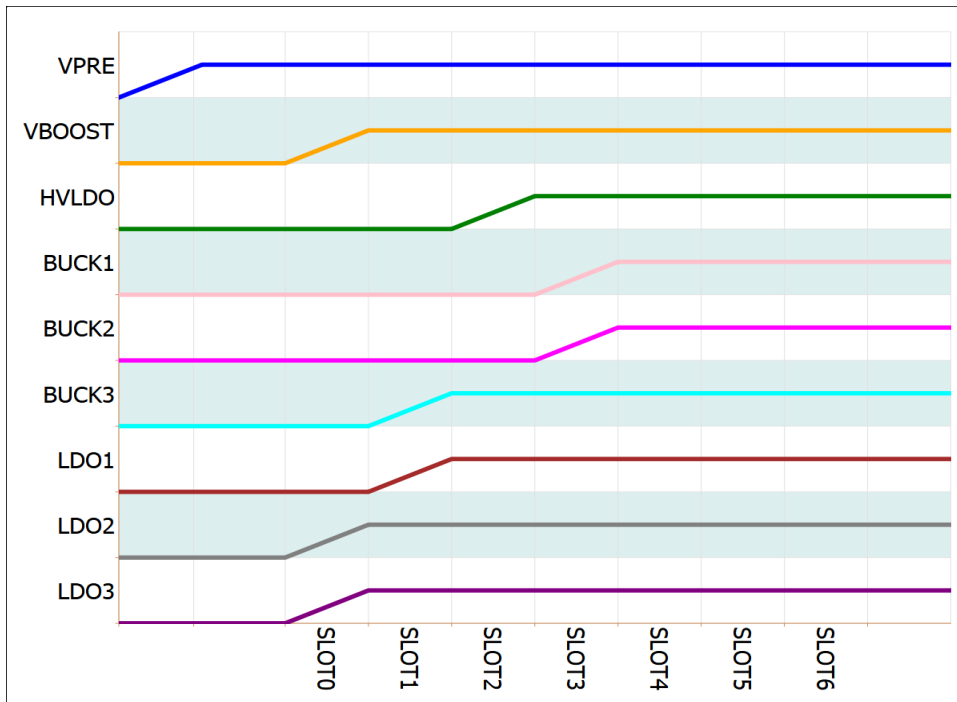
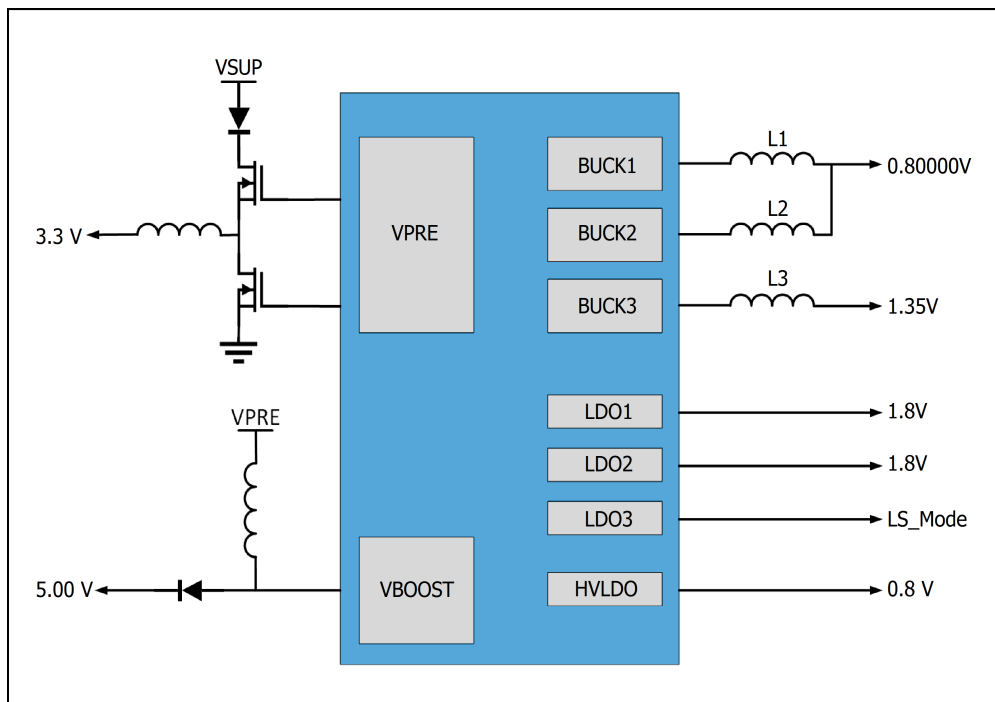


