Project Name :

Platform : SKYLAKE

PAGE CONTENT

M/B Schematic Version Change List

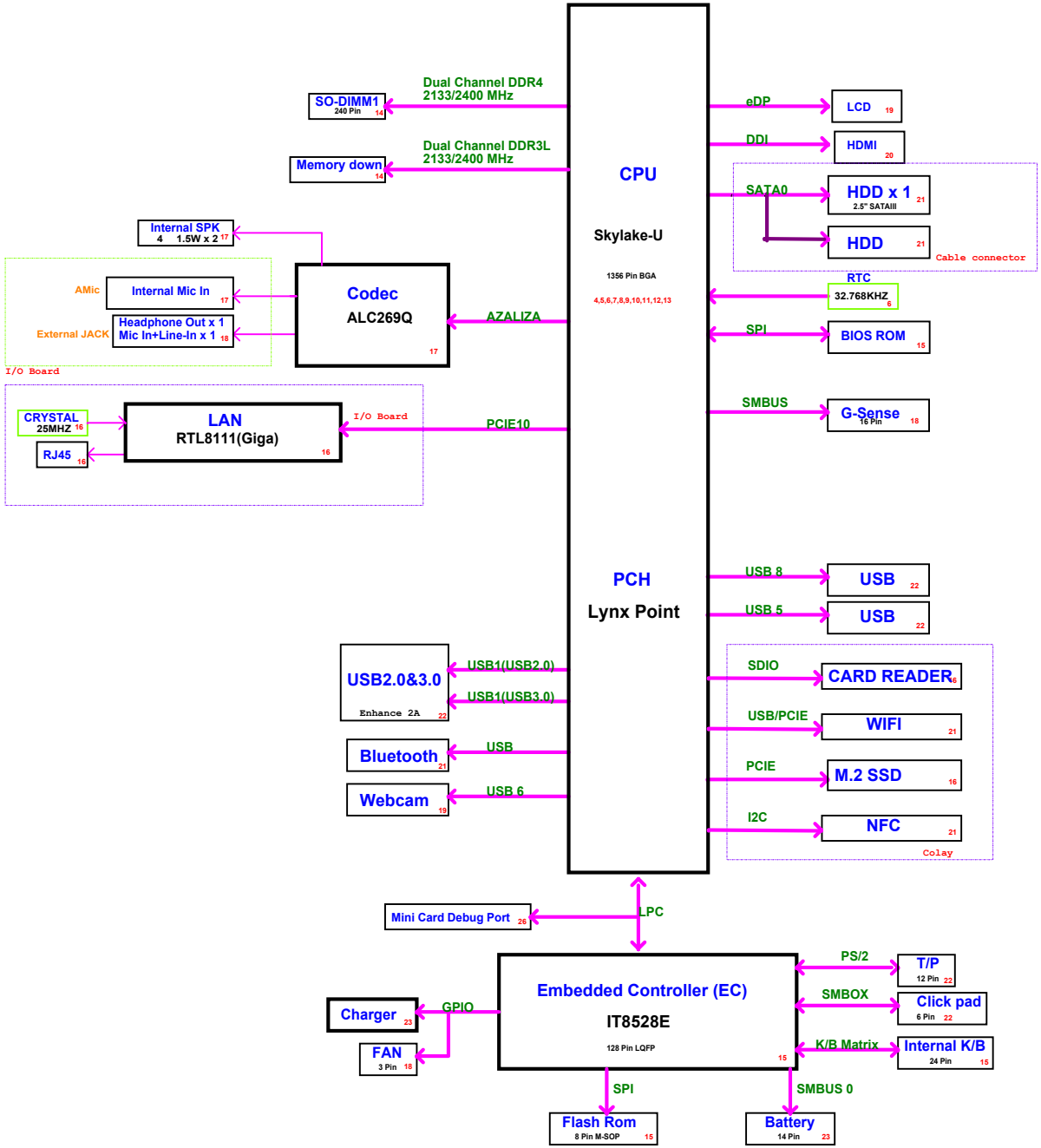
Release Date	Version	PCB P/N	PCB Description	PCBA P/N	Note
2017-3-15	A				
2017-4-18	B				

Daughter Board Schematic Version Change List

Release Date	Version	PCB P/N	PCB Description	PCBA P/N	Note

TongFang Inc			
Title: kabylake-U/RU			
Size: Custom	Document Number: Index		Rev: B
Date: Tuesday, April 25, 2017	Sheet 1 of 30		

SYSTEM BLOCK DIAGRAM



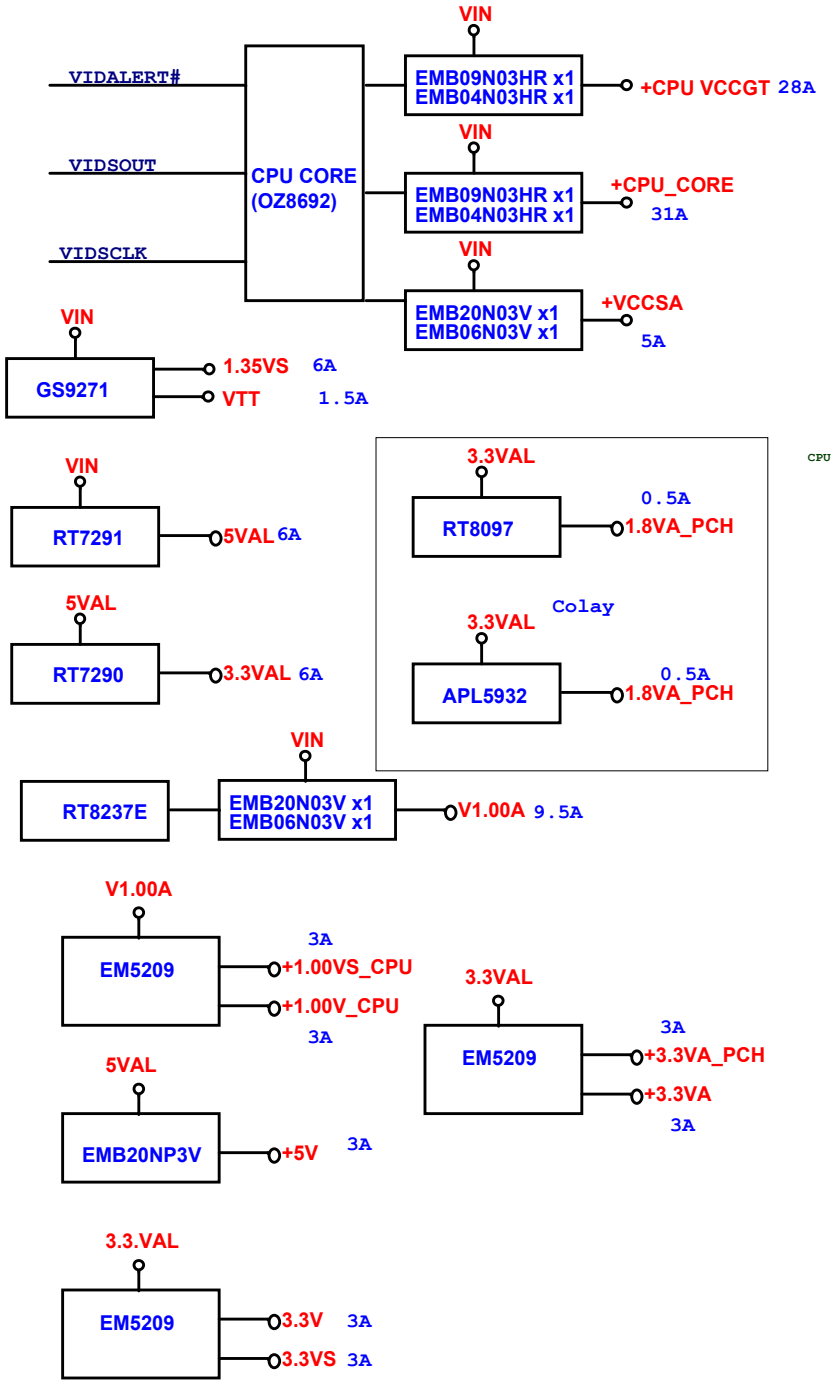
TongFang Inc

kabylake-U/RU

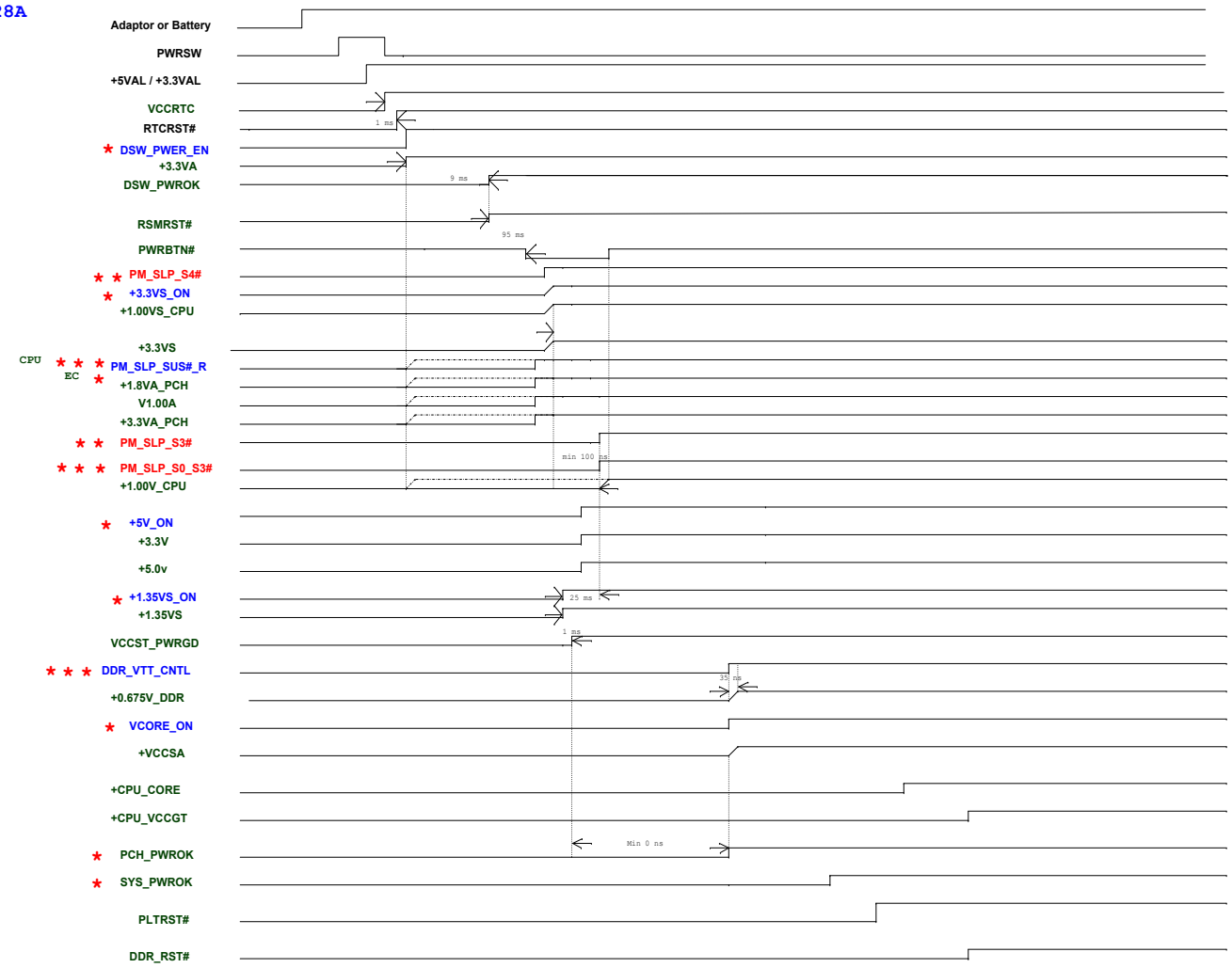
Size: Custom | Document Number: SYSTEM BLOCK | Rev: B

Date: Tuesday, April 25, 2017 | Sheet 2 of 30

POWER BLOCK DIAGRAM



System Poewr On Sequence



* * * CPU Control Pin(O/P)

* * EC Control Pin(I/P)

* EC Control Pin (O/P)

