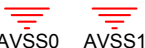
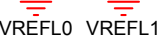


R7S910018 Evaluation board RTK7910018C00000BE SCHEMATICS (RZ/T1, BGA320)

TITLE	PAGE
Index	1
RZ/T1-1	2
RZ/T1-2, Serial-flash	3
NOR-flash, SDRAM	4
EtherCAT	5
Audio-codec, USB, LAN	6
Serial(USB), DBGIF	7
DSMIF, PMOD, CAN, SW	8
Power	9
Application Header	10

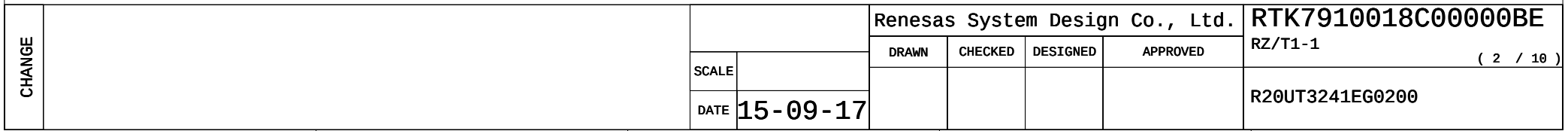
Note:

-  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)

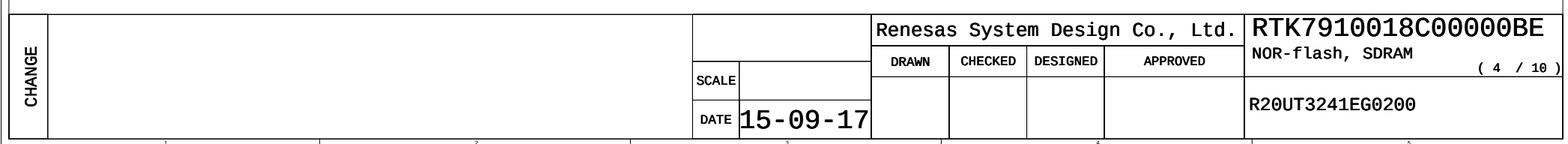
VIN = System Power (5V or 7V-12V input)
D5V = Digital 5V
D3.3V = Digital 3.3V for External device
A3.3V = Analog 3.3V for External device
D1.2V = Digital 1.2V
A1.2V = Analog 1.2V
VCCQ33 = 3.3V for RZ/T1 I/O & USB
AVCC = Analog 3.3V for ADC
VDD = Digital 1.2V for RZ/T1 Core
AVDD = Analog 1.2V for PLL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

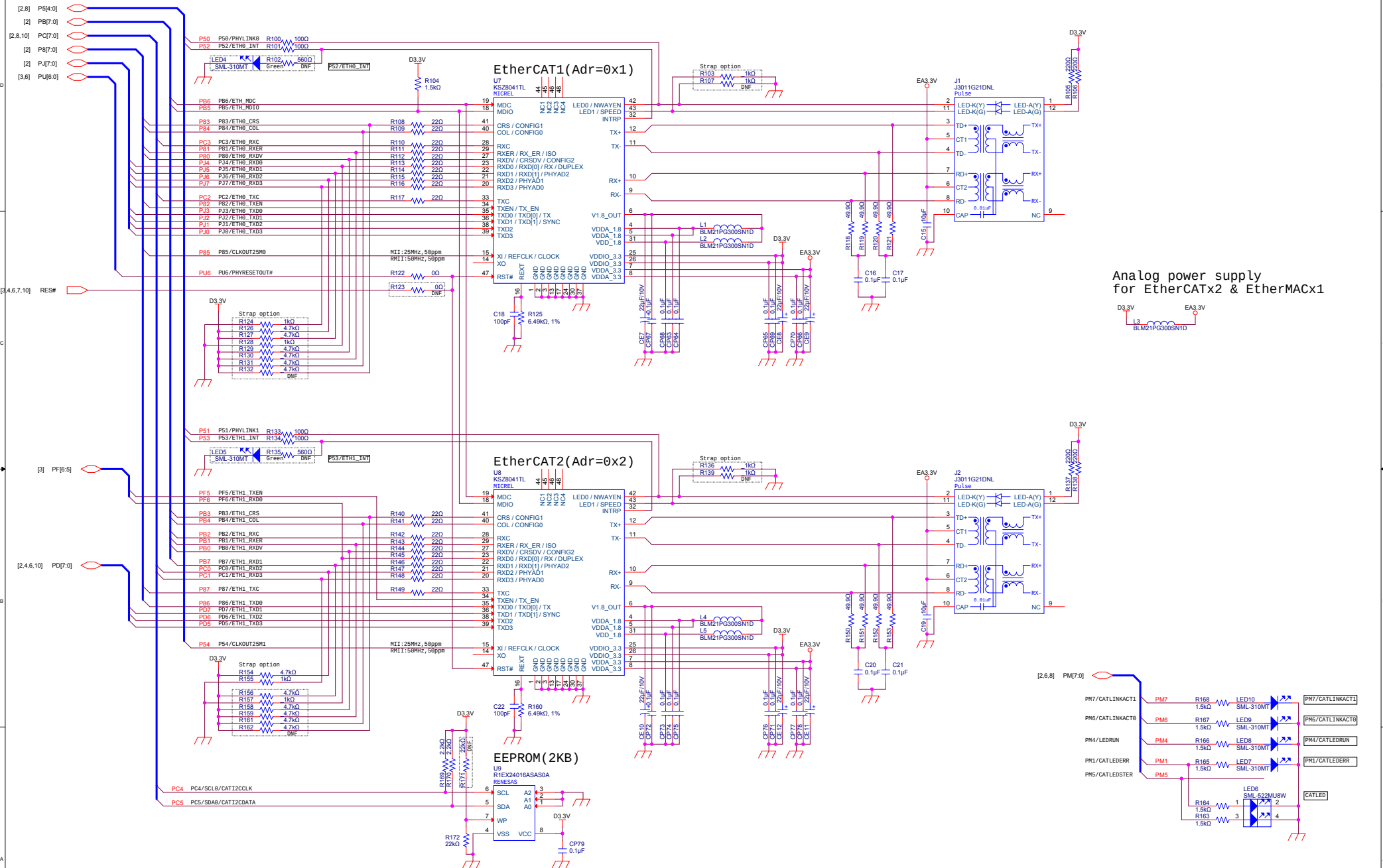
R = Fixed Resistors
RA = Resistor Array
C = Ceramic Caps
CE = Tantalum Electrolytic Caps
CP = Decoupling Caps