5 Power-up sequence summary



The signals depicted above are enable signals for each regulator. They don't represent the actual ramp voltage

6 Hardware configuration diagram



7 System configuration

See VR5510 datasheet for parametric details. The OTP configuration summary for A6 sequence ID is provided in Tables below.

Table 2. Device OTP configuration

Functional block	Feature	OTP selection
Device Configuration	Main I2C Address	0x20
	VSUP UV threshold	4.9 V
	Auto Re-try Enable	Enabled (default)
	Auto Re-try Timeout	4 s (default)
	Number of Retries	Infinite Retry (default)
	PLL Enable	Disabled (default)
	Clock 1 Divider	2.22 MHz (default)
	Clock 2 Divider	455 KHz (default)
	Thermal Warning TH	105 °C (default)
	Deep Sleep Enable	DSM Disabled (default)
IO Configuration	PWRON2 Control	Not Required
	AMUX/FOUT Select	AMUX Enabled (default)
	PSYNC Enable	PSYNC Disabled (default)
	PSYNC Mode	Sync 2 x VR5510
	PSYNC Power Down Ctrl	Ignore for PwrDown
	Standby Transition Timer	Enabled (default)
	Standby Discharge TH	75 mV (default)
	Standby Polarity	Active Low (default)
	Standby PGOOD Enable	Enabled (default)
	PSYNC PGOOD Ext	Disabled

Configuration report for QM OTP program ID: A6 rev B

	Ext Standby Discharge	Disabled
	Standby PGOOD Delay	400us
	VDDIO Supply Seletion	LDO3 (default)
	Multiphase Configuration	Dual Phase

Table 3. Voltage Regulators Configuration

Functional block	Feature	OTP selection
VPRE Configuration	VPRE Voltage	3.3 V (default)
	Slope Compensation	41.4 mV/us
	VPRE Standby Output Ctrl	Set by VPREV_STBY (I2C)
	ILIM sense Voltage	120 mV
	VPRE HighSide pull down Slew Rate Ctrl	PD / 520 mA (455 KHz default value)
	VPRE HighSide pull up Slew Rate Ctrl	PU / 520 mA (455 KHz default value)
	VPRE LowSide Slew Rate Ctrl	PU / PD / 900 mA (default value)
	Soft Start Ramp	2 mV/us (default)
	VPRE Off Time	80 ns
	TON in PFM	550 ns (default value)
	TON Min	45 ns
	Turn OFF Delay	250 us
VBOOST Configuration	VBOOST Voltage	5.00 V (default)
	Slope Compensation	67 mV/us (default)
	Minimum TON	60 ns (default)
	Current Limit	2.25 A (default)
	Low Side Slew Rate Ctrl	500 V/us (default)
	Input Path to BOS	Enabled (default)

Configuration report for QM OTP program ID: A6 rev B

	Compensation Capacitor	125 pF (default)
	Compensation Resistor	500 kΩ (default)

Table 4. BUCK Regulators

Functional block	Feature	OTP selection
BUCK1/2 - Dual Phase	Output Voltage	0.80 V
	Current Limit	3.6 A
	Output Inductor	1 uH(default)
	DVS Ramp of BUCK12	15.6 mV/us (power up) / 10.4 mV/us (power down)
	Transconductance	65 umho
BUCK3	Output Voltage	1.35 V
	Current Limit	3.6 A
	Output Inductor	1 uH(default)
	Ramp	3.47 mV/us (power up/down)
	Transconductance	65 umho
	R Comp	56 KΩ

Table 5. LDO Regulators

Functional block	Feature	OTP selection
LDO1 Regulator	Output Voltage	1.8 V
	Current Limit	400 mA (default)
LDO2 Regulator	Output Voltage	1.8 V
	LDO Mode	LDO Mode (default)
LDO3 Regulator	Output Voltage	LS_Mode
	LDO Mode	Load Switch (default)

