

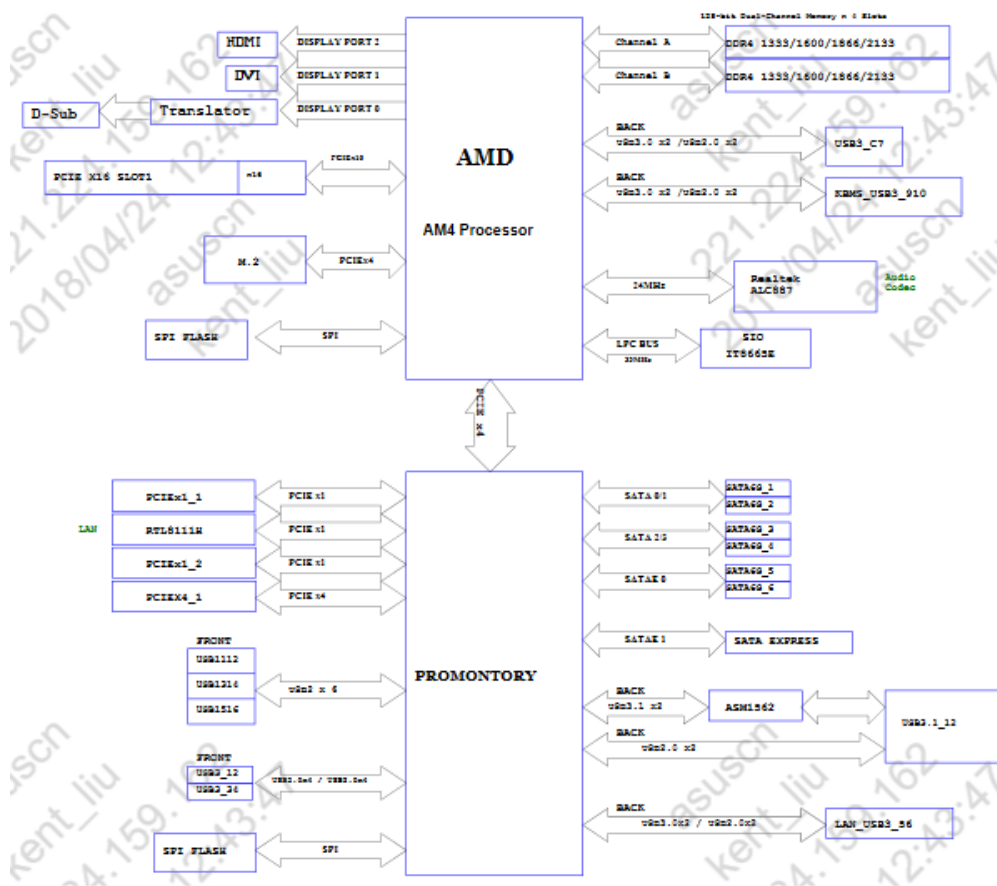
# ROG STRIX X470-F GAMING Repair Guide

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2018/4/24

## 1. STANDARD APPEARANCE

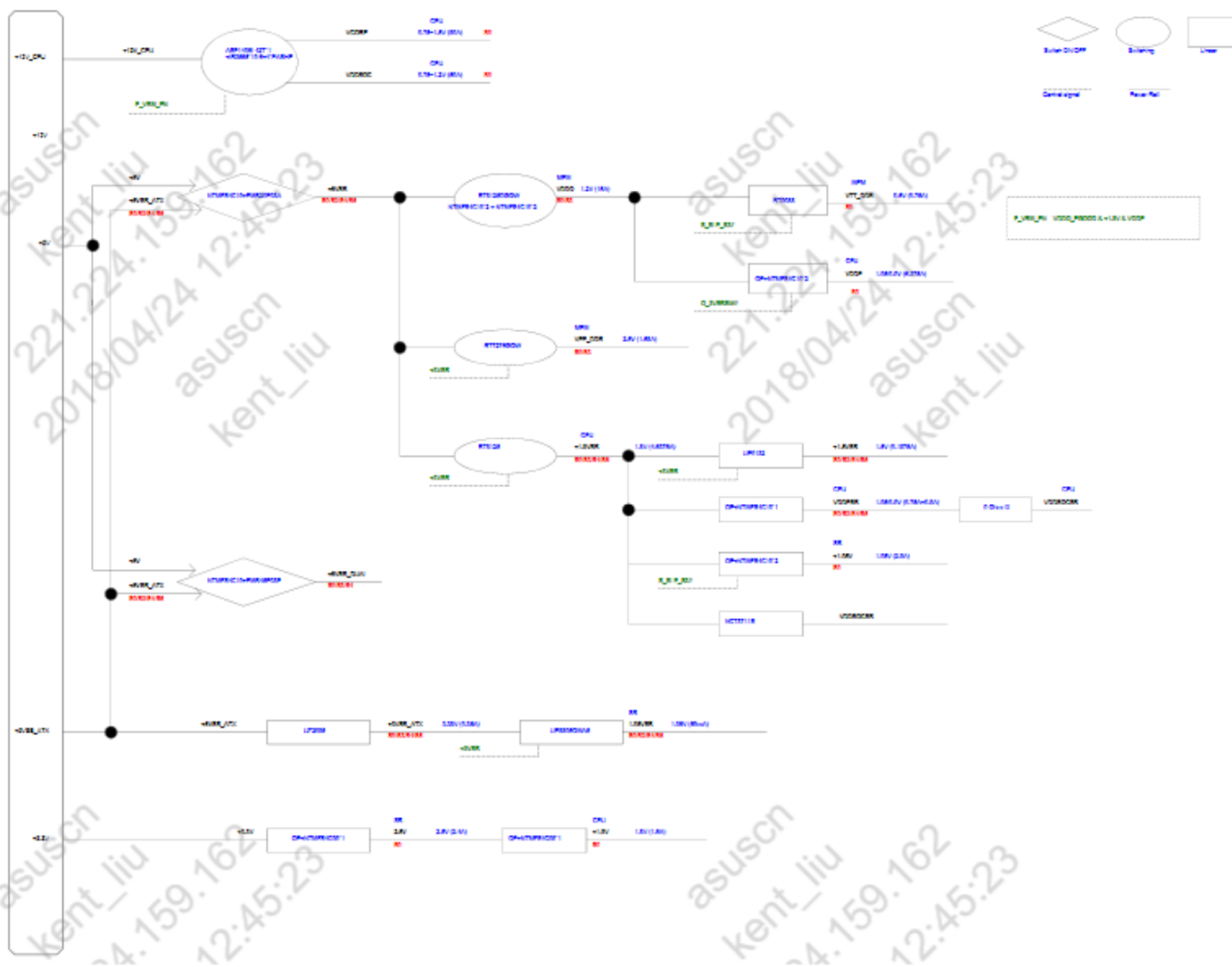


## 2. BLOCK DIAGRAM

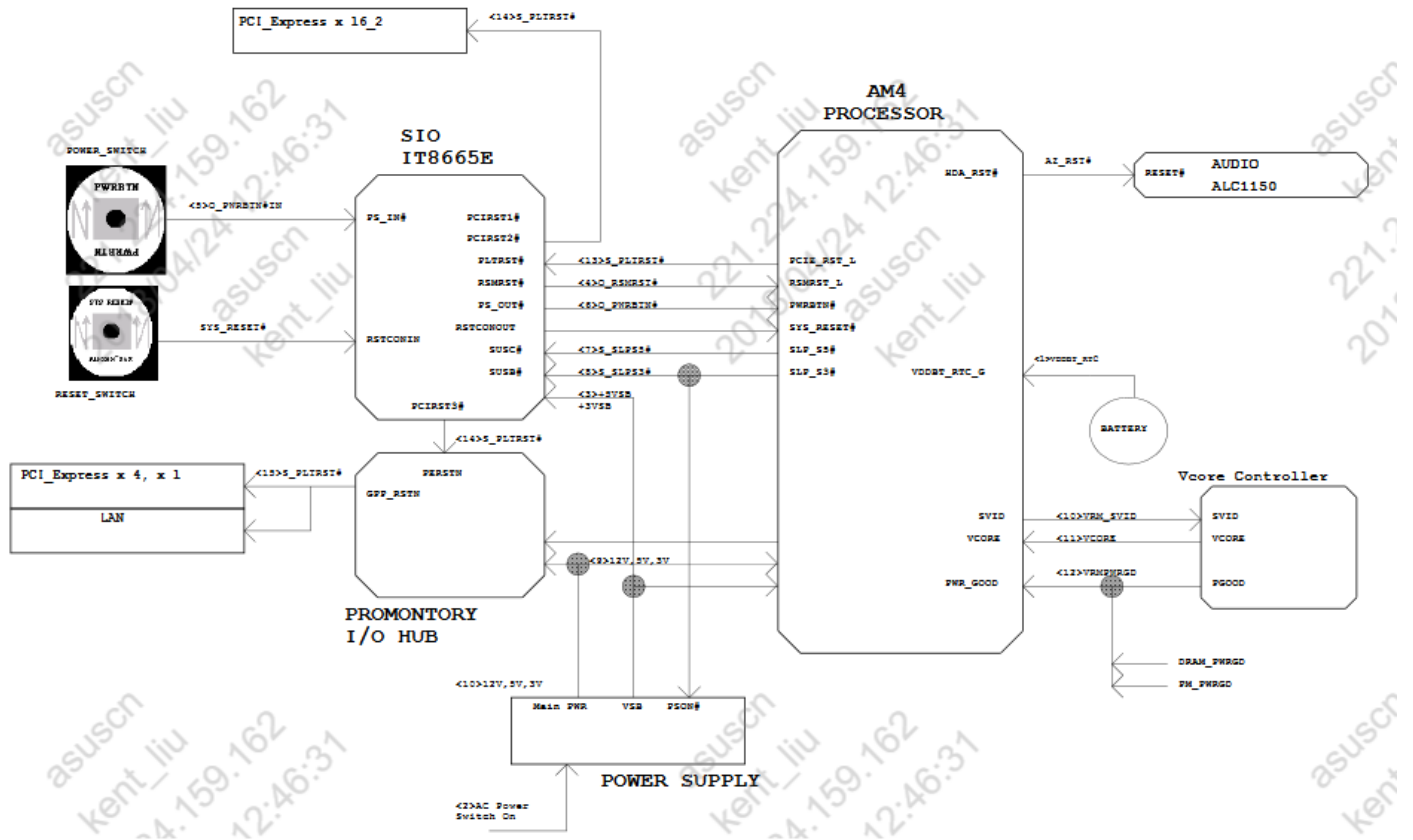


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63-64	USB3 ASM1042-2
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76-80	USB2C2Hector
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### 3. POWER FLOW

