


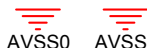





R7S910018 Evaluation board RTK7910018C00000BE SCHEMATICS (RZ/T1, BGA320)

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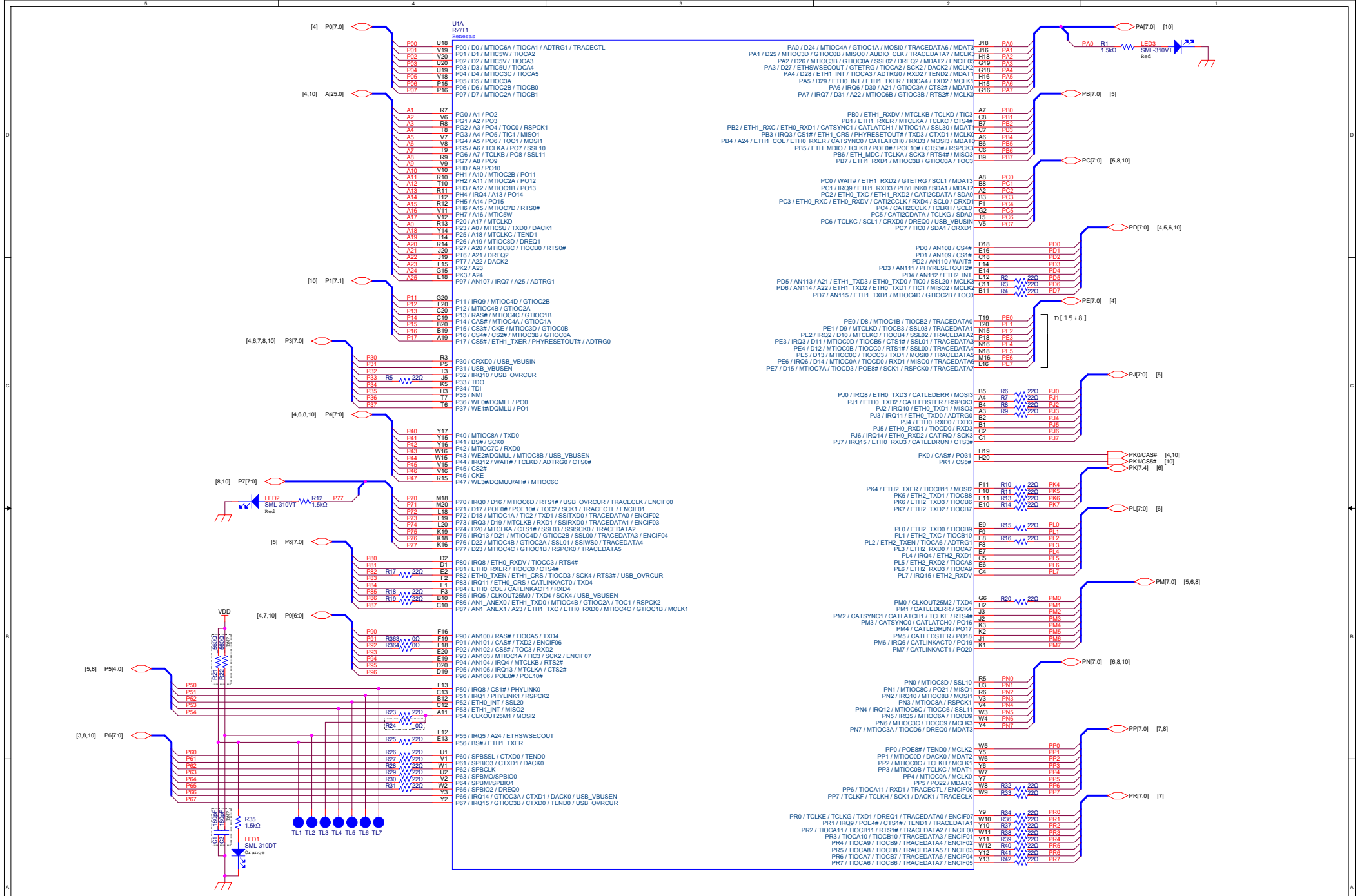
Note:

-  Digital GND (VSS)
-  Digital GND for USB
-  Analog GND
-  Analog GND for ADC
-  Analog GND for ADC Reference
-  Analog GND for PLL
-  Not mounted (Do Not Fit)

