Dolly/DL4FA with IntelWHL/CML

Block Diagram

WhiskeyLake + INTEL PCH

PEGATRON

Title : RSVD

PEGATRON PROPRIETARY AND CONFIDENTIAL

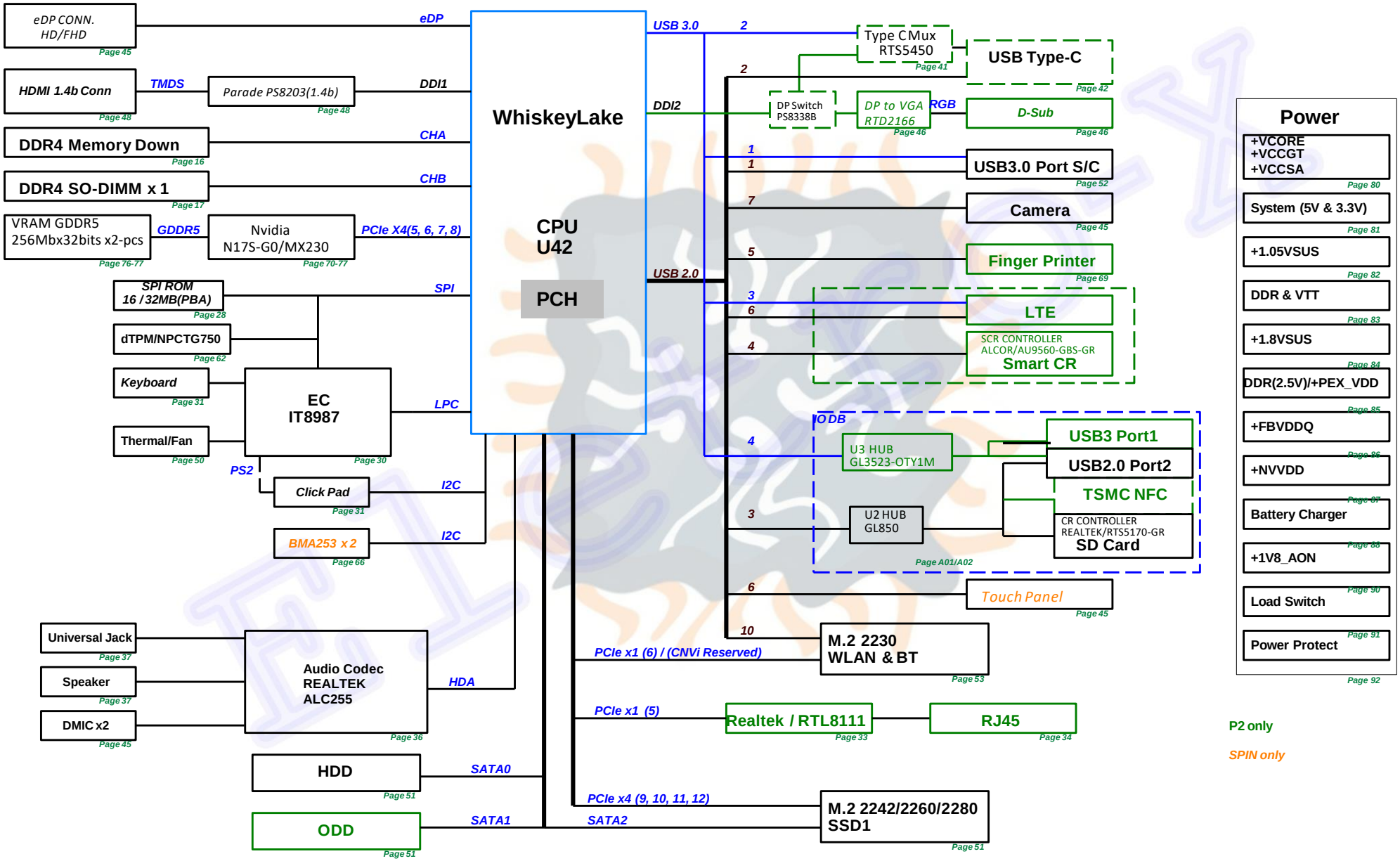
BG1-HW1 RD

Engineer: *Tina Lee*

Size	Project Name	Rev
A	DL4FA	1.1

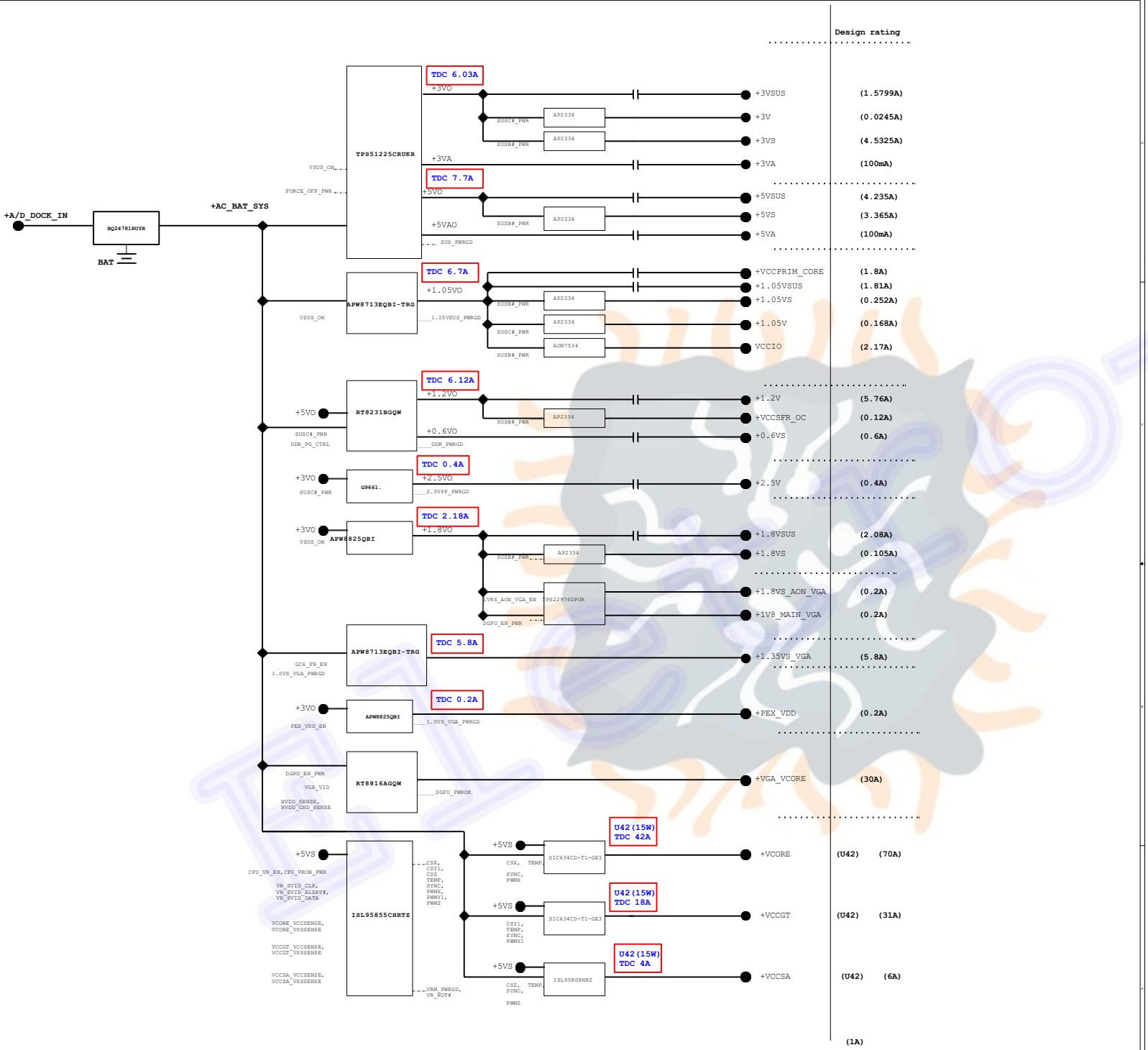
Date: Friday, April 12, 2019 Sheet 12 of 104

Eletro-X



Eletro-X

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : Block
BG1-HW3 RD
Engineer: Unknow desiner
Size: C
Project Name: P2 / Extensa
Rev: 0.9
Date: Friday, April 12, 2019
Sheet 1 of 97



PEGATRON Title : POWER_FLOWCHART
Engineer: Isaac Lin
DL4FA

Eletro-X

BATTERY IN DETECT

+AC_USBPD_WCT_IN → +AC_USBPD_WCT_IN 88,89
+A/D_DOCK_IN → +A/D_DOCK_IN 60,89
+USB_PD_IN → +USB_PD_IN 42,89
+AC_BAT_SYS → +AC_BAT_SYS 41,45,80,81,82,83,85,87,88
+BAT_CON → +BAT_CON 60,88
+RTC_POWER → +RTC_POWER 81

+5VA → +5VA 36,56,81
+3VA → +3VA 21,30,31,36,57,65,81,88

+5VO → +5VO 81,82,83,85,91
+3VO → +3VO 81,82,84,91
+2.5VO → +2.5VO 82
+1.8VO → +1.8VO 84,88,91
+1.2VO → +1.2VO 83,91
+1.05VO → +1.05VO 82,91
+0.6VO → +0.6VO 83

+5VSUS → +5VSUS 41,42,52,56,61,64,81
+3VSUS → +3VSUS 4,10,20,21,22,23,28,30,33,53,61,62,64,67,74,81,86,88,92
+1.8VSUS → +1.8VSUS 10,23,61,84
+1.05VSUS → +1.05VSUS 10,82
+VCCPRIM_CORE → +VCCPRIM_CORE 10,82

+3V → +3V 31,57,91
+2P5VPP → +2P5VPP 16,17,28,57,82
+1.2V → +1.2V 6,9,15,16,17,18,57,83
+1.05V → +1.05V 9,57,91

+3VS_IR → +3VS_IR 45,91
+5VS → +5VS 28,31,36,45,46,48,50,51,57,61,67,80,87,91
+3VS → +3VS 3,4,6,20,21,23,30,32,33,36,41,42,44,45,46,47,48,50,51,53,57,62,64,66,69,74,87,91,92
+1.8VS → +1.8VS 36,91
+1.05VS → +1.05VS 9,91
+VCCIO → +VCCIO 3,9,57,91
+0.6VS → +0.6VS 15,17,57,83

+VCORE → +VCORE 8,9,80
+VCCGT → +VCCGT 9,80
+VCCSA → +VCCSA 9,80

60 TS1# → 2 R9300 1KOhm vx_r0402_small 1% 1 → BAT1_IN_OC# 30
C9300 @ 0.1UF/16V tx_c0402 X7R/+/-10%

FOR POWER TEST

+3VA
JP9300 SGL_JUMP 1 2 → T9300 TPC28T → CPU_VRON_PWR 80
JP9301 SGL_JUMP 1 2 → T9301 TPC28T → SUSB#_PWR 83,91
JP9302 SGL_JUMP 1 2 → T9302 TPC28T → SUSC#_PWR 82,83,91
JP9303 SGL_JUMP 1 2 → T9303 TPC28T → VSUS_ON 30,81,82,84
JP9304 SGL_JUMP 1 2 → T9304 TPC28T → DGPU_EN_PWR 57,74,87,91

+VGA_VCORE → +VGA_VCORE 57,75,87
+1.8VS_AON_VGA → +1.8VS_AON_VGA 57,70,72,74,75,87,91
+1.8VS_MAIN_VGA → +1.8VS_MAIN_VGA 57,70,71,72,74,75,91
+1.35VS_VGA → +1.35VS_VGA 57,71,75,76,85
+PEX_VDD → +PEX_VDD 57,70,86

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : PWR_SIGNAL & DETECT
BG1-POWER
Engineer: Isaac Lin
Size: Custom
Project Name: DL4FA
Rev: 1.0
Date: Friday, April 12, 2019
Sheet 93 of 96

Eletro-X

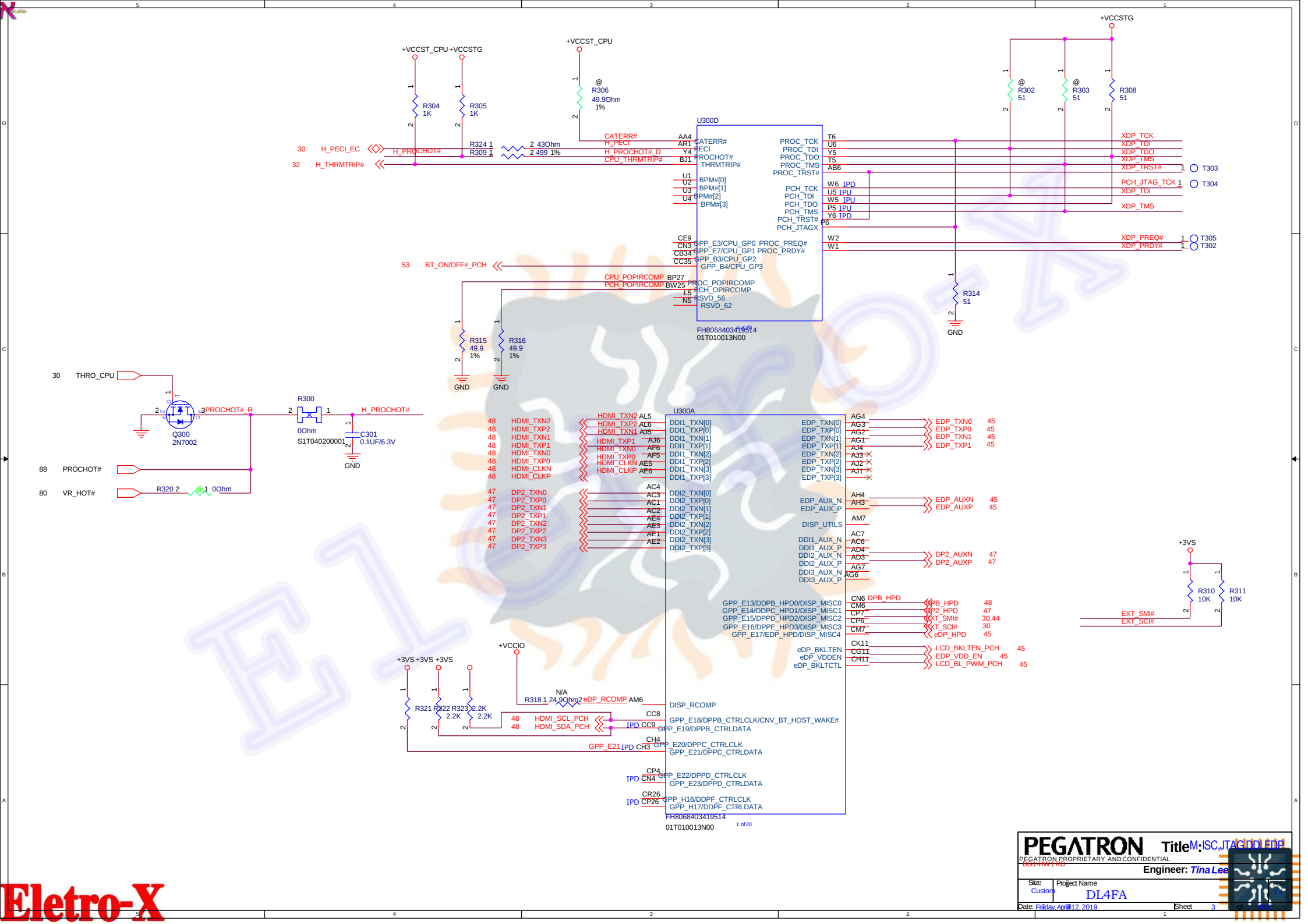
Option

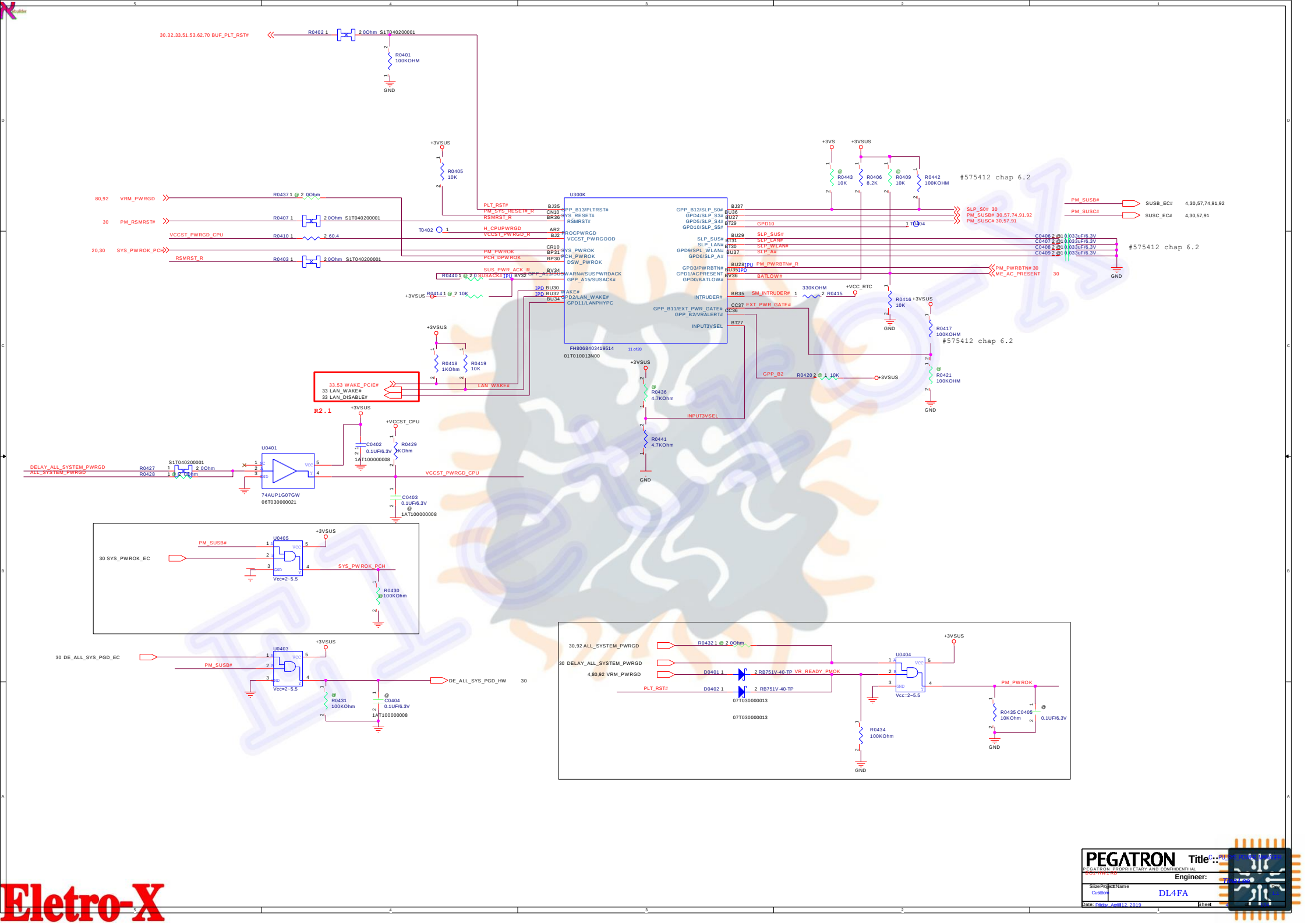
Optional	Remark
@	Ummount
/Debug	Debug only
/EMI	Reserved EMI part
/UMA	Support UMA
/VGA	Support VGA
/U22	Support 2+2 CPU
/U42	Support 4+2 CPU
/TPM	Support dTPM function
/Non_TPM	Support fTPM function

/5450	DDI2 TO RTS5450 for reduce cost of RTS2166 and PS8338
/P2_SPIN	RTS5450 for Full funciton Type-C solution
@/Dead battery	No Support dead Battery
/Dead battery	Support dead Battery
/8338	DDI2 TO PS8338 DP SW for D-Sub
/CRT	RTS2166
/ODD	Support ODD function
PCB_ID0/1/2	PCB ID
MEM_ID0/1/2	MEM ID
/ALC233	Audio Codec : Realtek ALC233
/ALC255	Audio Codec : Realtek ALC255
/BASE_SKU	BASE SKU
/Premium_SKU	Premium_SKU

Eletro-X

PEGATRON Title : Option
PEGATRON PROPRIETARY AND CONFIDENTIAL
BG1-HW1.RD Engineer: TinaLee
Size: C | Project Name: DL4FA | Rev: 1.1
Date: Friday, April 12, 2019 | Sheet 2 of 104


+VCCSTG
+VCCST_CPU
+VCCST_CPU
+VCCSTG
R304 1K
R305 1K
@ R306 49.9Ohm 1%
@ R302 51
@ R303 51
R308 51
30 H_PECI_EC
32 H_THRMTRIP#
H_PROCHOT#
R324 1
R309 1
2 43Ohm
2 499 1%
CATERR#
H_PECI
H_PROCHOT# D
CPU_THRMTRIP#
U300D
AA4 CATERR#
AR1 PECI
Y4 PROCHOT#
BJ1 THRMTRIP#
PROC_TCK
PROC_TDI
PROC_TDO
PROC_TMS
PROC_TRST#
T6
U6
Y5
T5
AB6
XDP_TCK
XDP_TDI
XDP_TDO
XDP_TMS
XDP_TRST#
T303
PCH_JTAG_TCK
XDP_TDI
T304
XDP_TMS
U1 BPM#[0]
U2 BPM#[1]
U3 BPM#[2]
U4 BPM#[3]
PCH_TCK
PCH_TDI
PCH_TDO
PCH_TMS
PCH_TRST#
PCH_JTAGX
W6 IPD
U5 IPU
W5 IPU
P5 IPU
Y6 IPD
P6
CE9 GPP_E3/CPU_GP0 PROC_PREQ#
CN3 GPP_E7/CPU_GP1 PROC_PRDY#
CB34 GPP_B3/CPU_GP2
CC35 GPP_B4/CPU_GP3
W2
W1
XDP_PREQ#
XDP_PRDY#
T305
T302
53 BT_ON/OFF#_PCH
CPU_POPIRCOMP BP27
PCH_POPIRCOMP BW25
PROC_POPIRCOMP
PCH_OPIRCOMP
L5 RSVD_56
N5 RSVD_62
R314 51
GND
R315 49.9 1%
R316 49.9 1%
GND
GND
FH8068403419514
01T010013N00
30 THRO_CPU
Q300 2N7002
PROCHOT#_R
R300 0Ohm S1T040200001
H_PROCHOT#
C301 0.1UF/6.3V
GND
88 PROCHOT#
80 VR_HOT#
R320 2 1 0Ohm
U300A
HDMI_TXN2 AL5
HDMI_TXP2 AL6
HDMI_TXN1 AJ5
HDMI_TXP1 AJ6
HDMI_TXN0 AF6
HDMI_TXP0 AF5
HDMI_CLKN AE5
HDMI_CLKP AE6
DDI1_TXN[0]
DDI1_TXP[0]
DDI1_TXN[1]
DDI1_TXP[1]
DDI1_TXN[2]
DDI1_TXP[2]
DDI1_TXN[3]
DDI1_TXP[3]
EDP_TXN[0]
EDP_TXP[0]
EDP_TXN[1]
EDP_TXP[1]
EDP_TXN[2]
EDP_TXP[2]
EDP_TXN[3]
EDP_TXP[3]
AG4
AG3
AG2
AG1
AJ4
AJ3
AJ2
AJ1
EDP_TXN0 45
EDP_TXP0 45
EDP_TXN1 45
EDP_TXP1 45
DP2_TXN0
DP2_TXP0
DP2_TXN1
DP2_TXP1
DP2_TXN2
DP2_TXP2
DP2_TXN3
DP2_TXP3
AC4
AC3
AC1
AC2
AE4
AE3
AE1
AE2
DDI2_TXN[0]
DDI2_TXP[0]
DDI2_TXN[1]
DDI2_TXP[1]
DDI2_TXN[2]
DDI2_TXP[2]
DDI2_TXN[3]
DDI2_TXP[3]
EDP_AUX_N
EDP_AUX_P
AH4
AH3
EDP_AUXN 45
EDP_AUXP 45
AM7
DISP_UTILS
AC7
AC6
AD4
AD3
AG7
AG6
DDI1_AUX_N
DDI1_AUX_P
DDI2_AUX_N
DDI2_AUX_P
DDI3_AUX_N
DDI3_AUX_P
DP2_AUXN 47
DP2_AUXP 47
+3VS
R310 10K
R311 10K
EXT_SMI#
EXT_SCI#
GPP_E13/DDPB_HPD0/DISP_MISC0
GPP_E14/DDPC_HPD1/DISP_MISC1
GPP_E15/DPPD_HPD2/DISP_MISC2
GPP_E16/DPPE_HPD3/DISP_MISC3
GPP_E17/EDP_HPD/DISP_MISC4
CN6 DPB_HPD
CM6
CP7
CP6
CM7
DPB_HPD 48
DP2_HPD 47
EXT_SMI# 30,44
EXT_SCI# 30
eDP_HPD 45
CK11
CG11
CH11
eDP_BKLTEN
eDP_VDDEN
eDP_BKLTCTL
LCD_BKLTEN_PCH 45
EDP_VDD_EN 45
LCD_BL_PWM_PCH 45
+VCCIO
+3VS +3VS +3VS
R321 2.2K
R322 2.2K
R323 2.2K
N/A
R318 1 24.9Ohm 2
eDP_RCOMP
AM6
DISP_RCOMP
48 HDMI_SCL_PCH
48 HDMI_SDA_PCH
CC8
CC9
GPP_E18/DPPB_CTRLCLK/CNV_BT_HOST_WAKE#
GPP_E19/DPPB_CTRLDATA
GPP_E21
CH4
CH3
GPP_E20/DPPC_CTRLCLK
GPP_E21/DPPC_CTRLDATA
CP4
CN4
GPP_E22/DPPD_CTRLCLK
GPP_E23/DPPD_CTRLDATA
CR26
CP26
GPP_H16/DDPF_CTRLCLK
GPP_H17/DDPF_CTRLDATA
FH8068403419514
01T010013N00
1 of 20
PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
BG14HW1RB
Title M:ISC,JTAG,DDI,EDP
Engineer: Tina Lee
Size Custom
Project Name DL4FA
Rev 1.0
Date: Friday, April 12, 2019
Sheet 3
Eletro-X


30,32,33,51,53,62,70 BUF_PLT_RST#
R0402 1 2 0Ohm S1T040200001
R0401 100KOHM
GND
+3VSUS
R0405 10K
80,92 VRM_PWRGD
R0437 1 @ 2 0Ohm
30 PM_RSMRST#
R0407 1 2 0Ohm S1T040200001
VCCST_PWRGD_CPU
R0410 1 2 60.4
20,30 SYS_PWROK_PCH
RSMRST_R
R0403 1 2 0Ohm S1T040200001
T0402 1
PLT_RST#
PM_SYS_RESET#_R
RSMRST_R
H_CPUPWRGD
VCCST_PWRGD_R
PM_PWROK
PCH_DPWROK
SUS_PWR_ACK_R
R0440 1 @ 2 0 SUSACK# IPU
R0414 1 @ 2 10K
U300K
BJ35 GPP_B13/PLTRST#
CN10 SYS_RESET#
BR36 RSMRST#
AR2 PROCPWRGD
BJ2 VCCST_PWRGOOD
CR10 SYS_PWROK
BP31 PCH_PWROK
BP30 DSW_PWROK
BY34 SWARN#/SUSPWRDACK
GPP_A15/SUSACK#
IPD BU30 WAKE#
IPD BU32 GPD2/LAN_WAKE#
BU34 GPD11/LANPHYPC
FH8068403419514
11 of20
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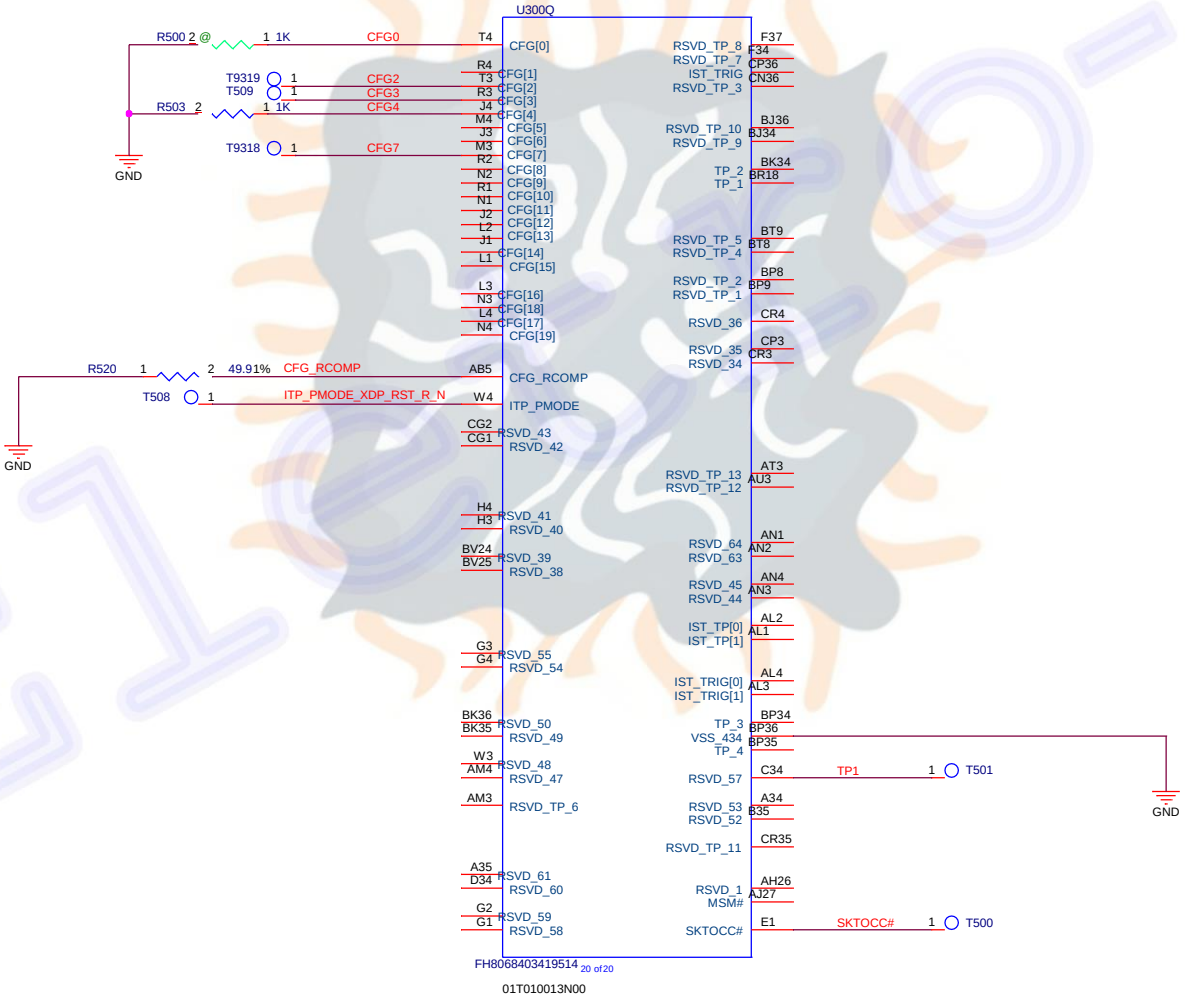
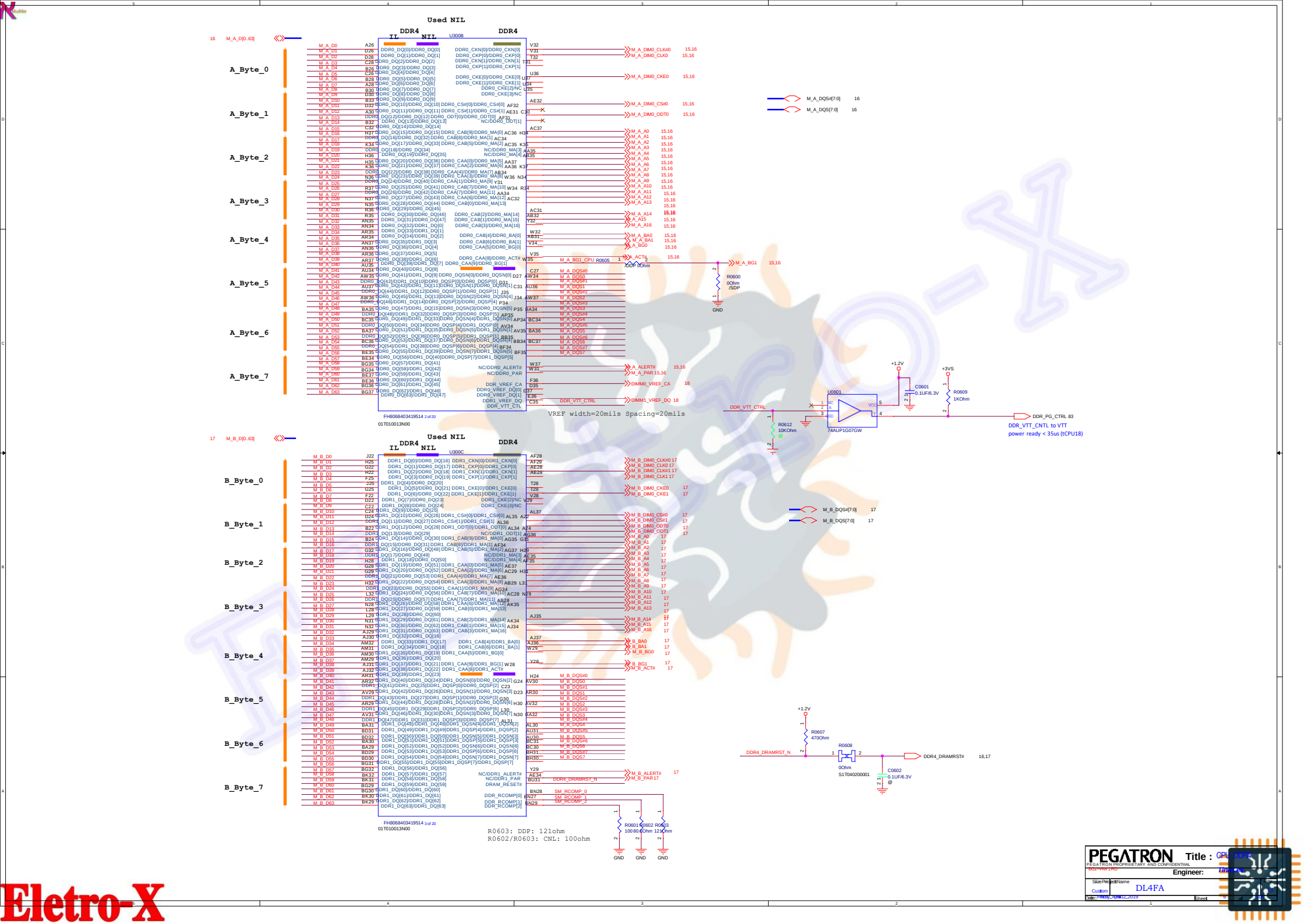
GPP_B12/SLP_S0#
BU36 GPD4/SLP_S3#
BU27 GPD5/SLP_S4#
BT29 GPD10/SLP_S5#
BU29 SLP_SUS#
BT31 SLP_LAN#
BT30 GPD9/SPI_WLAN#
BU37 GPD6/SLP_A#
BU28 IPU GPD3/PWRBTN#
BU35 IPD GPD1/ACPRESENT
BV36 GPD0/BATLOW#
BR35 INTRUDER#
CC37 GPP_B11/EXT_PWR_GATE#
CC36 GPP_B2/VRALERT#
BT27 INPUT3VSEL
SLP_S0# 30
PM_SUSB# 30,57,74,91,92
PM_SUSC# 30,57,91
PM_SUSB#
PM_SUSC#
SUSB_EC# 4,30,57,74,91,92
SUSC_EC# 4,30,57,91
SLP_SUS#
SLP_LAN#
SLP_WLAN#
SLP_A#
PM_PWRBTN#_R
BATLOW#
SM_INTRUDER# 1
EXT_PWR_GATE#
PM_PWRBTN# 30
ME_AC_PRESENT 30
+3VS
+3VSUS
R0443 10K
R0406 8.2K
R0409 10K
R0442 100KOHM
#575412 chap 6.2
C0406 2 @1 0.033uF/6.3V
C0407 2 @1 0.033uF/6.3V
C0408 2 @1 0.033uF/6.3V
C0409 2 @1 0.033uF/6.3V
#575412 chap 6.2
GND
330KOHM
+VCC_RTC
R0415 2 1
R0416 10K
R0417 100KOHM
#575412 chap 6.2
R0421 100KOHM
GND
R0418 1KOhm
R0419 10K
33,53 WAKE_PCIE#
33 LAN_WAKE#
33 LAN_DISABLE#
LAN_WAKE#
R2.1
GPP_B2
R0420 2 @ 1 10K
+3VSUS
R0436 4.7KOhm
INPUT3VSEL
R0441 4.7KOhm
GND
+VCCST_CPU
C0402 0.1UF/6.3V
1AT100000008
R0429 KOhm
VCCST_PWRGD_CPU
C0403 0.1UF/6.3V
@
1AT100000008
DELAY_ALL_SYSTEM_PWRGD
ALL_SYSTEM_PWRGD
R0427
R0428
S1T040200001
2 0Ohm
U0401
74AUP1G07GW
06T030000021
30 SYS_PWROK_EC
PM_SUSB#
U0405
Vcc=2~5.5
SYS_PWROK_PCH
R0430 @100KOhm
30 DE_ALL_SYS_PGD_EC
U0403
Vcc=2~5.5
R0431 100KOhm
C0404 0.1UF/6.3V
1AT100000008
DE_ALL_SYS_PGD_HW 30
30,92 ALL_SYSTEM_PWRGD
R0432 1 @ 2 0Ohm
30 DELAY_ALL_SYSTEM_PWRGD
4,80,92 VRM_PWRGD
D0401 1
2 RB751V-40-TP
VR_READY_PMOK
PLT_RST#
D0402 1
2 RB751V-40-TP
07T030000013
07T030000013
U0404
Vcc=2~5.5
R0434 100KOhm
PM_PWROK
R0435 10KOhm
C0405 0.1UF/6.3V
GND
PEGATRON
PEGATRON PROPRIIETARY AND CONFIDENTIIAL
Title:
Engineer:
Size
Project Name
DL4FA
Date: Friday, April 12, 2019
Sheet
Eletro-X

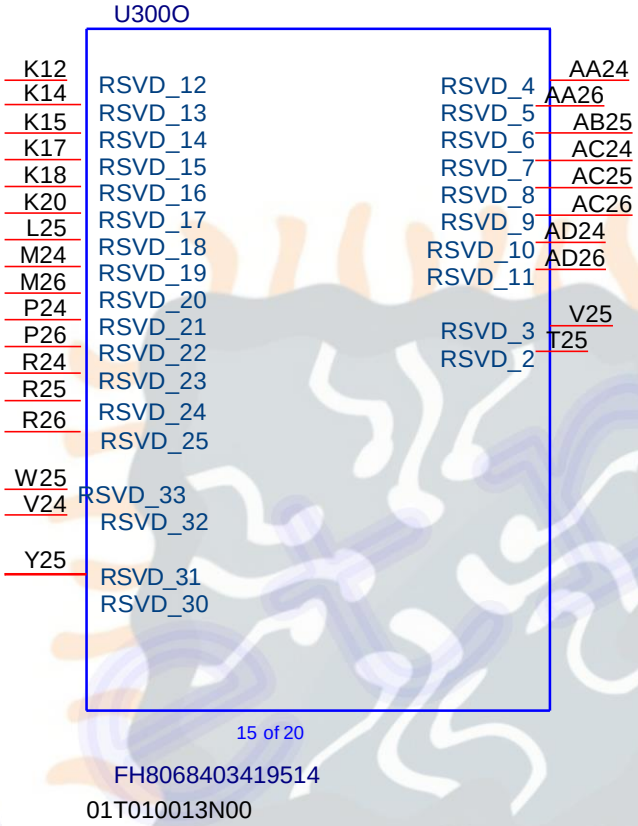


PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title C:PU_RESERVED
BG1-HW1RD
Engineer: Tina Lee
Size Project Name Rev
Custom DL4FA
Date: Friday, April 12, 2019 Sheet 5

Eletro-X


Used NIL
DDR4
NIL
U300B
16 M_A_D[0..63]
A_Byte_0
A_Byte_1
A_Byte_2
A_Byte_3
A_Byte_4
A_Byte_5
A_Byte_6
A_Byte_7
M_A_DQS#[7:0] 16
M_A_DQS[7:0] 16
M_A_BG1_CPU R0605 1 2 0Ohm
M_A_BG1 15,16
R0600 0Ohm /SDP
GND
VREF width=20mils Spacing=20mils
+1.2V
+3VS
C0601 0.1UF/6.3V
R0609 1KOhm
U0601
74AUP1G07GW
R0612 10KOhm
DDR_VTT_CTRL
DDR_PG_CTRL 83
DDR_VTT_CNTL to VTT
power ready < 35us (tCPU18)
17 M_B_D[0..63]
B_Byte_0
B_Byte_1
B_Byte_2
B_Byte_3
B_Byte_4
B_Byte_5
B_Byte_6
B_Byte_7
M_B_DQS#[7:0] 17
M_B_DQS[7:0] 17
R0607 470Ohm
R0608 0Ohm S1T040200001
C0602 0.1UF/6.3V @
DDR4_DRAMRST_N
DDR4_DRAMRST# 16,17
R0603: DDP: 121ohm
R0602/R0603: CNL: 100ohm
R0601 100 R0602 80.6Ohm R0603 121Ohm
GND GND GND
PEGATRON
Title : GPU_DDR4
Engineer:
DL4FA
Custom
Date: Friday, April 12, 2019
Sheet

