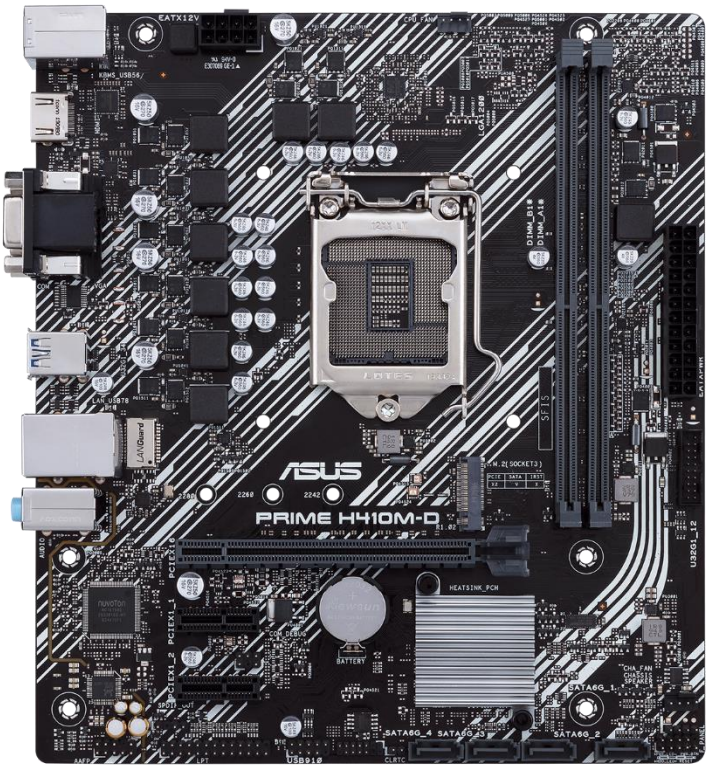
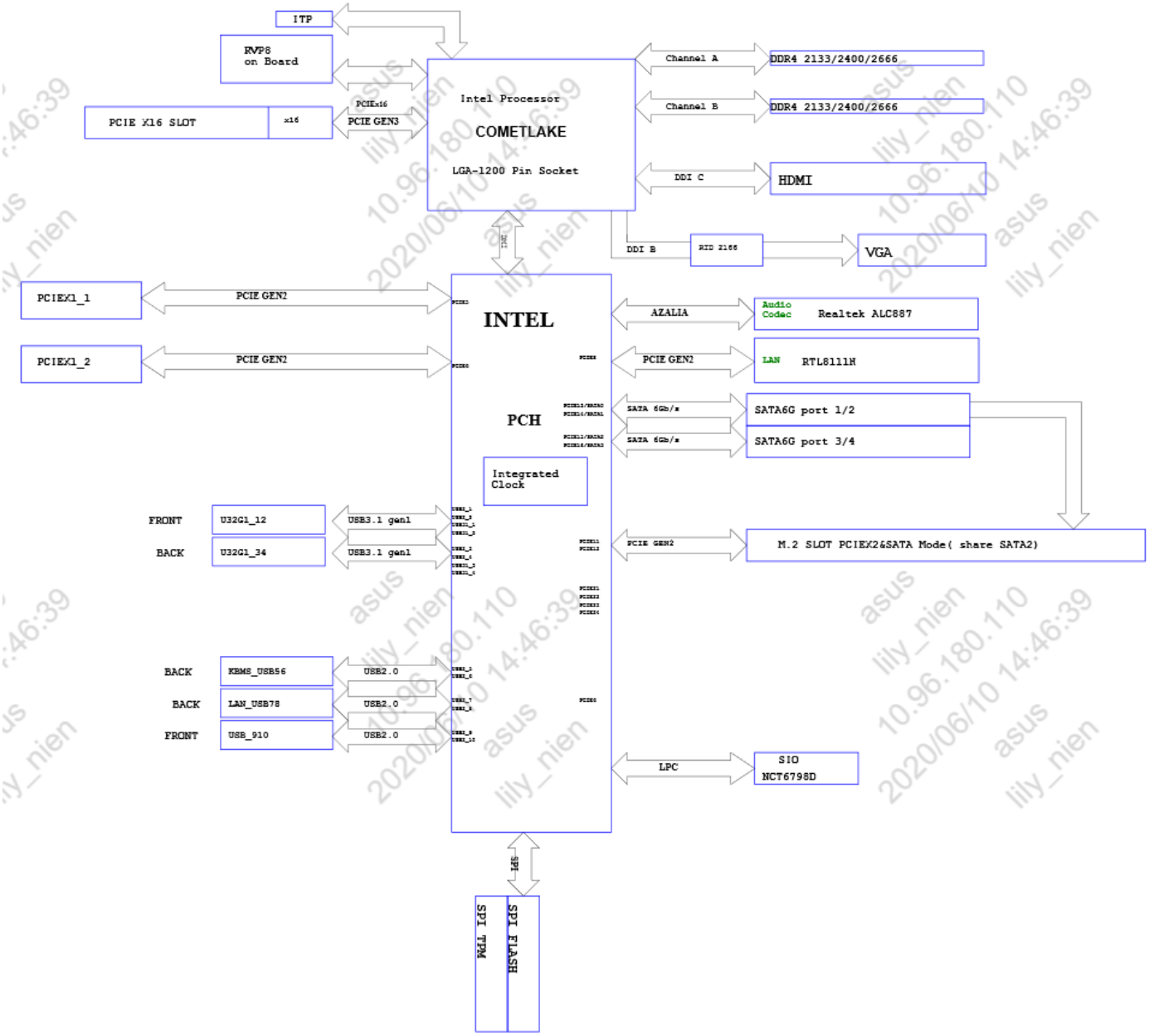
PRIME H410M-D Repair Guide