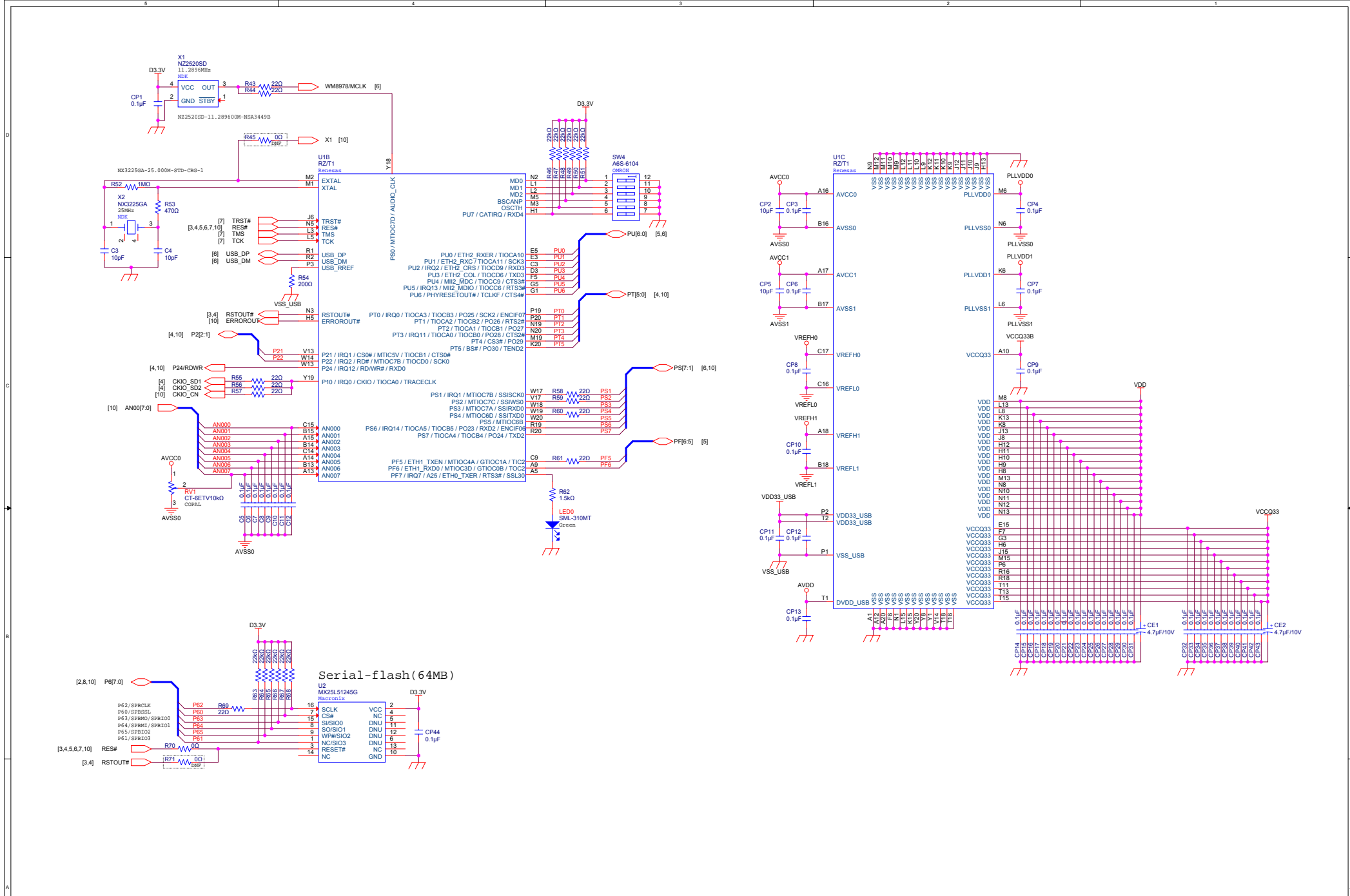
VIN = System Power (5V or 7V-12V input)
D5V = Digital 5V
D3.3V = Digital 3.3V for External device
A3.3V = Analog 3.3V for External device
D1.2V = Digital 1.2V
A1.2V = Analog 1.2V
VCCQ33 = 3.3V for RZ/T1 I/O & USB
AVCC = Analog 3.3V for ADC
VDD = Digital 1.2V for RZ/T1 Core
AVDD = Analog 1.2V for PLL & USB

R = Fixed Resistors
RA = Resistor Array
C = Ceramic Caps
CE = Tantalum Electrolytic Caps
CP = Decoupling Caps

CHANGE					Renesas System Design Co., Ltd.				RTK7910018C00000BE	
	SCALE				DRAWN	CHECKED	DESIGNED	APPROVED	INDEX	(1 / 10)
	DATE		15-09-17						R20UT3241EG0200	