Eletro-X



PEGATRON

Title : CPU_RSVD

PEGATRON PROPRIETARY AND CONFIDENTIAL

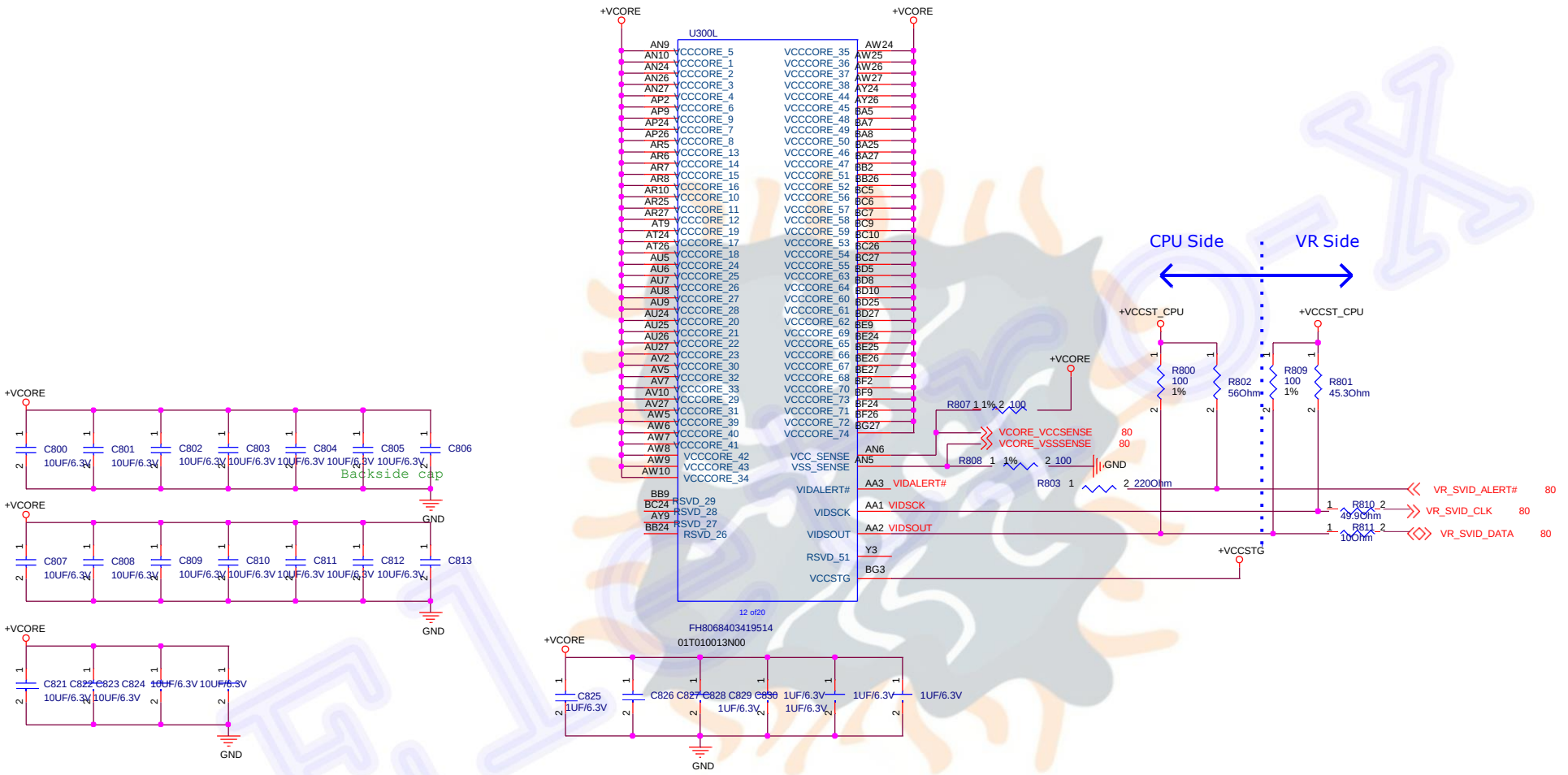
BG1-HW1 RD

Engineer: *Tina Lee*

Size	Project Name	Rev
Custom	DL4FA	1.1

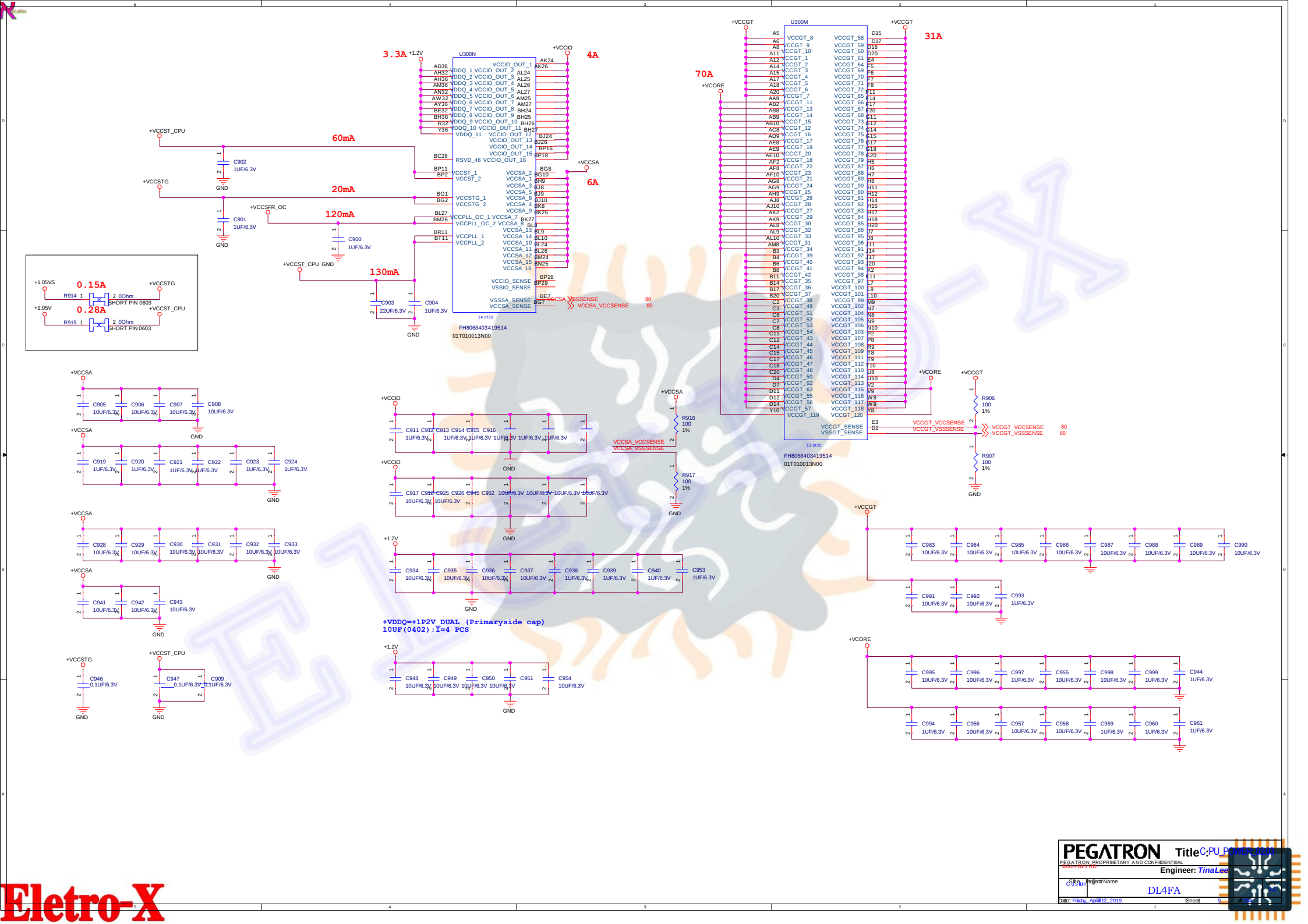
Date: Friday, April 12, 2019 Sheet 7 of 104

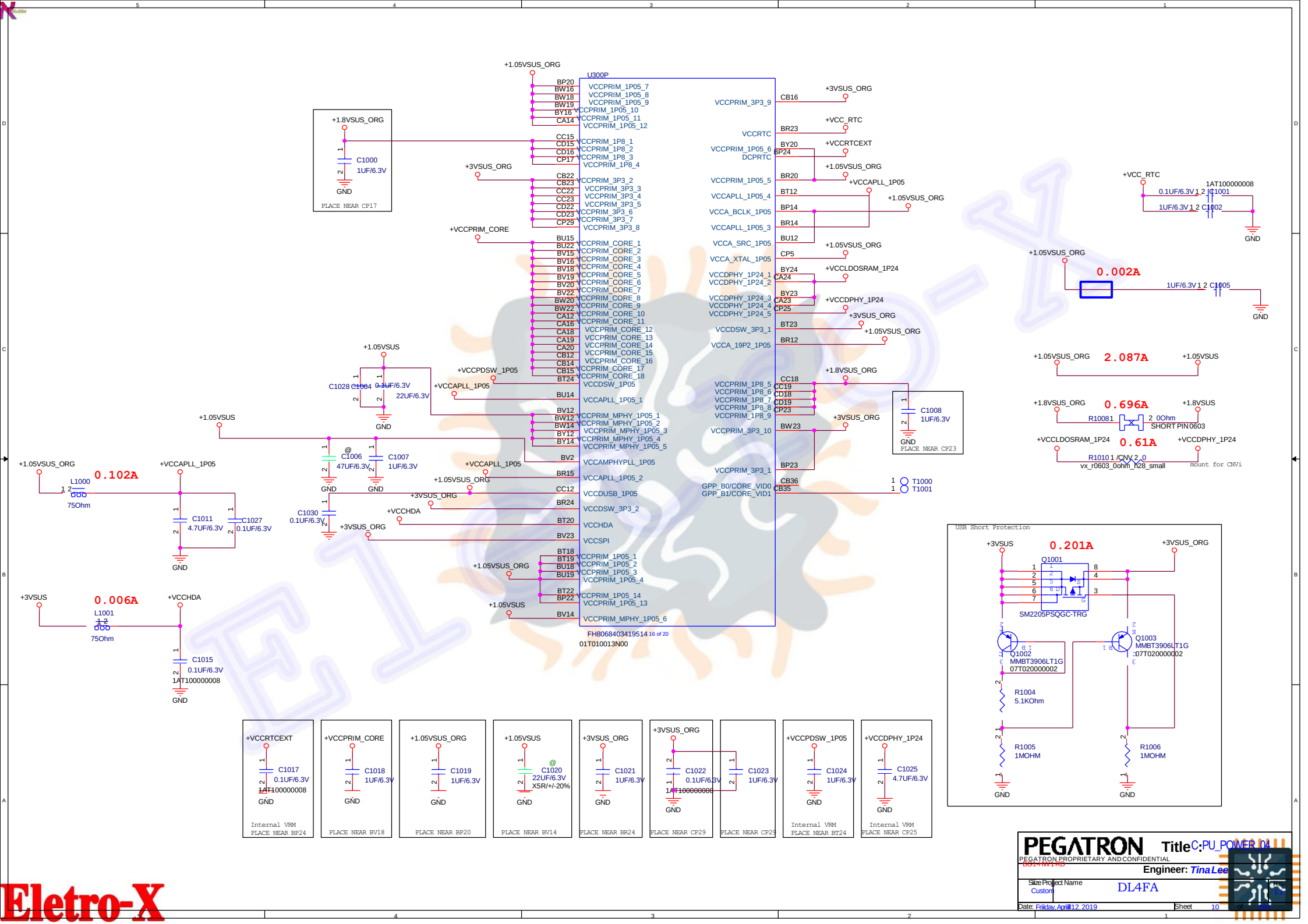
Eletro-X



PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title: C:PU_POWER_01
BS1-HW1RD
Engineer: Tina Lee
Custom
Size
Project Name
DL4FA
Rev
Date: Friday, April 12, 2019
Sheet 8 of 124

Eletro-X


3.3A
4A
6A
70A
31A
60mA
20mA
120mA
130mA
0.15A
0.28A
U300N
U300M
+VCCIO
+VCCSA
+VCCGT
+VCORE
+VCCSTG
+VCCST_CPU
+VCCSFR_OC
+1.2V
+1.05VS
+1.05V
FH8068403419514
01T010013N00
+VDDQ=+1P2V_DUAL (Primaryside cap)
10UF(0402):I=4 PCS
PEGATRON
DL4FA
Eletro-X


U300P
FH8068403419514 16 of 20
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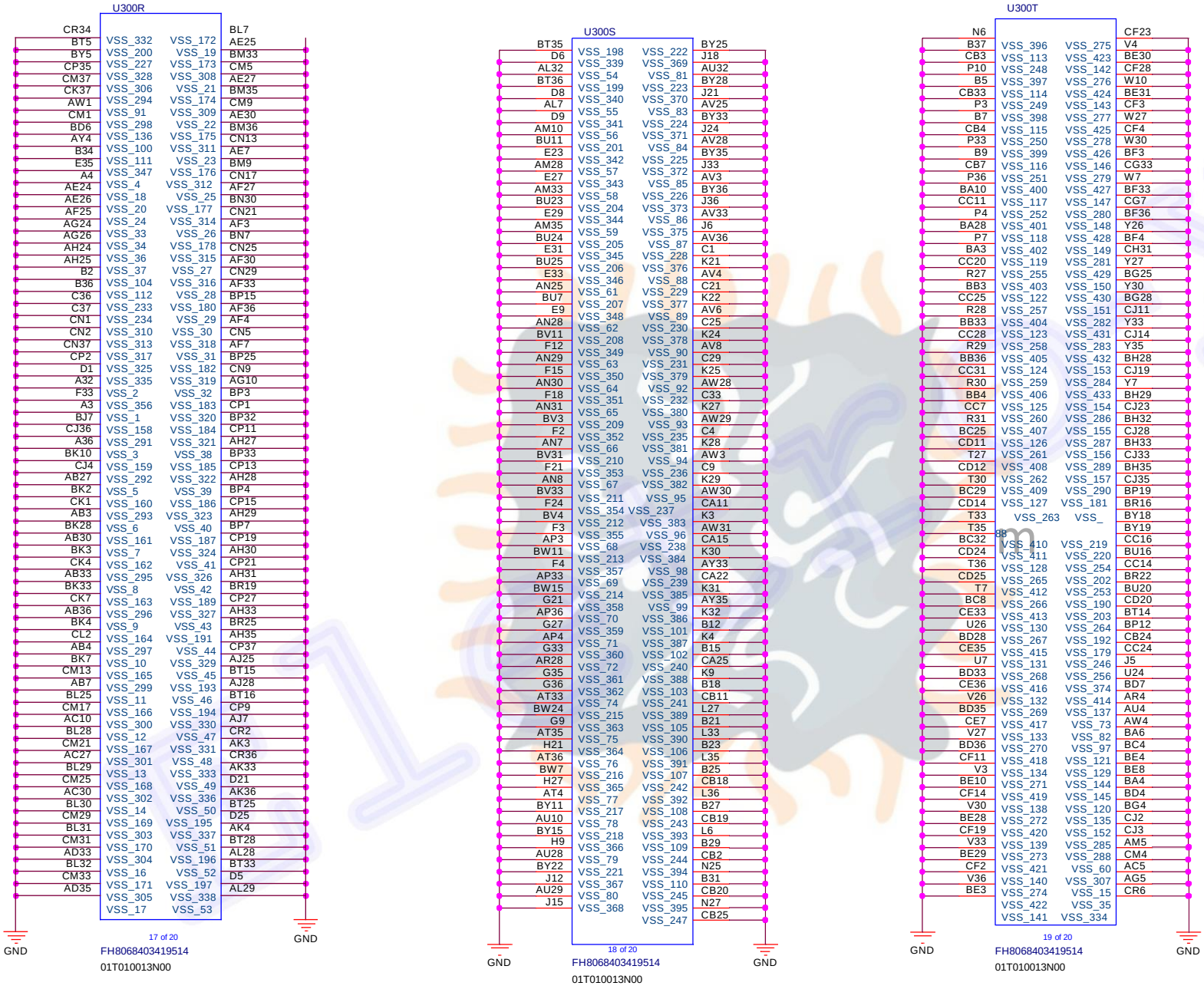
0.102A
0.006A
0.002A
2.087A
0.696A
0.61A
0.201A
75Ohm
SM2205PSQGC-TRG
Q1001
Q1002 MMBT3906LT1G 07T020000002
Q1003 MMBT3906LT1G 07T020000002
R1004 5.1KOhm
R1005 1MOHM
R1006 1MOHM
R10081 0Ohm SHORT PIN 0603
R1010 0 /CNV
USB Short Protection
PLACE NEAR CP17
PLACE NEAR CP23
PLACE NEAR BP24
PLACE NEAR BV18
PLACE NEAR BP20
PLACE NEAR BV14
PLACE NEAR BR24
PLACE NEAR CP29
PLACE NEAR CP29
PLACE NEAR BT24
PLACE NEAR CP25
Internal VRM
PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title C:PU_POWER_04
Engineer: Tina Lee
Size Project Name
Custom DL4FA
Date: Friday, April 12, 2019
Sheet 10
Eletro-X



PEGATRON

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BG1-HW1RD

Title: C:PU_GND

Engineer: Tina Lee

Size	Project Name	Rev
Custom	DL4FA	0A

Date: Friday, April 12, 2019 Sheet 11 of 100

Eletro-X

DDR4(0)_Termination

+0.6VS → +0.6VS 17,57,83

+1.2V → +1.2V 6,9,16,17,18,57,83

+0.6VS

1% R1501 1 /OBM 2 36OHM M0_MA0 — M_A_A0 6,16

1% R1502 1 /OBM 2 36OHM M0_MA1 — M_A_A1 6,16

1% R1503 1 /OBM 2 36OHM M0_MA2 — M_A_A2 6,16

1% R1504 1 /OBM 2 36OHM M0_MA3 — M_A_A3 6,16

1% R1505 1 /OBM 2 36OHM M0_MA4 — M_A_A4 6,16

1% R1506 1 /OBM 2 36OHM M0_MA5 — M_A_A5 6,16

1% R1507 1 /OBM 2 36OHM M0_MA6 — M_A_A6 6,16

1% R1508 1 /OBM 2 36OHM M0_MA7 — M_A_A7 6,16

1% R1509 1 /OBM 2 36OHM M0_MA8 — M_A_A8 6,16

1% R1510 1 /OBM 2 36OHM M0_MA9 — M_A_A9 6,16

1% R1511 1 /OBM 2 36OHM M_A_A10_AP — M_A_A10 6,16

1% R1512 1 /OBM 2 36OHM M0_MA11 — M_A_A11 6,16

1% R1513 1 /OBM 2 36OHM M0_MA12 — M_A_A12 6,16

1% R1514 1 /OBM 2 36OHM M0_MA13 — M_A_A13 6,16

1% R1515 1 /OBM 2 36OHM M_A_A14_WE_N — M_A_A14 6,16

1% R1516 1 /OBM 2 36OHM M_A_A15_CAS_N — M_A_A15 6,16

1% R1529 1 /OBM 2 36OHM M_A_A16_RAS_N — M_A_A16 6,16

+0.6VS

6,16 M_A_DIM0_CS#0 — 1% R1521 1 /OBM 2 36OHM

6,16 M_A_DIM0_CKE0 — 1% R1522 1 /OBM 2 36OHM

+0.6VS

6,16 M_A_BG0 — 1% R1523 1 /OBM 2 36OHM

6,16 M_A_BG1 — 1% R1538 1 /DDP 2 36OHM

6,16 M_A_BA0 — 1% R1524 1 /OBM 2 36OHM

6,16 M_A_BA1 — 1% R1525 1 /OBM 2 36OHM

6,16 M_A_DIM0_ODT0 — 1% R1530 1 /OBM 2 36OHM

6,16 M_A_ACT# — 1% R1532 1 /OBM 2 36OHM

6,16 M_A_PAR — 1% R1534 1 /OBM

2

6,16 M_A_DIM0_CLK#0 — 1% R1536 1 /OBM 2 33Ohm

@ C1514 3PF/50V

+1.2V

1 2 C1503 0.01UF/50V /OBM

6,16 M_A_DIM0_CLK0 — 1% R1537 1 /OBM 2 33Ohm

+1.2V

6,16 M_A_ALERT# — 1% R1535 1 /OBM 2 49.9Ohm

Average placed close to +VDDQ_VTT power plane

+0.6VS

/OBM C1513 1UF/6.3V

/OBM C1512 1UF/6.3V

/OBM C1510 1UF/6.3V

/OBM C1504 1UF/6.3V

/OBM C1509 1UF/6.3V

/OBM C1506 1UF/6.3V

/OBM C1507 1UF/6.3V

/OBM C1508 1UF/6.3V

+0.6VS

/OBM C1505 10UF/6.3V

/OBM C1511 10UF/6.3V

@ C1502 10UF/6.3V

@ C1501 10UF/6.3V

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Title : DDR4(1)_Termination

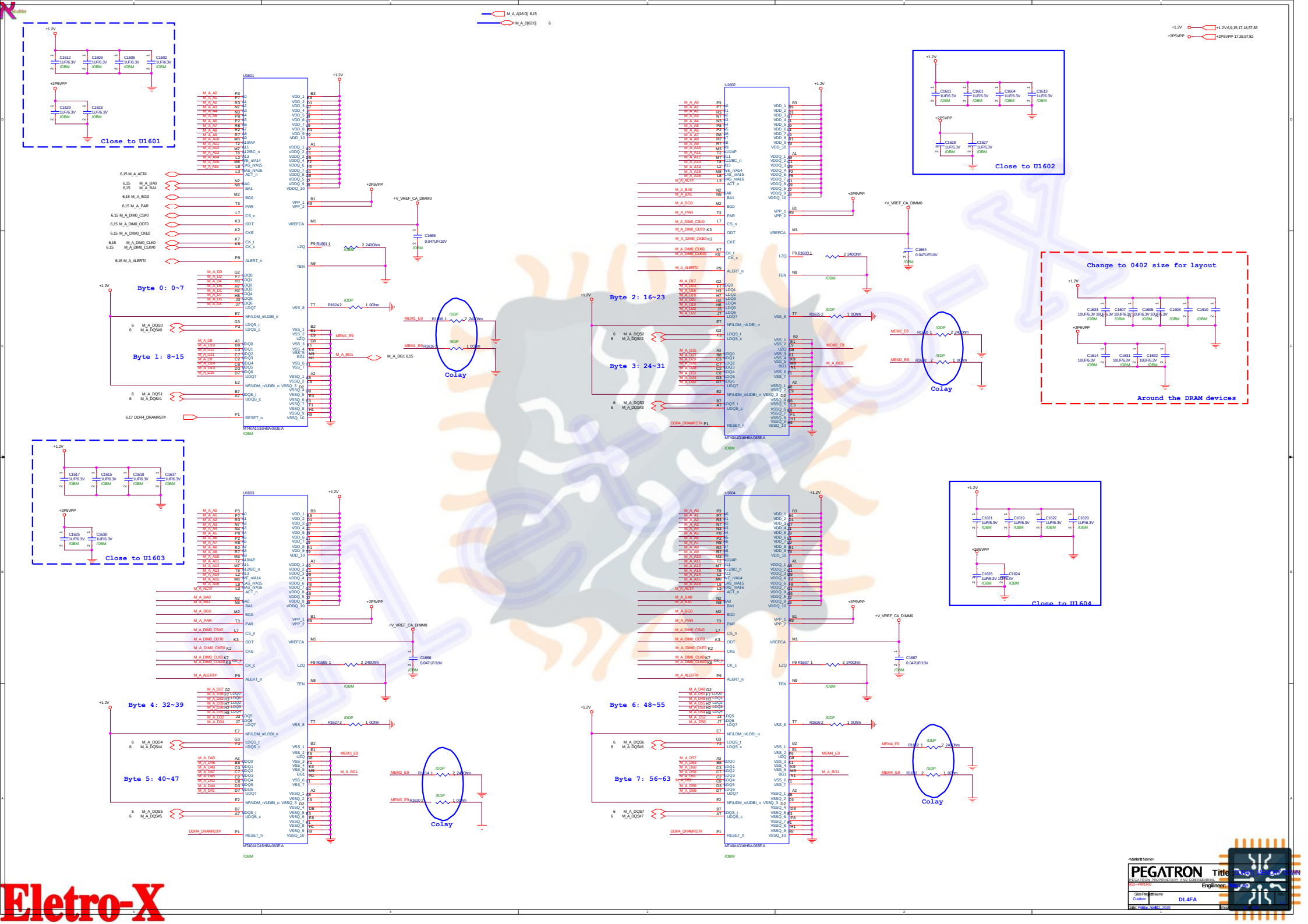
BG1-HW1 RD

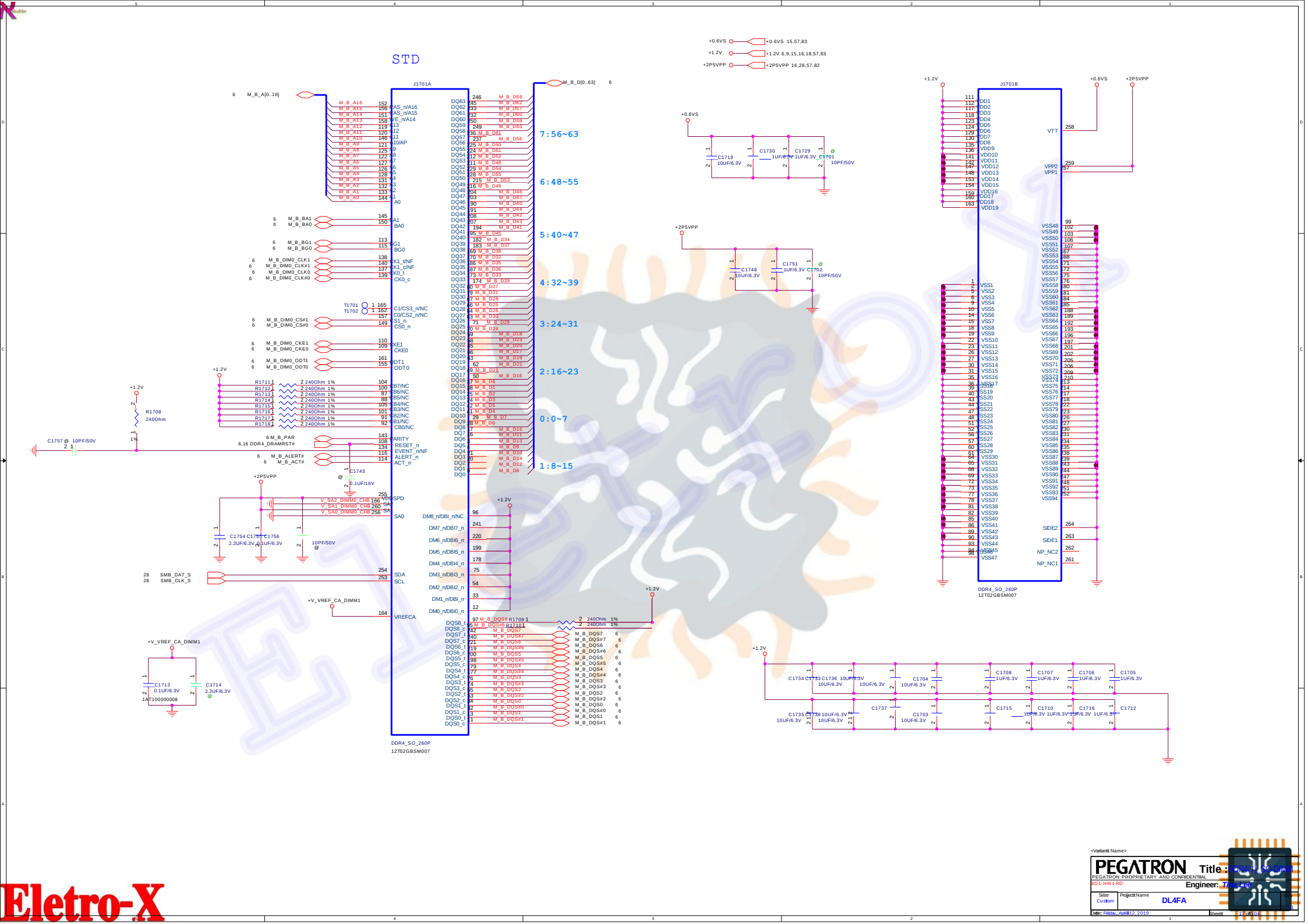
Engineer: Tina Lee

Size: Custom | Project Name: DL4FA | Rev: 1.0

Date: Friday, April 12, 2019 | Sheet 15 of 104

Eletro-X


Close to U1601
Close to U1602
Close to U1603
Close to U1604
Change to 0402 size for layout
Around the DRAM devices
Byte 0: 0~7
Byte 1: 8~15
Byte 2: 16~23
Byte 3: 24~31
Byte 4: 32~39
Byte 5: 40~47
Byte 6: 48~55
Byte 7: 56~63
Colay
U1601
U1602
U1603
U1604
MT40A1G16HBA-083E:A
/OBM
PEGATRON
DL4FA
Eletro-X


STD
J1701A
J1701B
DDR4_SO_260P
12T02GBSM007
+0.6VS
+1.2V
+2P5VPP
+V_VREF_CA_DIMM1
M_B_A[0..16]
M_B_D[0..63]
7:56~63
6:48~55
5:40~47
4:32~39
3:24~31
2:16~23
0:0~7
1:8~15
SMB_DAT_S
SMB_CLK_S
DDR4_DRAMRST#
R1708 240Ohm
C1757 @ 10PF/50V
C1743 @ 0.1UF/16V
C1754 C1755 C1756 2.2UF/6.3V 0.1UF/6.3V
10PF/50V @
C1713 0.1UF/6.3V
C1714 2.2UF/6.3V @
1AT100000008
C1719 10UF/6.3V
C1730 1UF/6.3V
C1729 1UF/6.3V
C1701 @ 10PF/50V
C1748 10UF/6.3V
C1751 1UF/6.3V
C1702 @ 10PF/50V
C1734 C1733 C1736 10UF/6.3V
C1704 10UF/6.3V
C1708 1UF/6.3V
C1707 1UF/6.3V
C1706 1UF/6.3V
C1705 1UF/6.3V
C1735 C1738 10UF/6.3V
C1737 C1703 10UF/6.3V
C1715 C1710 C1716 C1712 1UF/6.3V
R1709 R1710 240Ohm 1%
R1711 R1712 R1713 R1714 R1715 R1716 R1717 R1718 240Ohm 1%
DDR4_SO_260P
12T02GBSM007
PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : DDR4 SO-DIMM
Engineer: Tony Lee
DL4FA
Friday, April 12, 2019
Eletro-X

+1.2V — +1.2V 6,9,15,16,17,57,83

+V_VREF_CA_DIMM0 — +V_VREF_CA_DIMM0 16

+V_VREF_CA_DIMM1 — +V_VREF_CA_DIMM1 17

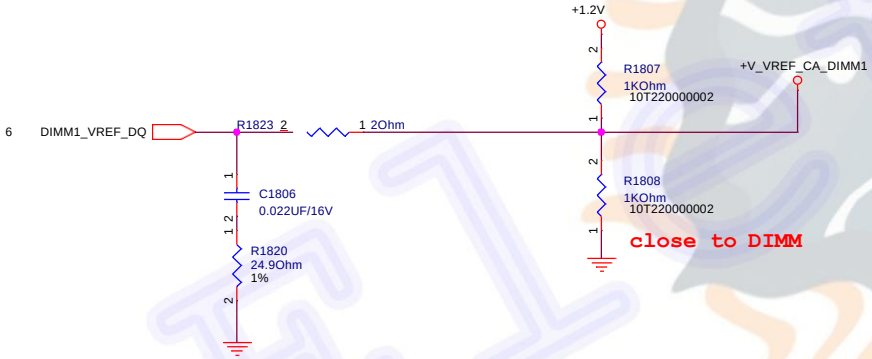


Figure 4-8. WHL U DDR4 x16 Devices Memory Down V_{REF-CA} Overview

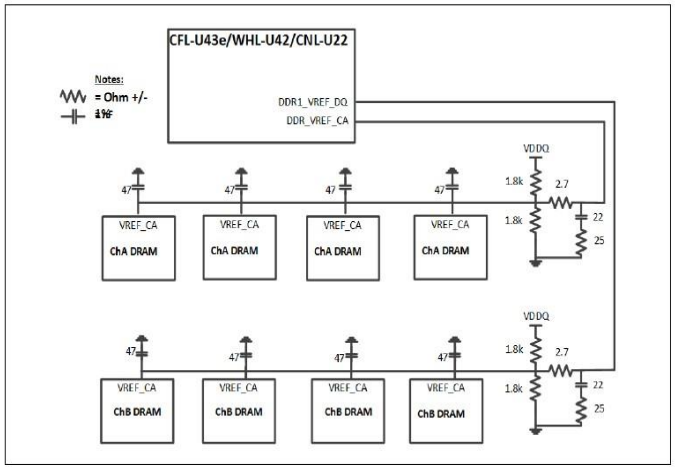
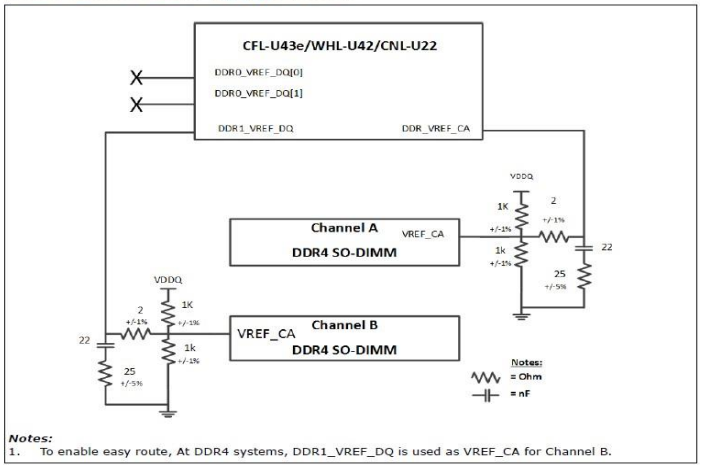


Figure 4-1. WHL U DDR4 SODIMM V_{REF-CA} Overview



Notes:

1. To enable easy route, At DDR4 systems, DDR1_VREF_DQ is used as VREF_CA for Channel B.

<Variant Name>

PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : DDR4(2) CA/DQ Volta

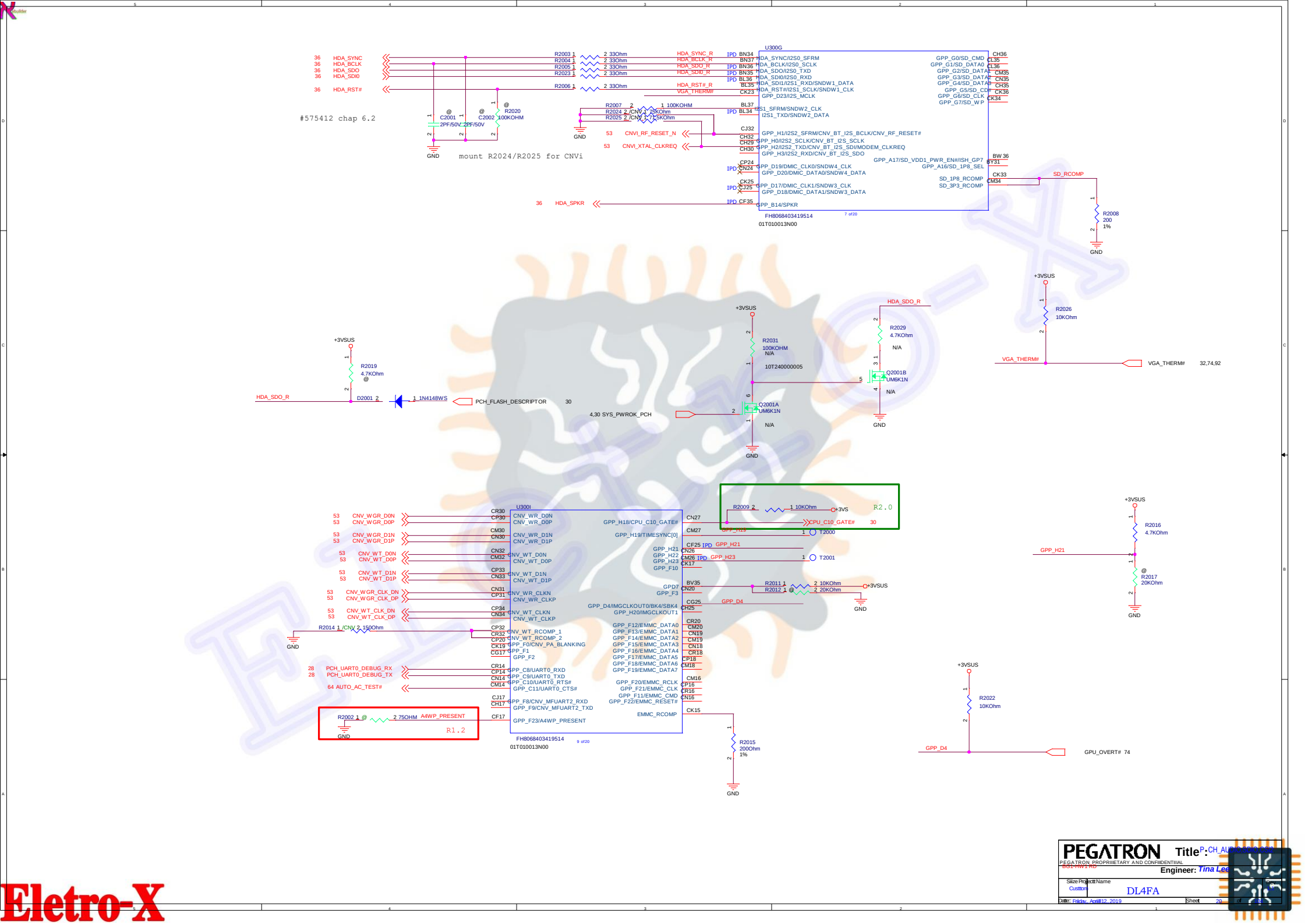
Engineer: Tina Liu

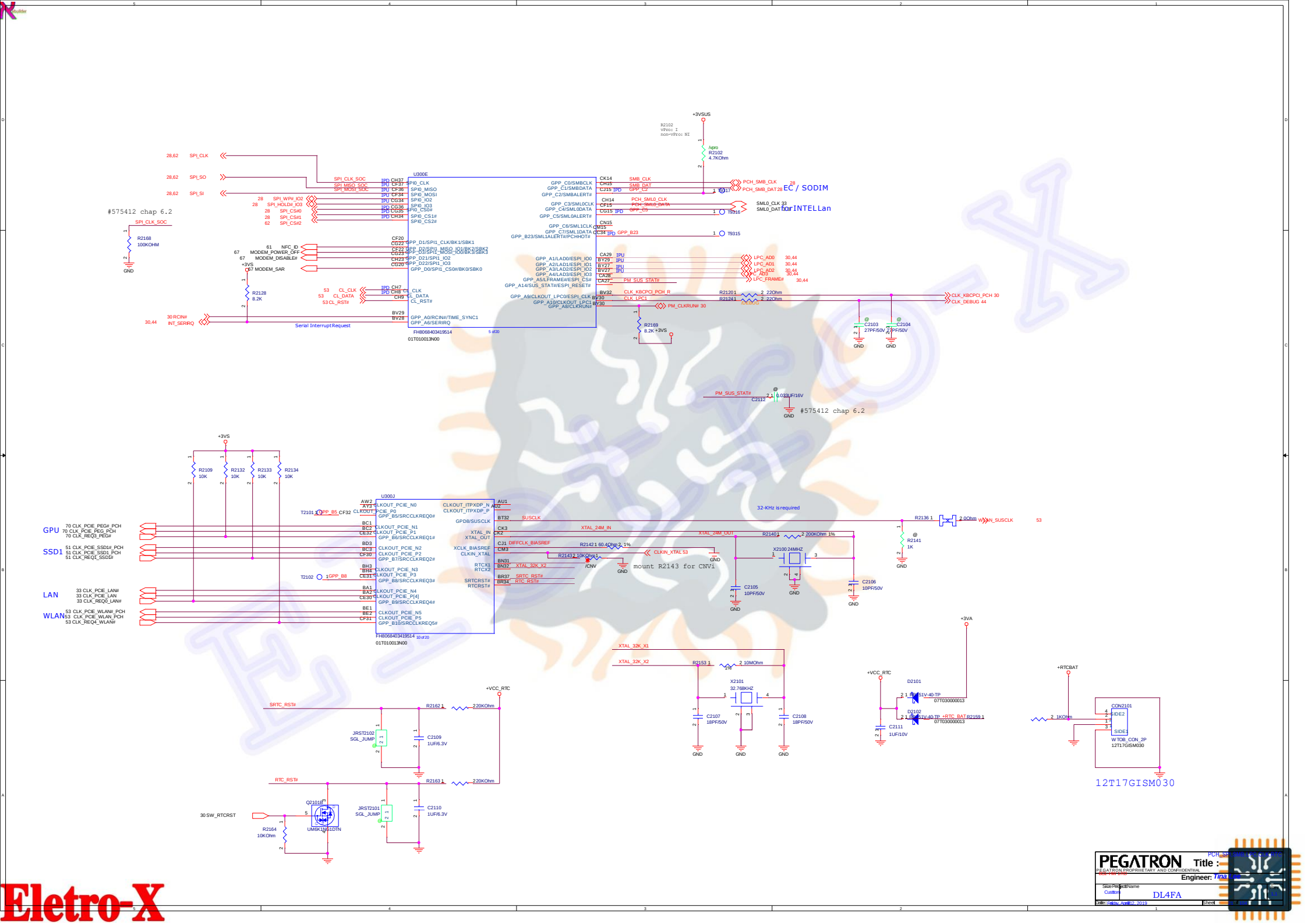
BG1-HW1 RD

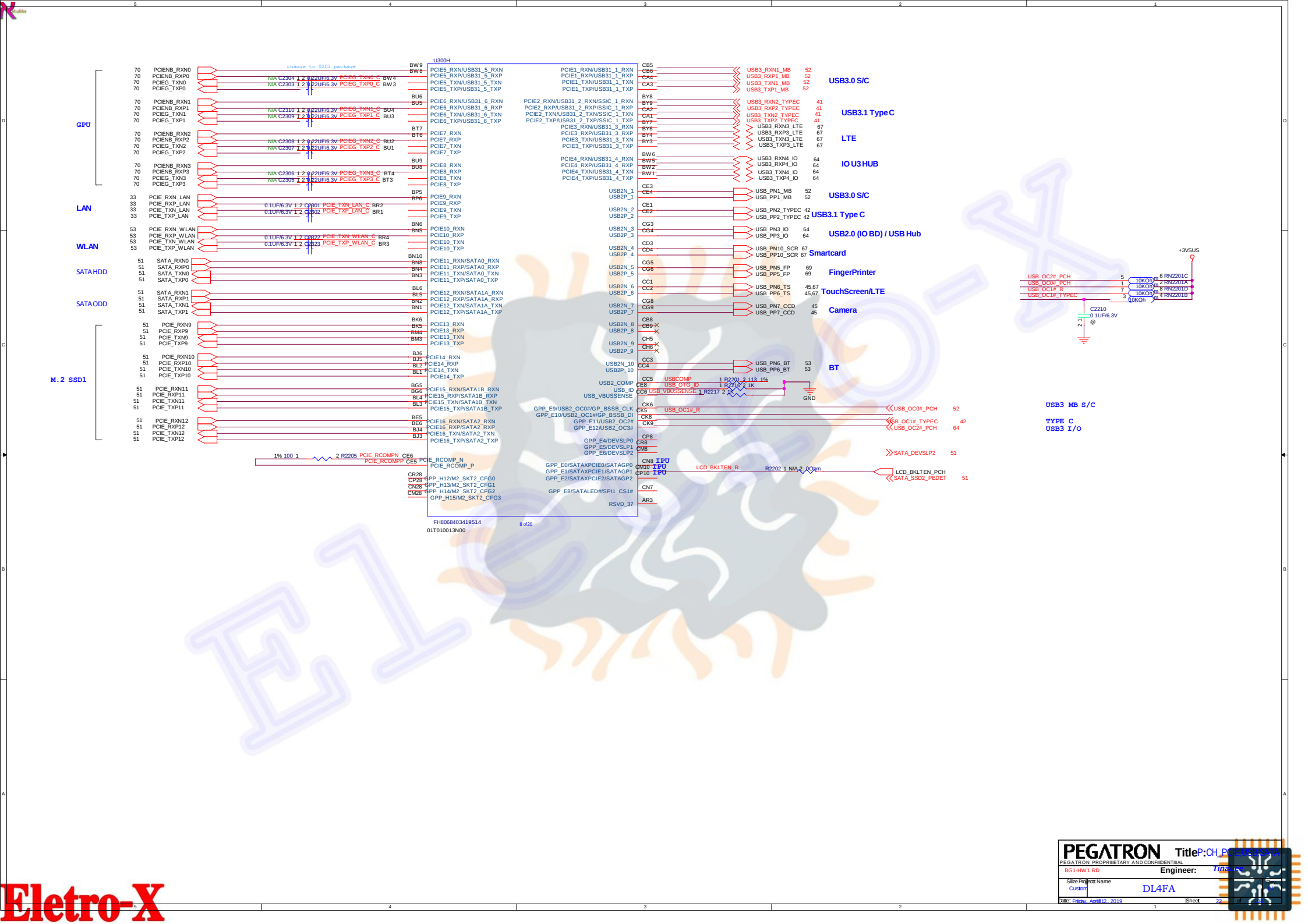
Size: Custom | Project Name: DL4FA | Rev: 1.0

