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Virtual Event

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POWER SEQUENCE MEASUREMENT VIA AUTOMATED CLOUD POWER-ON-RESET TOOL

Angie Ng See Tien, Mohd Bahar Amyrul Azuan, Tan Yean Shim, Lee Eng Kwong, Saifullah Nasrullah
Intel Corporation

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What is Power Sequencing Measurement?

- The sequence in which power is applied and shut down
- Includes specification of the time intervals between steps in the sequence
- Start up and shut down in the right sequence and at correct rates to avoid latch up, functional anomalies or even damage
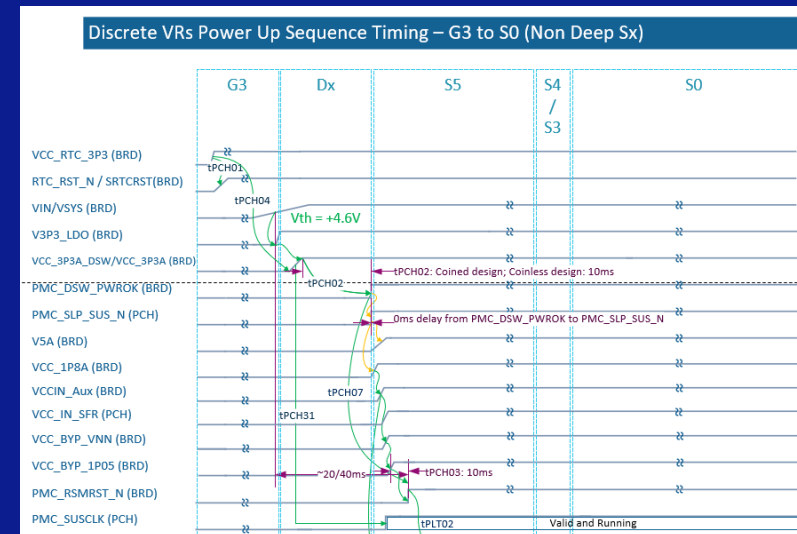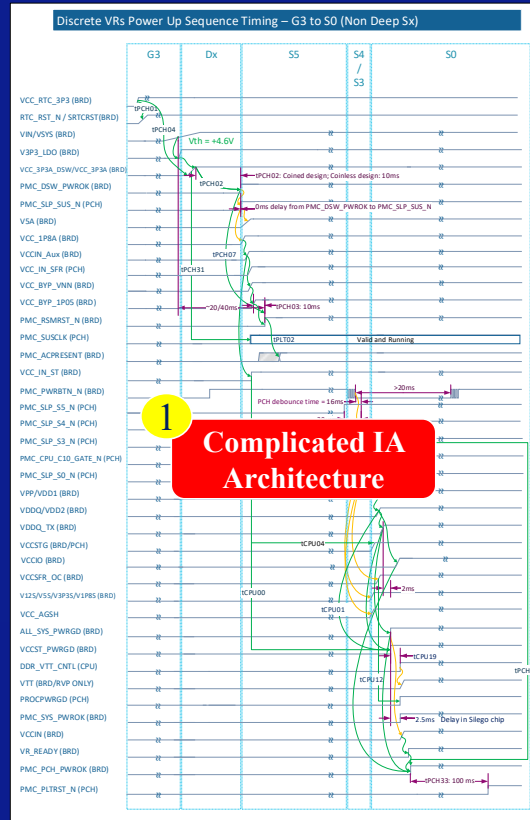