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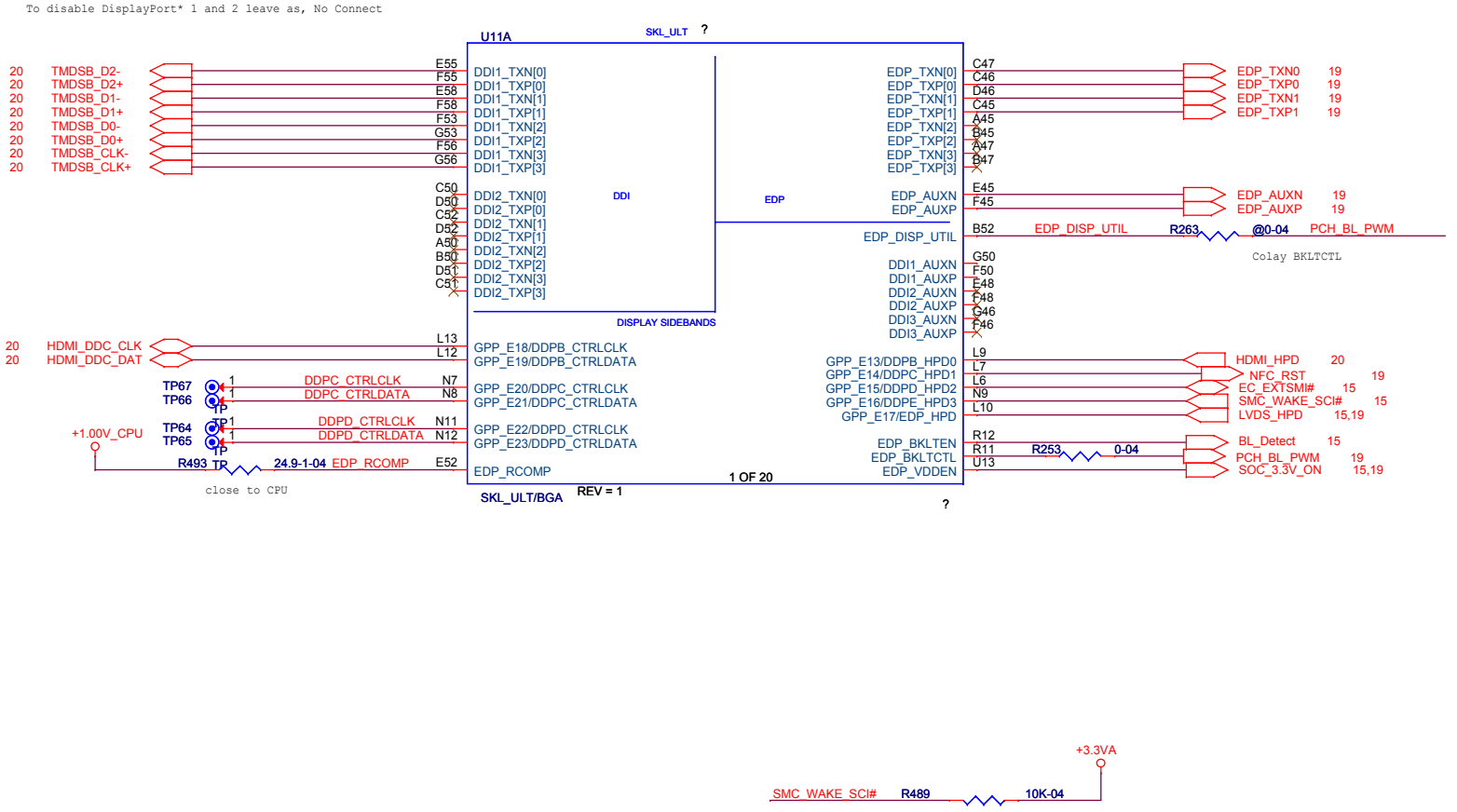
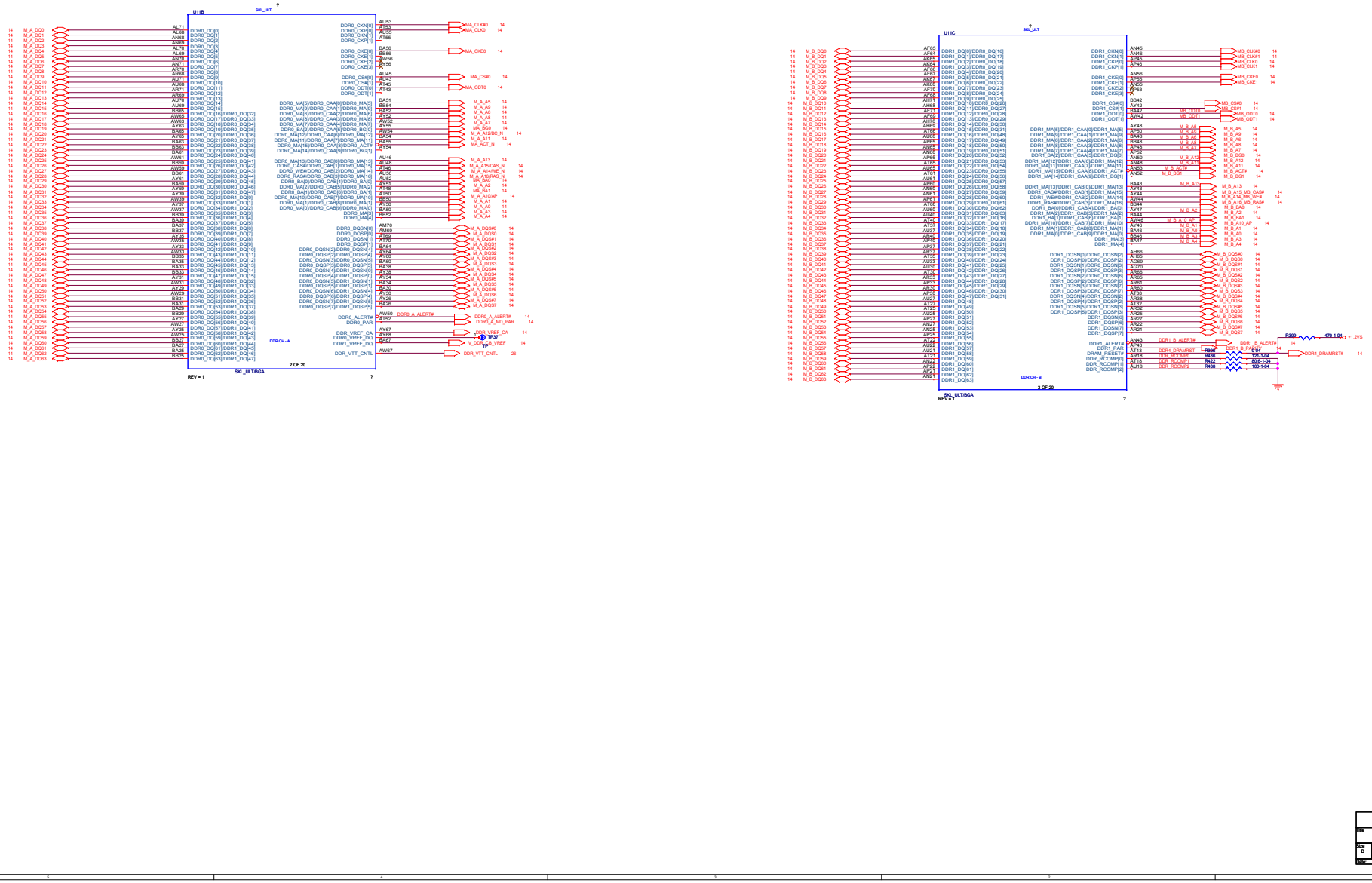
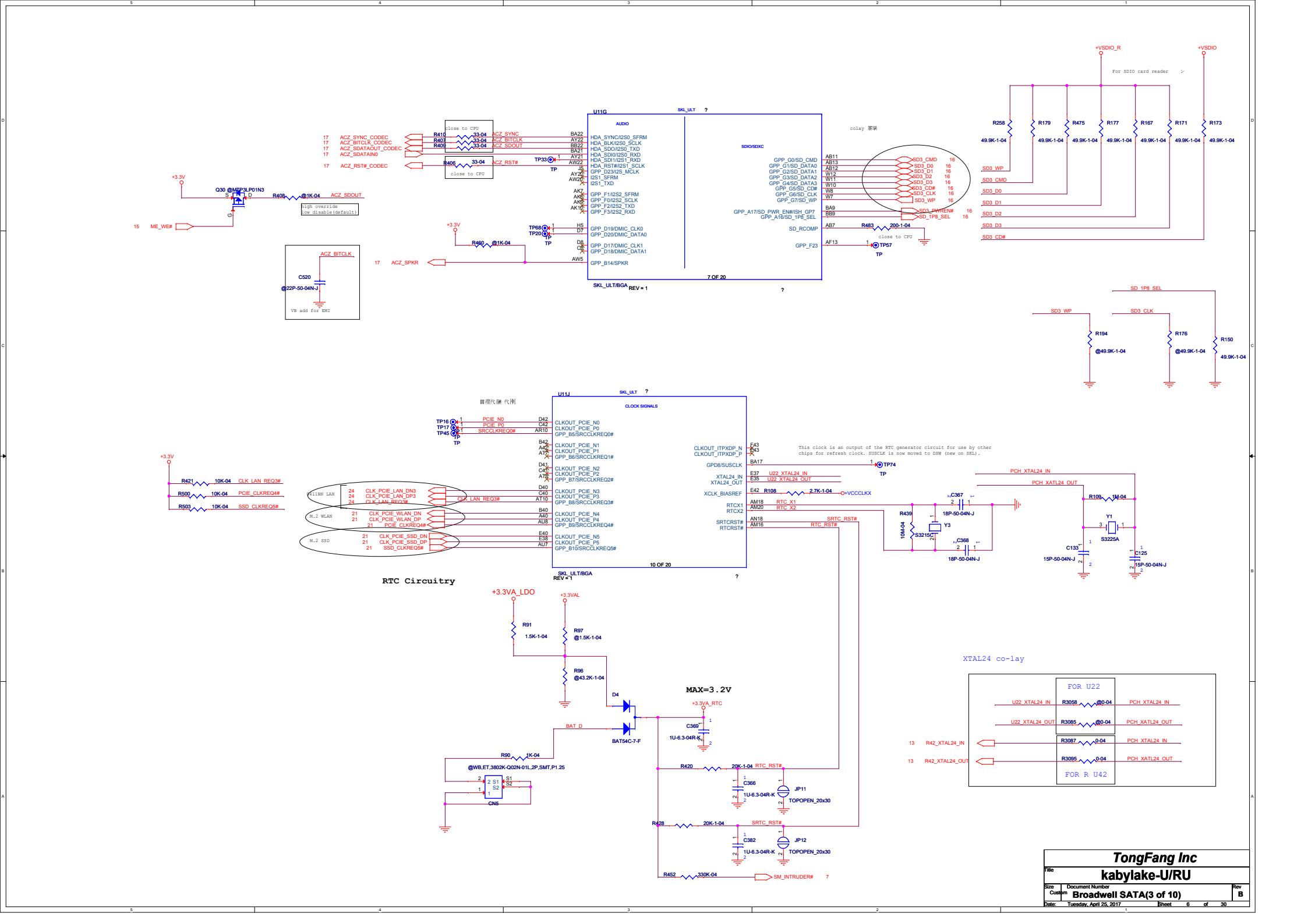
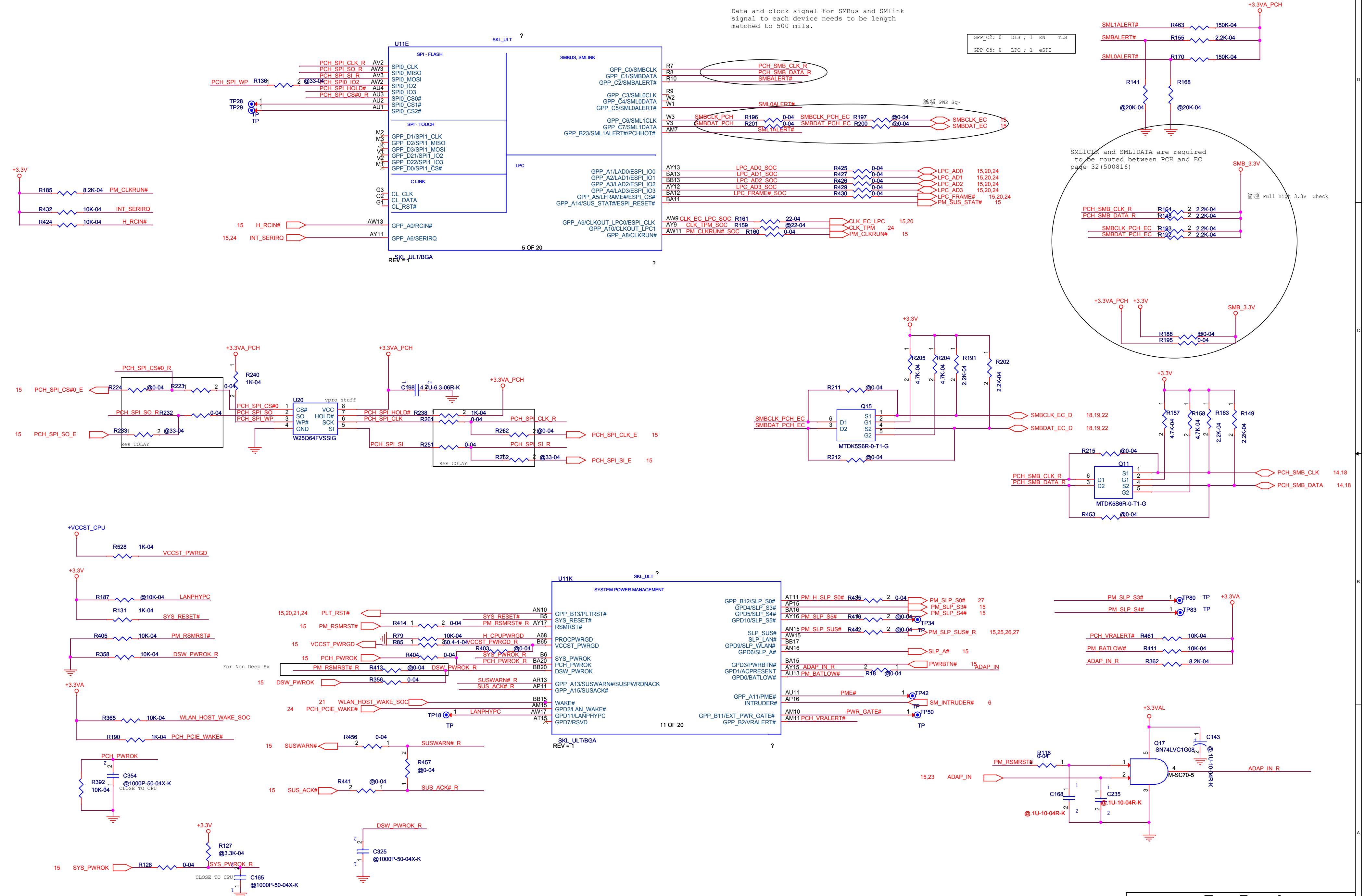
Title: kabylake-U/RU			
Size: Custom	Document Number: POWER DIAGRAM & SEQUENCE		Rev: B
Date: Tuesday, April 25, 2017	Sheet 3 of 30		



TongFang Inc		
Title: kabylake-U/RU		
Size: Custom	Document Number: Broadwell DDI(1 of 10)	Rev: B
Date: Tuesday, April 25, 2017	Sheet 4 of 30	


U11B
SKL_ULT
SKL_ULT_BGA
2 OF 20
REV = 1
DDR CH - A
U11C
SKL_ULT
SKL_ULT_BGA
3 OF 20
REV = 1
DDR CH - B
TongFang Inc
kabylake-U/RU
Broadwell DDR bus(2 of 10)
Size D
Rev B
Tuesday, April 25, 2017
Sheet 5 of 30


U11G
SKL_ULT
AUDIO
SDIO/SDXC
HDA_SYNC/I2S0_SFRM
HDA_BLK/I2S0_SCLK
HDA_SDO/I2S0_TXD
HDA_SDI0/I2S0_RXD
HDA_SDI1/I2S1_RXD
HDA_RST#/I2S1_SCLK
GPP_D23/I2S_MCLK
I2S1_SFRM
I2S1_TXD
GPP_F1/I2S2_SFRM
GPP_F0/I2S2_SCLK
GPP_F2/I2S2_TXD
GPP_F3/I2S2_RXD
GPP_D19/DMIC_CLK0
GPP_D20/DMIC_DATA0
GPP_D17/DMIC_CLK1
GPP_D18/DMIC_DATA1
GPP_B14/SPKR
GPP_G0/SD_CMD
GPP_G1/SD_DATA0
GPP_G2/SD_DATA1
GPP_G3/SD_DATA2
GPP_G4/SD_DATA3
GPP_G5/SD_CD#
GPP_G6/SD_CLK
GPP_G7/SD_WP
GPP_A17/SD_PWR_EN#/ISH_GP7
GPP_A18/SD_1P8_SEL
SD_RCOMP
GPP_F23
7 OF 20
SKL_ULT/BGA
REV = 1
ACZ_SYNC_CODEC
ACZ_BITCLK_CODEC
ACZ_SDATAOUT_CODEC
ACZ_SDATAIN0
ACZ_RST#_CODEC
ACZ_SPKR
ACZ_SDOUT
ACZ_BITCLK
ACZ_RST#
ME_WE#
Q30 @MTP3LP01N3
high override
low disable(default)
close to CPU
VB add for EMI
C520
@22P-50-04N-J
+VSDIO_R
+VSDIO
For SDIO card reader
SD3_CMD
SD3_D0
SD3_D1
SD3_D2
SD3_D3
SD3_CD#
SD3_WP
SD3_PWREN#
SD_1P8_SEL
U11J
CLOCK SIGNALS
PCIE_N0
PCIE_P0
SRCCLKREQ0#
CLKOUT_PCIE_N0
CLKOUT_PCIE_P0
GPP_B5/SRCCLKREQ0#
CLKOUT_PCIE_N1
CLKOUT_PCIE_P1
GPP_B6/SRCCLKREQ1#
CLKOUT_PCIE_N2
CLKOUT_PCIE_P2
GPP_B7/SRCCLKREQ2#
CLKOUT_PCIE_N3
CLKOUT_PCIE_P3
GPP_B8/SRCCLKREQ3#
CLKOUT_PCIE_N4
CLKOUT_PCIE_P4
GPP_B9/SRCCLKREQ4#
CLKOUT_PCIE_N5
CLKOUT_PCIE_P5
GPP_B10/SRCCLKREQ5#
CLKOUT_ITPXDP_N
CLKOUT_ITPXDP_P
GPD8/SUSCLK
XTAL24_IN
XTAL24_OUT
XCLK_BIASREF
RTCX1
RTCX2
SRTCRST#
RTCRST#
10 OF 20
SKL_ULT/BGA
REV = 1
This clock is an output of the RTC generator circuit for use by other chips for refresh clock. SUSCLK is now moved to DSW (new on SKL).
CLK_LAN_REQ3#
PCIE_CLKREQ4#
SSD_CLKREQ5#
CLK_PCIE_LAN_DN3
CLK_PCIE_LAN_DP3
CLK_LAN_REQ3#
CLK_PCIE_WLAN_DN
CLK_PCIE_WLAN_DP
PCIE_CLKREQ4#
CLK_PCIE_SSD_DN
CLK_PCIE_SSD_DP
SSD_CLKREQ5#
M.2 WLAN
M.2 SSD
RTC Circuitry
+3.3VA_LDO
+3.3VAL
+3.3VA_RTC
MAX=3.2V
BAT54C-7-F
@WB,ET,3802K-Q02N-01L,2P,SMT,P1.25
CN5
RTC_RST#
SRTC_RST#
SM_INTRUDER#
BAT_D
XTAL24 co-lay
FOR U22
FOR R U42
U22_XTAL24_IN
U22_XTAL24_OUT
PCH_XTAL24_IN
PCH_XATL24_OUT
R42_XTAL24_IN
R42_XTAL24_OUT
TongFang Inc
kabylake-U/RU
Broadwell SATA(3 of 10)
Rev B
Tuesday, April 25, 2017
Sheet 6 of 30