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



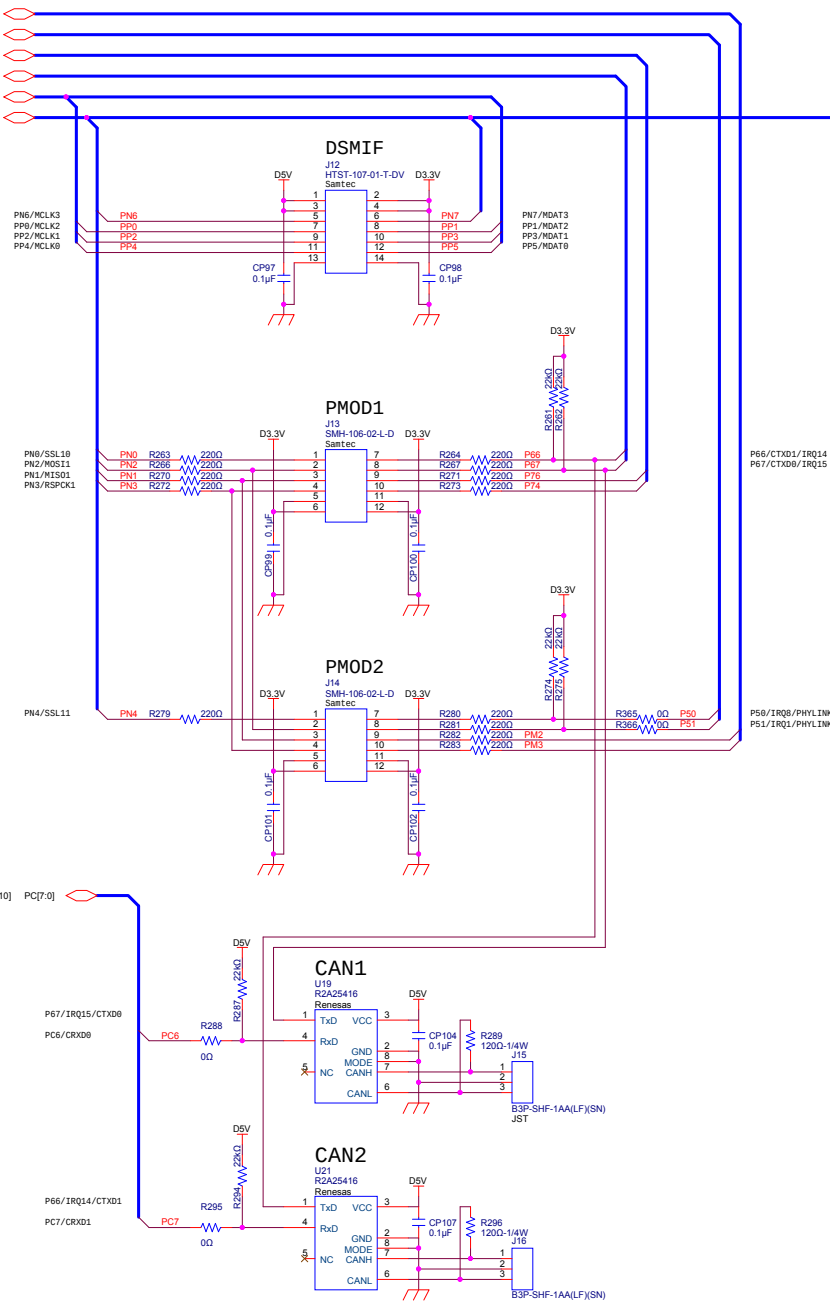




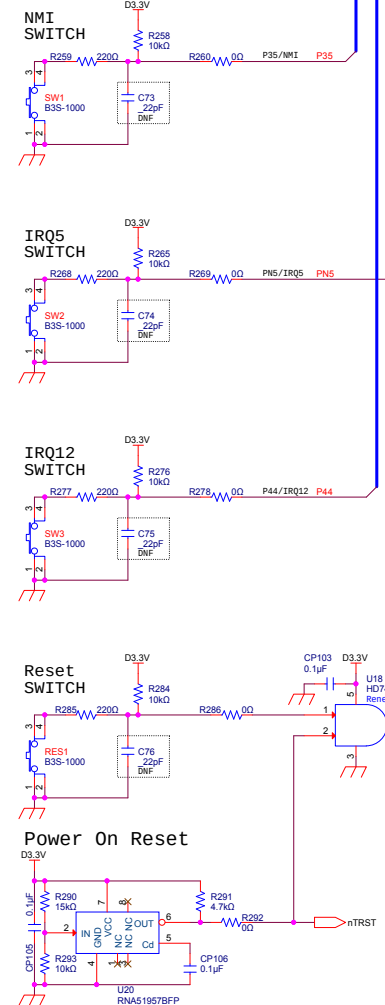


CHANGE	Renesas System Design Co., Ltd.			RTK7910018C00000BE			
	EtherCAT			(5 / 10)			
	R20UT3241EG0200						
SCALE		DRAWN		CHECKED		DESIGNED	
DATE		15-09-17					