2020/11/16

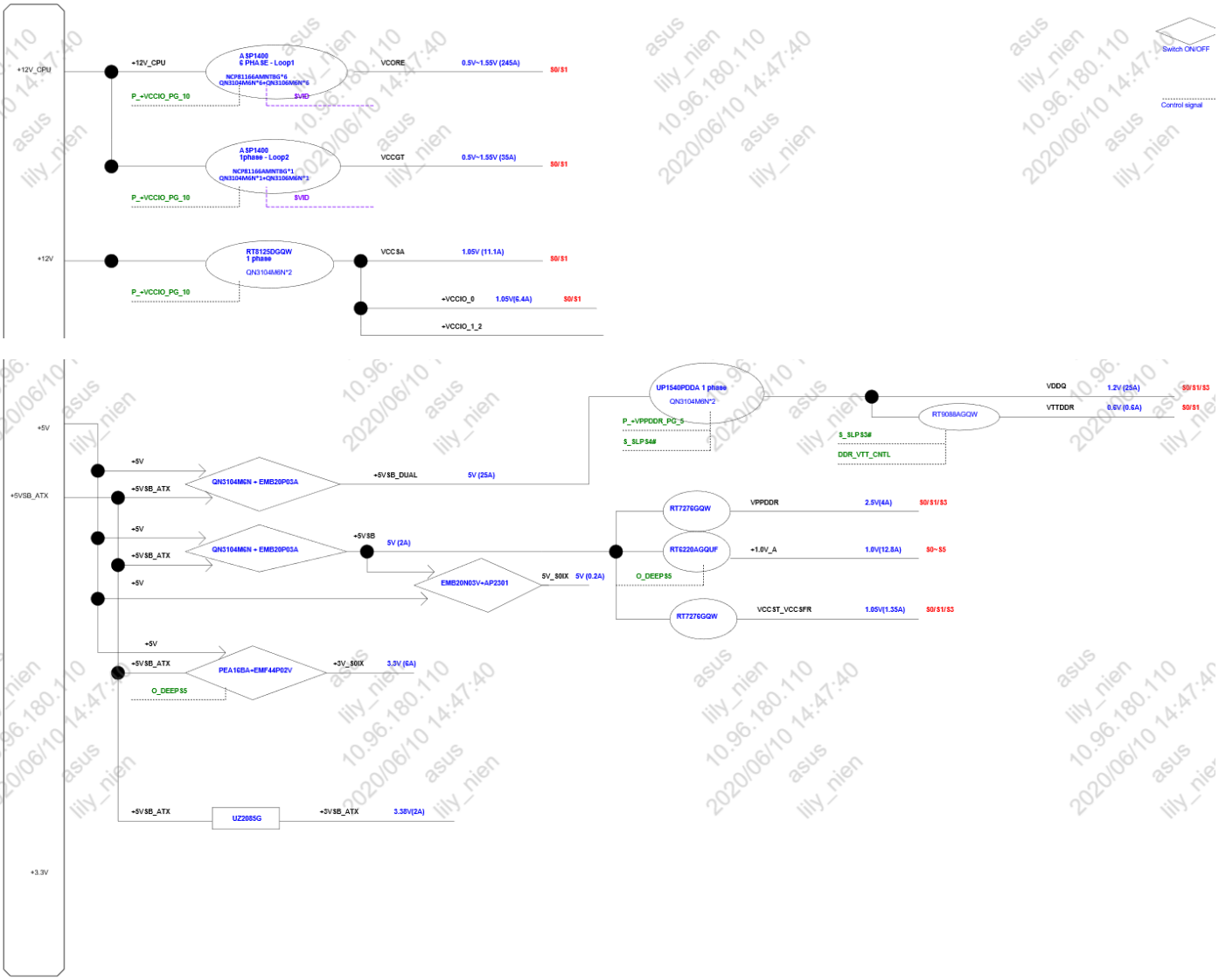
1. STANDARD APPEARANCE



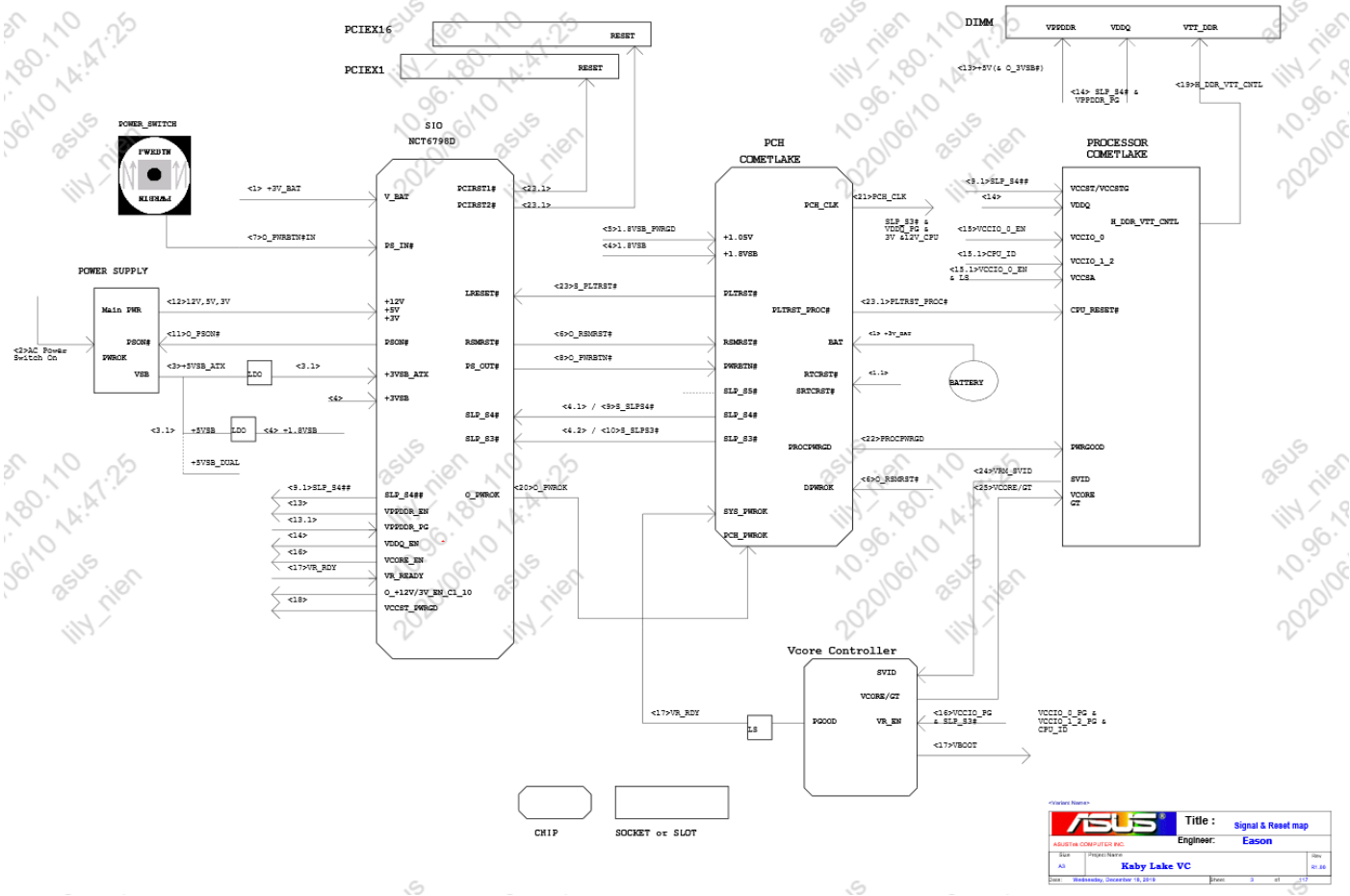
2. BLOCK DIAGRAM



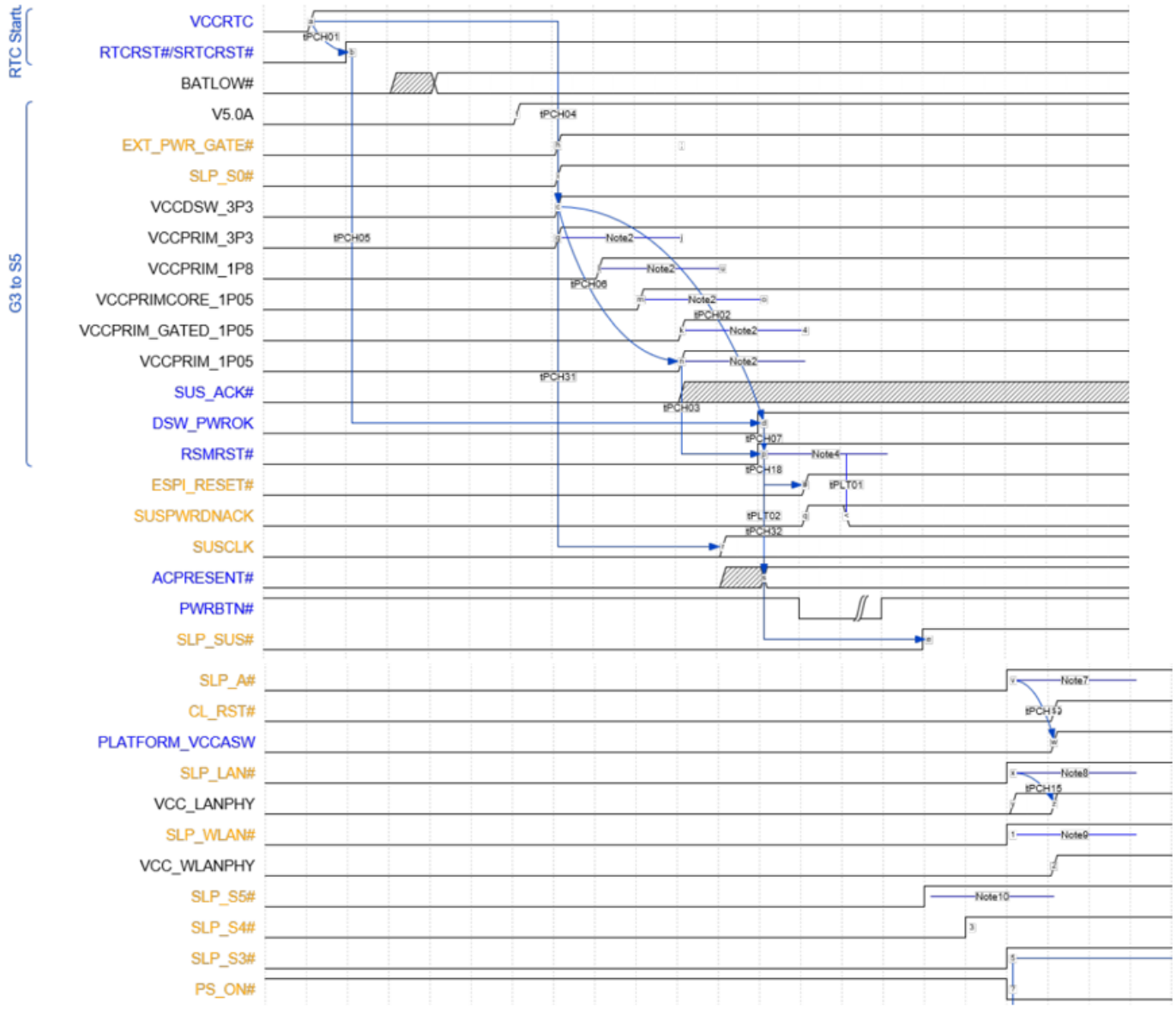
3. POWER FLOW


Switch ON/OFF
Control signal
+12V_CPU
+12V_CPU
ASP1400
6 PHASE - Loop1
NCP81166AMNTBG*6