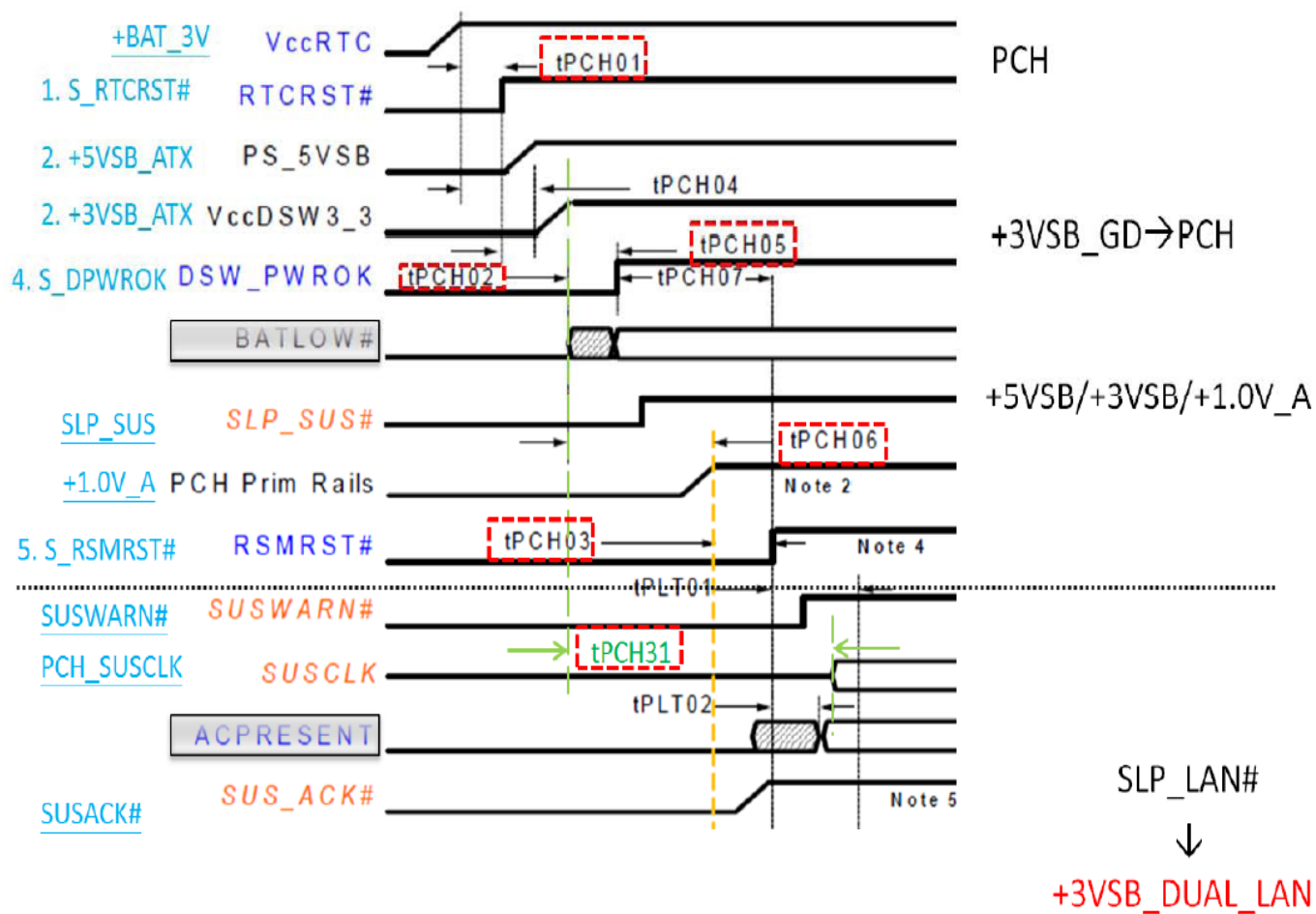


## 4. POWER ON SEQUENCE



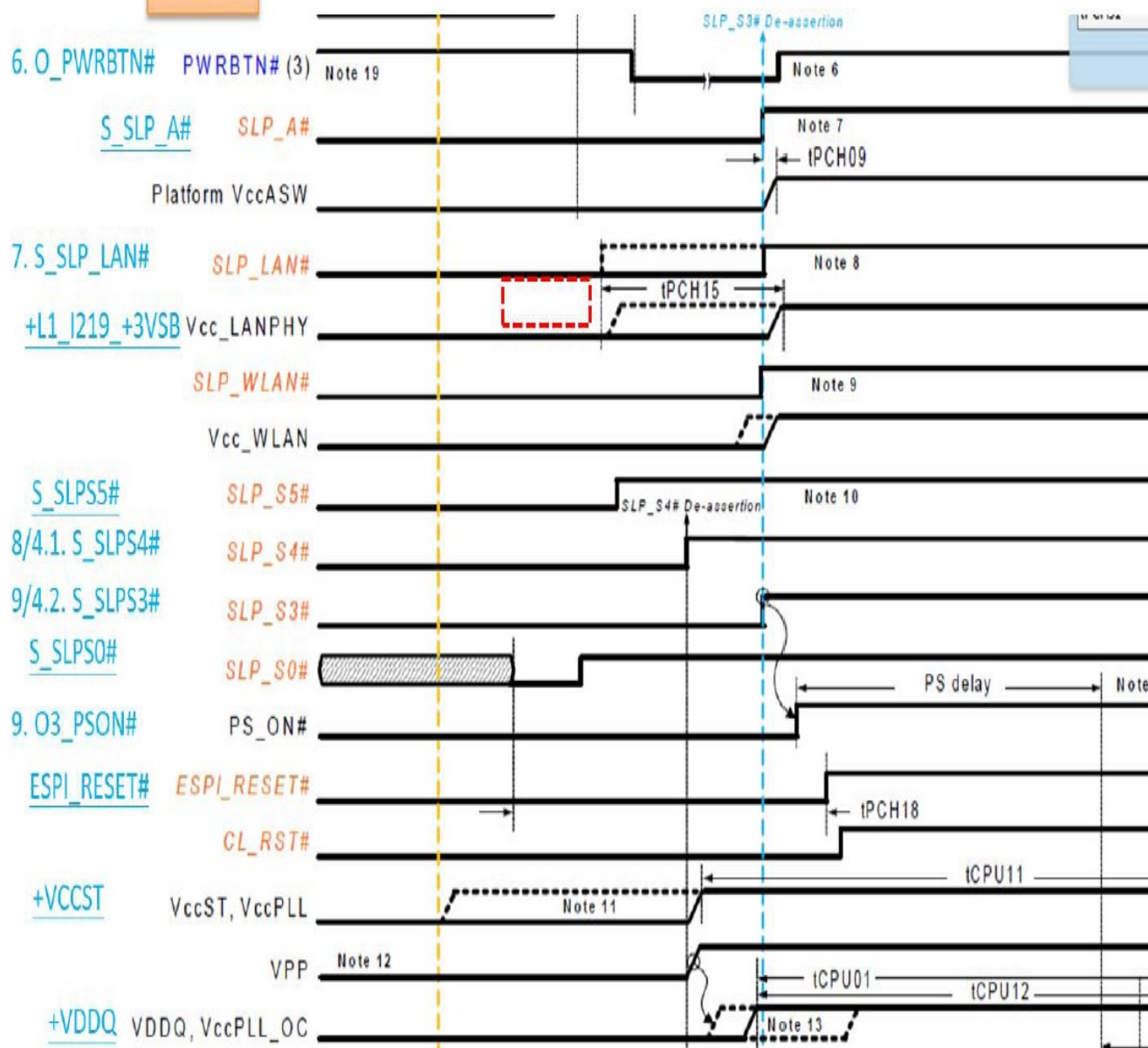