Configuration report for QM OTP program ID: A6 rev B

Table 6. HVLDO Regulator

Functional block	Feature	OTP selection
HVLDO Regulator	HVLDO Voltage	0.8 V (default)
	Transition Mode	Switch in Normal / LDO in Standby (default)
	Sequence Control	Follows HVLDO_OTP slot

Table 7. Voltage Sequence and Timing Configuration

Regulator	Sequence	Enabled	Phase Delay	Clock	TSD Event
VPRE	Auto-enabled	Enabled	No delay	CLK2	
VBOOST	Slot 0	Enabled	No delay	CLK1	Shutdown + DFS
BUCK1	Slot 3	Enabled	1 clock delay	CLK1	Shutdown + DFS
BUCK2	Slot 3	Enabled	2 clock delay	CLK1	Shutdown + DFS
BUCK3	Slot 1	Enabled	3 clock delay	CLK1	Shutdown + DFS
LDO1	Slot 1	Enabled			Shutdown + DFS
LDO2	Slot 0	Enabled			Shutdown + DFS
LDO3	Slot 0	Enabled			Shutdown + DFS
HVLDO	Slot 2	Enabled			Shutdown + DFS
SLOT Width	250 us				

Table 8. Safety State Machine Configuration

Functional block	Feature	OTP selection
Safety Configuration	FailSafe I2C Address	0x21
	8sec Timer to DFS	Timer Disabled
	ABIST1 to RSTB delay	5 ms Delay
	VCOREMON SVS Clamp Limit	16 steps available (default)
	VCOREMON SVS Offset Type	Negative offset (default)

Configuration report for QM OTP program ID: A6 rev B

	PGOOD assert with RSTB	PGOOD Asserts with RSTB Fault (default)
	HVLDO Mode Select	Switch Mode (default)
	WDI Polarity	Falling Edge
	WDI on FCCU1	WDI Disabled (default)
	STANDBY Mode	STANDBY Enabled (default)
	STANDBY Polarity	Active Low in standby mode (default)
	STANDBY Request Path	I2C + STBY Pin Transition (default)
	STANDBY Window	STBY Window Enabled (default)
	WD Init Timeout	1024 ms
	Fault Recovery Mode	Disabled
	WD Selection	Simple WD
	WD Monitoring	WD Disabled
	FCCU Monitoring	FCCU Disabled
	LBIST Enable	LBIST Disabled

Configuration report for QM OTP program ID: A6 rev B

Table 9. Voltage Monitoring

	VMONEN	Voltage	UV_TH	OV_TH	UV Dbnc	OV Dbnc	PGOOD Ctrl	ABIST Ctrl
VCOREMON	Enabled	0.80000V	95.5%	106%	25 us	25 us	PGOOD Assigned	No ABIST at PWRUP
VDDIOMON	Enabled	3.3 V	95%	105%	25 us	25 us	PGOOD Assigned	No ABIST at PWRUP
HVLDOMON	Enabled	0.8 V	93%	107%	25 us	25 us	PGOOD Assigned	No ABIST at PWRUP
VMON1	Enabled	0.8 V	95.5%	106%	25 us	25 us	PGOOD Assigned	No ABIST at PWRUP
VMON2	Enabled	0.8 V	96.5%	105%	25 us	25 us	PGOOD Assigned	No ABIST at PWRUP
VMON3	Enabled	0.8 V	95%	105%	25 us	25 us	PGOOD Assigned	No ABIST at PWRUP
VMON4	Enabled	0.8 V	95%	105%	25 us	25 us	PGOOD Assigned	No ABIST at PWRUP

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Revision History

Date	OTP Rev	OTP Changes compared to rev A
Mar 3 2021	Rev B	<ol style="list-style-type: none">1. ABIST1 to RSTB Delay: Changed to 5ms Delay from No Delay (default)2. BUCK3 Non DVS Ramp: Changed to 3.47mV/us (power up/down) from 10.42mV/us (power up/down)3. Standby PGOOD Release Delay: Changed to 400us from 300us4. LDO1 Sequence: Changed to Slot 1 from Slot 0