[2.5,6] PM[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]



[2.4,6,10] P4[7:0]
[2.4,6,7,10] P3[7:0]



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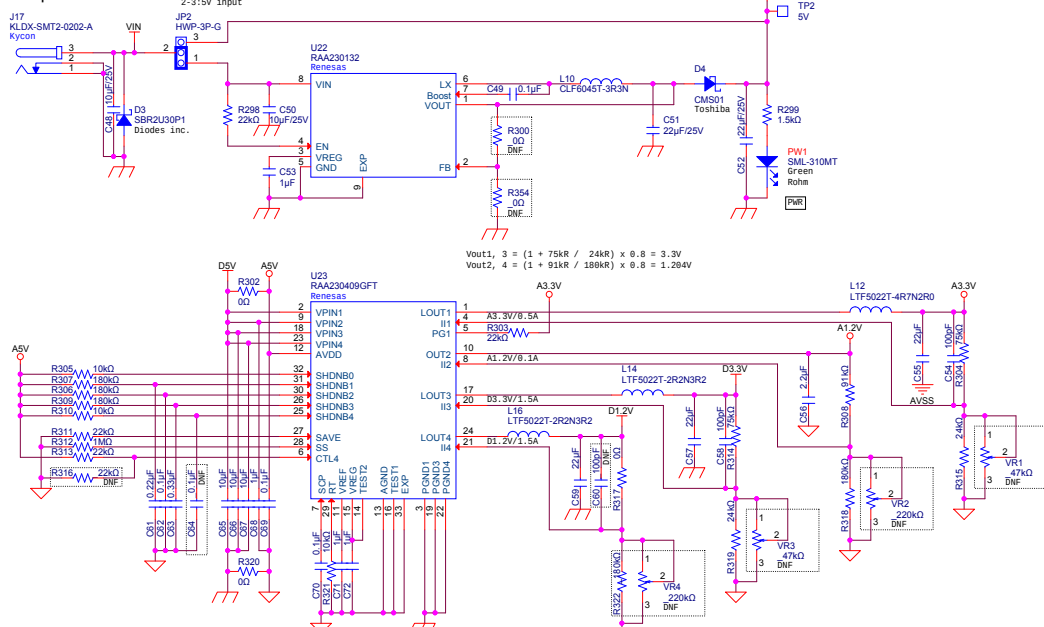
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DSMIF, PMOD, CAN, SW (8 / 10)