## 5. Timing Diagram for G3 to S5

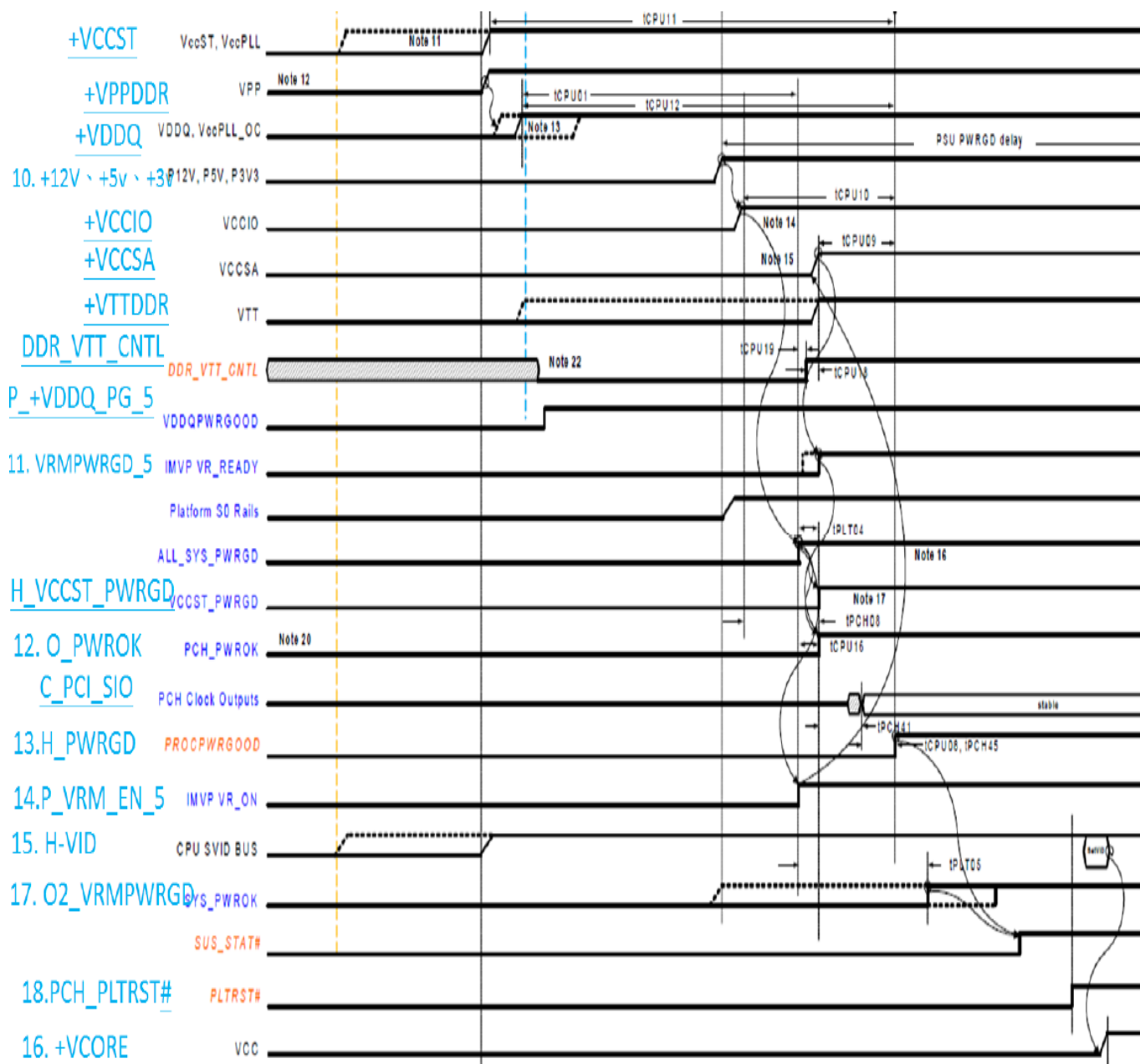
G3→S5



## Timing Diagram for S5 to S0/M0

S5→S0

