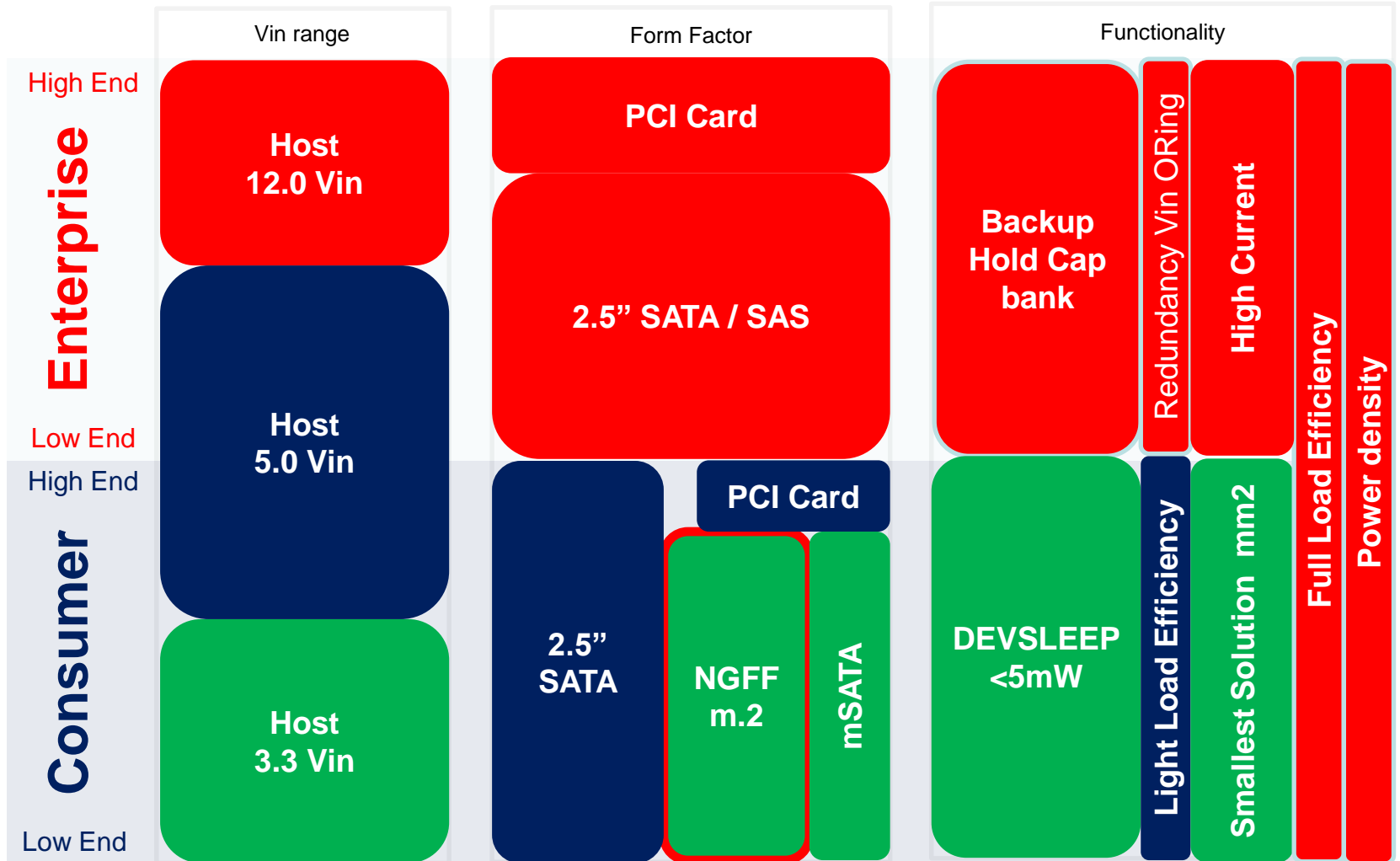


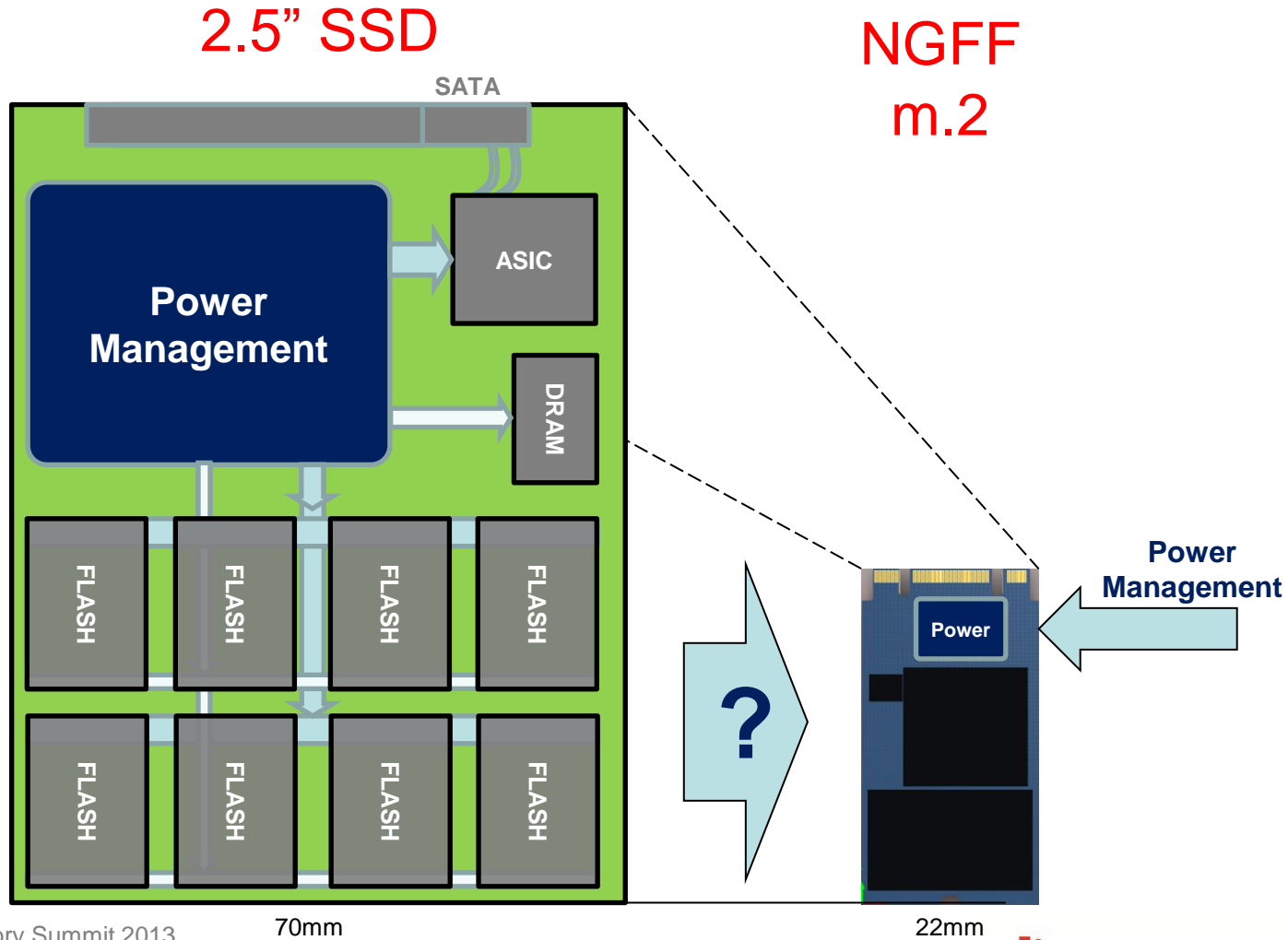
Integrated Power Management for SSD Application

