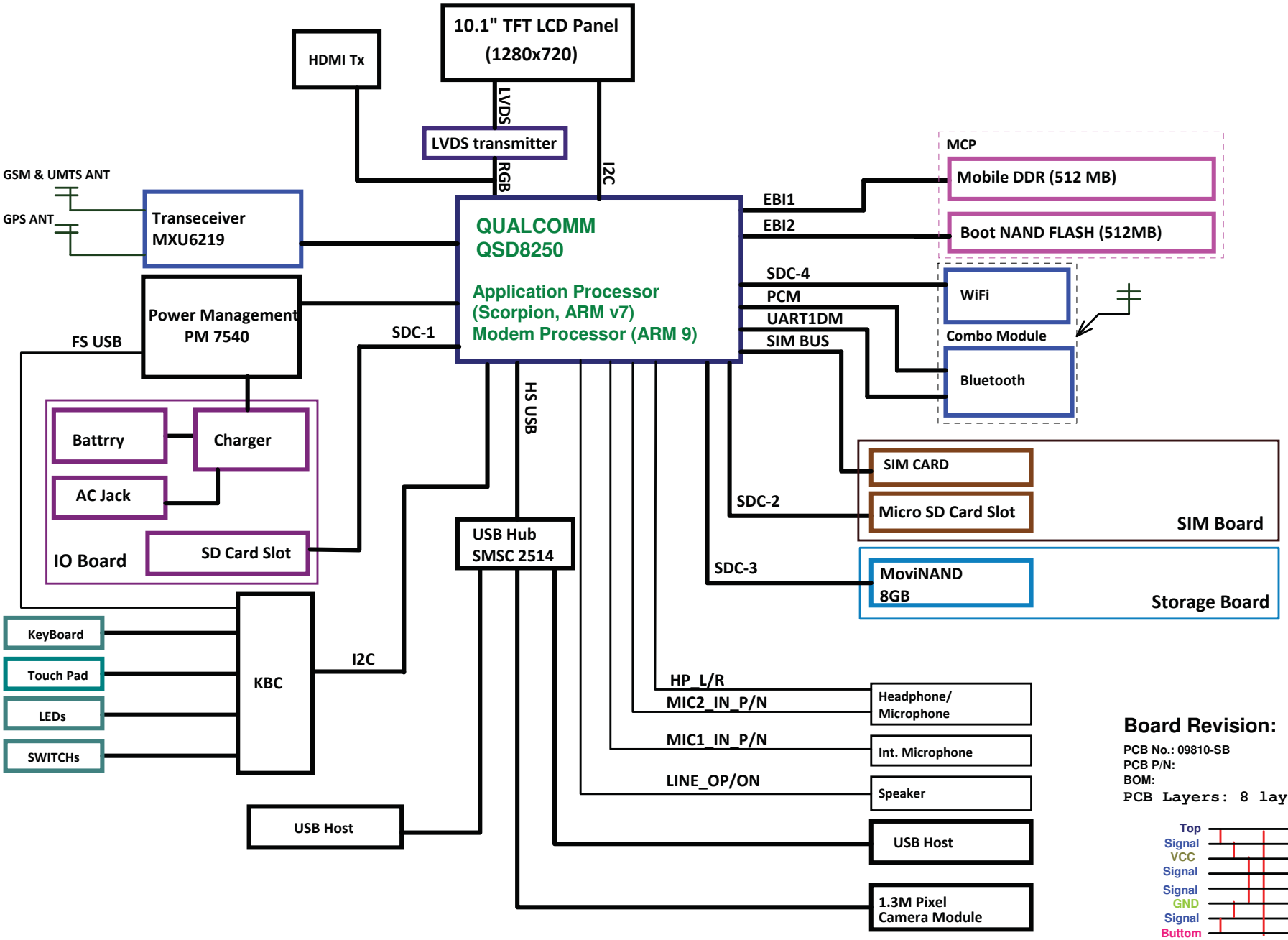
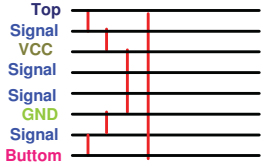
T-note System Block Diagram



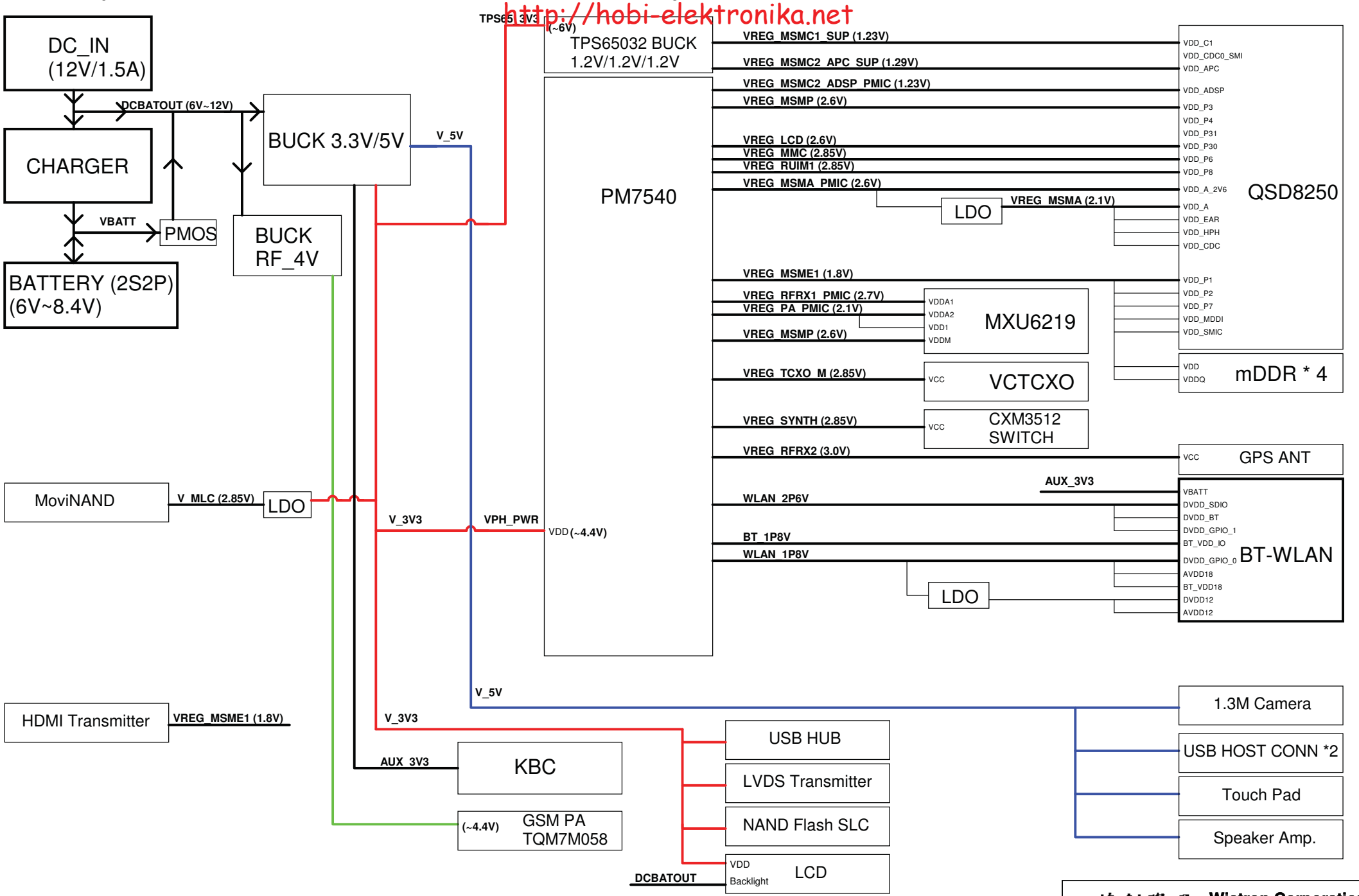
Board Revision:

PCB No.: 09810-SB
PCB P/N:
BOM:
PCB Layers: 8 layers HDI

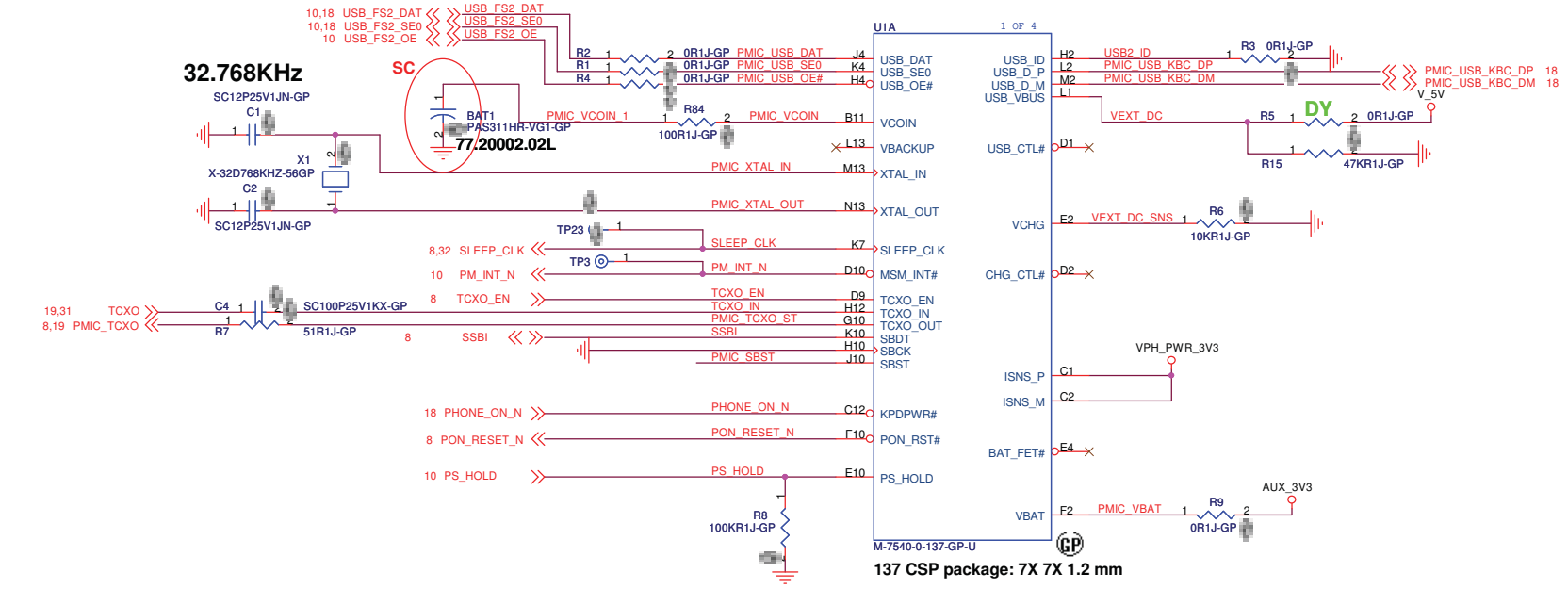


緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

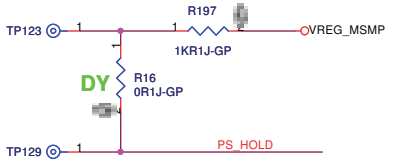
Title: Block Diagram		
Size: C	Document Number: T-note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 1 of 34	



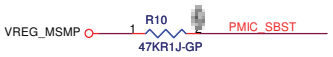
緯創資通	Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title: Power Block		
Size: A3	Document Number: T-Note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 2 of 32	



137 CSP package: 7X 7X 1.2 mm



Put TP123 and TP129 out of shielding can
TP123 connect with TP129 at fixture side



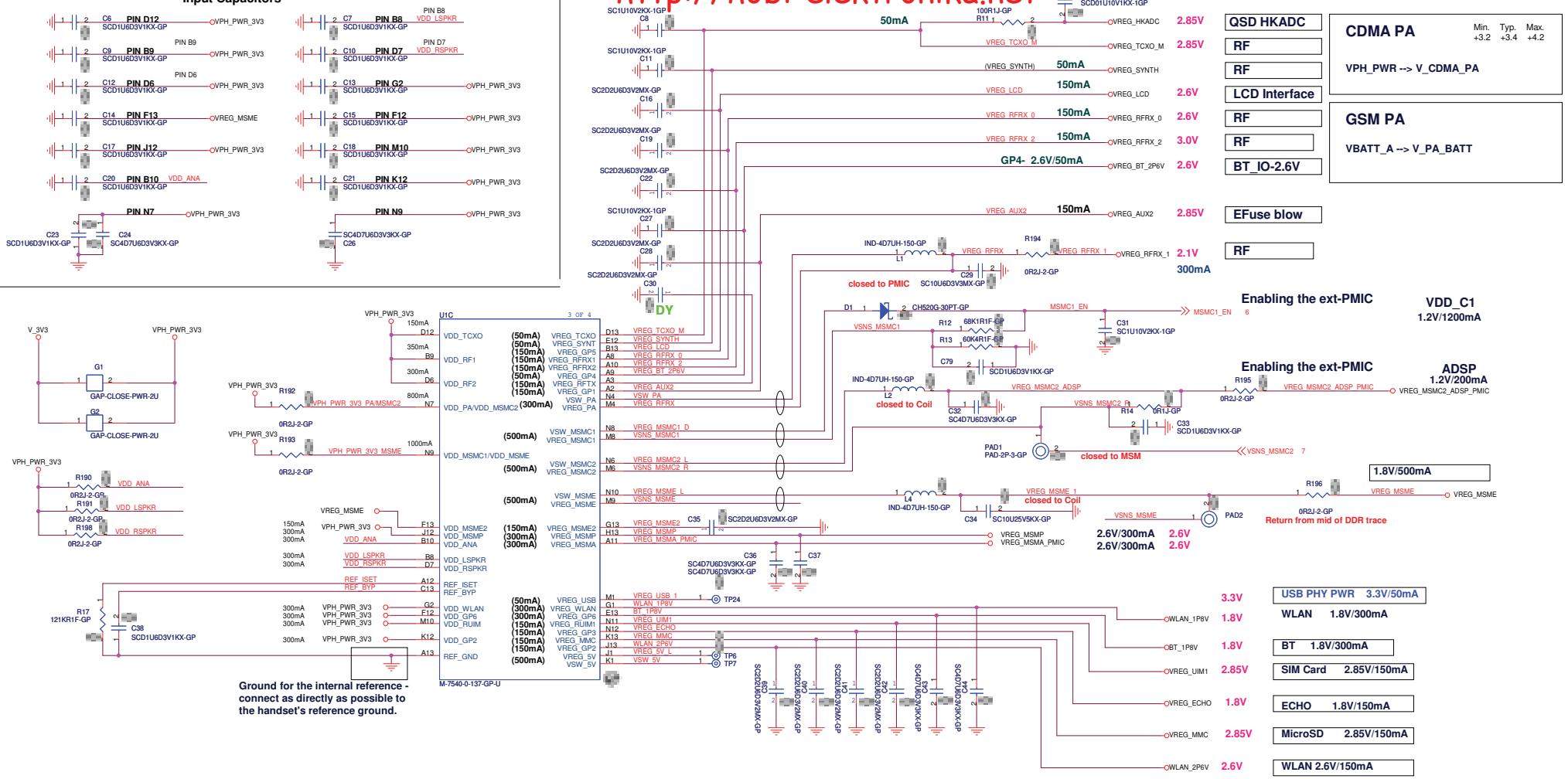
To configure PMIC for SSBI mode.
PMIC_SBST must be connected to VREG_MSMP
PMIC_SBCK must be connected to GND

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

Title: PM7540 (Charger)		
Size: A3	Document Number: T-Note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 3 of 34	

Input Capacitors

Please Refer to These Power Levels



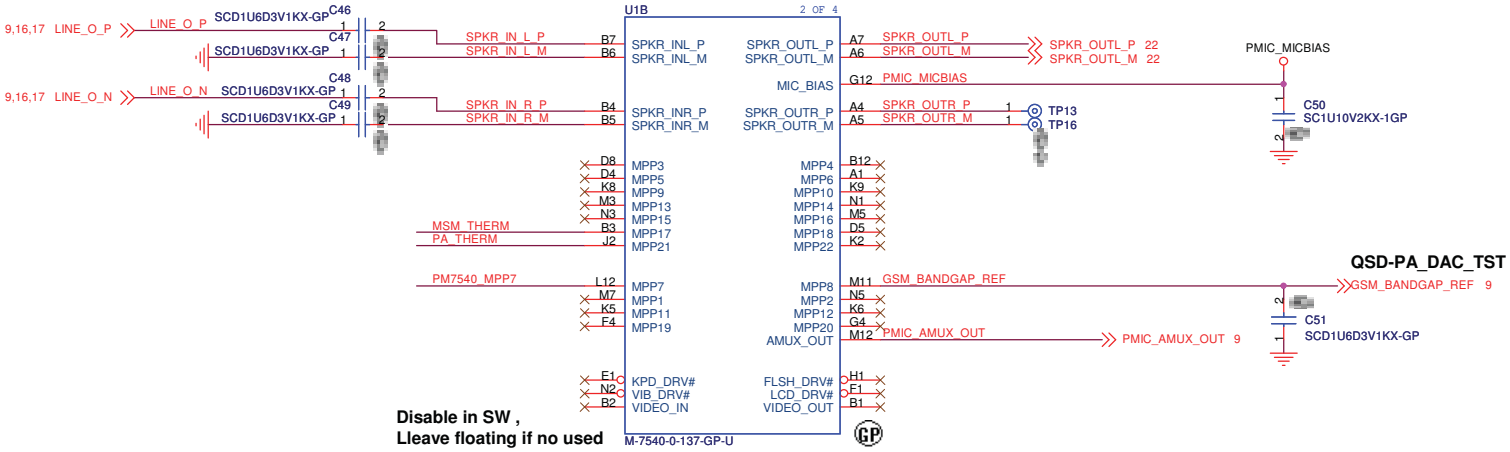
Type/name 1 2	Default conditions 3	Voltage range	Intended use
SMPS - Boost			
+5 V (500 mA)	Off, 5.000 V	3.000 to 6.100 V	USB-OTG host, white LEDs, camera flash
SMPS - Buck			
MSMC1 (500 mA)	On, 1.200 V	0.750 to 3.050 V	MSM core #1; DVS available
MSMC2 (500 mA)	On, 1.200 V	0.750 to 3.050 V	MSM core #2; DVS available
MSME (500 mA)	On, 1.800 V	0.750 to 3.050 V	Devices on EBI #1 bus
PA (300 mA)	Off, 1.800 V	0.750 to 3.050 V	Power amplifier(s); DVS available
Linear - 300 mA			
MSMA 4	On, 2.600 V	1.500 to 3.050 V	MSM analog circuits
MSMP 6	On, 2.600 V	1.500 to 3.050 V	MSM pad voltage and other IC digital I/Os
WLAN	Off, 2.850 V	1.500 to 3.050 V	802.11 wireless LAN Bluetooth
GP6 (BT)	Off, 2.850 V	1.500 to 3.050 V	Bluetooth
Linear - 150mA			
MMC	Off, 2.850 V	1.500 to 3.050 V	Mtimedia or SD circuits
MSME2	On, 1.500 V	0.750 to 1.525 V	Devices on EBI #2 bus
RFRX1	Off, 2.850 V	1.500 to 3.050 V	First of two RF receiver circuit supplies
RFRX2	Off, 2.850 V	1.500 to 3.050 V	Second of two RF receiver circuit supplies
RFTX	Off, 2.850 V	1.500 to 3.050 V	RF transmitter circuits
RUIM1	Off, 2.850 V	1.500 to 3.050 V	RUIM module #1
GP1 (CAM)	Off, 2.850 V	1.500 to 3.050 V	Camera circuits
GP2 (MDDI)	Off, 2.850 V	1.500 to 3.050 V	MDDI circuits
GP3 (RUIM2)	Off, 2.850 V	1.500 to 3.050 V	RUIM module #2
GP5 (AUX2)	Off, 2.850 V	1.500 to 3.050 V	Auxiliary #2 analog circuits
Linear - 50 mA			
SYNT	Off, 2.850 V	1.500 to 3.050 V	Tx VCO and PLL circuits
TCXO	On, 2.850 V	1.500 to 3.050 V	VCTCXO and Rx VCO and PLL circuits
USB	Off, 3.300 V	3.000 V to 6.100 V	Internal USB transceiver; not used off-chip
GP4 (AUX1)	Off, 2.850 V	1.500 to 3.050 V	Auxiliary #1 analog circuits
Linear -			
MIC bias	Off, 2.000 V	1.73, 1.80, 1.93, 2.00 V	Microphone bias