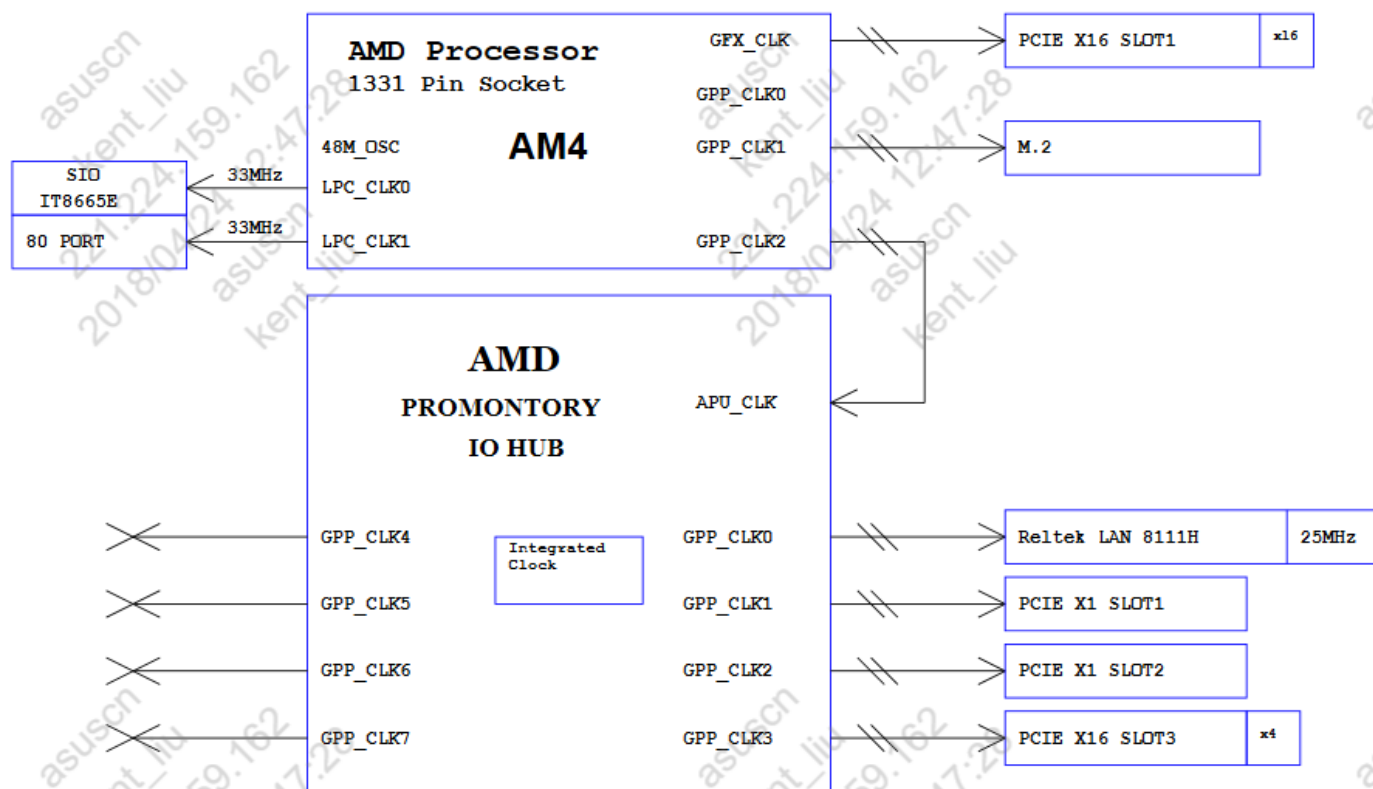






## 6. Frequency Flow

ICG : Integrated Clock Gen.