Data and clock signal for SMBus and SMlink
signal to each device needs to be length
matched to 500 mils.
GPP_C2: 0 DIS ; 1 EN TLS
GPP_C5: 0 LPC ; 1 eSPI
U11E
SKL_ULT
SPI - FLASH
SPI0_CLK
SPI0_MISO
SPI0_MOSI
SPI0_IO2
SPI0_IO3
SPI0_CS0#
SPI0_CS1#
SPI0_CS2#
SPI - TOUCH
GPP_D1/SPI1_CLK
GPP_D2/SPI1_MISO
GPP_D3/SPI1_MOSI
GPP_D21/SPI1_IO2
GPP_D22/SPI1_IO3
GPP_D0/SPI1_CS#
C LINK
CL_CLK
CL_DATA
CL_RST#
GPP_A0/RCIN#
GPP_A6/SERIRQ
SMBUS, SMLINK
GPP_C0/SMBCLK
GPP_C1/SMBDATA
GPP_C2/SMBALERT#
GPP_C3/SML0CLK
GPP_C4/SML0DATA
GPP_C5/SML0ALERT#
GPP_C6/SML1CLK
GPP_C7/SML1DATA
GPP_B23/SML1ALERT#/PCHHOT#
LPC
GPP_A1/LAD0/ESPI_IO0
GPP_A2/LAD1/ESPI_IO1
GPP_A3/LAD2/ESPI_IO2
GPP_A4/LAD3/ESPI_IO3
GPP_A5/LFRAME#/ESPI_CS#
GPP_A14/SUS_STAT#/ESPI_RESET#
GPP_A9/CLKOUT_LPC0/ESPI_CLK
GPP_A10/CLKOUT_LPC1
GPP_A8/CLKRUN#
5 OF 20
SKL_ULT/BGA
REV = 1
SML1CLK and SML1DATA are required
to be routed between PCH and EC
page 32(500816)
Pull high 3.3V Check
W25Q64FVSSIG
Res COLAY
MTDK5S6R-0-T1-G
U11K
SYSTEM POWER MANAGEMENT
GPP_B13/PLTRST#
SYS_RESET#
RSMRST#
PROCPWRGD
VCCST_PWRGD
SYS_PWROK
PCH_PWROK
DSW_PWROK
GPP_A13/SUSWARN#/SUSPWRDNACK
GPP_A15/SUSACK#
WAKE#
GPD2/LAN_WAKE#
GPD11/LANPHYPC
GPD7/RSVD
GPP_B12/SLP_S0#
GPD4/SLP_S3#
GPD5/SLP_S4#
GPD10/SLP_S5#
SLP_SUS#
SLP_LAN#
GPD9/SLP_WLAN#
GPD6/SLP_A#
GPD3/PWRBTN#
GPD1/ACPRESENT
GPD0/BATLOW#
GPP_A11/PME#
INTRUDER#
GPP_B11/EXT_PWR_GATE#
GPP_B2/VRALERT#
11 OF 20
For Non Deep Sx
CLOSE TO CPU
Q17
SN74LVC1G08
M-SC70-5

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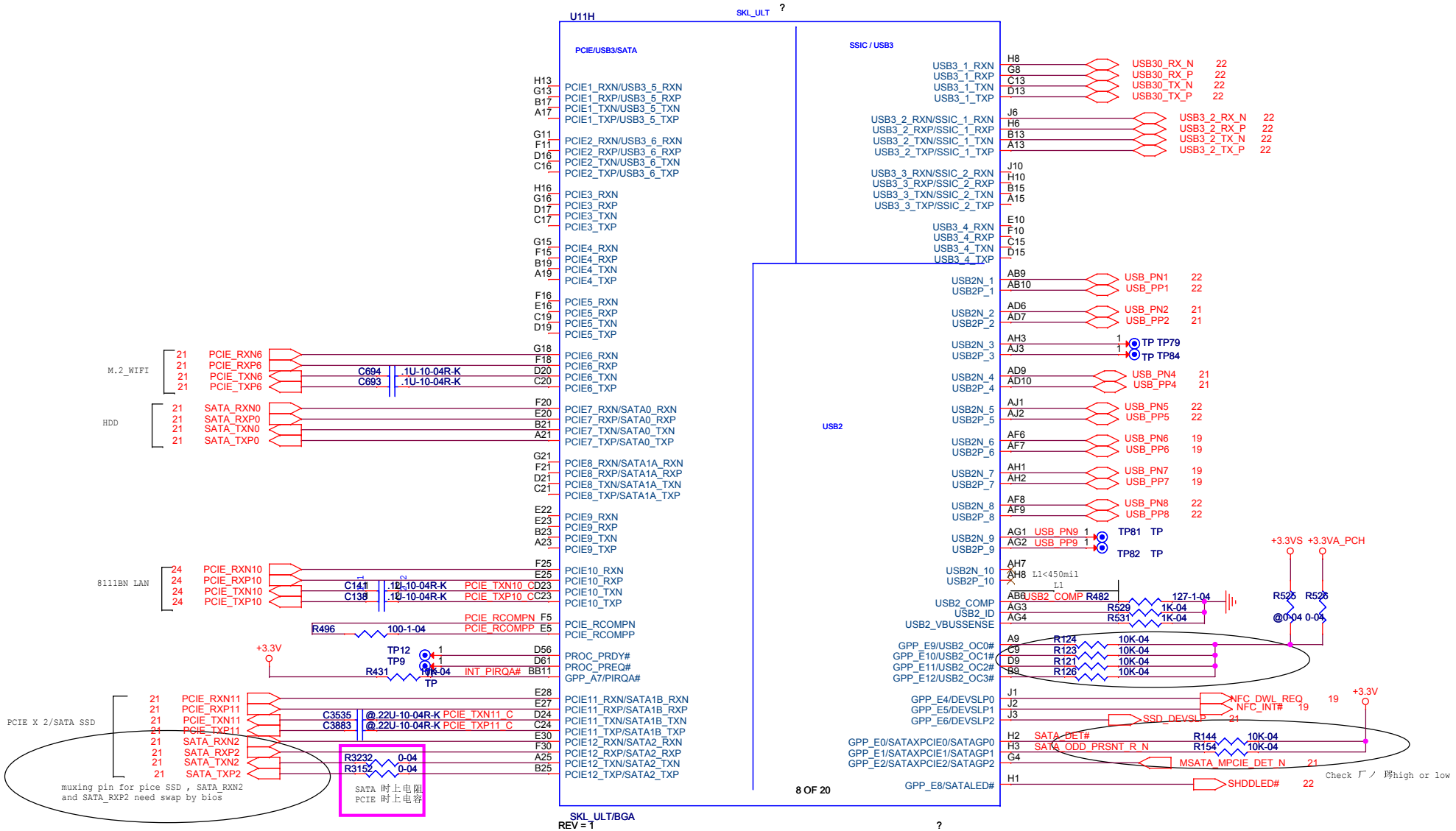
Title	kabylake-U/RU	
Size: Custom	Document Number: Broadwell LPC/SPI(4 of 10)	Rev: B
Date: Tuesday, April 25, 2017	Sheet 7 of 30	

TongFang Inc		
Title: **kabylake-U/RU**		
Size: Custom	Document Number: **Broadwell GPIO(5 of 10)**	Rev: B
Date: Tuesday, April 25, 2017	Sheet 8 of 30	



TongFang Inc		
Title	kabylake-U/RU	
Size B	Document Number: Broadwell USB/PCIE(6 of10)	Rev B
Date: Wednesday, April 26, 2017	Sheet 9 of 30	

15W/U22 TDC:21A Peak:

23A

15W/U22 TDC:18A Peak:

VCCGT and VCCcore co-lay

利用不同钢网控制jump短路，但jump间的Air Gap要小于4.5 mil
default = PJP18

R_U42 short PJP18
U22 short PJP17

15W/U22 TDC:NA Peak:

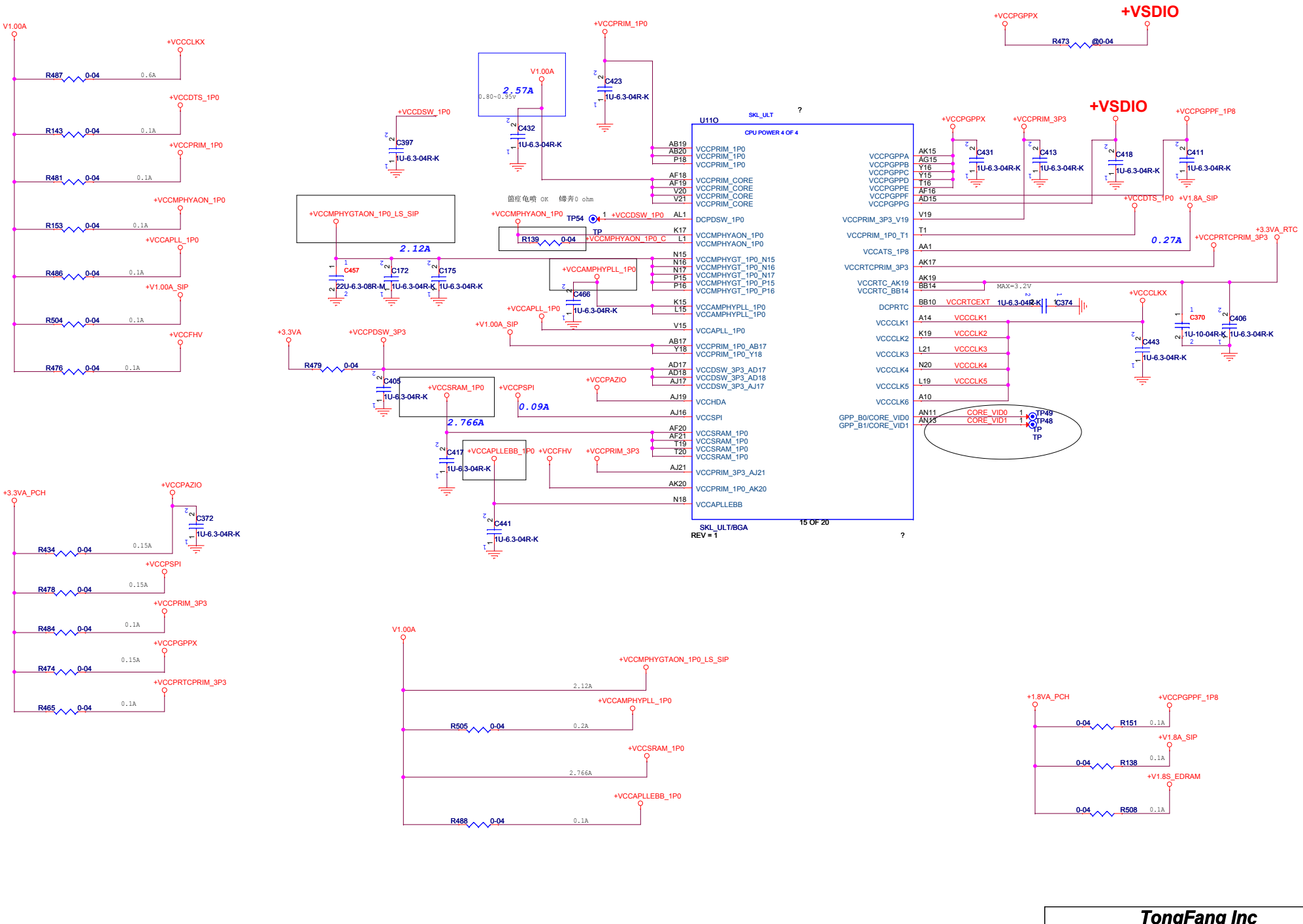
CPU为 R_U42时， R3163 & R3164均不上件
CPU为U22时， R3163 & R3164均上件

15W/U22 TDC:4A Peak:
15W/U23e TDC:5A Peak:
28W/U23e TDC:5A Peak:

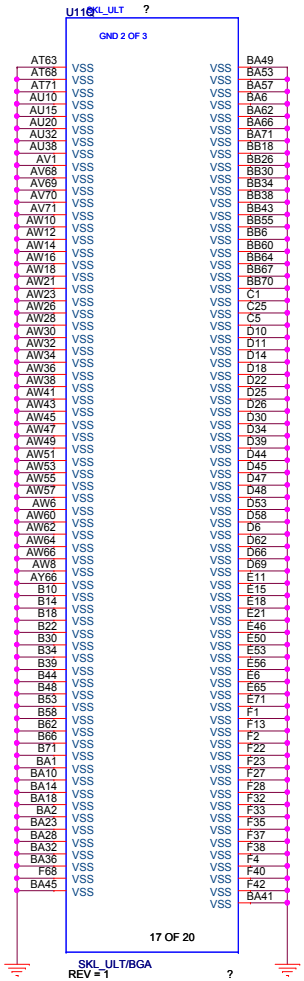
One sense resistor per phase. VRTT loadline data is required if sense resistors are not provided

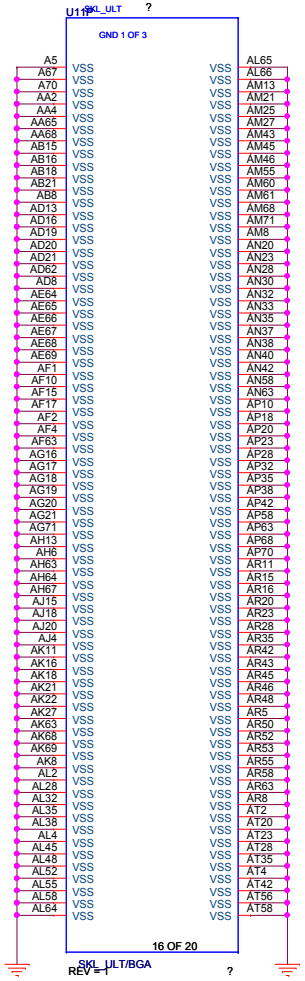
close to cpu bottom

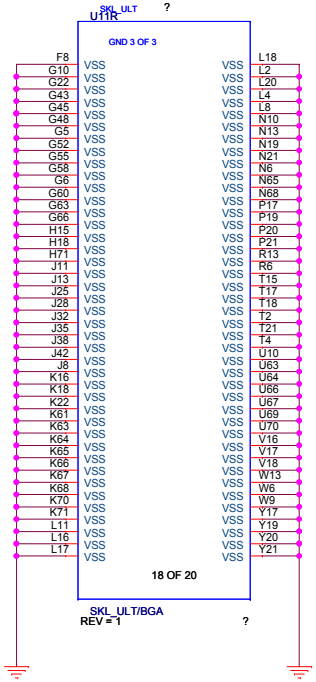
Company	TongFang Inc
Title	kabylake-U/RU
Size / Custom	Document Number: Broadwell 1/2(7 of 10)
Rev	B
Date:	Tuesday, April 25, 2017
Sheet	10 of 30