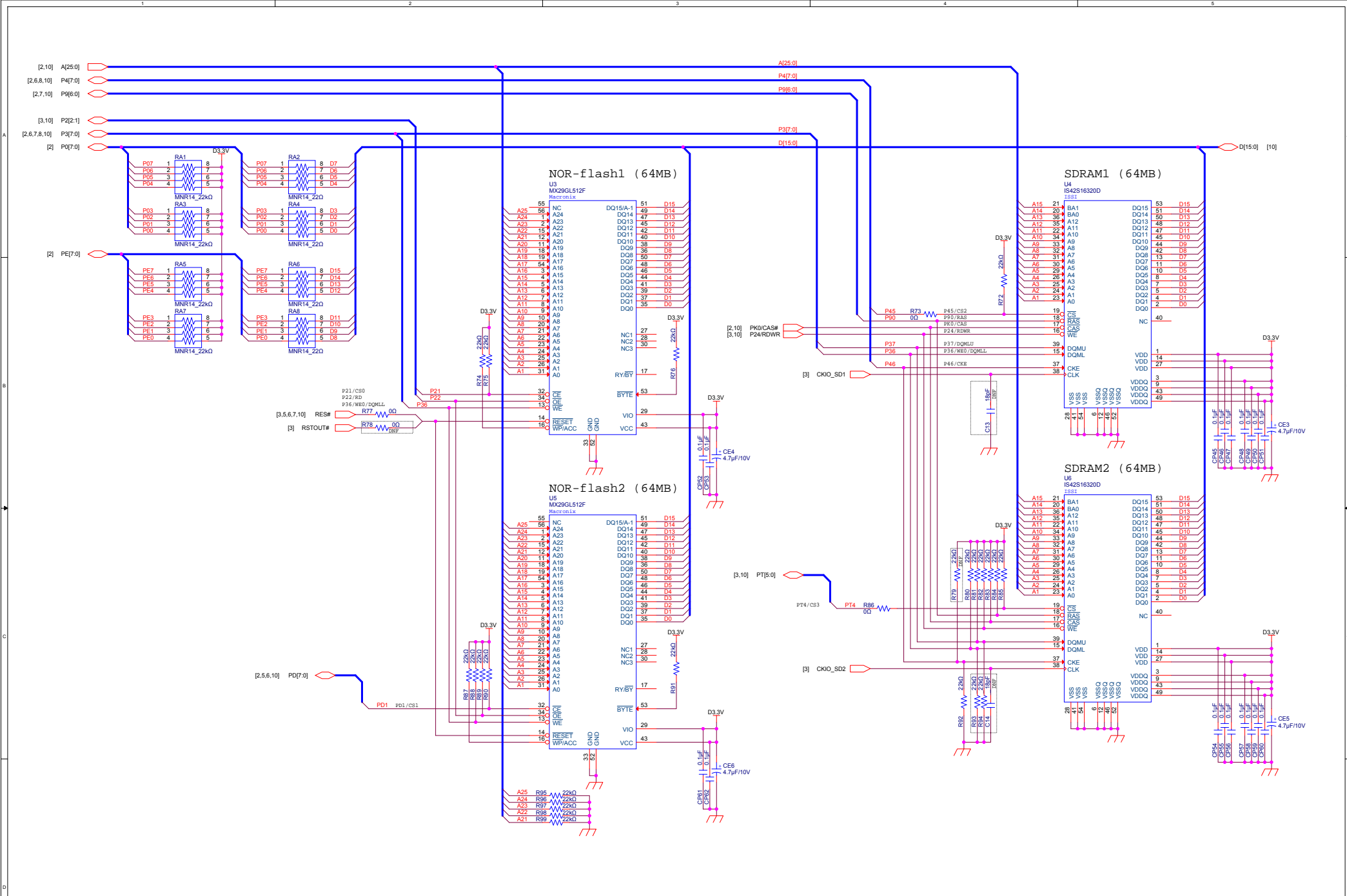
CHANGE	Renesas System Design Co., Ltd.				RTK7910018C00000BE	
					RZ/T1-1	
	SCALE		DRAWN		CHECKED	
	DATE		DESIGNED		APPROVED	
		15-09-17				
				(2 / 10)		
				R20UT3241EG0200		



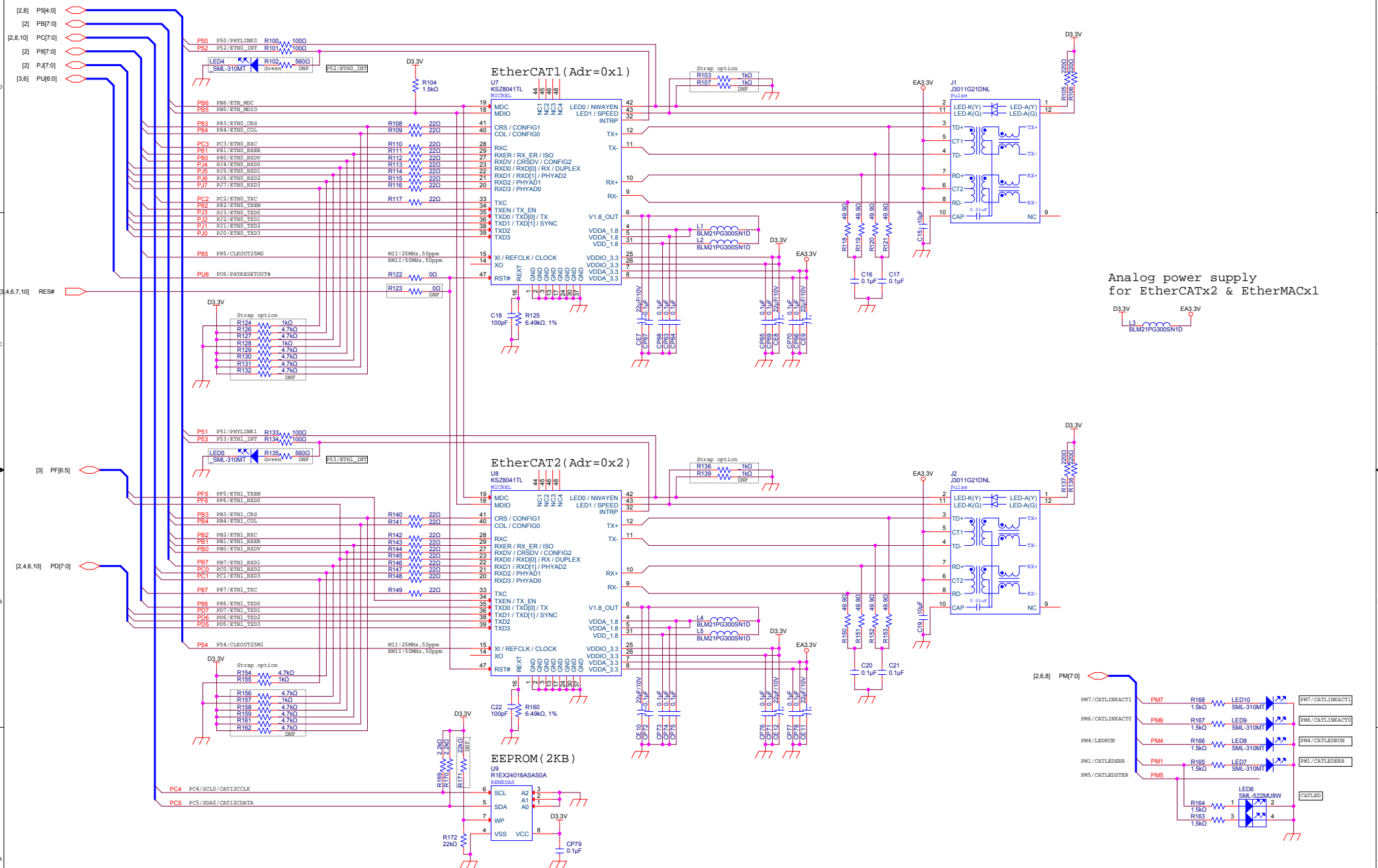
Serial-flash (64MB)