R20UT3241EG0200

AC Adaptor



SS(Soft start time) : tss = $1.8 \times R_{SS}(M\Omega) + 0.24 = 2.04ms$
SCP(Short circuit protect) : tSV = $0.9 \times C_{SCP}(\mu F) = 0.99s = 99ms$
RT(Resonator timing reg.) : $f_{OSC} = -0.107 \times RT(k\Omega) + 3.05 = 1.98MHz$

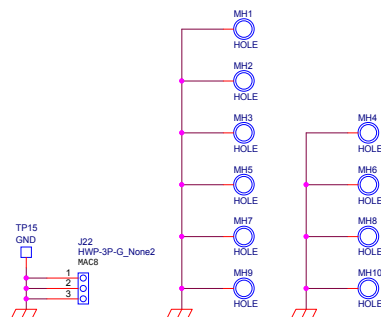
SAVE(Power saving) : L=OFF, H=ON(Normal x 15% clock freq.)
SHDNB*(Voltage output) : L=OFF, H=ON

CTL4(Ch4 output voltage) : L=by External resistor, H=1.2V fix

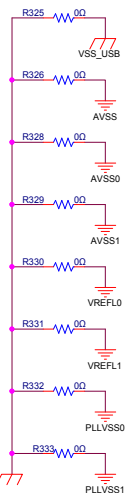
CTL4	R313	R316	C60	R317	R322
H	0	x	x	0	x
L	x	0	0	91k	180k

0:Mount, x:No mount

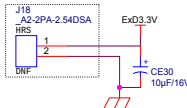
Board fixed hole.



AGND-DGND

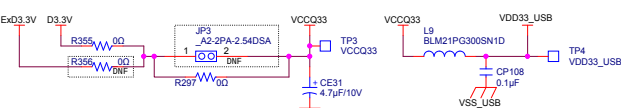


D3.3V External

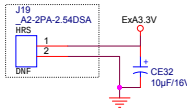


$$R = \frac{3.3V - 150mA}{V_f} = \frac{((3.2 \times 3.3V) / (100 \times (3.3V - 150mA))) \times 0.95}{V_f} = 203mR \rightarrow 200mR$$

$$V_f = 200mR \times 150mA = 30mV$$

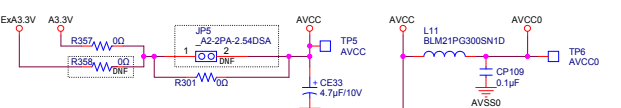


A3.3V External

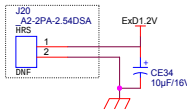


$$R = \frac{3.3V - 42mA}{V_f} = \frac{((3.2 \times 3.3V) / (100 \times (3.3V - 42mA))) \times 0.95}{V_f} = 724mR \rightarrow 750mR$$

$$V_f = 750mR \times 42mA = 31.5mV$$

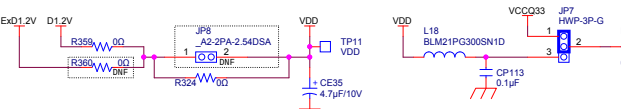


D1.2V External

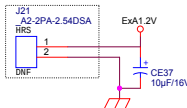


$$R = \frac{1.2V - 800mA}{V_f} = \frac{((3.2 \times 1.2V) / (100 \times (1.2V - 800mA))) \times 0.95}{V_f} = 38mR \rightarrow 47mR (Min.)$$

$$V_f = 47mR \times 800mA = 37.6mV$$

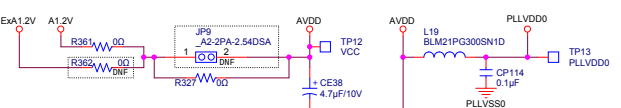


A1.2V External

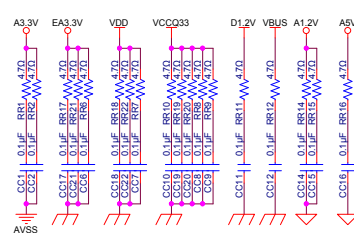


$$R = \frac{1.2V - 60mA}{V_f} = \frac{((3.2 \times 1.2V) / (100 \times (1.2V - 60mA))) \times 0.95}{V_f} = 507mR \rightarrow 510mR$$

$$V_f = 510mR \times 60mA = 30.6mV$$



Snubber circuit for EMC measures



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Power

(9 / 10)

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