8	0= Disable CLKREQ#power management capability V 1= Enable CLKREQ# power management capability
ROMIDCFG[3:0] (Internal PD)	GPIO[13,12,11]	if BIOS_ROM_EN=1,then Config[3:0] defines the ROM type if BIOS_ROM_EN=0,then Config[3:0] defines the primary memory apeture size
BIOS_ROM_EN (Internal PD)	GPIO_22_ROMCSB	Enable external BIOS ROM device V 0= Disable external BIOS ROM device 1= Enable external BIOS ROM device
AUD[1] AUD[0] (Internal PD)	VGA_HSYNC VGA_VSYNC	AUD[1:0] 00:No audio function 01:Audio for DisplayPort and HDMI (if adapter is detected) 10:Audio for DisplayPort only 11:Audio for both DisplayPort and HDMI V

DIS

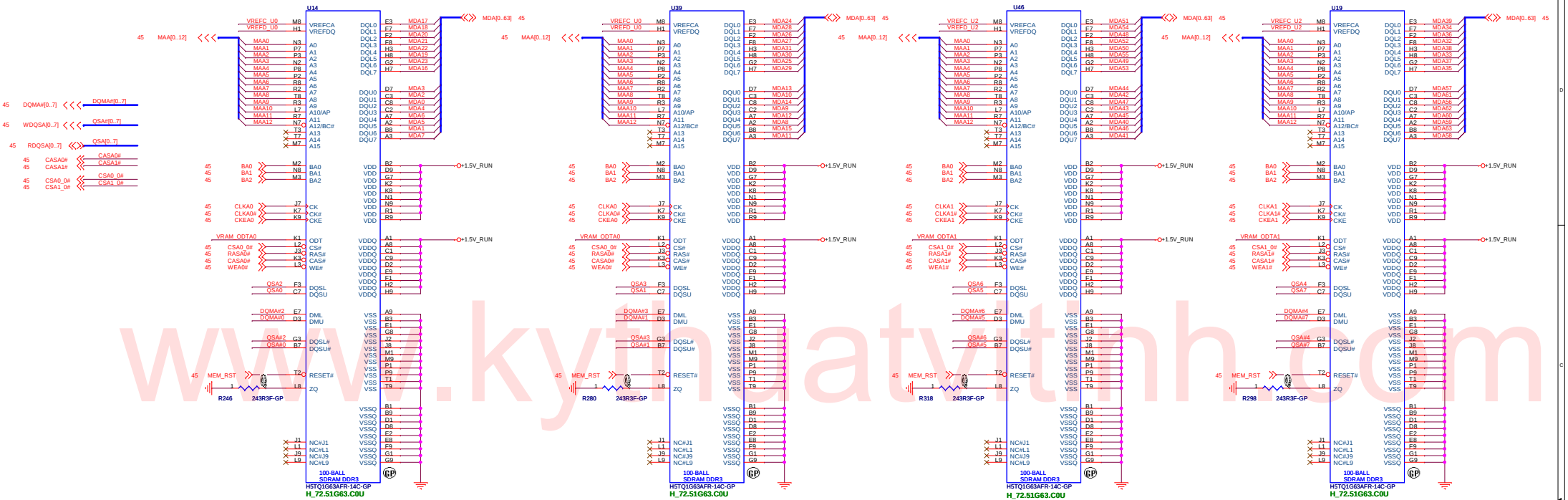
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

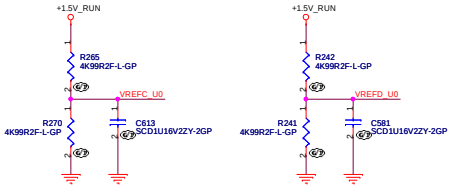
Title: VGA-MEMORY/STRAPS(4/4)

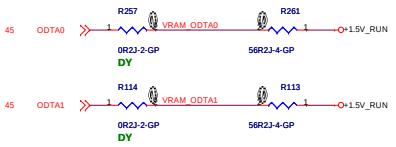
Size	Document Number	Rev
A2	JM41 Discrete	-1

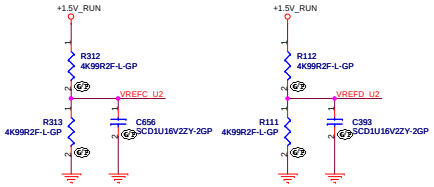
Date: Monday, April 06, 2009 Sheet 45 of 48