WLAN/BT Power
1.2V : 1.2V +/-5% (ripple Vpp<10mV) 50mA
1.8V : 1.8V +/-5% (ripple Vpp<10mV) 80mA
VBATT : 3.2~4.2 (Recommend 3.3V~3.6V, ripple Vpp<10mV) 200mA
SDIO & Interface : Need to meet SDIO High signal level & IO level of BT

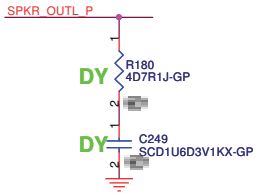
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: PM7540 (System Power)
Size: C | Document Number: T-note | Rev: SC
Date: Tuesday, June 30, 2009 | Sheet 4 of 34

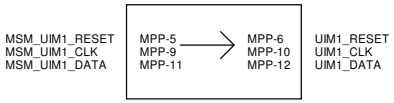
PM7540 ADC/AMP



Disable in SW ,
Lleave floating if no used



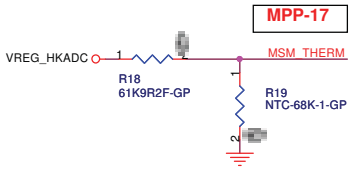
SIM Driver



MSM Side		RUIM side	
MPP-1	AMUX_IN1	MPP-2	AMUX_IN2
MPP-3	CBL0PWR_N	MPP-4	CBL1PWR_N
MPP-5	RUIM_M_RST	MPP-6	RUIM_RST
MPP-7	GP1_DRV_N	MPP-8	REF_OUT
MPP-9	RUIM_M_CLK	MPP-10	RUIM_CLK
MPP-11	RUIM_M_IO	MPP-12	RUIM_IO

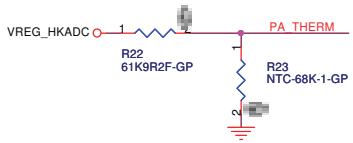
Pairs intend to be used as RUIM level translator:
MPP-5/6, MPP-9/10, MPP-11/12

MSM Thermistor



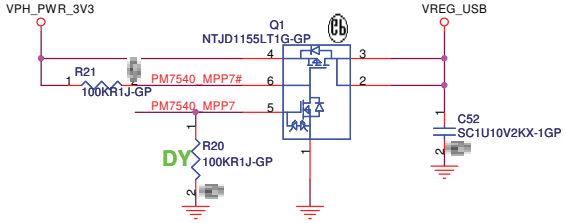
Note: Place close to MSM and SDRAM

PA Thermistor

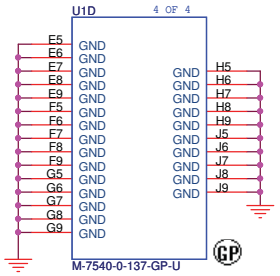


Note: Place close to PA

QSD8K USB PHY Power

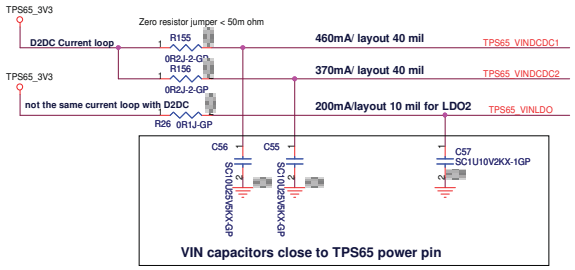


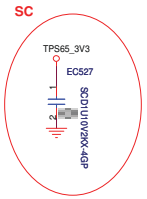
PM7540 GND

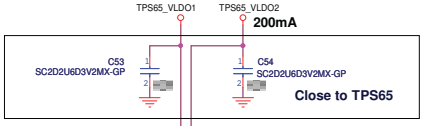


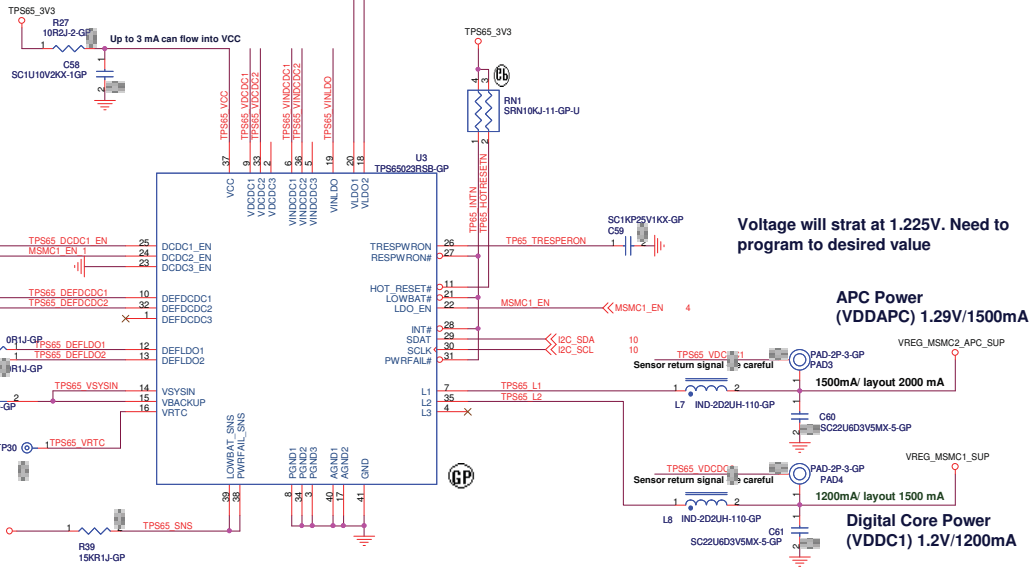
緯創資通	Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title	PM7540 (Audio, Power, MGT)		
Size A3	Document Number T-note		Rev SC
Date: Tuesday, June 30, 2009		Sheet 5 of 34	

ADSP Power
Digital Core Power







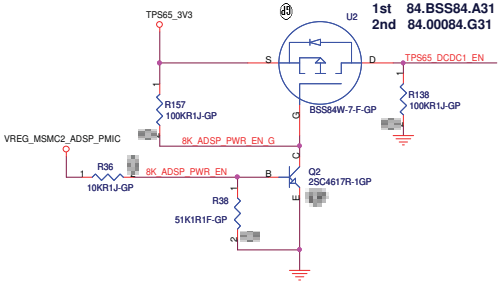


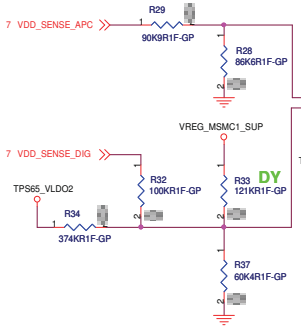
Voltage will strat at 1.225V. Need to program to desired value

APC Power
(VDDAPC) 1.29V/1500mA

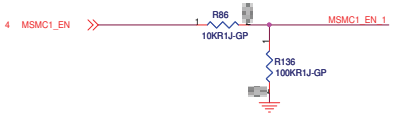
Digital Core Power
(VDDC1) 1.2V/1200mA

DCDC-1 : Enable Logic



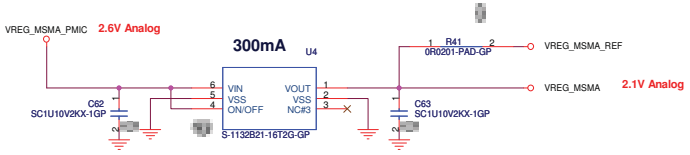


DCDC-2 : Enable



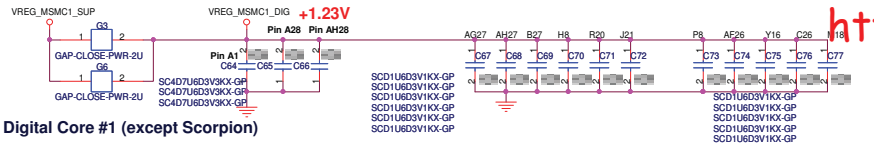
MSMA Power

+2.1V (only for ES2 or later)

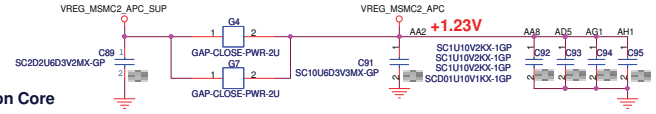


緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: DSP Power		
Size: C	Document Number: T-note	Rev: SC
Date: Monday, July 06, 2009	Sheet 6 of 34	

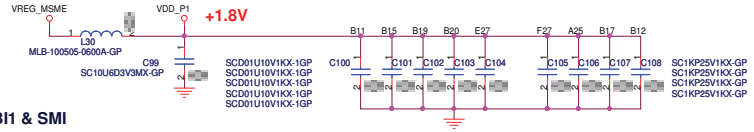
Digital Core #1 (except Scorpion)



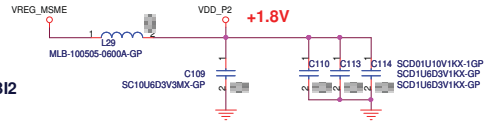
Scorpion Core



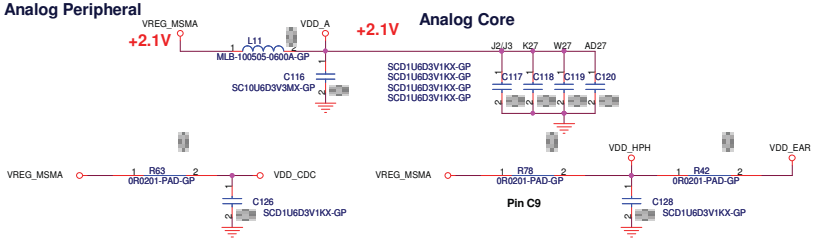
P1: EBI1 & SMI



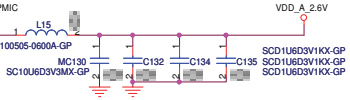
P2: EBI2



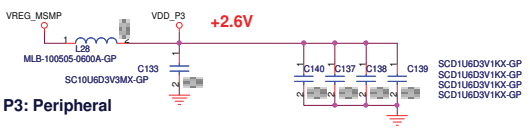
Analog Peripheral



Analog +2.6V



P3: Peripheral



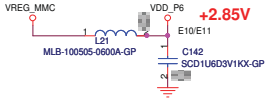
P31: RF (Ball-U8,U9)

P4: Camera

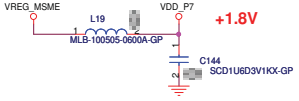
P5: USB(HS)/ULPI

Removed from ES2 and later

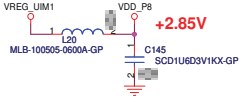
P6: SDC 1-3 Peripherals



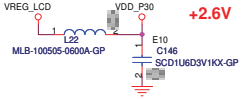
P7



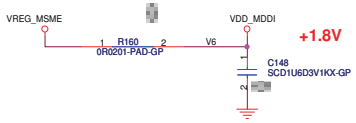
P8: UIM



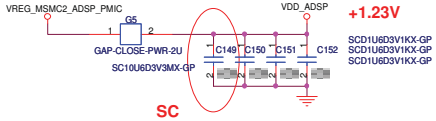
P30: LCDC



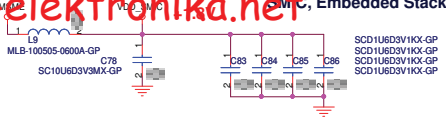
MDDI



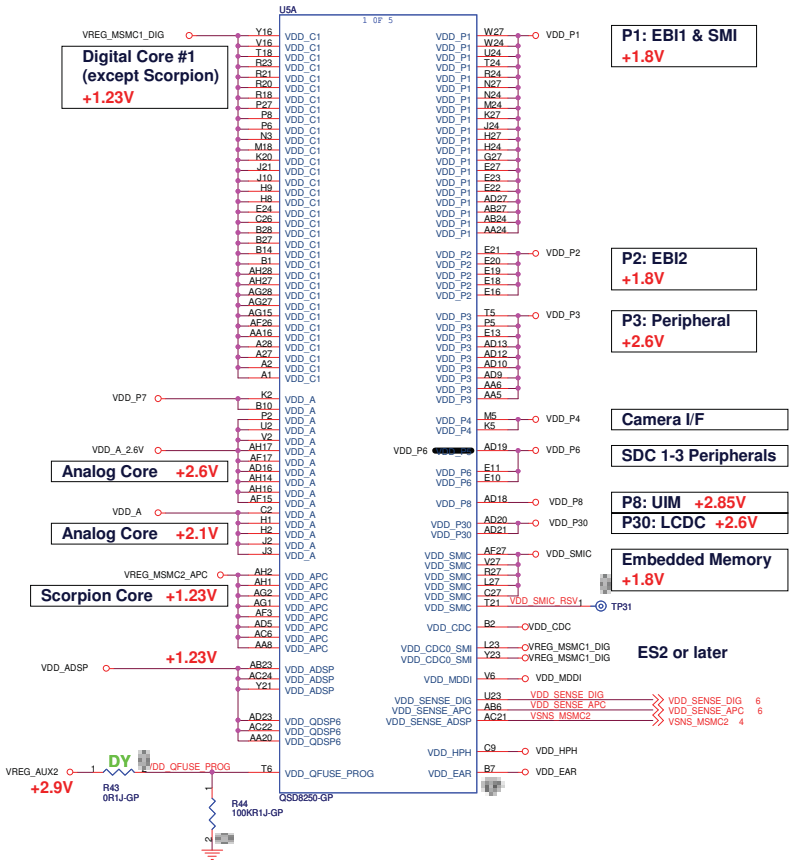
DSP Core



SMC, Embedded Stacked Memory

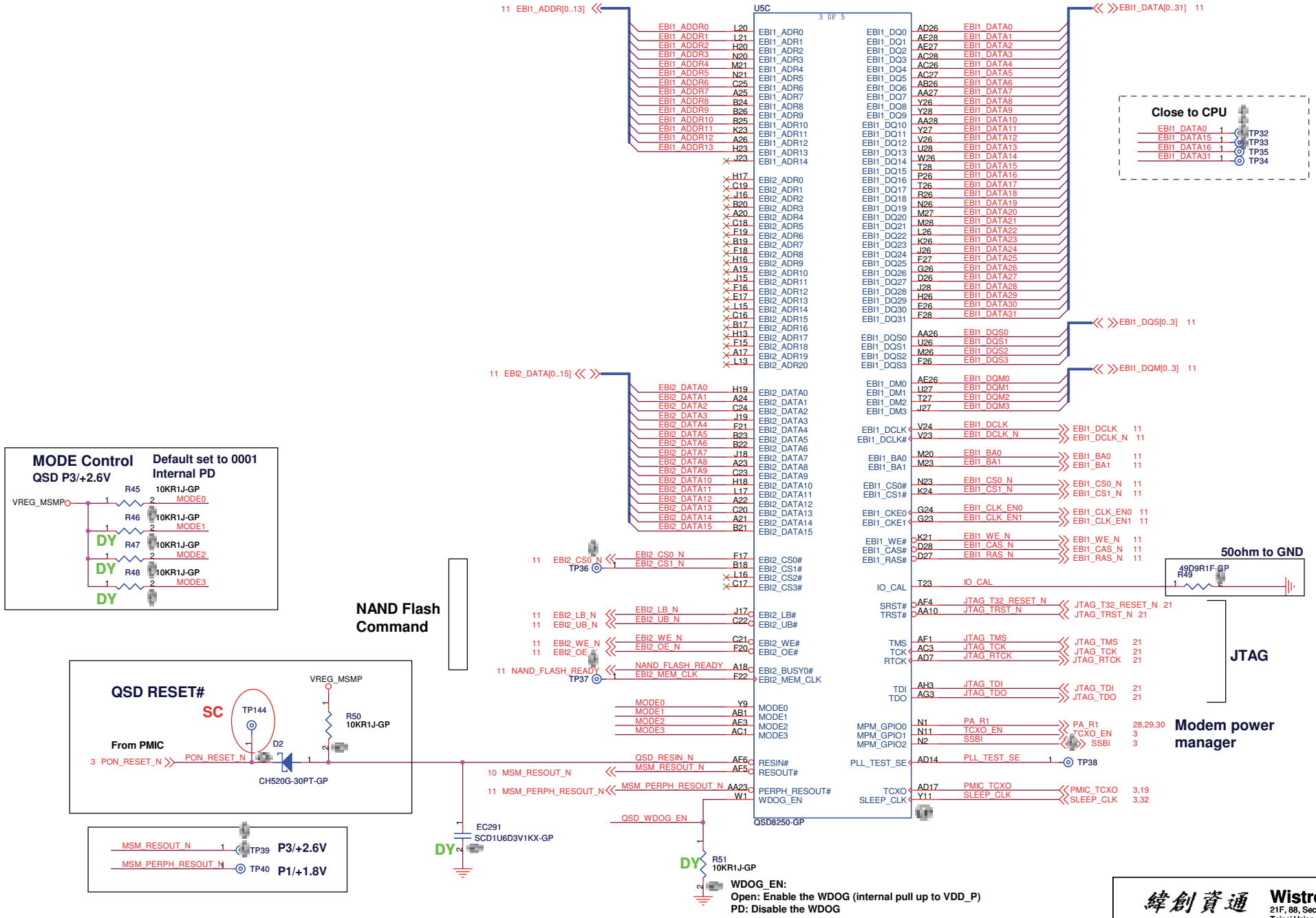


QSD8250-Power Section



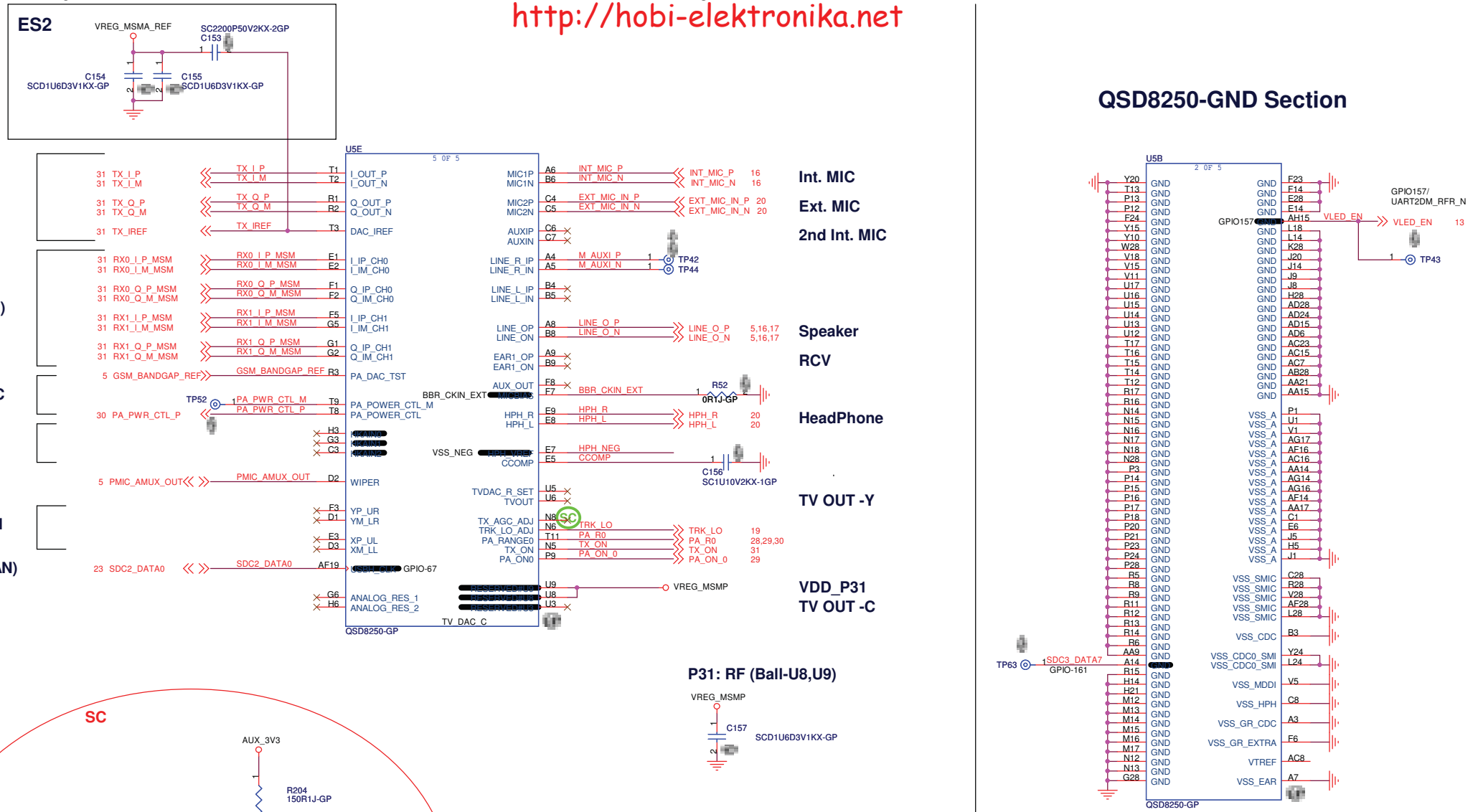
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title	QSD8250 (PWR)	
Size C	Document Number T-note	Rev SC
Date: Tuesday, June 30, 2009	Sheet 7 of 34	