TongFang Inc			
Title: kabylake-U/RU			
Size: Custom	Document Number: Broadwell 2/2(8 of 10)		Rev: B
Date: Tuesday, April 25, 2017	Sheet 11 of 30		





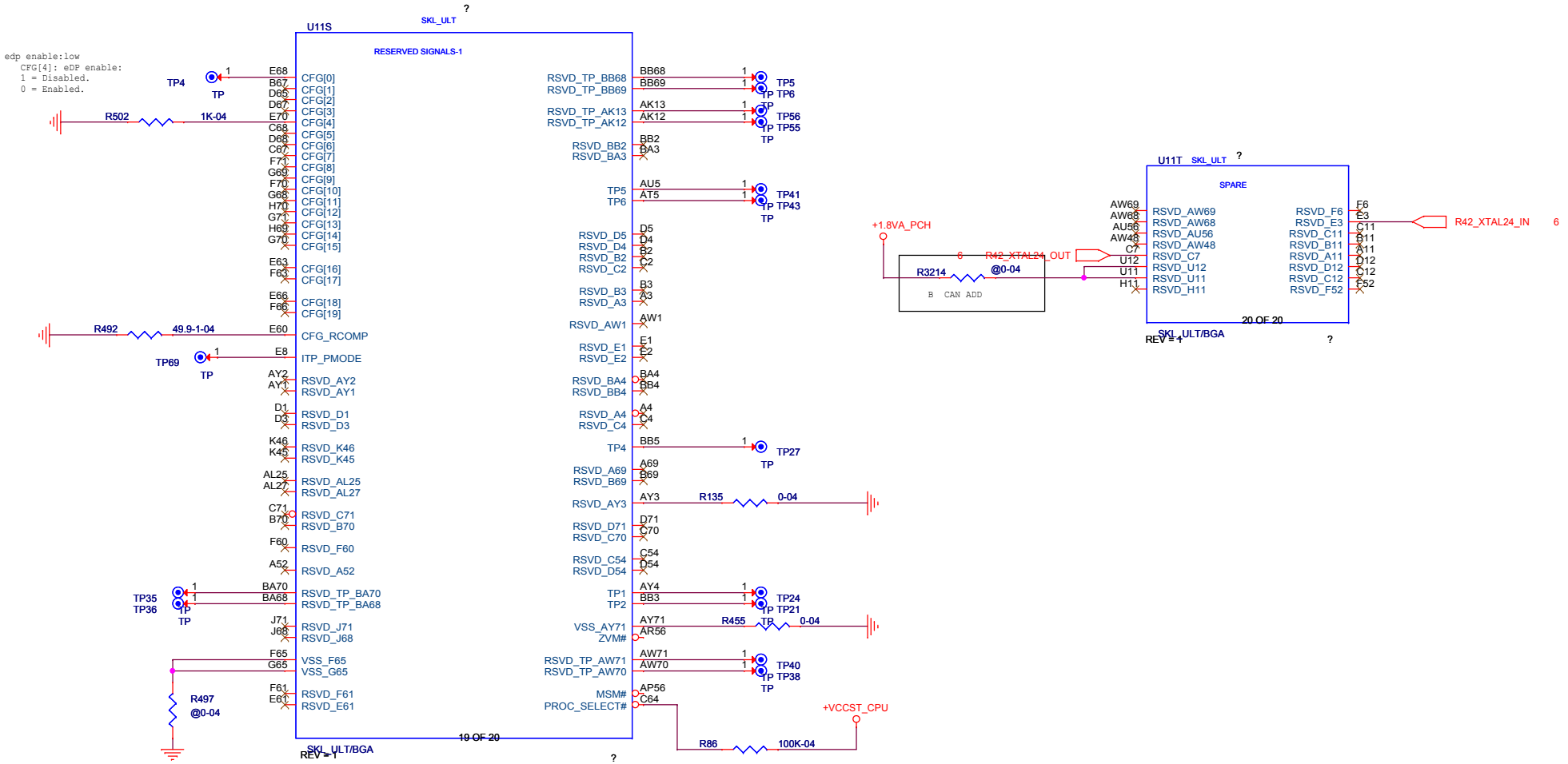


TongFang Inc

Title: **kabylake-U/RU**

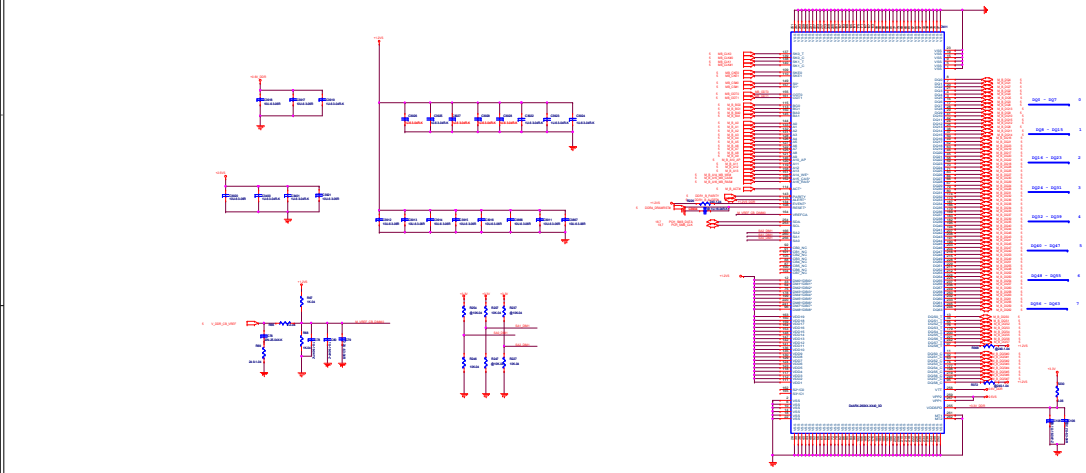
Size	Document Number	Rev
Custom	Broadwell VSS(9 of 10)	B

Date: Tuesday, April 25, 2017 Sheet 12 of 30

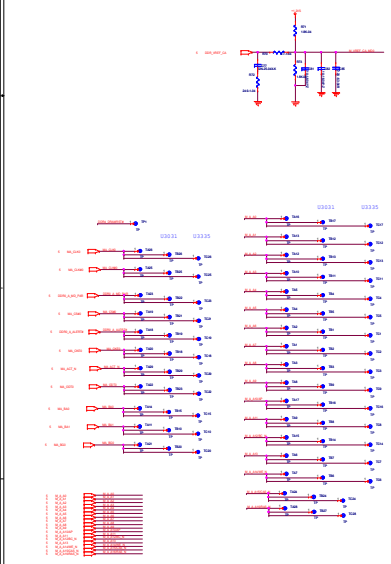


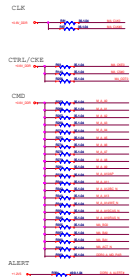
TongFang Inc			
Title: kabylake-U/RU			
Size: Custom	Document Number: Broadwell RSVD(10 of 10)		Rev: B
Date: Tuesday, April 25, 2017	Sheet 13 of 30		

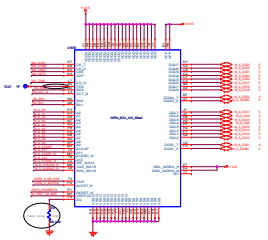
DDR4 SODIMM

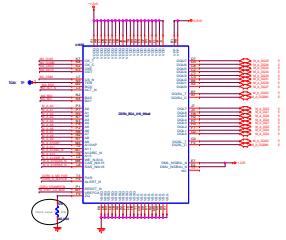


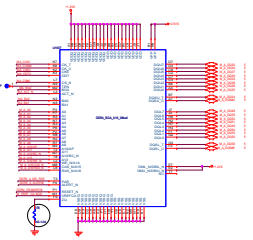
DDR4 Memory Down
Double-T

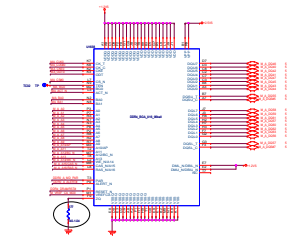


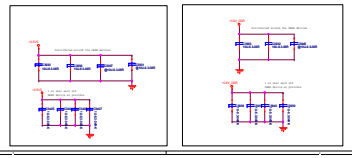




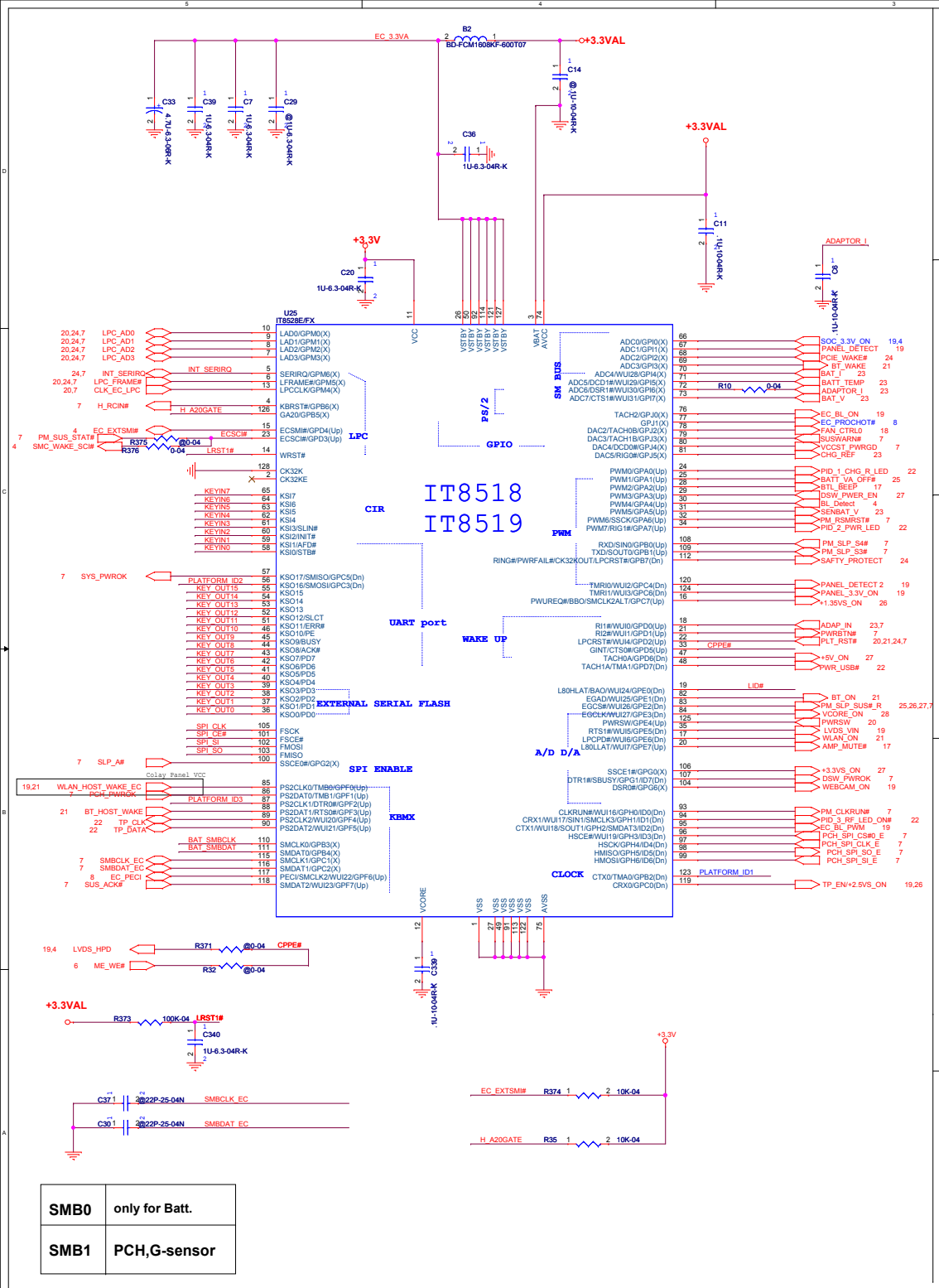




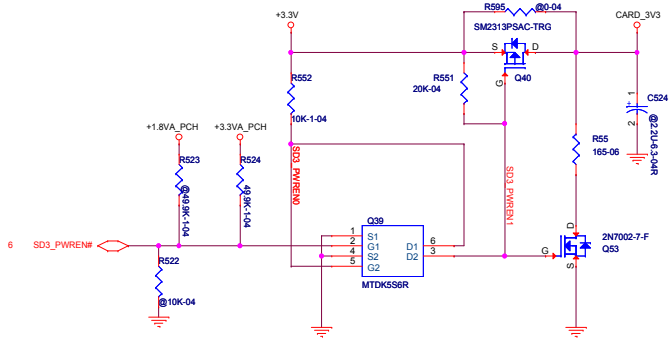


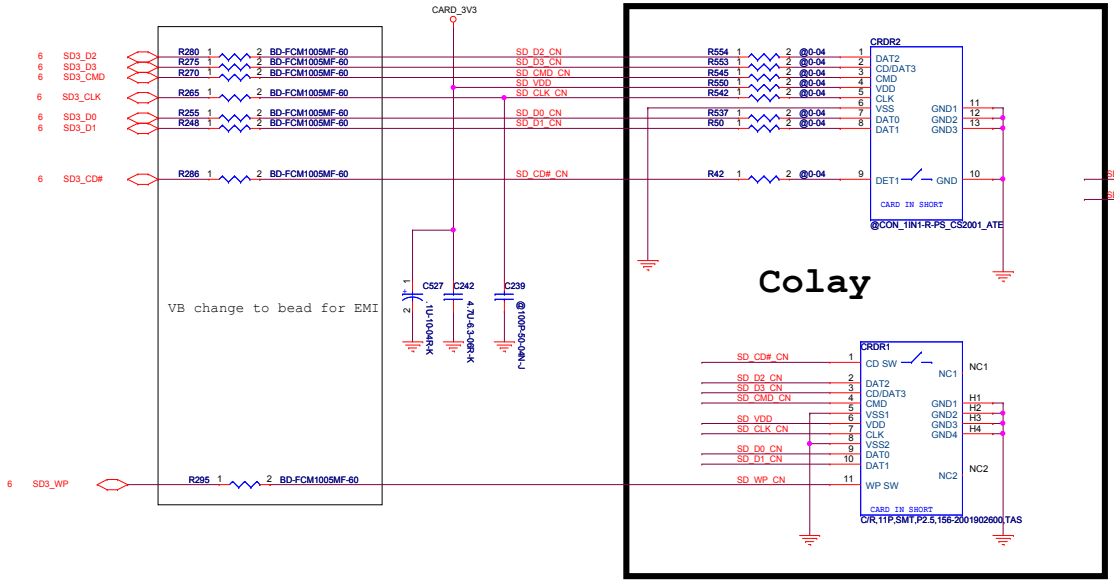


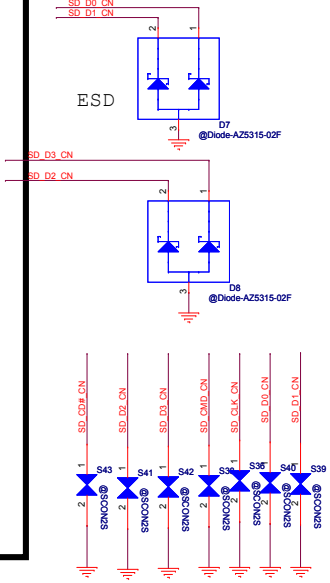
TongFang Inc
kabylake-U/RU
DDR4 SODIMM &DRAM