QN3104M6N*6+QN3106M6N*6
P_+VCCIO_PG_10
SVID
VCORE
0.5V~1.55V (245A)
S0/S1
ASP1400
1Phase - Loop2
NCP81166AMNTBG*1
QN3104M6N*1+QN3106M6N*3
P_+VCCIO_PG_10
SVID
VCCGT
0.5V~1.55V (35A)
S0/S1
+12V
RTS125DGQW
1 phase
QN3104M6N*2
P_+VCCIO_PG_10
VCCSA
1.05V (11.1A)
S0/S1
+VCCIO_0
1.05V(6.4A)
S0/S1
+VCCIO_1_2
+5V
+5VSB_ATX
+3.3V
+5V
+5VSB_ATX
QN3104M6N + EMB20P03A
+5VSB_DUAL
5V (25A)
+5V
+5VSB_ATX
QN3104M6N + EMB20P03A
+5VSB
5V (2A)
EMB20N03V+AP2301
5V_S0IX
5V (0.2A)
+5V
+5VSB_ATX
PEA16BA+EMF44P02V
+3V_S0IX
3.3V (6A)
O_DEEPSS
+5VSB_ATX
UZ2085G
+3VSB_ATX
3.38V(2A)
UP1540PDDA 1 phase
QN3104M6N*2
P_+VPPDDR_PG_5
S_SLP_S4#
S_SLP_S3#
DDR_VTT_CNTL
RT9088AGQW
VDDQ
1.2V (25A)
S0/S1/S3
VTTDDR
0.6V (0.6A)
S0/S1
RT7276GQW
VPPDDR
2.5V(4A)
S0/S1/S3
RTE220AGQUF
+1.0V_A
1.0V(12.8A)
S0~S5
O_DEEPSS
RT7276GQW
VCCST_VCCSFR
1.05V(1.35A)
S0/S1/S3