緯創資通	Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title	QSD8250 (EBI-1/2)	
Size A3	Document Number T-note	Rev SC
Date: Tuesday, June 30, 2009	Sheet 8 of 34	

QSD8250-GND Section



Wistron Corporation	緯創資通
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title: QSD8250 (Analog, GND)	
Size: A3	Document Number: T-note
Rev: SC	
Date: Monday, July 06, 2009	Sheet 9 of 34

QSD (GPIO, MDDI)

QSD 8650 71.Q8650.00U
QSD 8250 71.Q8250.00U

HW MB VERSION

default is INPUT P/L

MB VERSION	CONFIG MODE1	CONFIG MODE2	CONFIG MODE3
SA	0	0	0
SB	0	0	1
SC	0	1	0
-1	0	1	1
-2	1	0	0
-3	1	0	1
-4	1	1	0
-5	1	1	1

MCP VERSION	CONFIG MODE5
Hynix	0
Samsung	1

3G VERSION	CONFIG MODE4
WCDMA	0
CDMA2000	1

CONFIG_MODE5
CONFIG_MODE4
CONFIG_MODE3
CONFIG_MODE2
CONFIG_MODE1

I2C Level Shifter

CPU
DSP Power
KBC
LCD
CRT/HDMI
ECHO/UUID EEPROM

71.09546.00K
Main source : PHILIP/71.09546.00K
Second source : TI/71.09546.003

SDC

Near AA19
Near AH20
Near A13
Near C14

USB (HS)

Near B12

USB ID
USB Clock
D+
D-

Boot Scure

Determines the boot mode of the chip:
0: non-secure boot
1: secure boot (boot code is authenticated)

Floating Now

Camera I/F

Device Control

Buttons

INT

UART1DM (BT)

UART2/UIM1

AUX PCM

UART3 (Debug)

SDC3 (SD Controller)/CE-ATA

I2C

RF CTRL

SDC-1 (SD Card)

SDC-2 (Micro SD)

LCD

USB Transceiver (PMIC)

SDC-4 (WiFi)

WLAN CTRL

MDDI

MDDI 1.5 Type 2 Host

WakeUP and Higher Voltage GPIO
ES2 GPIO # 21, 24, 28, 35, 36, 37, 38, 39, 40, 41, 42, 45, 49, 51, 53, 64, 66, 68, 69, 83, 86, 90, 92, 94, 139, 141, 145, 152, 153

TPS65023

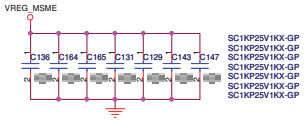
The TPS65023 has a 7-bit address: 1001000, other addresses are available upon contact with the factory.

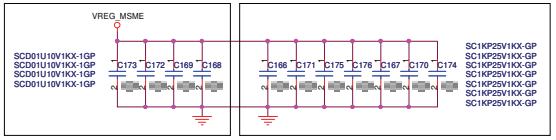
HDMI Transmitter

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

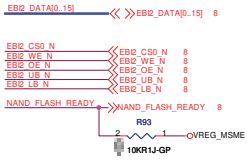
Title: QSD8250 (GPIO)
Size: Custom | Document Number: T-Note | Rev: SC
Date: Tuesday, June 30, 2009 | Sheet 10 of 34

Memory MCP
DDR SDRAM & NAND Flash

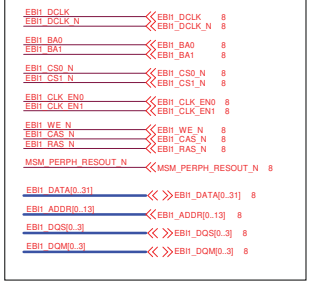


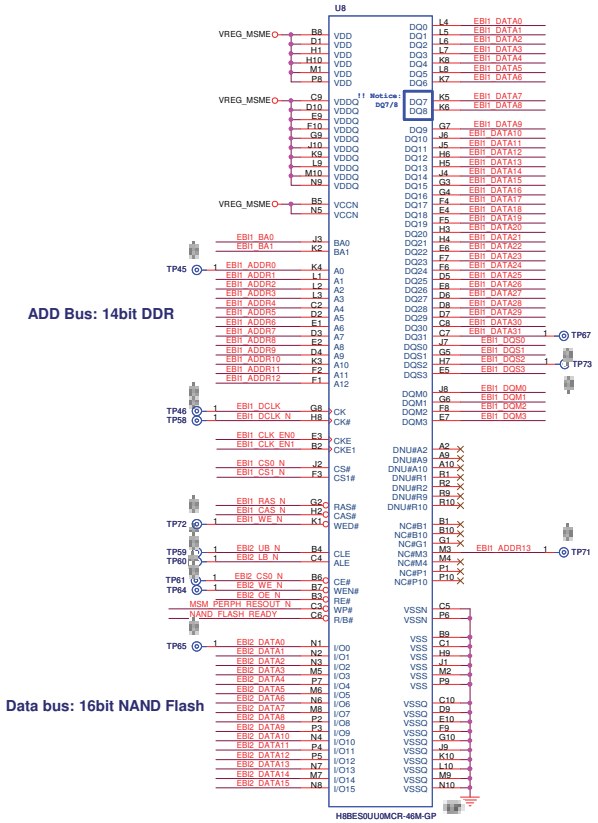


EBI2 (NAND FLASH)



EBI1 (DDR)





ADD Bus: 14bit DDR

Data Bus: 32bit DDR

Data bus: 16bit NAND Flash

P/N: 72.H8BES.B0U

Hynix H8BES0UU0MCR-46M-GP (MCP4G+4G)

4Gb (256Mb x16) NAND Flash

+ 4Gb (64Mb x32 2/CS 2CKE) mobile DDR

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

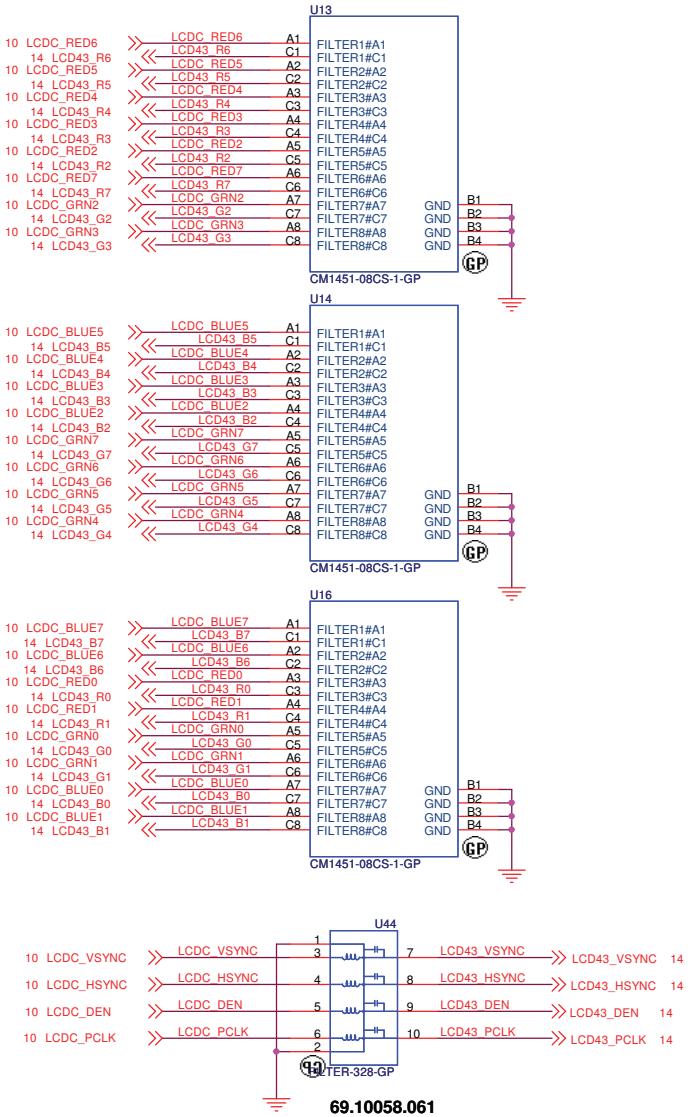
Title: MCP

Size: A2 | Document Number: T-Note | Rev: SC

Date: Tuesday, June 30, 2009 | Sheet 11 of 34

LCD I/F FILTER

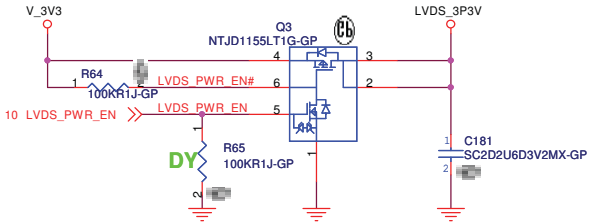
(Close to CPU)

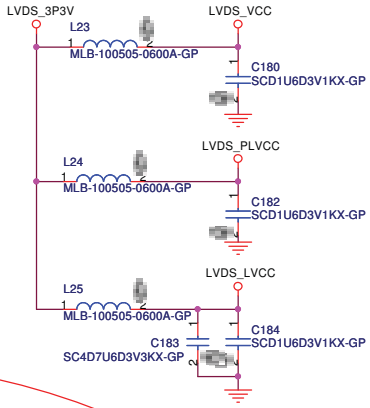


69.10058.061

LVDS Transmitter

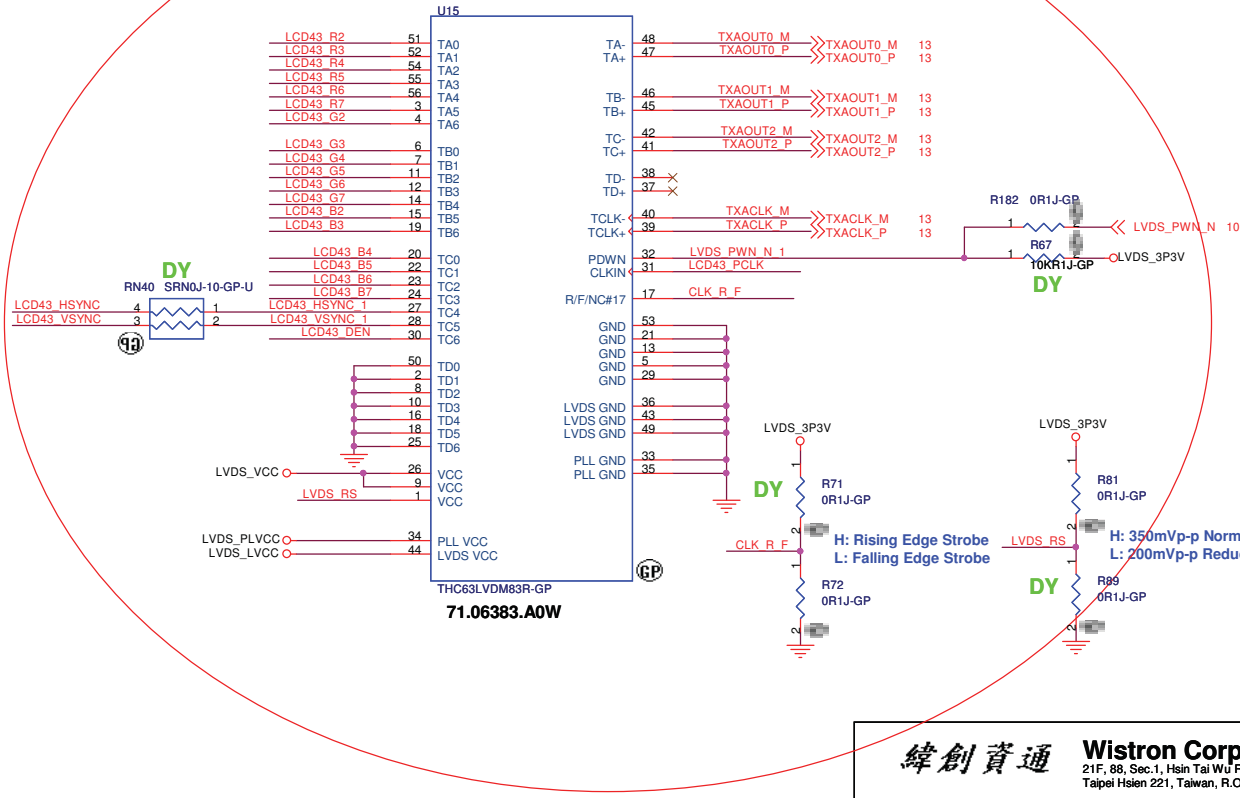
3.3V Power Switch for LVDS Transmitter (3.3V/50mA)





SC

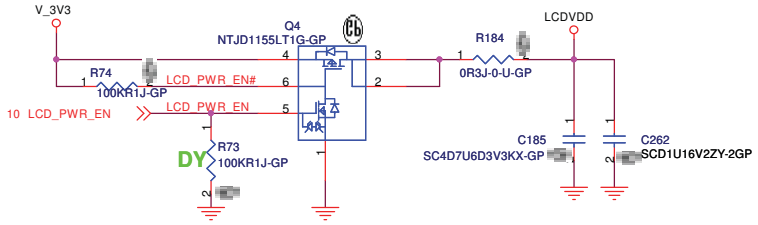
Change to THC63LVDM83R-GP

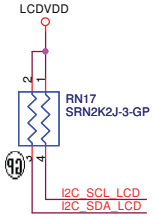


71.06383.A0W

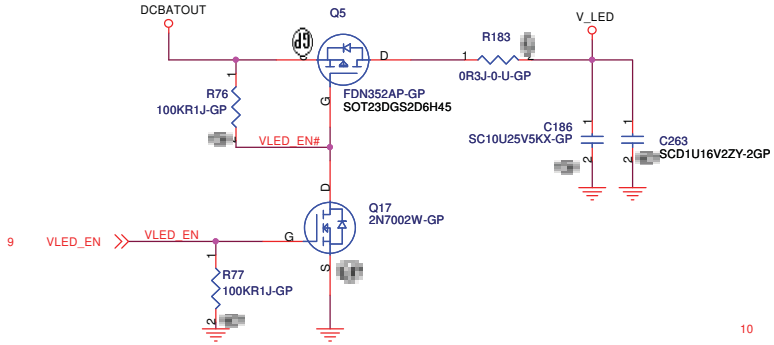
Wistron Corporation	緯創資通
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title: LVDS Transmitter	
Size: A3	Document Number: T-Note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 12 of 34

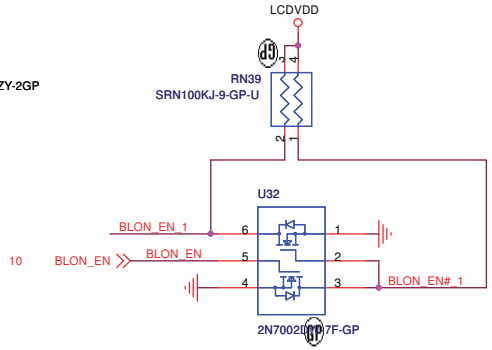
3.3V for LCD Panel (3.3V/210mA)



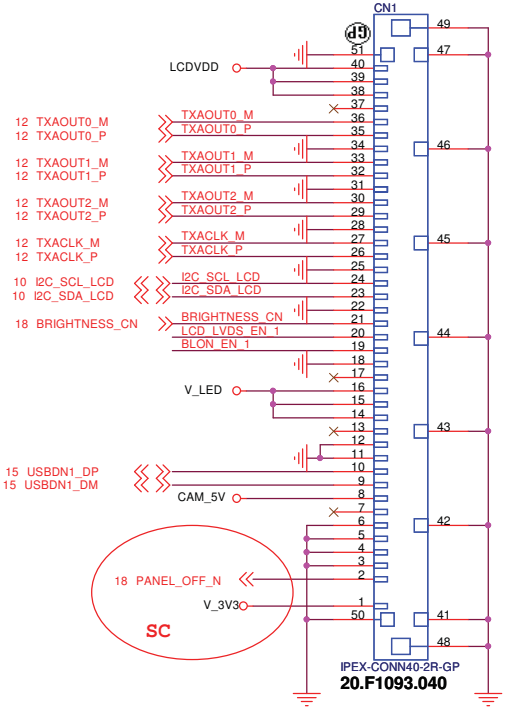


DCBATOUT for LCD Backlight (6V~12V/333mA~167mA)