CHANGE

Renesas System Design Co., Ltd.				RTK7910018C00000BE RZ/T1-2, Serial-flash	
				(3 / 10)	
SCALE		DRAWN	CHECKED	DESIGNED	APPROVED
DATE		15-09-17			
R20UT3241EG0200					

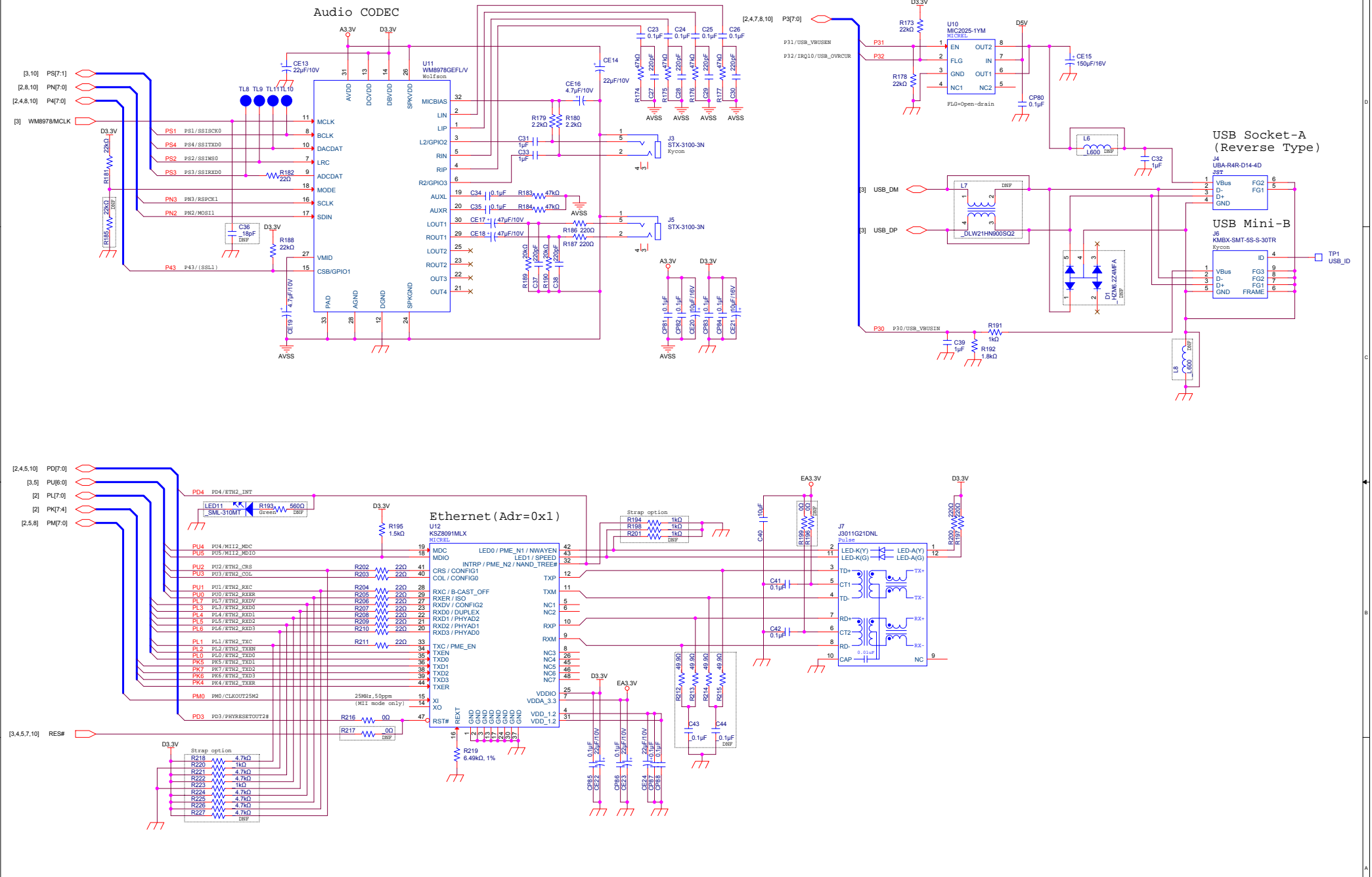


CHANGE	Renesas System Design Co., Ltd.				RTK7910018C00000BE	
	SCALE	DRAWN	CHECKED	DESIGNED	APPROVED	NOR-flash, SDRAM (4 / 10)