512MB DDR3



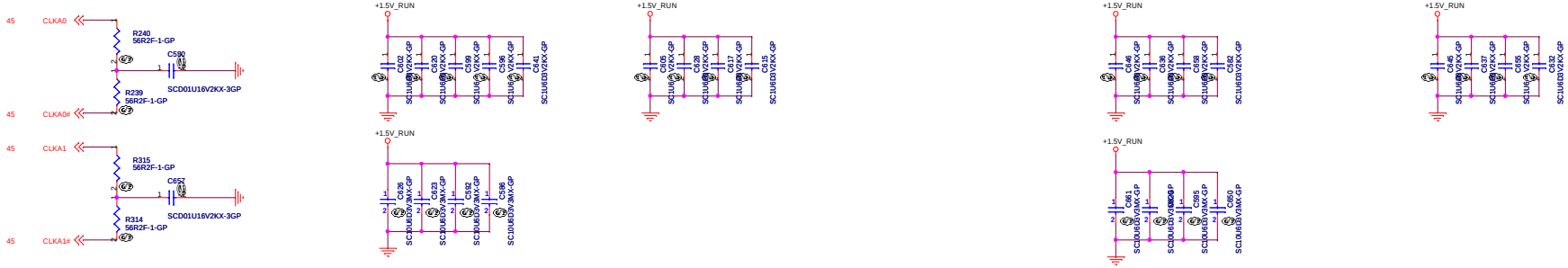






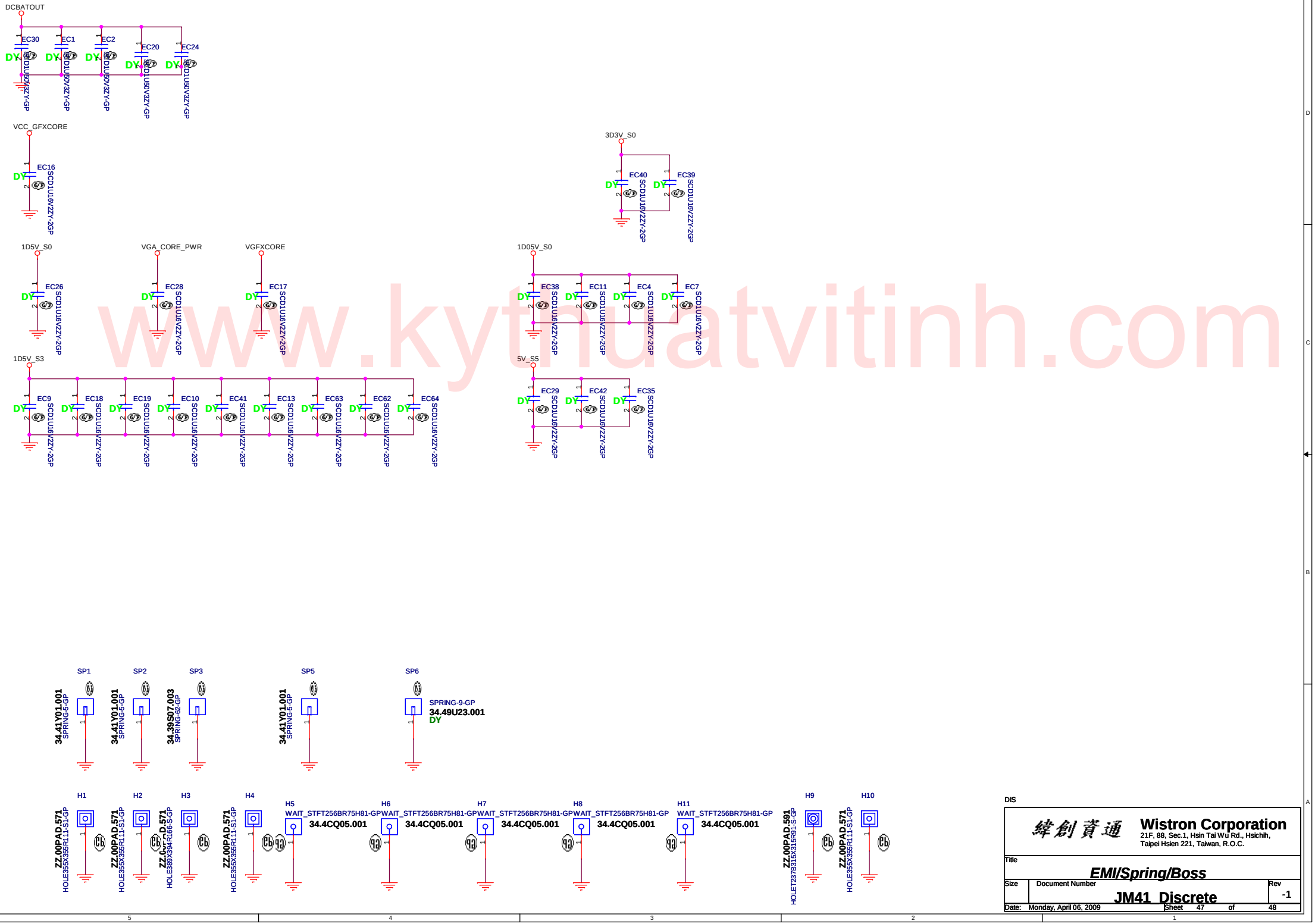
Samsung : K4W1G1646E-EC12

Hynix : H5TQ1G63BFR-12C



DIS

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: VRAM		
Size: A2	Document Number: JM41 Discrete	Rev: -1
Date: Tuesday, April 07, 2009	Sheet 46 of 48	



DIS

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

Title: ***EMI/Spring/Boss***

Size | Document Number: **JM41_Discrete** | Rev: -1

Date: Monday, April 06, 2009 | Sheet 47 of 48

JM41/JM51 DIS Schematic EC Tracking Record
EC #/ Page / Description / Part Affected

EC SC01/11/connect NB1.A31 to GND(For power save)
EC SC02/14/net DIS_EN pull high 10K to 3D3V_S0
EC SC03/20/CN2.pin35 change to AGND
EC SC04/22/R311 change to 39.2K
EC SC05/22/U24.pin2 change to AGND
EC SC06/26/BTB2.pin9 add stand by led control signal
EC SC07/28/U16.pin66 add stand by led control signal
EC SC08/28/add circuit to support green adapter
EC SC09/28/net EJECT_BTN pull high 10K to 3D3V_S0
EC SC10/31/add circuit to stand by led control
EC SC11/40/change GPU power enable signal to ATI_PWR_ON#(low active)
EC SC12/41/change U11 power plane to 1D8V_NB_S0

DIS

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

Title: ***HISTORY***

Size	Document Number	Rev
A2	JM41_Discrete	-1

Date: Wednesday, April 15, 2009 Sheet 48 of 48