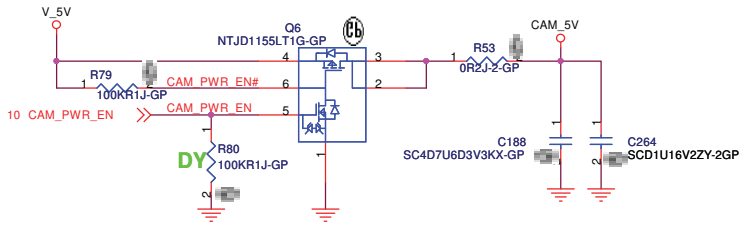


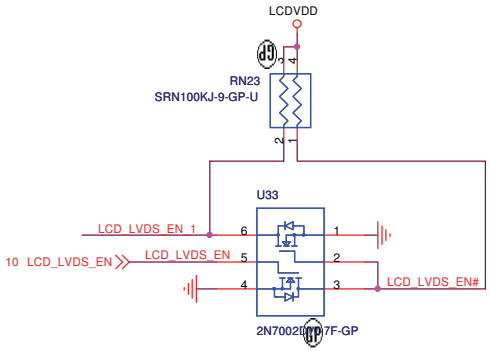


LCD/Camera Connector

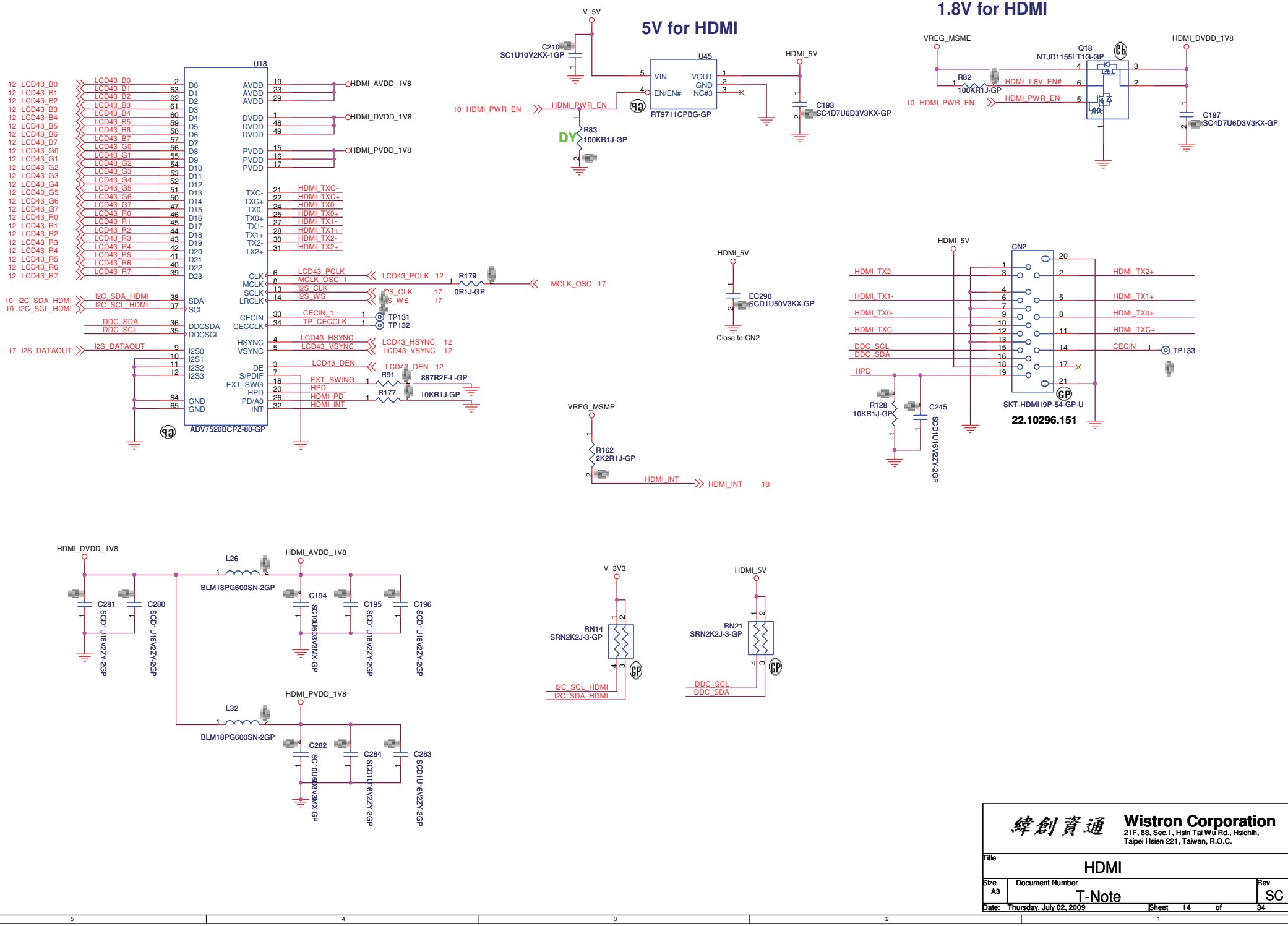


5V for Camera (5V/50mA)

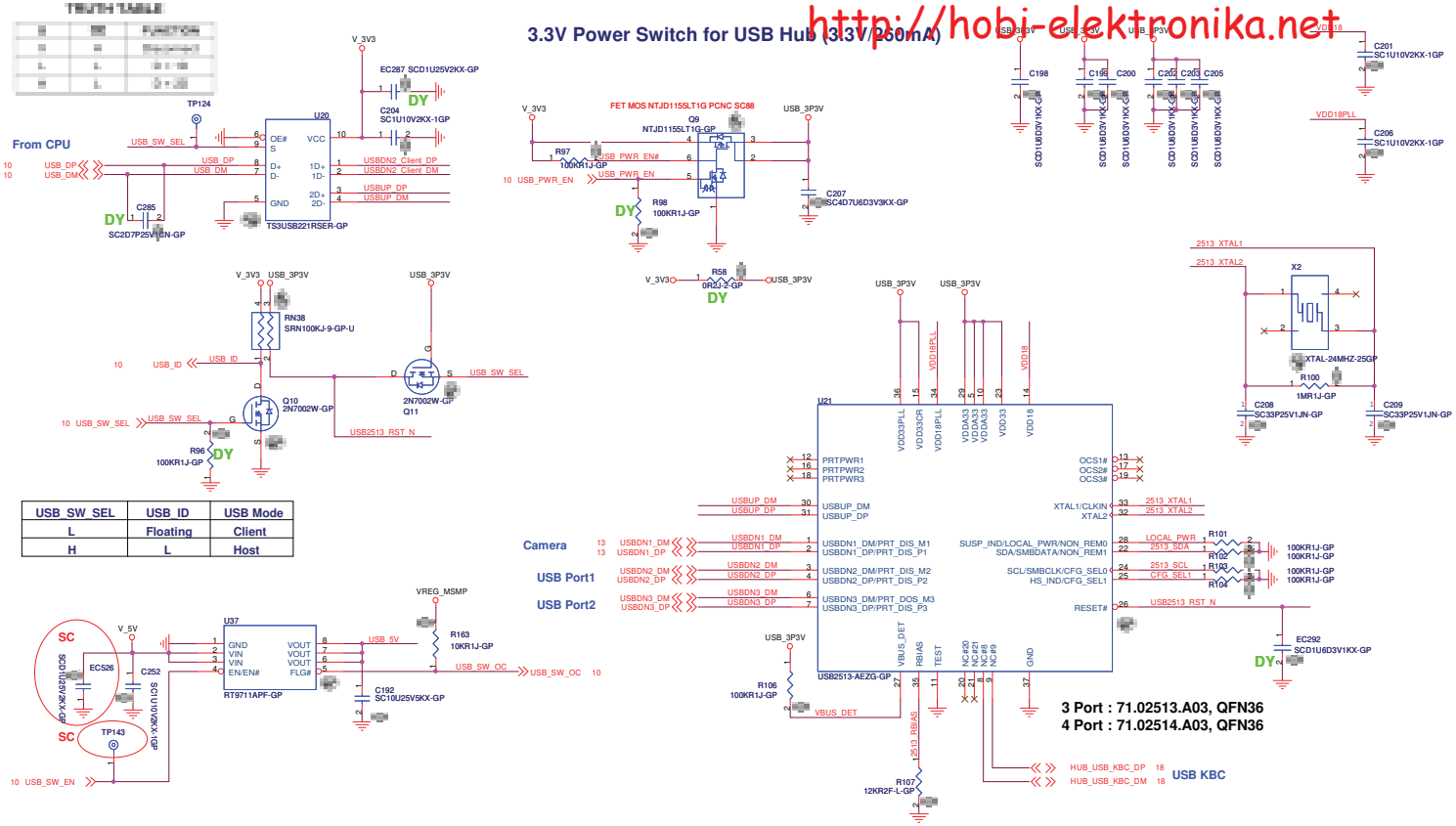




緯創資通	**Wistron Corporation** 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title: LCD, Camera		
Size: A3	Document Number: **T-Note**	Rev: SC
Date: Saturday, July 04, 2009	Sheet 13 of 34	

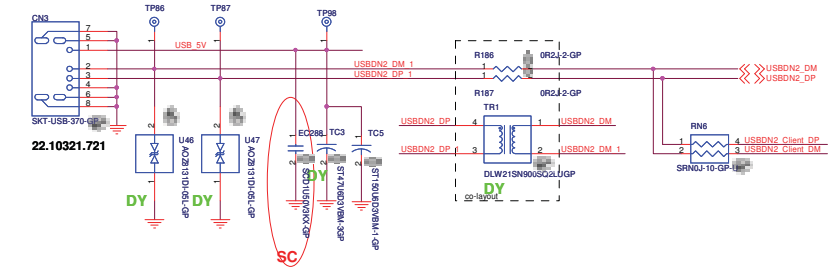


3.3V Power Switch for USB Hub (3.3V/250mA)

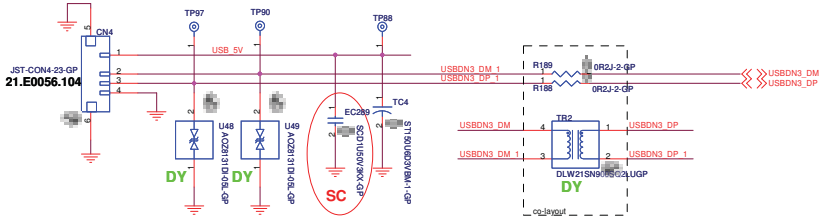


USB_SW_SEL	USB_ID	USB Mode
L	Floating	Client
H	L	Host

USB Host and Client

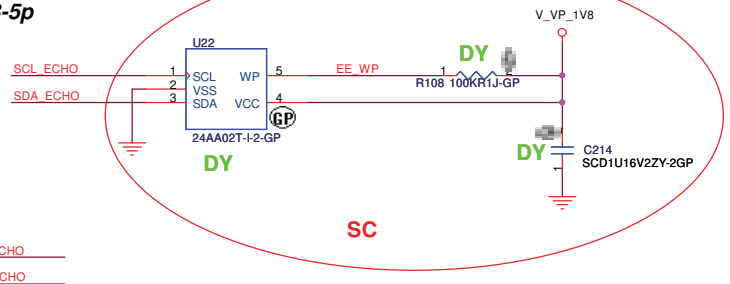


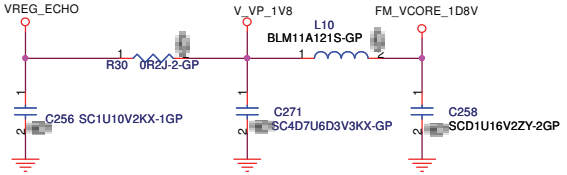
USB Host Only



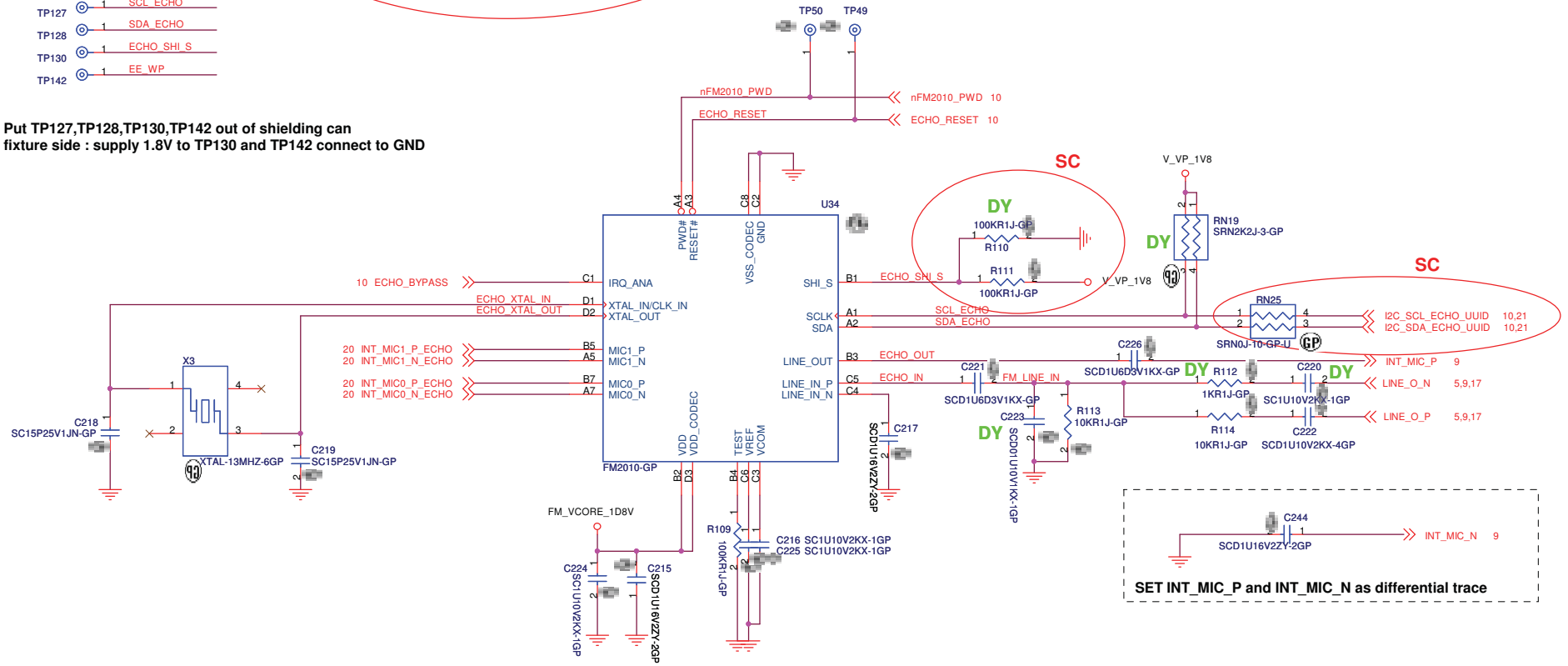
Wistron Corporation	緯創資通
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title: USB Hub	
Size: A2	Document Number: T-Note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 15 of 34	

Microchip EEPROM 2Kbit
24LC02B SOT-23-5p





Put TP127,TP128,TP130,TP142 out of shielding can
fixture side : supply 1.8V to TP130 and TP142 connect to GND

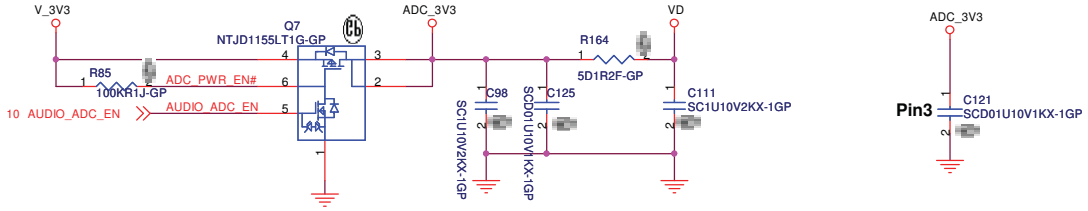


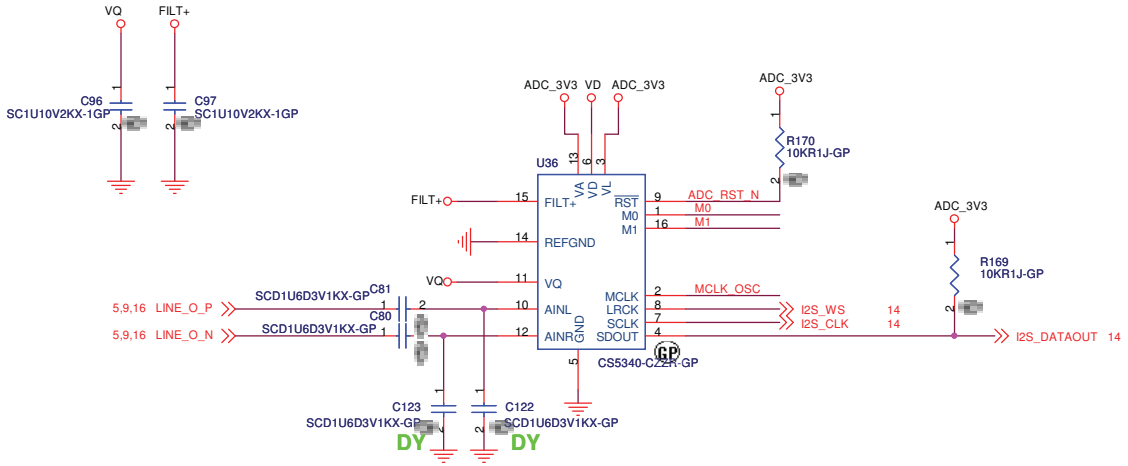
SHI_S --> Low for EEPROM
--> HI for I2C

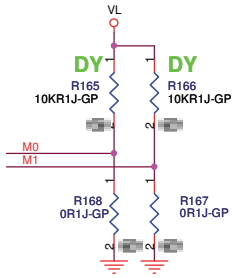
TEST == Low(normal mode, not test mode)
RESET == High(no reset held low)
PWD == High(normal mode,not power down)
IRQ_ANA == Low(normal mode, not bypass)

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

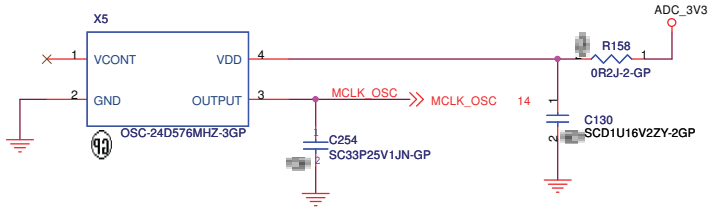
Title: Echo/Noise Cancellation		
Size: A3	Document Number: T-Note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 16 of 34	







M1	M0	
0	0	48KHz Master mode
0	1	96KHz Master mode
1	0	192KHz Master mode
1	1	Auto detect speed Slave mode



緯創資通	**Wistron Corporation** 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title	Audio ADC	
Size A3	Document Number T-note	Rev SC
Date: Tuesday, June 30, 2009	Sheet 17 of 34	

3.3V for KBC

AUX_3V3, KBC_3P3V, KBC_3P3V_D, KBC_3P3V_A
PG2 GAP-CLOSE-PWR-2U
R66 0R0201-PAD-GP
R70 0R0201-PAD-GP
C115 SC1U10V2KX-1GP
C90 SC10U6D3V3MX-GP
C112 SCD1U6D3V1KX-GP
C87 SC10U6D3V3MX-GP
C82 SCD1U6D3V1KX-GP

Keyboard Connector

ACES-CON24-7-GP CN5
Keyboard
KBROW2 KBROW8 KBROW7 KBCOL10 KBROW5 KBCOL1 KBROW3 KBROW4 KBCOL6 KBCOL2 KBROW1 KBCOL3 KBCOL5 KBCOL8 KBCOL9 KBCOL7 KBCOL4 KBCOL13 KBCOL14 KBCOL15 KBCOL12 KBCOL11 KBCOL16

20.K0320.024

KB_3V3
RN31 SRN10KJ-10-GP-U: KBROW1 KBROW2 KBROW3 KBROW4
RN27 SRN10KJ-10-GP-U: KBCOL5 KBCOL6 KBCOL7 KBCOL8
RN30 SRN10KJ-10-GP-U: KBROW5 KBROW6 KBROW7 KBROW8
RN26 SRN10KJ-10-GP-U: KBCOL9 KBCOL10 KBCOL11 KBCOL12
RN28 SRN10KJ-10-GP-U: KBCOL1 KBCOL2 KBCOL3 KBCOL4
RN33 SRN10KJ-10-GP-U: KBCOL13 KBCOL14 KBCOL15 KBCOL16
DY
R201 0R1J-GP
R206 0R1J-GP
SC

KBROW1 TP15, KBROW2 TP17, KBROW3 TP18, KBROW4 TP20
KBROW5 TP28, KBROW6 TP25, KBROW7 TP26, KBROW8 TP27
KBCOL1 TP51, KBCOL2 TP29, KBCOL3 TP41, KBCOL4 TP47
KBCOL5 TP74, KBCOL6 TP57, KBCOL7 TP62, KBCOL8 TP66
KBCOL9 TP78, KBCOL10 TP75, KBCOL11 TP76, KBCOL12 TP77
KBCOL13 TP145, KBCOL14 TP85, KBCOL15 TP111, KBCOL16 TP121
SC