	DATE	15-09-17				R20UT3241EG0200

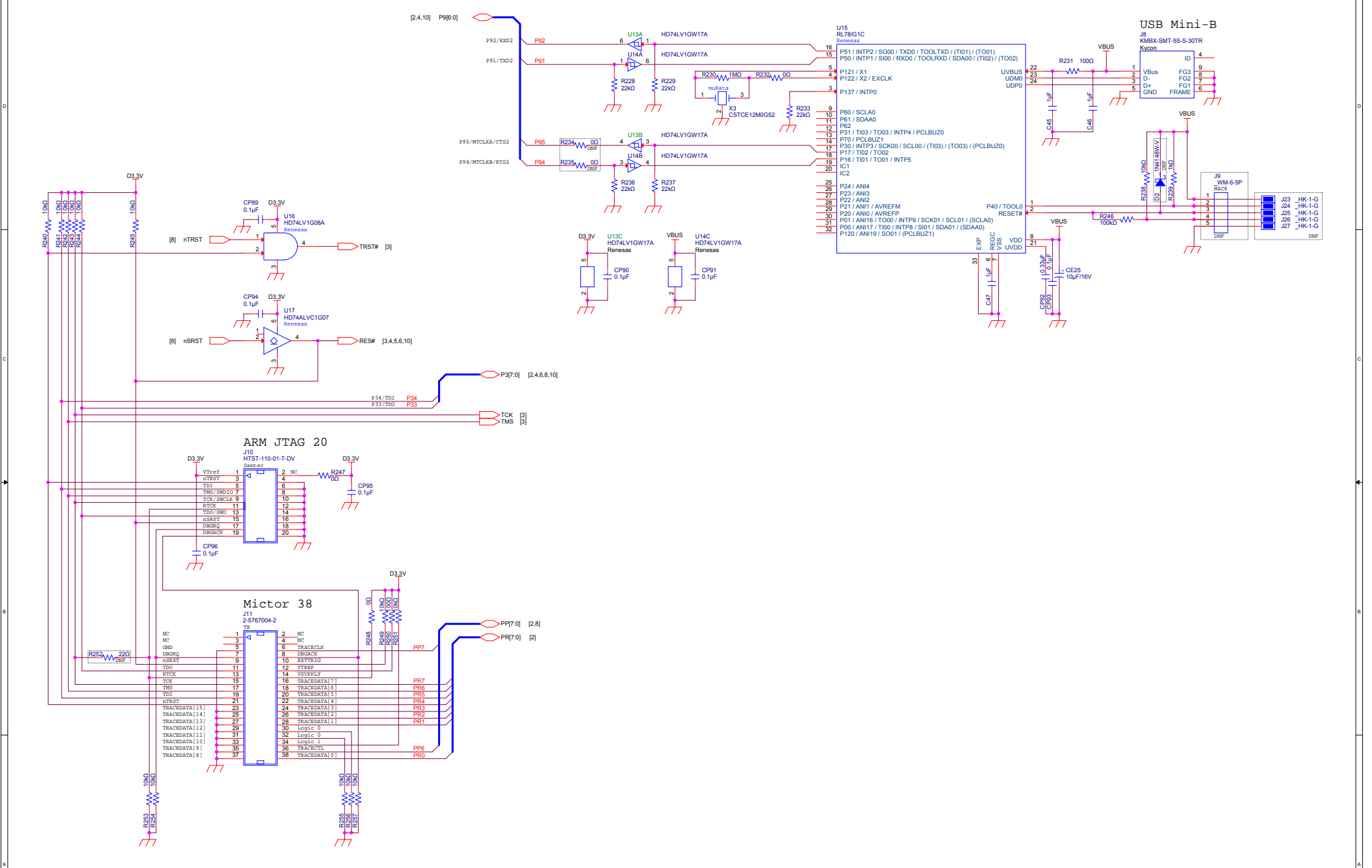


Analog power supply for EtherCATx2 & EtherMACx1

CHANGE	Renesas System Design Co., Ltd.				RTK7910018C00000BE	
					EtherCAT	
					(5 / 10)	
SCALE		DRAWN	CHECKED	DESIGNED	APPROVED	R20UT3241EG0200
DATE	15-09-17					

