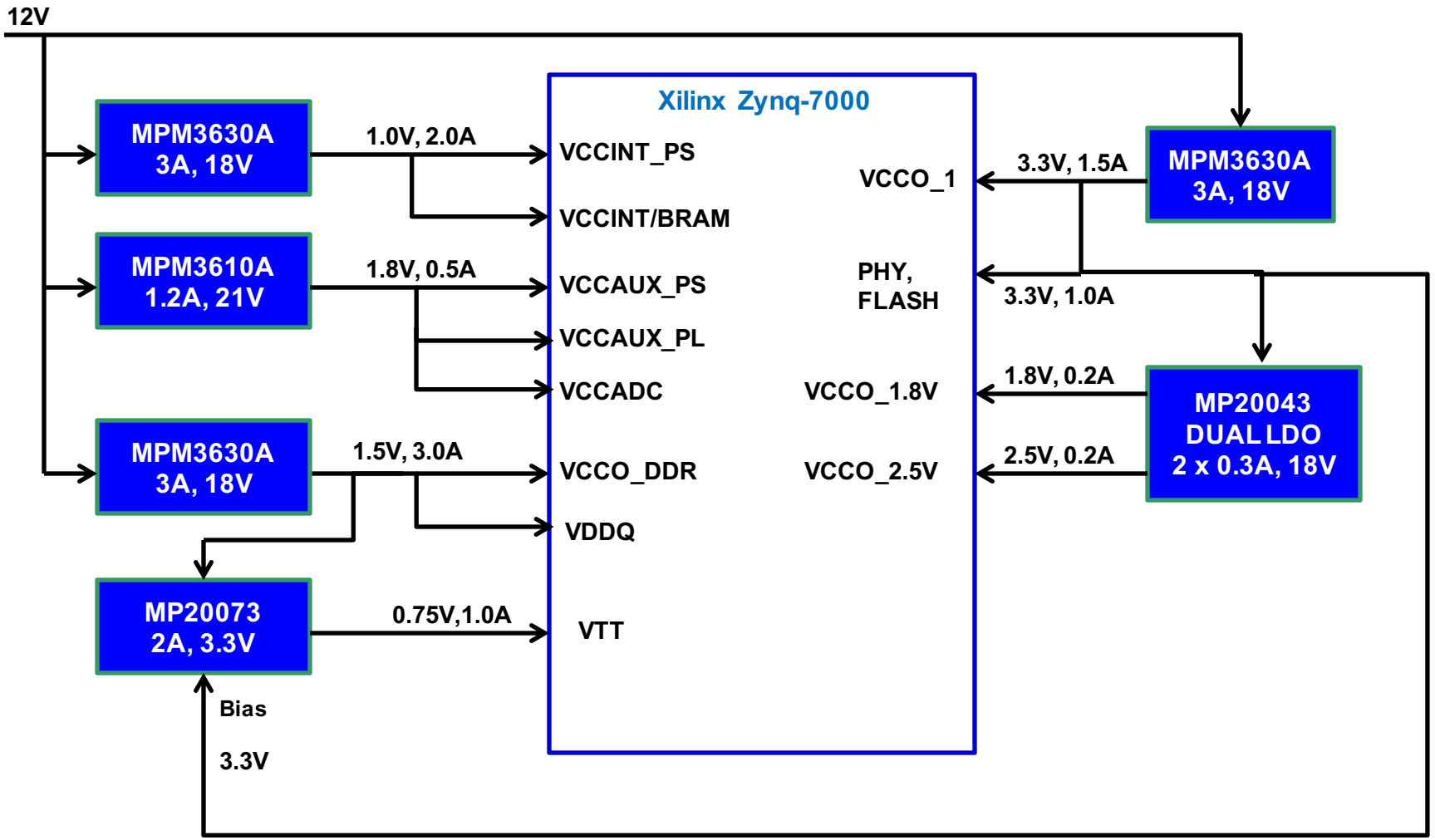
Monolithic Power Systems

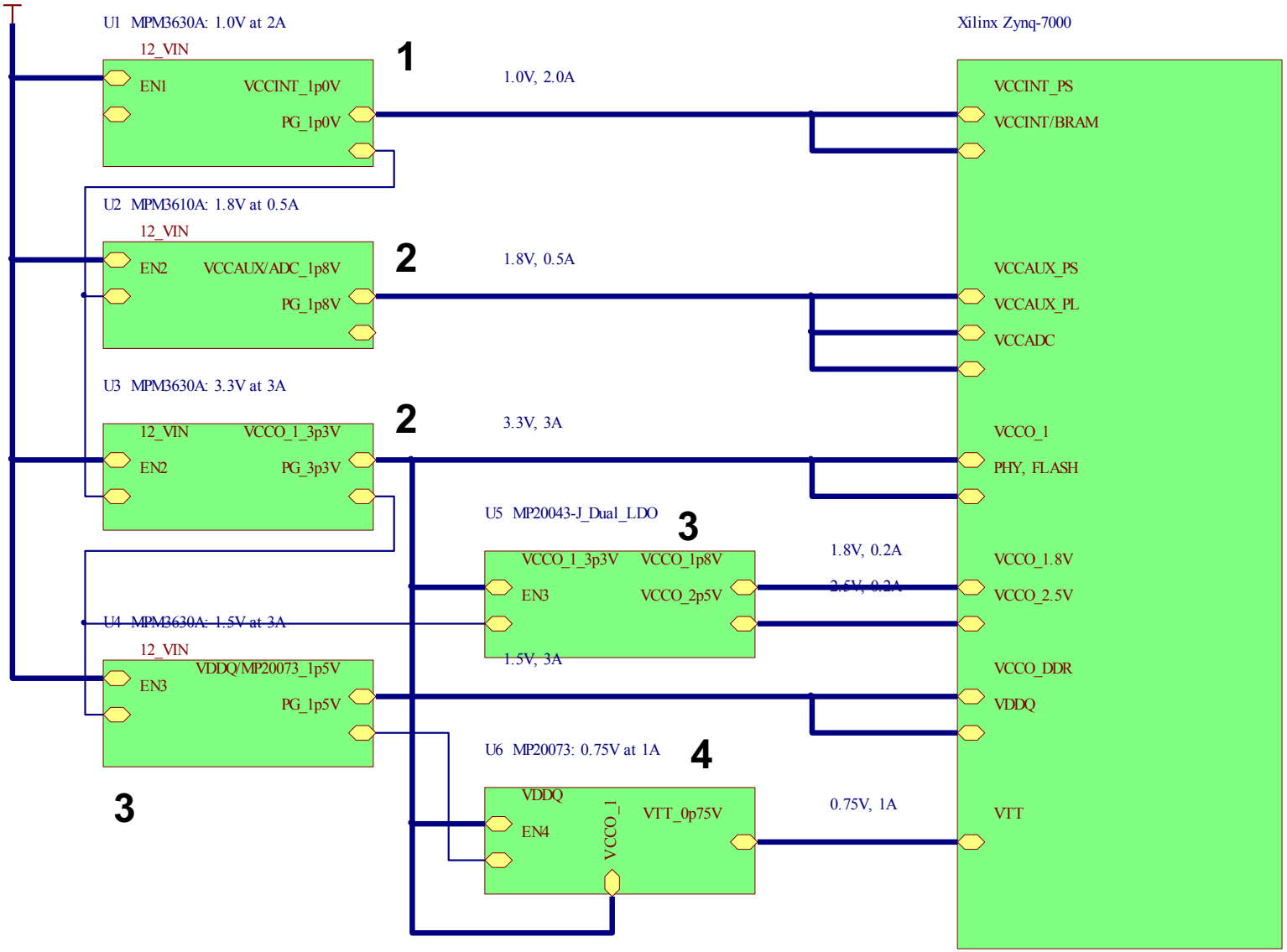
MPS Reference Design for Xilinx Zynq-7000