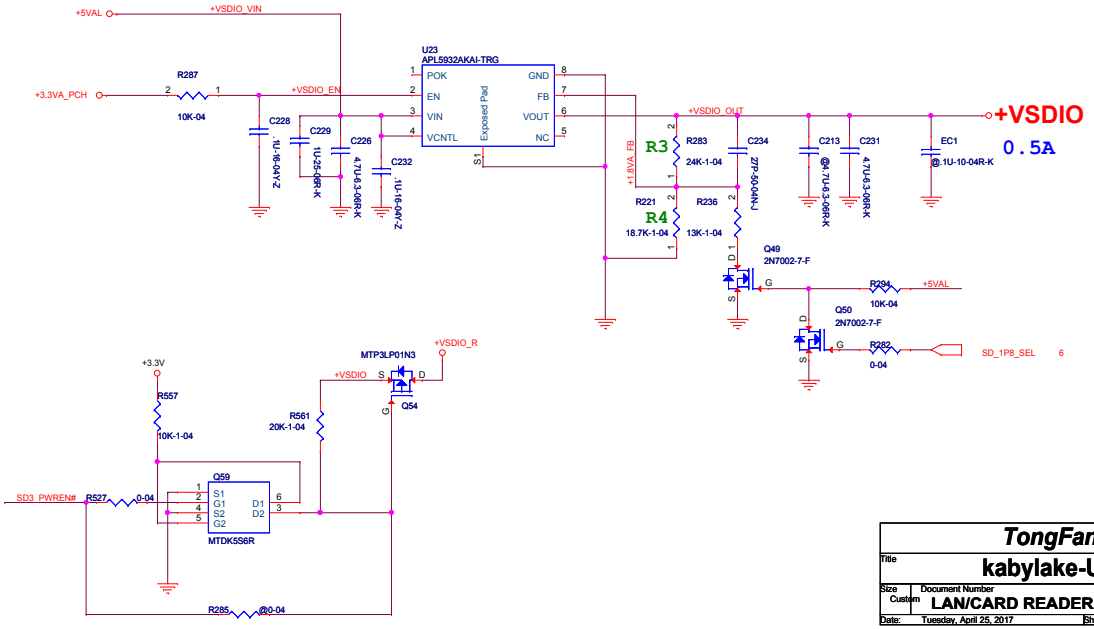

U25
IT8528E/FX
IT8518
IT8519
LPC
CIR
UART port
EXTERNAL SERIAL FLASH
SPI ENABLE
KBMX
PS/2
GPIO
SM BUS
PWM
WAKE UP
A/D D/A
CLOCK
+3.3VAL
+3.3V
EC_3.3VA
LAD0/GPM0(X)
LAD1/GPM1(X)
LAD2/GPM2(X)
LAD3/GPM3(X)
SERIRQ/GPM6(X)
LFRAME#/GPM5(X)
LPCCLK/GPM4(X)
KBRST#/GPB6(X)
GA20/GPB5(X)
ECSMI#/GPD4(Up)
ECSCI#/GPD3(Up)
WRST#
CK32K
CK32KE
KSI7
KSI6
KSI5
KSI4
KSI3/SLIN#
KSI2/INIT#
KSI1/AFD#
KSI0/STB#
KSO17/SMISO/GPC5(Dn)
KSO16/SMOSI/GPC3(Dn)
KSO15
KSO14
KSO13
KSO12/SLCT
KSO11/ERR#
KSO10/PE
KSO9/BUSY
KSO8/ACK#
KSO7/PD7
KSO6/PD6
KSO5/PD5
KSO4/PD4
KSO3/PD3
KSO2/PD2
KSO1/PD1
KSO0/PD0
FSCK
FSCE#
FMOSI
FMISO
SSCE0#/GPG2(X)
PS2CLK0/TMB0/GPF0(Up)
PS2DAT0/TMB1/GPF1(Up)
PS2CLK1/DTR0#/GPF2(Up)
PS2DAT1/RTS0#/GPF3(Up)
PS2CLK2/WUI20/GPF4(Up)
PS2DAT2/WUI21/GPF5(Up)
SMCLK0/GPB3(X)
SMDAT0/GPB4(X)
SMCLK1/GPC1(X)
SMDAT1/GPC2(X)
PECI/SMCLK2/WUI22/GPF6(Up)
SMDAT2/WUI23/GPF7(Up)
ADC0/GPI0(X)
ADC1/GPI1(X)
ADC2/GPI2(X)
ADC3/GPI3(X)
ADC4/WUI28/GPI4(X)
ADC5/DCD1#/WUI29/GPI5(X)
ADC6/DSR1#/WUI30/GPI6(X)
ADC7/CTS1#/WUI31/GPI7(X)
TACH2/GPJ0(X)
GPJ1(X)
DAC2/TACH0B/GPJ2(X)
DAC3/TACH1B/GPJ3(X)
DAC4/DCD0#/GPJ4(X)
DAC5/RIG0#/GPJ5(X)
PWM0/GPA0(Up)
PWM1/GPA1(Up)
PWM2/GPA2(Up)
PWM3/GPA3(Up)
PWM4/GPA4(Up)
PWM5/GPA5(Up)
PWM6/SSCK/GPA6(Up)
PWM7/RIG1#/GPA7(Up)
RXD/SIN0/GPB0(Up)
TXD/SOUT0/GPB1(Up)
RING#/PWRFAIL#/CK32KOUT/LPCRST#/GPB7(Dn)
TMRI0/WUI2/GPC4(Dn)
TMRI1/WUI3/GPC6(Dn)
PWUREQ#/BBO/SMCLK2ALT/GPC7(Up)
RI1#/WUI0/GPD0(Up)
RI2#/WUI1/GPD1(Up)
LPCRST#/WUI4/GPD2(Up)
GINT/CTS0#/GPD5(Up)
TACH0A/GPD6(Dn)
TACH1A/TMA1/GPD7(Dn)
L80HLAT/BAO/WUI24/GPE0(Dn)
EGAD/WUI25/GPE1(Dn)
EGCS#/WUI26/GPE2(Dn)
EGCLK/WUI27/GPE3(Dn)
PWRSW/GPE4(Up)
RTS1#/WUI5/GPE5(Dn)
LPCPD#/WUI6/GPE6(Dn)
L80LLAT/WUI7/GPE7(Up)
SSCE1#/GPG0(X)
DTR1#/SBUSY/GPG1/ID7(Dn)
DSR0#/GPG6(X)
CLKRUN#/WUI16/GPH0/ID0(Dn)
CRX1/WUI17/SIN1/SMCLK3/GPH1/ID1(Dn)
CTX1/WUI18/SOUT1/GPH2/SMDAT3/ID2(Dn)
HSCE#/WUI19/GPH3/ID3(Dn)
HSCK/GPH4/ID4(Dn)
HMISO/GPH5/ID5(Dn)
HMOSI/GPH6/ID6(Dn)
CTX0/TMA0/GPB2(Dn)
CRX0/GPC0(Dn)
SOC_3.3V_ON
PANEL_DETECT
PCIE_WAKE#
BT_WAKE
BAT_I
BATT_TEMP
ADAPTOR_I
BAT_V
EC_BL_ON
EC_PROCHOT#
FAN_CTRL0
SUSWARN#
VCCST_PWRGD
CHG_REF
PID_1_CHG_R_LED
BATT_VA_OFF#
BTL_BEEP
DSW_PWER_EN
BL_Detect
SENBAT_V
PM_RSMRST#
PID_2_PWR_LED
PM_SLP_S4#
PM_SLP_S3#
SAFTY_PROTECT
PANEL_DETECT 2
PANEL_3.3V_ON
+1.35VS_ON
ADAP_IN
PWRBTN#
PLT_RST#
+5V_ON
PWR_USB#
LID#
BT_ON
PM_SLP_SUS#_R
VCORE_ON
PWRSW
LVDS_VIN
WLAN_ON
AMP_MUTE#
+3.3VS_ON
DSW_PWROK
WEBCAM_ON
PM_CLKRUN#
PID_3_RF_LED_ON#
EC_BL_PWM
PCH_SPI_CS#0_E
PCH_SPI_CLK_E
PCH_SPI_SO_E
PCH_SPI_SI_E
PLATFORM_ID1
TP_EN/+2.5VS_ON
KEYIN7
KEYIN6
KEYIN5
KEYIN4
KEYIN3
KEYIN2
KEYIN1
KEYIN0
KEY_OUT15
KEY_OUT14
KEY_OUT13
KEY_OUT12
KEY_OUT11
KEY_OUT10
KEY_OUT9
KEY_OUT8
KEY_OUT7
KEY_OUT6
KEY_OUT5
KEY_OUT4
KEY_OUT3
KEY_OUT2
KEY_OUT1
KEY_OUT0
KBT1
EC FLASH ROM(SPI)
U3
Pm25LQ512B-SCE
EC SMBUS LEVEL SHIFT
2N7002K-H
APX9132HAI-TRG
Platform ID
PLATFORM_ID1 HI= 2G RAM LOW= 4G RAM
PLATFORM_ID2 HI= 65W LOW= 40W
PLATFORM_ID3 HI=On board Ram LOW=Non on board
SMB0 only for Batt.
SMB1 PCH,G-sensor
TongFang Inc
kabylake-U/RU
EC IT8528/BIOS/KB CONN/LID
Rev B
Tuesday, April 25, 2017
Sheet 15 of 30

SD POWER





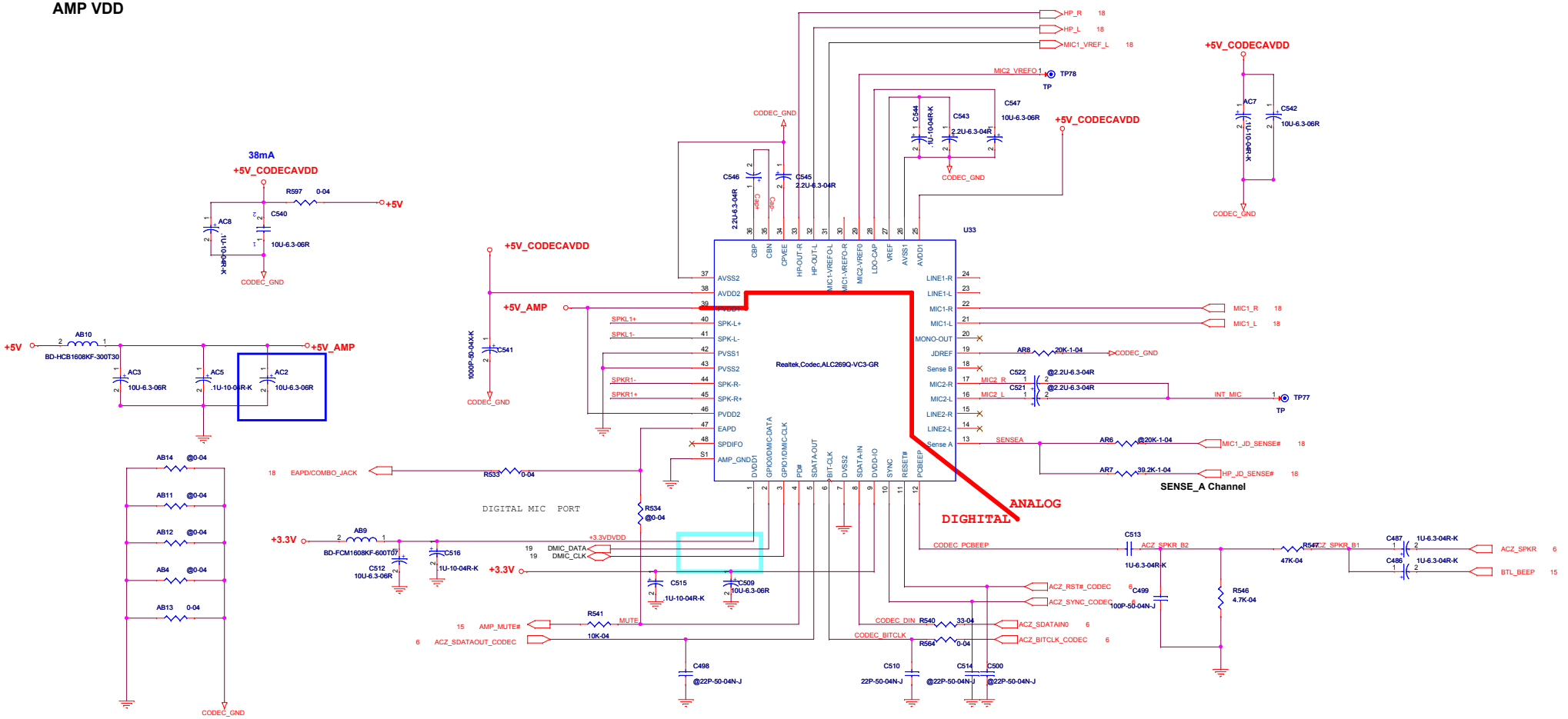




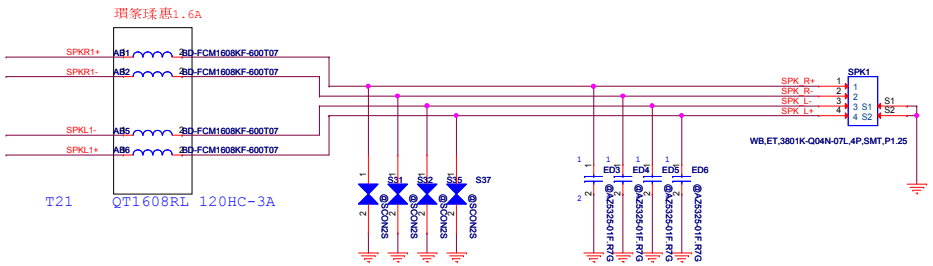
TongFang Inc		
Title: kabylake-U/RU		
Size: Custom	Document Number: LAN/CARD READER/15DB/RT8411	Rev: B
Date: Tuesday, April 25, 2017	Sheet 16 of 30	

CODEC ALC269Q

AMP VDD



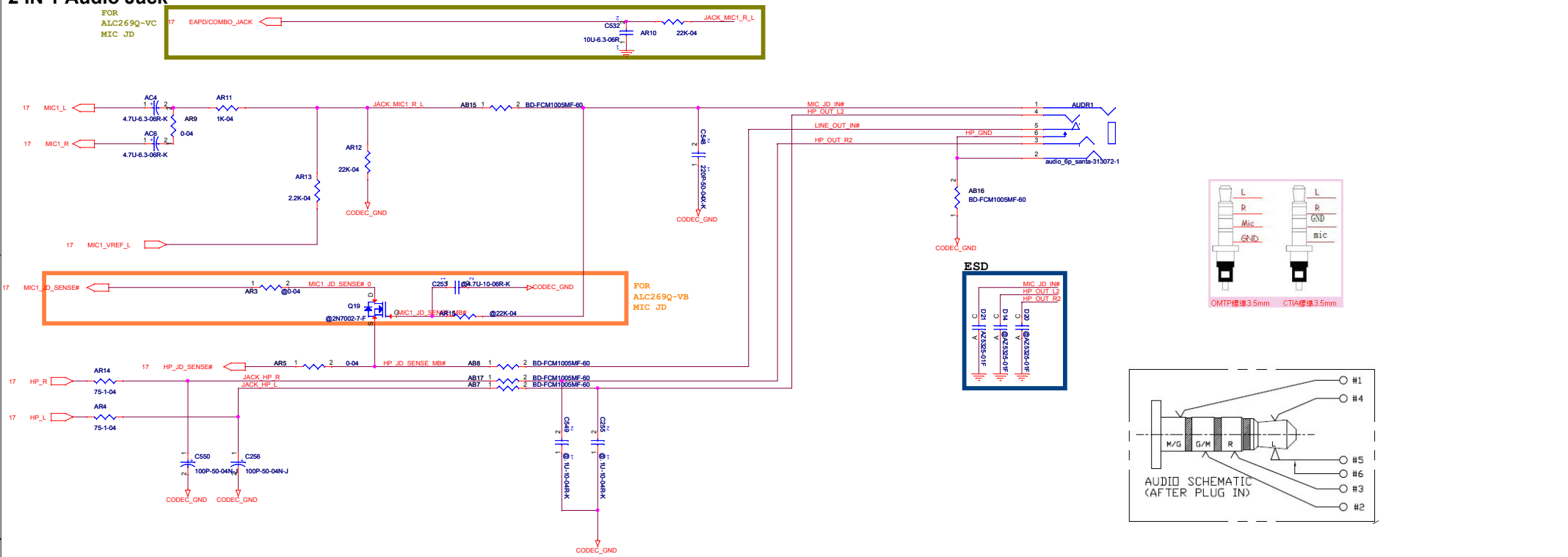
INT_SPEAKER



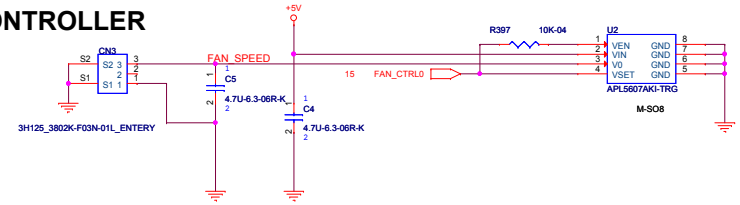
INT_MIC

TongFang Inc			
Title: kabylake-U/RU			
Size: Custom	Document Number: CODEC(ALC269Q)/INT MIC/SPKR		Rev: B
Date: Tuesday, April 25, 2017		Sheet 17 of 30	

