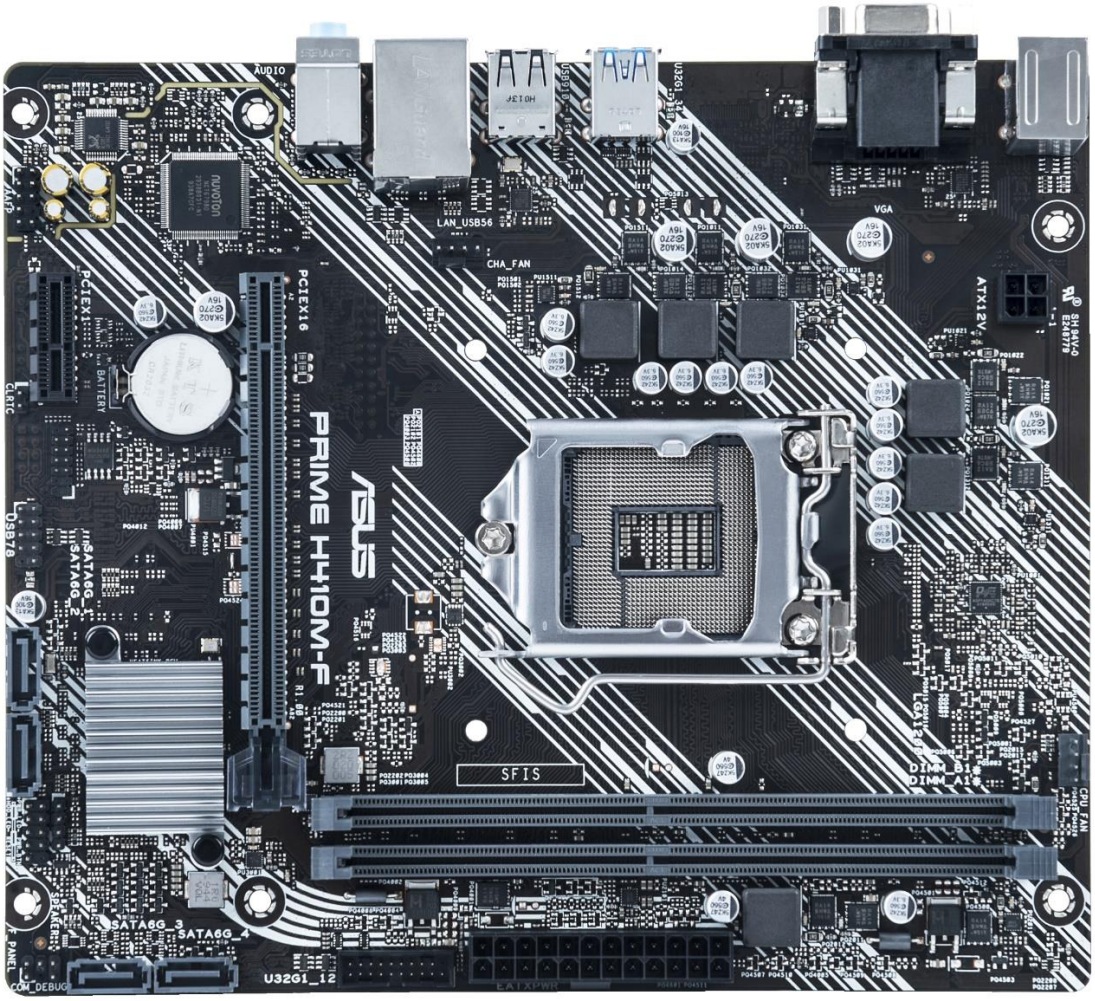
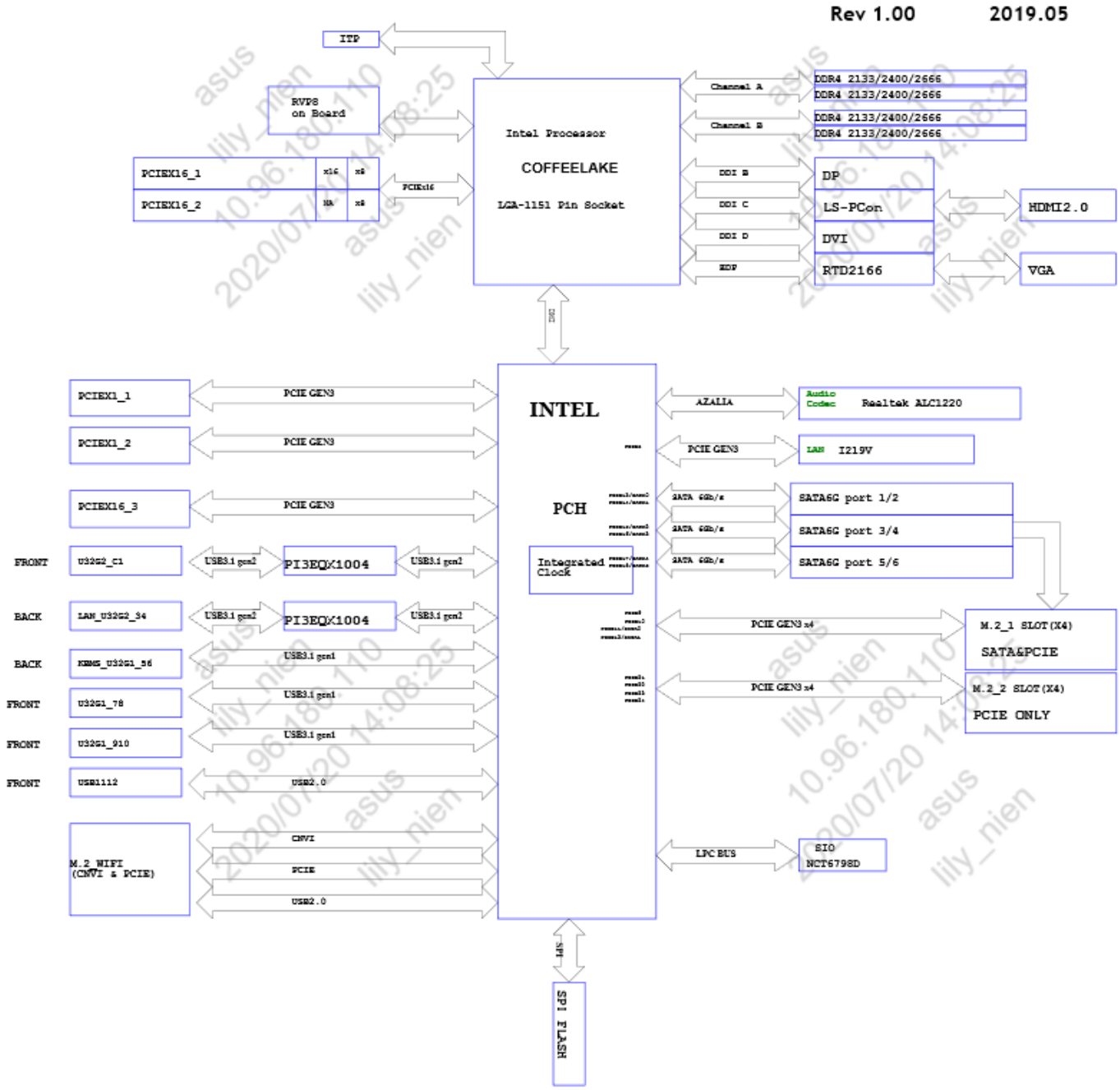
PRIME H410M-F Repair Guide

2020/07/20

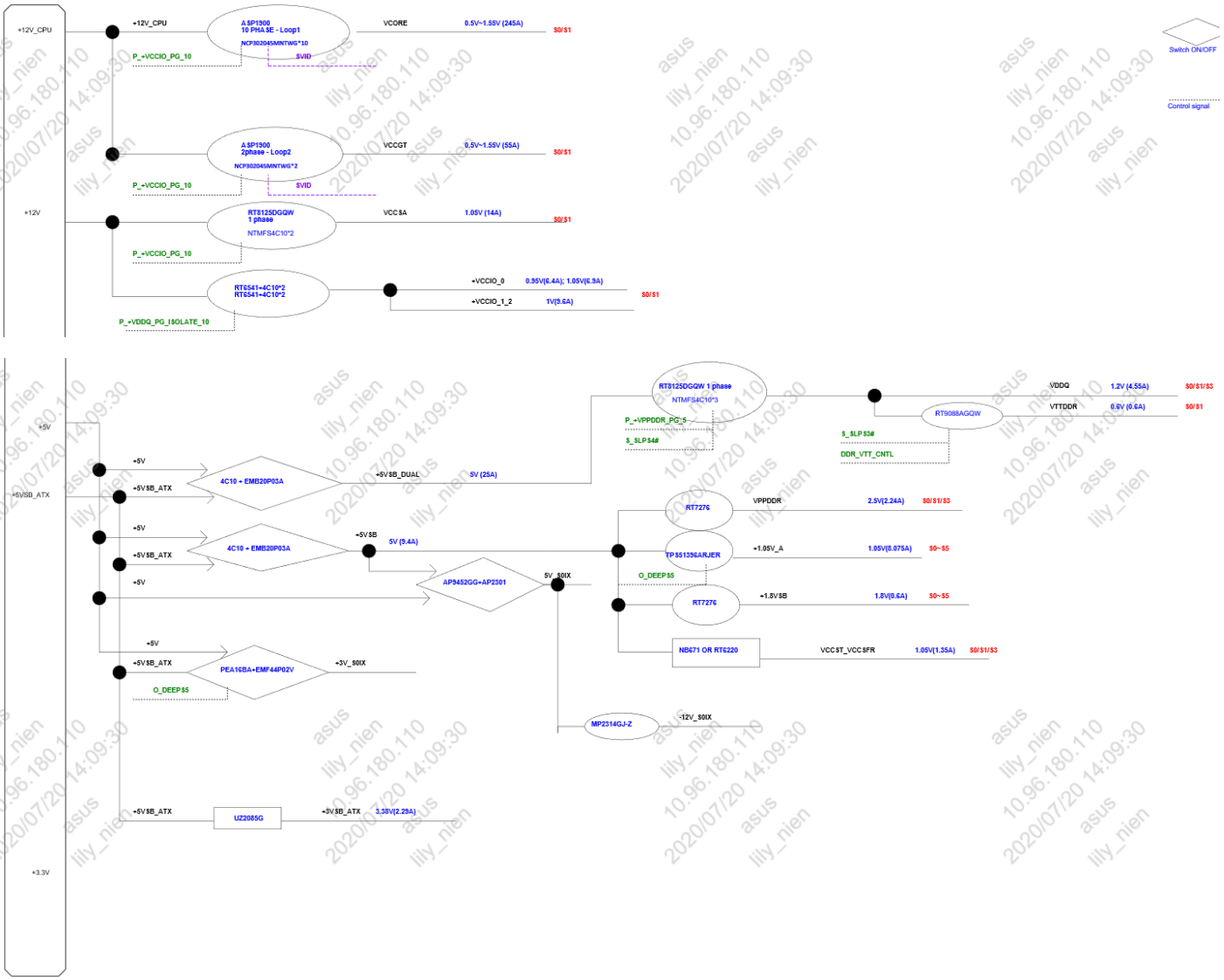
1. STANDARD APPEARANCE



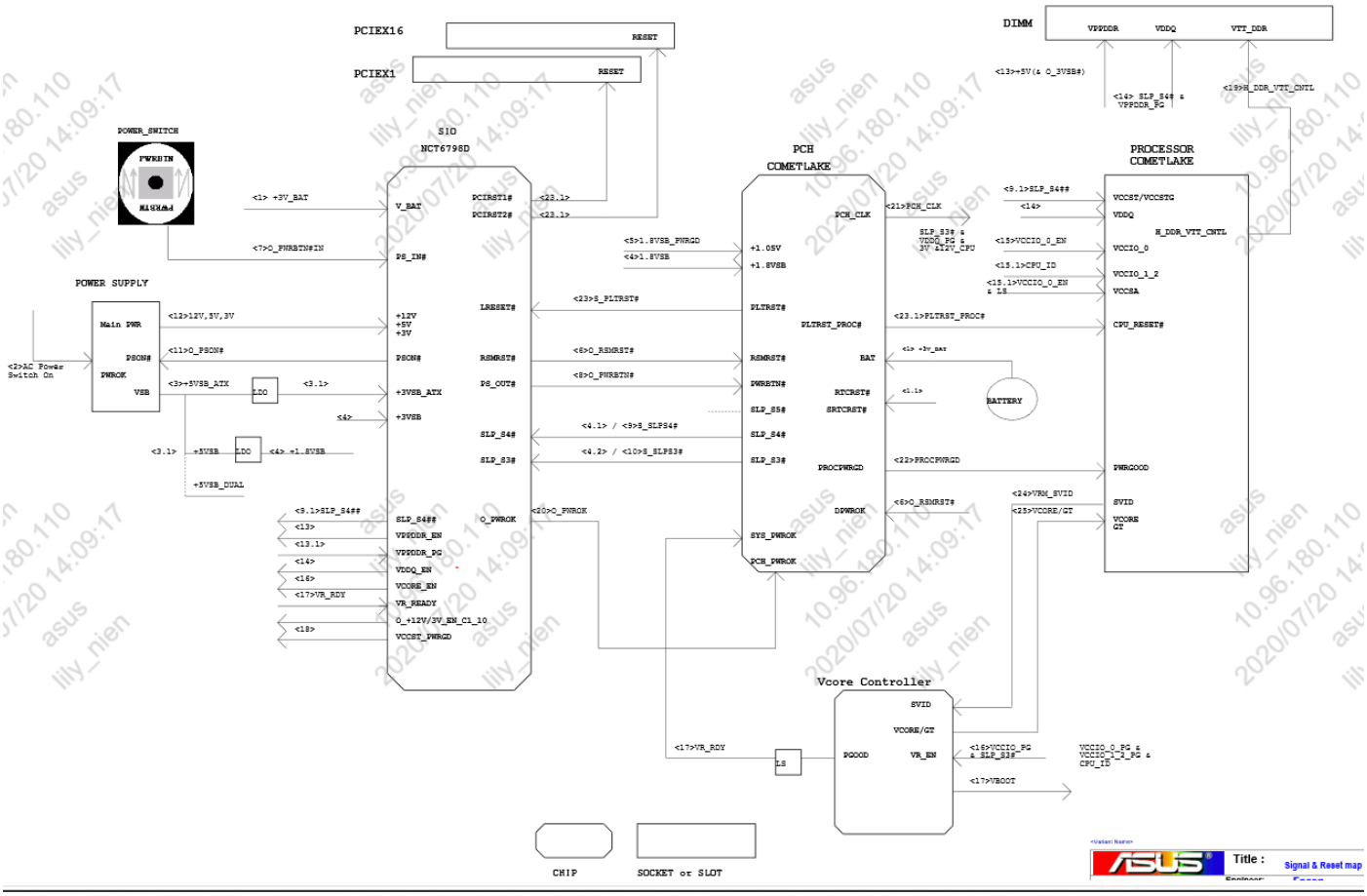