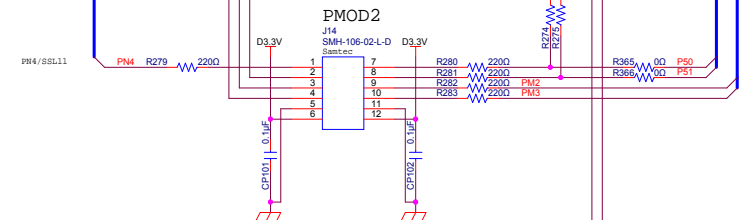
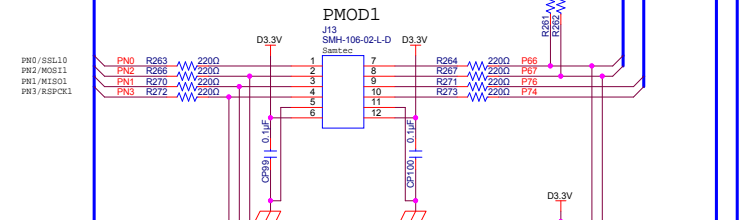
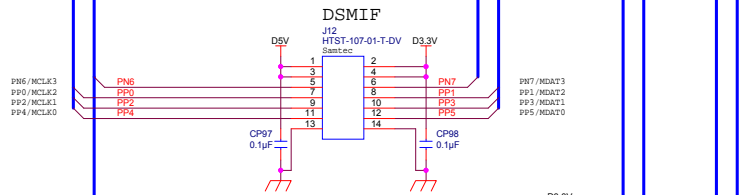


CHANGE	Renesas System Design Co., Ltd.				RTK7910018C00000BE	
					Audio-codec, USB, LAN	
					(6 / 10)	
SCALE		DRAWN		CHECKED	DESIGNED	APPROVED
DATE		15-09-17		R20UT3241EG0200		

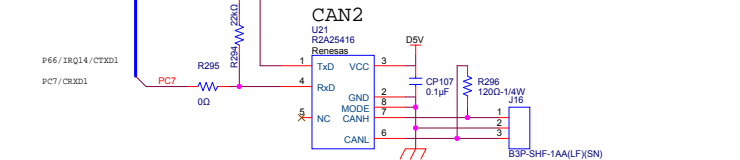
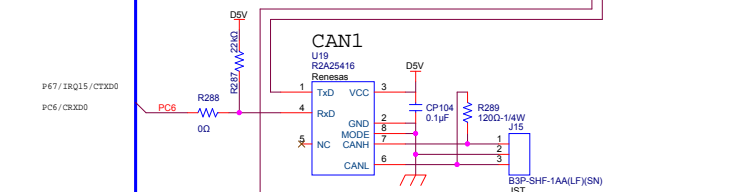


CHANGE	Renesas System Design Co., Ltd.				RTK7910018C00000BE	
					Serial (USB), DBGIF (7 / 10)	
	SCALE		DRAWN	CHECKED	DESIGNED	APPROVED
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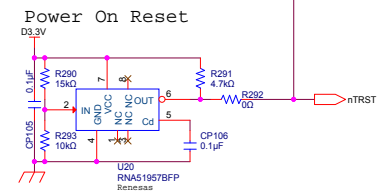
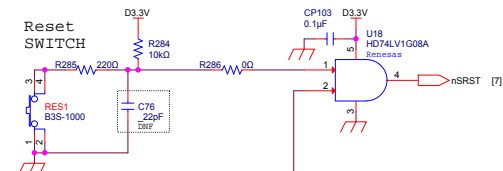
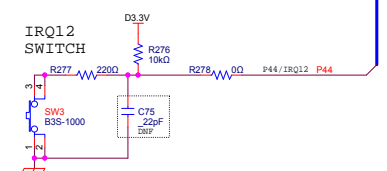
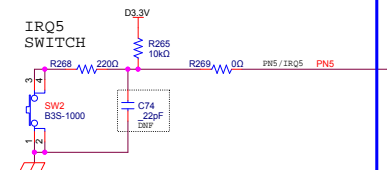
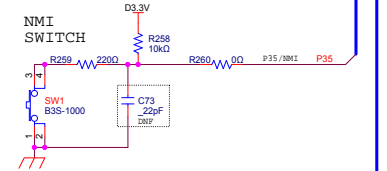
[2.5.6] PM7[7:0]
 [2.5] P5[4:0]
 [2.10] P7[7:0]
 [2.3.10] P6[7:0]
 [2.7] PP[7:0]
 [2.6.10] PN[7:0]



[2.5.10] PC7[7:0]



[2.4.6.10] P4[7:0]
 [2.4.6.7.10] P3[7:0]