Robert Loke
Product Line - Technologist
Texas Instruments Inc.
robert.loke@ti.com

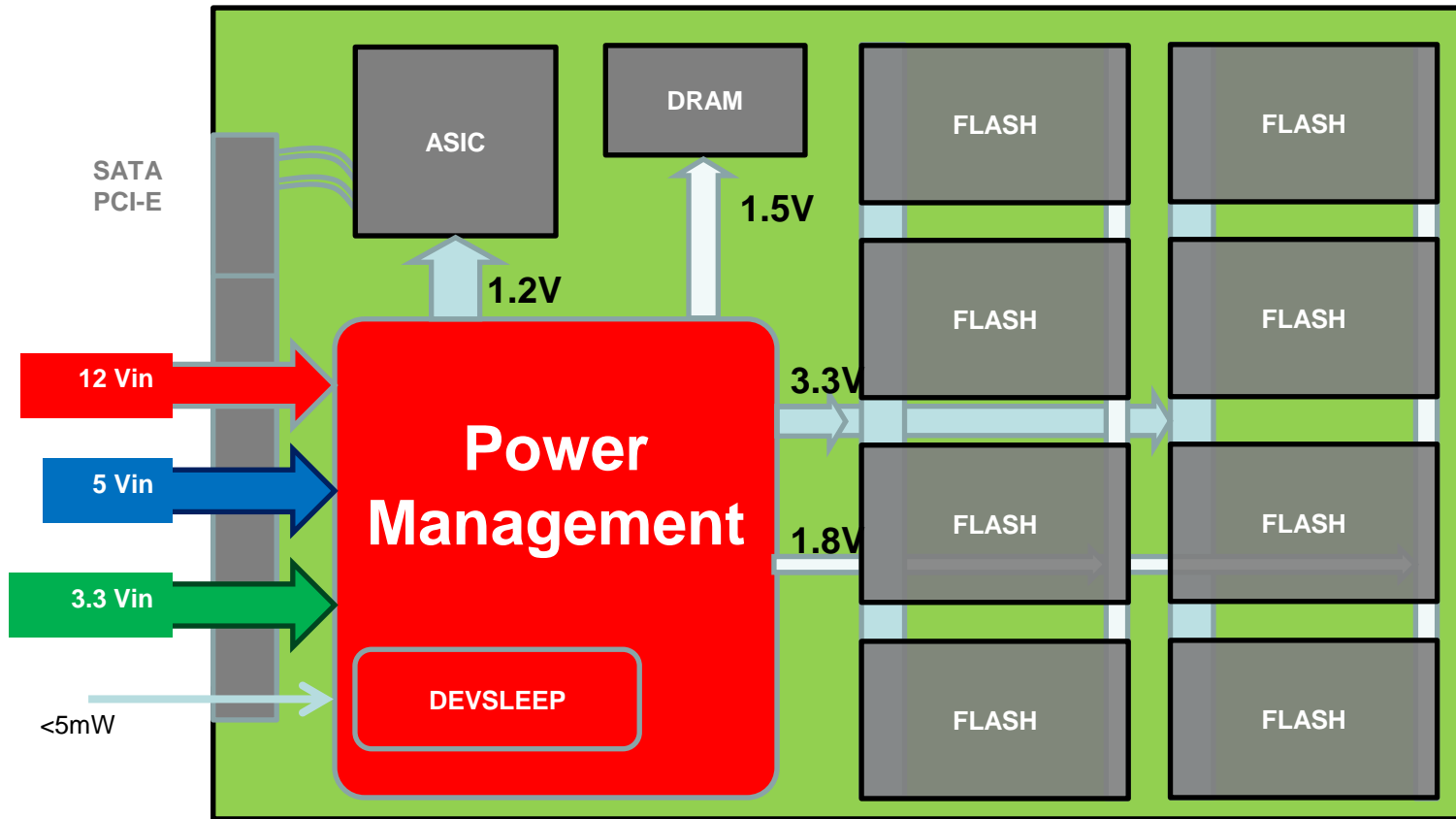
Power Solutions in SSD's



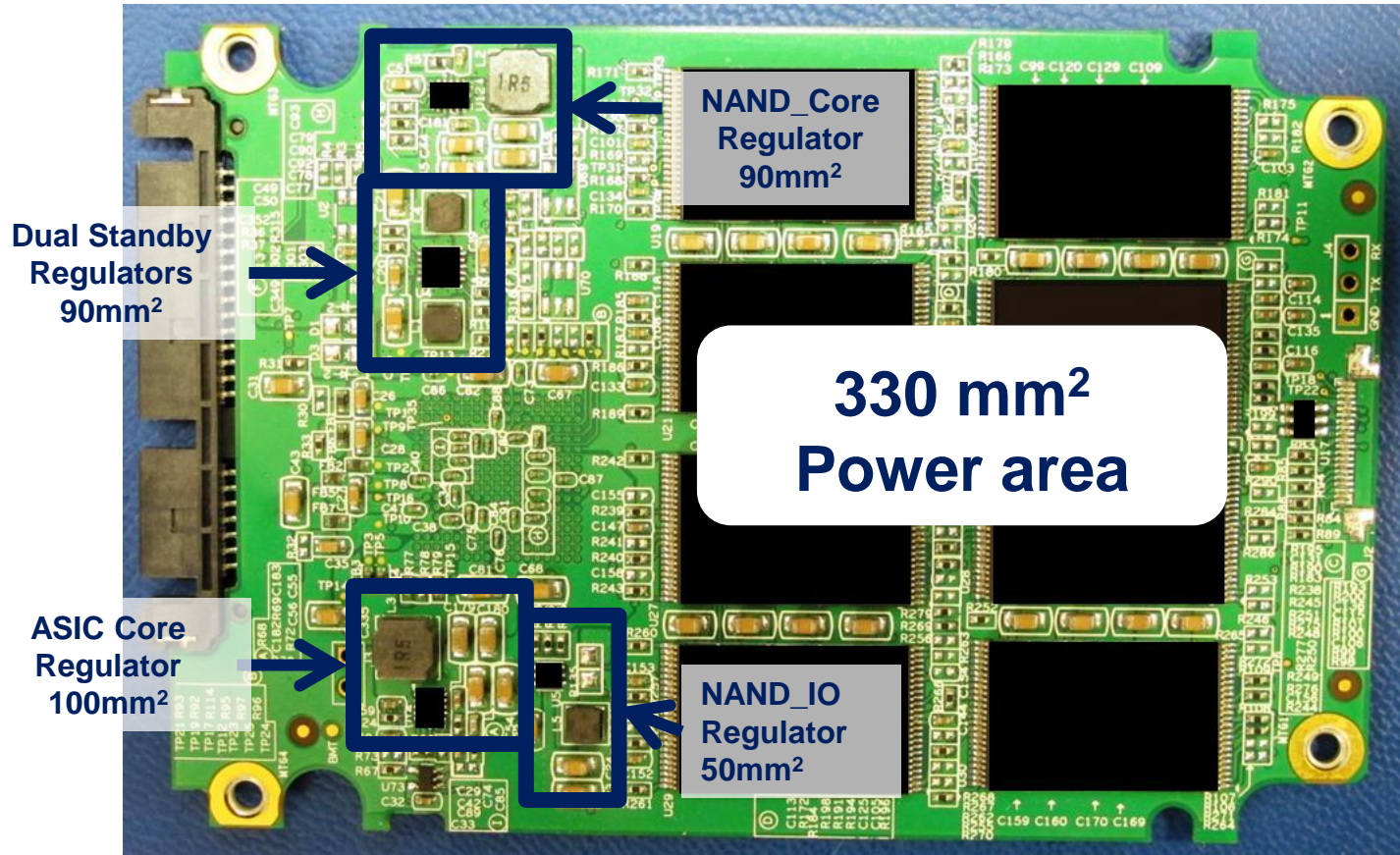
Smaller Form factor SSD's