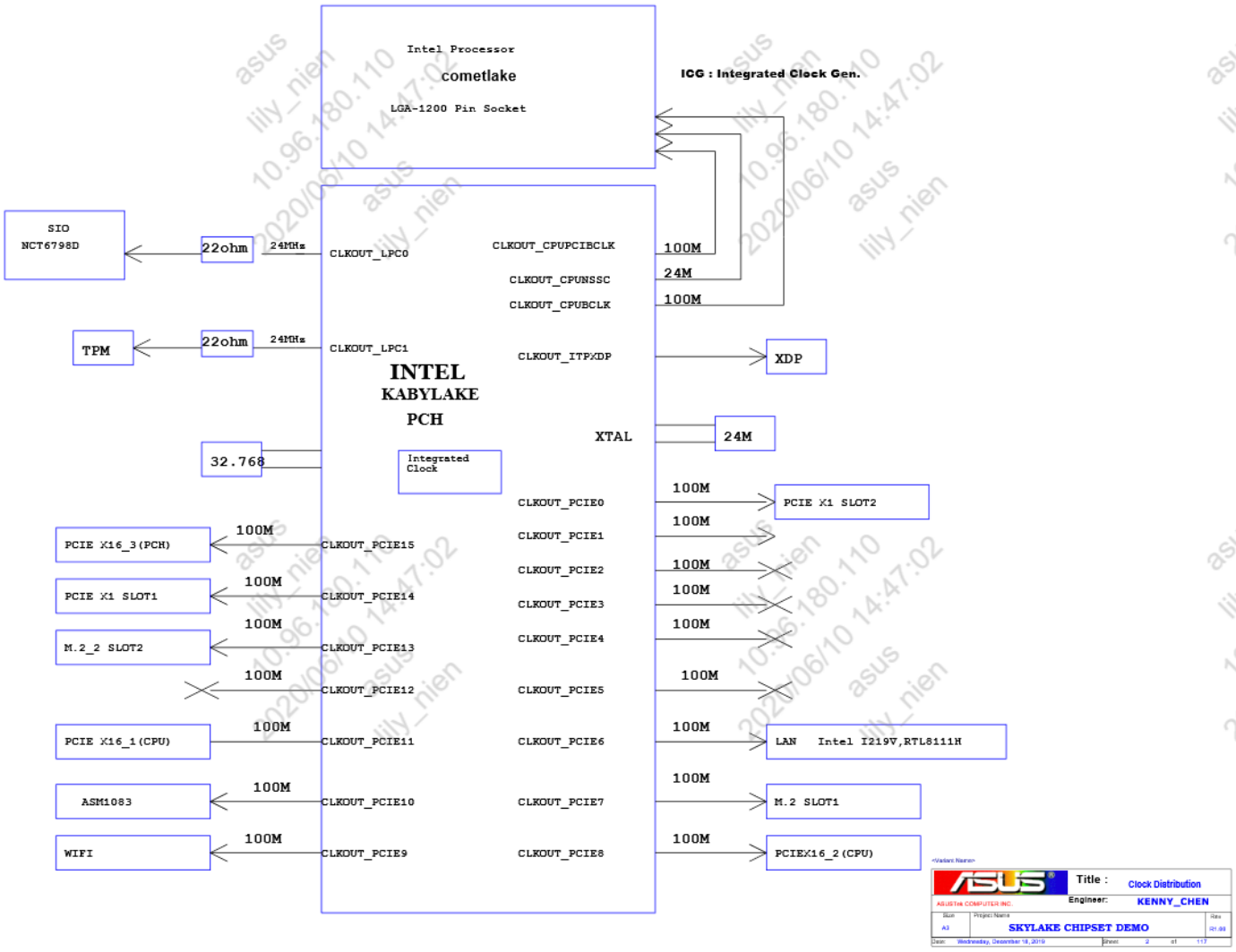
4. POWER ON SEQUENCE



5. Timing Diagram for G3 to S0



6. **Frequency Flow**



7. Socket reflow profile

Package & Socket Rework

Intel® Lead-Free Rework Thermo Profile Table (for FCBGA & LGA Socket)

Step 1 Board Preheat	Step 2 Soak Time	Step 3 Peak Reflow & Time Above 220 °C	Step 4 Cool Down
Start with solder joint temp ≤ 40°C	After nozzle is lowered prior to peak reflow (Soak Time: Paste dependant; consult paste manufacturer)	FCBGA Solder Joint Temp 230 – 250°C Socket Solder Joint Temp 230 – 250°C FCBGA Time Above ≥220°C 60 – 120 sec Socket Time Above ≥220°C 60 – 120 sec (preferred) Max delta-t of solder joint temperature for FCBGA at peak reflow ≤10°C Max delta-t of solder joint temperature for Socket at peak reflow ≤15°C	FCBGA Body MAX Temperature ≤250°C FCBGA Die Peak Temperature ≤300°C LGA Socket Body Max Temperature ≤260°C/40 sec.
Rising Ramp Rate 0.5 – 2.5° C/ Sec..	FCBGA Solder Joint Temp: 200 to 220°C Socket Solder Joint Temp: 190 to 215°C		Cooling Ramp Rate FCBGA & Sockets -0.5 to – 2.0°C/sec
Board Preheat Solder Joint Temp: 125 – 150°C	FCBGA Critical Ramp Rate (205 to 215°C): 0.35 – 0.75°C/sec. Socket Critical Ramp Rate (205 to 215°C): 0.35 – 0.75°C/sec	Peak Temp Range, and Time Above ≥220°C spec's met.	PCB land/pad temperature needs to be at 100 – 130°C ±5°C when removing board from rework machine bottom heater at end of component removal operation or ≤80°C when using stand alone PCB Pre-Heater for PCB land/pad site dress operation.