Date: Friday, April 12, 2019 | Sheet 18 of 104

Eletro-X

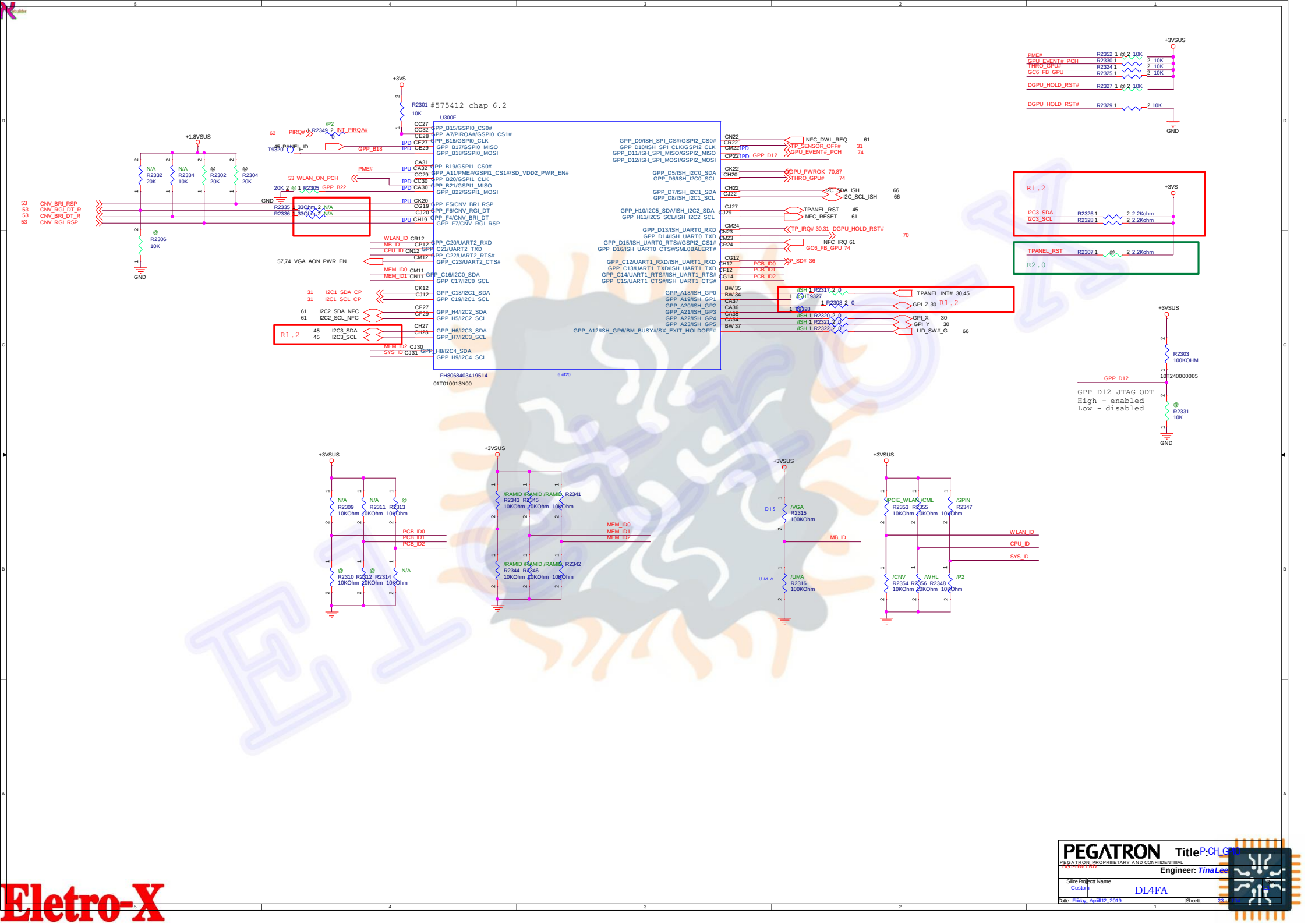

U300G
HDA_SYNC
HDA_BCLK
HDA_SDO
HDA_SDI0
HDA_RST#
#575412 chap 6.2
mount R2024/R2025 for CNVi
HDA_SPKR
FH8068403419514
01T010013N00
SD_RCOMP
VGA_THERM#
HDA_SDO_R
PCH_FLASH_DESCRIPTOR
4,30 SYS_PWROK_PCH
U300I
CNV_WGR_D0N
CNV_WGR_D0P
CNV_WGR_D1N
CNV_WGR_D1P
CNV_WT_D0N
CNV_WT_D0P
CNV_WT_D1N
CNV_WT_D1P
CNV_WGR_CLK_DN
CNV_WGR_CLK_DP
CNV_WT_CLK_DN
CNV_WT_CLK_DP
PCH_UART0_DEBUG_RX
PCH_UART0_DEBUG_TX
AUTO_AC_TEST#
A4WP_PRESENT
CPU_C10_GATE#
GPU_OVERT#
EMMC_RCOMP
FH8068403419514
01T010013N00
PEGATRON
Engineer: Tina Lee
DL4FA
Friday, April 12, 2019
Eletro-X


#575412 chap 6.2
SPI_CLK_SOC
R2168 100KOHM
SPI_CLK
SPI_SO
SPI_SI
SPI_MISO_SOC
SPI_MOSI_SOC
SPI_WP#_IO2
SPI_HOLD#_IO3
SPI_CS#0
SPI_CS#1
SPI_CS#2
U300E
SPI0_CLK
SPI0_MISO
SPI0_MOSI
SPI0_IO2
SPI0_IO3
SPI0_CS0#
SPI0_CS1#
SPI0_CS2#
NFC_ID
MODEM_POWER_OFF
MODEM_DISABLE#
MODEM_SAR
R2128 8.2K
+3VS
CL_CLK
CL_DATA
CL_RST#
30 RCIN#
INT_SERIRQ
Serial Interrupt Request
GPP_A0/RCIN#/TIME_SYNC1
GPP_A6/SERIRQ
FH8068403419514
017010013N00
5 of 20
+3VSUS
R2102 4.7KOhm
SMB_CLK
SMB_DAT
PCH_SMB_CLK
PCH_SMB_DAT
EC / SODIM
PCH_SMB0_CLK
PCH_SMB0_DATA
SML0_CLK
SML0_DAT
for INTELLan
GPP_C5/SML0ALERT#
GPP_B23
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC_FRAME#
PM_SUS_STAT#
CLK_KBCPCI_PCH_R
CLK_LPC1
PM_CLKRUN#
R21201 22Ohm
R21241 22Ohm
CLK_KBCPCI_PCH
CLK_DEBUG
C2103 27PF/50V
C2104 27PF/50V
C2112 0.033UF/16V
#575412 chap 6.2
R2169 8.2K +3VS
+3VS
R2109 10K
R2132 10K
R2133 10K
R2134 10K
U300J
GPU
SSD1
LAN
WLAN
CLKOUT_PCIE_N0
CLKOUT_PCIE_P0
CLKOUT_PCIE_N1
CLKOUT_PCIE_P1
CLKOUT_PCIE_N2
CLKOUT_PCIE_P2
CLKOUT_PCIE_N3
CLKOUT_PCIE_P3
CLKOUT_PCIE_N4
CLKOUT_PCIE_P[4]
CLKOUT_PCIE_N5
CLKOUT_PCIE_P5
GPP_B5/SRCCLKREQ0#
GPP_B6/SRCCLKREQ1#
GPP_B7/SRCCLKREQ2#
GPP_B8/SRCCLKREQ3#
GPP_B9/SRCCLKREQ4#
GPP_B10/SRCCLKREQ5#
CLKOUT_ITPXDP_N
CLKOUT_ITPXDP_P
GPD8/SUSCLK
XTAL_IN
XTAL_OUT
XCLK_BIASREF
CLKIN_XTAL
RTCX1
RTCX2
SRTCRST#
RTCRST#
32-KHz is required
R2136 2.0Ohm
WAN_SUSCLK
XTAL_24M_IN
XTAL_24M_OUT
R21401 200KOhm 1%
R21421 60.4Ohm 1%
DIFFCLK_BIASREF
R2143 10KOhm
/CNV
CLKIN_XTAL
mount R2143 for CNVi
X2100 24MHZ
C2105 10PF/50V
C2106 10PF/50V
R2141 1K
XTAL_32K_X1
XTAL_32K_X2
R2153 10MOhm
X2101 32.768KHZ
C2107 18PF/50V
C2108 18PF/50V
+3VA
+VCC_RTC
D2101
D2102
RB751V-40-TP
+RTC_BAT
R2159 1
C2111 1UF/10V
+RTCBAT
2 1KOhm
CON2101
SIDE2
SIDE1
WTOB_CON_2P
12T17GISM030
SRTC_RST#
R2162 220KOhm
JRST2102 SGL_JUMP
C2109 1UF/6.3V
RTC_RST#
R2163 220KOhm
30 SW_RTCRST
Q2101
UM6K1NGS1DTN
R2164 10KOhm
JRST2101 SGL_JUMP
C2110 1UF/6.3V
PEGATRON
Title :
Engineer: Tina
DL4FA
Eletro-X



Eletro-X

PEGATRON
PEGATRON PROPRIIETARY AND CONFIIDENTIIAL
BG1-HW1 RD
Engineer:
Size
Custom
Project Name
DL4FA
Date: Friday, April 12, 2019
Sheet 22



PEGATRON PROPRIIETARY AND CONFIIIDENTIIIAL

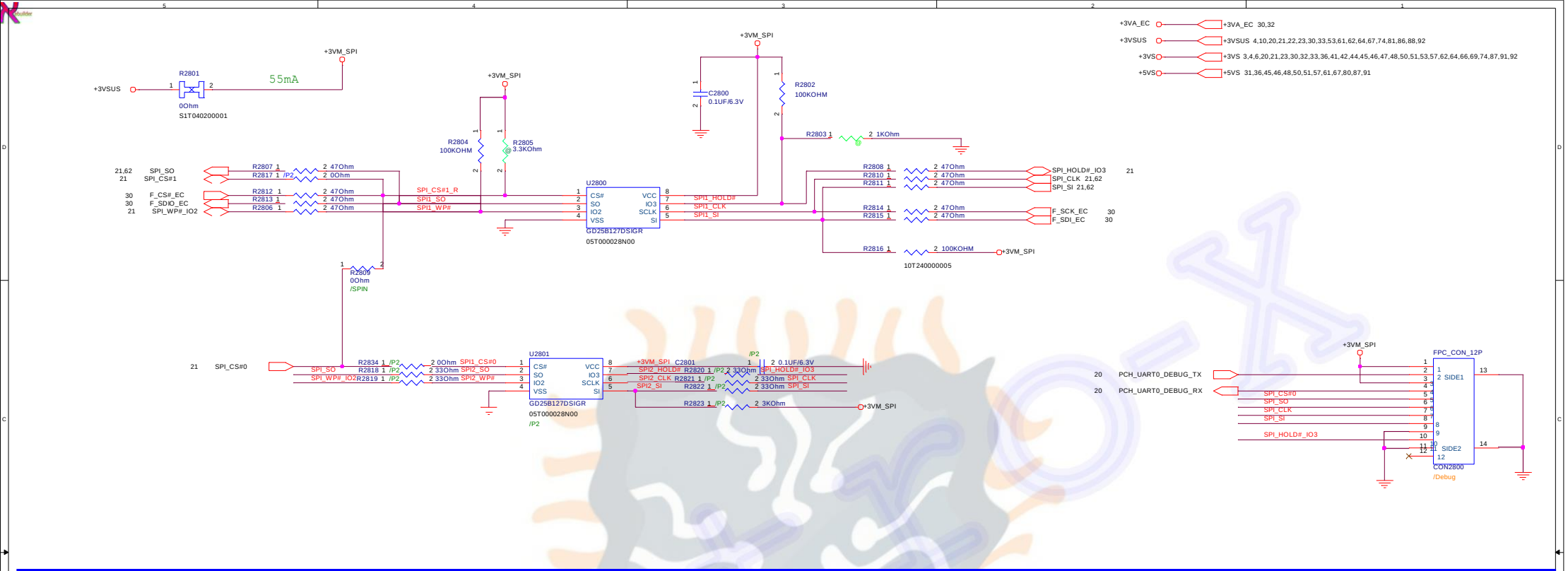
Title: P:CH_GPIO

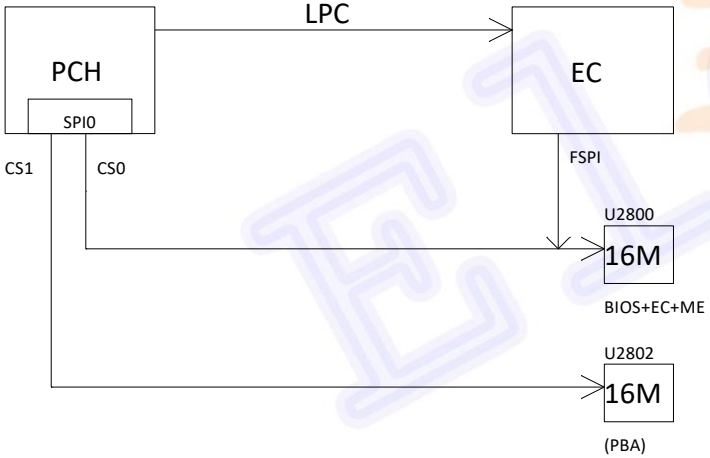
Engineer: TinaLee

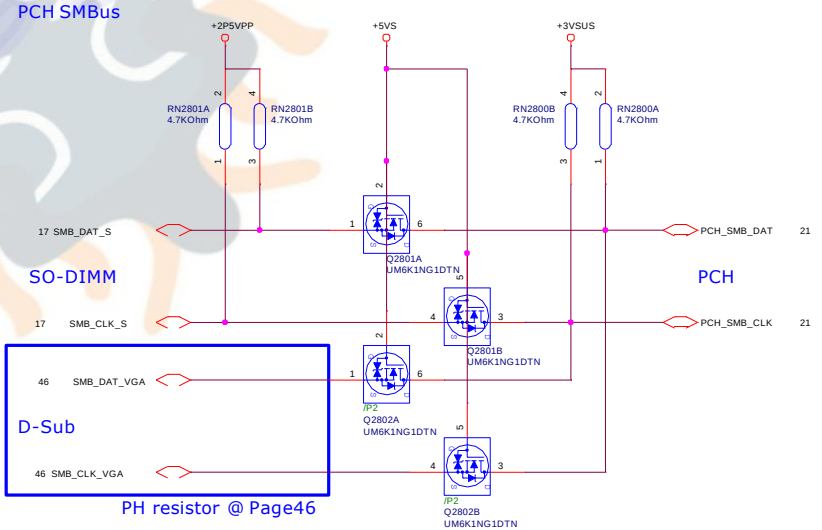
Size: Custom | Project Name: DL4FA | Rev:

Date: Friday, April 12, 2019 | Sheet: 23

Eletro-X

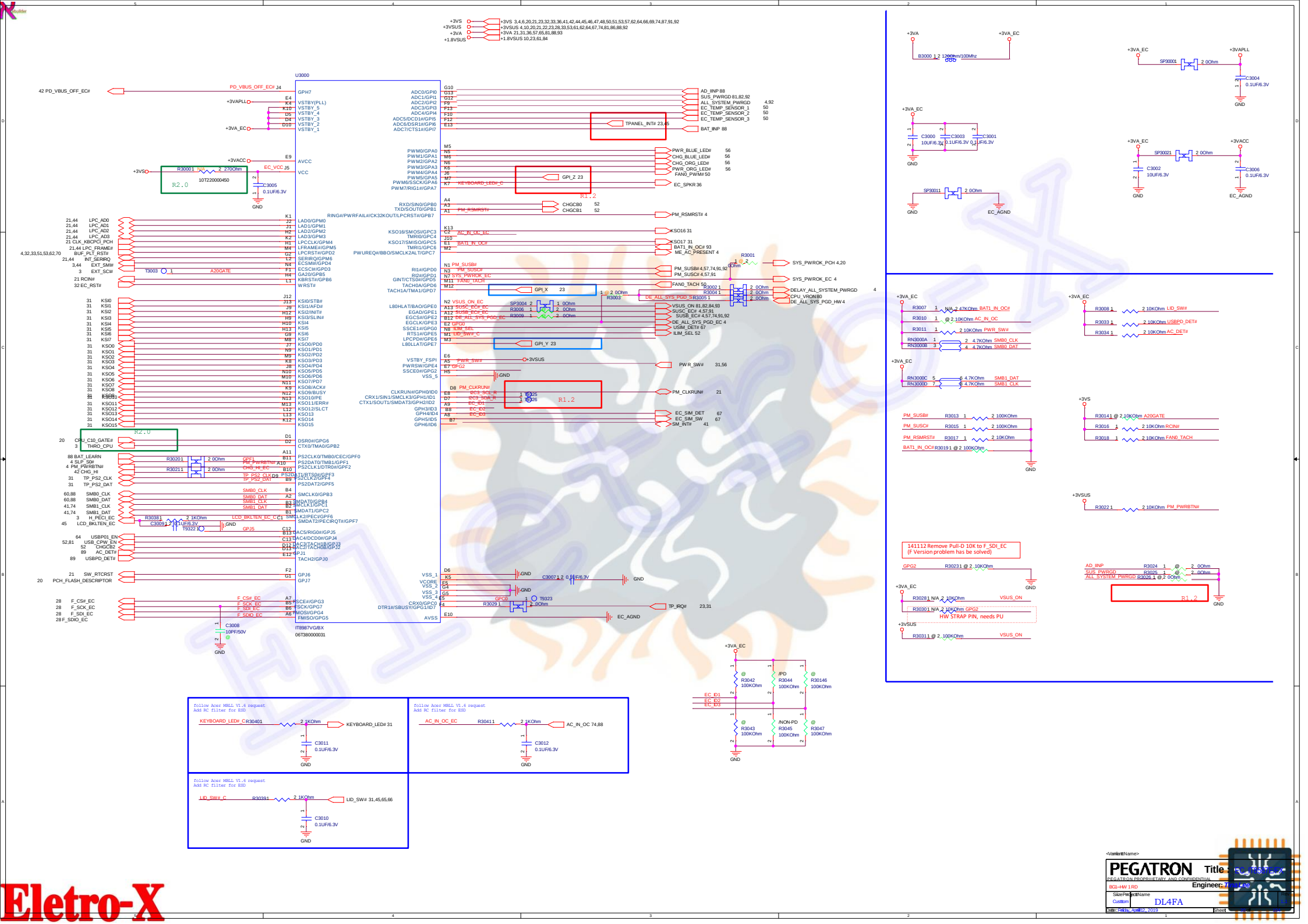


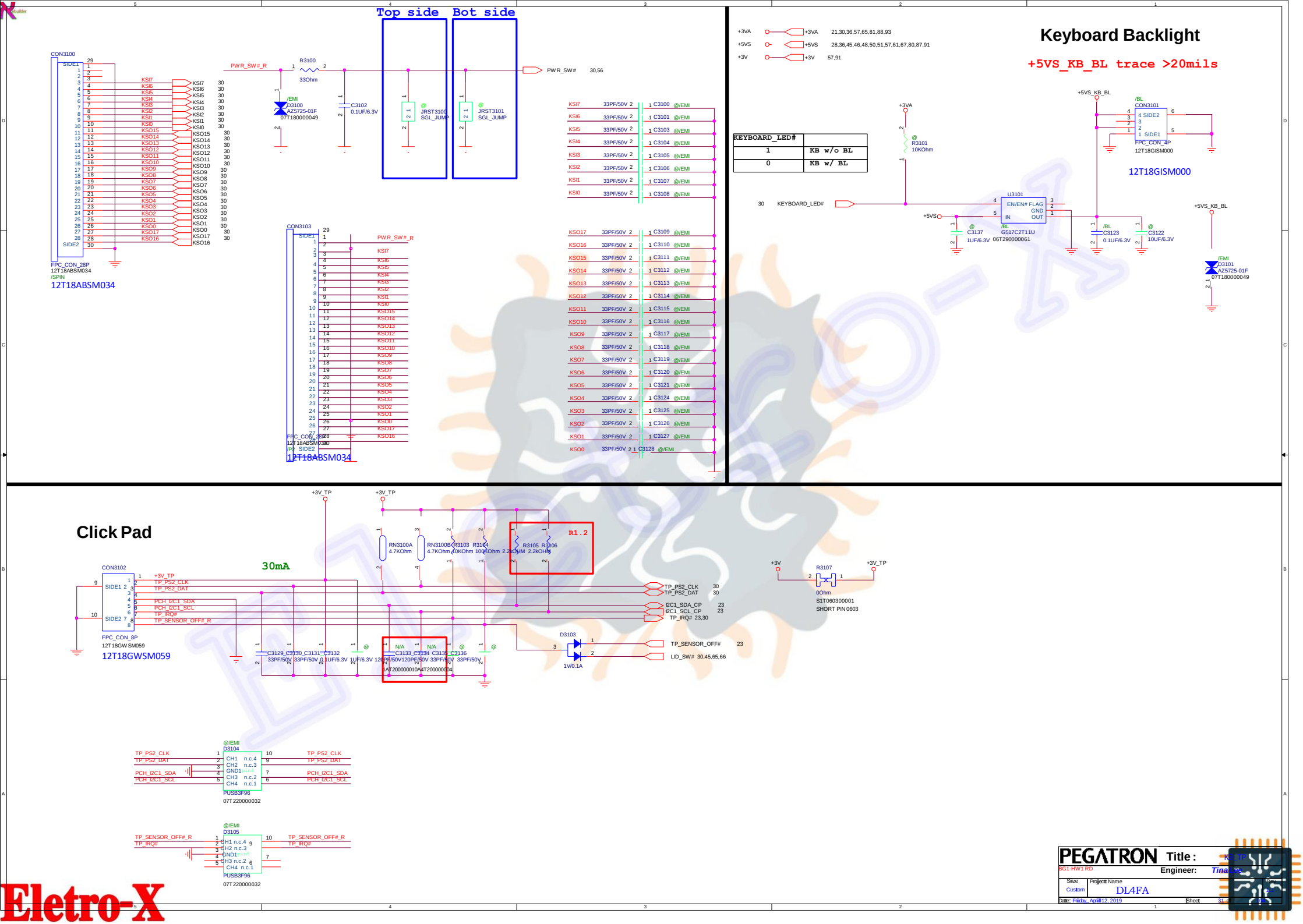


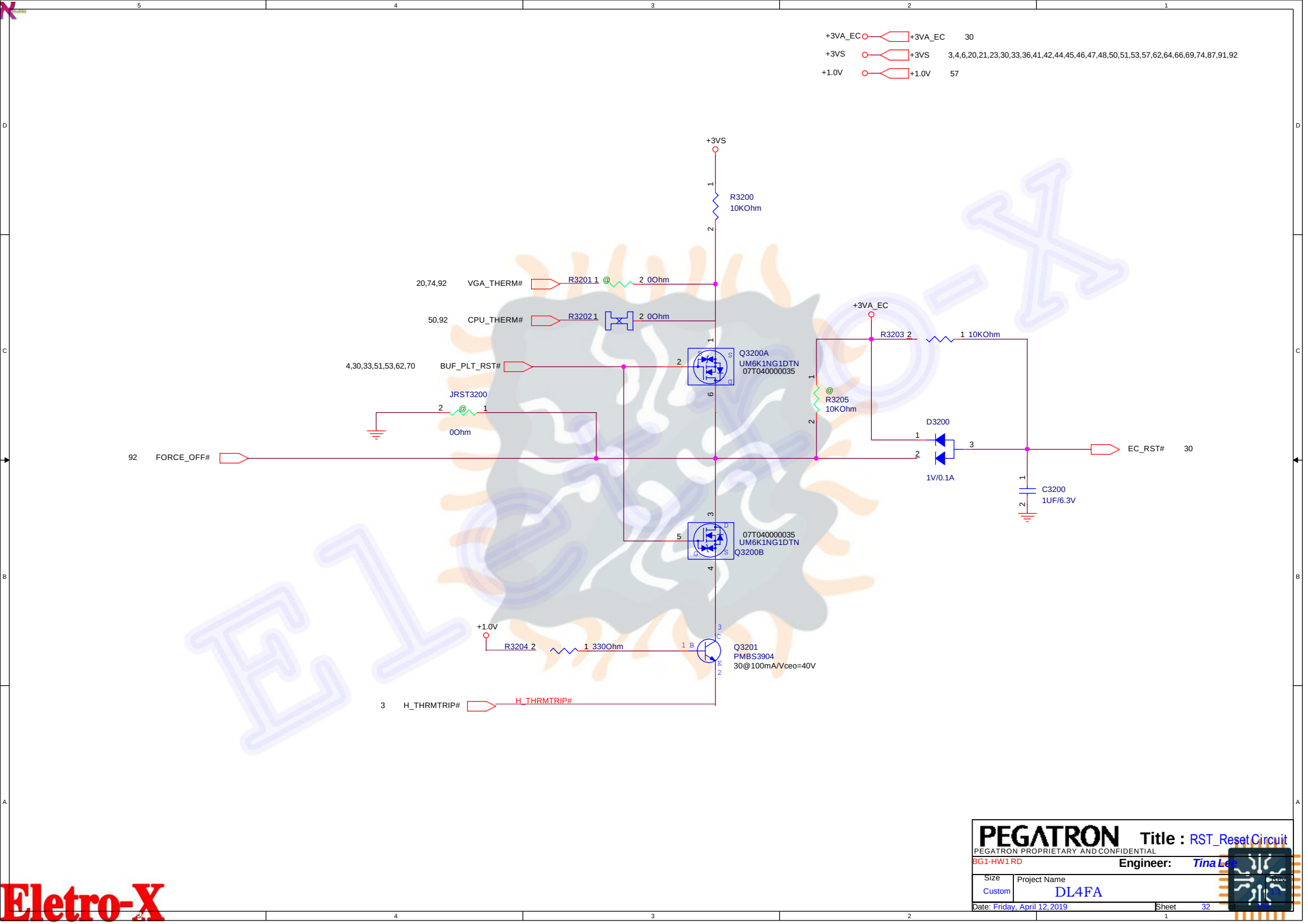


PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : PCH SPI SMB
BG1-HW1RD
Engineer: Tina Lee
Size: Custom
Project Name: DL4FA
Rev:
Date: Friday, April 12, 2019
Sheet 28 of 100

Eletro-X


U3000
IT8987VG/BX
PEGATRON
Eletro-X


Top side
Bot side
CON3100
FPC_CON_28P
12T18ABSM034
/SPIN
12T18ABSM034
PWR_SW#_R
R3100
33Ohm
PWR_SW# 30,56
/EMI
D3100
AZ5725-01F
07T180000049
C3102
0.1UF/6.3V
@ JRST3100 SGL_JUMP
@ JRST3101 SGL_JUMP
CON3103
FPC_CON_28P
12T18ABSM034
/SPIN SIDE2
12T18ABSM034
KSI7 33PF/50V C3100 @/EMI
KSI6 33PF/50V C3101 @/EMI
KSI5 33PF/50V C3103 @/EMI
KSI4 33PF/50V C3104 @/EMI
KSI3 33PF/50V C3105 @/EMI
KSI2 33PF/50V C3106 @/EMI
KSI1 33PF/50V C3107 @/EMI
KSI0 33PF/50V C3108 @/EMI
KSO17 33PF/50V C3109 @/EMI
KSO16 33PF/50V C3110 @/EMI
KSO15 33PF/50V C3111 @/EMI
KSO14 33PF/50V C3112 @/EMI
KSO13 33PF/50V C3113 @/EMI
KSO12 33PF/50V C3114 @/EMI
KSO11 33PF/50V C3115 @/EMI
KSO10 33PF/50V C3116 @/EMI
KSO9 33PF/50V C3117 @/EMI
KSO8 33PF/50V C3118 @/EMI
KSO7 33PF/50V C3119 @/EMI
KSO6 33PF/50V C3120 @/EMI
KSO5 33PF/50V C3121 @/EMI
KSO4 33PF/50V C3124 @/EMI
KSO3 33PF/50V C3125 @/EMI
KSO2 33PF/50V C3126 @/EMI
KSO1 33PF/50V C3127 @/EMI
KSO0 33PF/50V C3128 @/EMI
+3VA +3VA 21,30,36,57,65,81,88,93
+5VS +5VS 28,36,45,46,48,50,51,57,61,67,80,87,91
+3V +3V 57,91
Keyboard Backlight
+5VS_KB_BL trace >20mils
KEYBOARD_LED#
1 KB w/o BL
0 KB w/ BL
30 KEYBOARD_LED#
@ R3101 10KOhm
U3101
EN/EN# FLAG
GND
IN OUT
/BL G517C2T11U 06T290000061
@ C3137 1UF/6.3V
/BL C3123 0.1UF/6.3V
@ C3122 10UF/6.3V
+5VS_KB_BL
/BL CON3101
FPC_CON_4P
12T18GISM000
12T18GISM000
/EMI D3101 AZ5725-01F 07T180000049
Click Pad
30mA
CON3102
FPC_CON_8P
12T18GW SM059
12T18GWSM059
+3V_TP
TP_PS2_CLK
TP_PS2_DAT
PCH_I2C1_SDA
PCH_I2C1_SCL
TP_IRQ#
TP_SENSOR_OFF#_R
RN3100A 4.7KOhm
RN3100B 4.7KOhm
R3103 10KOhm
R3104 100KOhm
R3105 2.2KOHM
R3106 2.2KOHM
R1,2
C3129 C3130 C3131 C3132 33PF/50V 33PF/50V 0.1UF/6.3V 1UF/6.3V
N/A C3133 C3134 C3135 C3136 120PF/50V 33PF/50V 33PF/50V
2AT200000104 4T200000034
TP_PS2_CLK 30
TP_PS2_DAT 30
I2C1_SDA_CP 23
I2C1_SCL_CP 23
TP_IRQ# 23,30
D3103
1V/0.1A
TP_SENSOR_OFF# 23
LID_SW# 30,45,65,66
+3V
R3107
0Ohm
S1T060300001
SHORT PIN 0603
+3V_TP
@/EMI D3104 PUSB3F96 07T220000032
@/EMI D3105 PUSB3F96 07T220000032
TP_SENSOR_OFF#_R
TP_IRQ#
PEGATRON
Title : KB_TP
BG1-HW1 RD
Engineer: Tina_ge
Size Custom
Project Name DL4FA
Date: Friday, April 12, 2019
Sheet 31
Eletro-X



PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : RST_Reset Circuit

BG1-HW1 RD

Engineer: Tina Lee

Size	Project Name	
Custom	DL4FA	

Date: Friday, April 12, 2019 Sheet 32 of 32

Eletro-X

+3VS +3VS 3,4,6,20,21,23,30,32,36,41,42,44,45,46,47,48,50,51,53,57,62,64,66,69,74,87,91,92

+3VSUS +3VSUS 4,10,20,21,22,23,28,30,53,61,62,64,67,74,81,86,88,92

020J-00S6000
REALTEK/RTL8111K-CG

U3301A

34 LAN_MDI0P
34 LAN_MDI0N
34 LAN_MDI1P
34 LAN_MDI1N
34 LAN_MDI2P
34 LAN_MDI2N
34 LAN_MDI3P
34 LAN_MDI3N

13 MDI_PLUS[0]
14 MDI_MINUS[0]
17 MDI_PLUS[1]
18 MDI_MINUS[1]
20 MDI_PLUS[2]
21 MDI_MINUS[2]
23 MDI_PLUS[3]
24 MDI_MINUS[3]

VDD3P3_IN 5 +3VSUS_LAN
VDD3P3_1 4
VDD3P3_2 15 +3VSUS_LAN
VDD3P3_3 19
VDD3P3_4 29

Width > 60 mils
200 mils

200 mils

VDD10

/P2 C3307 0.1UF/6.3V
/P2 C3308 0.1UF/6.3V
/P2 C3309 0.1UF/6.3V
/P2 C3310 0.1UF/6.3V
/P2 C3312 0.1UF/6.3V
/P2 C3311 0.1UF/6.3V
/P2

GND

+3VSUS_LAN

/P2 C3320 0.1UF/6.3V
/P2 C3321 0.1UF/6.3V
/P2 C3322 0.1UF/6.3V
/P2 C3323 0.1UF/6.3V
/P2 C3318 4.7UF/6.3V
/P2 C3319 4.7UF/6.3V

GND

For surge improvement

+3VSUS_LAN +3VS

drive the ISOLATEB pin
to a voltage level
< 0.8V at the S3~S5

/219LM R3310 4.7KOhm 5%
/8111K R3306 1KOHM 5% 10T140000010
ISOLATE
/8111K R3307 15KOhm 1% 10T120000059
GND

25 LED2
27 LED1
26 LED0

COLAY

/8111K R3311 0Ohm tx_r0805_0ohm_h26

CTRL0P9 7 REGOUT
VDD10
/P2 C3306 0.1UF/6.3V
4.7uH L3301 09T030006I00 /219LM
VDD10 /219LM C3315 22UF/6.3V

VDD0P9_1 8
VDD0P9_11 11
VDD0P9_2 16
VDD0P9_3 22
VDD0P9_4 37
VDD0P9_5 40
VDD0P9_6 43
VDD0P9_7 46
VDD0P9_8 47

VDD10 GND

/219LM R3315 0Ohm
VDD10

/P2 C3313 0.1UF/6.3V
@ C3314 0.1UF/6.3V

GND

+3VSUS_LAN
40 mil
R3304 1 /P2 2 0Ohm
40 mil
+3VSUS
10T440000001
tx_r0805_0ohm_h26

1 RSVD1_VCC3P3
2 LANWAKE_N
3 LAN_DISABLE_N
6 SVR_EN_N

4,53 WAKE_PCIE#
4 LAN_WAKE#
4 LAN_DISABLE#

R3313 0Ohm 1 /8111K 2 LANWAKE#
R3312 0Ohm 1 /219LM 2 LAN_DISABLE#_R
R3314 LANSVR

@ R3316 0Ohm 5%
/P2 R3301 0Ohm 5%
+3VSUS_LAN
GND

PU 10K +3VS on CPU side

CLK_REQ_N 48 CLK_REQ0_LAN# 21
PE_RST_N 36 BUF_PLT_RST# 4,30,32,51,53,62,70
C3316 2 1 0.1UF/6.3V @ GND

PE_CLKP 44 CLK_PCIE_LAN 21
PE_CLKN 45 CLK_PCIE_LAN# 21

PL disable Switch Regulator
PU enable Switch Regulator

35 JTAG_TCK
33 JTAG_TMS
32 JTAG_TDI
34 JTAG_TDO

PETp 38 PCIE_RXP_LAN_C /P2 C3302 1
PETn 39 PCIE_RXN_LAN_C /P2 C3301 1
2 0.1UF/6.3V
2 0.1UF/6.3V
PCIE_RXP_LAN 22
PCIE_RXN_LAN 22

PERp 41 PCIE_TXP_LAN 22
PERn 42 PCIE_TXN_LAN 22

SMB_CLK 28 SML0_CLK
SMB_DATA 31 SML0_DAT

XTAL_IN
XTAL_OUT

/P2 X3301 25MHZ
/P2 C3303 10PF/50V 5%
/P2 C3304 10PF/50V 5%
GND GND GND

I219_Test_En
I219_RBIAS

30 TEST_EN
12 RBIAS
49 GND

XTAL_IN 10 XTAL_IN
XTAL_OUT 9 XTAL_OUT

/219LM R3303 1KOHM 5%
/8111K R3302 2.49KOhm 1%
/219LM R3308 3.01KOHM 1%
COLAY
GND

U3301B
50 GND1
51 GND2
52 GND3
53 GND4
54 GND5
55 GND6
56 GND7
57 GND8
WGI219LM
02T000014NPB
/LAN
GND

WGI219LM
02T000014NPB
/LAN

+3VSUS_LAN

/219LM R3305 499ohm
/219LM R3309 499ohm
10T12M009N100T12M009N00

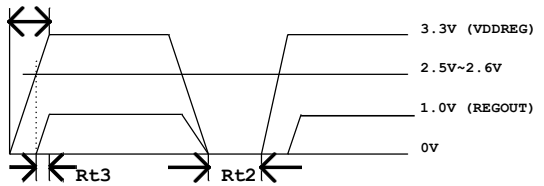
SML0_CLK 21
SML0_DAT 21

If LAN is the only device on SMBUS, the SMBUS pull-up can be on +3.3V_LAN.

+3.3V_A is always on during G3->S5, S0, Sx, and DeepSx states.

Power sequence

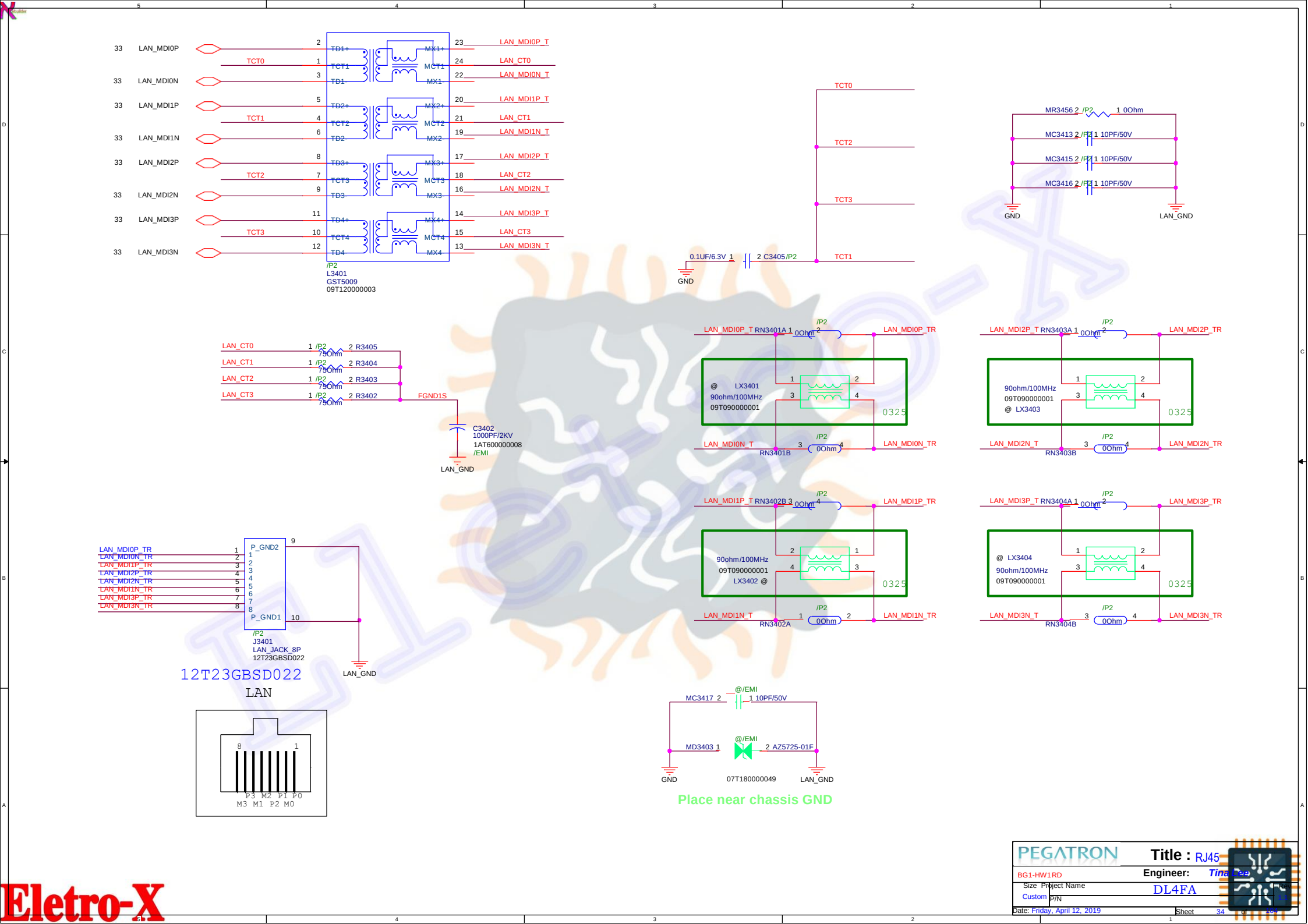
3.3V rising time must be more than 0.5ms and less than 100ms.