KBC_3P3V
RN35 SRN2K2J-3-GP: I2C_SCL_KBC, I2C_SDA_KBC
RN34 SRN2K2J-3-GP: I2C_SCL_BAT, I2C_SDA_BAT

V_5V
R25 100R2J-2-GP
LED1 LED-W-38-GP
CAPS_LED

83.19217.I70

U17 EPF011J-GP-U1

KBC_3P3V_D → VDD 37, VDDA 13, VREFH 12
KBC_3P3V_A

P0_0 KBCOL1, P0_1 KBCOL2, P0_2 KBCOL3, P0_3 KBCOL4, P0_4 KBCOL5, P0_5 KBCOL6, P0_6 KBCOL7, P0_7 KBCOL8
P1_0 KBROW1, P1_1 KBROW2, P1_2 KBROW3, P1_3 KBROW4, P1_4 KBROW5, P1_5 KBROW6, P1_6 KBROW7, P1_7 KBROW8
P3_0 I2C_SCL_KBC, P3_1 I2C_SDA_KBC, P3_4 I2C_SCL_BAT, P3_5 I2C_SDA_BAT
P4_0 BATT_IN, P4_1 AC_IN#, P4_2 CHG_ON#, P4_3 PWR_BTN_N, P4_6 PANEL_OFF_N, P4_7 PWR_LED_1
SPI_DI, SPI_DO, SPI_CLK
OP_MODE
P5_0 KBCOL9, P5_1 KBCOL10, P5_2 KBCOL11, P5_3 KBCOL12, P5_4 KBCOL13, P5_5 KBCOL14, P5_6 KBCOL15, P5_7 KBCOL16
P7_0 KBC_RXD, P7_1 KBC_TXD, P7_2 CAPS_LED_1, P7_3, P7_4/CIR
P8_0 DCDC_ON, P8_1 AD_OFF, P8_2 PHONE_ON_N, P8_3 BRIGHTNESS_CN
ADC_0 AD_IA, ADC_1 KB_INT, ADC_2, ADC_3 BATT_INT
PS2A_CLK PS2_CLK, PS2A_DAT PS2_DATA
X_IN XI, X_OUT XO
DP USB_KBC_DP, DM USB_KBC_DM
RST# KBC_RST_N
VSS, VSS, VSSA

DCDC_ON → 23
AD_OFF → 23
PHONE_ON_N → 3
BRIGHTNESS_CN → 13
AD_IA → 23
KB_INT → 10
BATT_INT → 10

DY

RN36 SRN0J-10-GP: PMIC_USB_KBC_DP → USB_KBC_DP, PMIC_USB_KBC_DM → USB_KBC_DM
RN37 SRN0J-10-GP: HUB_USB_KBC_DP → USB_KBC_DP, HUB_USB_KBC_DM → USB_KBC_DM

DCDC_ON
R99 10KR1J-GP
KBC_3P3V
R24 100KR1J-GP
PHONE_ON_N

SC

D3 BAS40DCW-GP
DCDC_ON, KBC_RST_N → T8_HW_SHUT_N 9

TouchPad Connector

V_5V, V_5V
RN10 SRN10KJ-11-GP-U
C190 SCU1U10V2KX-1GP
C18 SCU1U10V2KX-1GP
EC524 SCD1U25V2KX-GP
CN14 PTWO-CON4-4-GP
PS2_CLK, PS2_DATA
C189 SC33P25V1JN-GP
C191 SC33P25V1JN-GP

20.K0322.004

TP138 PS2_CLK
TP139 PS2_DATA
TP140, TP141 V_5V

Put TP138,139,140,141 out of shielding can

KBC_3P3V
R92 10KR1J-GP
C127 SCD1U6D3V1KX-GP
KBC_RST_N

KBC_3P3V
R68 10KR1J-GP
OP_MODE
R75 10KR1J-GP
DY

Q14 2N7002W-GP / Q19 2N7002W-GP

PWR_LED → PWR_LED_1
CAPS_LED → R69 100KR1J-GP → CAPS_LED_1
DY

MSM_UART2DM_RXD / MSM_UART2DM_TXD

RN41 SRN0J-10-GP: USB_FS2_DAT → KBC_TXD, USB_FS2_SE0 → KBC_RXD
DY

Test PAD for Debugging

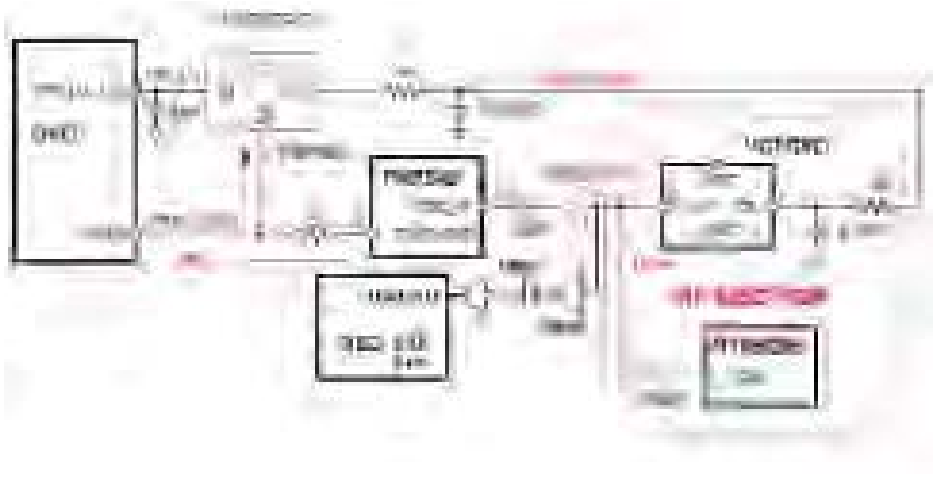
DY
KBC_3P3V
RN29 SRN2K2J-3-GP
KBC_3P3V
OP_MODE TP10
KBC_RXD TP14
KBC_TXD TP19
TP22
TP21

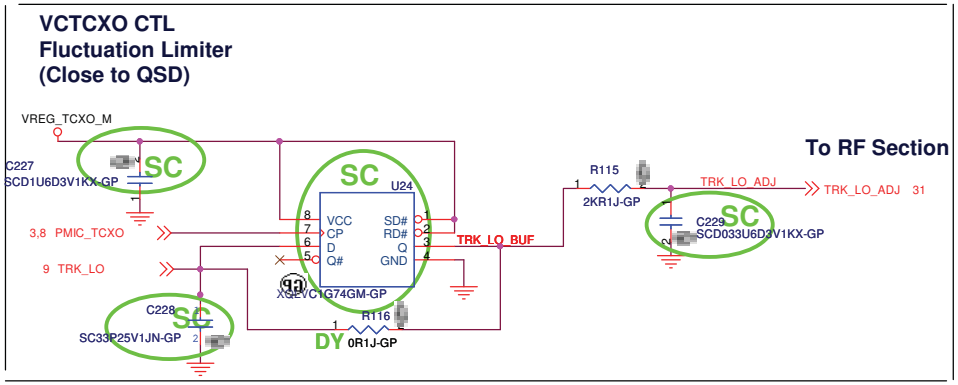
Put TP14,TP19,TP10, out of shielding can

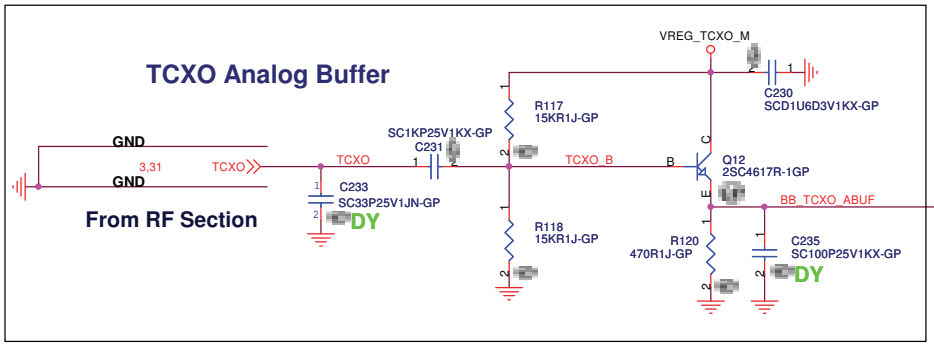
R31 10MR2J-L-GP
X4 XTAL-24MHZ-25GP
C25 SC15P50V2JN-2-GP
C88 SC15P50V2JN-2-GP

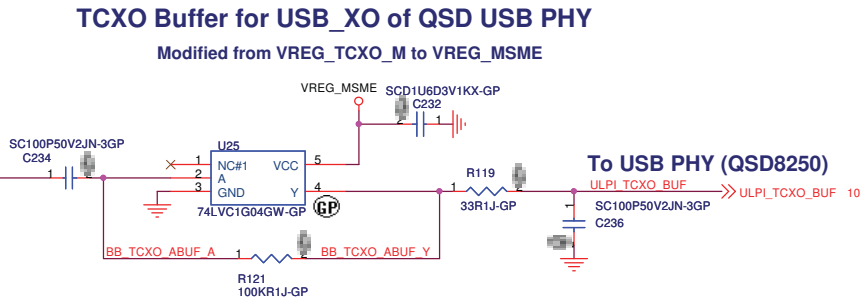
緯創資通	**Wistron Corporation** 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	KBC, Keyboard con.,T/P
Size A3	Document Number **T-Note** Rev SC
Date: Tuesday, June 30, 2009	Sheet 18 of 34

VCTCXO CTL





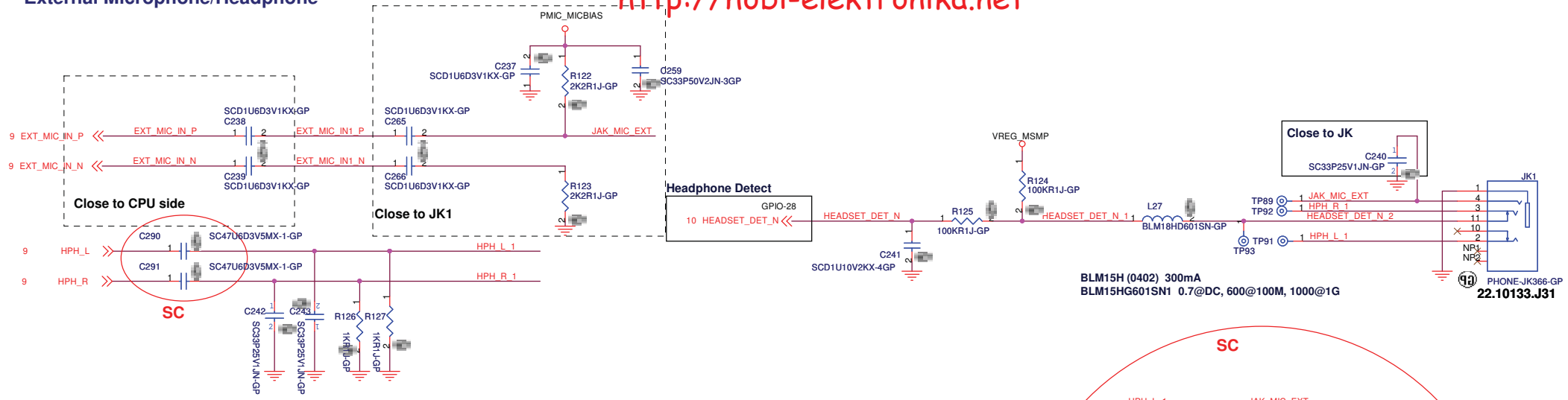


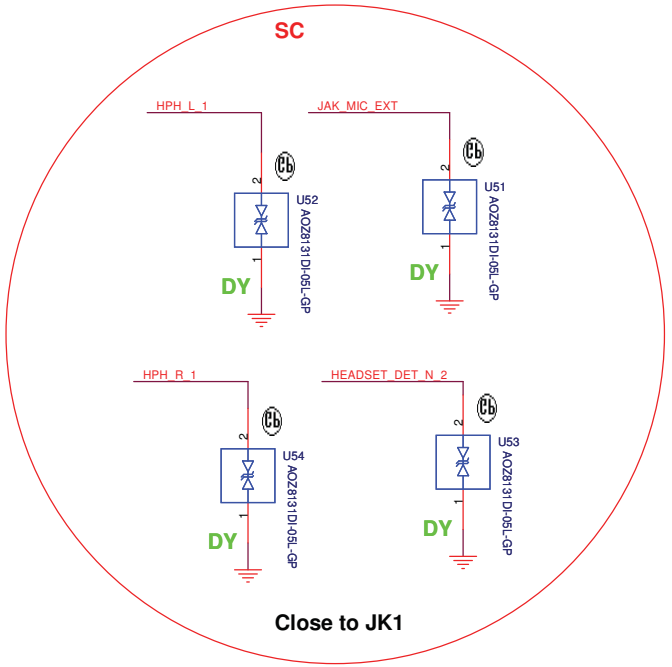


緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

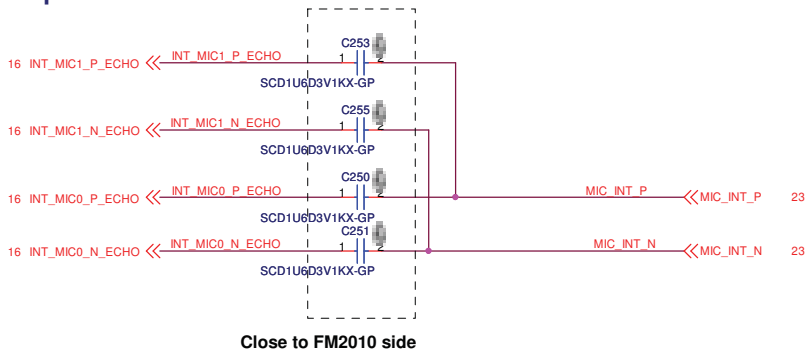
Title: TCXO Buffer		
Size: A3	Document Number: T-note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 19 of 34	

External Microphone/Headphone



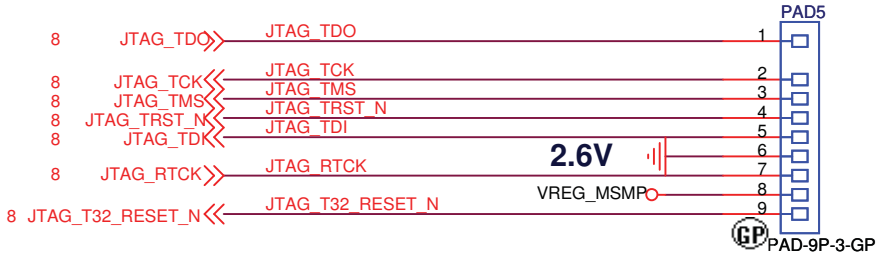


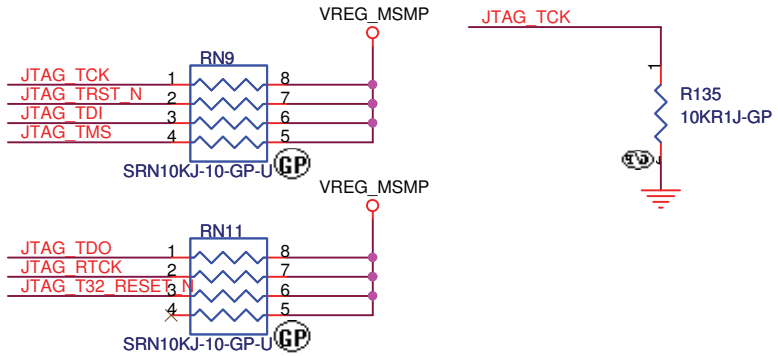
Internal Microphone



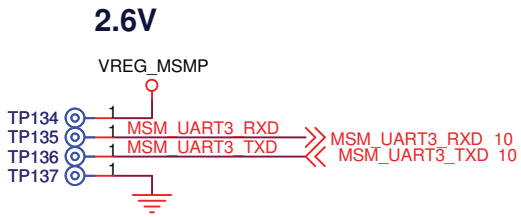
緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: Ext Mic, Int Mic, HP		
Size: A3	Document Number: T-note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 20 of 34	

JTAG

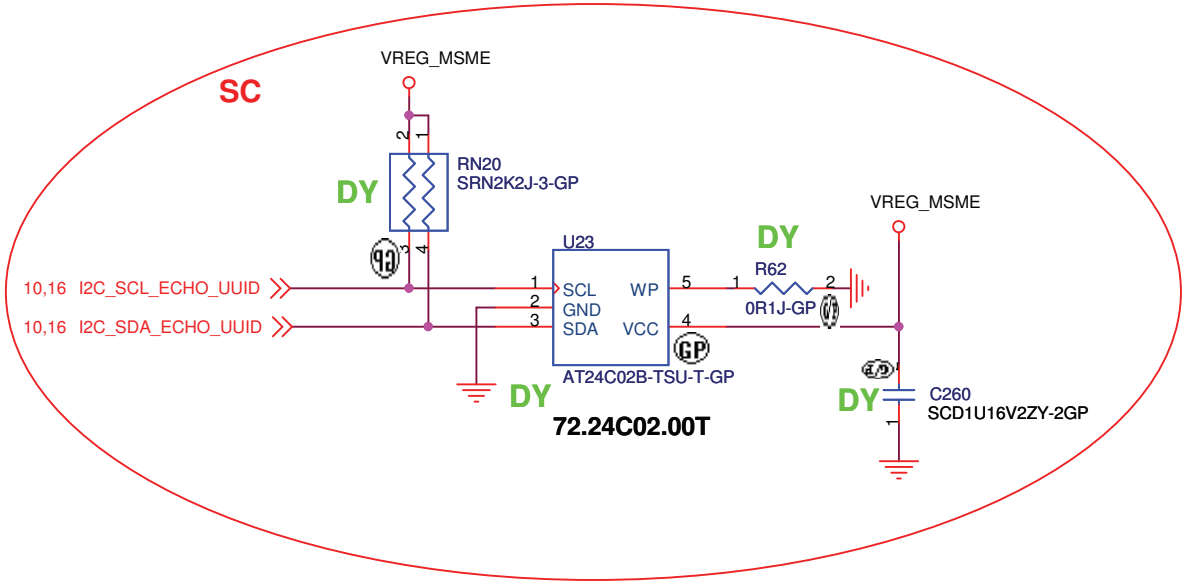




UART-3

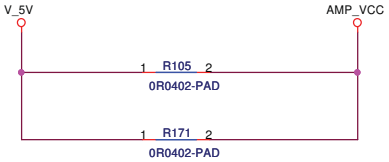


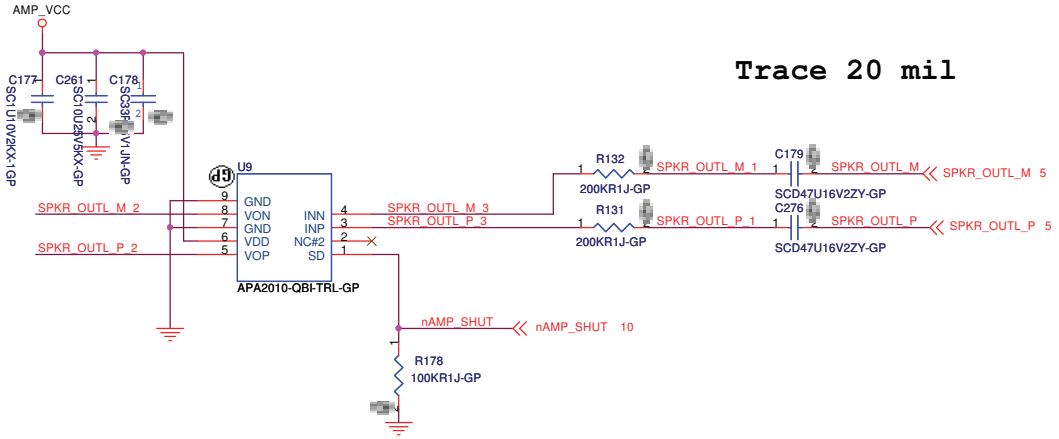
Put TP134,TP135,TP136,TP137 out of shielding can