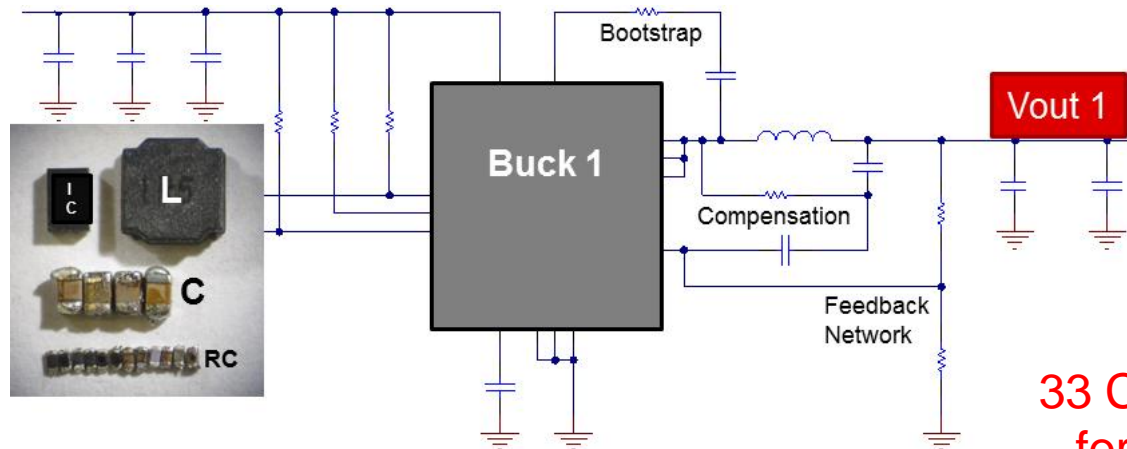
Typical SSD Power Path



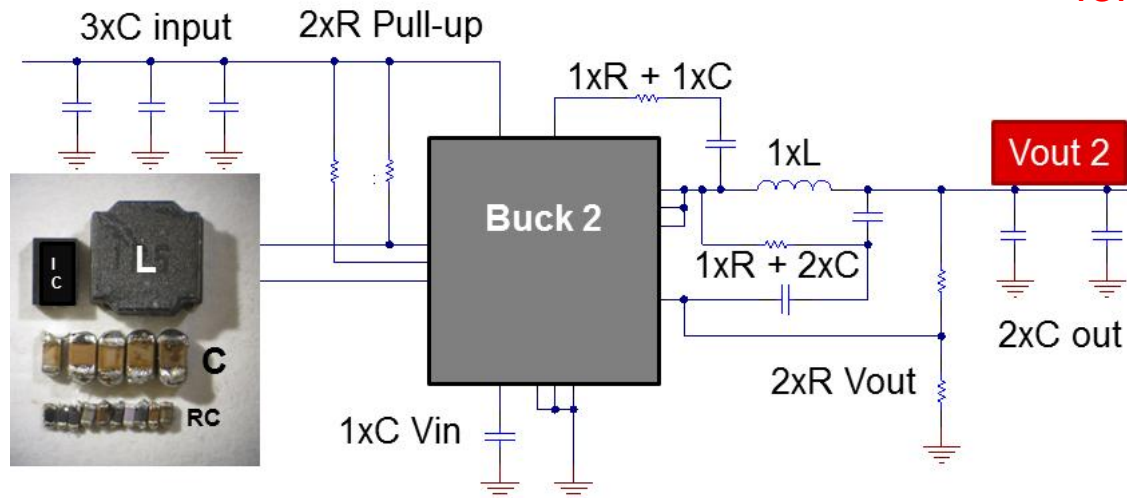
Power takes significant SSD area



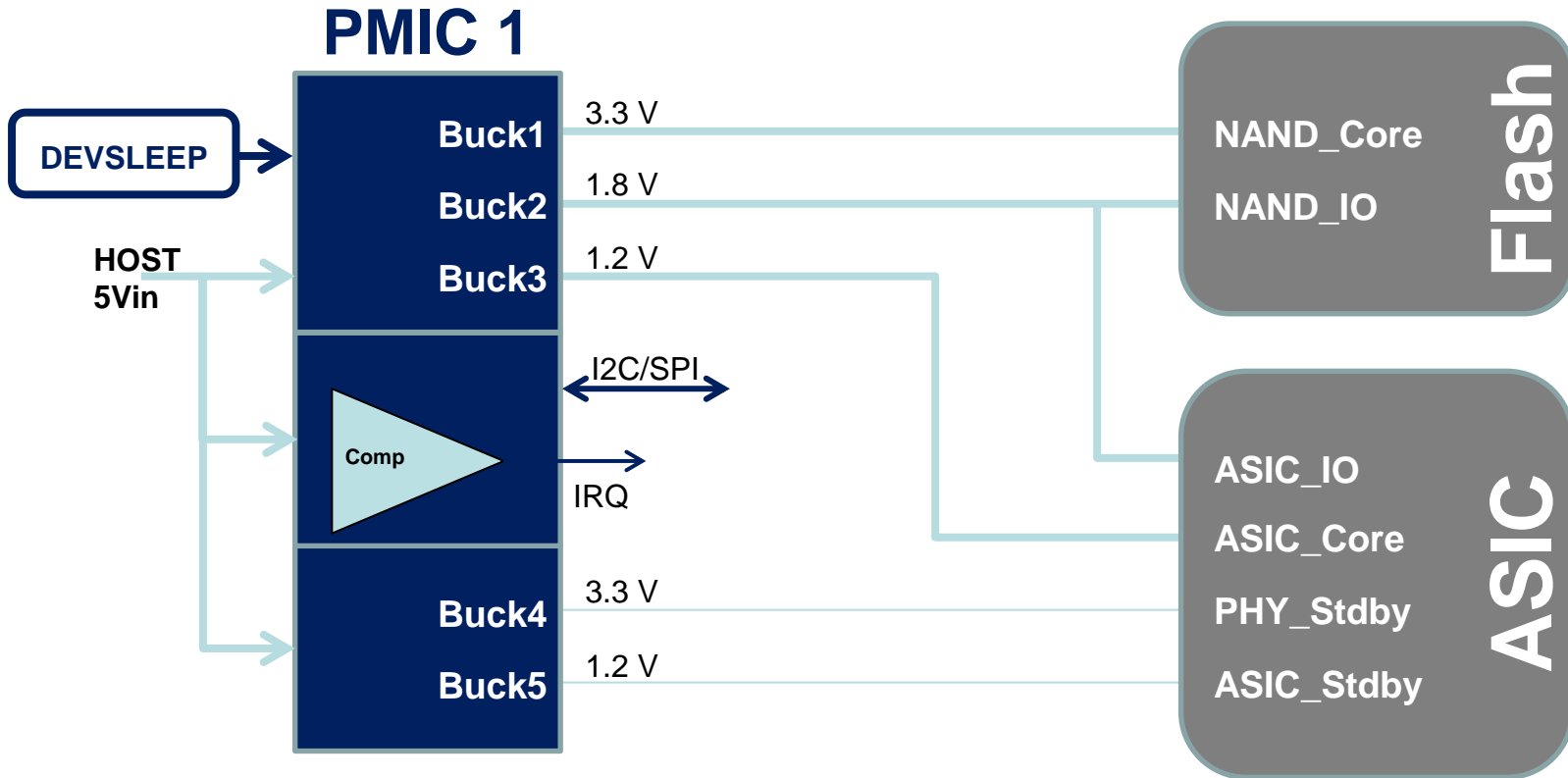
Externals Components



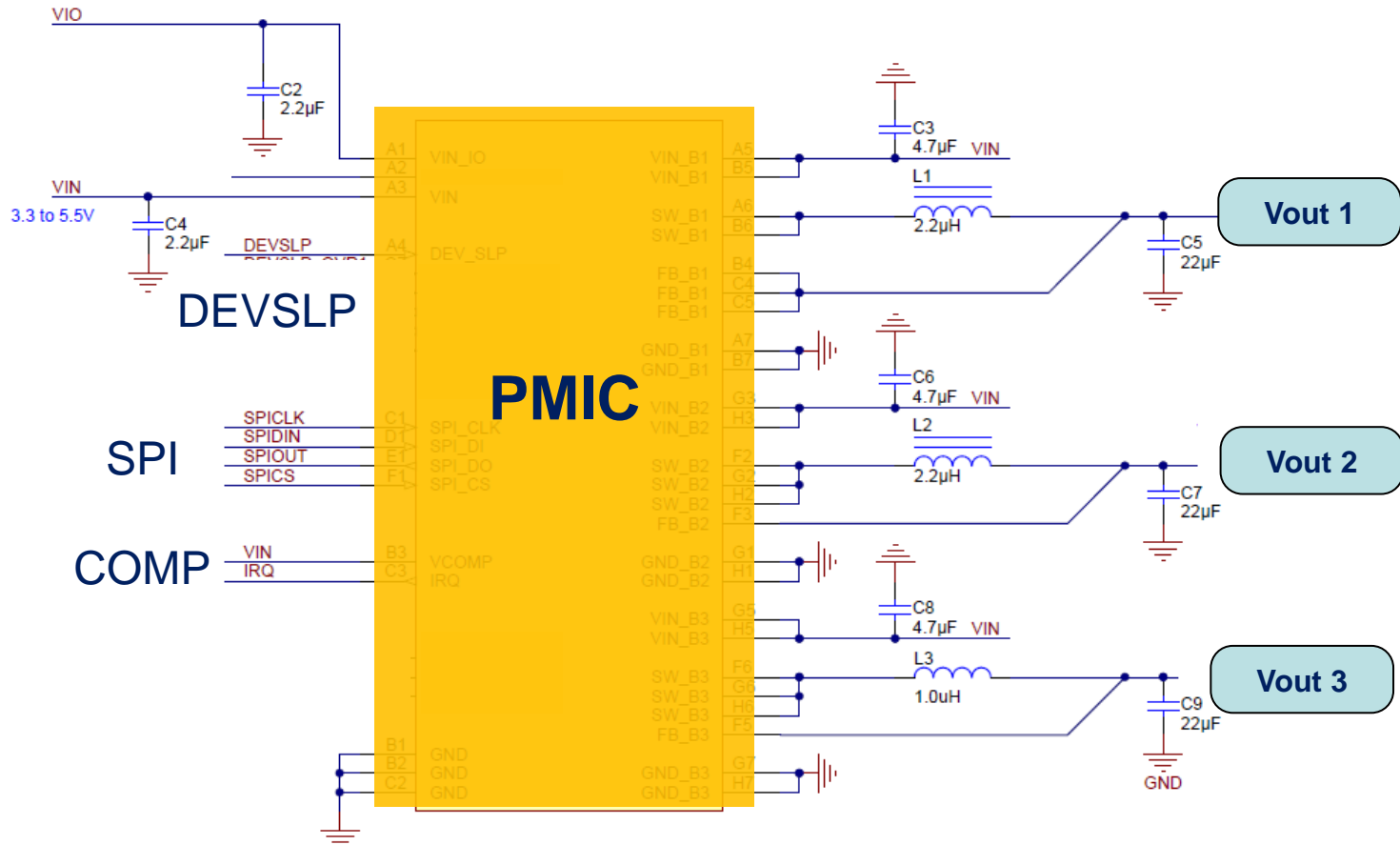
33 Components