June 2016

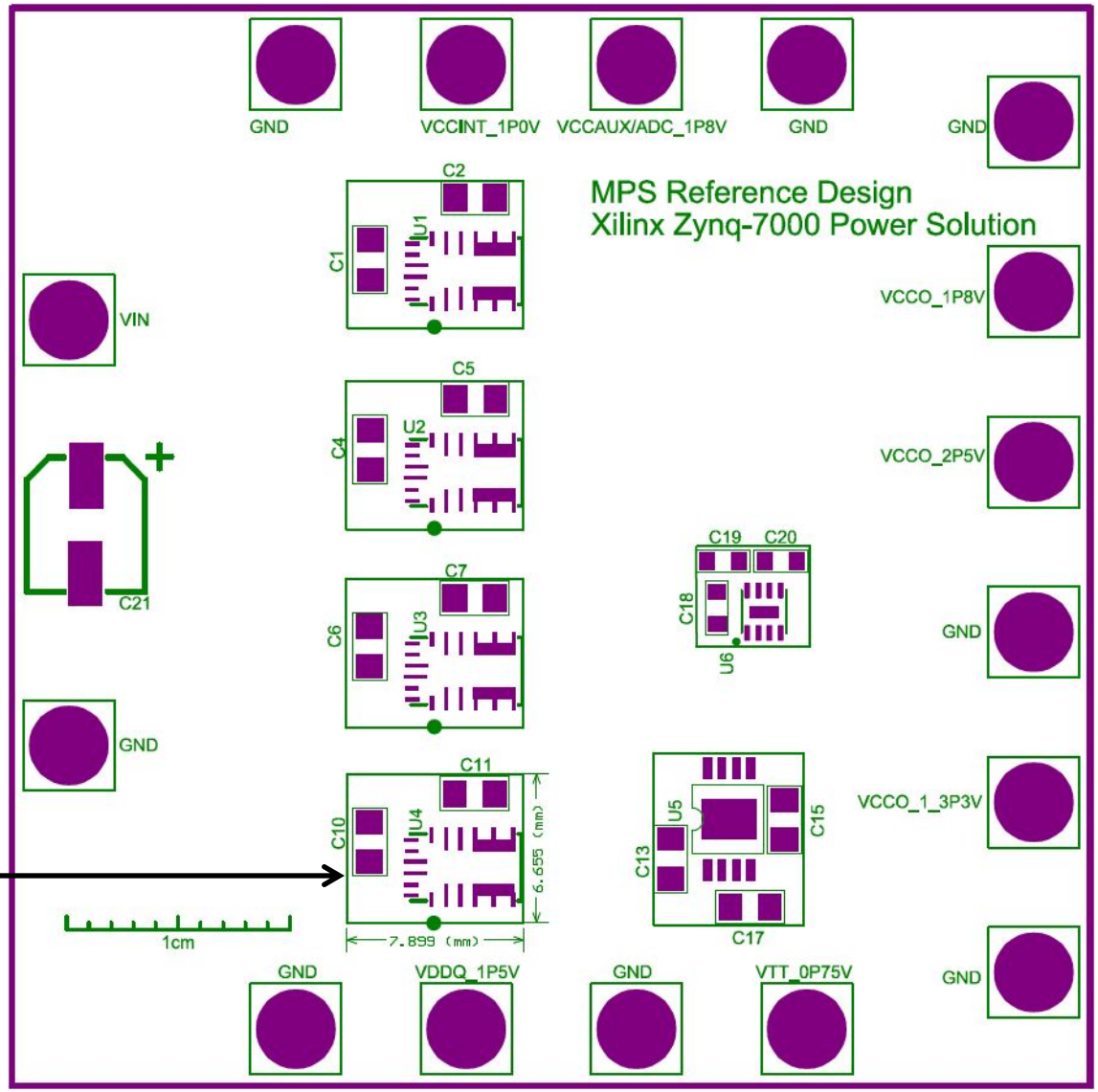
MPS Zynq Industrial Ethernet Power Supply