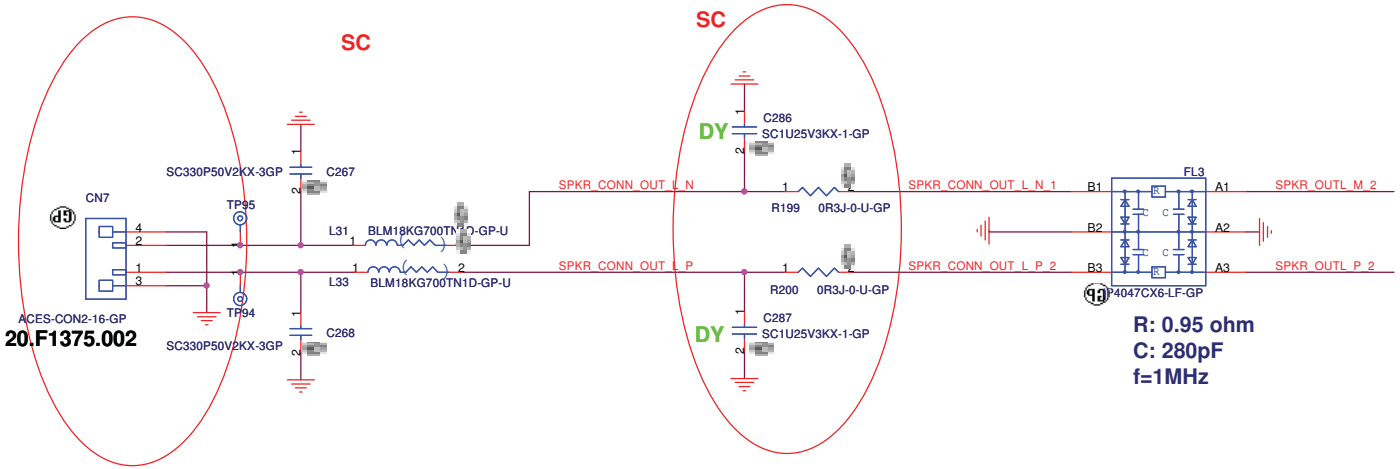
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: Debug Port		
Size: A4	Document Number: T-Note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 21 of 34	



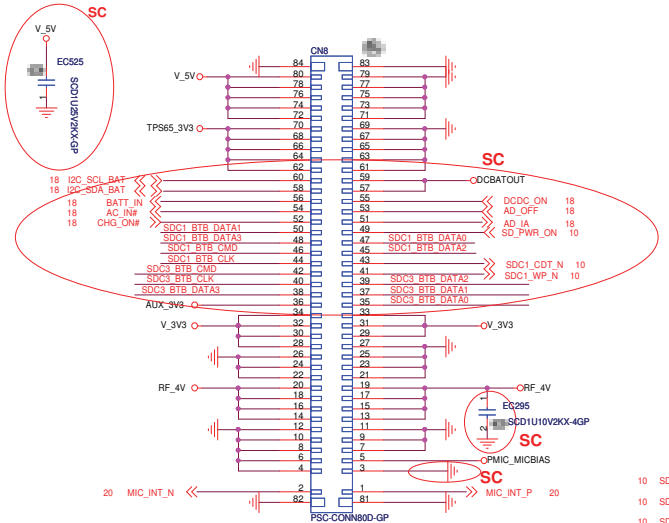


Trace 20 mil

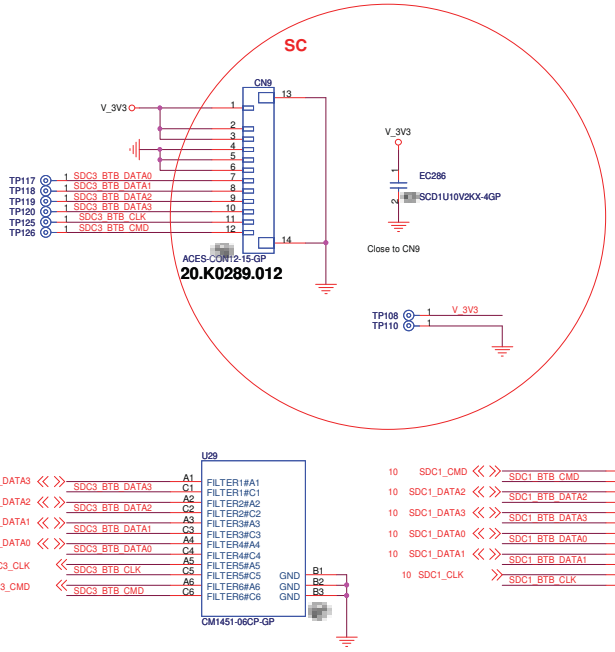


緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: SKP AMP		
Size: A3	Document Number: T-Note	Rev: SC
Date: Monday, July 06, 2009	Sheet 22 of 34	

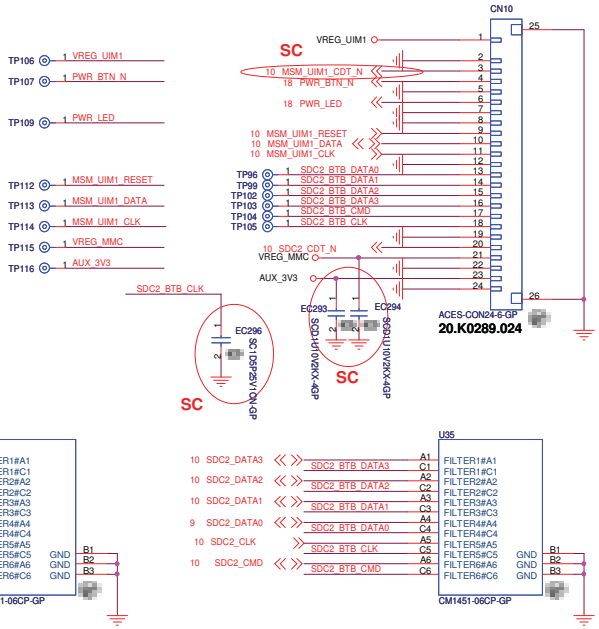
BTB Connector: IO Board <-> MB Board



FPC Connector: Flash Board <-> MB Board

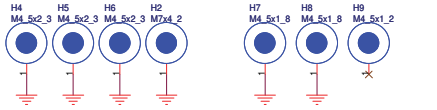


FPC Connector: SIM Board <-> MB Board



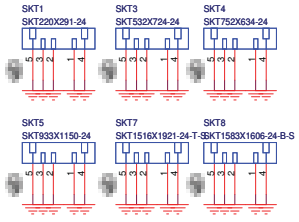
Shielding Can

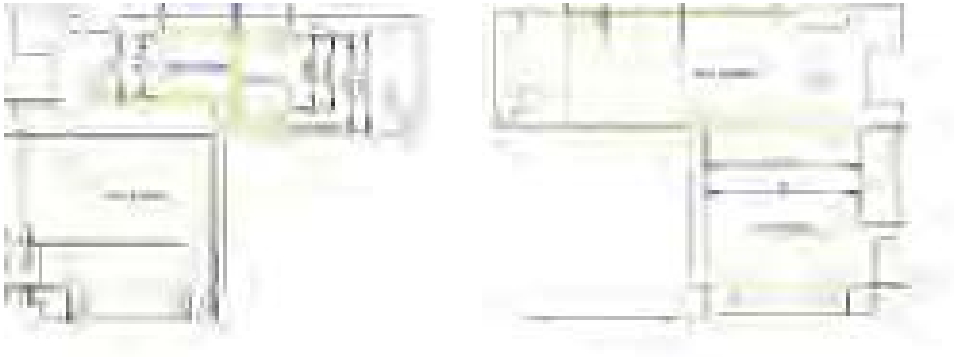
Screw Hole



H9:34.13X03.001

Shielding Can





[illegible]				

緯創資通	Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title	BTB,FPC, Shielding Can		
Size C	Document Number T-note		Rev SC
Date: Tuesday, June 30, 2009		Sheet 23 of 34	

RF Interface (MXU)

SSBI

GPIO-59 — SSBDT_MXU — SSBDT_MXU 10,31

ANT SEL

GRFC_9 GPIO-72	ANT_SEL3	ANT_SEL3	10,33
GRFC_8 GPIO-73	ANT_SEL2	ANT_SEL2	10,33
GRFC_7 GPIO-74	ANT_SEL1	ANT_SEL1	10,33
GRFC_6 GPIO-75	ANT_SEL0	ANT_SEL0	10,33

GPIO-30	DRX_MODE_SELECT_A	DRX_MODE_SELECT_A	10,33
GPIO-23	DRX_MODE_SELECT_B	DRX_MODE_SELECT_B	10,33
GPIO-82	DRX_MODE_SELECT_C	DRX_MODE_SELECT_C	10,33

PA CTRL

N5	TX_ON	TX_ON	9,31
T11 MPM-GPIO[0]	PA_R0	PA_R0	9,28,29,30
	PA_R1	PA_R1	8,28,29,30
P9 GPIO-83	PA_ON_0	PA_ON_0	9,29
GPIO-110	PA_ON_1	PA_ON_1	10,30
	PA_ON2	PA_ON2	10,31

9,30 PA_PWR_CTL_P — PA_PWR_CTL_P

GRFC2 GPIO-79	GSM_PA_EN	GSM_PA_EN	10,30
GRFC1 GPIO-80	GSM_PA_BAND	GSM_PA_BAND	10,30

RF CTRL

GPIO-81 — INTER_RX_SW_SEL_1 — INTER_RX_SW_SEL_1 10,31

GPIO-16	INTER_TX_SW_SEL_1	INTER_TX_SW_SEL_1	10,31
GPIO-26	INTER_TX_SW_SEL_2	INTER_TX_SW_SEL_2	10,28,31

GRFC3 GPIO-78 **(N/A)** INTER_RX_SW_SEL_2

GPS

GPIO-109 — EXT_GPS_LNA_EN — EXT_GPS_LNA_EN 10,33

RX0 IQ

9,31 RX0_I_P_MSM — RX0_I_P_MSM
9,31 RX0_I_M_MSM — RX0_I_M_MSM

RX0 IQ
To QSD RF RX
(Analog)

RX0 IQ
To QSD RF RX
(Analog)

9,31 RX0_Q_P_MSM — RX0_Q_P_MSM
9,31 RX0_Q_M_MSM — RX0_Q_M_MSM

RX1 IQ

9,31 RX1_I_P_MSM — RX1_I_P_MSM
9,31 RX1_I_M_MSM — RX1_I_M_MSM

RX1 IQ
To QSD RF RX
(Analog)

RX1 IQ
To QSD RF RX
(Analog)

9,31 RX1_Q_P_MSM — RX1_Q_P_MSM
9,31 RX1_Q_M_MSM — RX1_Q_M_MSM

TX IQ

TX_Q_P	TX_Q_P	TX_Q_P	9,31
TX_Q_M	TX_Q_M	TX_Q_M	9,31
TX_I_P	TX_I_P	TX_I_P	9,31
TX_I_M	TX_I_M	TX_I_M	9,31
TX_IREF	TX_IREF	TX_IREF	9,31

TX IQ
From QSD TXDAC
(Analog)

VCTCXO

VCTCXO ADJ

TRK_LO_ADJ — TRK_LO_ADJ 19,31

3,19,31 TCXO — TCXO — TCXO — **RF_TCXO_GND**

RF_TCXO_GND

Covered by GND traces and planes

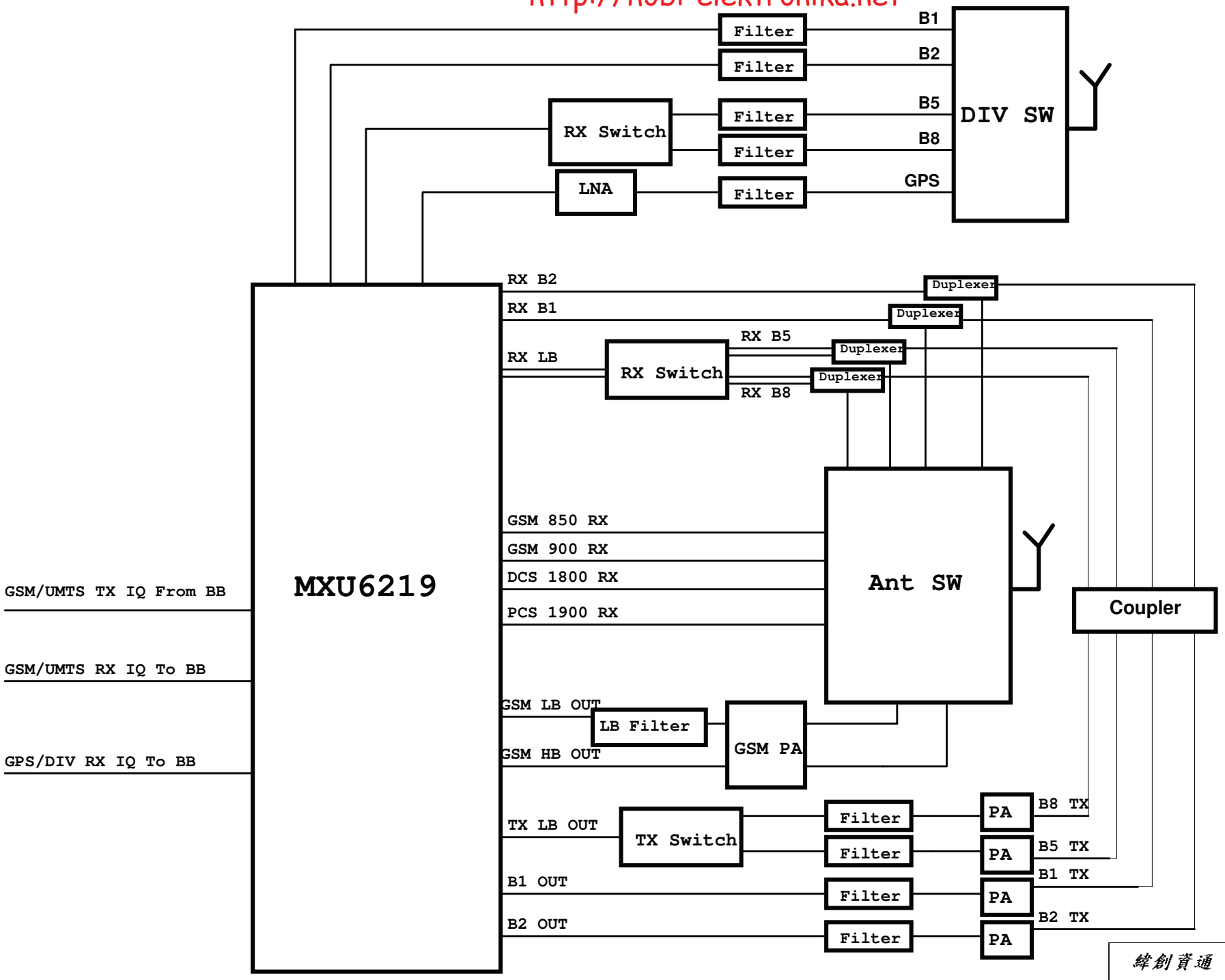
緯創資通	**Wistron Corporation** 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title	BB/RF Interface		
Size C	Document Number T-note		Rev SC
Date: Tuesday, June 30, 2009	Sheet 24 of 34		

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

Title: VERSION SHEET

Size	Document Number	Rev
C	T-note	SC

Date: Tuesday, June 30, 2009 Sheet 25 of 34



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

Title: RF BLOCK DIAGRAM

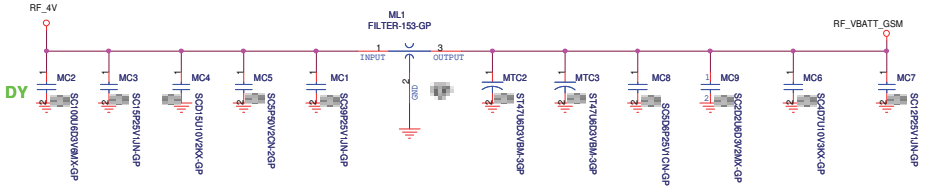
Size	Document Number	Rev
C	T-note	SC

Date: Tuesday, June 30, 2009 Sheet 26 of 34

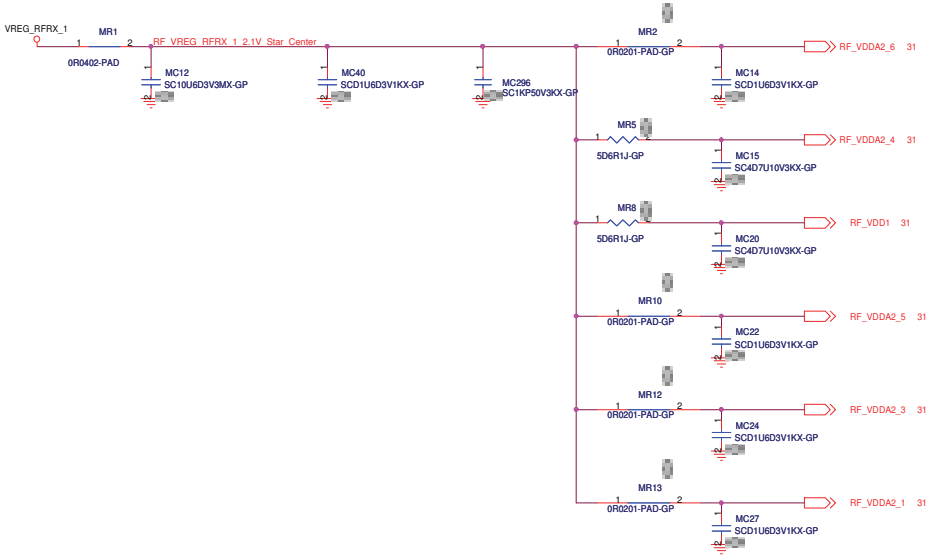
POWER DIAGRAM

From Battery	3.8VDC	VBATT
From System Power, Controlled by PM7540	3.8VDC	V_CDMA_PA
From PM7540	2.6VDC	VREG_MSMP
From PM7540	2.7VDC	VREG_RFRX_0
From PM7540	2.1VDC	VREG_RFRX_1
From PM7540	2.7VDC	VREG_TCXO
From PM7540	3VDC	VREG_RFRX_2
From PM7540	2.7VDC	VREG_SYNTH