for 2x Bucks



Power Management IC - PMIC

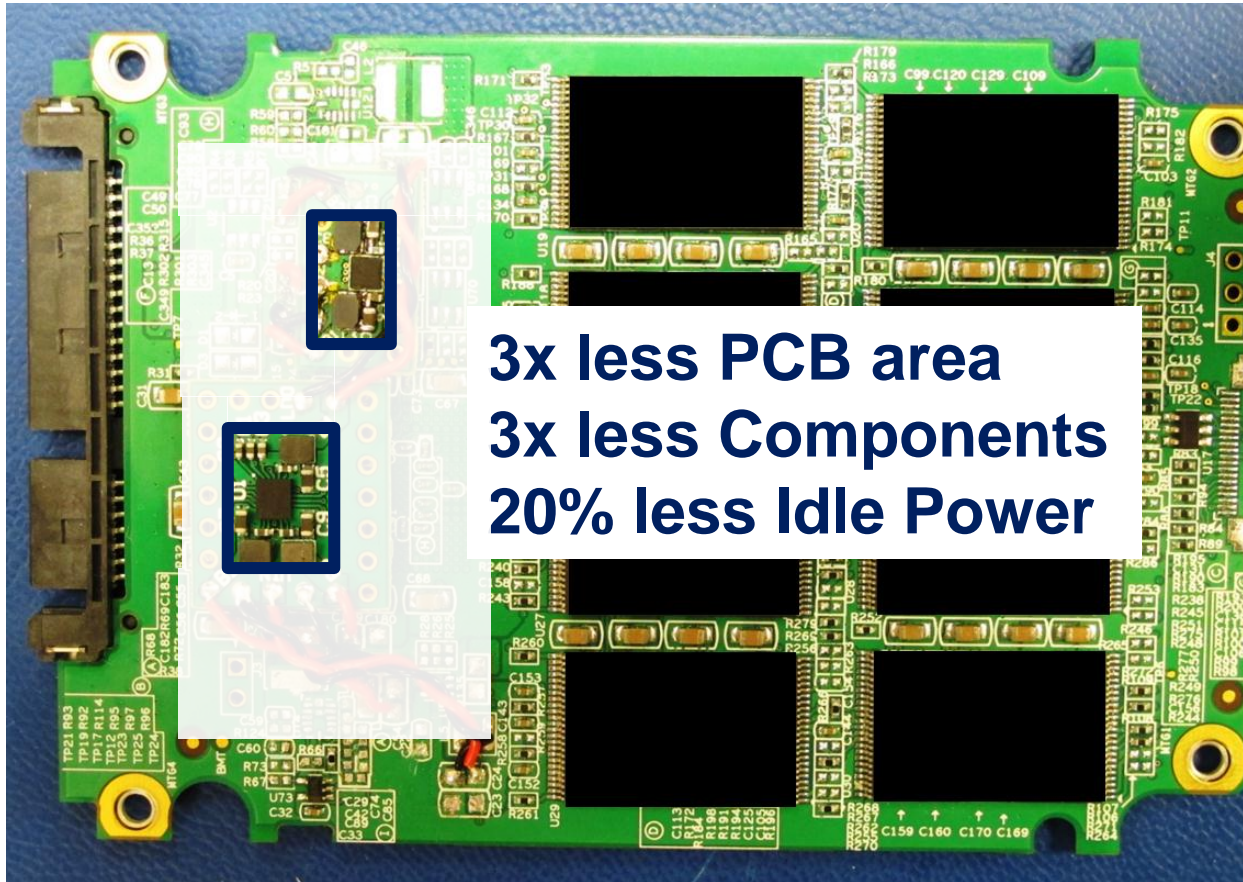


Power Management IC - PMIC



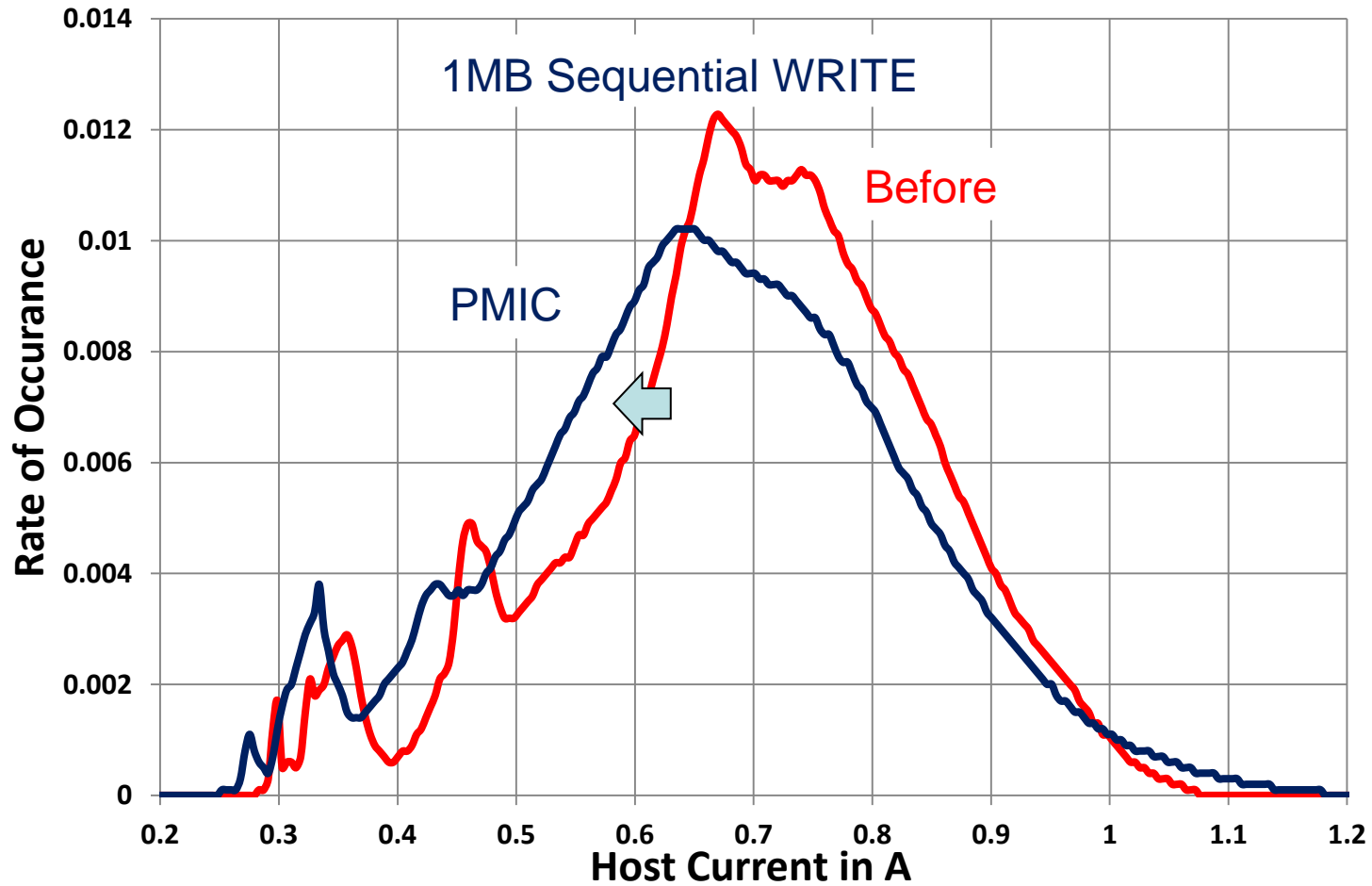
3x less external Components

Advantages - PMIC



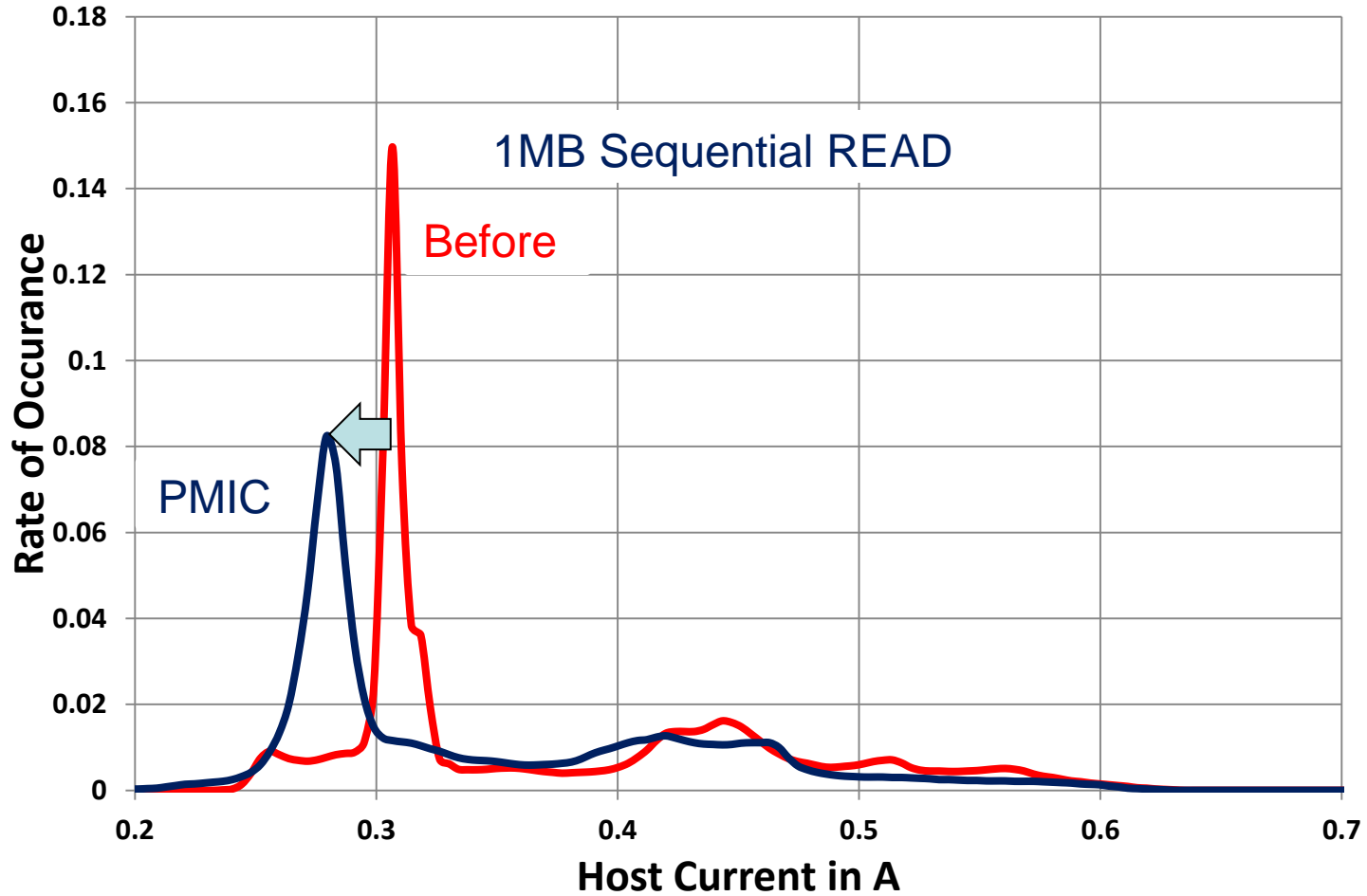