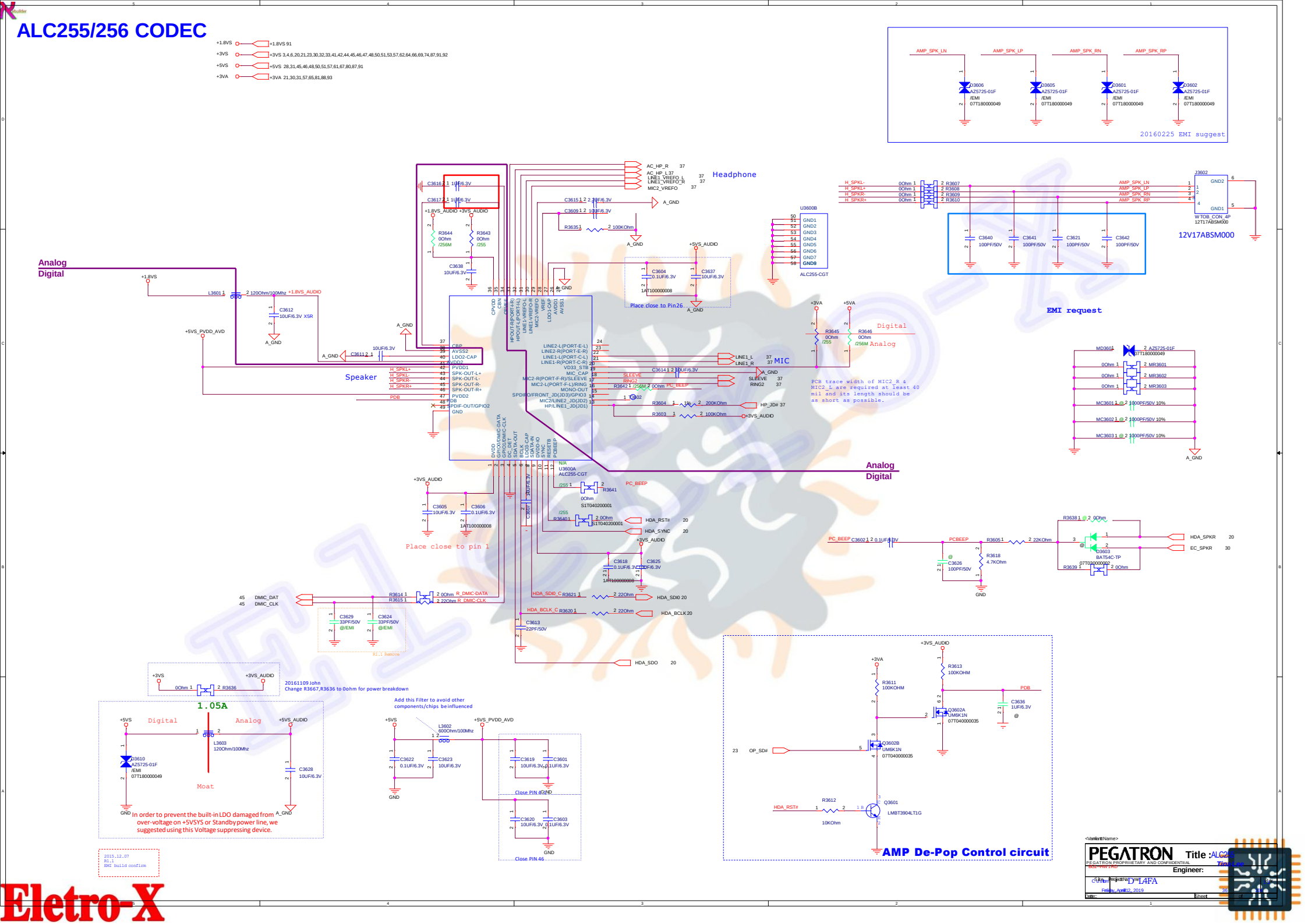
	Min.	Typical	Max.	Units
Rt1	0.5	-	100	ms
Rt2	50	-	-	ms
Rt3	-	-	15	ms

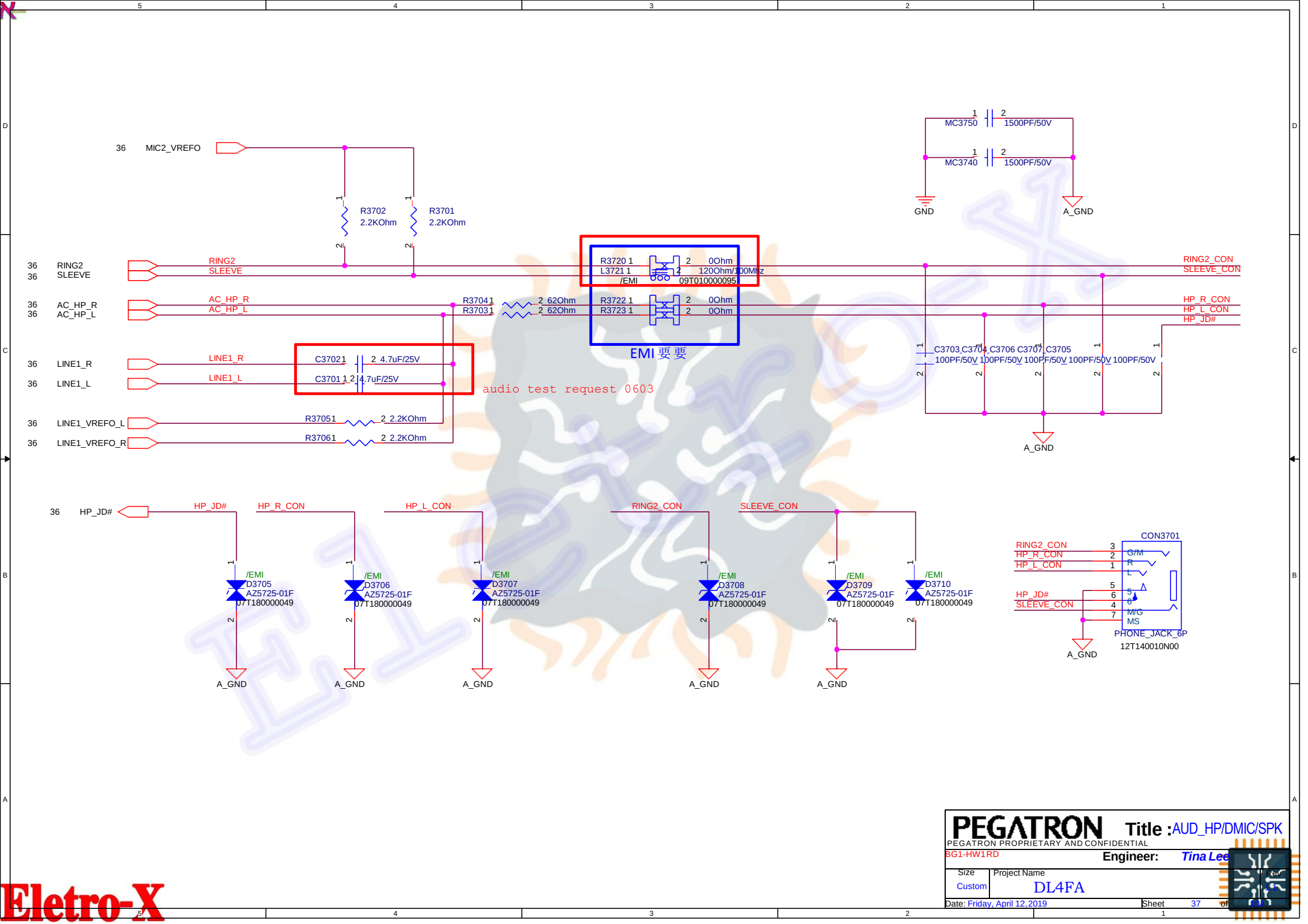
PEGATRON
Title : Realtek 8111
BG1-HW1RD
Engineer: Tina Lee
Size Project Name DL4FA
Custom P/N
Date: Friday, April 12, 2019 Sheet 33 of

Eletro-X


33 LAN_MDI0P
33 LAN_MDI0N
33 LAN_MDI1P
33 LAN_MDI1N
33 LAN_MDI2P
33 LAN_MDI2N
33 LAN_MDI3P
33 LAN_MDI3N
TCT0
TCT1
TCT2
TCT3
TD1+ TCT1 TD1
TD2+ TCT2 TD2
TD3+ TCT3 TD3
TD4+ TCT4 TD4
MX1+ MCT1 MX1
MX2+ MCT2 MX2
MX3+ MCT3 MX3
MX4+ MCT4 MX4
LAN_MDI0P_T
LAN_CT0
LAN_MDI0N_T
LAN_MDI1P_T
LAN_CT1
LAN_MDI1N_T
LAN_MDI2P_T
LAN_CT2
LAN_MDI2N_T
LAN_MDI3P_T
LAN_CT3
LAN_MDI3N_T
/P2
L3401
GST5009
09T120000003
LAN_CT0
LAN_CT1
LAN_CT2
LAN_CT3
/P2 75Ohm R3405
/P2 75Ohm R3404
/P2 75Ohm R3403
/P2 75Ohm R3402
FGND1S
C3402
1000PF/2KV
1AT600000008
/EMI
LAN_GND
LAN_MDI0P_TR
LAN_MDI0N_TR
LAN_MDI1P_TR
LAN_MDI2P_TR
LAN_MDI2N_TR
LAN_MDI1N_TR
LAN_MDI3P_TR
LAN_MDI3N_TR
P_GND2
P_GND1
/P2
J3401
LAN_JACK_8P
12T23GBSD022
12T23GBSD022
LAN
8 1
P3 M2 P1 P0
M3 M1 P2 M0
TCT0
TCT2
TCT3
TCT1
0.1UF/6.3V
C3405 /P2
GND
MR3456 /P2 0Ohm
MC3413 /P2 10PF/50V
MC3415 /P2 10PF/50V
MC3416 /P2 10PF/50V
GND
LAN_GND
LAN_MDI0P_T RN3401A 0Ohm LAN_MDI0P_TR
@ LX3401
90ohm/100MHz
09T090000001
0325
LAN_MDI0N_T RN3401B 0Ohm LAN_MDI0N_TR
LAN_MDI2P_T RN3403A 0Ohm LAN_MDI2P_TR
90ohm/100MHz
09T090000001
@ LX3403
0325
LAN_MDI2N_T RN3403B 0Ohm LAN_MDI2N_TR
LAN_MDI1P_T RN3402B 0Ohm LAN_MDI1P_TR
90ohm/100MHz
09T090000001
LX3402 @
0325
LAN_MDI1N_T RN3402A 0Ohm LAN_MDI1N_TR
LAN_MDI3P_T RN3404A 0Ohm LAN_MDI3P_TR
@ LX3404
90ohm/100MHz
09T090000001
0325
LAN_MDI3N_T RN3404B 0Ohm LAN_MDI3N_TR
MC3417 @/EMI 10PF/50V
MD3403 @/EMI AZ5725-01F
GND
07T180000049
LAN_GND
Place near chassis GND
PEGATRON
Title : RJ45
BG1-HW1RD
Engineer: Tina Lee
Size Project Name
Custom DL4FA
P/N
Date: Friday, April 12, 2019
Sheet 34 of 204

ALC255/256 CODEC





PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : AUD_HP/DMIC/SPK

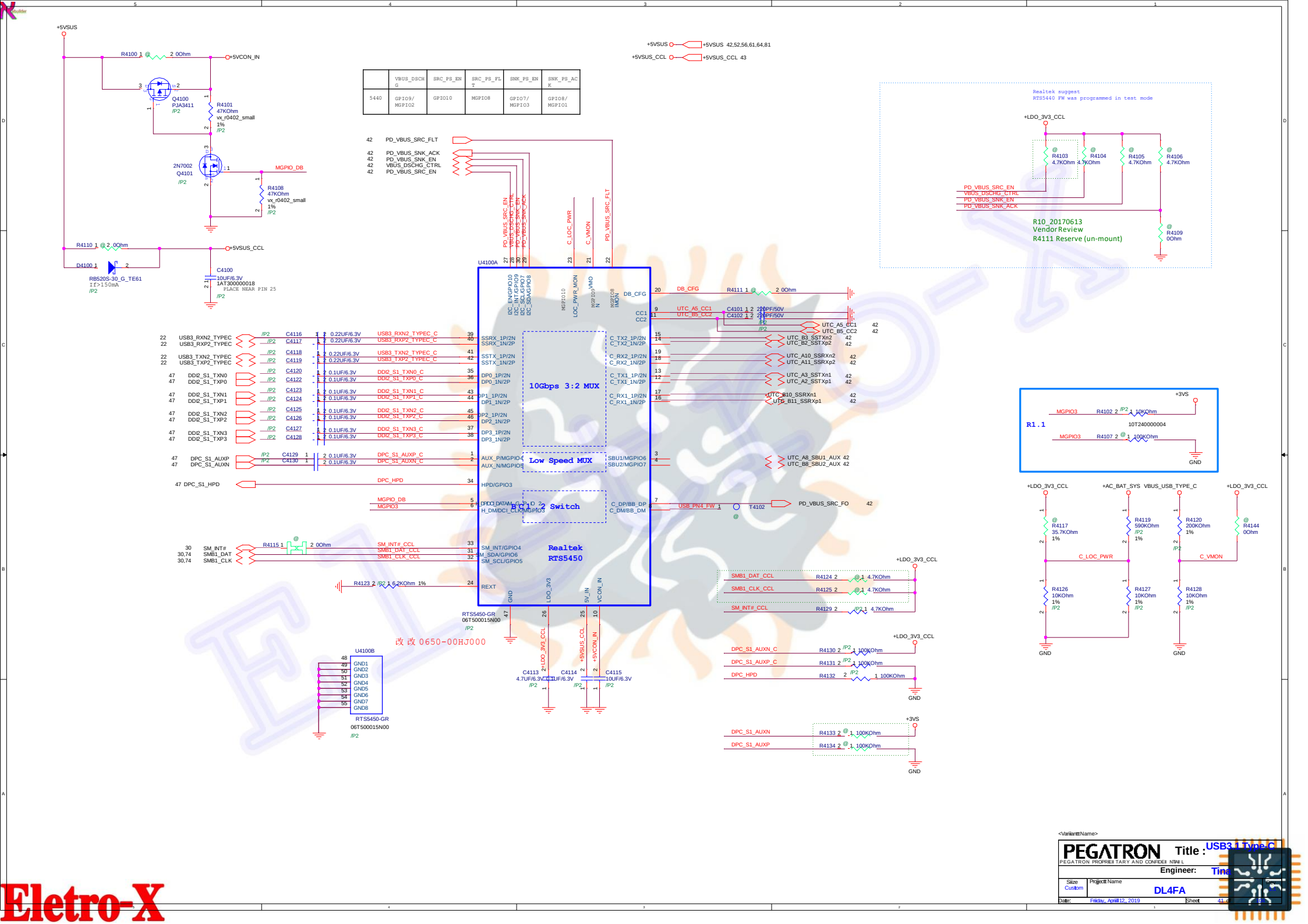
BG1-HW1RD

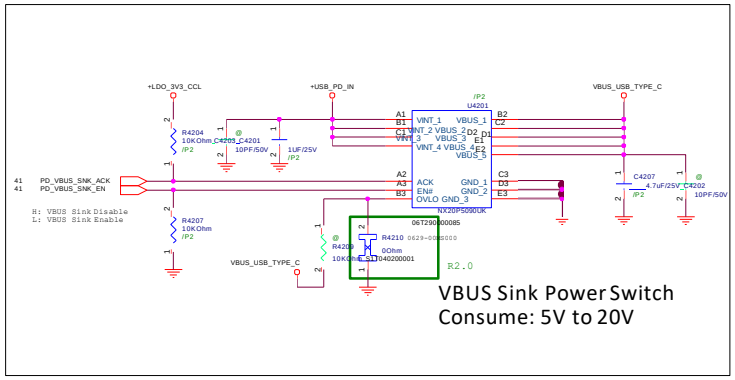
Engineer: Tina Lee

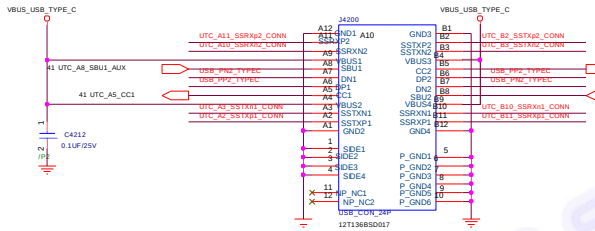
Size	Project Name	Rev
Custom	DL4FA	

Date: Friday, April 12, 2019 Sheet 37 of

Eletro-X

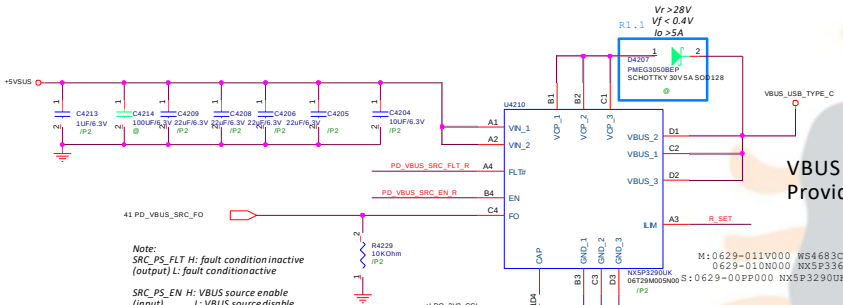

+5VSUS
R4100 1 @ 2 0Ohm
+5VCON_IN
Q4100
PJA3411
/P2
R4101
47KOhm
vx_r0402_small
1%
/P2
2N7002
Q4101
/P2
MGPIO_DB
R4108
47KOhm
vx_r0402_small
1%
/P2
R4110 1 @ 2 0Ohm
+5VSUS_CCL
D4100 1 2
RB520S-30_G_TE61
If>150mA
/P2
C4100
10UF/6.3V
1AT3000000018
PLACE NEAR PIN 25
/P2
+5VSUS 42,52,56,61,64,81
+5VSUS_CCL 43
VBUS_DSCHG
SRC_PS_EN
SRC_PS_FLT
SNK_PS_EN
SNK_PS_ACK
5440
GPIO9/ MGPIO2
GPIO10
MGPIO8
GPIO7/ MGPIO3
GPIO8/ MGPIO1
42 PD_VBUS_SRC_FLT
42 PD_VBUS_SNK_ACK
42 PD_VBUS_SNK_EN
42 VBUS_DSCHG_CTRL
42 PD_VBUS_SRC_EN
U4100A
10Gbps 3:2 MUX
Low Speed MUX
BC1.2 Switch
Realtek
RTS5450
RTS5450-GR
06T500015N00
/P2
DB_CFG
R4111 1 @ 2 0Ohm
C4101 1 2 220PF/50V
C4102 1 2 220PF/50V
UTC_A5_CC1
UTC_B5_CC2
C_TX2_1P/2N
C_TX2_1N/2P
C_RX2_1P/2N
C_RX2_1N/2P
C_TX1_1P/2N
C_TX1_1N/2P
C_RX1_1P/2N
C_RX1_1N/2P
UTC_B3_SSTXn2
UTC_B2_SSTXp2
UTC_A10_SSRXn2
UTC_A11_SSRXp2
UTC_A3_SSTXn1
UTC_A2_SSTXp1
UTC_B10_SSRXn1
UTC_B11_SSRXp1
UTC_A8_SBU1_AUX
UTC_B8_SBU2_AUX
USB_PN4_FW 1
T4102
PD_VBUS_SRC_FO
USB3_RXN2_TYPEC_C
USB3_RXP2_TYPEC_C
USB3_TXN2_TYPEC_C
USB3_TXP2_TYPEC_C
DDI2_S1_TXN0_C
DDI2_S1_TXP0_C
DDI2_S1_TXN1_C
DDI2_S1_TXP1_C
DDI2_S1_TXN2_C
DDI2_S1_TXP2_C
DDI2_S1_TXN3_C
DDI2_S1_TXP3_C
DPC_S1_AUXP_C
DPC_S1_AUXN_C
DPC_HPD
SM_INT#_CCL
SMB1_DAT_CCL
SMB1_CLK_CCL
R4123 2 /P2 1 6.2KOhm 1%
R4115 1 @ 2 0Ohm
U4100B
RTS5450-GR
06T500015N00
/P2
改改 0650-00HJ000
R4124 2 @ 1 4.7KOhm
R4125 2 @ 1 4.7KOhm
R4129 2 /P2 1 4.7KOhm
R4130 2 /P2 1 100KOhm
R4131 2 /P2 1 100KOhm
R4132 2 /P2 1 100KOhm
R4133 2 @ 1 100KOhm
R4134 2 @ 1 100KOhm
C4113 4.7UF/6.3V /P2
C4114 1UF/6.3V /P2
C4115 10UF/6.3V /P2
Realtek suggest
RTS5440 FW was programmed in test mode
+LDO_3V3_CCL
R4103 4.7KOhm
R4104 4.7KOhm
R4105 4.7KOhm
R4106 4.7KOhm
PD_VBUS_SRC_EN
VBUS_DSCHG_CTRL
PD_VBUS_SNK_EN
PD_VBUS_SNK_ACK
R10_20170613
Vendor Review
R4111 Reserve (un-mount)
R4109 0Ohm
+3VS
R1.1
MGPIO3
R4102 2 /P2 1 10KOhm
10T240000004
R4107 2 @ 1 100KOhm
GND
+AC_BAT_SYS
VBUS_USB_TYPE_C
R4117 35.7KOhm 1%
R4119 590KOhm /P2 1%
R4120 200KOhm 1%
R4144 0Ohm
C_LOC_PWR
C_VMON
R4126 10KOhm 1% /P2
R4127 10KOhm 1% /P2
R4128 10KOhm 1% /P2
<VariantName>
PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : USB3.1 Type-C
Engineer: Tina
Size Custom
Project Name DL4FA
Date: Friday, April 12, 2019
Sheet 41
Eletro-X

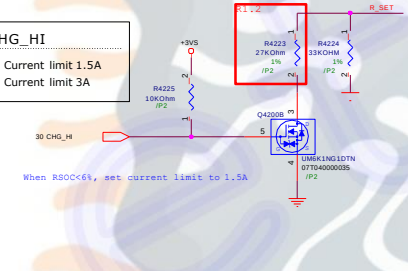


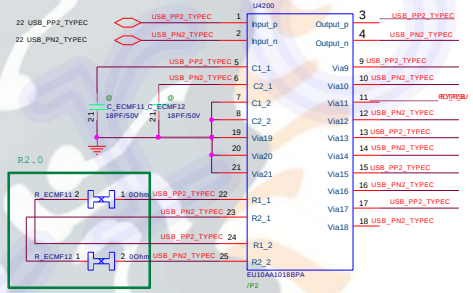


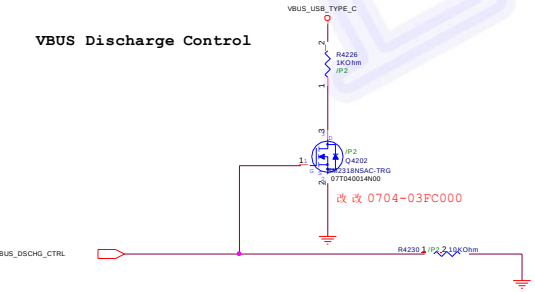
USB Type C Connector

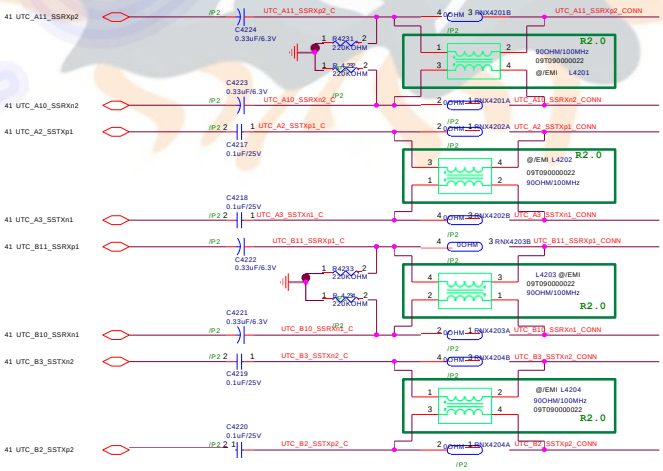
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
GND	TX1+	TX1-	Vbus	CC1	D+	D-	SBU1	Vbus	RX2-	RX2+	GND
GND	RX1+	RX1-	Vbus	SBU2	D-	D+	CC2	Vbus	TX2-	TX2+	GND
B12	B11	B10		B9	B8	B7	B6	B5	B4	B3	B2	B1

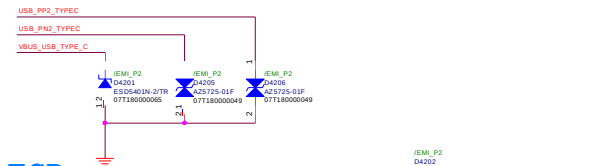


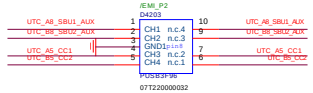


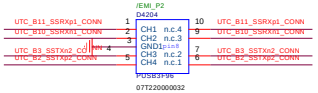


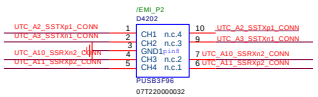


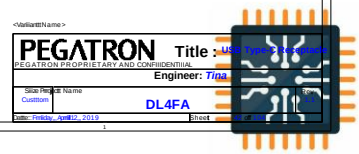










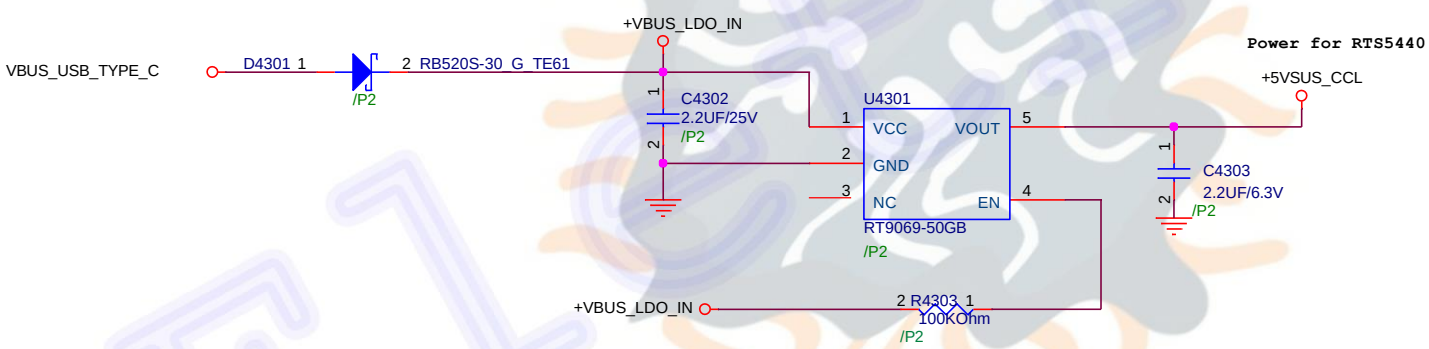


Eletro-X

Hardware Solution For Dead Battery

For notebook applications, if the battery charger needs higher voltage than
5V to operate correctly, execute the steps below in the order they are listed:

VBUS_USB_TYPE_C	VBUS_USB_TYPE_C	41,42
+AC_BAT_SYS	+AC_BAT_SYS	41,45,80,81,82,83,85,87,88
+5VSUS_CCL	+5VSUS_CCL	41



<Variant Name>

PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : Dead Battery

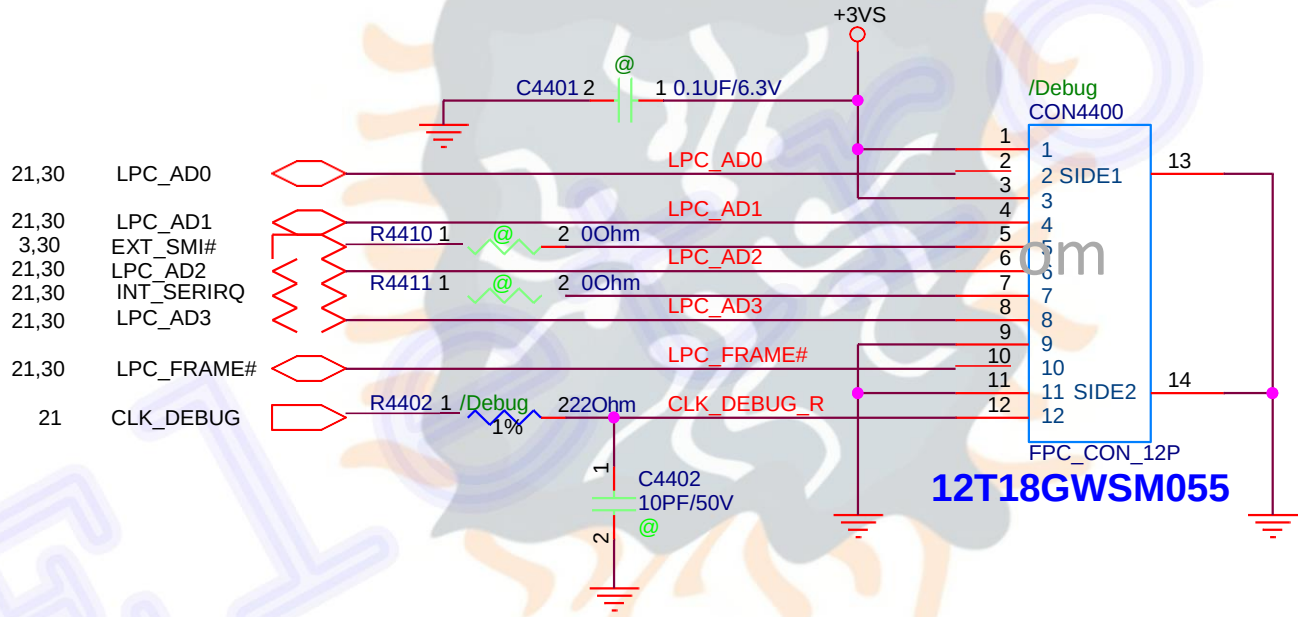
Engineer: Tina

Size	Project Name	Rev
Custom	DL4FA	

Date: Friday, April 12, 2019 Sheet 43 of 101

Eletro-X

+3VS +3VS 3,4,6,20,21,23,30,32,33,36,41,42,45,46,47,48,50,51,53,57,62,64,66,69,74,87,91,92



PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : DEBUG CONN.

BG1-HW1 RD

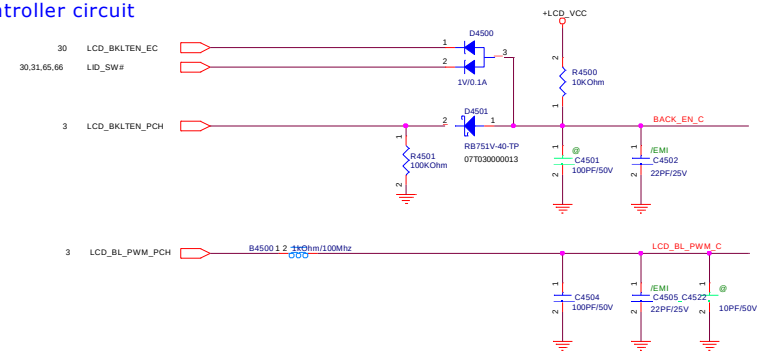
Engineer: Tina Lee

Size	Project Name	Rev
Custom	DL4FA	1.0

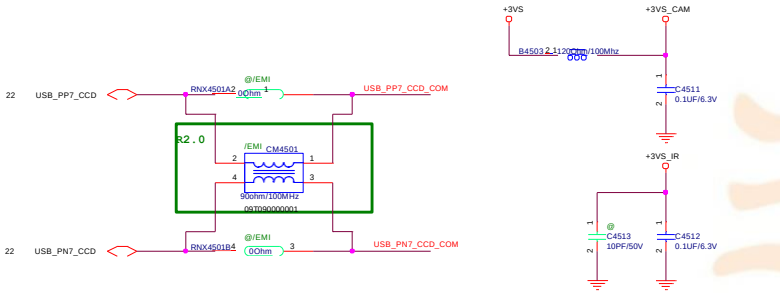
Date: Friday, April 12, 2019 Sheet 44 of 107

Eletro-X

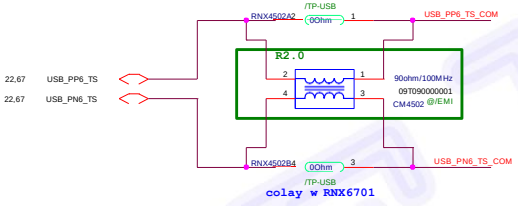
Controller circuit

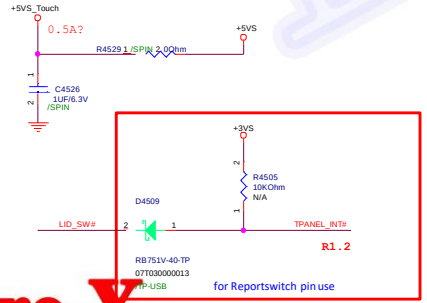


Camera

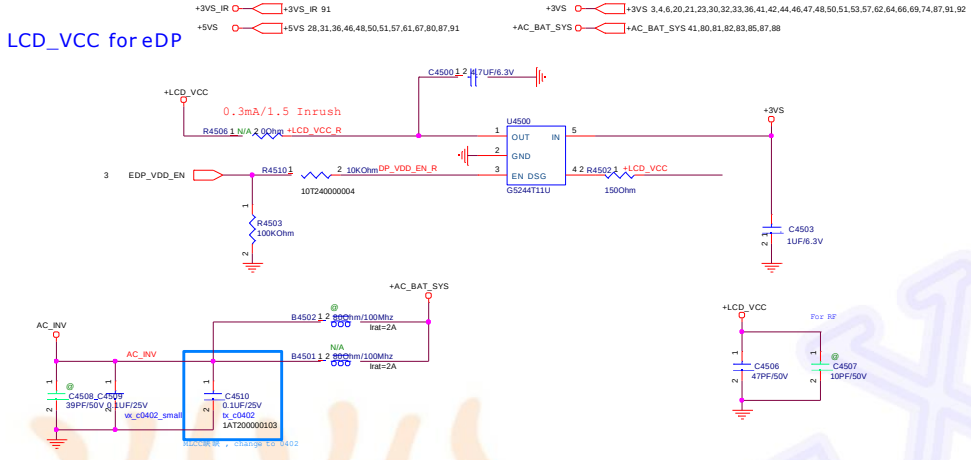


Touch panel





LCD_VCC for eDP



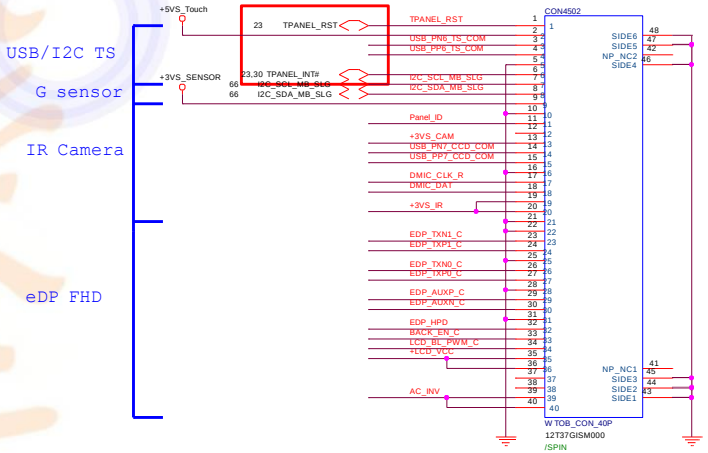
eDP HPD

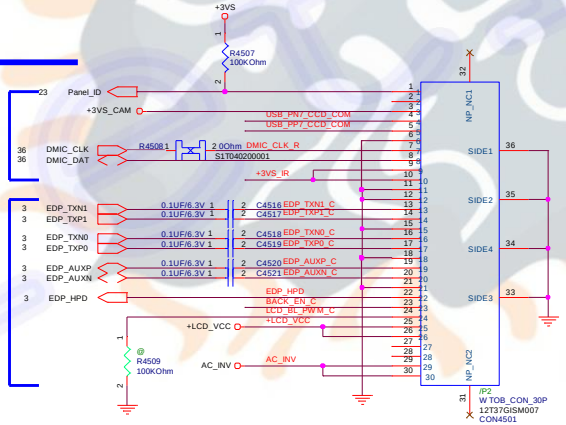
USB/I2C TS

G sensor

IR Camera

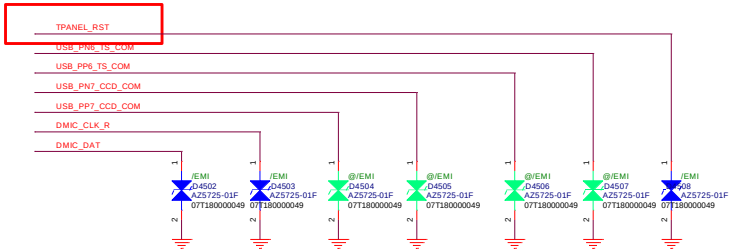
eDP FHD





12T37GISM007

	Panel_ID
14"	NC
15"	GND

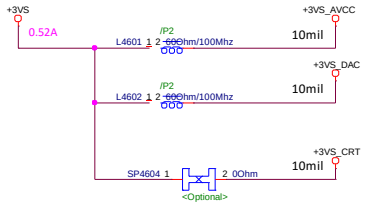


PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title
BG1-HW1RD
Engineer:
Size: Custtom
Project Name: DL4FA
Rev:
Date: Friday, April 12, 2019
Sheet 45 of 108

Eletro-X

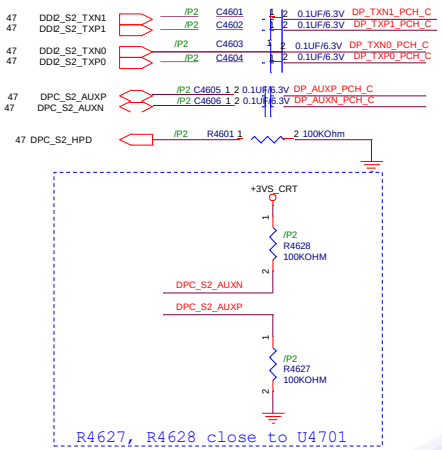
DP2VGA Realtek RTD2166

Power



CPU Interface

DP main link total length < 8 inch
VIA < 2



Rom / Flash Mode :

		POL1 (Pin10)	
		0	1
POL2 (Pin9)	0	No Use	No Use
	1	**(V) Rom mode**	Ext Flash mode

Embedded EDID setting :

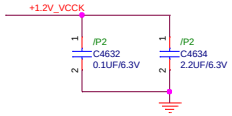
EDID_SET (Pin11)	Mode
0 or NC	**(V) Disable RTD2166 Embedded EDID**
1	Enable RTD2166 Embedded EDID

LDO Mode :

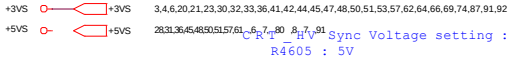
LDO_RSTB (Pin27)	Mode
1 or NC	**(V)**
0	External 1.2V Mode

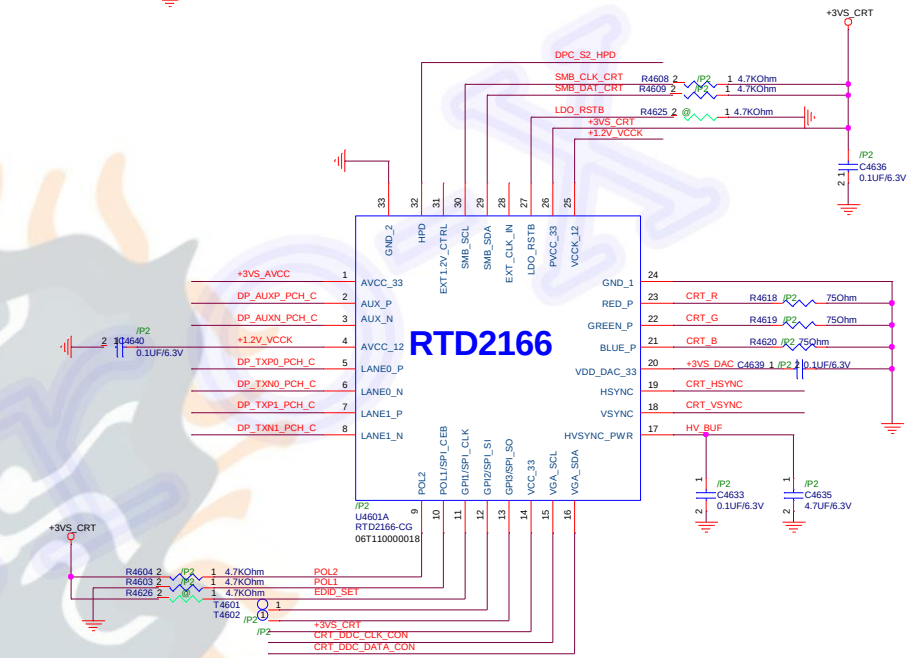
1: Pull High 0: Pull Down

+1.2V_VCCK :
Max length < 600 mil
min trace width > 20 mil
C4640, C4632, C4634 close to chip < 200 mil