Preheat with bottom heater, before nozzle is lowered	Nozzle has lowered to reflow component	Nozzle is down during peak reflow	Socket – Nozzle raises to home position when solder joint reaches peak temp range

Reflow Recommendations

	LGA1150 Socket	PCH
Solder Joint Peak Temperature	235 °C to 250 °C	
SMT Solder Paste	Needs sufficient flux activity to remove oxides from solder balls. SAC305 (LF) or SAC405(LF), Type 3 or Type 4	
Component Placement	100% ball recognition	
Stencil Design	See stencil modifications slides	
Stencil thickness	0.127mm (5 mil)	
Paste height range	0.127mm to 0.173mm (5.0 to 6.8 mil)	
Time Above 220 °C	60 to 120 sec	
Soak Time, sec (over 150 °C – 200 °C)	Solder paste / flux dependent. Consult manufacturer for recommendations	
Rising Ramp Rate	< 3 °C/sec	
Falling Ramp Rate	< 3 °C/sec	
Package Moisture Sensitivity Level (MSL)	N/A	3
Component Body Max. Reflow Temperature	260 °C for 40 sec	260 °C
Reflow Environment	N_2 (O_2<3000 PPM) is recommended. Air is acceptable.	
Additional Comments	Soak and Time Above 220 °C should not be at low end of recommendation to avoid head and pillow defect. Delta T <10 deg C across Socket recommended to reduce warp and for better ball collapse. Do not bake the socket at any time. Delta-T < 12°C across the board is just a recommendation and not a hard requirement.	

The reflow profile is applicable for LGA115X and LGA1200 platform.