Power Tree and Power-up Sequence

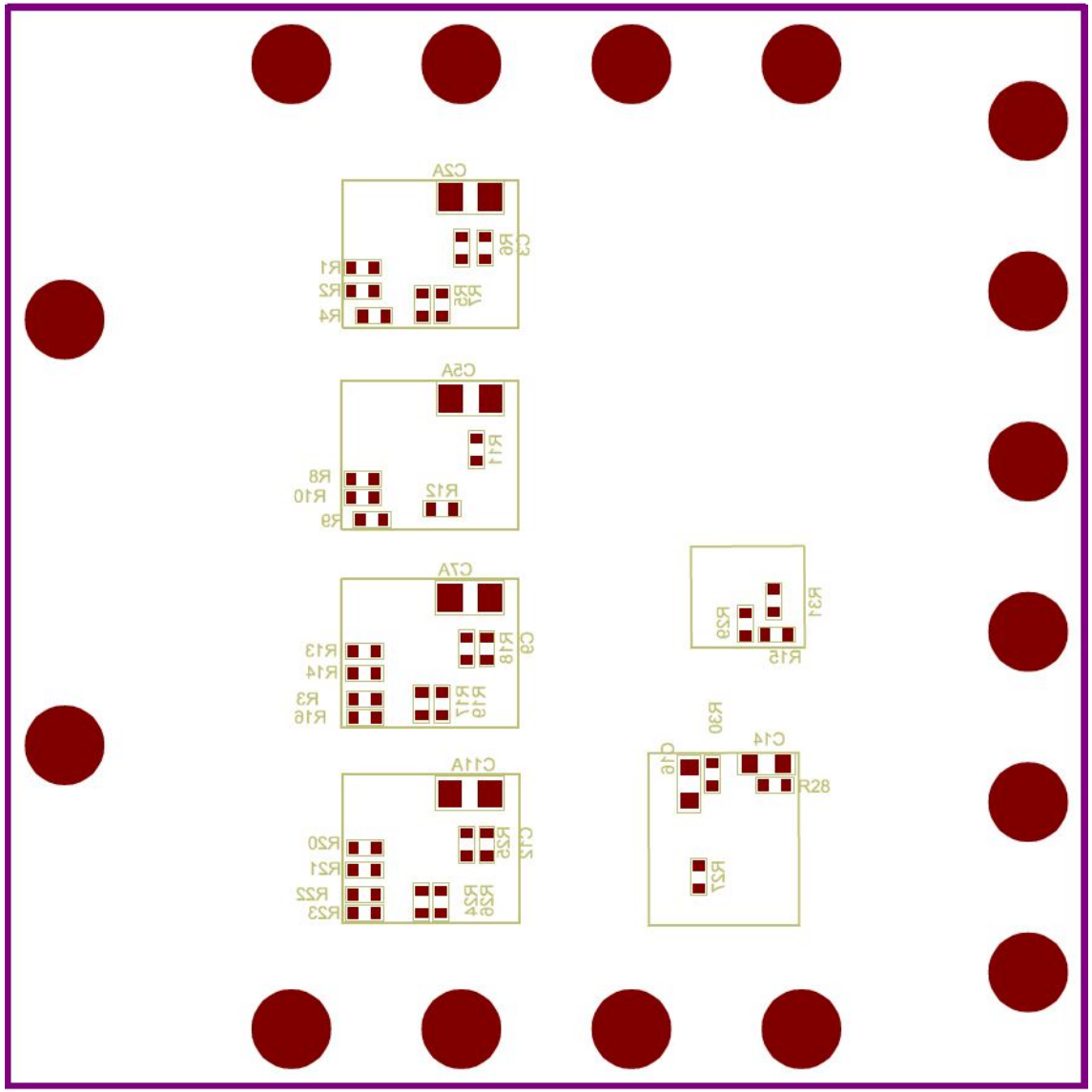


Demo Board Top Silk



Solution Size:
7x8mm

Demo Board Bottom Silk



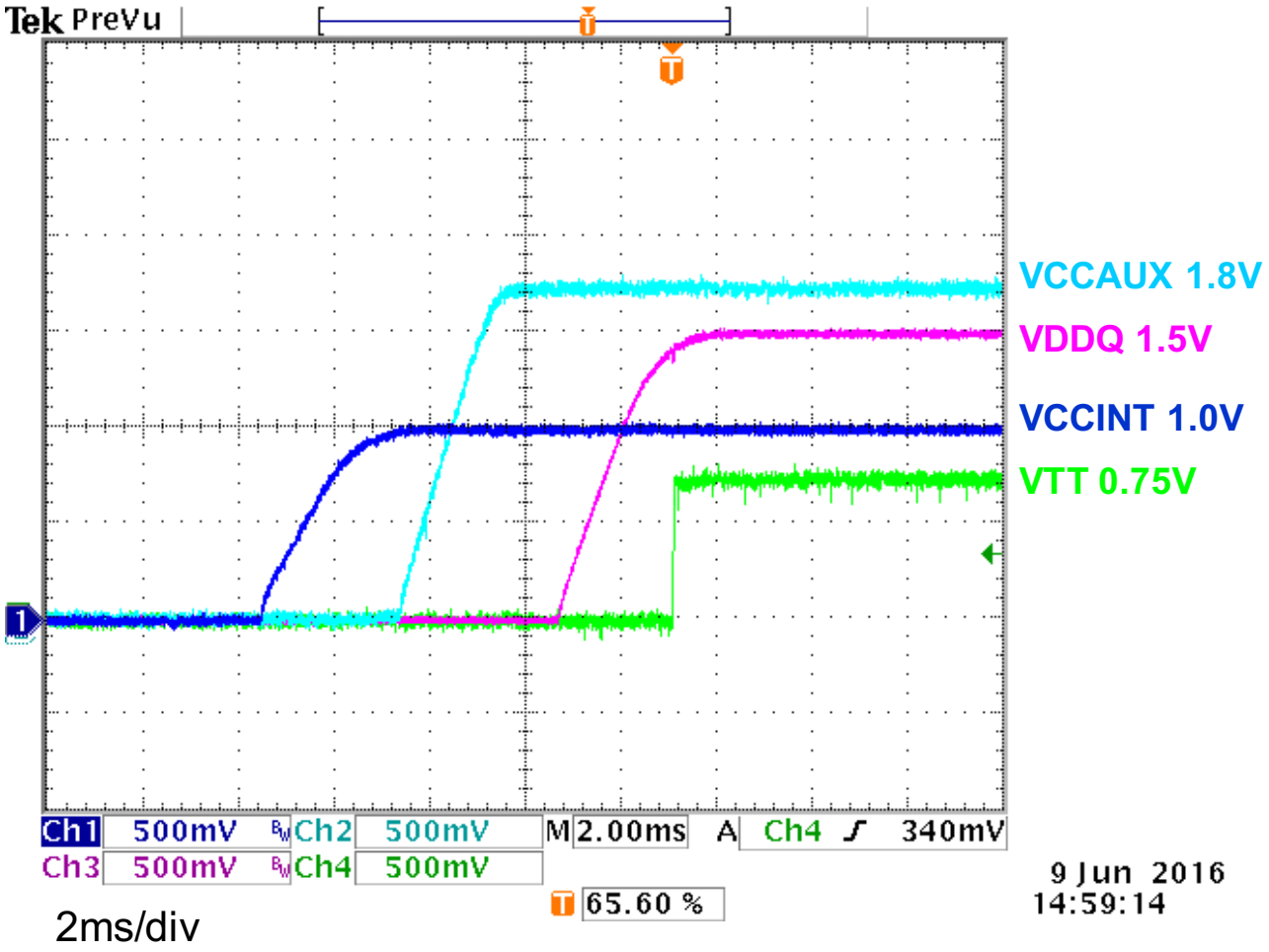
Test Items Check List

Item		Comment	Test Condition
Steady State	Efficiency	OK	3x MPM3630, MPM3610, MP20073, MP20043
	Output Ripple	OK	Full load/ No load
On/Off the part	Power on Sequence	OK	V_{IN}=12V, I_{OUT}=0 and full load
	Power off Sequence	DNS*	V_{IN}=12V, I_{OUT}=0 and full load

* **Does Not meet Spec**. Sequencing does not meet the requirements in the Ultrascale specification. External sequencing will be needed to provide the proper power down sequence, which is the complement of the powerup sequence. Contact MPS for Details.