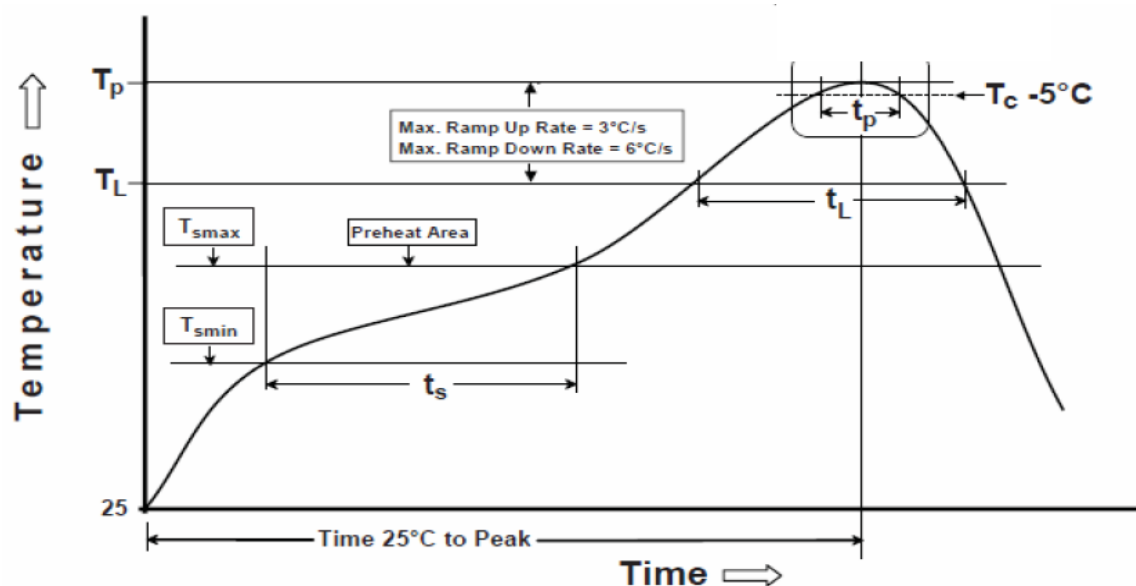
## 7. Socket reflow profile

Profile Feature	SMD Pb-Free Assembly	DIP Pb-Free Assembly	SMT Component Vendor Spec	DIP Component Vendor Spec
Preheat/Soak	150 °C	80 °C	150 °C	135 °C
Temperature Min (T <sub>smin</sub> )	200 °C	135 °C	200 °C	need endure 80 seconds
Temperature Max (T <sub>smax</sub> )	120 seconds	120 seconds	need endure 120 seconds	
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )				
Ramp-up rate (TL to Tp)	3 °C/second max.	3 °C/second max.	need endure 3 °C/second max.	need endure 3 °C/second max.
Liquidous temperature (TL)	217 °C	NA	217 °C	NA
Time (t <sub>L</sub> ) maintained above TL	90 seconds		need endure 90 seconds	
Peak package body temperature (Tp)	260 °C	270 °C	260 °C	270 °C
Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (Tc), see Figure 1-1.	10* seconds	6* seconds	need endure 10* seconds	need endure 6* seconds
Ramp-down rate (Tp to TL)	6 °C/second max.	6 °C/second max.	need endure 6 °C/second max.	need endure 6 °C/second max.
Time 25 °C to peak temperature	8 minutes max.	8 minutes max.	8 minutes max.	8 minutes max.

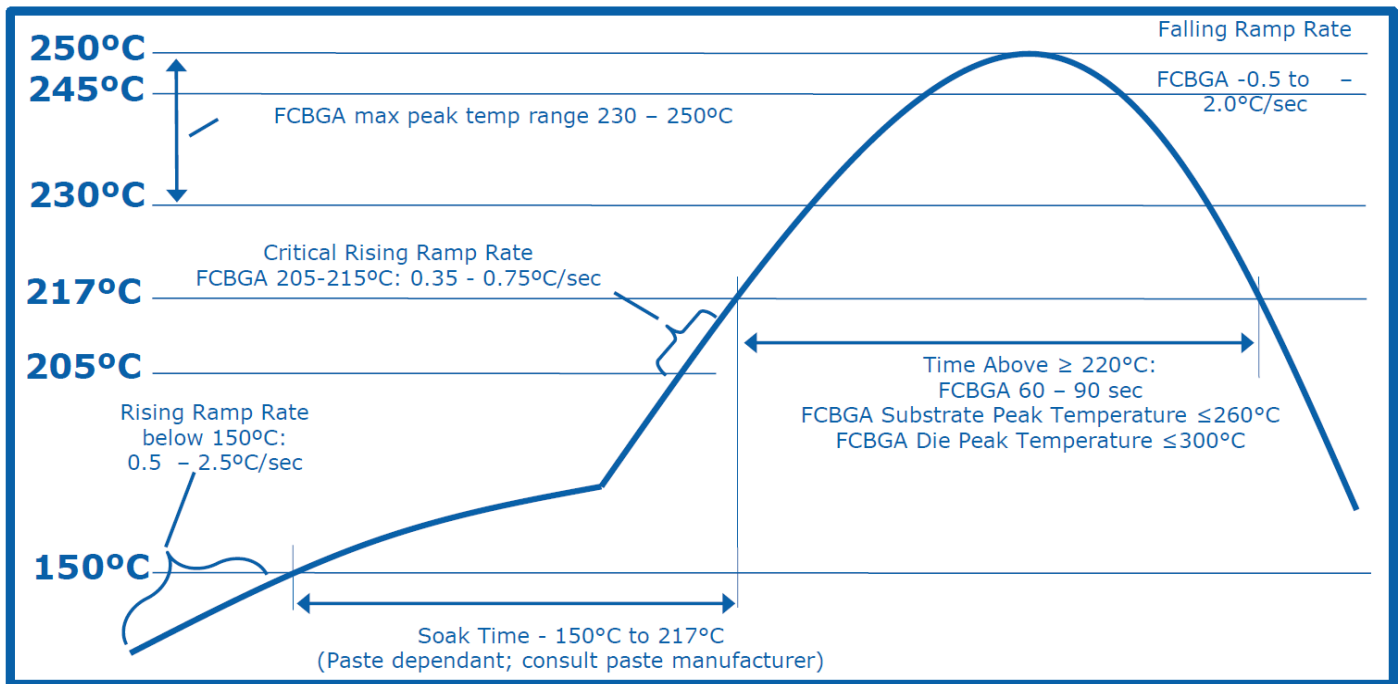
Note 1: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow (e.g., live-bug). If parts are reflowed in other than the normal live-bug assembly reflow orientation (i.e., dead-bug), Tp shall be within  $\pm 2$  °C of the live-bug Tp and still meet the Tc requirements, otherwise, the profile shall be adjusted to achieve the latter. To accurately measure actual peak package body temperatures refer to JEP140 for recommended thermocouple use.