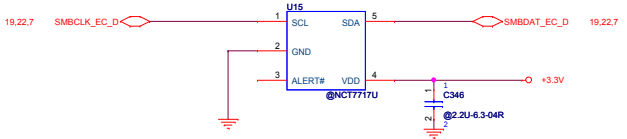
2 IN 1 Audio Jack



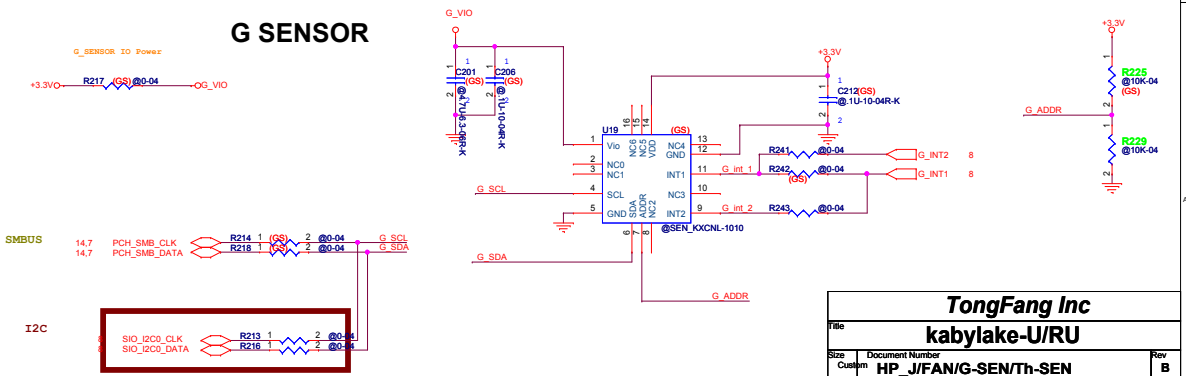
FAN CONTROLLER



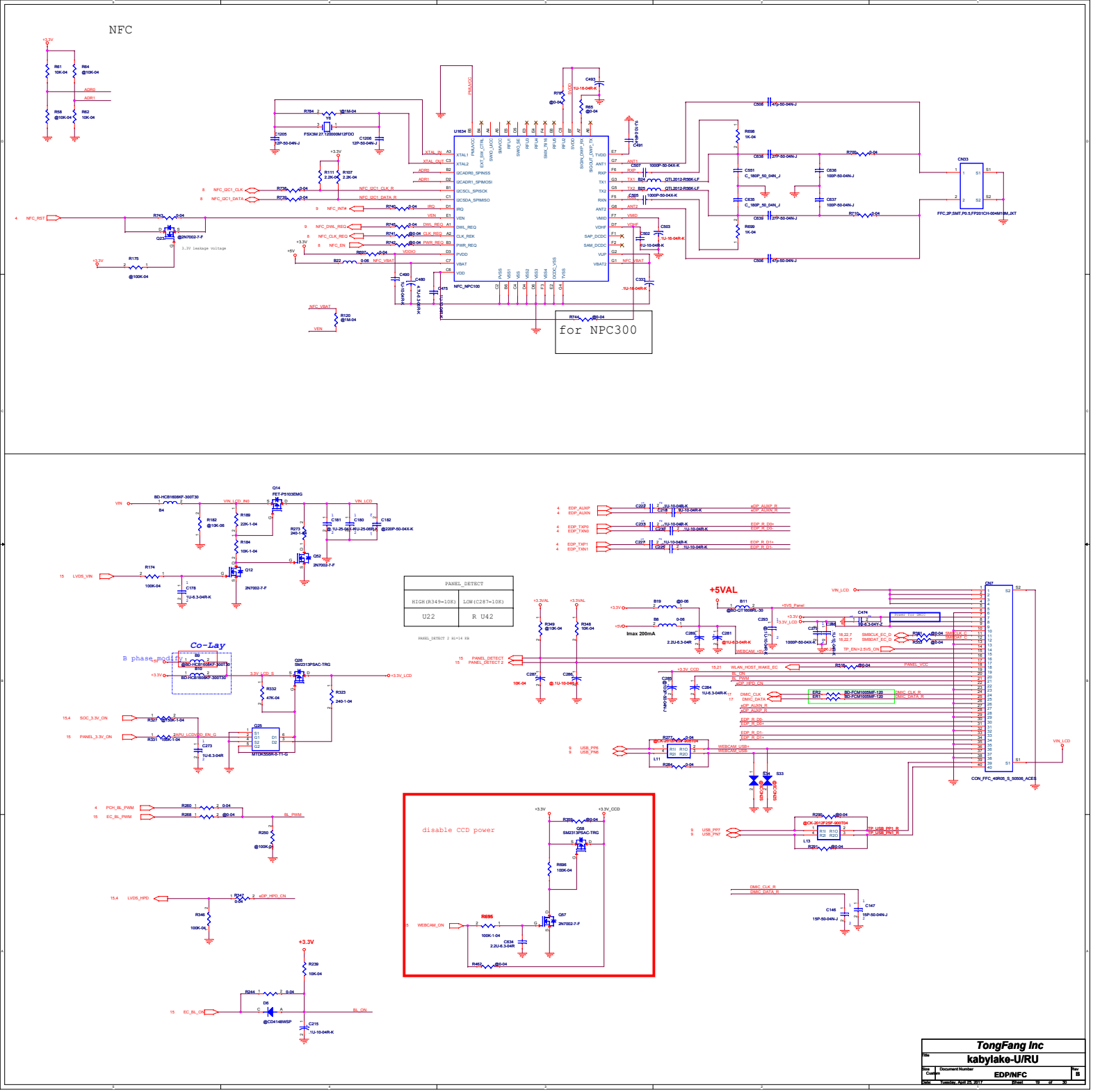
CPU Thermal Sensor



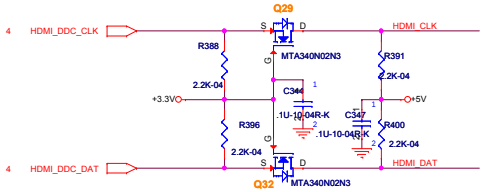
G SENSOR

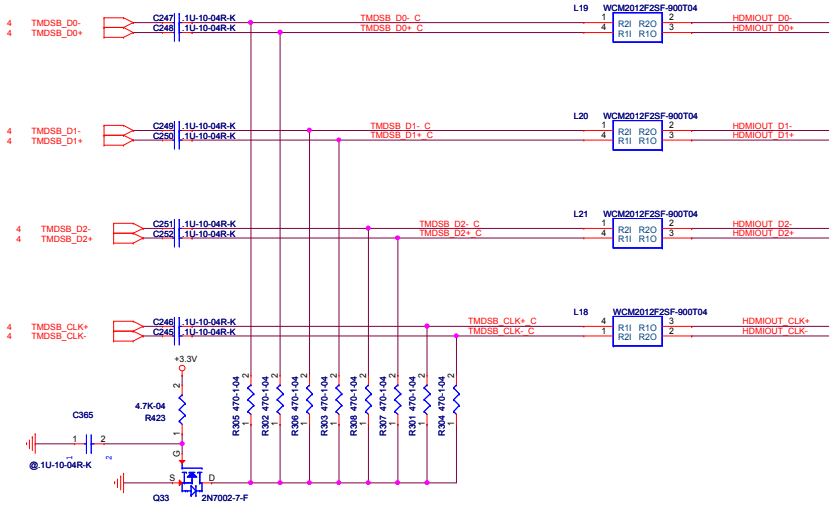


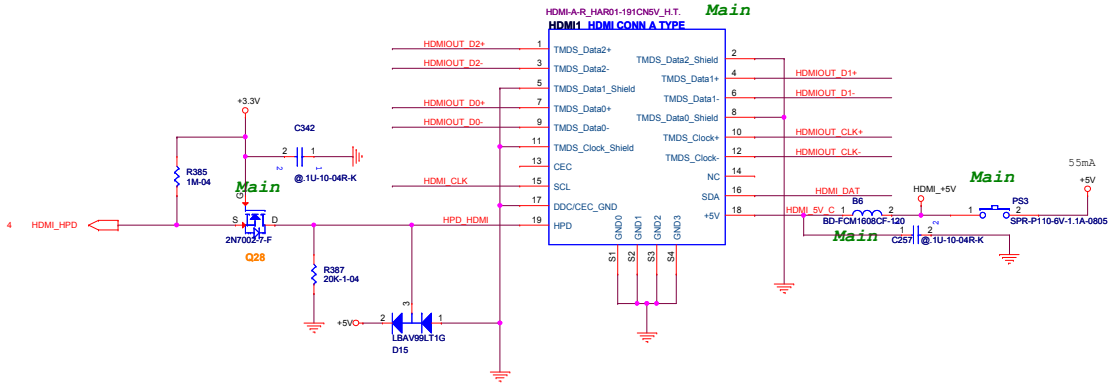
Title	TongFang Inc kabylake-U/RU
Size / Document Number	Custom / HP_J/FAN/G-SEN/Th-SEN
Rev	B
Date:	Tuesday, April 25, 2017
Sheet	18 of 30


NFC
for NPC300
Co-Lay
B phase modify
disable CCD power
+5VAL
PANEL_DETECT
HIGH(R349=10K)
LOW(C287=10K)
U22
R U42
TongFang Inc
kabylake-U/RU
EDP/NFC
Tuesday, April 25, 2017

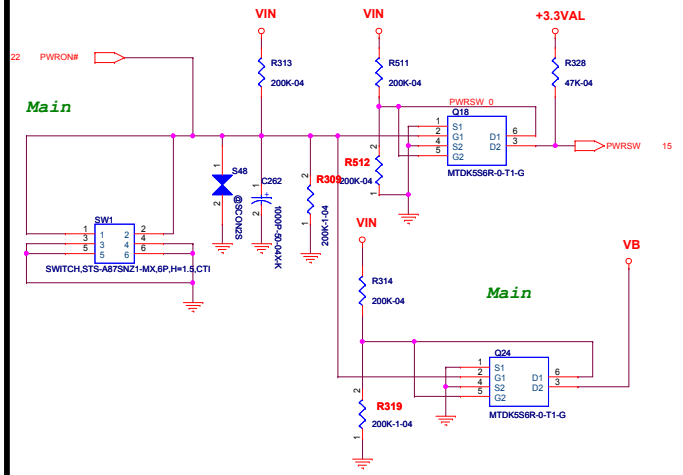
HDMI

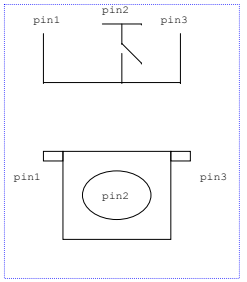


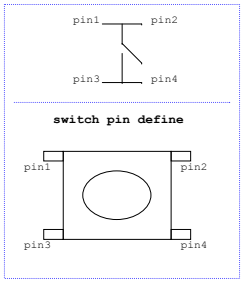




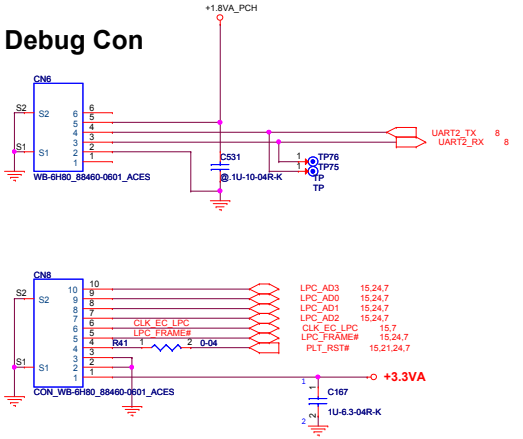
PWR SW





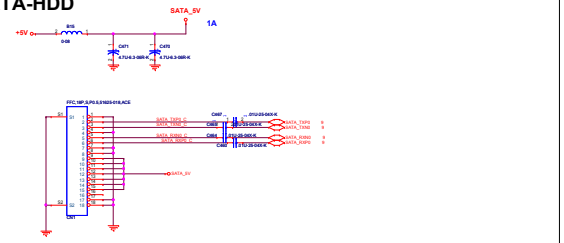


Debug Con

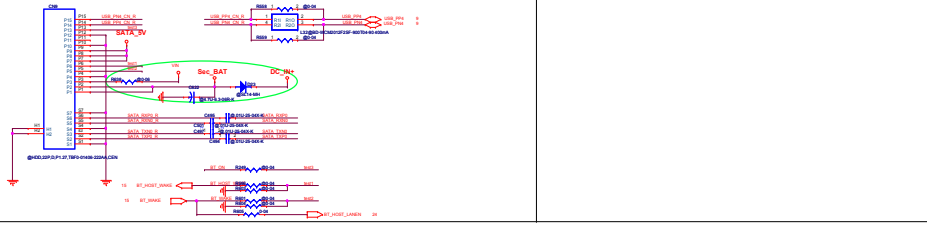


	TongFang Inc	
Title	kabylake-U/RU	
Size: Custom	Document Number: PWR SW/HDMI	Rev: B
Date: Tuesday, April 25, 2017	Sheet 20 of 30	