2. BLOCK DIAGRAM



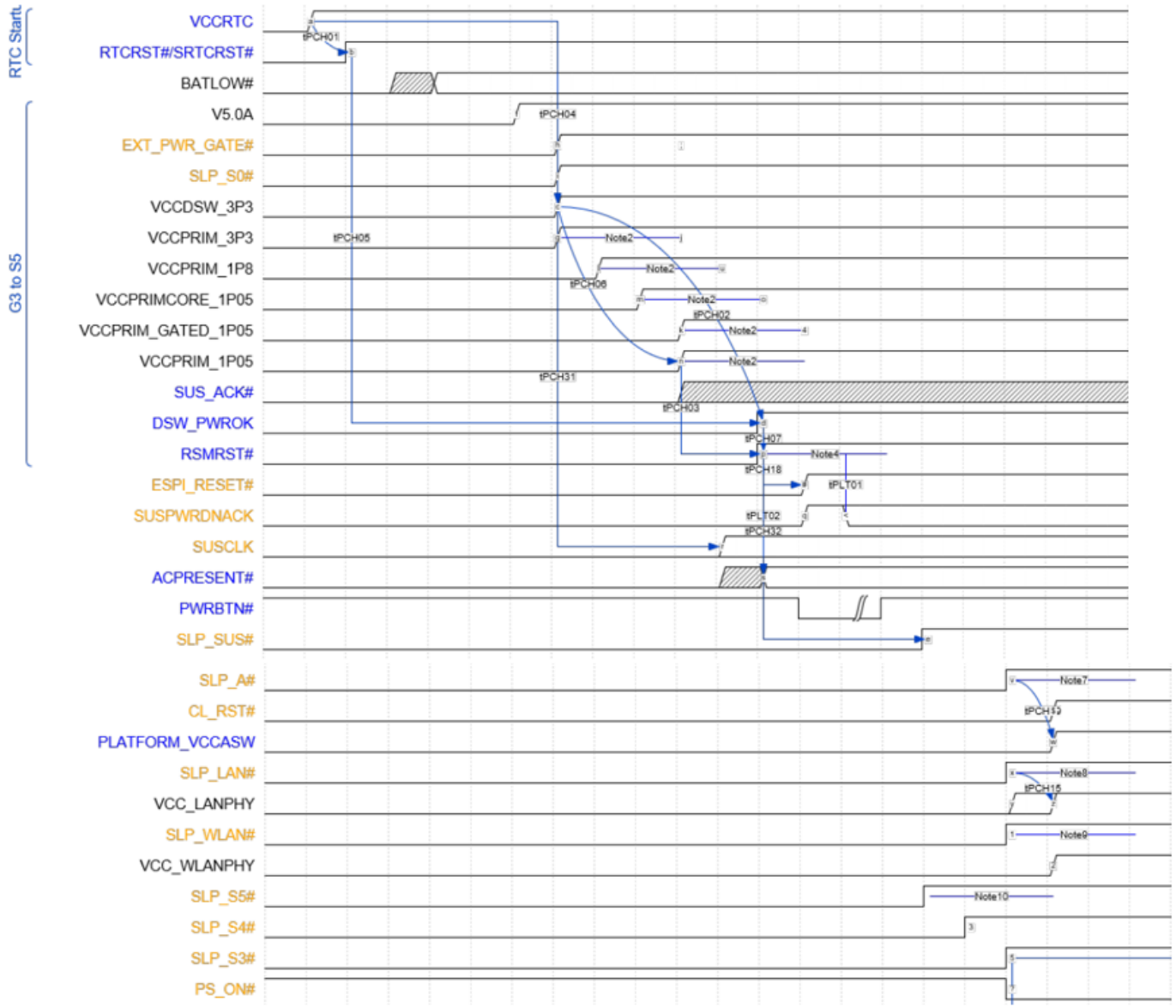
3. POWER FLOW


+12V_CPU
+12V_CPU
ASP1900
10 PHASE - Loop1
NCP302045MNTWG*10
VCORE
0.5V~1.55V (245A)
S0/S1
P_+VCCIO_PG_10
SVID
ASP1900
2phase - Loop2
NCP302045MNTWG*2