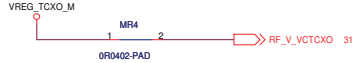
VBATT for GSM AP



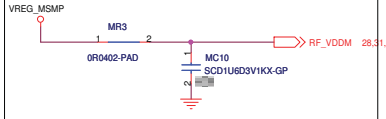
+2.1VDC



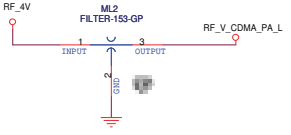
VREG_TCXO_M



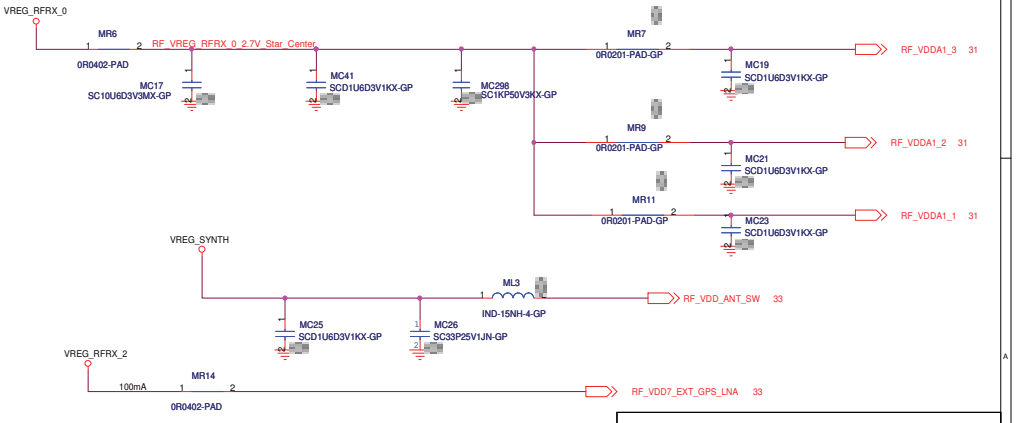
+2.6VDC



V_CDMA_PA



+2.7VDC

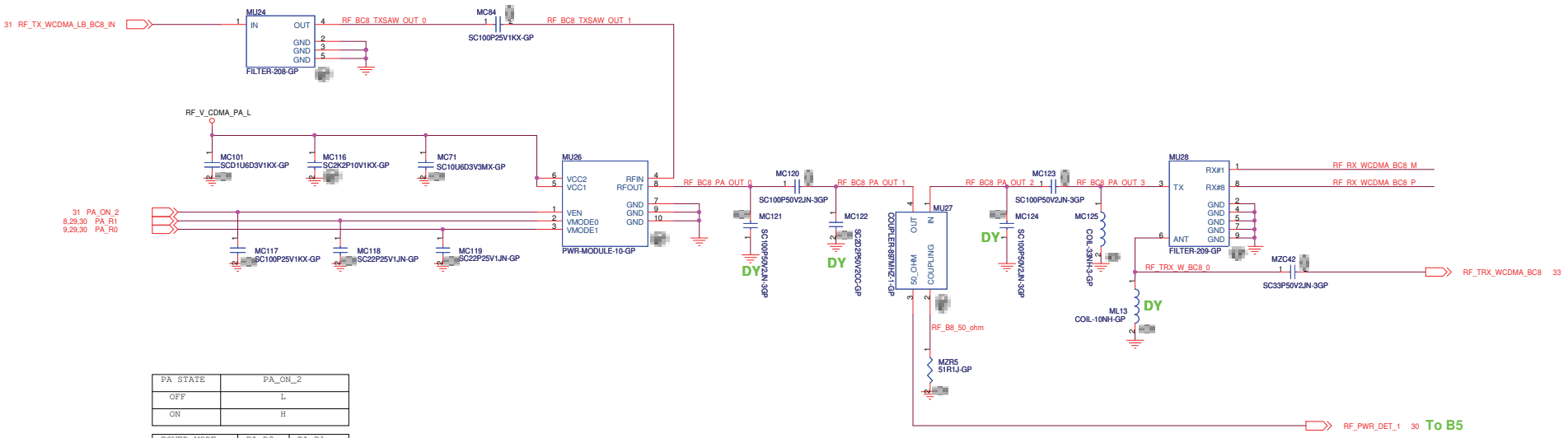


緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: RF POWER DISTRIBUTION

Size: C | Document Number: T-note | Rev: SC

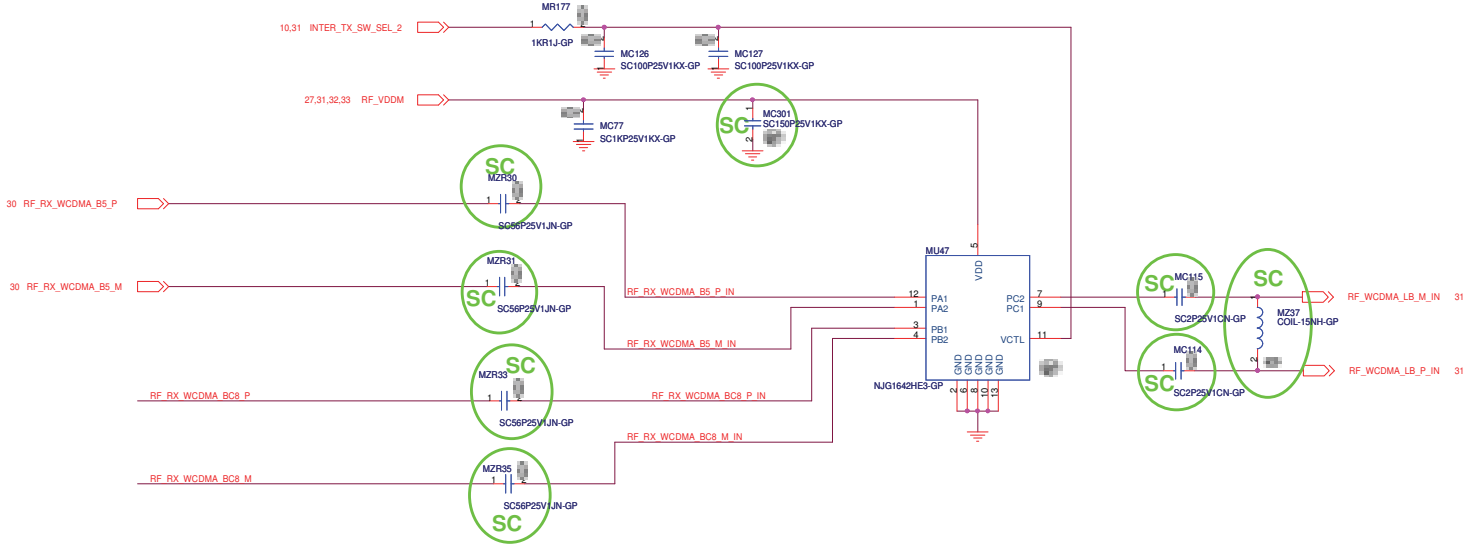
Date: Tuesday, June 30, 2009 | Sheet 27 of 34



PA STATE	PA_ON_2
OFF	L
ON	H

POWER MODE	PA_R0	PA_R1
LOW POWER	H	H
MEDIUM POWER	L	H
HIGH POWER	L	L

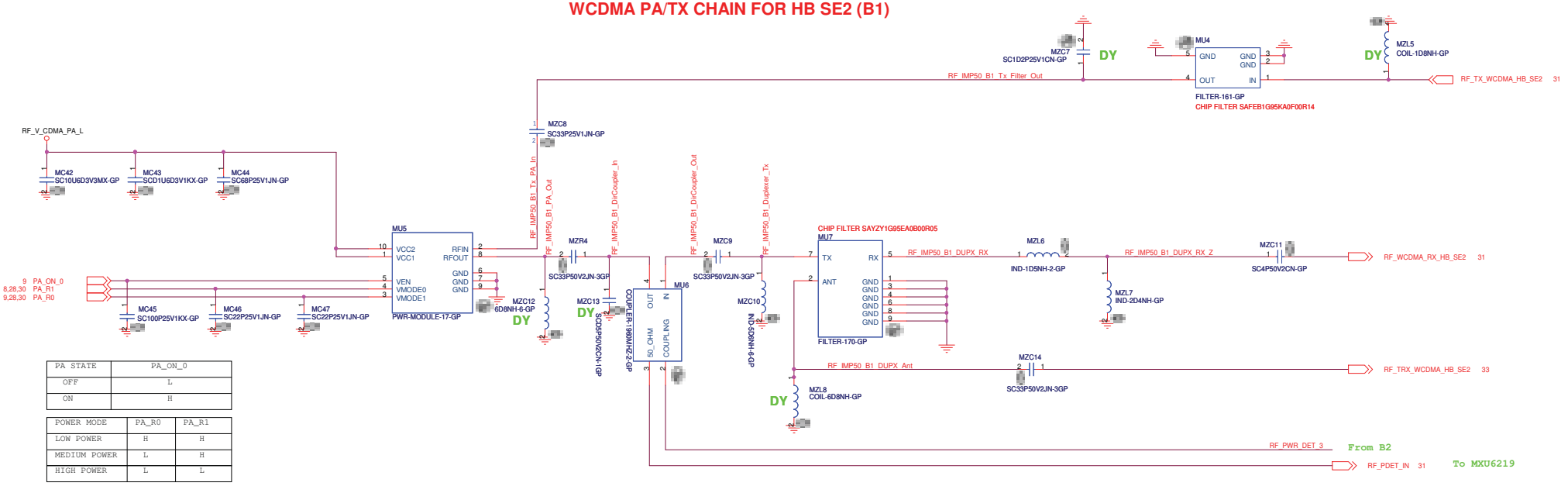
RX INTERSTAGE CHAIN



RX MODE	INTER_TX_SW_SEL_2
B5	H
BC8	L

緯創資通	Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title	WCDMA B8 & RX CHAIN	
Size: C	Document Number: T-note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 28 of 34	

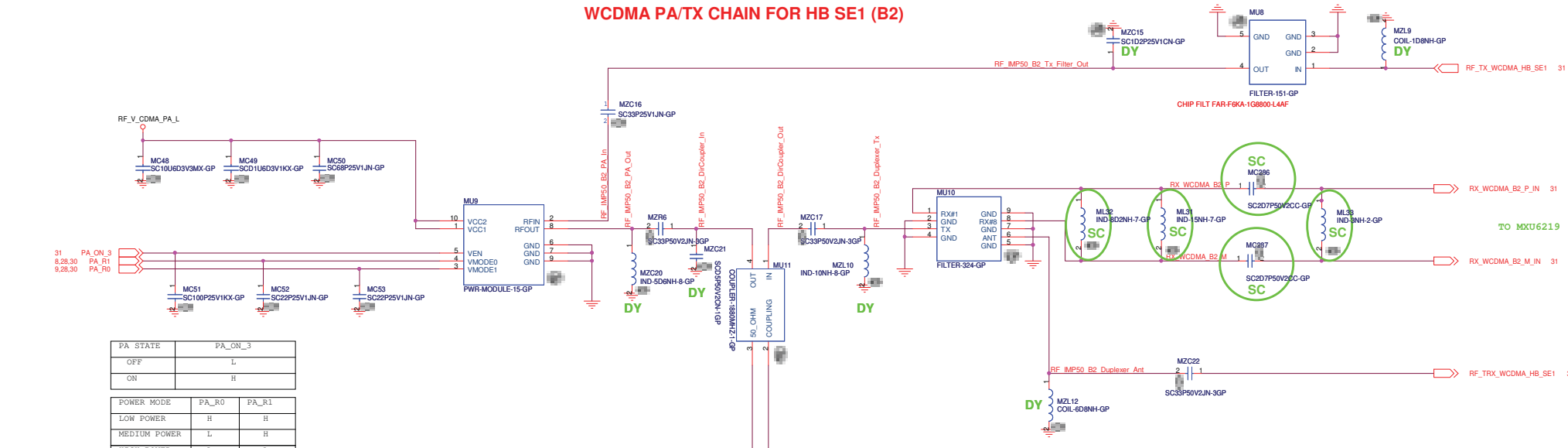
WCDMA PA/TX CHAIN FOR HB SE2 (B1)



PA STATE	PA_ON_0
OFF	L
ON	H

POWER MODE	PA_R0	PA_R1
LOW POWER	H	H
MEDIUM POWER	L	H
HIGH POWER	L	L

WCDMA PA/TX CHAIN FOR HB SE1 (B2)



PA STATE	PA_ON_3
OFF	L
ON	H

POWER MODE	PA_R0	PA_R1
LOW POWER	H	H
MEDIUM POWER	L	H
HIGH POWER	L	L

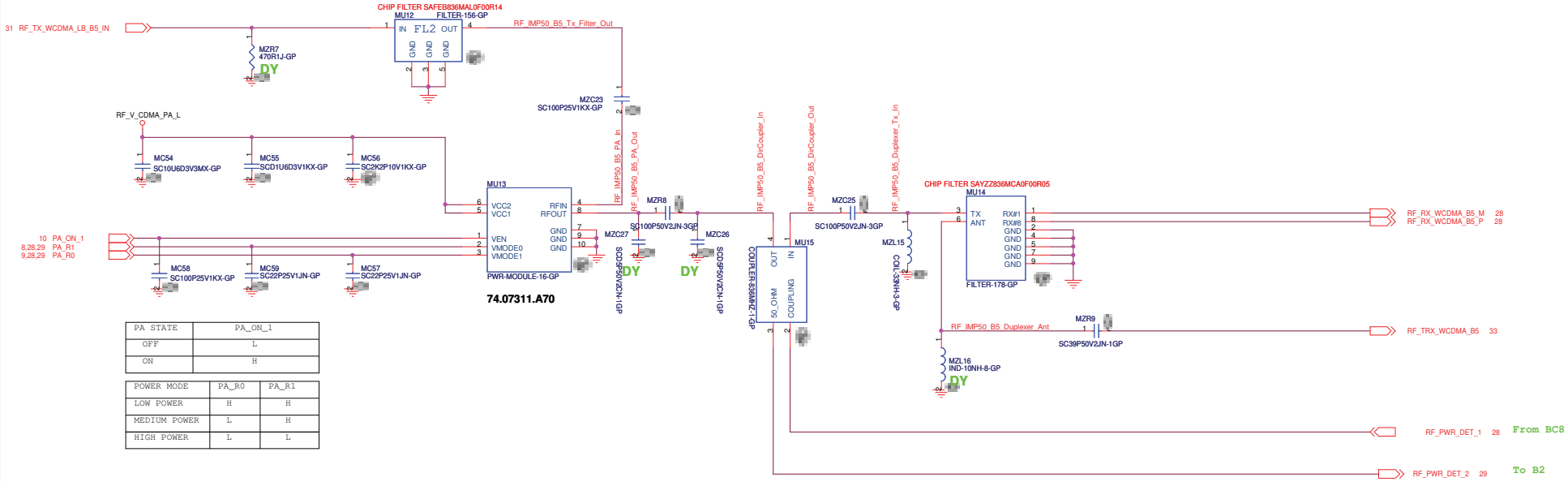
緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: WCDMA B1/2 PAs & DUPLEXERs

Size	Document Number	Rev
C	T-note	SC

Date: Tuesday, June 30, 2009 Sheet 29 of 34

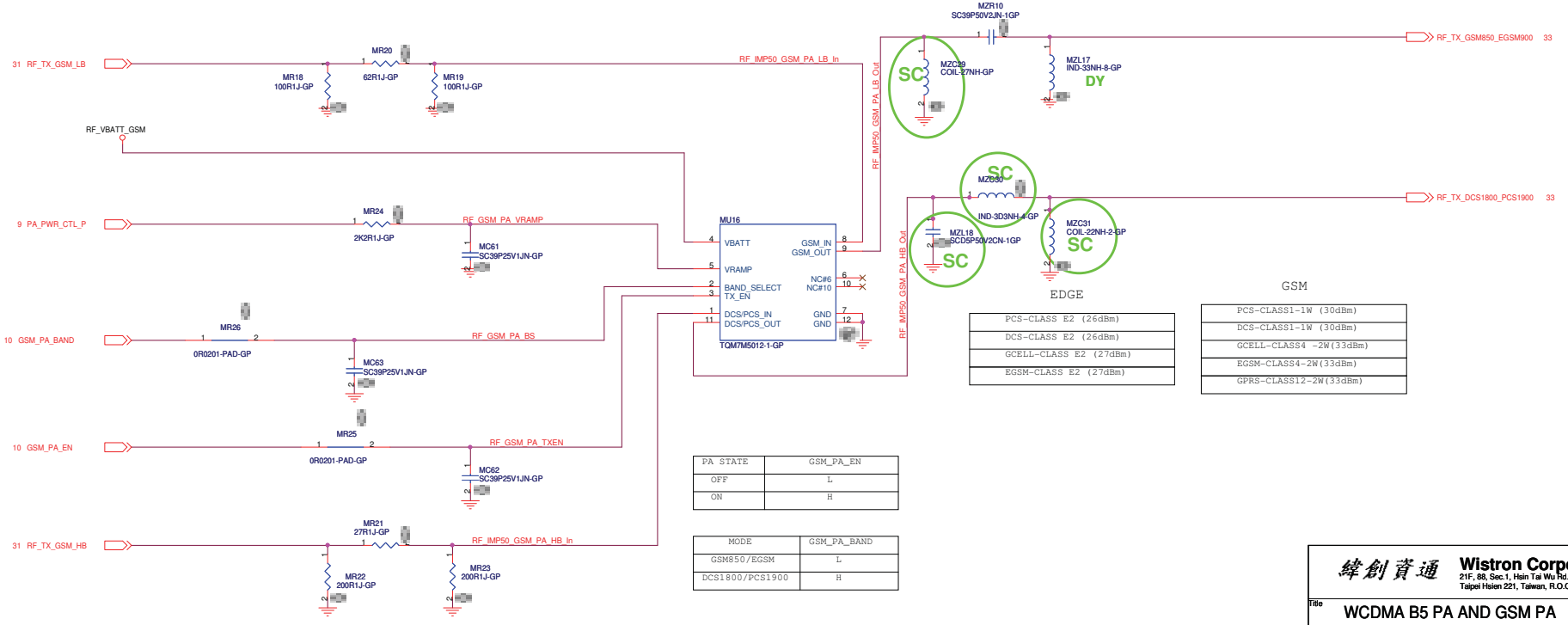
WCDMA 800 (B5/6) LPA/TX CHAIN



PA STATE	PA_ON_1
OFF	L
ON	H

POWER MODE	PA_R0	PA_R1
LOW POWER	H	H
MEDIUM POWER	L	H
HIGH POWER	L	L

GSM QUAD-BAND PA



PA STATE	GSM_PA_EN
OFF	L
ON	H

MODE	GSM_PA_BAND
GSM850/EGSM	L
DCS1800/PCS1900	H

EDGE

PCS-CLASS E2 (26dBm)
DCS-CLASS E2 (26dBm)
GCELL-CLASS E2 (27dBm)
EGSM-CLASS E2 (27dBm)

GSM

PCS-CLASS1-1W (30dBm)
DCS-CLASS1-1W (30dBm)
GCELL-CLASS4 -2W(33dBm)
EGSM-CLASS4-2W(33dBm)
GPRS-CLASS12-2W(33dBm)

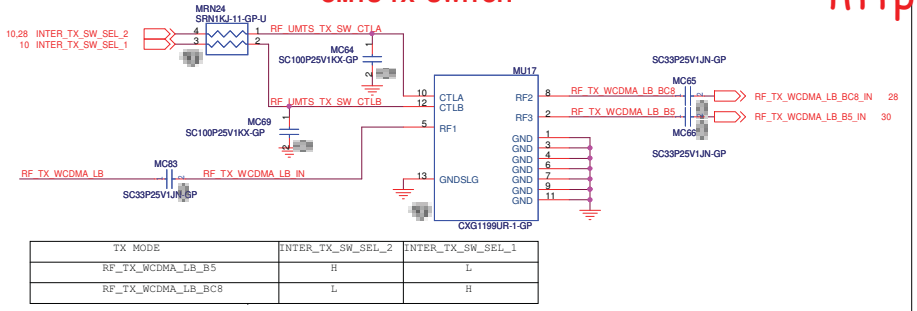
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: WCDMA B5 PA AND GSM PA

Size: C | Document Number: T-note | Rev: SC

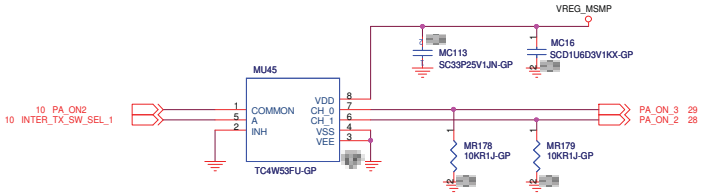
Date: Tuesday, June 30, 2009 | Sheet 30 of 34