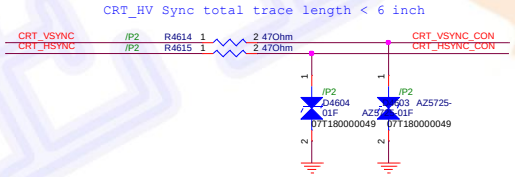


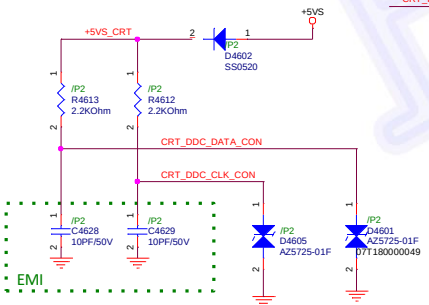
CRT_HV Sync Voltage setting :
R4605 : 5V
R4606 : 3.3V



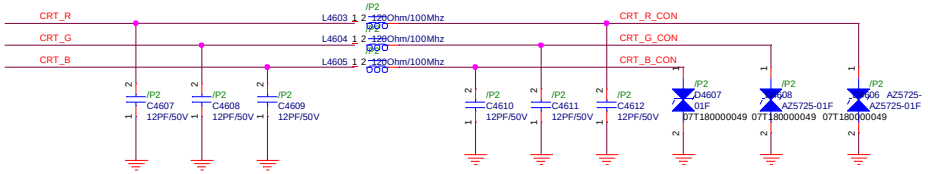


CRT_HV Sync total trace length < 6 inch



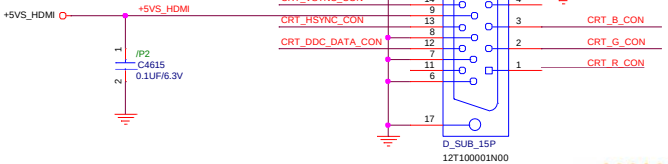


Max mismatch between RGB signal < 200 mil,
total trace length < 6 inch



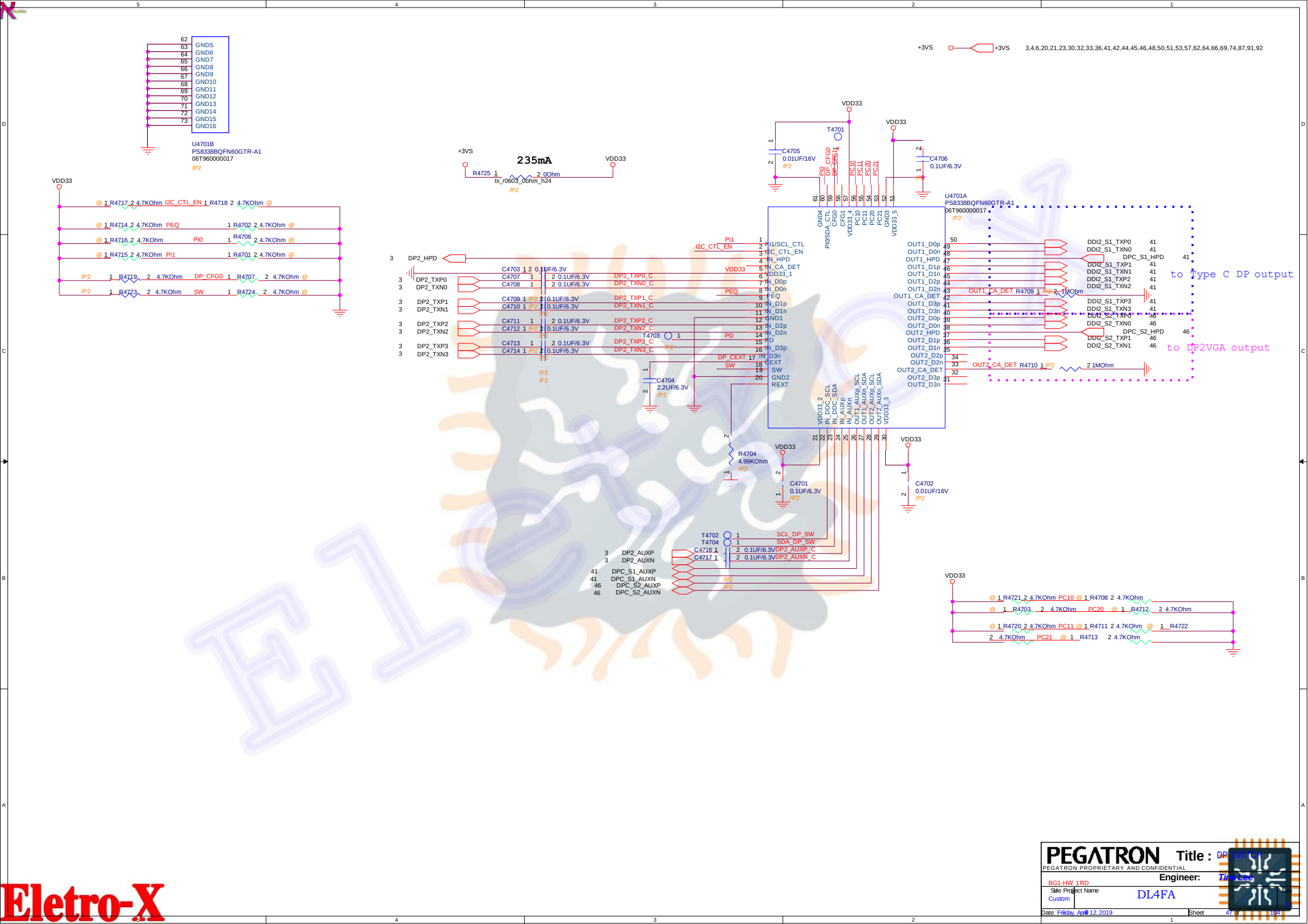
D-SUB Connector

12T100001N00



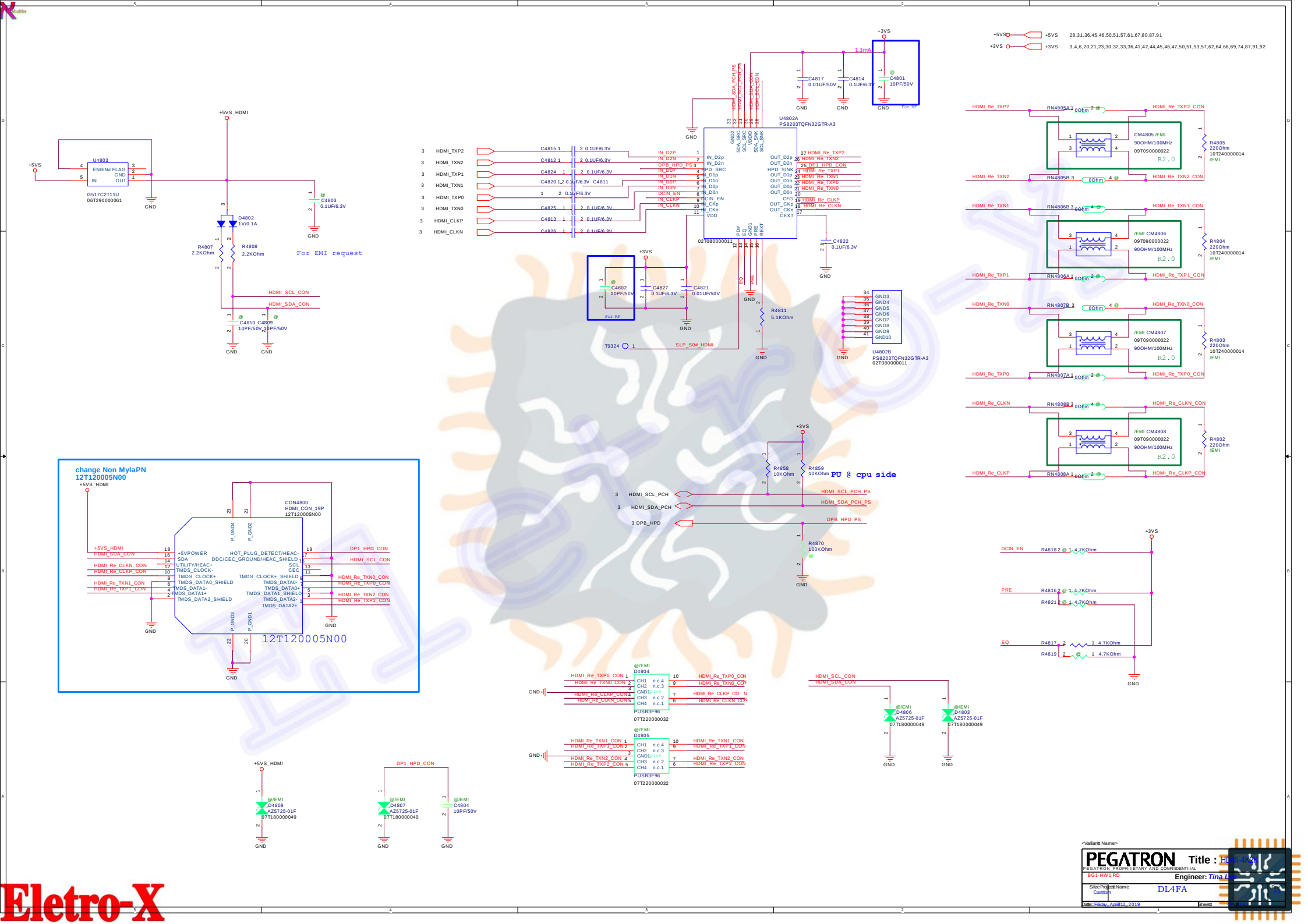
PEGATRON
PEGATRON PROPRIIETARY AND CONFIIDENTIIAL
Title : CRT RGB/HV
Engineer: TinaLee
BG1-HW1 RD
Size Project Name
Custom DL4FA
Date: Friday, April 12, 2019 Sheet 49

Eletro-X

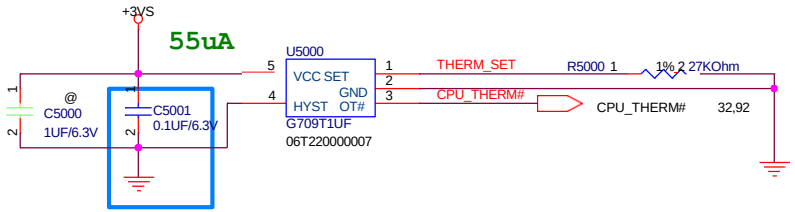


PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : DP Switch
Engineer: Tina Lee
BG1-HW 1RD
Size Project Name
Custom DL4FA
Date: Friday, April 12, 2019
Sheet 47 of 104

Eletro-X


+5VS_HDMI
U4803
G517C2T11U
067290000061
D4802
1V/0.1A
R4807
2.2KOhm
R4808
2.2KOhm
For EMI request
C4803
0.1UF/6.3V
HDMI_SCL_CON
HDMI_SDA_CON
C4810 C4809
10PF/50V 10PF/50V
HDMI_TXP2
HDMI_TXN2
HDMI_TXP1
HDMI_TXN1
HDMI_TXP0
HDMI_TXN0
HDMI_CLKP
HDMI_CLKN
C4815 C4812 C4824 C4820 C4811 C4825 C4813 C4826
0.1UF/6.3V
U4802A
PS8203TQFN32GTR-A3
02T080000011
C4817
0.01UF/50V
C4814
0.1UF/6.3V
C4801
10PF/50V
1.3mA
C4822
0.1UF/6.3V
C4802
10PF/50V
C4827
0.1UF/6.3V
C4821
0.01UF/50V
For RF
T9324
SLP_S0#_HDMI
R4811
5.1KOhm
U4802B
PS8203TQFN32GTR-A3
02T080000011
change Non MylaPN
12T120005N00
CON4800
HDMI_CON_19P
12T120005N00
12T120005N00
R4858
10K Ohm
R4859
10KOhm
PU @ cpu side
HDMI_SCL_PCH
HDMI_SDA_PCH
DPB_HPD
HDMI_SCL_PCH_PS
HDMI_SDA_PCH_PS
DPB_HPD_PS
R4870
100KOhm
DCIN_EN
PRE
EQ
R4818
R4816
R4821
R4817
R4819
4.7KOhm
RN4805A
RN4805B
RN4806A
RN4806B
RN4807A
RN4807B
RN4808A
RN4808B
0Ohm
CM4805 /EMI
CM4806
CM4807
CM4808
90OHM/100MHz
09T090000022
R2.0
R4805
R4804
R4803
R4802
220Ohm
107240000014
/EMI
D4804
D4805
D4806
D4803
D4808
D4807
PUSB3F96
07T220000032
AZ5725-01F
07T180000049
07T180000049
07T180000049
C4804
10PF/50V
+5VS
+3VS
28,31,36,45,46,50,51,57,61,67,80,87,91
3,4,6,20,21,23,30,32,33,36,41,42,44,45,46,47,50,51,53,57,62,64,66,69,74,87,91,92
PEGATRON
Title : HDMI 4K2K
PEGATRON PROPRIIETARY AND CONFIDENTIIAL
BG1-HW1 RD
Engineer: Tina Liu
DL4FA
Friday, April 12, 2019

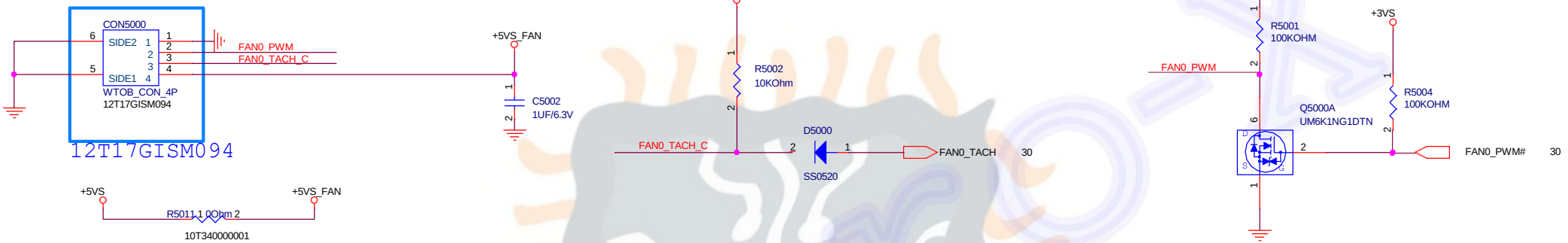
Thermal Sensor for package test



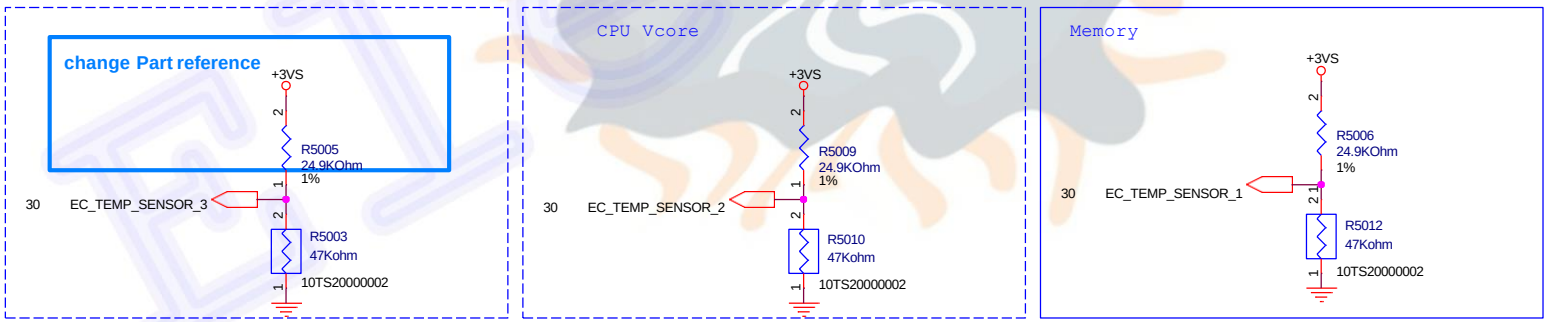
temp setting : 83 degree

RSET(kΩ)= 0.0012T2 – 0.9308T + 96.147

FAN



DPTF



PEGATRON

Title : Thermal_Fan

BG1-HW1 RD

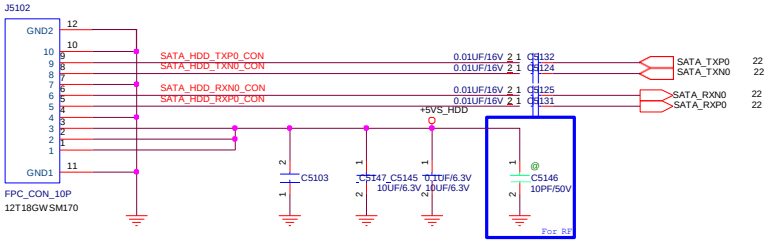
Engineer: Tina Lee

Size	Project Name	
Custom	DL4FA	

Date: Friday, April 12, 2019 Sheet 50 of 64

Eletro-X

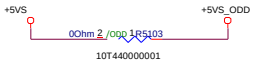
SATA HDD



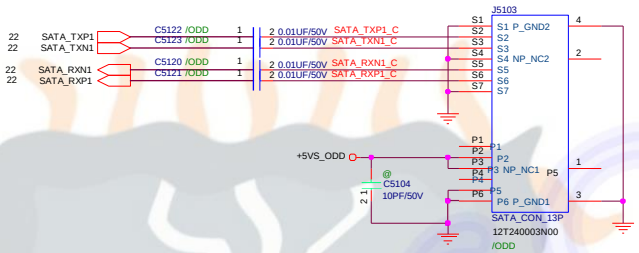
12T18GWSM170

ADD 1218-02Q8000

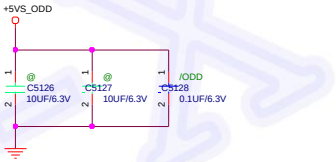
ODD / HDD Colay



ODD Power Consumption MAX 1.8A /Cuntinue 1.1A

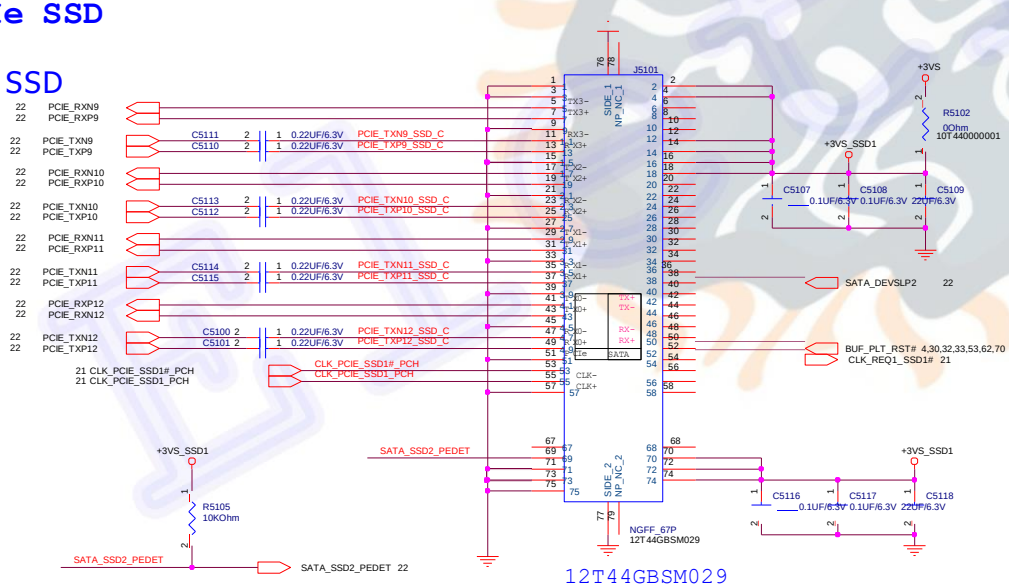


12T240003N00



SATA / PCIe SSD

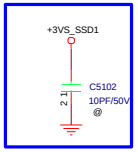
SSD



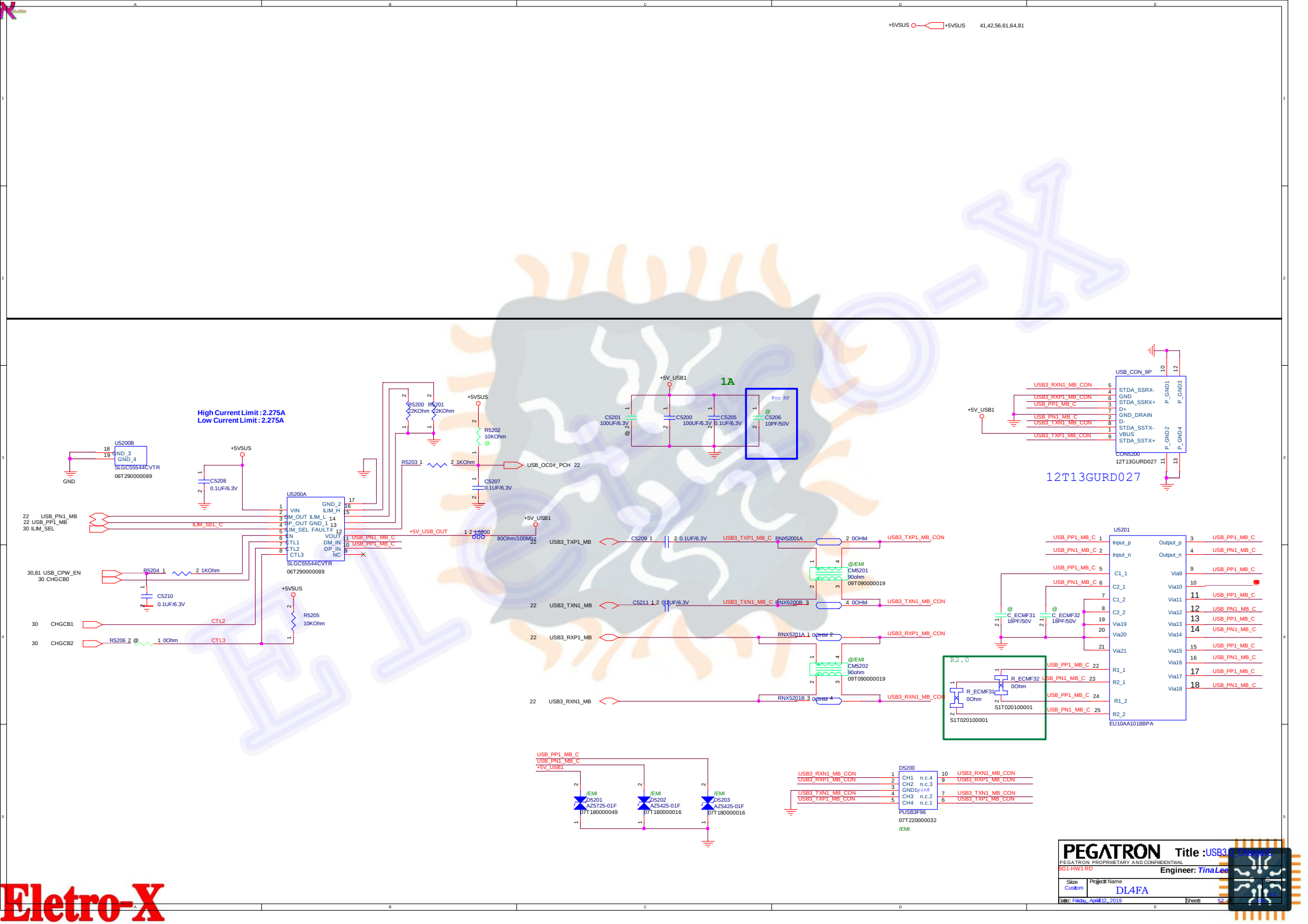
12T44GBSM029

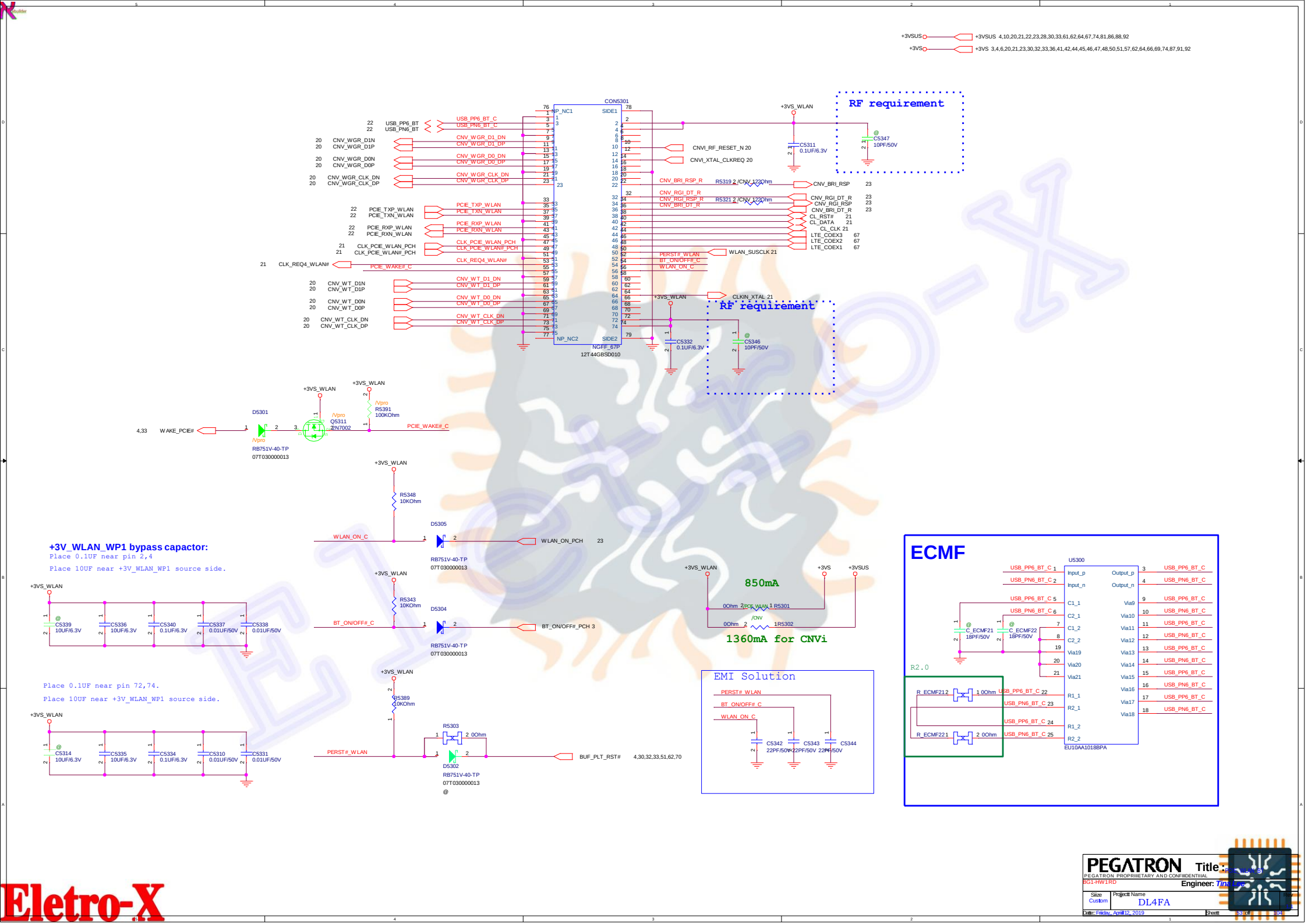
WLAN Nut

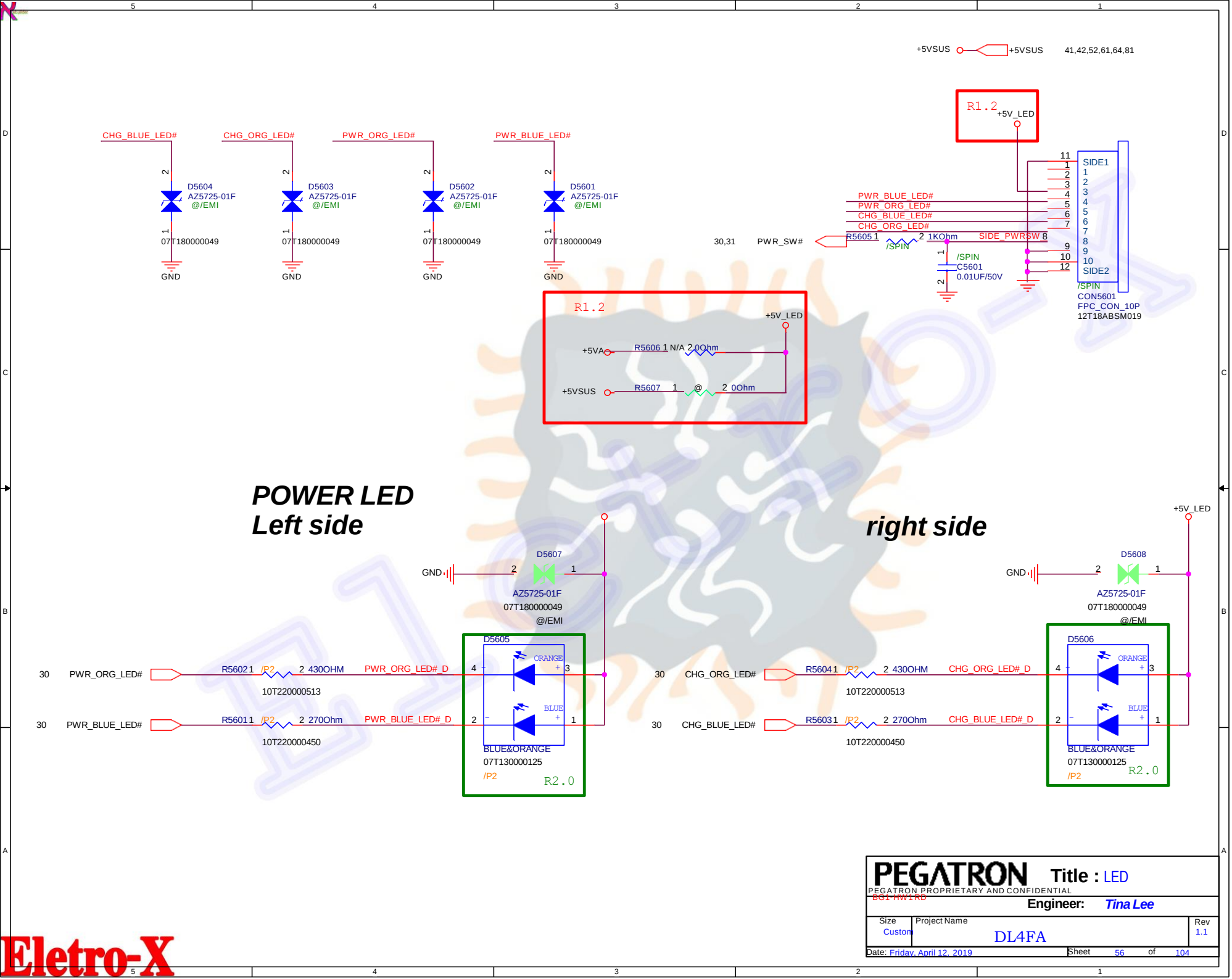
RF requirement



PEGATRON
PEGATRON PROPRIIETARY AND CONFIIDENTIIAL
Title:
BG1-HW1 RD
Engineer:
Tina Ge
Size: Custom
Project Name: DL4FA
Date: Friday, April 12, 2019
Sheet


+5VSUS
+5VSUS
41,42,56,61,64,81
High Current Limit : 2.275A
Low Current Limit : 2.275A
U5200B
SLGC55544CVTR
06T290000089
U5200A
SLGC55544CVTR
06T290000089
+5VSUS
C5208
0.1UF/6.3V
R5200
22KOhm
R5201
22KOhm
R5202
10KOhm
R5203
2.1KOhm
USB_OC0#_PCH
C5207
0.1UF/6.3V
+5V_USB_OUT
80Ohm/100MHz
+5V_USB1
C5201
100UF/6.3V
C5200
100UF/6.3V
C5205
0.1UF/6.3V
C5206
10PF/50V
1A
For RF
USB_CON_9P
CON5200
12T13GURD027
USB3_RXN1_MB_CON
USB3_RXP1_MB_CON
USB_PP1_MB_C
USB_PN1_MB_C
USB3_TXN1_MB_CON
USB3_TXP1_MB_CON
STDA_SSRX-
STDA_SSRX+
STDA_SSTX-
STDA_SSTX+
GND
D+
D-
VBUS
GND_DRAIN
P_GND1
P_GND2
P_GND3
P_GND4
22 USB_PN1_MB
22 USB_PP1_MB
30 ILIM_SEL
ILIM_SEL_C
30,81 USB_CPW_EN
30 CHGCB0
R5204
2.1KOhm
C5210
0.1UF/6.3V
30 CHGCB1
CTL2
30 CHGCB2
R5206
1.0Ohm
CTL3
R5205
10KOhm
USB_PN1_MB_C
USB_PP1_MB_C
USB3_TXP1_MB
USB3_TXN1_MB
USB3_RXP1_MB
USB3_RXN1_MB
C5209
0.1UF/6.3V
C5211
0.1UF/6.3V
RNX5201A
RNX5201B
RNX5200B
0OHM
@/EMI
CM5201
CM5202
90ohm
09T090000019
U5201
Input_p
Input_n
Output_p
Output_n
C1_1
C2_1
C1_2
C2_2
Via9
Via10
Via11
Via12
Via13
Via14
Via15
Via16
Via17
Via18
Via19
Via20
Via21
R1_1
R2_1
R1_2
R2_2
EU10AA1018BPA
C_ECMF31
18PF/50V
C_ECMF32
18PF/50V
R_ECMF31
R_ECMF32
0Ohm
S1T020100001
R2.0
/EMI
D5201
AZ5725-01F
07T180000049
D5202
AZ5425-01F
07T180000016
D5203
AZ5425-01F
07T180000016
D5200
PUSB3F96
07T220000032
CH1 n.c.4
CH2 n.c.3
GND1
CH3 n.c.2
CH4 n.c.1
PEGATRON
PEGATRON PROPRIIETARY AND CONFIIDENTIIAL
BG1-HW1 RD
Title :USB3.0 Charger
Engineer: TinaLee
Size
Custom
Project Name
DL4FA
Date: Friday, April 12, 2019
Sheet 52


+3VSUS
+3VSUS 4,10,20,21,22,23,28,30,33,61,62,64,67,74,81,86,88,92
+3VS
+3VS 3,4,6,20,21,23,30,32,33,36,41,42,44,45,46,47,48,50,51,57,62,64,66,69,74,87,91,92
CON5301
NP_NC1
SIDE1
NP_NC2
SIDE2
NGFF_67P
12T44GBSD010
RF requirement
+3VS_WLAN
C5311
0.1UF/6.3V
C5347
10PF/50V
CNVI_RF_RESET_N 20
CNVI_XTAL_CLKREQ 20
CNV_BRI_RSP_R
R5319 2 /CNV_12.2Ohm
CNV_BRI_RSP 23
CNV_RGI_DT_R
CNV_RGI_RSP_R
R5321 2 /CNV_12.2Ohm
CNV_RGI_DT_R 23
CNV_RGI_RSP 23
CNV_BRI_DT_R 23
CNV_BRI_DT_R
CL_RST# 21
CL_DATA 21
CL_CLK 21
LTE_COEX3 67
LTE_COEX2 67
LTE_COEX1 67
PERST#_WLAN
BT_ON/OFF#_C
WLAN_ON_C
WLAN_SUSCLK 21
CLKIN_XTAL 21
C5332
0.1UF/6.3V
C5346
10PF/50V
USB_PP6_BT
USB_PN6_BT
USB_PP6_BT_C
USB_PN6_BT_C
CNV_WGR_D1N
CNV_WGR_D1P
CNV_WGR_D1_DN
CNV_WGR_D1_DP
CNV_WGR_D0N
CNV_WGR_D0P
CNV_WGR_D0_DN
CNV_WGR_D0_DP
CNV_WGR_CLK_DN
CNV_WGR_CLK_DP
PCIE_TXP_WLAN
PCIE_TXN_WLAN
PCIE_RXP_WLAN
PCIE_RXN_WLAN
CLK_PCIE_WLAN_PCH
CLK_PCIE_WLAN#_PCH
CLK_REQ4_WLAN#
PCIE_WAKE#_C
CNV_WT_D1N
CNV_WT_D1P
CNV_WT_D1_DN
CNV_WT_D1_DP
CNV_WT_D0N
CNV_WT_D0P
CNV_WT_D0_DN
CNV_WT_D0_DP
CNV_WT_CLK_DN
CNV_WT_CLK_DP
D5301
RB751V-40-TP
07T030000013
Q5311
2N7002
/Vpro
R5391
100KOhm
4,33 WAKE_PCIE#
PCIE_WAKE#_C
R5348
10KOhm
WLAN_ON_C
D5305
WLAN_ON_PCH 23
R5343
10KOhm
BT_ON/OFF#_C
D5304
BT_ON/OFF#_PCH 3
R5389
10KOhm
PERST#_WLAN
R5303
0Ohm
D5302
BUF_PLT_RST# 4,30,32,33,51,62,70
+3V_WLAN_WP1 bypass capactor:
Place 0.1UF near pin 2,4
Place 10UF near +3V_WLAN_WP1 source side.
C5339 10UF/6.3V
C5336 10UF/6.3V
C5340 0.1UF/6.3V
C5337 0.01UF/50V
C5338 0.01UF/50V
Place 0.1UF near pin 72,74.
Place 10UF near +3V_WLAN_WP1 source side.
C5314 10UF/6.3V
C5335 10UF/6.3V
C5334 0.1UF/6.3V
C5310 0.01UF/50V
C5331 0.01UF/50V
850mA
0Ohm 2/PCE_WLAN 1 R5301
/CNV
0Ohm 2 1R5302
1360mA for CNVi
+3VS
+3VSUS
EMI Solution
PERST# WLAN
BT_ON/OFF# C
WLAN_ON_C
C5342 22PF/50V
C5343 22PF/50V
C5344 22PF/50V
ECMF
U5300
Input_p
Input_n
Output_p
Output_n
C1_1
C2_1
C1_2
C2_2
Via9
Via10
Via11
Via12
Via13
Via14
Via15
Via16
Via17
Via18
Via19
Via20
Via21
R1_1
R2_1
R1_2
R2_2
C_ECMF21 18PF/50V
C_ECMF22 18PF/50V
R_ECMF212 1 0Ohm
R_ECMF221 2 0Ohm
EU10AA1018BPA
R2.0
PEGATRON
PEGATRON PROPRIIETARY AND CONFIIDENTIIAL
BG1-HW1RD
Engineer: Tina Lee
Title:
Size Custom
Project Name DL4FA
Date: Friday, April 12, 2019
Sheet
Eletro-X