VCCGT
0.5V~1.55V (55A)
S0/S1
+12V
RT8125DGQW
1 phase
NTMFS4C10*2
VCCSA
1.05V (14A)
S0/S1
RT6541+4C10*2
RT6541+4C10*2
+VCCIO_0
0.95V(6.4A); 1.05V(6.9A)
+VCCIO_1_2
1V(9.6A)
S0/S1
P_+VDDQ_PG_ISOLATE_10
Switch ON/OFF
Control signal
+5V
+5VSB_ATX
4C10 + EMB20P03A
+5VSB_DUAL
5V (25A)
RT8125DGQW 1 phase
NTMFS4C10*3
P_+VPPDDR_PG_S
S_SLP S3#
S_SLP S4#
RT9088AGQW
VDDQ
1.2V (4.55A)
S0/S1/S3
VTTDDR
0.6V (0.6A)
S0/S1
DDR_VTT_CNTL
4C10 + EMB20P03A
+5VSB
5V (9.4A)
AP9452GG+AP2301
5V_S0IX
RT7276
VPPDDR
2.5V(2.24A)
S0/S1/S3
TPS51358ARJER
+1.05V_A
1.05V(0.075A)
S0~S5
O_DEEPS5
RT7276
+1.8VSB
1.8V(0.6A)
S0~S5
NB671 OR RT6220
VCCST_VCCSFR
1.05V(1.35A)
S0/S1/S3
PEA16BA+EMF44P02V
+3V_S0IX
O_DEEPS5
MP2314GJ-Z