UMTS TX SWITCH

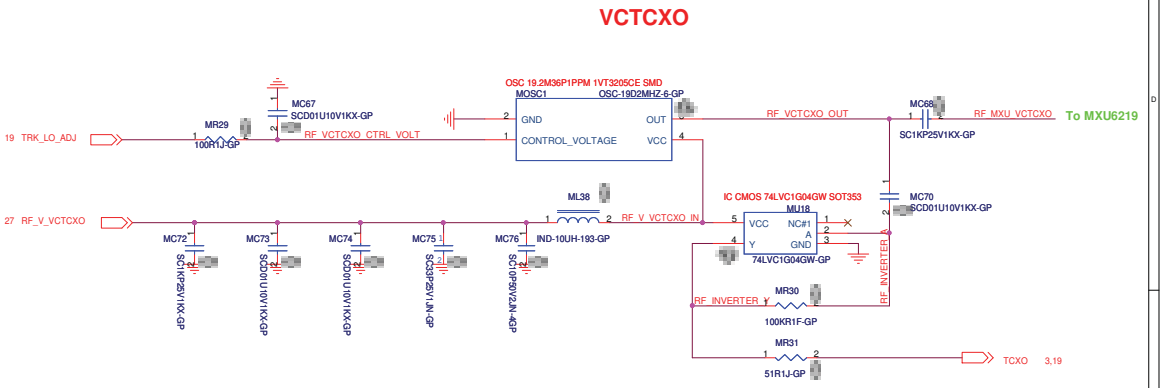


TX_MODE	INTER_TX_SW_SEL_2	INTER_TX_SW_SEL_1
RF_TX_WCDMA_LB_B5	H	L
RF_TX_WCDMA_LB_BC8	L	H

PA_ON SW

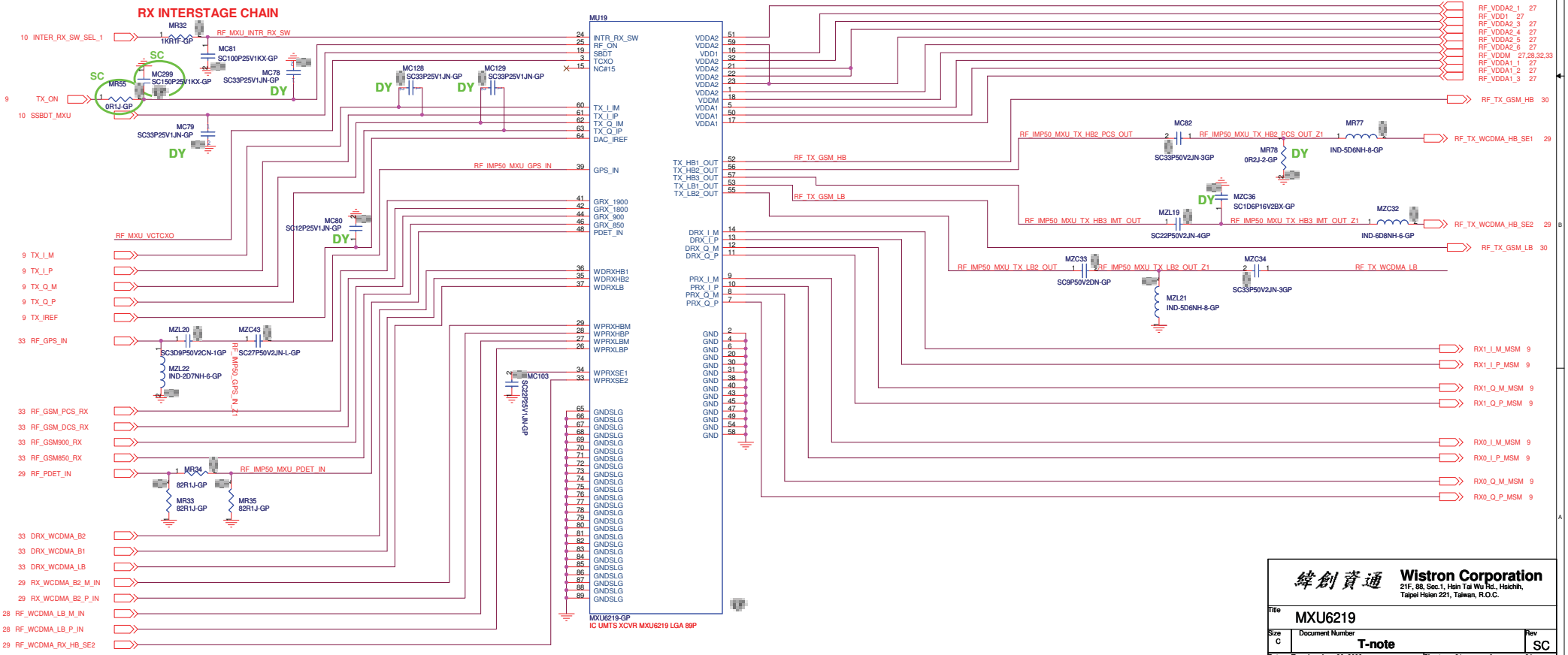


VCTCXO



MXU6219

RX INTERSTAGE CHAIN

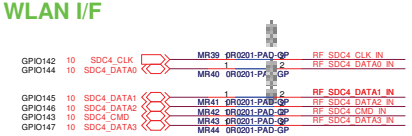


緯創資通 Wistron Corporation
21F, 88, Sec. 1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title	MXU6219	
Size C	Document Number T-note	Rev SC
Date: Tuesday, June 30, 2009	Sheet 31 of 34	

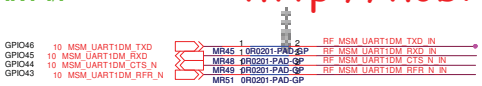
WLAN/BT Interface

WLAN I/F

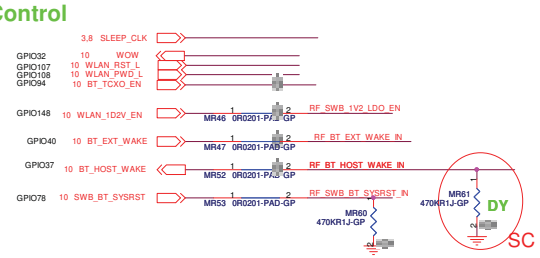


PCM I/F

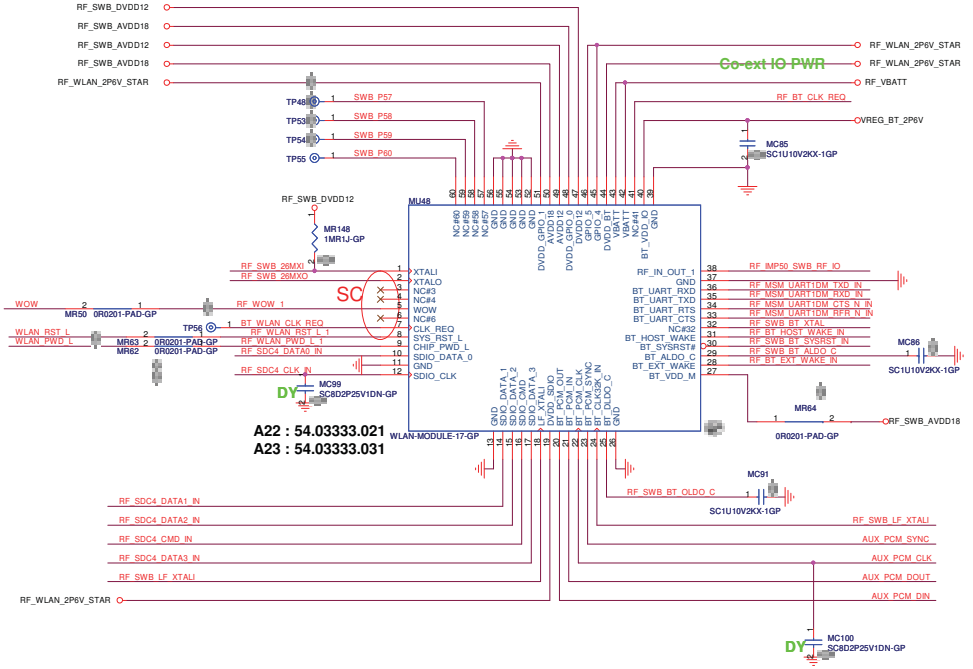
UART I/F



Control

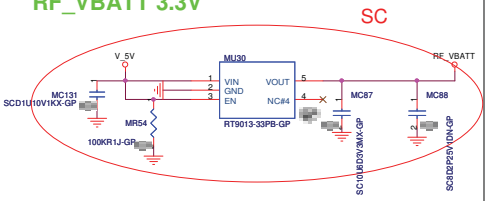


SWB-A23 WLAN/BT Module



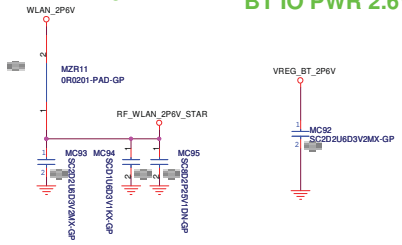
WLAN/BT Power

RF_VBATT 3.3V

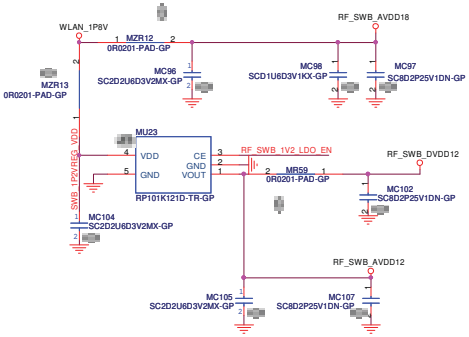


WLAN 2.6V

BT IO PWR 2.6V

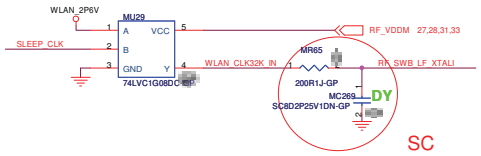


WLAN 1.8V

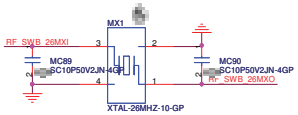


WLAN/BT Clock

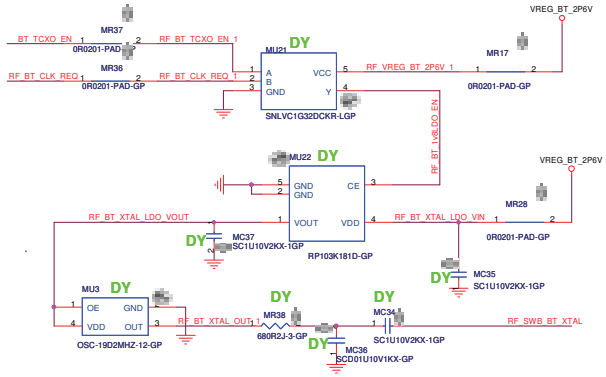
32.768KHz Clock for WLAN/BT



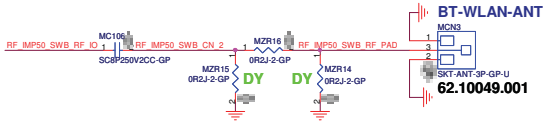
WLAN 26MHz XTAL



BT 19.2MHz TCXO



2.4GHz Antenna Pads

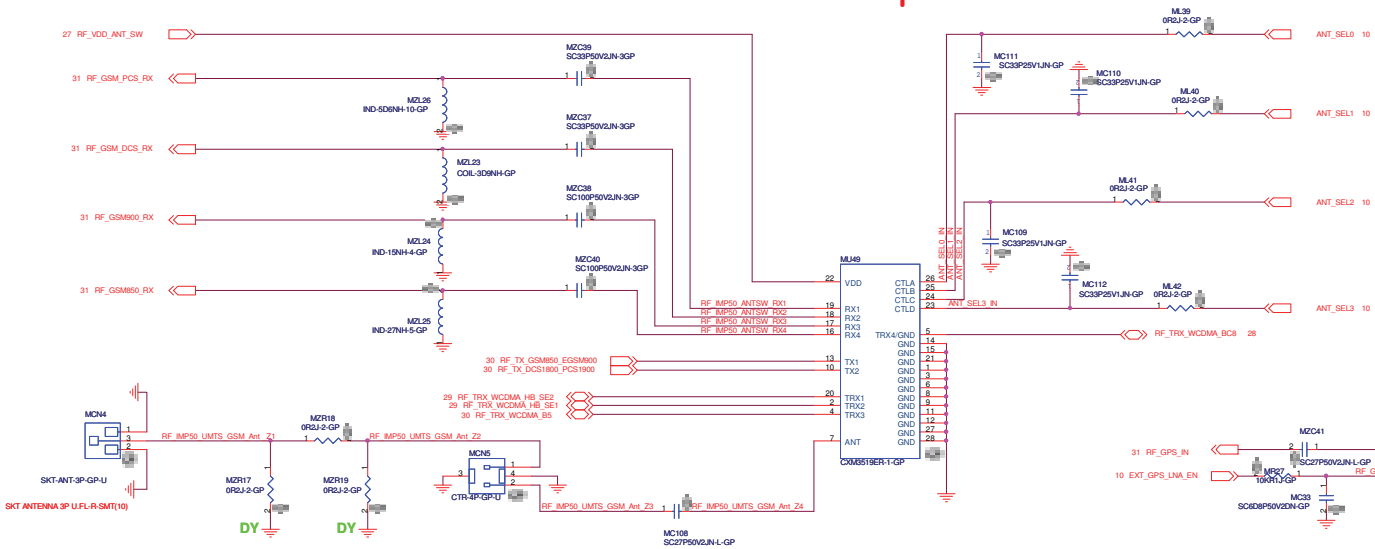


緯創資通 Wistron Corporation		
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: SWB-A23 BT+WLAN		
Size: A2	Document Number: T-note	Rev: SC
Date: Tuesday, June 30, 2009	Sheet 32 of 34	

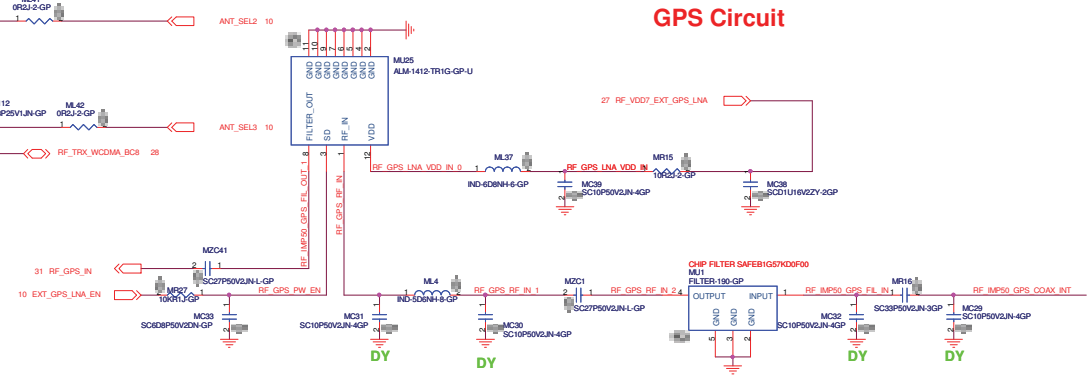
PRIMARY ANTENNA & SWITCHPLEXER

1P9T SWITCH LOGIC

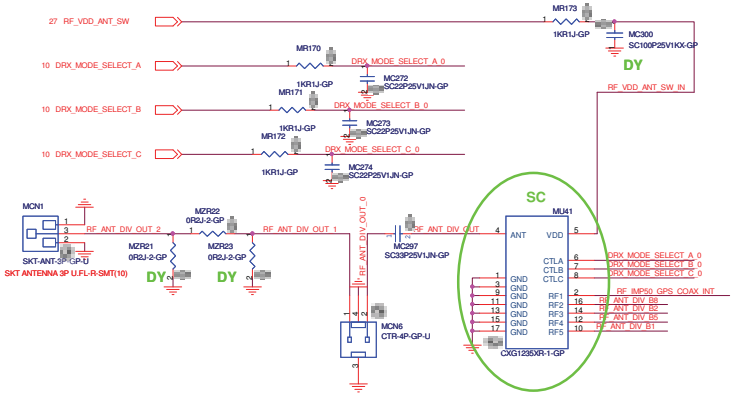
MODE	ANT_SEL0	ANT_SEL1	ANT_SEL2	ANT_SEL3
GSM850/EGSM TX	H	H	L	L
DCS1800/PCS1900 TX	H	L	L	L
GSM850 RX	L	H	L	L
EGSM900 RX	L	H	H	L
DCS1800 RX	L	L	H	L
PCS1900 RX	L	L	L	L
TRX1(BC1)	H	L	H	L
TRX2(BC2)	H	H	H	L
TRX3(BC5)	H	L	H	H
TRX4(BC8)	H	H	H	H



GPS Circuit



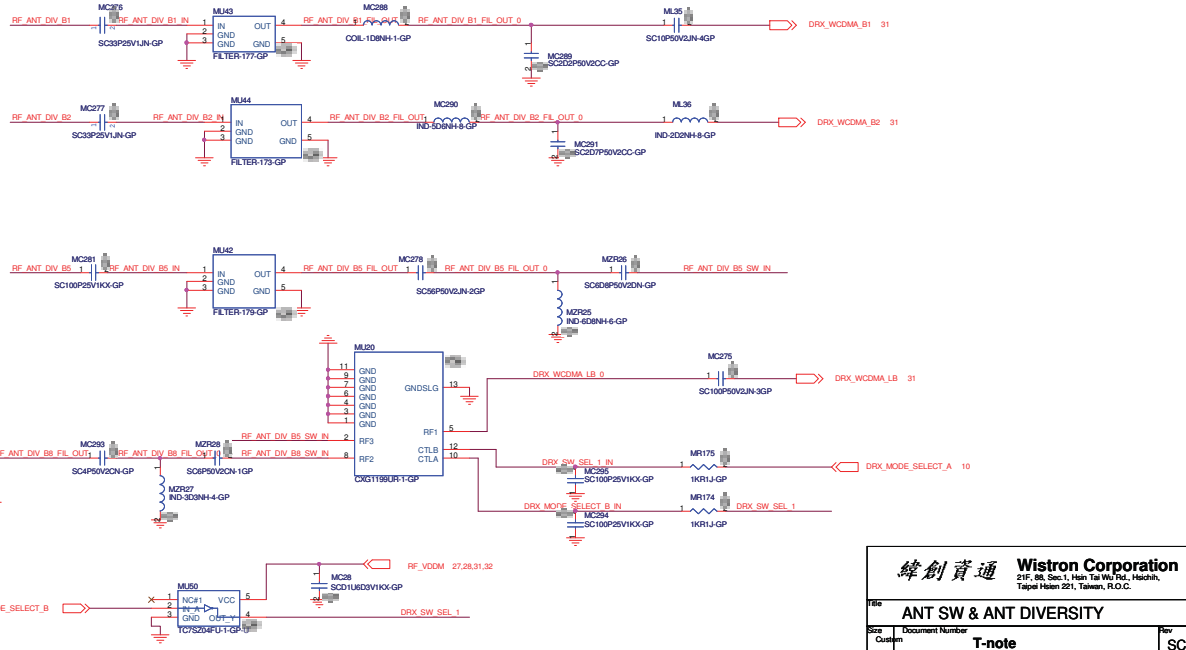
RX DIVERSITY



SC

DIVERSITY SWITCH LOGIC

MODE	DRX_MODE_SELECT_A	DRX_MODE_SELECT_B	DRX_MODE_SELECT_C	DRX_SW_SEL_1
RF2_B8	H	H	L	L
RF3_B2	H	L	L	X
RF4_B5	L	L	L	H
RF5_B1	L	L	H	X
DIV_MOD_OFF	H	L	H	X



緯創資通	Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
Title	ANT SW & ANT DIVERSITY
Size: Custom	Document Number: T-note
Rev	SC
Date: Tuesday, June 30, 2009	Sheet 33 of 34

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

Title: Revision

Size	Document Number	Rev
A4	T-note	SC

Date: Tuesday, June 30, 2009 Sheet 34 of 34