Power Reduction - WRITE

Histogram

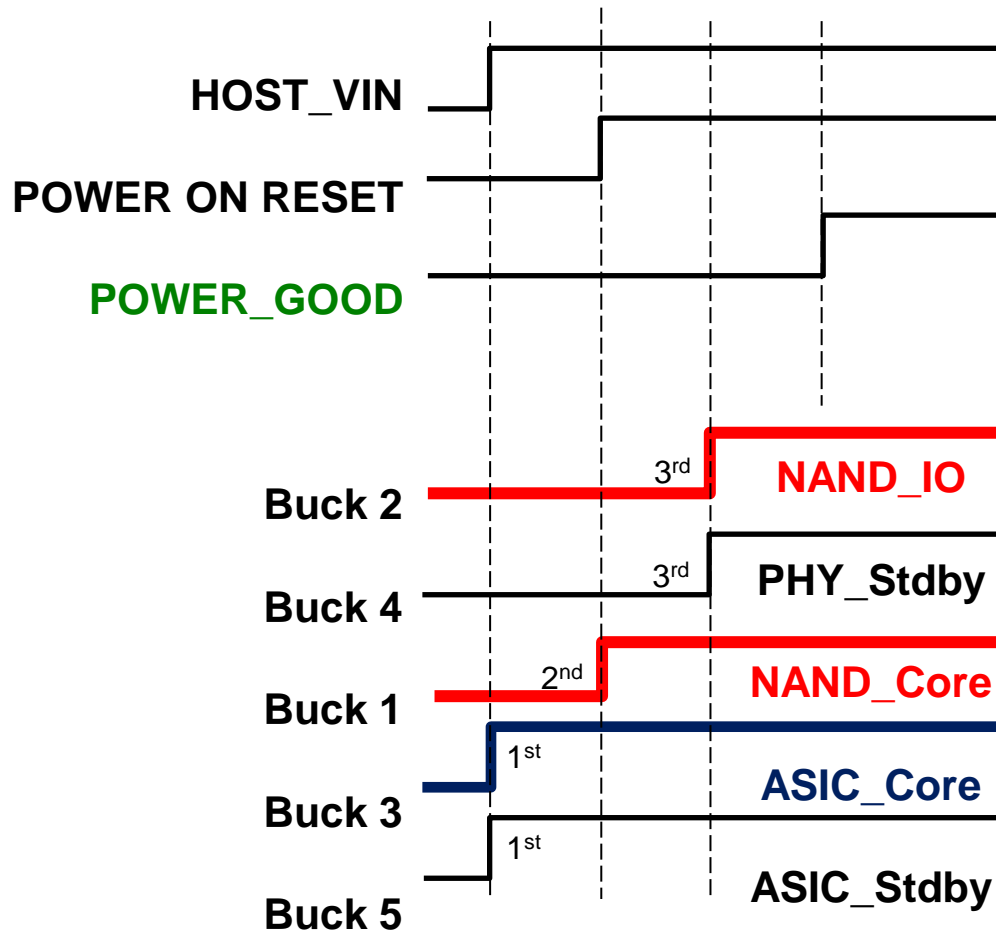


Power Reduction - READ

Histogram

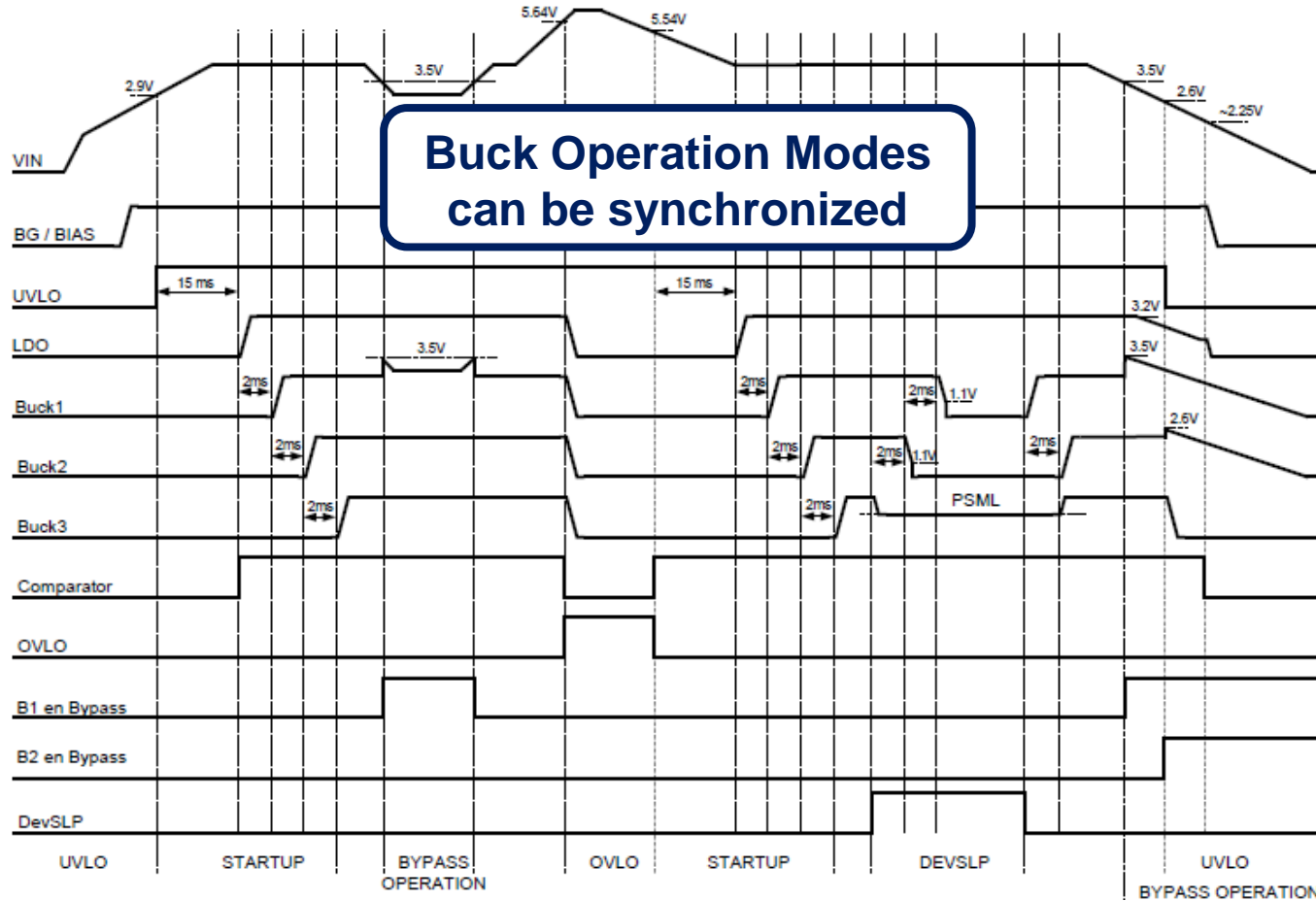


PMIC - Power Sequencing



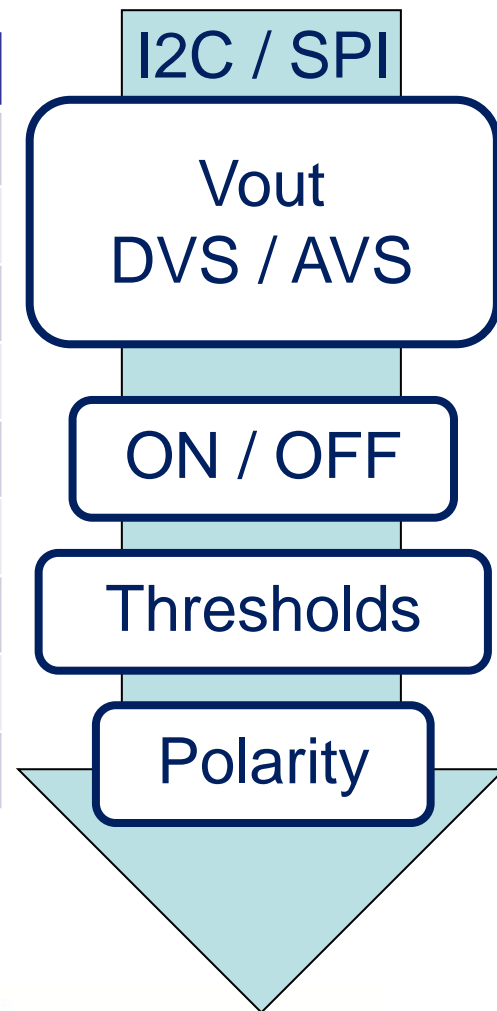
- Host Monitoring