PEGATRON

Title : LED

PEGATRON PROPRIETARY AND CONFIDENTIAL

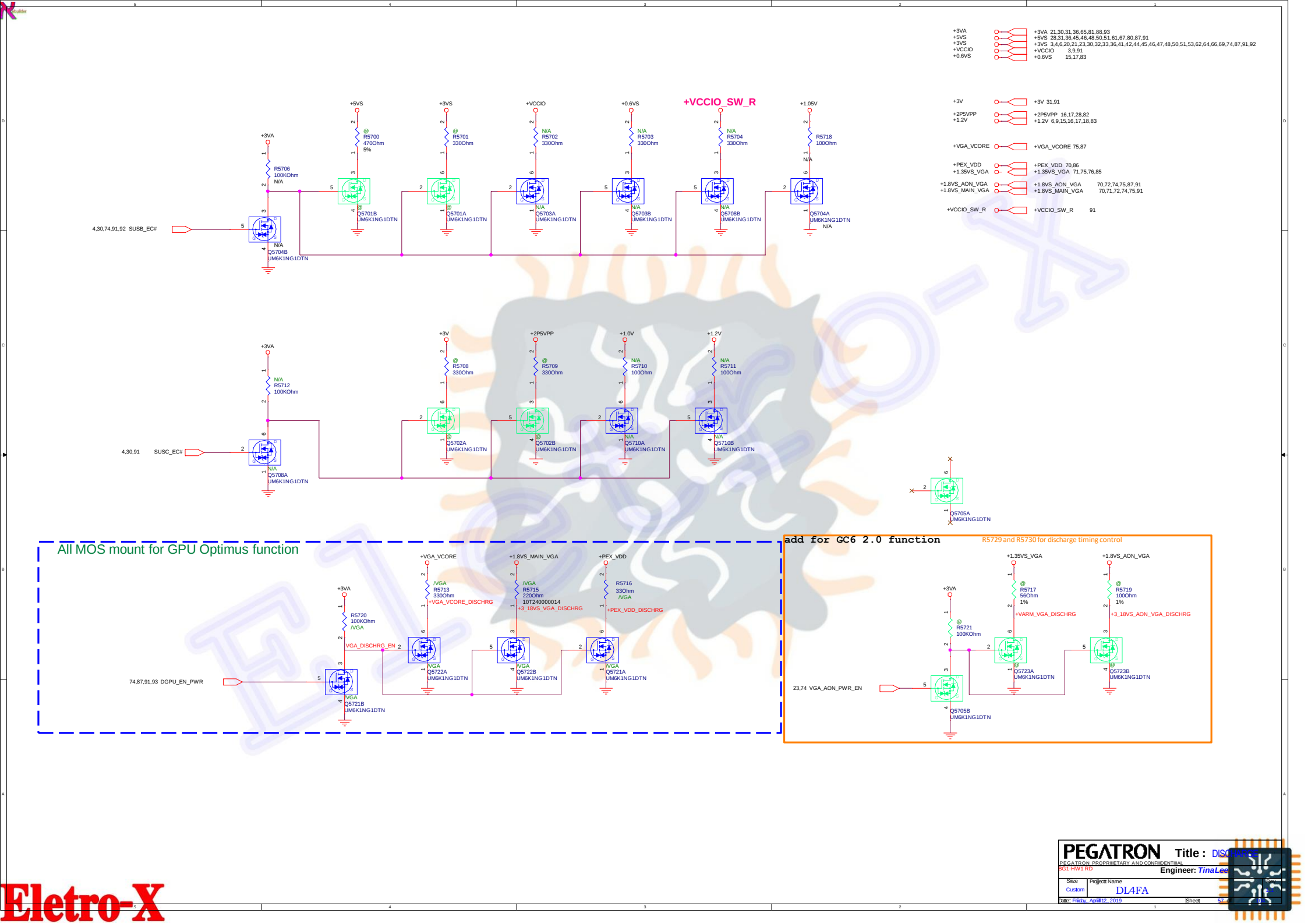
BG1-HW1RD

Engineer: Tina Lee

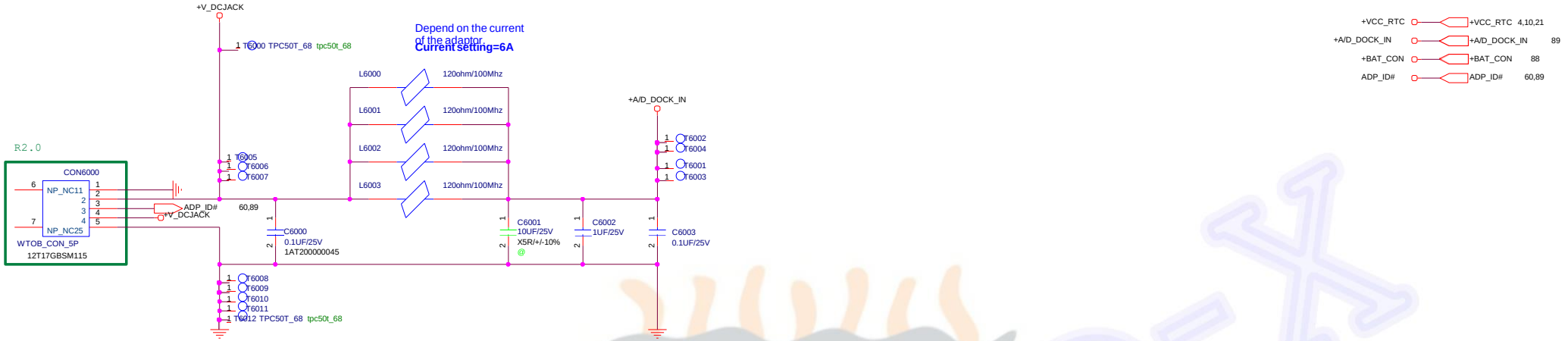
Size	Project Name	Rev
Custom	DL4FA	1.1

Date: Friday, April 12, 2019 Sheet 56 of 104

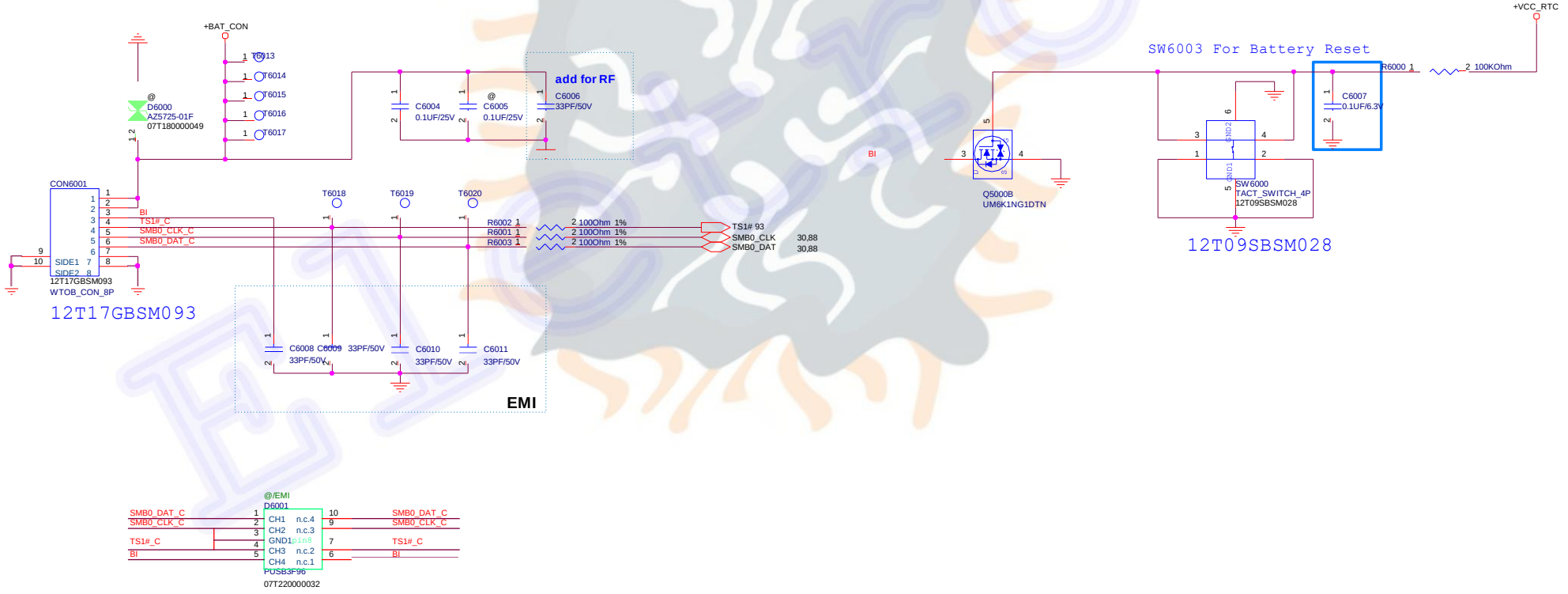
Eletro-X


+3VA 21,30,31,36,65,81,88,93
+5VS 28,31,36,45,46,48,50,51,61,67,80,87,91
+3VS 3,4,6,20,21,23,30,32,33,36,41,42,44,45,46,47,48,50,51,53,62,64,66,69,74,87,91,92
+VCCIO 3,9,91
+0.6VS 15,17,83
+3V 31,91
+2P5VPP 16,17,28,82
+1.2V 6,9,15,16,17,18,83
+VGA_VCORE 75,87
+PEX_VDD 70,86
+1.35VS_VGA 71,75,76,85
+1.8VS_AON_VGA 70,72,74,75,87,91
+1.8VS_MAIN_VGA 70,71,72,74,75,91
+VCCIO_SW_R 91
+VCCIO_SW_R
4,30,74,91,92 SUSB_EC#
4,30,91 SUSC_EC#
Q5705A UM6K1NG1DTN
add for GC6 2.0 function
R5729 and R5730 for discharge timing control
All MOS mount for GPU Optimus function
74,87,91,93 DGPU_EN_PWR
23,74 VGA_AON_PWR_EN
PEGATRON
Title : DISCHARGE
Engineer: TinaLee
DL4FA
Eletro-X

DC Jack WTB CONN



Battery Connector



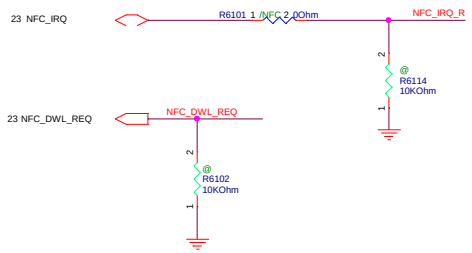
PEGATRON
Title : DC_BAT_CONN
BG1-HW1 RD
Engineer: Tina Liu
Size: Custom
Project Name: DL4FA
Date: Friday, April 12, 2019
Sheet

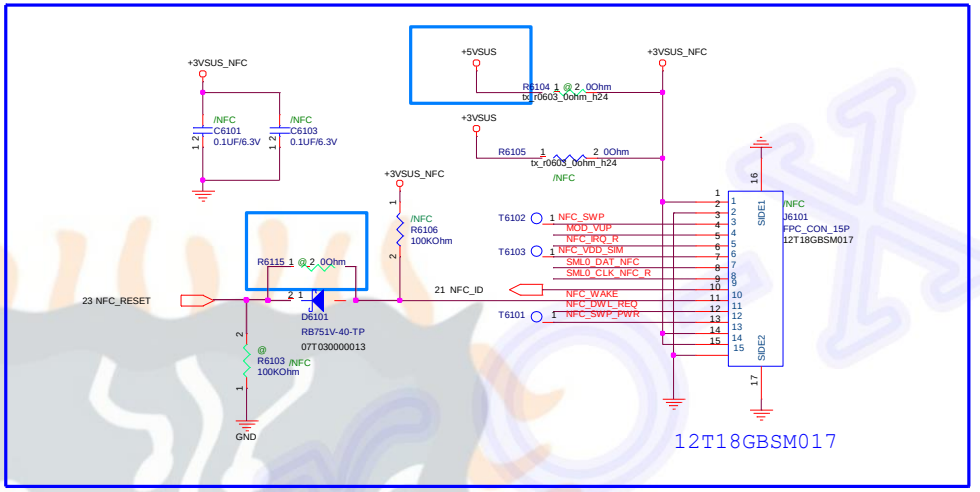
Eletro-X

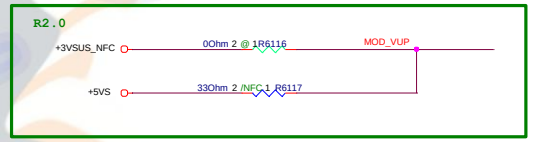
NFC

+3VSUS
+3VSUS 4,10,20,21,22,23,28,30,33,53,62,64,67,74,81,86,88,92
+3VS
+3VS 3,4,6,20,21,23,30,32,33,36,41,42,44,45,46,47,48,50,51,53,57,62,64,66,69,74,87,91,92

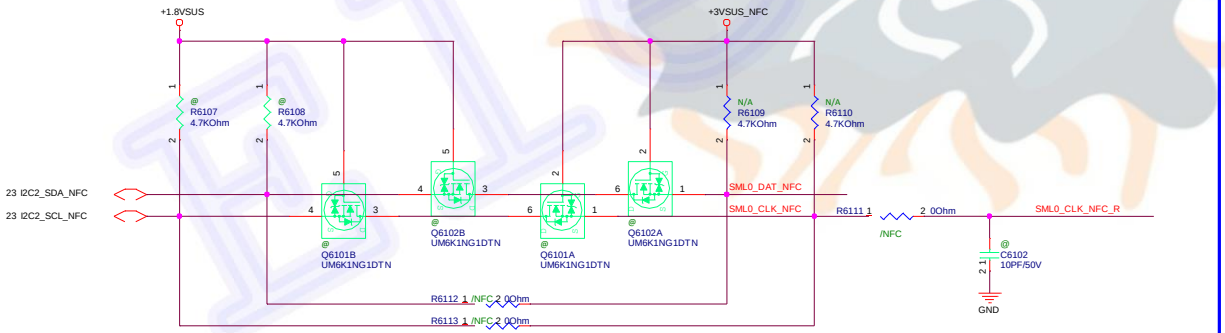
Control signal

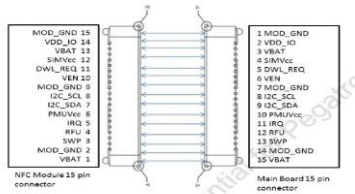






I2C Level Shift



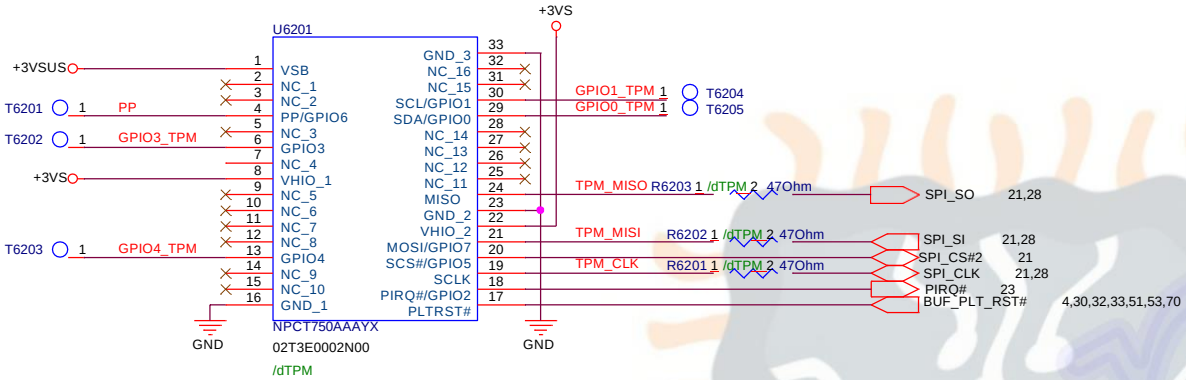


PEGATRON
Title : NFC
BG1-HW1 RD
Engineer: TinaLee
Size: Custom
Project Name: DL4FA
Date: Friday, April 12, 2019
Sheet 61 of

Eletro-X

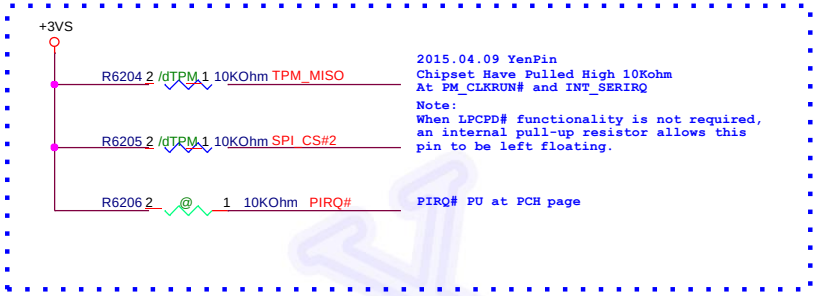
62 TPM NPCT750 - SPI

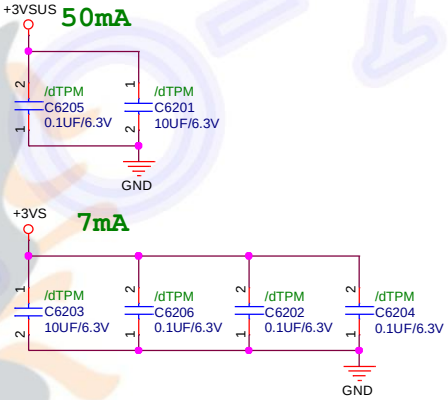
023E-005S000
FW:7.2.1.0 /NPCT750AABYX



+3VSUS +3VSUS 4,10,20,21,22,23,28,30,33,53,61,64,67,74,81,86,88,92

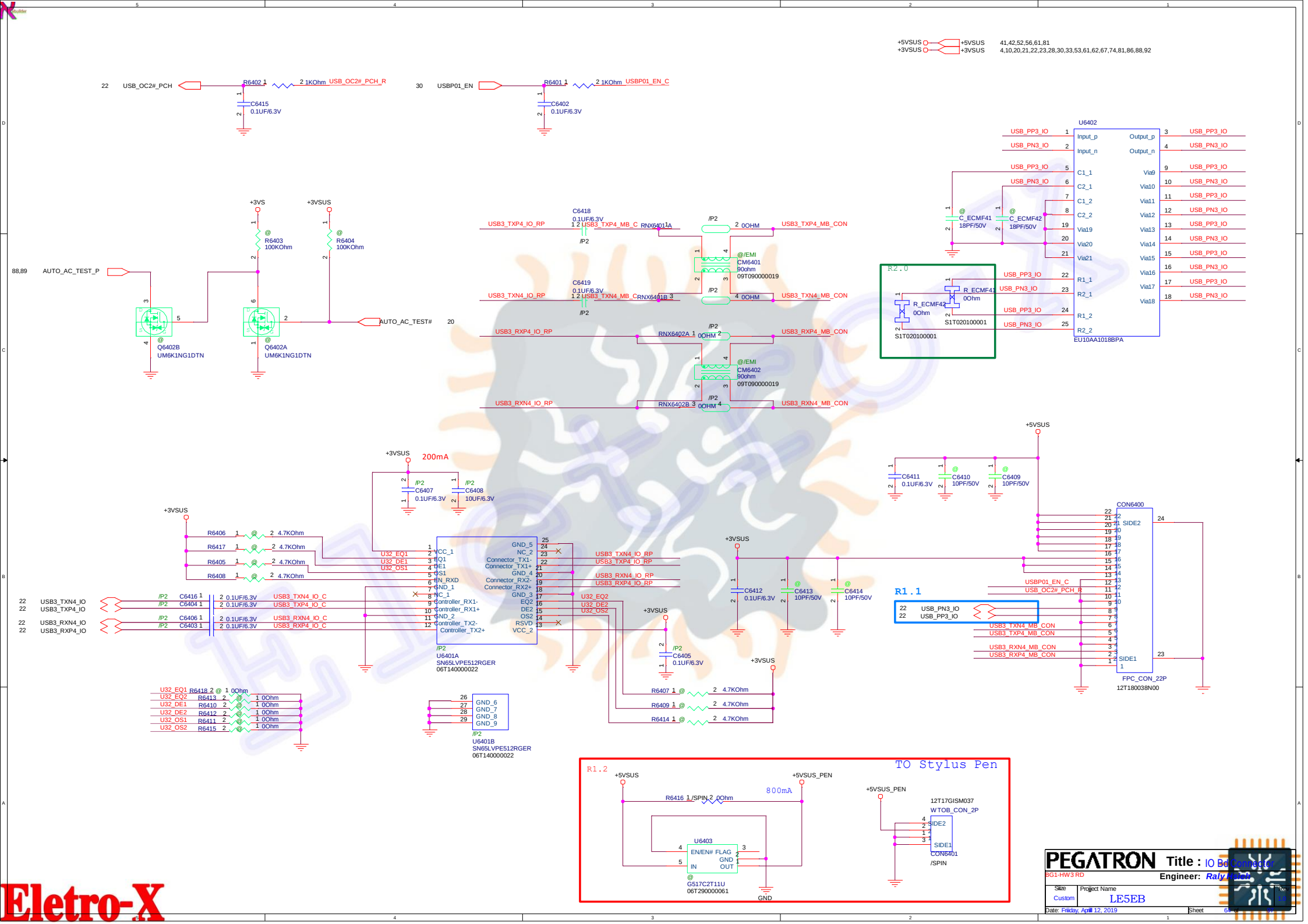
+3VS +3VS 3,4,6,20,21,23,30,32,33,36,41,42,44,45,46,47,48,50,51,53,57,64,66,69,74,87,91,92



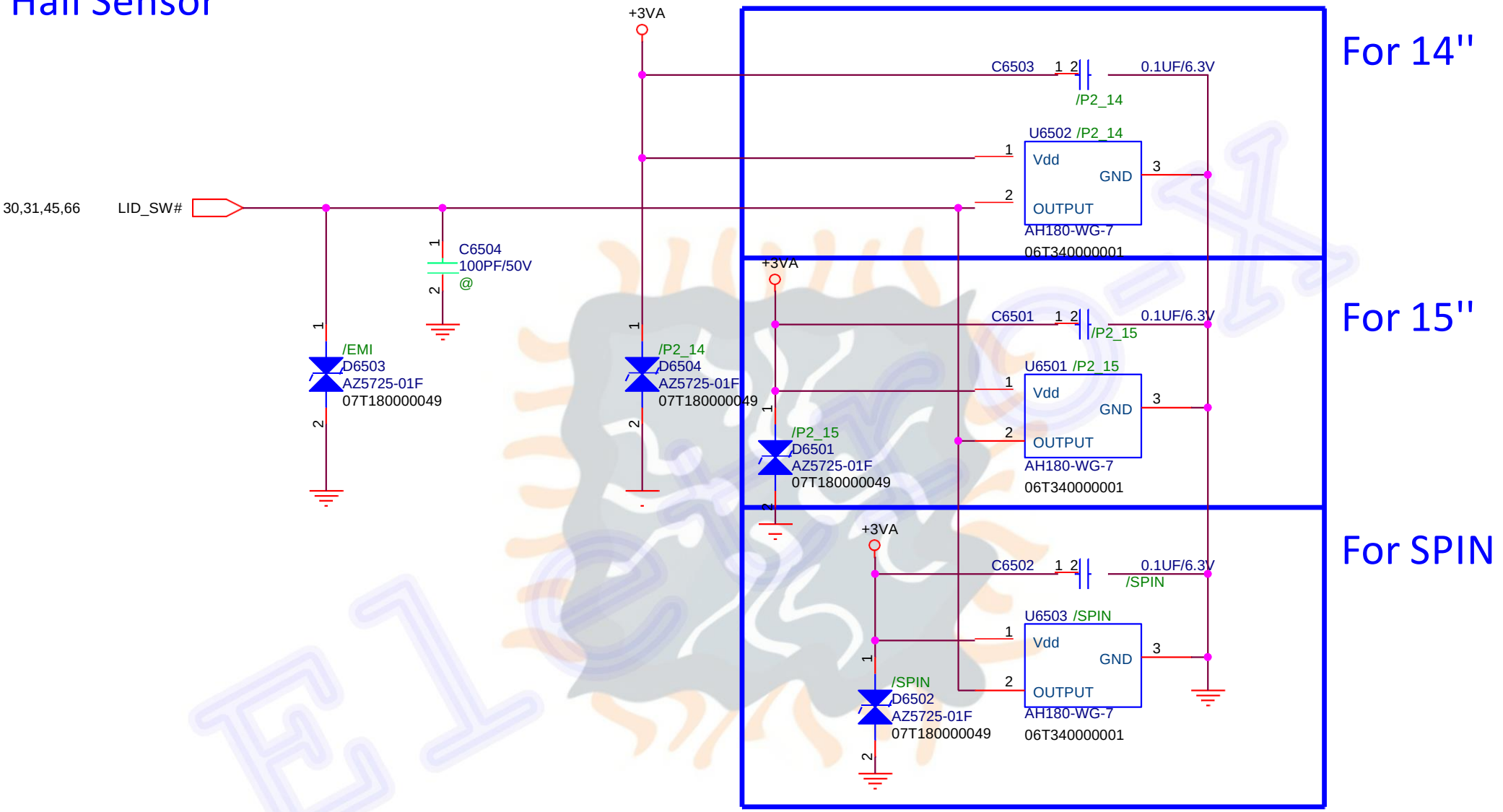


PEGATRON
BG1-HW1 RD
Title : TPM NPCT750
Engineer: Tina Lee
Size: Custom
Project Name: DL4FA
Date: Friday, April 12, 2019
Sheet 62 of 100

Eletro-X


+5VSUS
+3VSUS
41,42,52,56,61,81
4,10,20,21,22,23,28,30,33,53,61,62,67,74,81,86,88,92
22 USB_OC2#_PCH
R6402 1 2 1KOhm USB_OC2#_PCH_R
C6415 0.1UF/6.3V
30 USBP01_EN
R6401 1 2 1KOhm USBP01_EN_C
C6402 0.1UF/6.3V
U6402
USB_PP3_IO
USB_PN3_IO
Input_p
Input_n
Output_p
Output_n
C1_1
C2_1
C1_2
C2_2
Via9
Via10
Via11
Via12
Via13
Via14
Via15
Via16
Via17
Via18
Via19
Via20
Via21
R1_1
R2_1
R1_2
R2_2
C_ECMF41 18PF/50V
C_ECMF42 18PF/50V
R_ECMF41 0Ohm
R_ECMF42 0Ohm
S1T020100001
EU10AA1018BPA
R2.0
88,89 AUTO_AC_TEST_P
R6403 100KOhm
R6404 100KOhm
Q6402B UM6K1NG1DTN
Q6402A UM6K1NG1DTN
AUTO_AC_TEST#
20
C6418 0.1UF/6.3V
C6419 0.1UF/6.3V
USB3_TXP4_IO_RP
USB3_TXP4_MB_C
RNX6401 1A
USB3_TXN4_IO_RP
USB3_TXN4_MB_C
RNX6401B
0OHM
@/EMI CM6401 90ohm 09T090000019
USB3_TXP4_MB_CON
USB3_TXN4_MB_CON
USB3_RXP4_IO_RP
USB3_RXN4_IO_RP
RNX6402A 1
RNX6402B 3
@/EMI CM6402 90ohm 09T090000019
USB3_RXP4_MB_CON
USB3_RXN4_MB_CON
+3VSUS 200mA
C6407 0.1UF/6.3V
C6408 10UF/6.3V
C6411 0.1UF/6.3V
C6410 10PF/50V
C6409 10PF/50V
+5VSUS
CON6400
SIDE1
SIDE2
FPC_CON_22P
12T180038N00
R6406 4.7KOhm
R6417 4.7KOhm
R6405 4.7KOhm
R6408 4.7KOhm
U32_EQ1
U32_DE1
U32_OS1
U6401A
SN65LVPE512RGER
06T140000022
C6416 0.1UF/6.3V
C6404 0.1UF/6.3V
C6406 0.1UF/6.3V
C6403 0.1UF/6.3V
USB3_TXN4_IO_C
USB3_TXP4_IO_C
USB3_RXN4_IO_C
USB3_RXP4_IO_C
C6412 0.1UF/6.3V
C6413 10PF/50V
C6414 10PF/50V
R1.1
USBP01_EN_C
USB_OC2#_PCH_R
USB_PN3_IO
USB_PP3_IO
U32_EQ2
U32_DE2
U32_OS2
C6405 0.1UF/6.3V
R6407 4.7KOhm
R6409 4.7KOhm
R6414 4.7KOhm
R6418 0Ohm
R6413 0Ohm
R6410 0Ohm
R6412 0Ohm
R6411 0Ohm
R6415 0Ohm
U6401B
SN65LVPE512RGER
06T140000022
R1.2
TO Stylus Pen
+5VSUS_PEN
800mA
R6416 /SPIN 0Ohm
U6403
EN/EN# FLAG
GND
IN
OUT
G517C2T11U
06T290000061
12T17GISM037
W TOB_CON_2P
CON6401
/SPIN
PEGATRON
Title : IO BdConnector
BG1-HW3 RD
Engineer: Raly Hsieh
Size Custom
Project Name LE5EB
Date: Friday, April 12, 2019
Sheet 64 of 74
Eletro-X

Hall Sensor



<Variant Name>

PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : G-Sensor

Engineer: *Tina Lee*

Size	Project Name	Rev
Custom	DL4FA	1.0

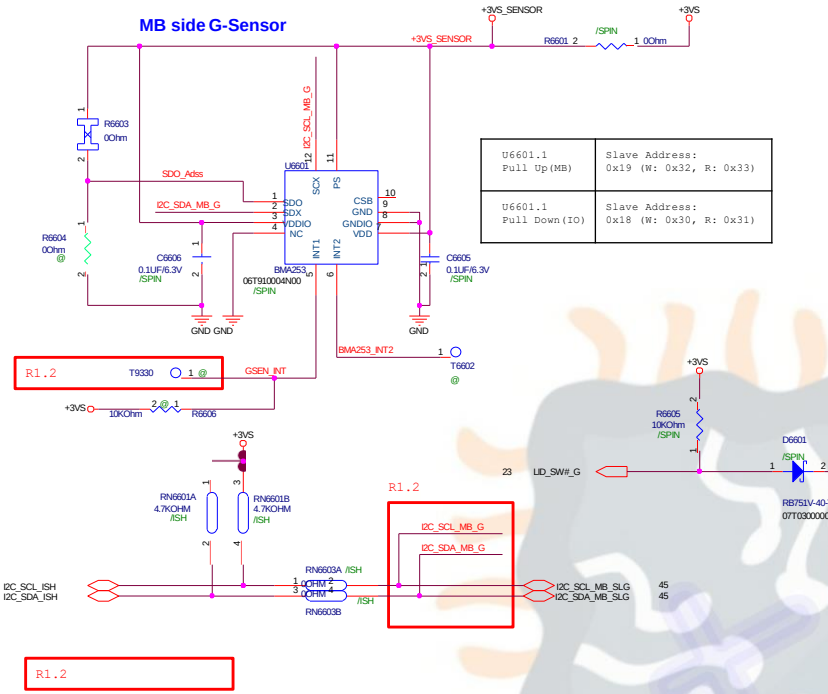
Date: Friday, April 12, 2019 Sheet 65 of 104

Eletro-X

+3VS +3VS 3,4,6,20,21,23,30,32,33,36,41,42,44,45,46,47,48,50,51,53,57,62,64,69,74,87,91,92

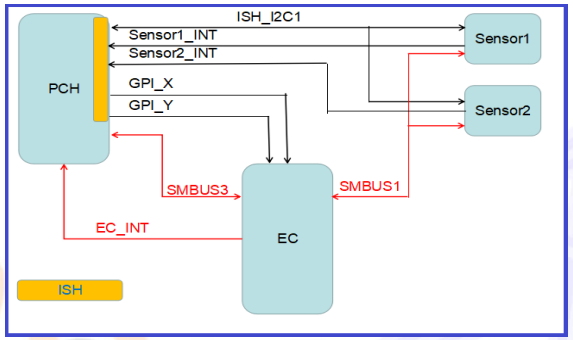
+3VS_SENSOR +3VS_SENSOR 45

MB side G-Sensor



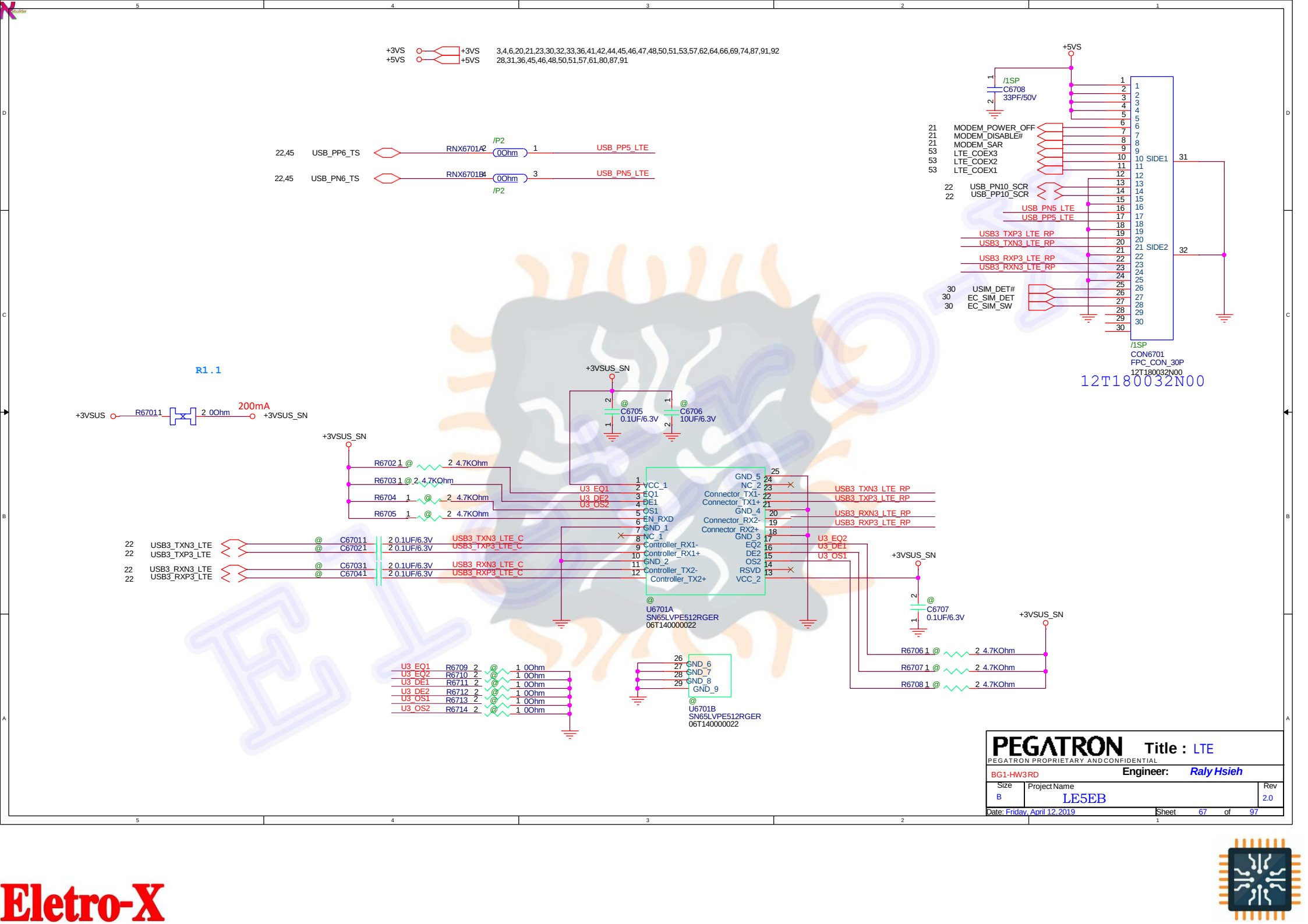
U6601.1 Pull Up(MB)	Slave Address: 0x19 (W: 0x32, R: 0x33)
U6601.1 Pull Down(IO)	Slave Address: 0x18 (W: 0x30, R: 0x31)

For a 360-degree clamshell design which needs a 2nd accelerometer on the base, and other sensors are on th lid.



<variantName>

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : G-Sensor
Engineer: Tina
Size: Custom
ProjectName: DL4FA
Rev: 1.0
Date: Friday, April 12, 2019
Sheet



PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : LTE

BG1-HW3 RD

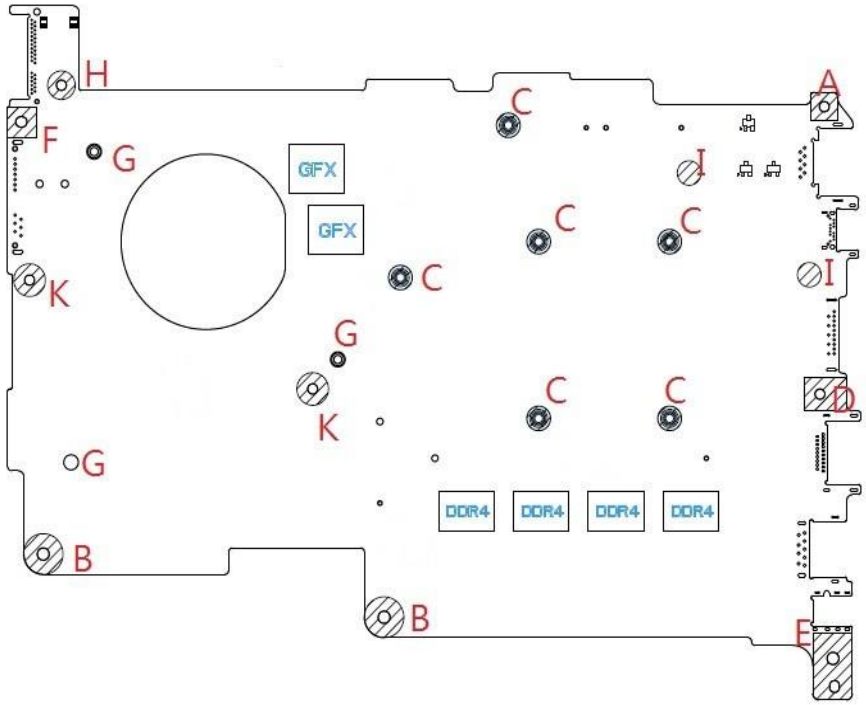
Engineer: Raly Hsieh

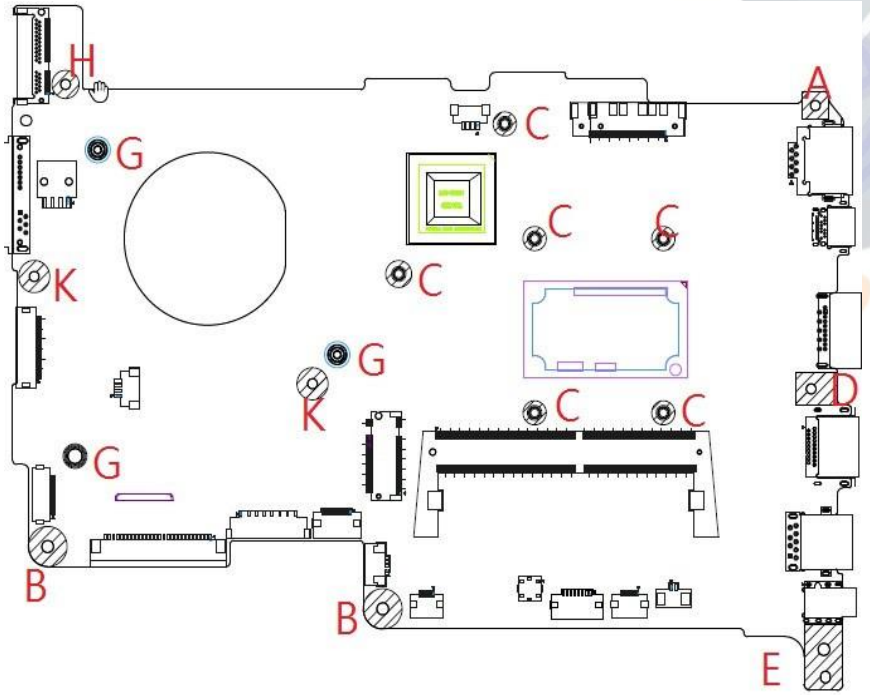
Size	Project Name	Rev
B	LE5EB	2.0

Date: Friday, April 12, 2019 Sheet 67 of 97

Eletro-X

68 ME Hole





CPU NUT

H6800 CT236B144D114 1308-00DW000
H6801 CT236B144D114 1308-00DW000
H6802 CT236B144D114 1308-00DW000
H6803 CT236B144D114 1308-00DW000

GPU NUT

/VGA H6805 CT236B144D114 1308-00DW000
/VGA H6806 CT236B144D114 1308-00DW000

A

H6824 GND NP_NC D98_D106N

B

H6823 C394D217
H6822 C394D217

C

H6807 RCT236CB236D114
H6808 C236D114
H6809 C236D114
H6810 C236D114
H6811 C236D114
H6812 RCT236CB236D114

D

H6820 R425x323D98 T-SH00005743

E

H6821 DO157X118_DO98X114

F

H6819 RT291x295DO114X98N

FAN NUT

H6817 CT236B176D146 1308-011B000
H6818 CT236B176D146 1308-011B000

G

H

H6816 C276D98

I

U6801 C236_NP
U6802 C236_NP

K

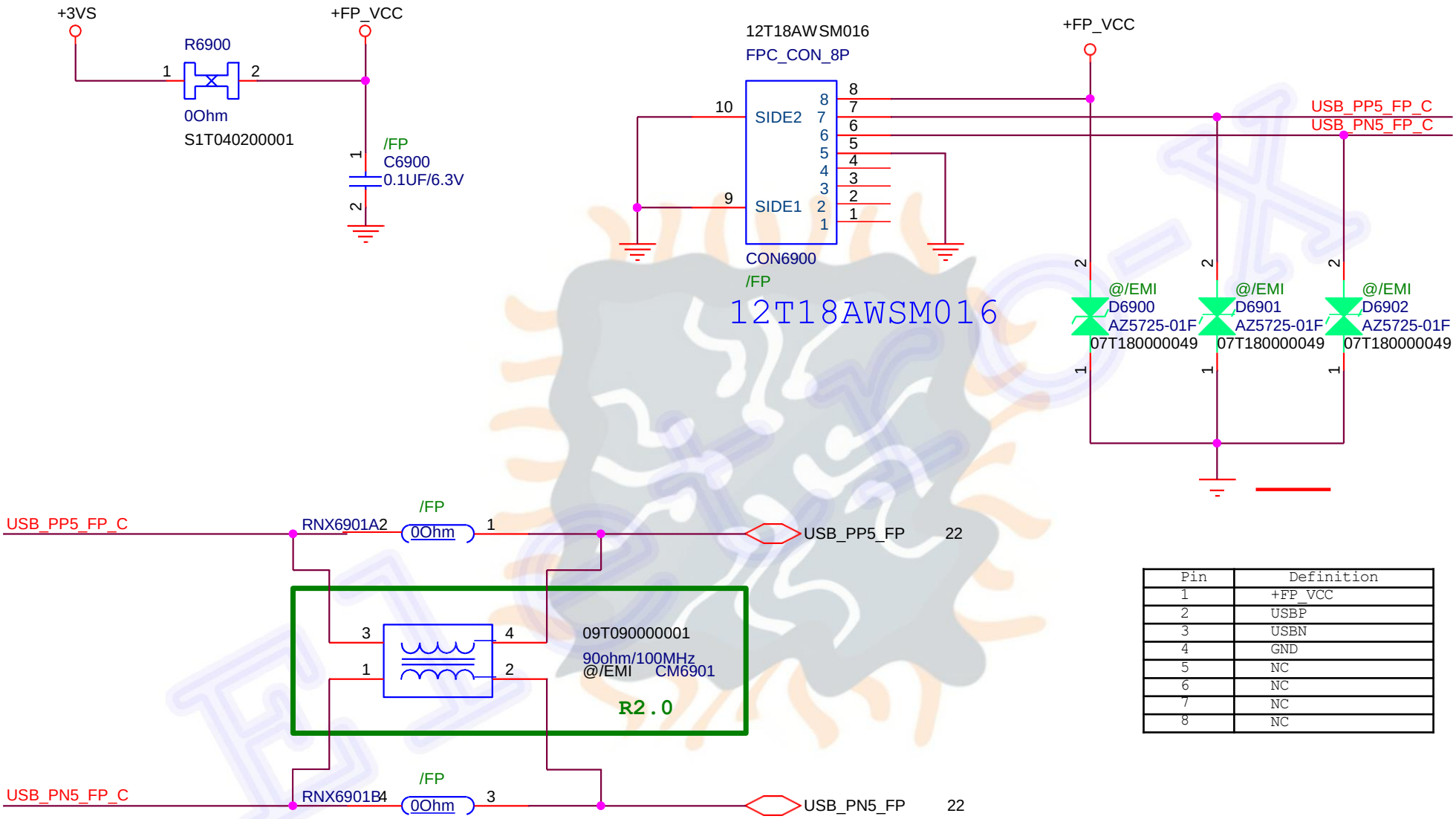
H6813 C315D98

R1.2

H6814 P_GND
NP_NC1 NP_NC2 NP_NC3 NP_NC4 NP_NC5 NP_NC6 NP_NC7 NP_NC8 NP_NC9 NP_NC10 NP_NC11 NP_NC12 NP_NC13 NP_NC14 NP_NC15 NP_NC16 NP_NC17 NP_NC18 NP_NC19 NP_NC20 NP_NC21 NP_NC22 NP_NC23 NP_NC24 NP_NC25 NP_NC26
NP_NC27 NP_NC28 NP_NC29 NP_NC30 NP_NC31 NP_NC32 NP_NC33 NP_NC34 NP_NC35 NP_NC36 NP_NC37 NP_NC38 NP_NC39 NP_NC40 NP_NC41 NP_NC42 NP_NC43 NP_NC44 NP_NC45 NP_NC46 NP_NC47 NP_NC48 NP_NC49 NP_NC50 NP_NC51 NP_NC52
SP276D98 T-SH00003650