SATA-HDD

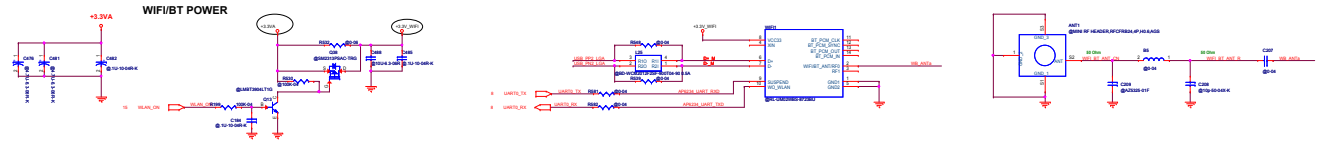


Colay

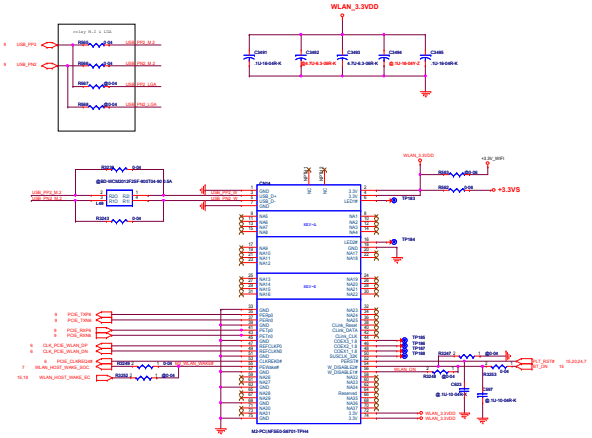


EMMC

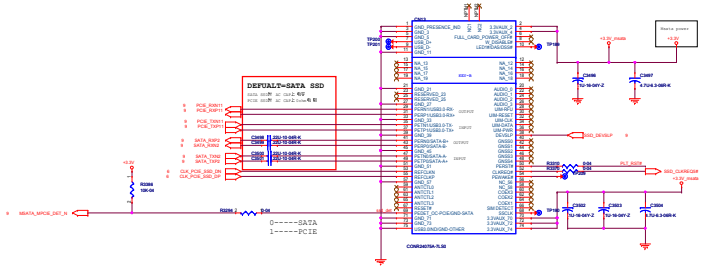
WIFI & BT Combo



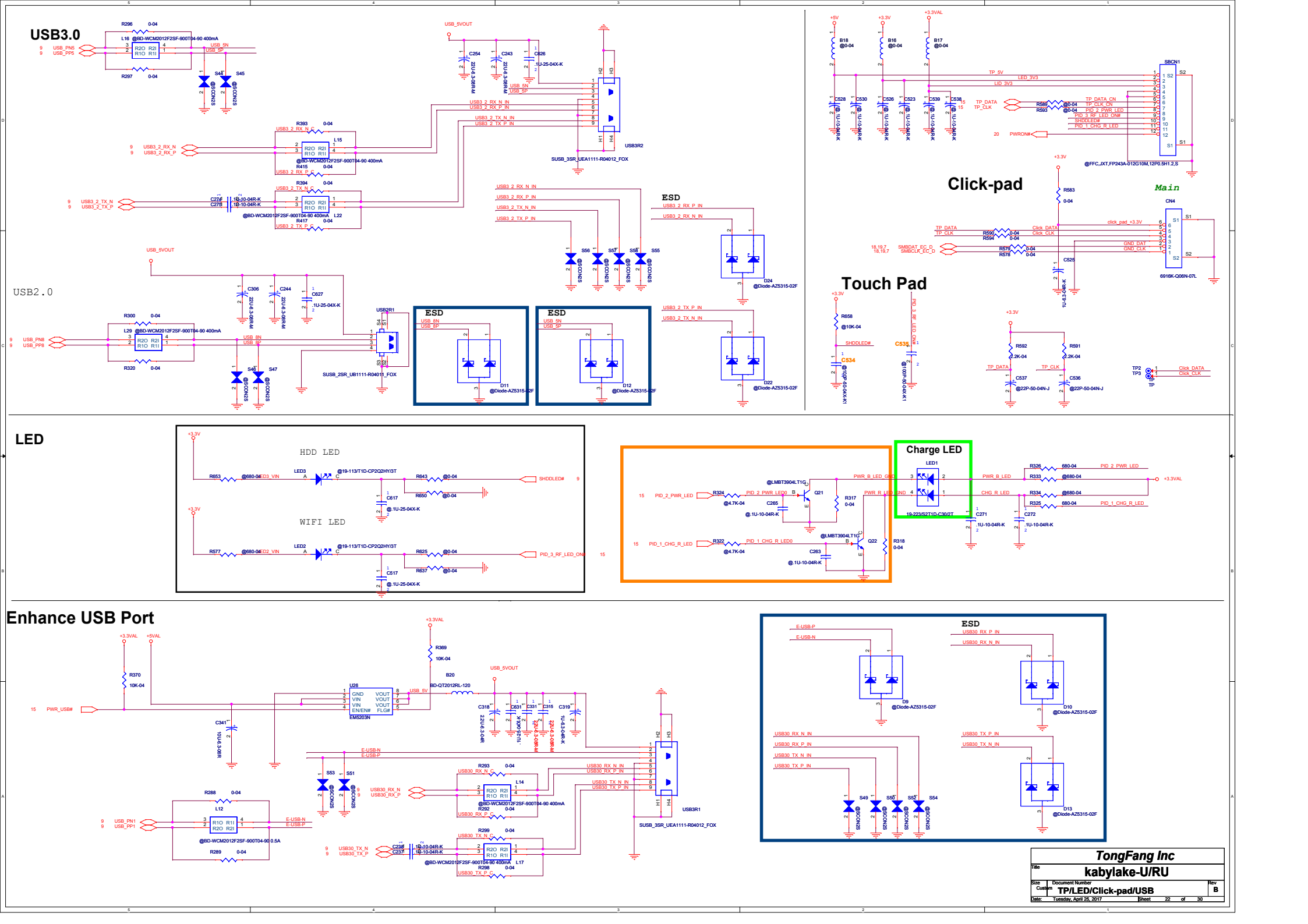
M.2 WLAN

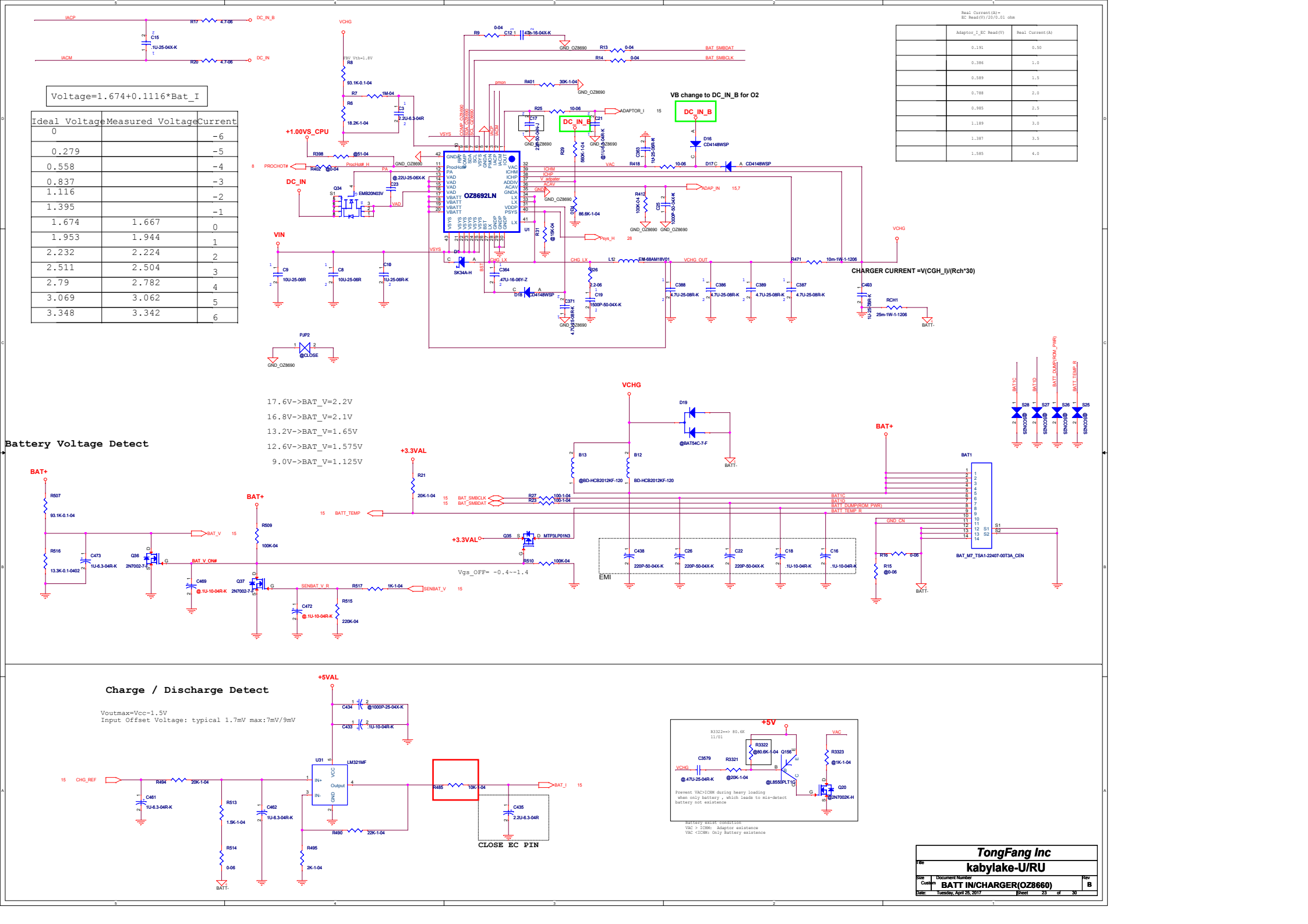


M.2_SSD

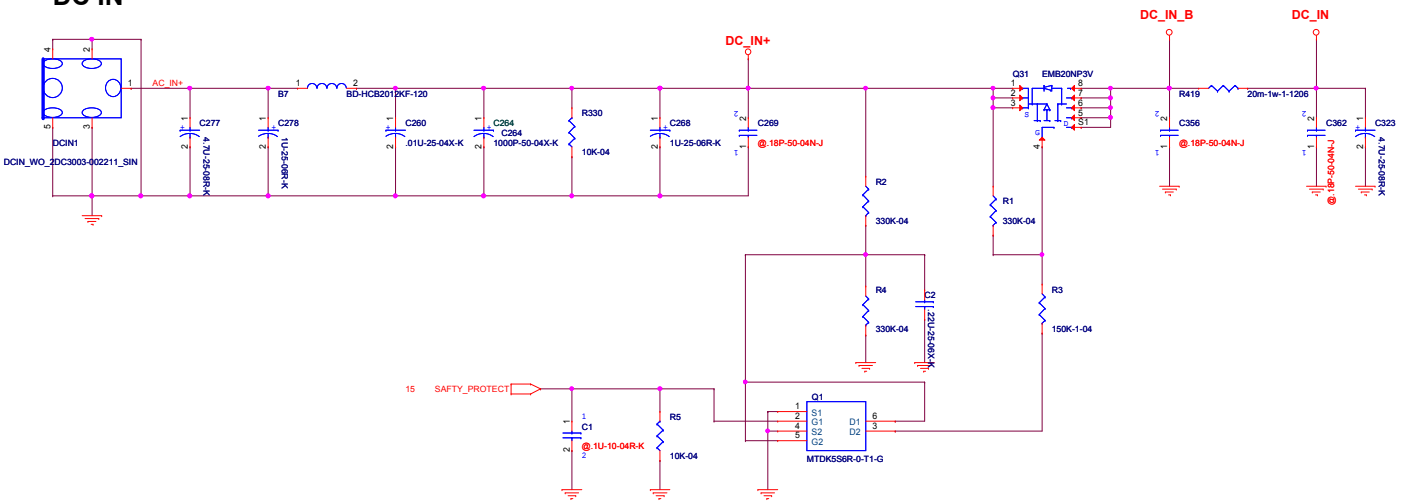


TongFang Inc	
kabylake-U/RU	
HDD/ODD/WIFI	B
Tuesday, April 25, 2017	Sheet 21 of 36

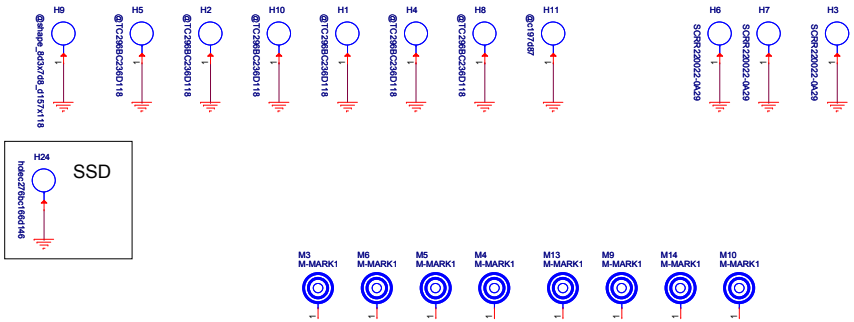

USB3.0
USB2.0
ESD
ESD
ESD
Click-pad
Touch Pad
Main
LED
HDD LED
WIFI LED
Charge LED
Enhance USB Port
ESD
TongFang Inc
kabylake-U/RU
TP/LED/Click-pad/USB
Tuesday, April 25, 2017
22
30
B

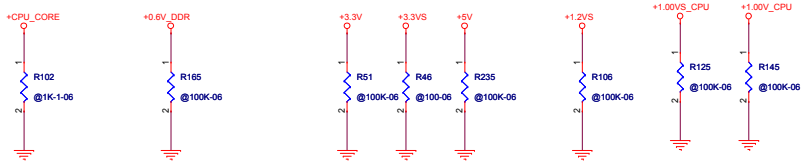

Voltage=1.674+0.1116*Bat_I
Ideal Voltage | Measured Voltage | Current
0 | | -6
0.279 | | -5
0.558 | | -4
0.837 | | -3
1.116 | | -2
1.395 | | -1
1.674 | 1.667 | 0
1.953 | 1.944 | 1
2.232 | 2.224 | 2
2.511 | 2.504 | 3
2.79 | 2.782 | 4
3.069 | 3.062 | 5
3.348 | 3.342 | 6
Real Current(A)= EC Read(V)/20/0.01 ohm
Adaptor_I_EC Read(V) | Real Current(A)
0.191 | 0.50
0.386 | 1.0
0.589 | 1.5
0.788 | 2.0
0.985 | 2.5
1.189 | 3.0
1.387 | 3.5
1.585 | 4.0
VB change to DC_IN_B for O2
OZ8692LN
CHARGER CURRENT =V(CGH_I)/(Rch*30)
17.6V->BAT_V=2.2V
16.8V->BAT_V=2.1V
13.2V->BAT_V=1.65V
12.6V->BAT_V=1.575V
9.0V->BAT_V=1.125V
Battery Voltage Detect
Vgs_OFF= -0.4~-1.4
EMI
Charge / Discharge Detect
Voutmax=Vcc-1.5V
Input Offset Voltage: typical 1.7mV max:7mV/9mV
CLOSE EC PIN
Prevent VAC>ICHM during heavy loading when only battery , which leads to mis-detect battery not existence
Battery exist condition
VAC > ICHM: Adaptor existence
VAC <ICHM: Only Battery existence
TongFang Inc
kabylake-U/RU
BATT IN/CHARGER(OZ8660)
Size: Custom
Rev: B
Date: Tuesday, April 25, 2017
Sheet 23 of 30