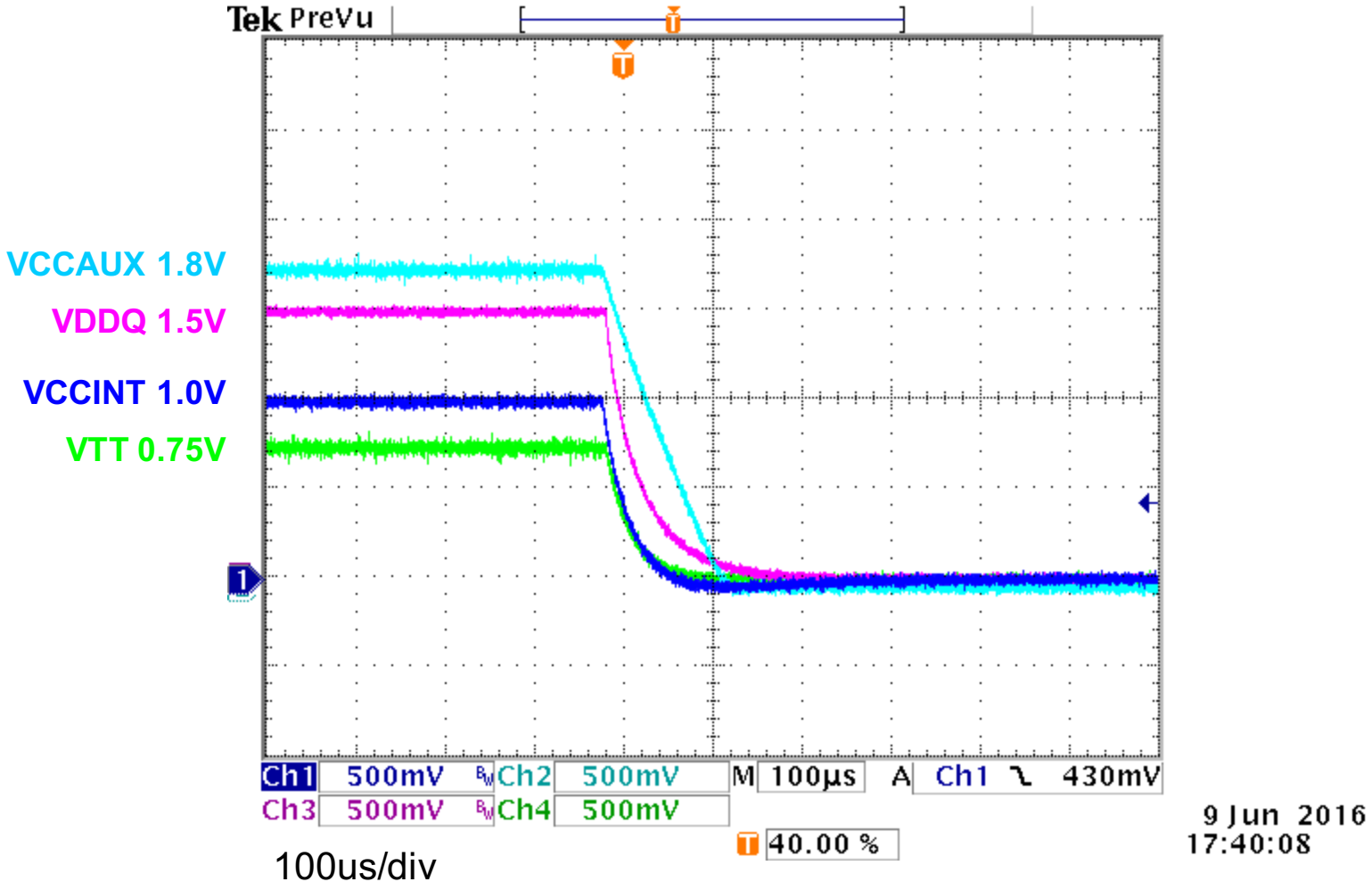
Power-up Through Enable Signal

V_{IN}=12V, full load in each rail

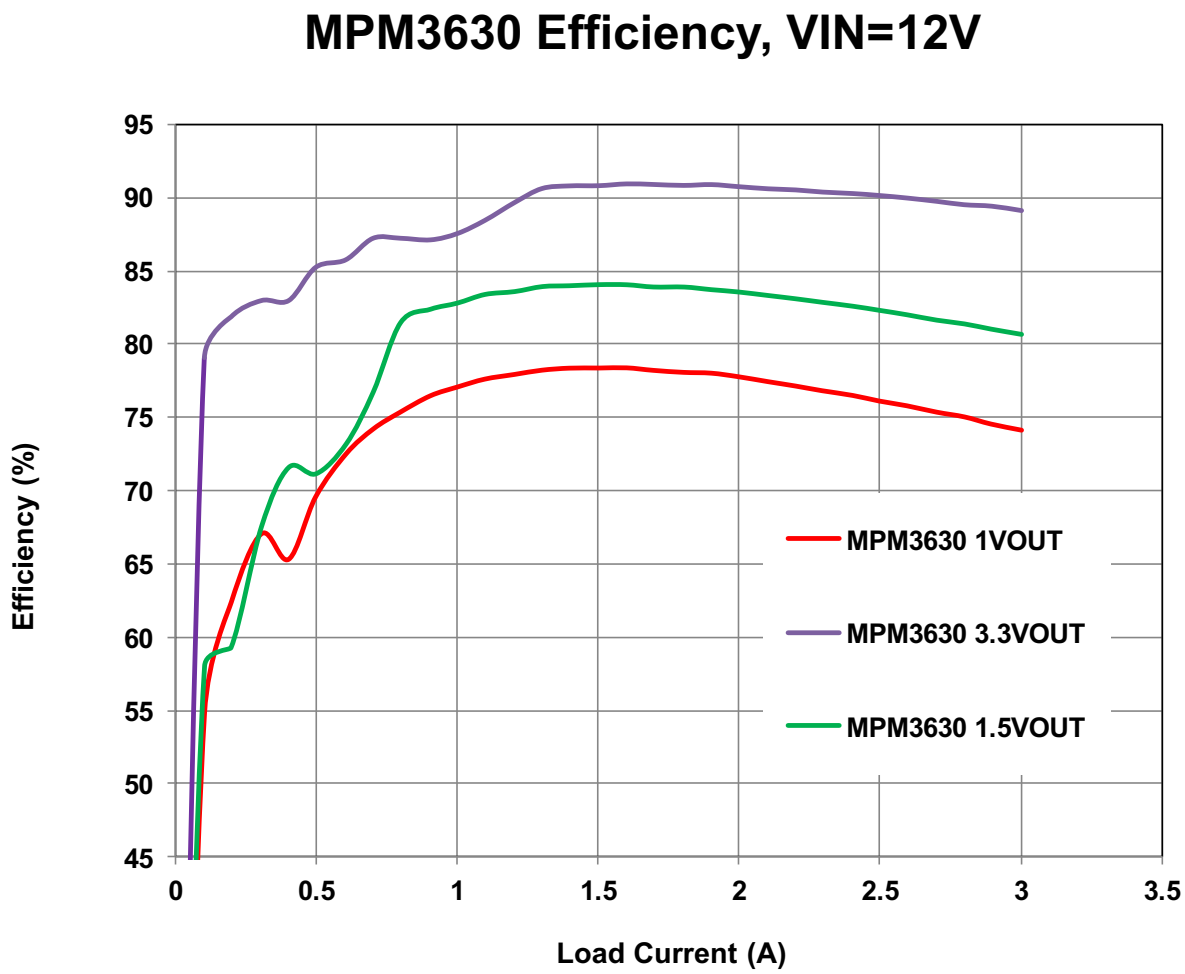


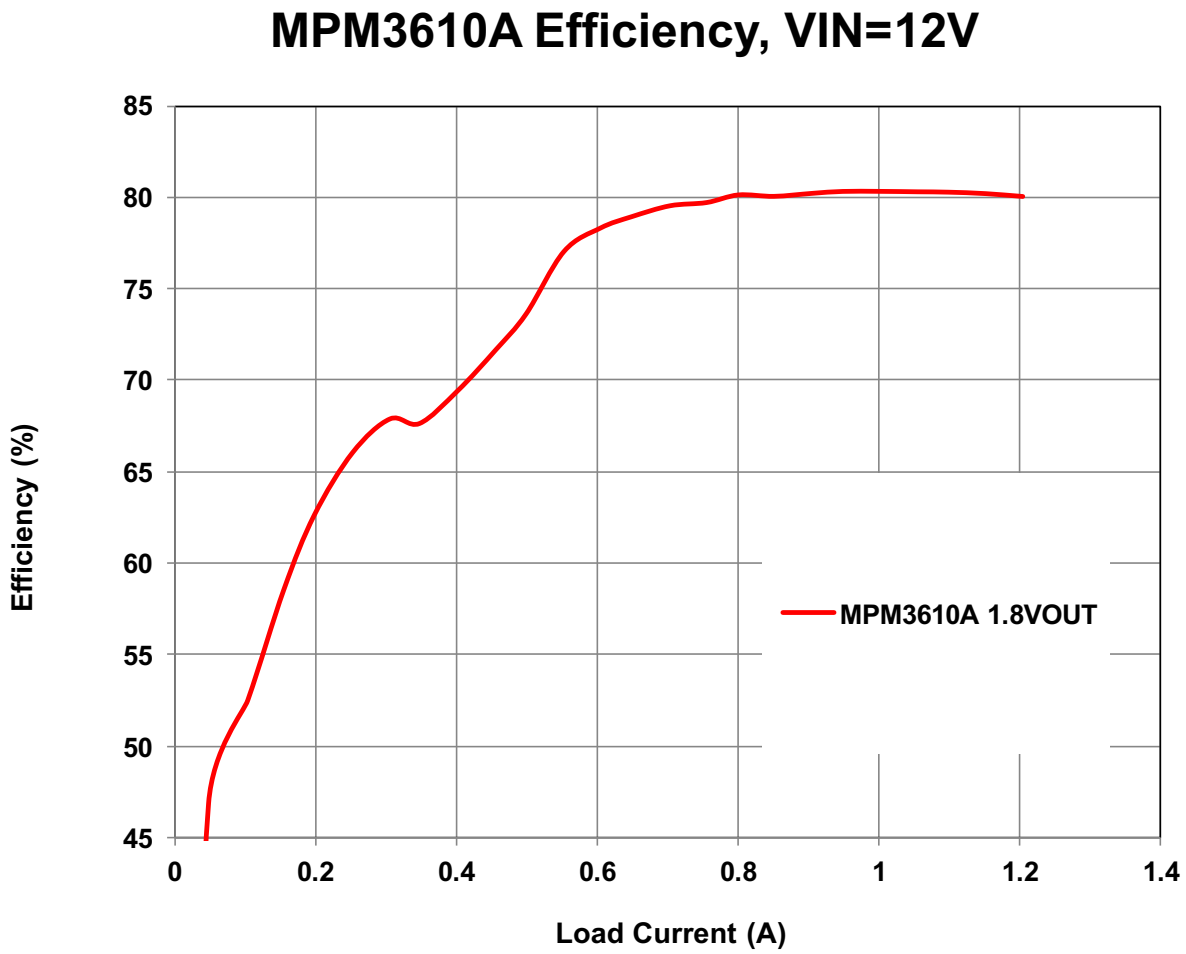
Power-down Through Enable Signal

V_{IN}=12V, full load in each rail



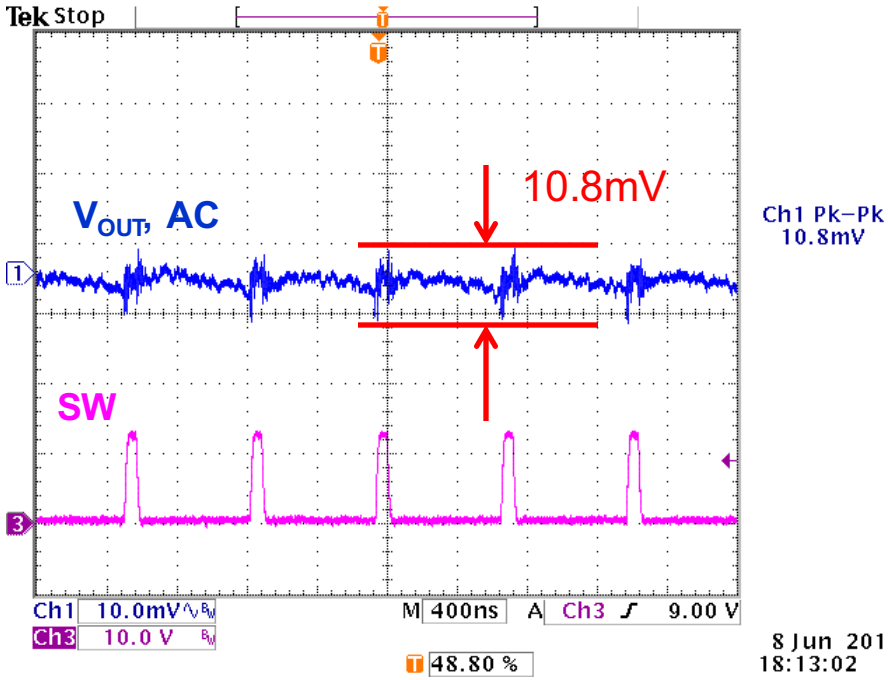
*Note that sequencing does not meet the requirements in the Ultrascale specification. External control is required to sequence the rails in the proper order. Contact MPS for Details.


MPM3630 Efficiency, VIN=12V
Efficiency (%)
95
90
85
80
75
70
65
60
55
50
45
0
0.5
1
1.5
2
2.5
3
3.5
Load Current (A)
MPM3630 1VOUT
MPM3630 3.3VOUT
MPM3630 1.5VOUT


MPM3610A Efficiency, VIN=12V
Efficiency (%)
85
80
75
70
65
60
55
50
45
0
0.2
0.4
0.6
0.8
1
1.2
1.4
Load Current (A)
MPM3610A 1.8VOUT