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : ME Hole
BG1-HW1 RD
Engineer: Tina Lee
Size: Custom
Project Name: DL4FA
Rev: 1.1
Date: Friday, April 12, 2019
Sheet 68 of 104

Eletro-X



Pin	Definition
1	+FP_VCC
2	USBP
3	USBN
4	GND
5	NC
6	NC
7	NC
8	NC

PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : Finger printer

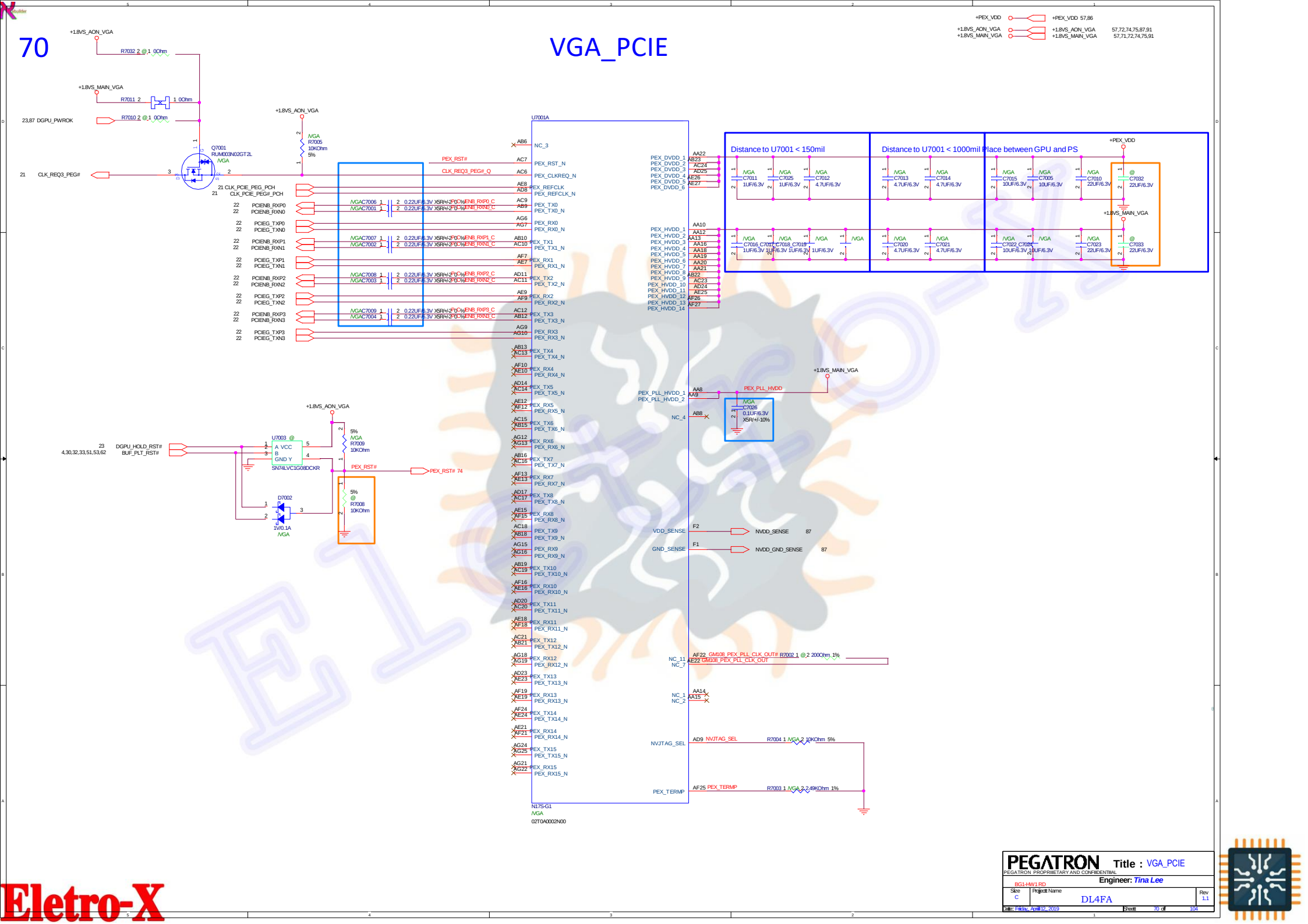
BG1-HW1 RD

Engineer: Tina Lee

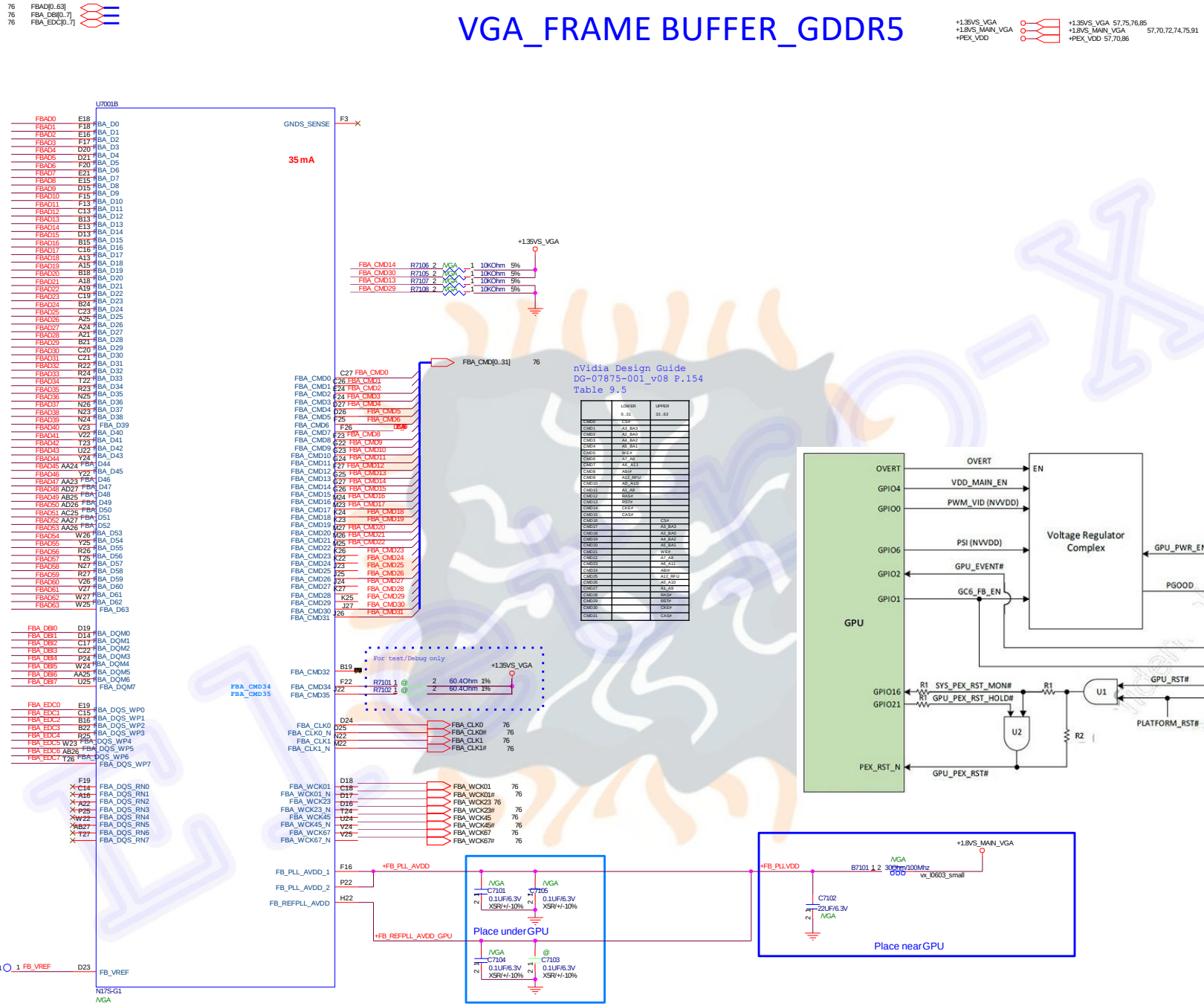
Size	Project Name	Rev
Custom	DL4FA	1.0

Date: Friday, April 12, 2019 Sheet 69 of 107

Eletro-X


70
VGA_PCIE
+1.8VS_AON_VGA
+1.8VS_MAIN_VGA
+PEX_VDD
+PEX_VDD 57,86
+1.8VS_AON_VGA 57,72,74,75,87,91
+1.8VS_MAIN_VGA 57,71,72,74,75,91
R7032 2 @ 1 0Ohm
R7011 2 1 0Ohm
R7010 2 @ 1 0Ohm
23,87 DGPU_PWROK
Q7001
RUM003N02GT2L
/VGA
R7005
10KOhm
5%
21 CLK_REQ3_PEG#
PEX_RST#
CLK_REQ3_PEG#_Q
21 CLK_PCIE_PEG_PCH
21 CLK_PCIE_PEG#_PCH
U7001A
NC_3
PEX_RST_N
PEX_CLKREQ_N
PEX_REFCLK
PEX_REFCLK_N
PEX_TX0
PEX_TX0_N
PEX_RX0
PEX_RX0_N
PEX_TX1
PEX_TX1_N
PEX_RX1
PEX_RX1_N
PEX_TX2
PEX_TX2_N
PEX_RX2
PEX_RX2_N
PEX_TX3
PEX_TX3_N
PEX_RX3
PEX_RX3_N
PEX_TX4
PEX_TX4_N
PEX_RX4
PEX_RX4_N
PEX_TX5
PEX_TX5_N
PEX_RX5
PEX_RX5_N
PEX_TX6
PEX_TX6_N
PEX_RX6
PEX_RX6_N
PEX_TX7
PEX_TX7_N
PEX_RX7
PEX_RX7_N
PEX_TX8
PEX_TX8_N
PEX_RX8
PEX_RX8_N
PEX_TX9
PEX_TX9_N
PEX_RX9
PEX_RX9_N
PEX_TX10
PEX_TX10_N
PEX_RX10
PEX_RX10_N
PEX_TX11
PEX_TX11_N
PEX_RX11
PEX_RX11_N
PEX_TX12
PEX_TX12_N
PEX_RX12
PEX_RX12_N
PEX_TX13
PEX_TX13_N
PEX_RX13
PEX_RX13_N
PEX_TX14
PEX_TX14_N
PEX_RX14
PEX_RX14_N
PEX_TX15
PEX_TX15_N
PEX_RX15
PEX_RX15_N
N17S-G1
/VGA
02T0A0002N00
PEX_DVDD_1
PEX_DVDD_2
PEX_DVDD_3
PEX_DVDD_4
PEX_DVDD_5
PEX_DVDD_6
PEX_HVDD_1
PEX_HVDD_2
PEX_HVDD_3
PEX_HVDD_4
PEX_HVDD_5
PEX_HVDD_6
PEX_HVDD_7
PEX_HVDD_8
PEX_HVDD_9
PEX_HVDD_10
PEX_HVDD_11
PEX_HVDD_12
PEX_HVDD_13
PEX_HVDD_14
Distance to U7001 < 150mil
Distance to U7001 < 1000mil Place between GPU and PS
C7011 1UF/6.3V
C7025 1UF/6.3V
C7012 4.7UF/6.3V
C7013 4.7UF/6.3V
C7014 4.7UF/6.3V
C7015 10UF/6.3V
C7005 10UF/6.3V
C7010 22UF/6.3V
C7032 22UF/6.3V
C7016 1UF/6.3V
C7017 1UF/6.3V
C7018 1UF/6.3V
C7019 1UF/6.3V
C7020 4.7UF/6.3V
C7021 4.7UF/6.3V
C7022 10UF/6.3V
C7004 10UF/6.3V
C7023 22UF/6.3V
C7033 22UF/6.3V
PEX_PLL_HVDD_1
PEX_PLL_HVDD_2
PEX_PLL_HVDD
C7026 0.1UF/6.3V X5R/+/-10%
NC_4
VDD_SENSE
GND_SENSE
NVDD_SENSE 87
NVDD_GND_SENSE 87
NC_11
NC_7
AF22 GM108_PEX_PLL_CLK_OUT# R7002 1 @ 2 200Ohm 1%
AE22 GM108_PEX_PLL_CLK_OUT
NC_1
NC_2
NVJTAG_SEL
AD9 NVJTAG_SEL
R7004 1 /VGA 2 10KOhm 5%
PEX_TERMP
AF25 PEX_TERMP
R7003 1 /VGA 2 2.49KOhm 1%
U7003 @
SN74LVC1G08DCKR
DGPU_HOLD_RST#
BUF_PLT_RST#
R7009
10KOhm
R7008
10KOhm
PEX_RST# 74
D7002
1V/0.1A
PEGATRON
Title : VGA_PCIE
Engineer: Tina Lee
BG1-HW1RD
Size C
Project Name DL4FA
Rev 1.1
Date: Friday, April 12, 2019
Sheet 70 of 104

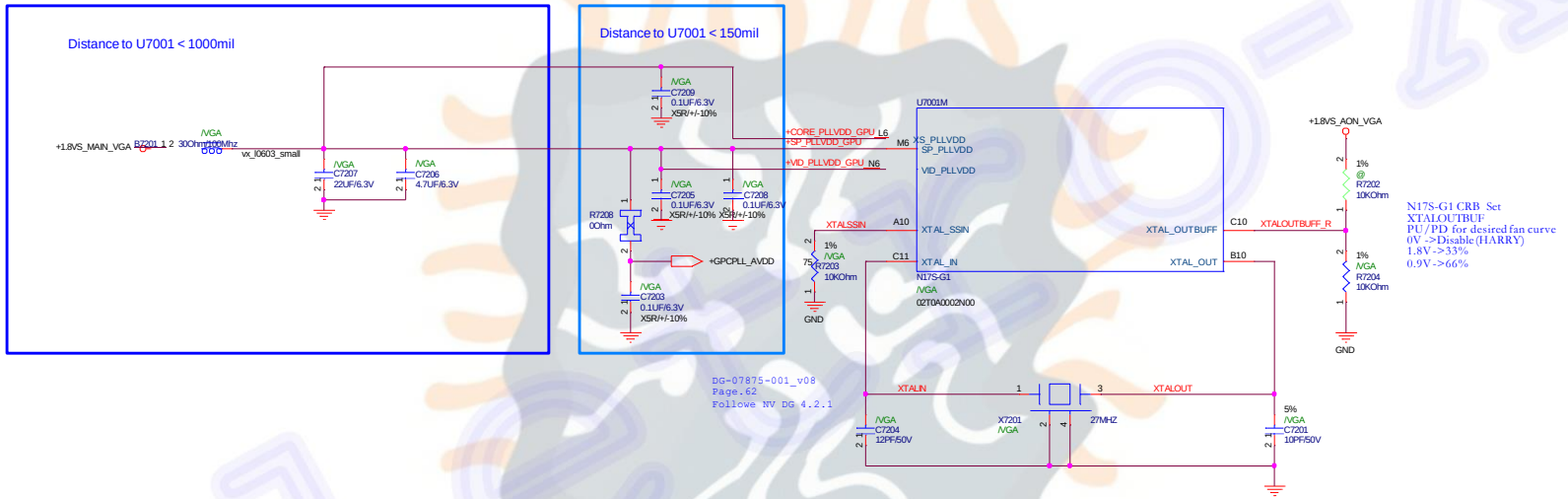
VGA_FRAME BUFFER_GDDR5



PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : VGA_FRAME BUFFER
Engineer: Tina Lee
BG1-HW1RD
Size C
Project Name DL4FA
Rev 1.1
Date: Friday, April 12, 2019
Sheet 71 of 104

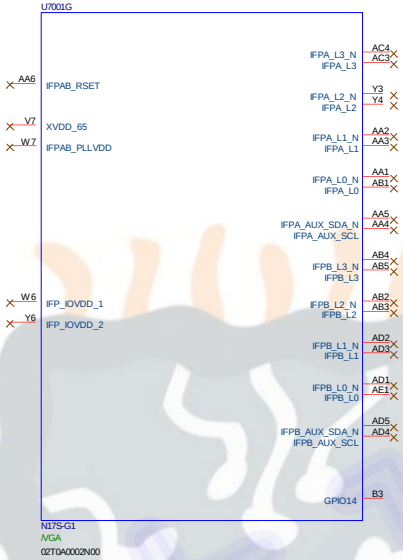
Eletro-X

VGA_XTAL



Eletro-X

VGA_DISPLAY



DG 10.2.1 Table 10.2
GB2C-64 no display support

Table 10.2 GB2C-64 Standard Configurations

Link	Standard Display Configurations
Note: GPUs in GB2C-64 packages provide no display links and no display head support; they are operated in Optimus/MS-Hybrid mode. **Note:** GPUs in GB2C-64 packages do not support G-SYNC™.	

Eletro-X

PEGATRON PROPRIETARY AND CONFIDENTIAL
PEGATRON Title : VGA_DISPLAY
Engineer: Tina Lee
BG1-HW1 RD
Size: C | Project Name: DL4FA | Rev: 1.1
Date: Friday, April 12, 2019 | Sheet 73 of 104

VBIOS ROM / Straping

VGA_GPIO_STRAP

From RVL-07916-001_v14 Table.4

	GB2C-64(N17S-LG)	Vendor	Strap	STRAP2	STRAP1	STRAP0
N17S-G0	TBD	Micron	0x9	L(R7416)	H(R7412)	L(R7404)
	TBD	Hynix	0xA		L(R7413)	H(R7401)
	0315-01SB0PB	Hynix	0x2	L(R7416)	H(R7412)	L(R7404)
	TBD	TBD	TBD			
	0315-02GE0PB	Micron	0x4	H(R7415)	L(R7413)	L(R7404)
	0315-02GG0PB	Hynix	0x5	H(R7415)	L(R7413)	H(R7401)
N17S-G1	TBD	TBD	TBD			
	TBD	TBD	TBD			
	TBD	TBD	TBD			

Table 5.5 SORx_EXPOSED Strap Enablement for Down Designs

Row Index	Strap Pins see Note			Resulting SORx_EXPOSED Enablements			
	ROM_SO	ROM_SI	ROM_SCLK	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
0	H	H	M	disabled	disabled	disabled	disabled
	M	X	X	(Reserved; do not configure)			
	All other Strap Configurations			(Reserved)			

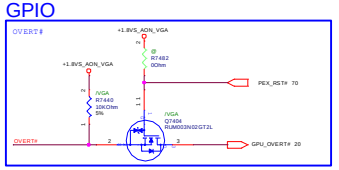
Table 5.6 SMB ALT_ADDR, DEVID_SEL, PCIE_CFG, VGA_DEVICE

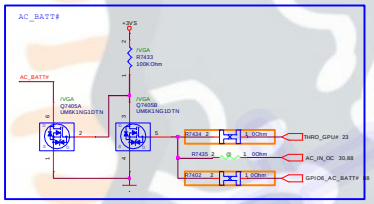
Strap Pins Note 1			Functions Selected by This Strapping			
STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
L	L	L	0	0	0	0

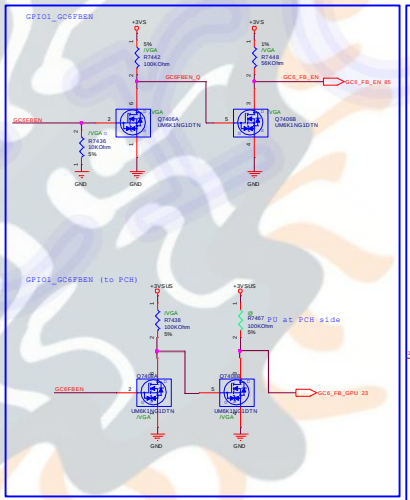
Table 5.3 RAMCFG

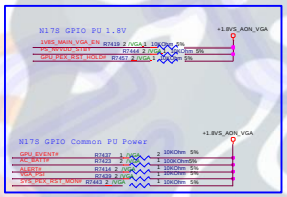
Strap Pins see Note			RAMCFG Setting Number
STRAP2	STRAP1	STRAP0	(see Memory RVL for memory configs corresponding to these numbers)
L	L	L	0 (0x0000)
L	L	H	1 (0x0001)
L	H	L	2 (0x0002)
L	H	H	3 (0x0003)
H	L	L	4 (0x0004)
H	L	H	5 (0x0005)
H	H	L	6 (0x0006)
H	H	H	7 (0x0007)
L	L	M	8 (0x0008)
L	M	L	9 (0x0009)
L	M	H	10 (0x000A)
L	H	M	11 (0x000B)
M	L	L	12 (0x000C)
M	L	H	13 (0x000D)

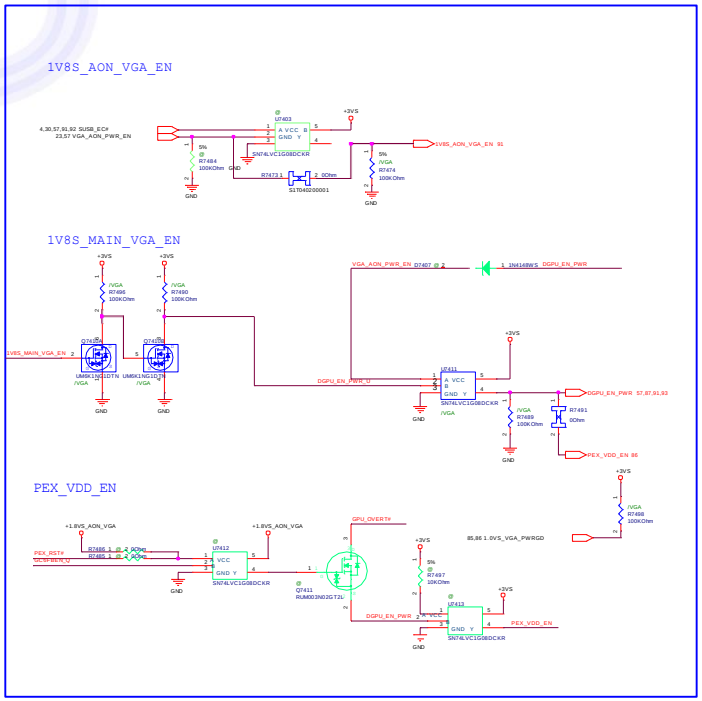
GPIO

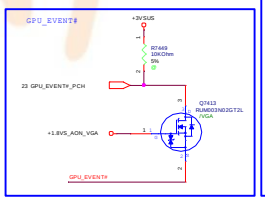


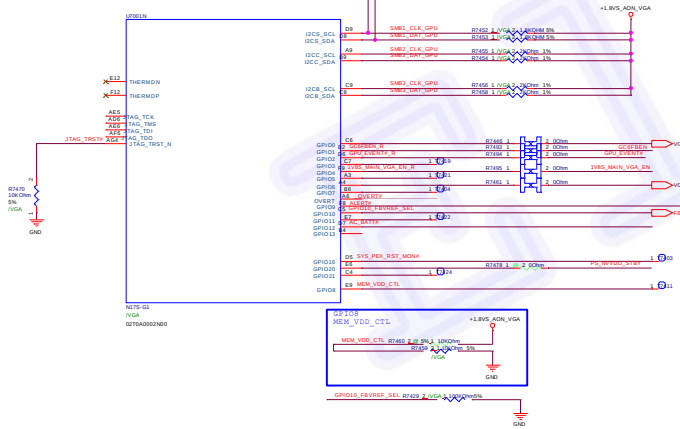








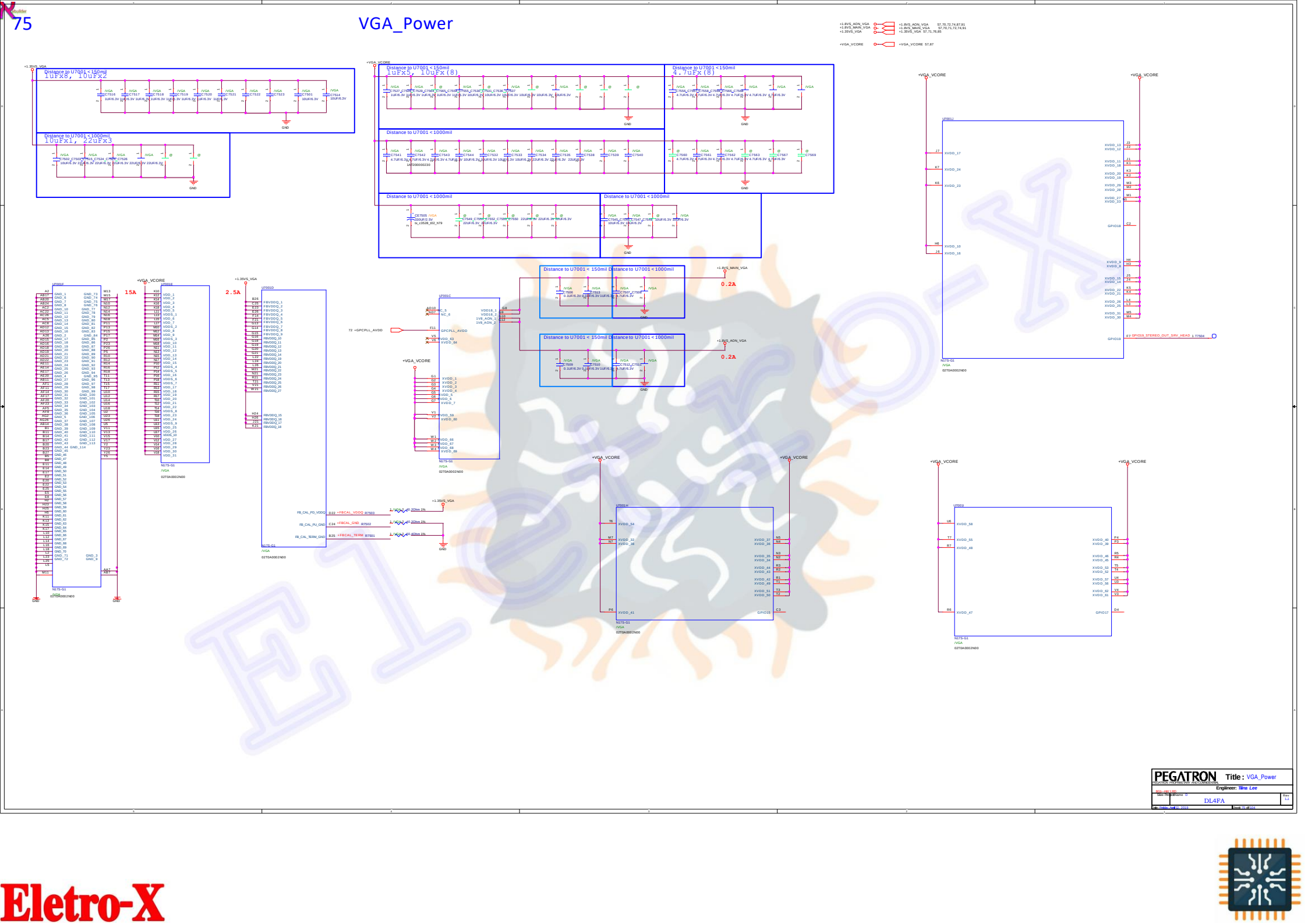




PEGATRON
Title: VGA_GPIO_STRAP
Engineer: Tina Lee
DL4FA

Eletro-X

VGA_Power



PEGATRON
CONFIDENTIAL PROPRIETARY AND CONFIDENTIAL

Title : VGA_Power

Engineer: Tina Lee

DL4FA

Eletro-X

VGA_FBA_GDDR5

nVidia Design Guide
DG-07875-001_v08 P.154
Table 9.5

	Lower 1.35	Upper 32.63
DQ00	0.00	
DQ01	41.850	
DQ02	41.850	
DQ03	41.850	
DQ04	41.85	
DQ05	41.85	
DQ06	41.85	
DQ07	41.85	
DQ08	41.85	
DQ09	41.85	
DQ10	41.85	
DQ11	41.85	
DQ12	41.85	
DQ13	41.85	
DQ14	41.85	
DQ15	41.85	
DBI0	41.85	
DBI1	41.85	
EDC0	41.85	
EDC1	41.85	
CMD0	0.00	
CMD1	41.850	
CMD2	41.850	
CMD3	41.850	
CMD4	41.85	
CMD5	41.85	
CMD6	41.85	
CMD7	41.85	
CMD8	41.85	
CMD9	41.85	
CMD10	41.85	
CMD11	41.85	
CMD12	41.85	
CMD13	41.85	
CMD14	41.85	
CMD15	41.85	
CLK0	41.850	
CLK1	41.850	
WCK01	41.850	
WCK23	41.850	
WCK45	41.850	
WCK67	41.850	

M1

3 : 24 ~ 31

2 : 16 ~ 23

1 : 8 ~15

0 : 0 ~ 7

M2

7 : 56 ~ 63

6 : 48 ~ 55

5 : 40 ~ 47

4 : 32 ~ 39

Non-Mirrored

Place near U7601

Place around U7601

Place below decoupling caps close VDD pin. (Spare Capacitors)

Place near U7602

Place around U7602

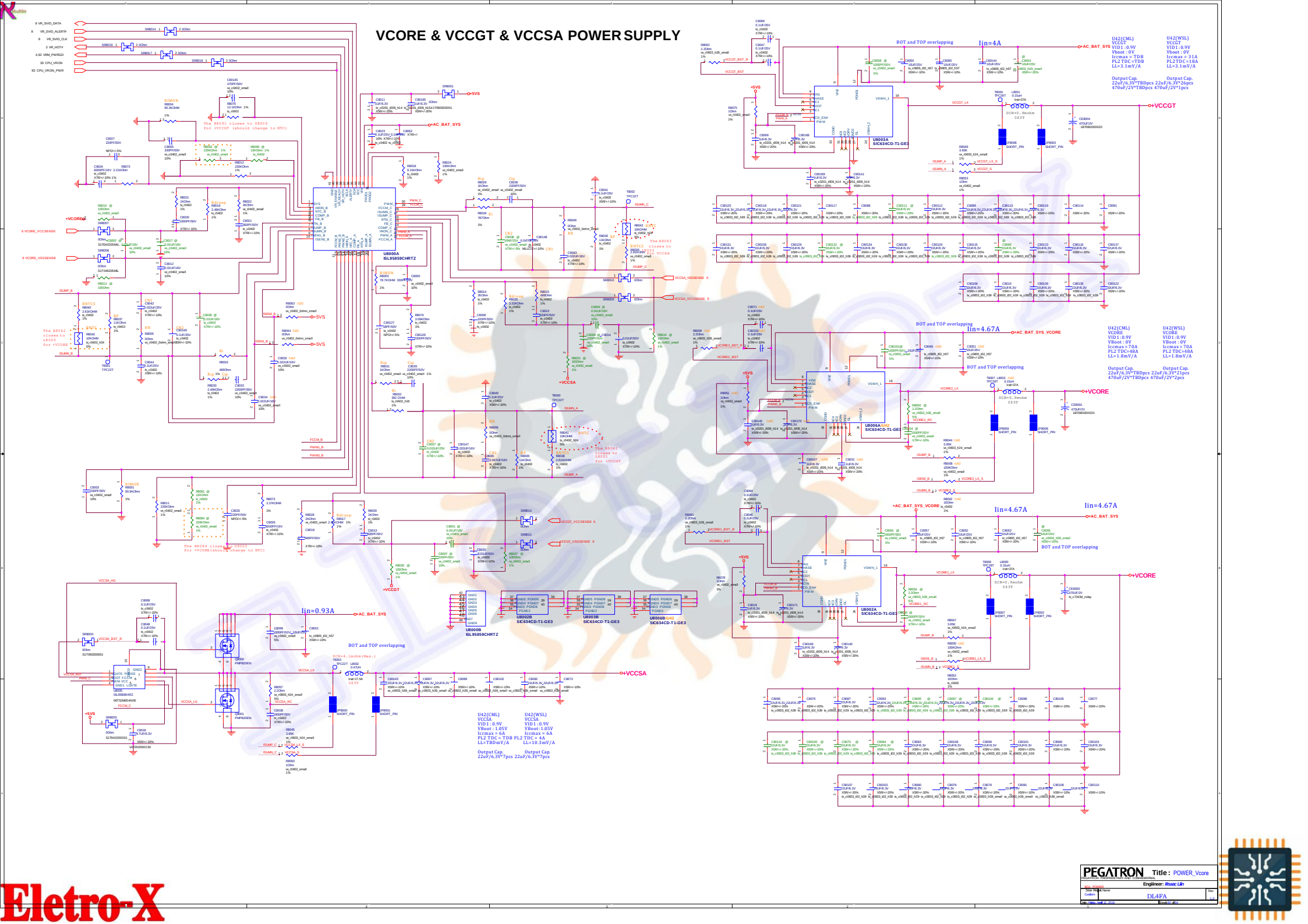
Place below decoupling caps close VDD pin. (Spare Capacitors)

Title :	VGA_FBA_GDDR5
Engineer:	Tina Lee
Size	Document Number
C	DL4FA
Date: Friday, April 20, 2012	Sheet 76 of 88

PEGATRON
CONFIDENTIAL

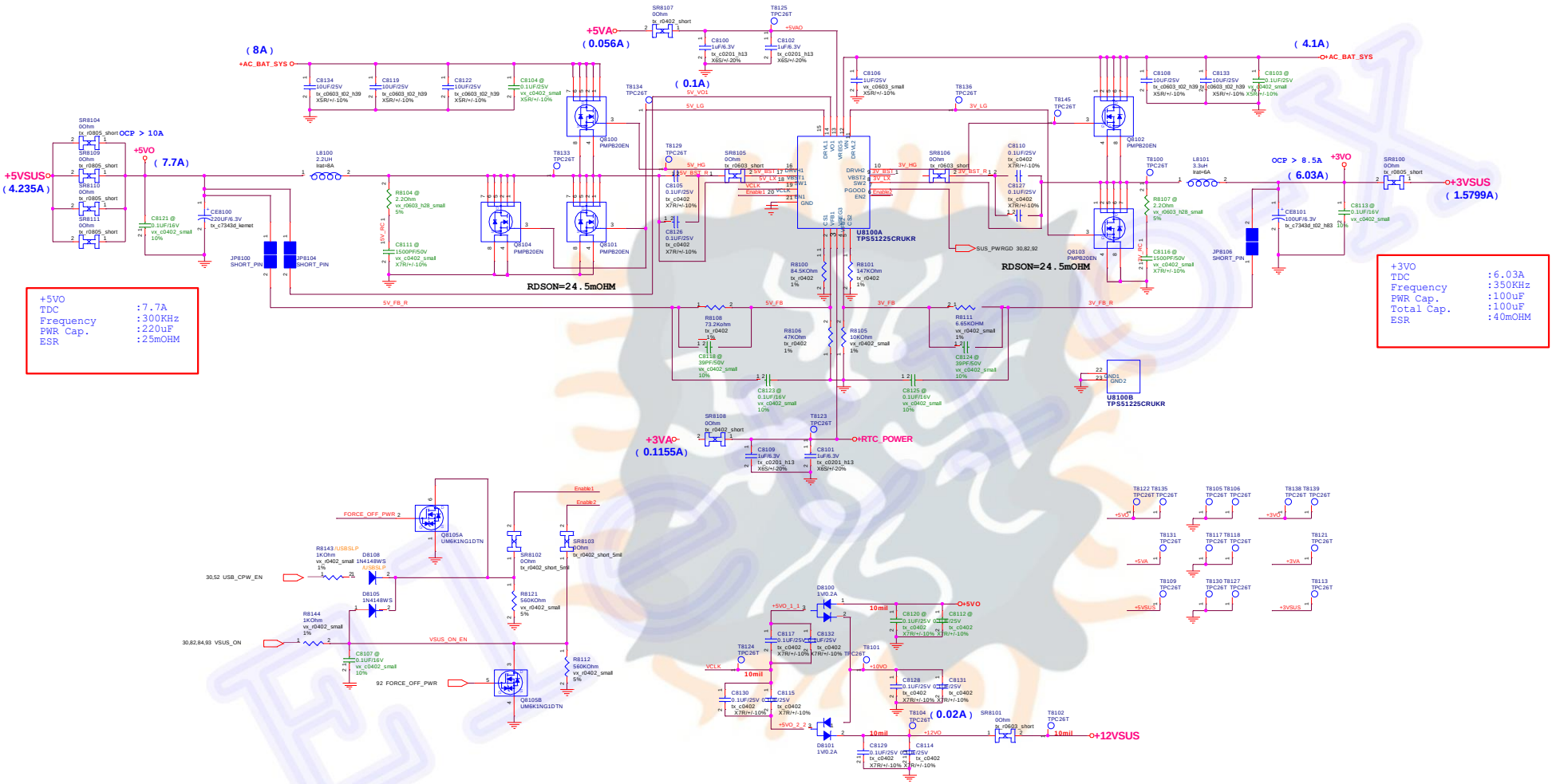
Eletro-X

VCORE & VCCGT & VCCSA POWER SUPPLY



Eletro-X

5VO & 3VO POWER SUPPLY



PEGATRON Title : POWER_SYSTEM
PEGATRON PROPRIETARY AND CONFIDENTIAL
Engineer: Isaac Lin
BG1 : POWER
Size: Custom | Project Name: DL4FA | Rev: 1.0
Date: Friday, April 12, 2019 | Sheet: 81 of 97

Eletro-X

1.05VSUS POWER SUPPLY

+1.05VO
TDC :6.77A
Frequency :519KHz
PWR Cap. :132uF
EE Cap :
Total Cap. :132uF

Vout=0.8*(1+(R1/R2))
0.8V +- 1%

1.008V:R1=5.10K, R2=19.6K
1.009V:R1=5.23K, R2=20K
1.359V:R1=13.7K, R2=19.6K
1.360V:R1=14K , R2=20K
1.512V:R1=17.8K, R2=20K
1.510V:R1=17.4K, R2=19.6K

2.5V POWER SUPPLY

+2.5VO
TDC :0.48A
OCP :3A
PWR Cap. :44uF
EE Cap. : uF
Total Cap. :44uF

<Variant Name>

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : PWR +1.05VSUS & +2.5V

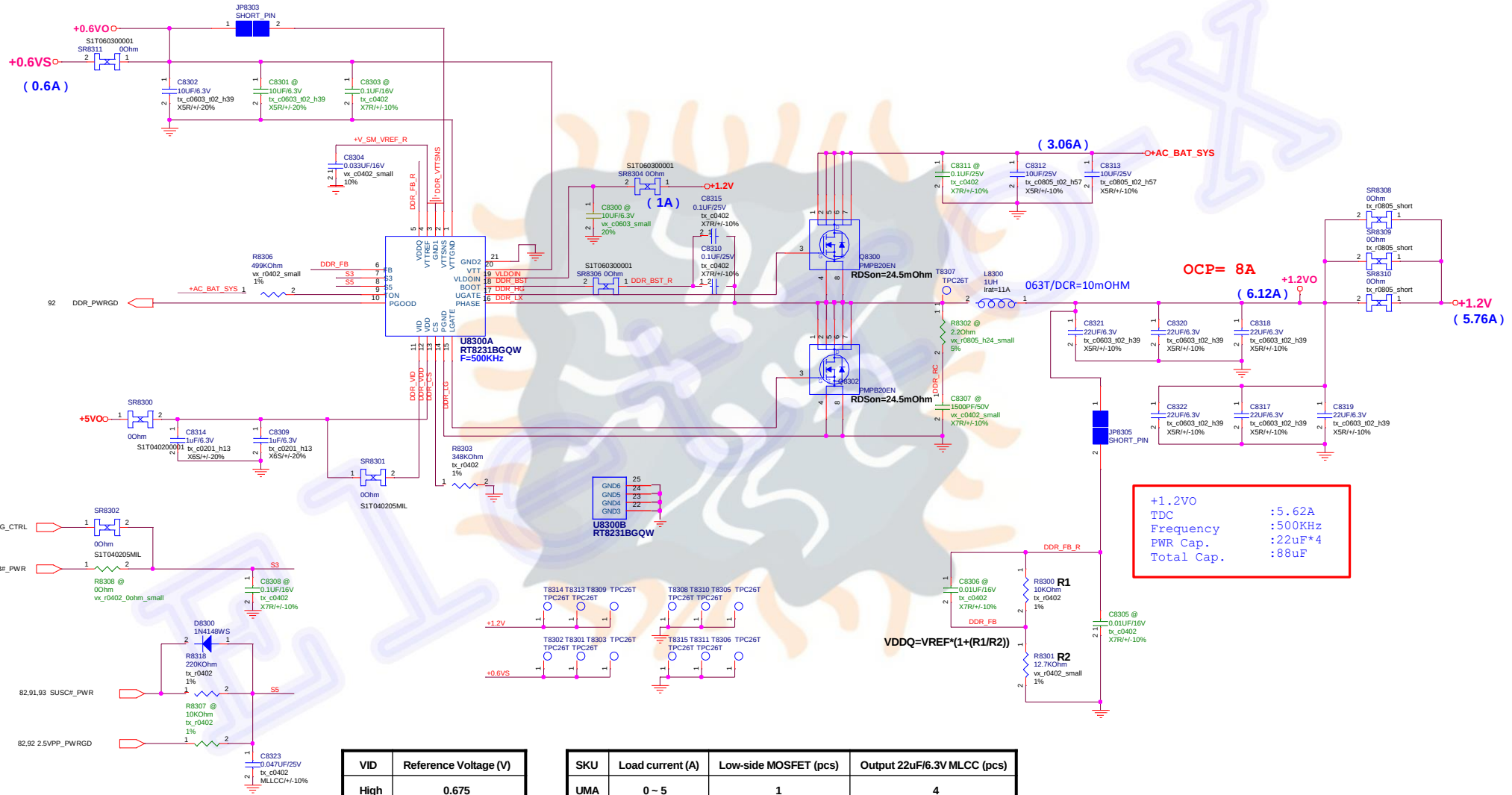
Engineer: Isaac Lin

Size: Custom | Project Name: DL4FA

Date: Friday, April 12, 2019 | Sheet 82 of 84

Eletro-X

DDR & VTT POWER SUPPLY



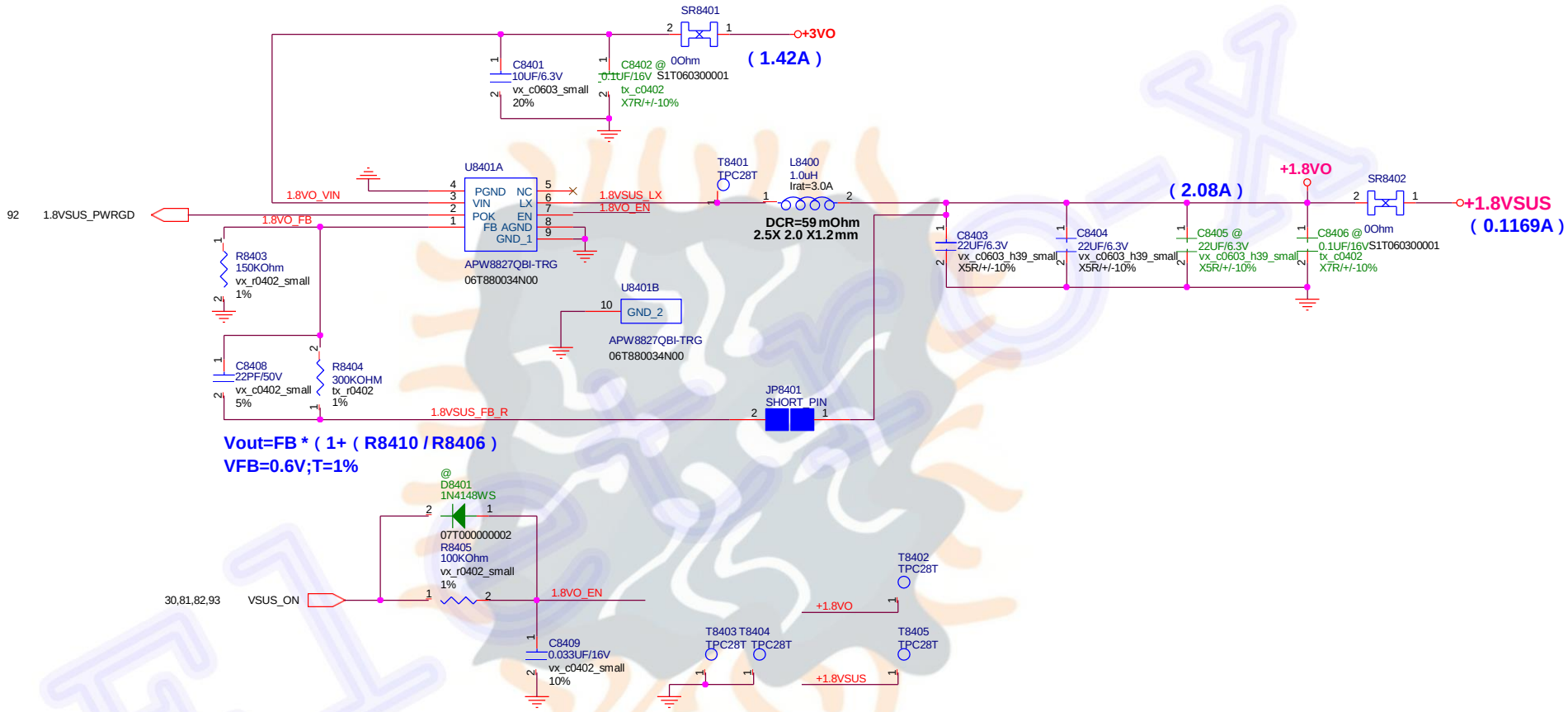
VID	Reference Voltage (V)
High	0.675
Low	0.75