- Reset ASIC
- Fault Monitoring
- Accurate Timing
- Controlled Inrush
- Soft Start

PMIC – Operating Modes

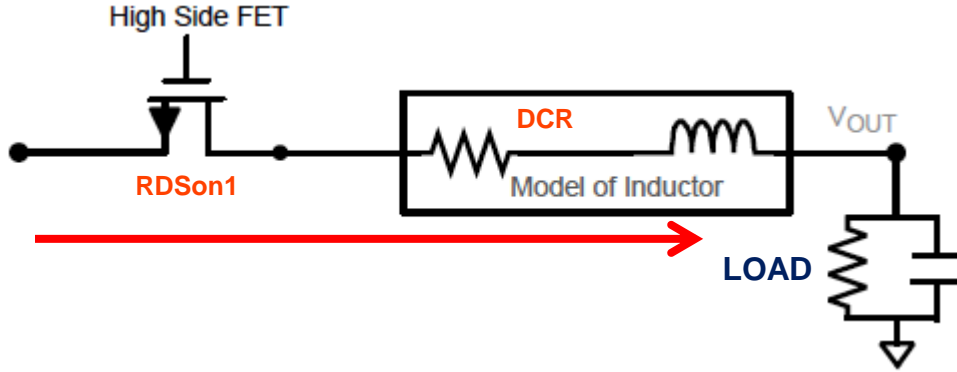


PMIC - Programmability

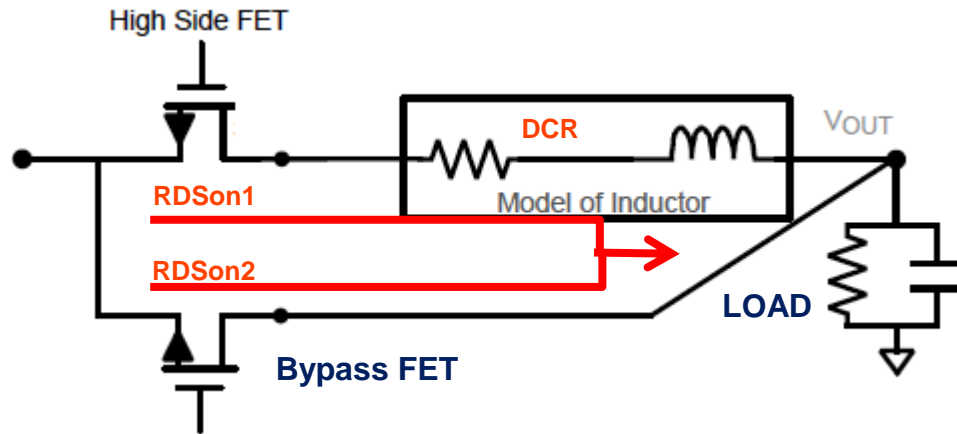
Register	Name	Data	Default
0x01	Buck 1 Vout	0x0E	1.8V
0x02	Buck 2 Vout	0x2C	3.3V
0x03	Buck 3 Vout	0x02	1.2V
0x0A	Enable Buck	0xFF	All Bucks ON
0x0B	Comp Threshold	0x3C	3.9V
0x0E	Interrupt Polarity	0x01	Active High IRQ



3.3V Bypass Operation



Bypass Function with High Side FET



Bypass Function with Bypass FET

PMIC's Solution provide for SSD's:

- ✓ Optimized Power Management for NGFF/m.2
- ✓ Smallest Solution Size
- ✓ Less External Components
- ✓ Lower Idle Power
- ✓ Programmability I2C/SPI