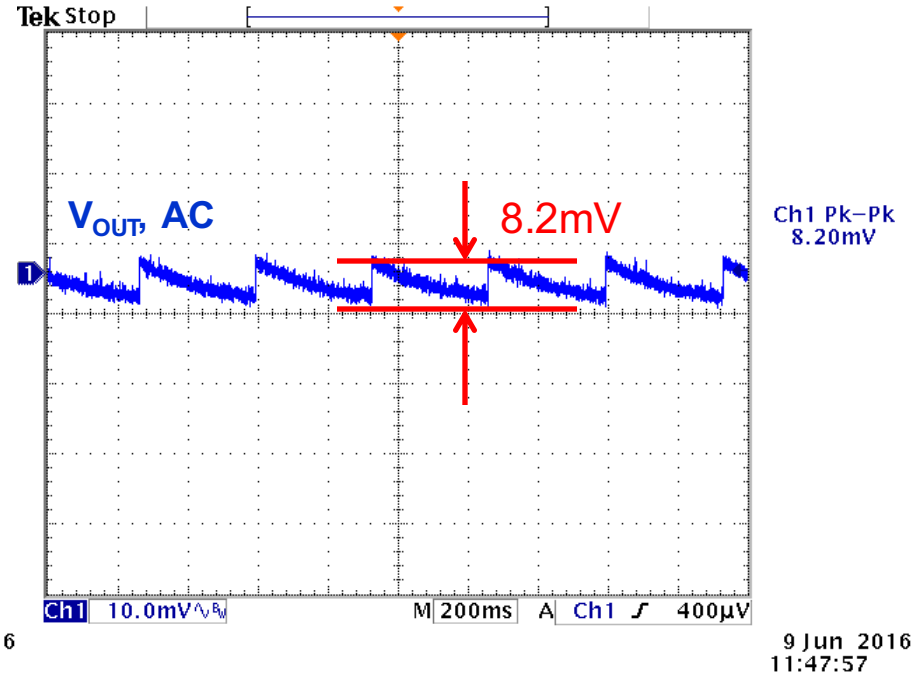
MPM3630 for VCCINT 1.0V Output Ripple

V_{IN}=12V, V_{OUT}=1V, I_{OUT}=2A,



400ns/div

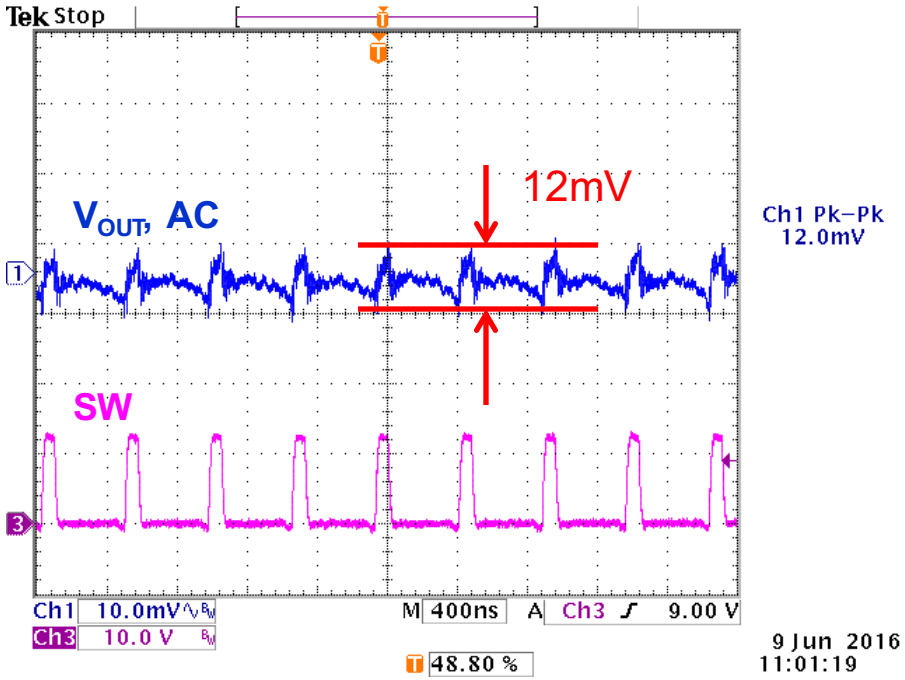
V_{IN}=12V, V_{OUT}=1V, I_{OUT}=0A,



200ms/div

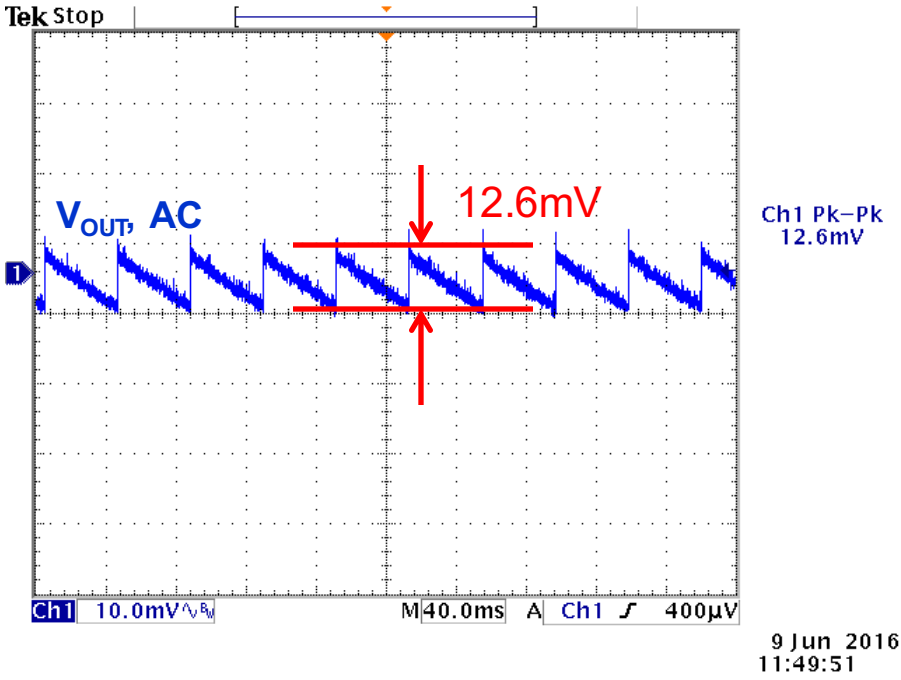
MPM3610A for VCCAUX 1.8V 0.5A Output Ripple