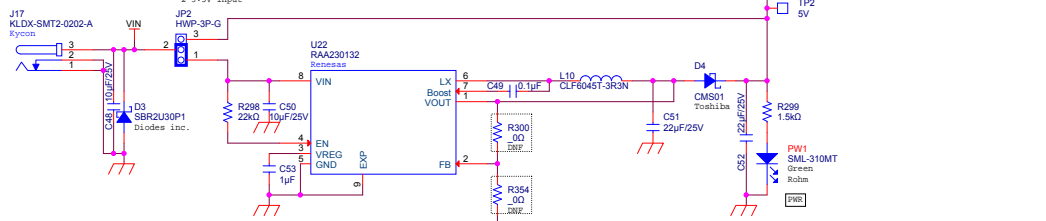
P66/CTXD1/IRQ14
 P67/CTXD0/IRQ15

P50/IRQ8/PHYLINK0
 P51/IRQ1/PHYLINK1

SCALE		Renesas System Design Co., Ltd.				RTK7910018C00000BE DSMIF, PMOD, CAN, SW (8 / 10)
		DRAWN	CHECKED	DESIGNED	APPROVED	
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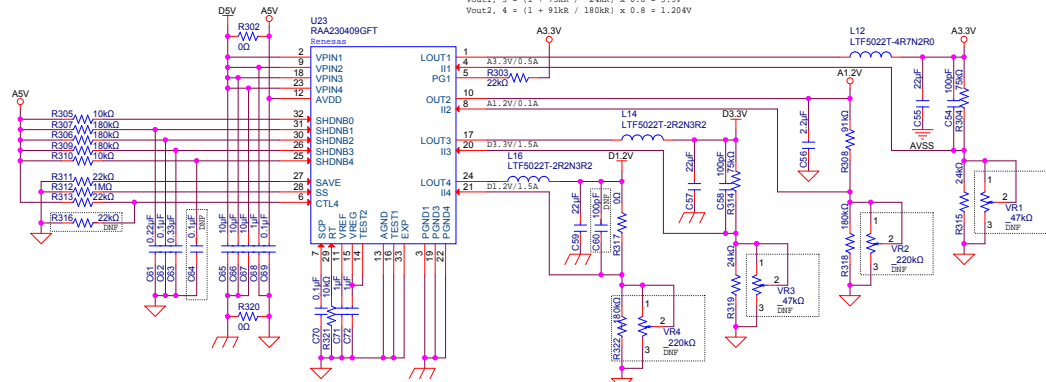
CHANGE

AC Adaptor



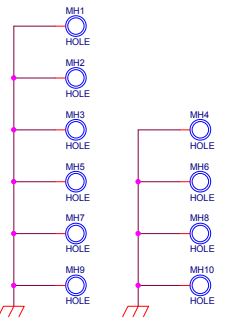
Jumper setting :
1-2:7V-12V input
2-3:5V input

$V_{out1,3} = (1 + 75k\Omega / 24k\Omega) \times 0.8 = 3.3V$
 $V_{out2,4} = (1 + 91k\Omega / 180k\Omega) \times 0.8 = 1.204V$

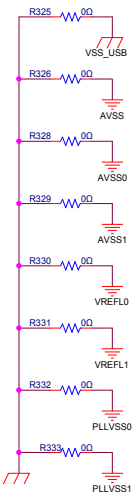


S8(Soft start time) : $t_{sw} = 1.8 \times R_{sw} \times I_{L} + 0.24 = 2.04ms$
 SCP(Short circuit protect) : $t_{scp} = 0.9 \times C_{scp} \times I_{scp} = 90ms$
 RT(Resonator timing reg.) : $E_{OSC} = -0.107 \times R_T \times I_{RT} + 3.05 = 1.98MHz$
 SAVN(Power saving) : L=OFF, H=ON(Normal 15k clock freq.)
 SHDNB*(Voltage output) : L=OFF, H=ON
 CTL4(Ch4 output voltage) : L=By External resistor, H=1.2V fix
 0:Mount, x:No mount

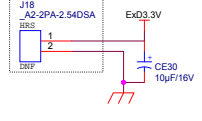
Board fixed hole.



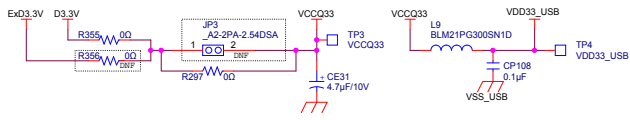
AGND-DGND



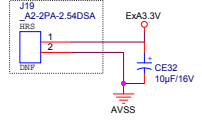
D3.3V External



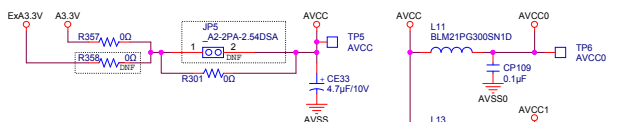
$R = (3.3V - 150mA) / (100 * (3.3V + 150mA)) * 0.95 = 203mR \rightarrow 200mR$
 $V_f = 200mR * 150mA = 30mV$



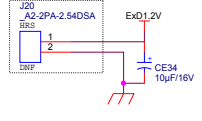
A3.3V External



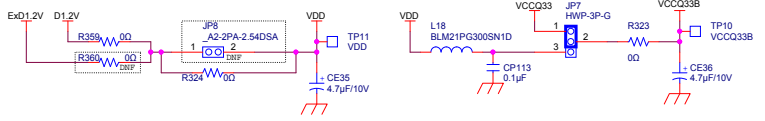
$R = (3.3V - 42mA) / (100 * (3.3V + 42mA)) * 0.95 = 724mR \rightarrow 750mR$
 $V_f = 750mR * 42mA = 31.5mV$