SKU	Load current (A)	Low-side MOSFET (pcs)	Output 22uF/6.3V MLCC (pcs)
UMA	0 ~ 5	1	4
DSC	0 ~ 8	2	5

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL
Title : POWER_DDR & VTT
Engineer: Isaac Lin
BG1-POWER
Size Project Name
Custom DL4FA
Date: Friday, April 12, 2019 Sheet

Eletro-X

1.8VSUS POWER SUPPLY



<Variant Name>

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : POWER_+1.8VSUS

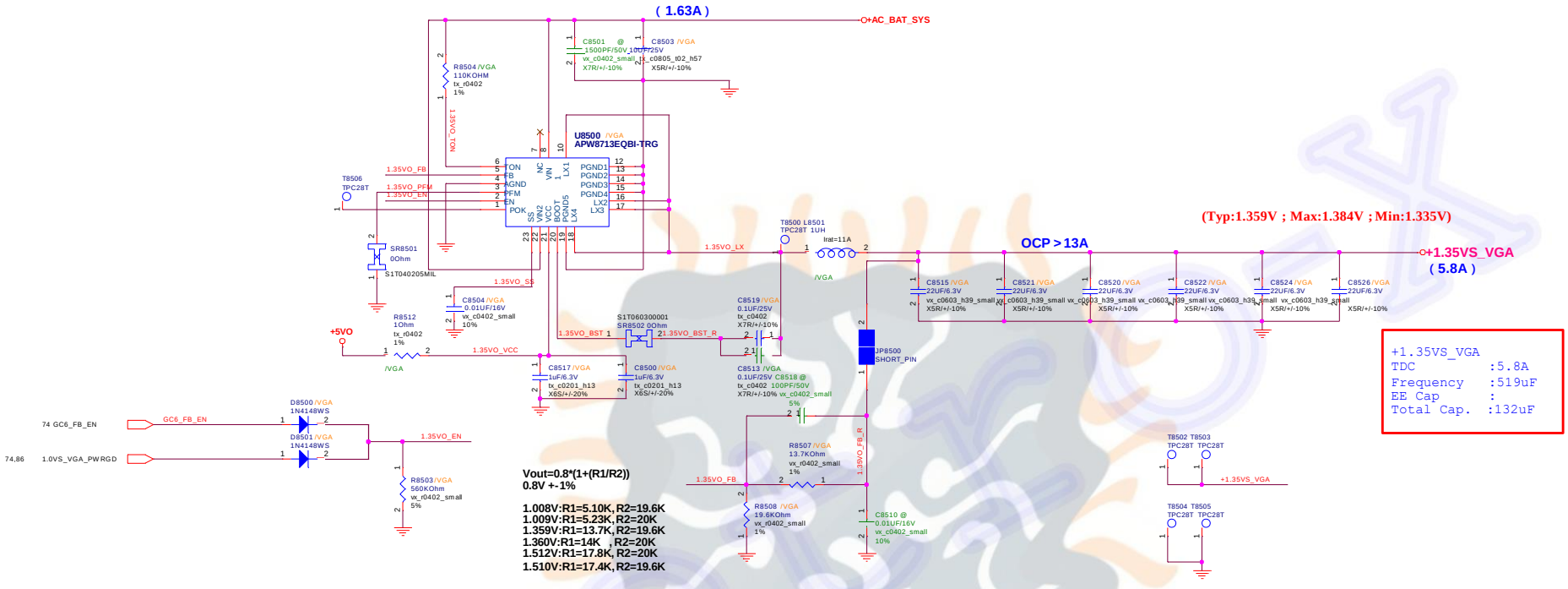
Engineer: Isaac Lin

Size	Project Name	Rev
B	DL4FA	1.0

Date: Friday, April 12, 2019 Sheet 84 of 96

Eletro-X

1.35VS_VGA POWER SUPPLY



PEGATRON PROPRIETARY AND CONFIDENTIAL

PEGATRON Title : POWER_1.35VS_VGA

Engineer: Isaac Lin

Project Name: DL4FA

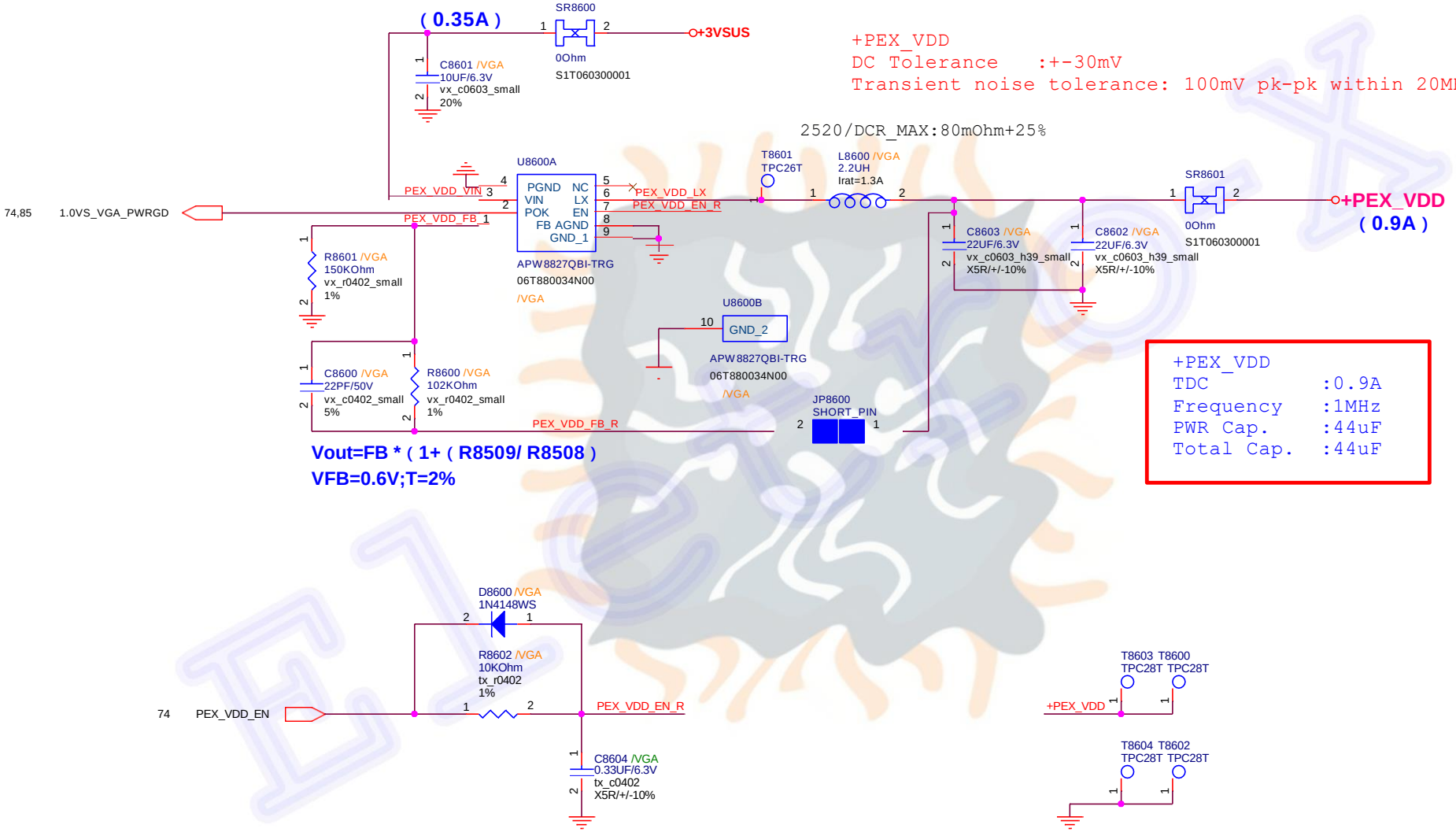
Rev: 1.0

Date: Friday, April 12, 2019

Sheet 85 of 96

Eletro-X

PEX_VDD POWER SUPPLY



<Variant Name>

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : PWR_PEX_VDD

Engineer: Isaac Lin

Size	Project Name	Rev
Custom	DL4FA	1.0

Date: Friday, April 12, 2019 Sheet 86 of 96

Eletro-X

VGA_CORE POWER SUPPLY

	N17S_G0
R8723	6.19K
R8721	20.5K
R8716	4.32K
R8715	16.5K
R8713	309
C8720	4.7nF
Vstep	6.25mV
Vmin	0.3V
Vmax	1.3V
Vboot	0.8V

VGA_PSI#	VO_action
~ 0.4V	1 Phase DEM
0.7 ~ 0.88V	1 Phase FCCM
1.08 ~ 1.35V	2 Phase FCCM
1.6V ~	2 Phase FCCM

+VGA_VCORE(Package type:N17VS-G1)
DC Tolerance :+-20mV

Overshoot/undershoot
Transient noise tolerance: -10% ~ +20% within 20MHz BW
High frequency noise: 400mV pk-pk within 1GHz BW

VID:0.6V ~ 1.2V
Number of programmable Volt: 96 levels
Programmable volt steps: 6.25mV
Settling Time: < 100us for rising, no restriction on falling

2 PHASE 25W
N17S-G2
TDC=27.8A
EDP=42A

+VGA_VCORE (2 Phase)
TDC :27.8A
Frequency :305KHz
PWR Cap. :940uF
EE Cap. :620uF
Total Cap. :1560uF
ESR :4.5mOHM

RDSON=2.5mOHM

RDSON=2.5mOHM

OCP 60.4A

PEGATRON
Title : VGA_VCORE
Engineer: Isaac.Lin
DL4FA

Eletro-X

BATTERY CHARGER

Charger Vendor	TI
Charger P/N	BQ24781RUYR
Support Hybrid Boost?	YES
Adapter capacity	45W, 65W
Active/Release Point (Hybrid Boost)	Active - ≧1.07 × CP Release - ≦0.93 × CP
Enable condition Disable condition	RSOC≧ 40% RSOC≦ 30%

<Variant Name>

PEGATRON Title : POWER_CHARGER

PEGATRON PROPRIETARY AND CONFIDENTIAL

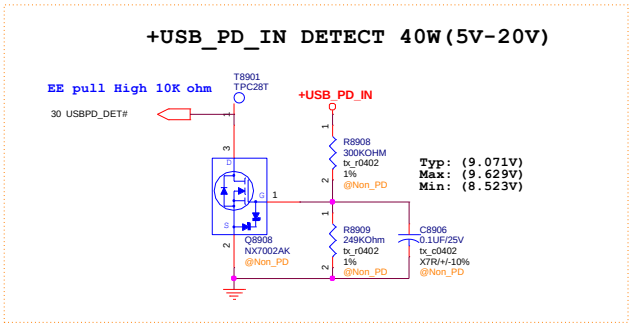
Engineer: Isaac Lin

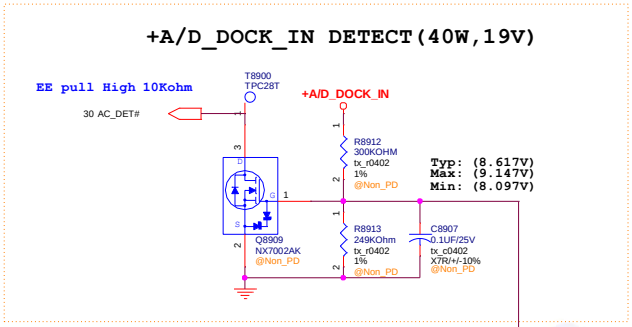
Size	Project Name	Rev
Custom	DL4FA	1.0

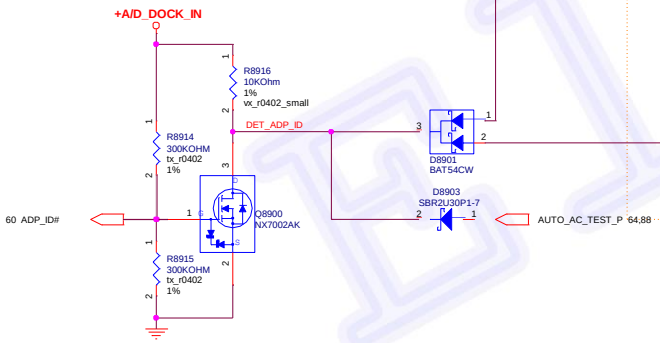
Date: Friday, April 12, 2019 Sheet 88 of 96

Eletro-X

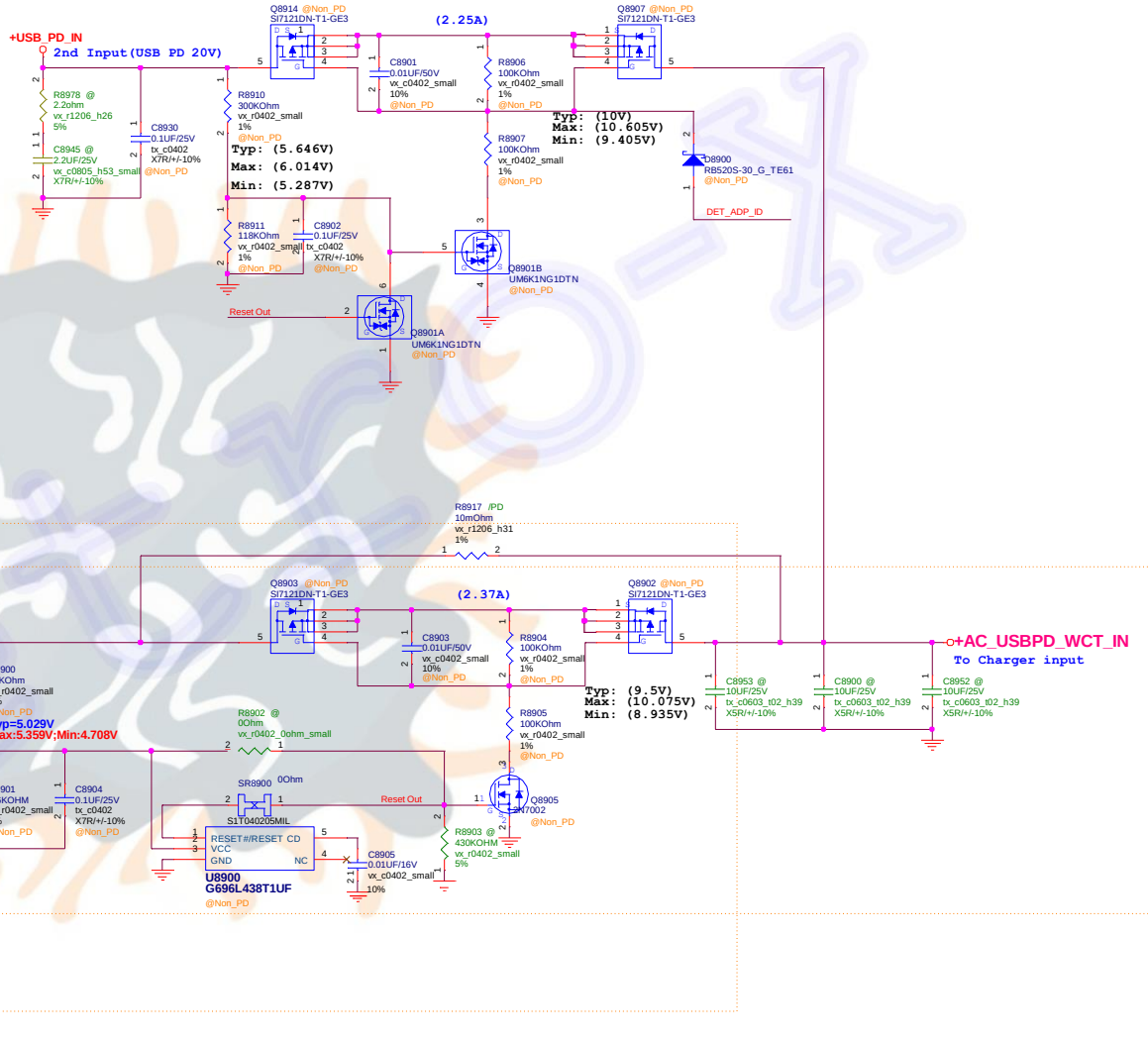
AC & USB_PD Detect







2 Input switch Circuit



PEGATRON
PEGATRON PROPRIIETARY AND CONFIIDENTIIAL

Title : AC&PD S.W.

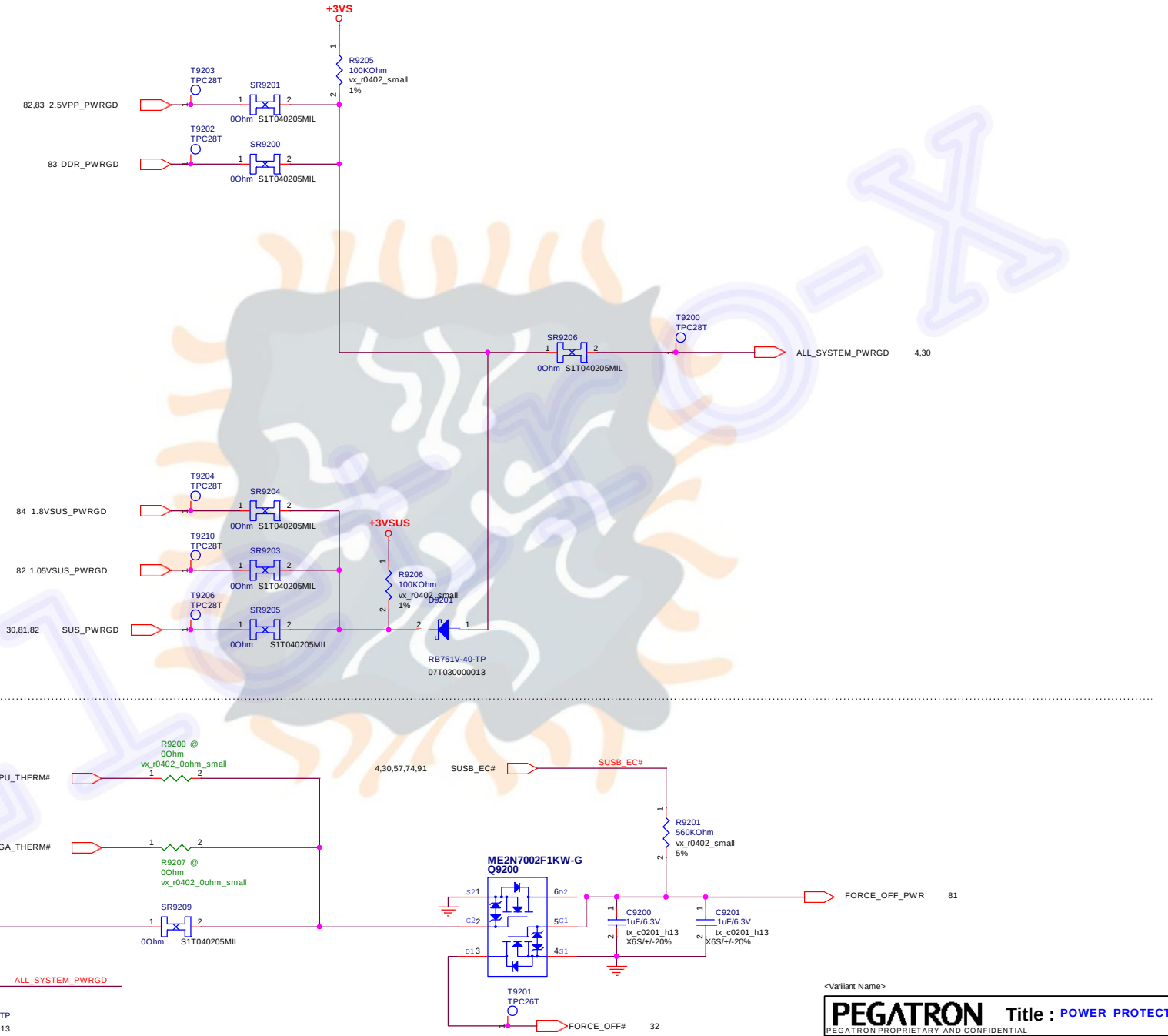
Engineer: Isaac Lin

Size	Project Name	Rev
Custom	DL4FA	1.0

Date: Friday, April 12, 2019 Sheet 89 of 96

Eletro-X

POWER GOOD DETECTER



<Variant Name>

PEGATRON
PEGATRON PROPRIETARY AND CONFIDENTIAL

Title : POWER_PROTECT

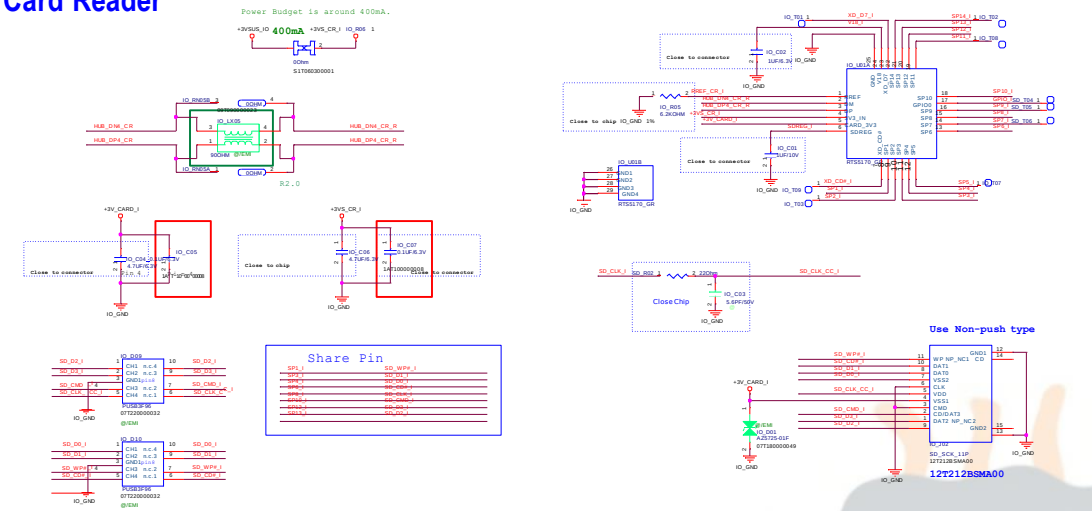
Engineer: Isaac Lin

Size	Project Name	Rev
Custom	DL4FA	1.0

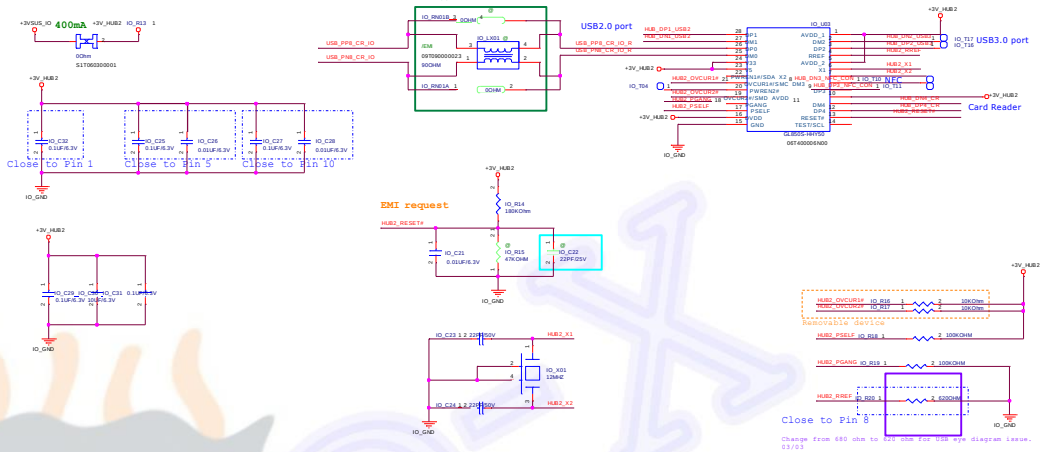
Date: Friday, April 12, 2019 Sheet 92 of 96

Eletro-X

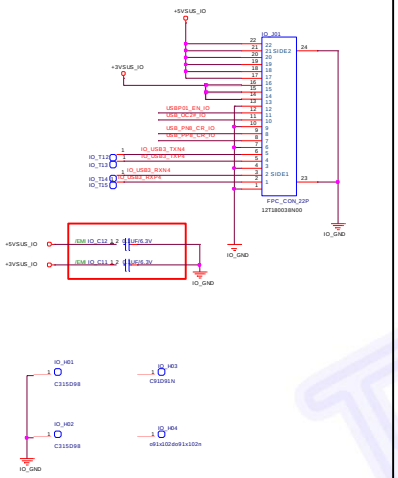
Card Reader



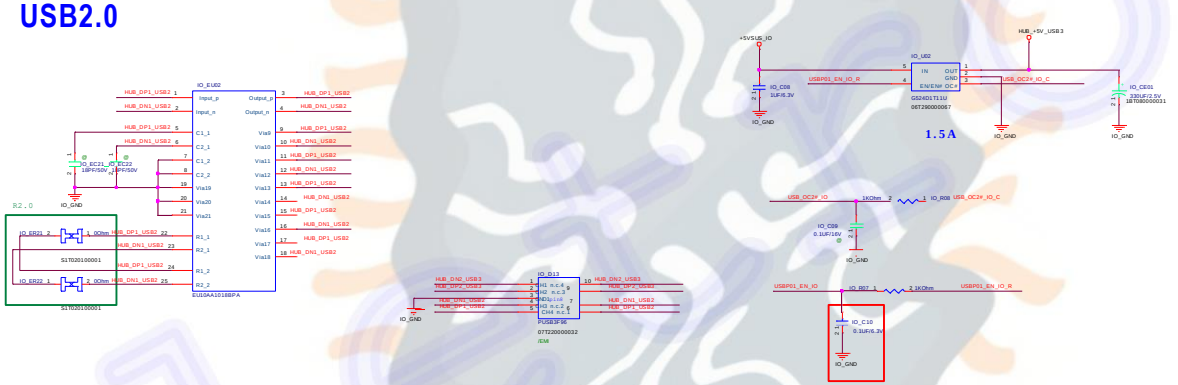
USB HUB



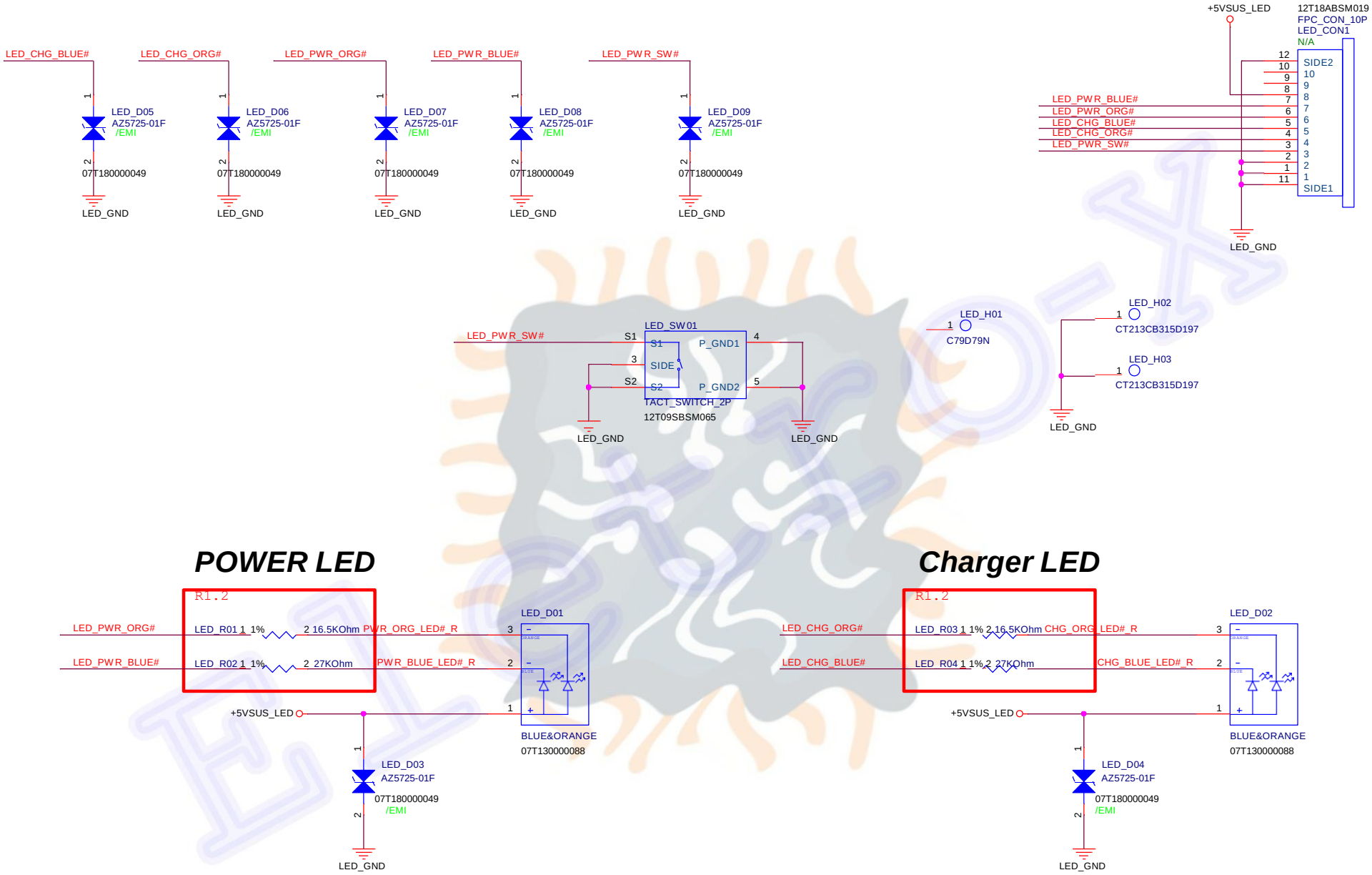
FFC connector



USB2.0



Eletro-X



PEGATRON

PEGATRON PROPRIETARY AND CONFIDENTIAL

B01-HW1RD

Title : LED

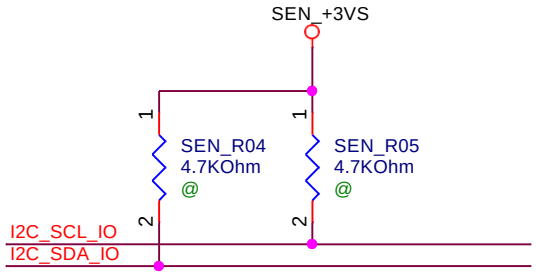
Engineer: Tina Lee

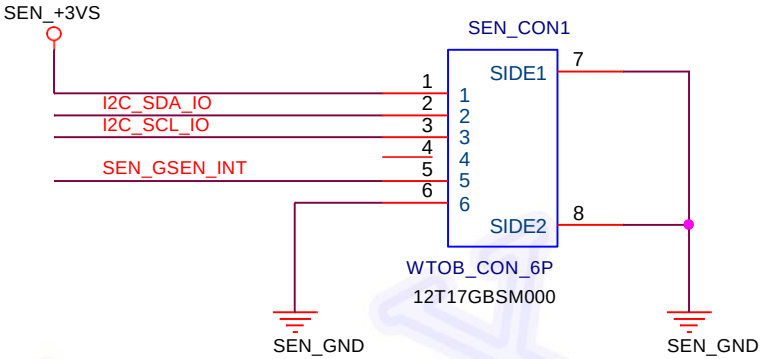
Size	Project Name
Custom	DL4FA

Date: Friday, April 12, 2019 Sheet 103 of 104

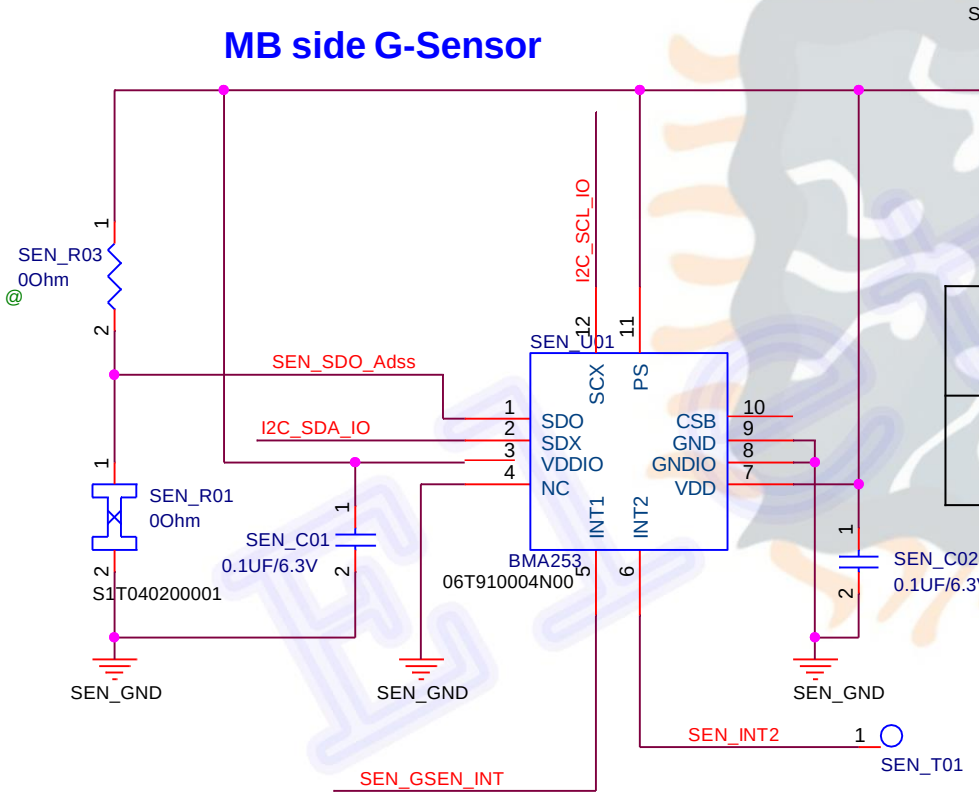
Eletro-X

G-Sensor I2C

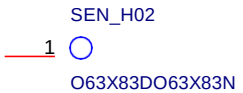


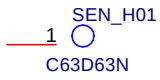


MB side G-Sensor



U6601.1 Pull Up(MB)	Slave Address: 0x19 (W: 0x32, R: 0x33)
SEN_U01.1 Pull Down(IO)	Slave Address: 0x18 (W: 0x30, R: 0x31)





PEGATRON

Title : G-sensor

BG1-HW1 RD

Engineer: *Tina Lee*

Size	Project Name	Rev
A	DL4FA	1.1
	P/N	

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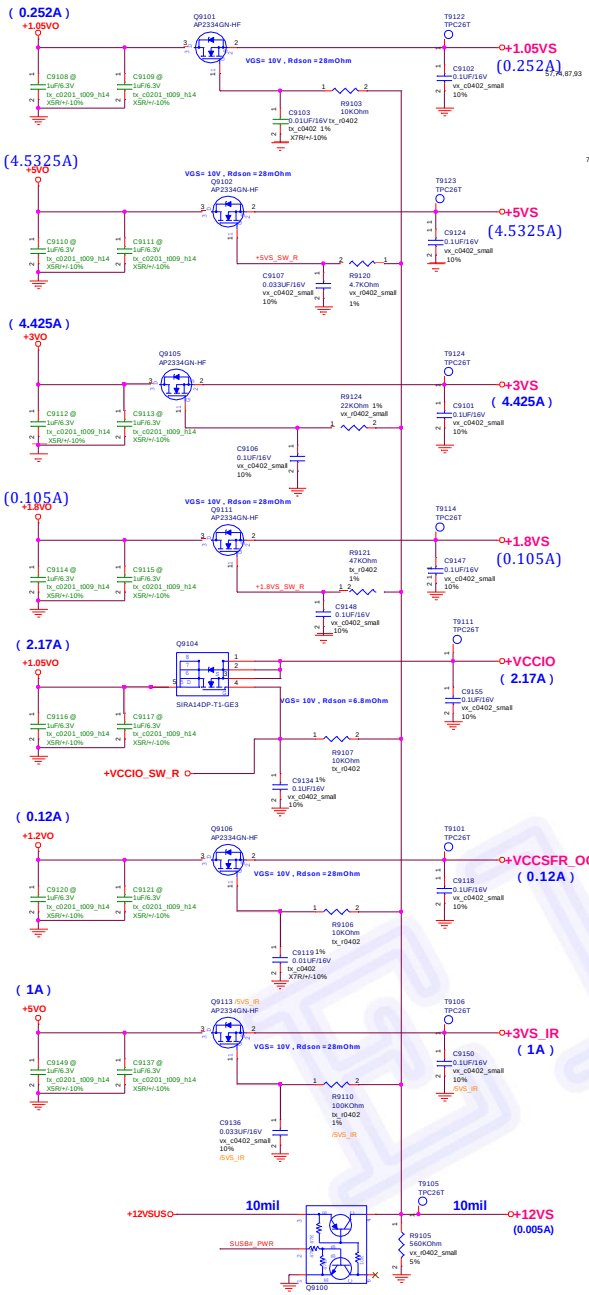
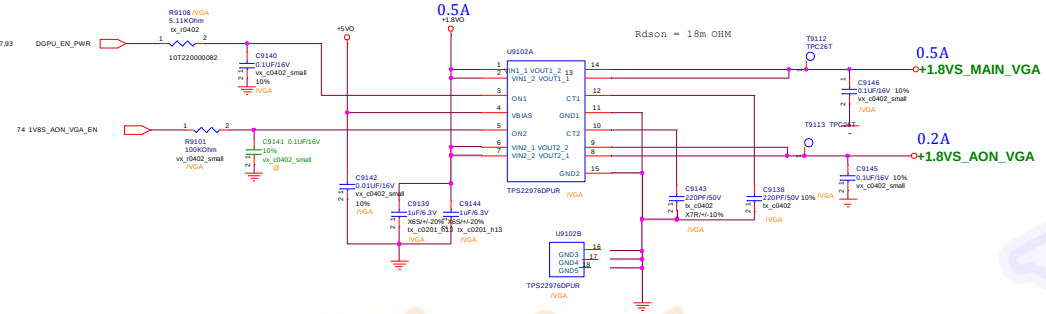
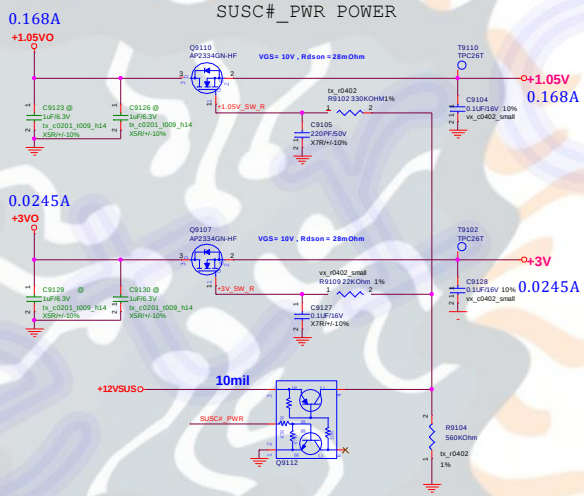
SUSB#_PWR POWER



DSC_VGA_PWR POWER for N17s-G1



SUSC#_PWR POWER



SUSB#_PWR POWER Control

SUSC#_PWR POWER Control

PEGATRON PROPRIETARY AND CONFIDENTIAL

PEGATRON Title : POWER_LOAD SWITCH

Engineer: Isaac Lin

Size: Custom | Project Name: DL4FA | Rev: 1.0

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