DC IN

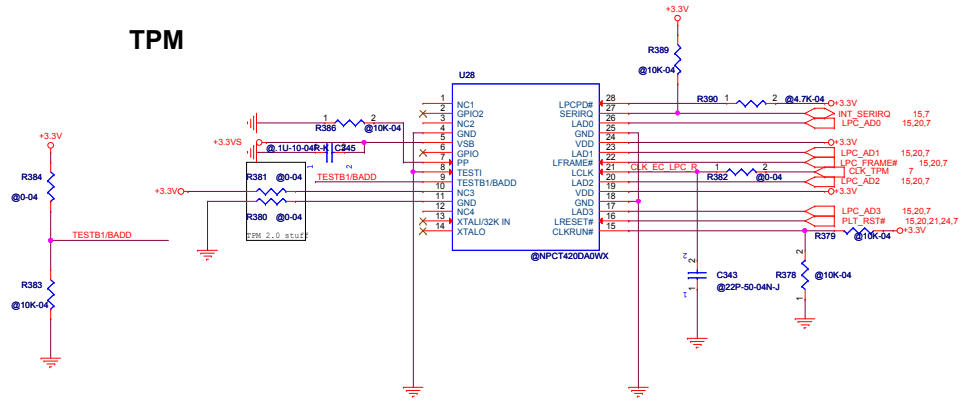


Discharge Resistor / Hole

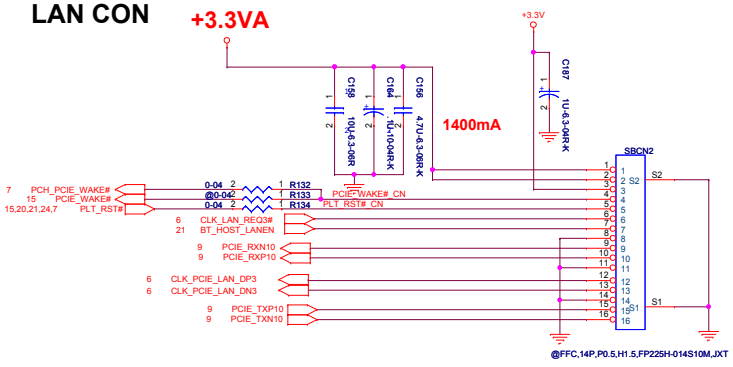




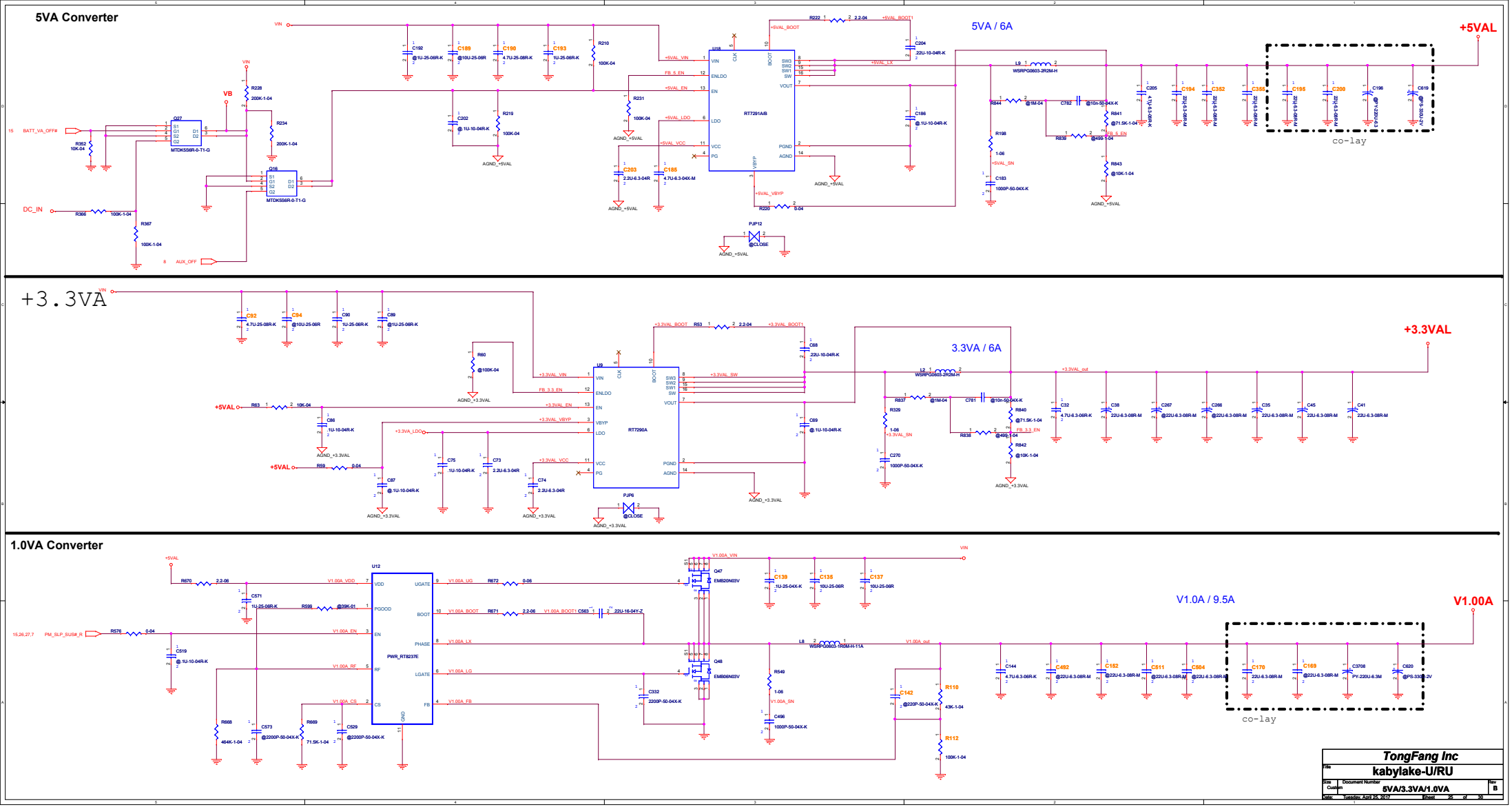
TPM



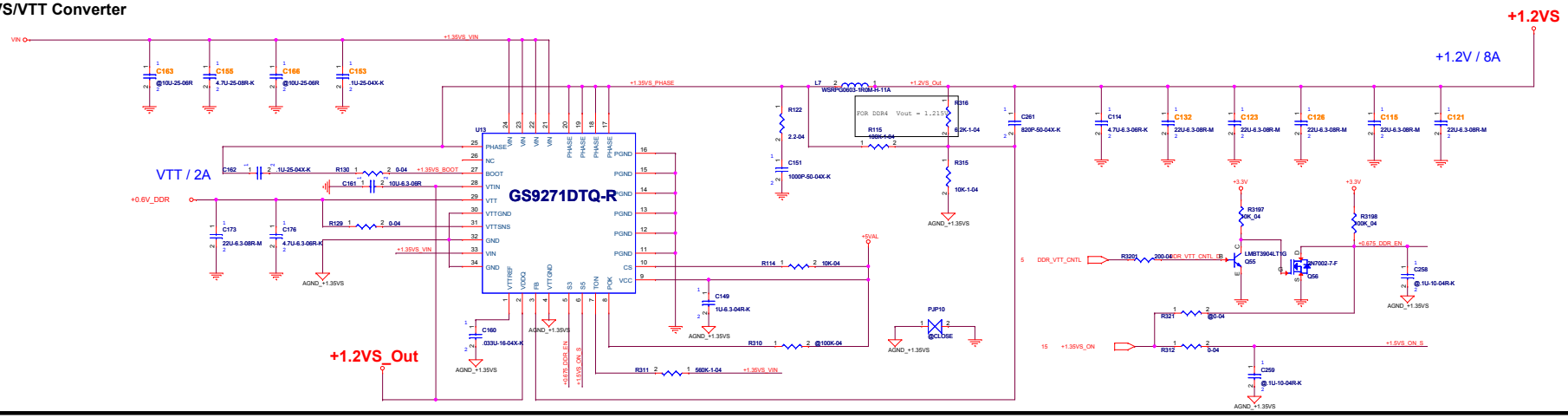
LAN CON



TongFang Inc			
Title: kabylake-U/RU			
Size: Custom	Document Number: DC IN/TPM/LAN CON/D-Resis		Rev: B
Date: Tuesday, April 25, 2017		Sheet 24 of 30	

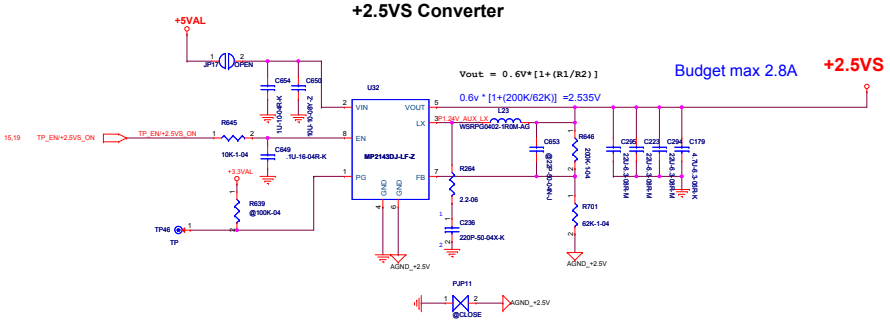

5VA Converter
5VA / 6A
+5VAL
VIN
VB
DC_IN
BATT_VA_OFF#
AUX_OFF
RT7291A/B
MTDK5S6R-6-T1-G
co-lay
+3.3VA
3.3VA / 6A
+3.3VAL
RT7290A
1.0VA Converter
V1.0A / 9.5A
V1.00A
PWR_RT8237E
WSRP0603-2R2M-H
WSRP0603-1R0M-H-11A
TongFang Inc
kabylake-U/RU
5VA/3.3VA/1.0VA
Tuesday, April 25, 2017

1.2VS/VTT Converter

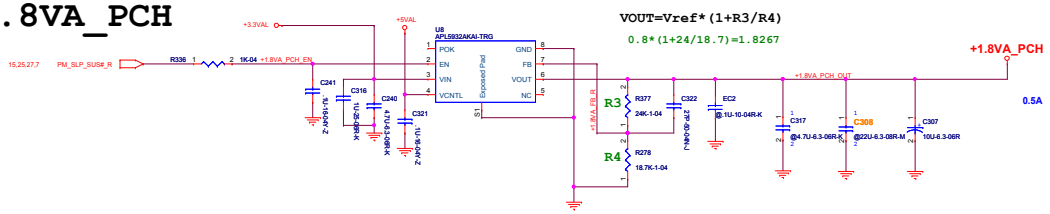


+2.5VS

+2.5VS Converter



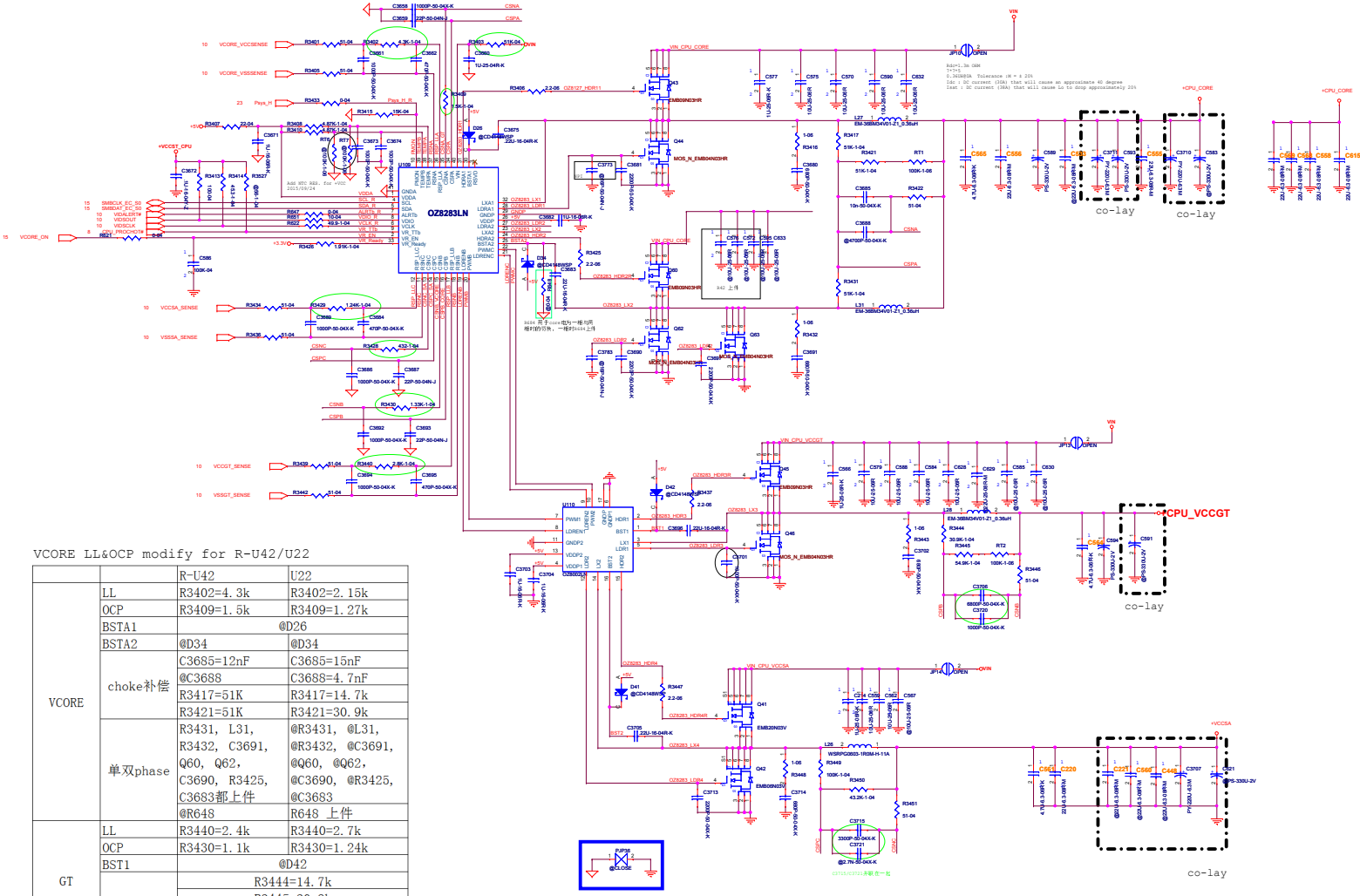
+1.8VA_PCH



TongFang Inc	
Title	kabylake-U/RU
Size: Custom	Document Number: 1.2VS/1.8VA/+2.5VS
Rev	B
Date: Tuesday, April 25, 2017	Sheet 26 of 30

Power switch

Title	kabylake-U/RU	
Size B	Document Number Power SW	Rev B
Date: Tuesday, April 25, 2017	Sheet 27 of 30	

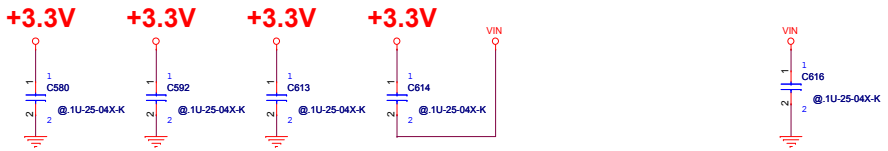


VCORE LL&OCP modify for R-U42/U22

		R-U42	U22
VCORE	LL	R3402=4. 3k	R3402=2. 15k
	OCP	R3409=1. 5k	R3409=1. 27k
	BSTA1	@D26	
	BSTA2	@D34	@D34
	choke补偿	C3685=12nF	C3685=15nF
		@C3688	C3688=4. 7nF
		R3417=51K	R3417=14. 7k
		R3421=51K	R3421=30. 9k
	单双phase	R3431, L31, R3432, C3691, Q60, Q62, C3690, R3425, C3683都上件	@R3431, @L31, @R3432, @C3691, @Q60, @Q62, @C3690, @R3425, @C3683
		@R648	R648 上件
GT	LL	R3440=2. 4k	R3440=2. 7k
	OCP	R3430=1. 1k	R3430=1. 24k
	BST1	@D42	
	choke补偿	R3444=14. 7k	
		R3445=30. 9k	
		C3706=15nF	
		C3720=4. 7nF	

Title	kabylake-U/RU		
Size: A1	Document Number: VCC_CORE/VCCGT		Rev: B
Date: Tuesday, April 25, 2017	Sheet 28 of 30		

HIGH SPEED CAP



Title: kabylake-U/RU		
Size: CustomEMI_H_CAP	Document Number	Rev: B
Date: Tuesday, April 25, 2017	Sheet 29 of 30	

Title	kabylake-U/RU
Size B	Document Number History
Rev B	
Date: Tuesday, April 25, 2017	Sheet 30 of 30