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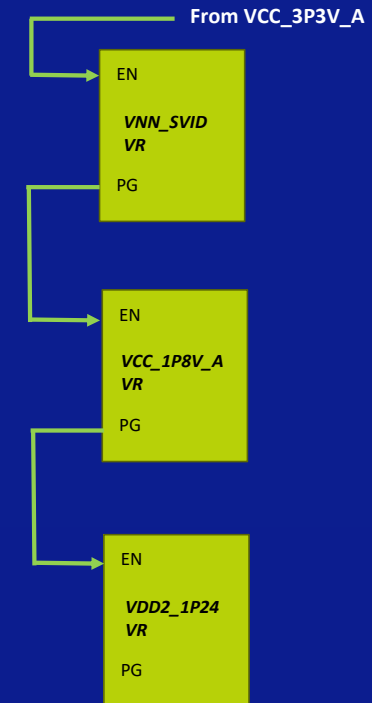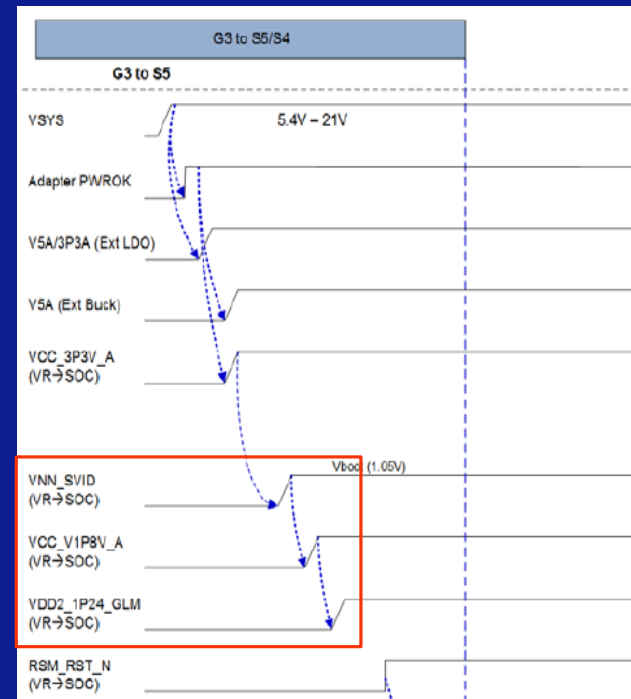
Why Power Sequencing Measurement?
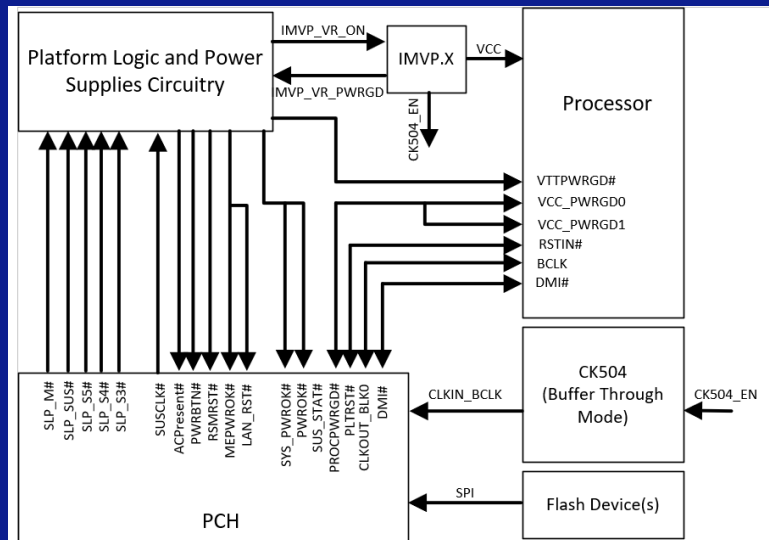
Example of Platform Power Logic and Signal Block Diagram

Discrete VRs Power Up Sequence Timing – G3 to S0 (Non Deep Sx)

Power On Timing Sequences

- Collect and timestamp electrical activities across several signals over a specific period
- Critical to ensure products functionality and stability

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Problem Statement

Discrete VRs Power Up Sequence Timing – G3 to S0 (Non Deep Sx)

① Complicated IA Architecture

② Expensive Equipment

③ Manual Labour

④ Limited CRB/RVP quantity

⑤ Time consuming

Power On Debug (~2 weeks)

Electrical Validation (~4 weeks)

Factory Test (~2 weeks)