V_{IN}=12V, V_{OUT}=1.8V, I_{OUT}=0.5A,



400ns/div

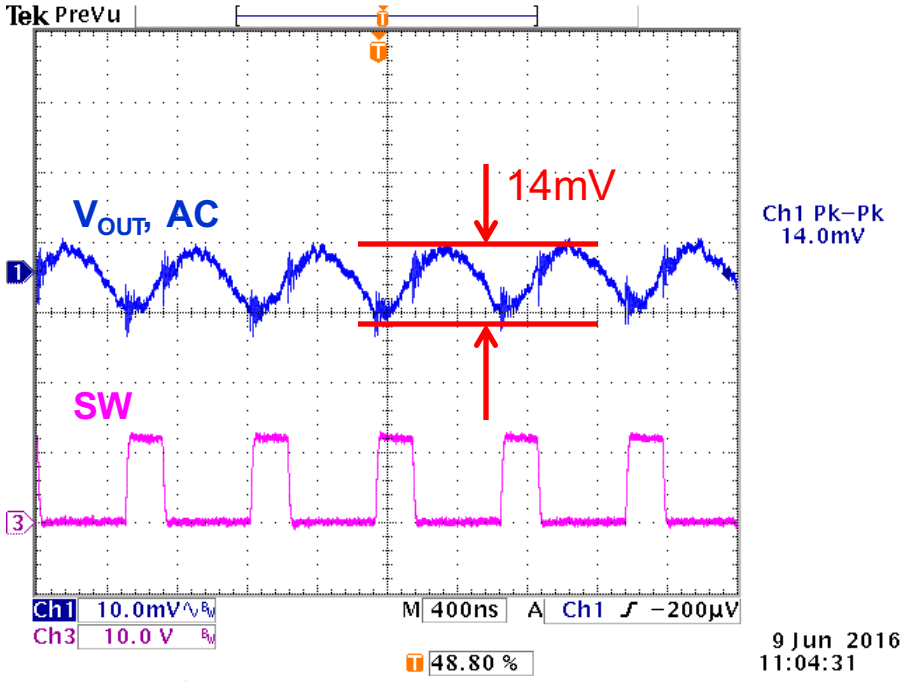
V_{IN}=12V, V_{OUT}=1.8V, I_{OUT}=0A,



40ms/div

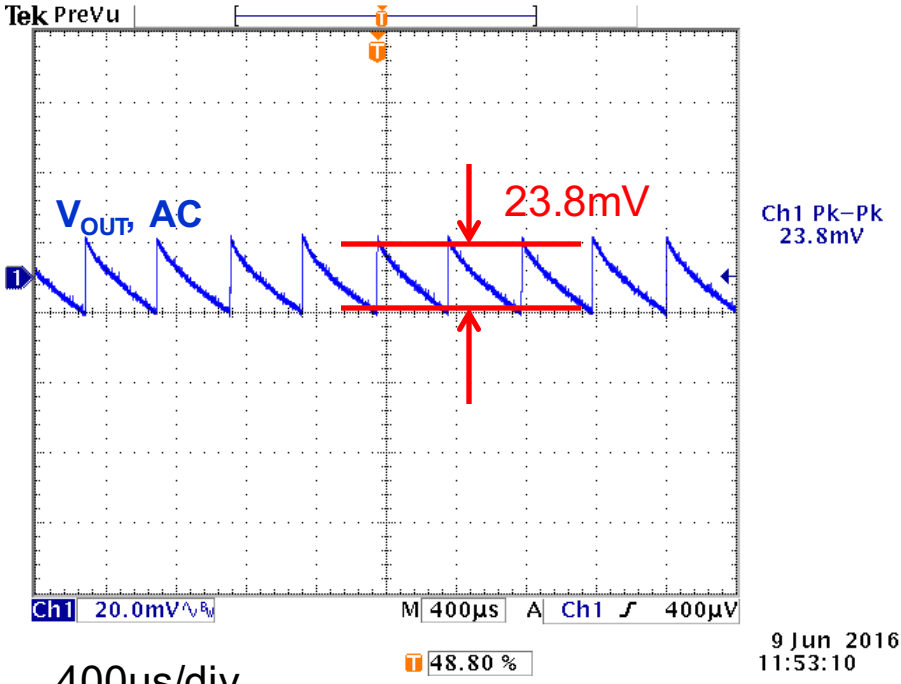
MPM3630 for VCCO_1 3.3V 3A Output Ripple

V_{IN}=12V, V_{OUT}=3.3V, I_{OUT}=3A,



400ns/div

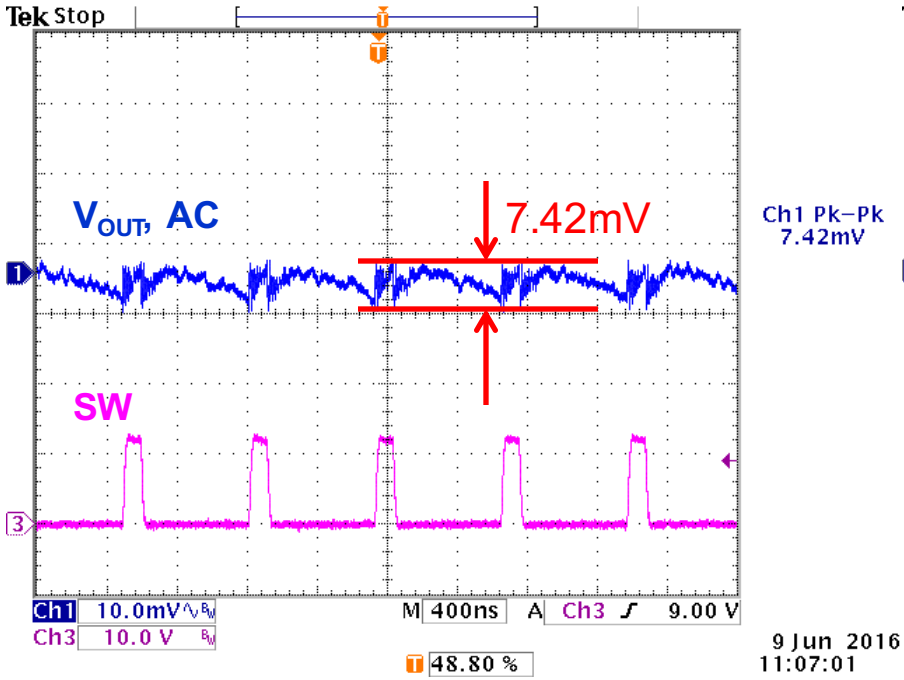
V_{IN}=12V, V_{OUT}=3.3V, I_{OUT}=0A,



400us/div

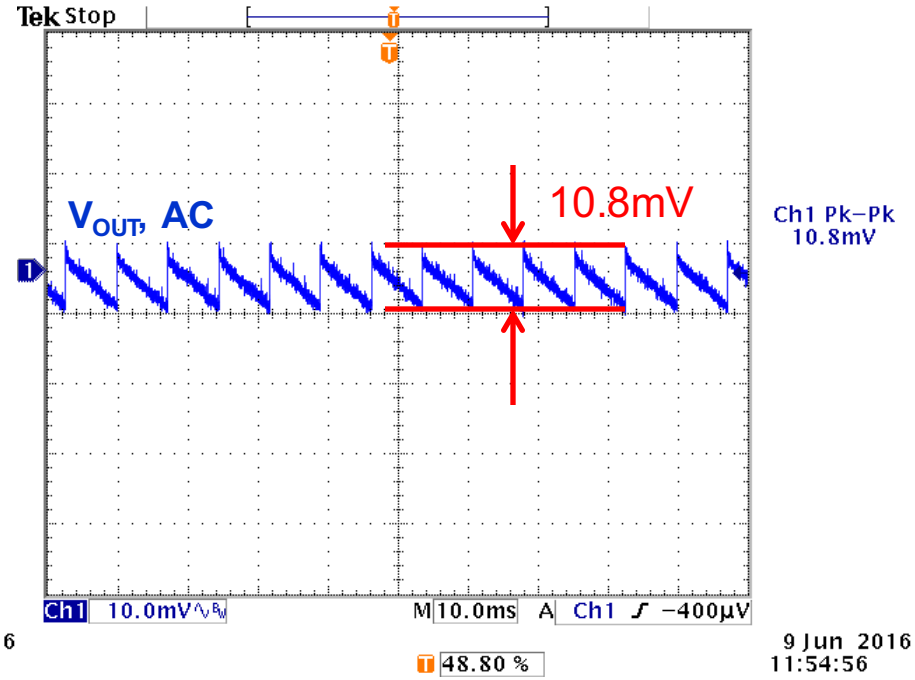
MPM3630 for VDDQ 1.5V 3A Output Ripple

V_{IN}=12V, V_{OUT}=1.5V, I_{OUT}=3A,



400ns/div

V_{IN}=12V, V_{OUT}=1.5V, I_{OUT}=0A,



10ms/div

Performance Summary

MPS Part #	Supply Rail	Solution Size (mm)	Efficiency	Voltage Ripple at Full Load
MPM3630	VCCINT 1V 2A	7x8	78.3%	10.8mV
MPM3610A	VCCAUX 1.8V 0.5A	7x8	75.2%	12mV
MPM3630	VCCO_1 3.3V 3A	7x8	89.2%	14mV
MPM3630	VDDQ 1.5V 3A	7x8	80.6%	7.42mV