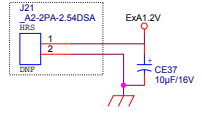
D1.2V External



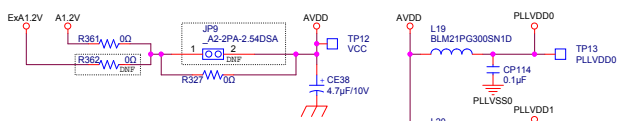
$R = (1.2V - 800mA) / (100 * (1.2V + 800mA)) * 0.95 = 38mR \rightarrow 47mR (Min.)$
 $V_f = 47mR * 800mA = 37.6mV$



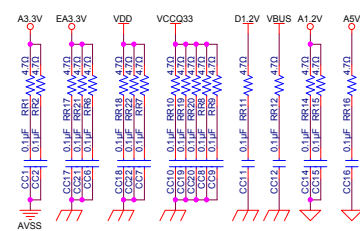
A1.2V External



$R = (1.2V - 60mA) / (100 * (1.2V + 60mA)) * 0.95 = 507mR \rightarrow 510mR$
 $V_f = 510mR * 60mA = 30.6mV$



Snubber circuit for EMC measures



CHANGE

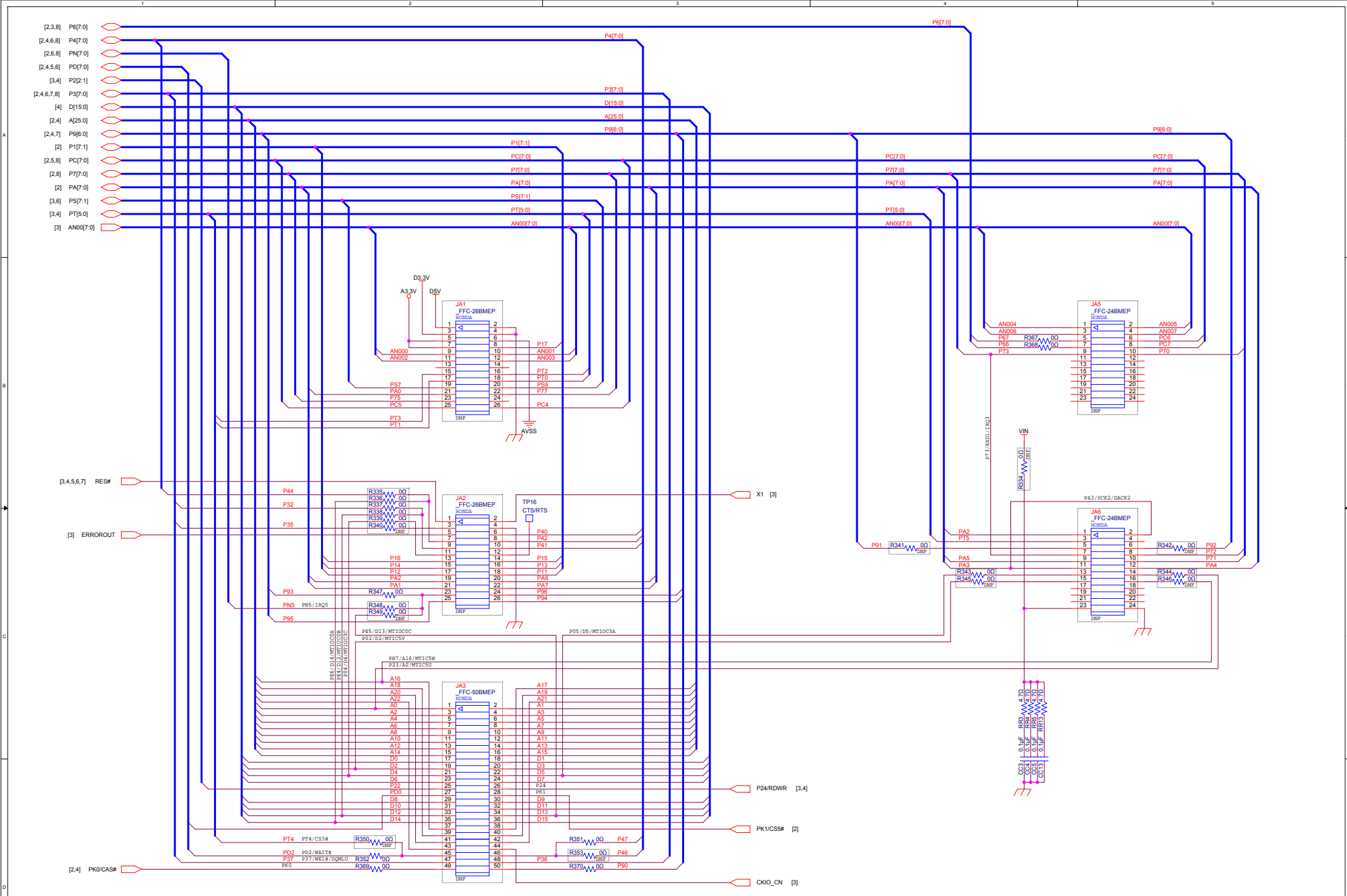
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Power (9 / 10)

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					Application Header	
	SCALE		DRAWN	CHECKED	DESIGNED	APPROVED
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(10 / 10)						