2. DIP Plastic heat resistance capability :

- (1) Direct contact 270°C, 6 seconds
- (2) In-direct contact 230°C, 5 seconds
- (3) no contact 130°C, 5 seconds



## 8. Lead-Free Rework Thermo profile Graphic for BGA & Chipset



Except for body temp, all temperatures are measured with thermo couples inside solder joints, for better accuracy

### Primary Factors for Successful Rework:

- Flux formulation and solder paste formulation and volume
- A capable thermal reflow profile
- Proper PCB pad solder preparation/wicking (clean-up of the residual solder from the PCB pads)

**Caution: Always remove batteries and thermal solutions following the system design disassembly process steps prior to BGA rework to avoid damaging the BGA.**

View this Intel® BGA / Socket Rework Video (10 minutes in length):

<http://link.brightcove.com/services/player/bcpid1409165005001?bckey=AQ~~,AAAQqwZd9wk~,X1Exj3sUi-03b71FGkEmVWbi4T4yGcor&bctid=1519232885001>

## 9. MB Baking Time: 120 °C, 8 hours

### BGA Baking Time:

**5.2 Floor Life** The floor life of SMDs per Table 5-1 will be modified by environmental conditions other than 30 °C/60% RH. Refer to Clause 7 to determine maximum allowable time before rebake would be necessary. If partial lots are used, the remaining SMD packages must be resealed or placed in safe storage within one hour of bag opening (see 5.3). If one hour exposure is exceeded, refer to 4.1.

**Table 5-1 Moisture Classification Level and Floor Life per J-STD-020**

Level	Floor Life (out of bag) at factory ambient $\pm 30^{\circ}\text{C}/60\%$ RH or as stated
1	Unlimited at $\pm 30^{\circ}\text{C}/85\%$ RH
2	1 year
2a	4 weeks
3	168 hours
4	72 hours
5	48 hours
5a	24 hours
6	Mandatory bake before use. After bake, must be reflowed within the time limit specified on the label

**Supplier Bake: Default Baking Times Used Prior to Dry-Pack that were Exposed to Conditions  $\pm 60\%$  RH (“MET” = 24 h )**

Package Body Thickness	Level	Bake @ $125^{\circ}\text{C} +10/-0^{\circ}\text{C}$	Bake @ $150^{\circ}\text{C} +10/-0^{\circ}\text{C}$
$\leq 1.4\text{ mm}$	2	7 hours	3 hours
	2a	8 hours	4 hours
	3	16 hours	8 hours
	4	21 hours	10 hours
	5	24 hours	12 hours
	5a	28 hours	14 hours
$> 1.4\text{ mm}$ $\leq 2.0\text{ mm}$	2	18 hours	9 hours
	2a	23 hours	11 hours
	3	43 hours	21 hours
	4	48 hours	24 hours
	5	48 hours	24 hours
$> 2.0\text{ mm}$ $\leq 4.5\text{ mm}$	5a	48 hours	24 hours
	2	48 hours	24 hours
	2a	48 hours	24 hours
	3	48 hours	24 hours
	4	48 hours	24 hours
	5	48 hours	24 hours
	5a	48 hours	24 hours

**Note 1:** If baking of packages  $> 4.5\text{ mm}$  thick is required see appendix B.

**Note 2:** The bake times specified are conservative for packages without blocking planes or stacked die. For a stacked die or BGA package with internal planes that impede moisture diffusion the actual bake time may be longer than that required in Table 4-2 if packages have had extended exposure to factory ambient before bake. Also the actual bake time may be reduced if technically justified. The increase or decrease in bake time **shall** be determined using the procedure in JEDEC JESD22-A120 (i.e.,  $< 0.002\%$  weight loss between successive readouts) or per critical interface concentration calculations.