1st Build

Typical 7-10 weeks in total

Product shipped

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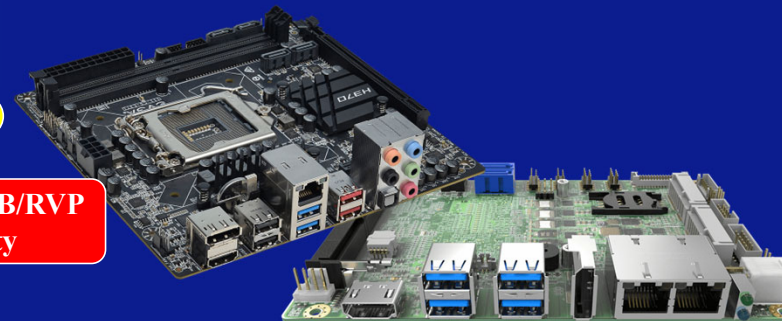
Solution Overview

Power-On-Reset (POR) Tool Overview

POR is a device that emulates a 32-channel mixed signal oscilloscope and logic analyzer with integrated and automated rule-checking

Reduces debug work from ~~days~~ *to hours*
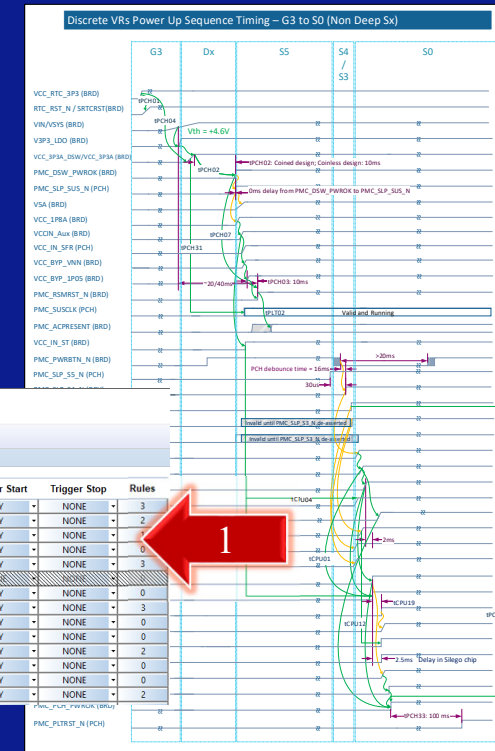*Reduces validation work from* ~~weeks~~ *to days*

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Solution Overview

- ✓ This solution consist of two elements (1) CBRD remote debug (2) POR in CBRD

- ✓ CBRD is the delivery of different service end to end solution through the Internet . It help to enable remote access to Intel customer reference and validation boards possible during Pandemic time.

- ✓ Measure power sequencing remotely through cloud services.

- ✓ POR helps to save time (~ 70% time reduced) and more convenient for debug

- ✓ Covered most of the power up/down sequence rails and signals

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Overall system solution architecture

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Comparison between Conventional method vs POR Tool + CBRD

Components	Today	POR Tool + CBRD
Equipment	>$20K (uses probes)	<$2K (uses header)
Requirements	Paper Spec (Pdf)	Smart Spec (RuleKit)
Test Method	Manual Interpretation	Fully Automated
Test Skills	Highly Specialized	Minimal Experience
Test Plans	Weeks (Create new)	Days (reuse RuleKit)
Test Execution	Months (Variable)	Days (Predictable)
Test Environment	Onsite	Remotely
Manpower	2-3 Engineers	1 Engineer

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Conclusion & Future Plans

- Proposed a new architecture of power on reset tool solution based on FPGA
- Combines the FPGA based POR tool with Cloud Based Remote Debug (CBRD) infrastructure to introduce the remote element to the test environment during pandemic outbreak
- Enhance POR tool to be multi-tool scaling to enable rule-check across 256 signals
- Optimize test capability on AC Transient analysis measurement
- Scale POR tool support across Intel product roadmap

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