-12V_S0IX
UZ2085G
+5VSB_ATX
3.38V(2.29A)
+3.3V

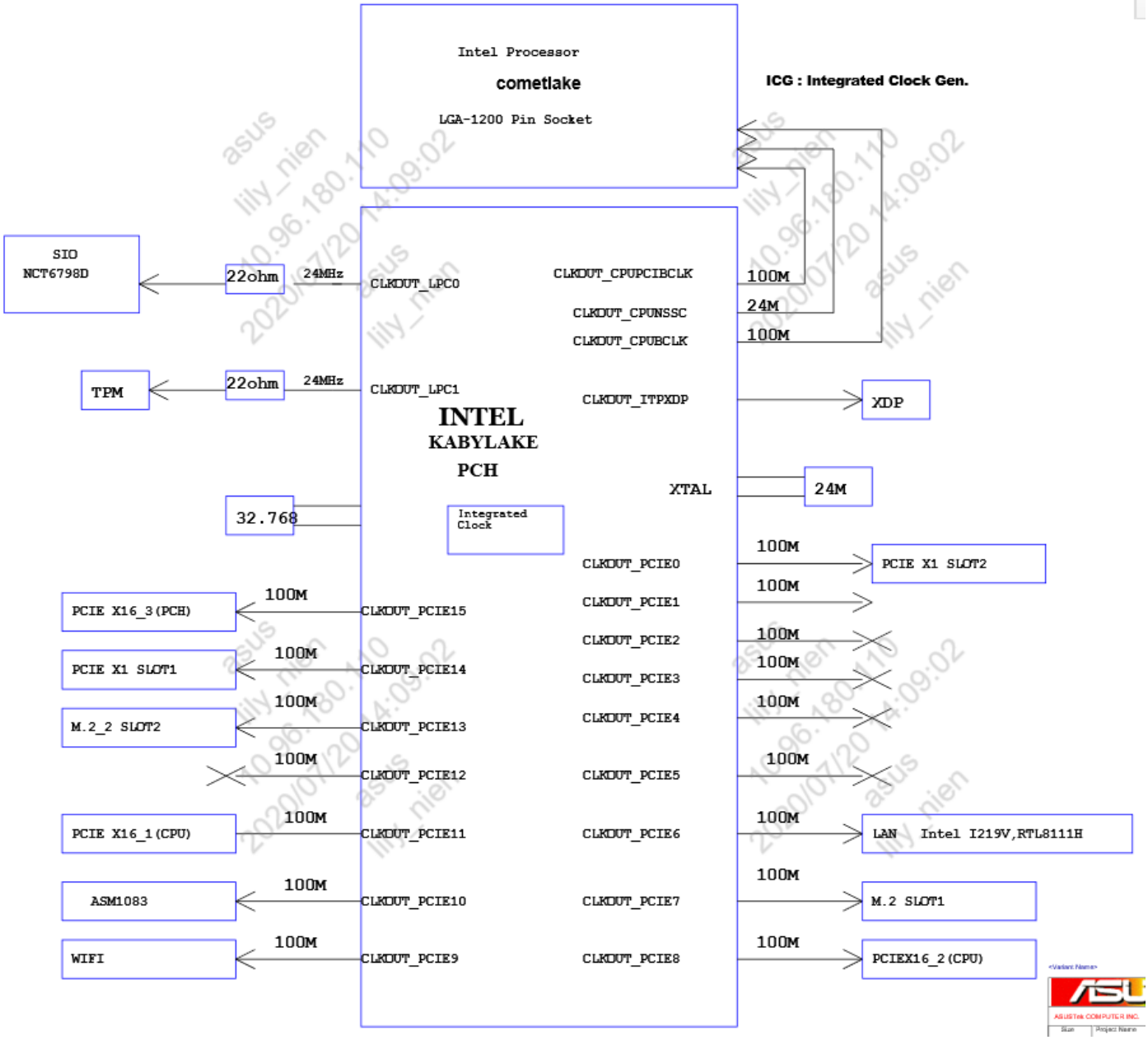
4. POWER ON SEQUENCE



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 (0_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.	