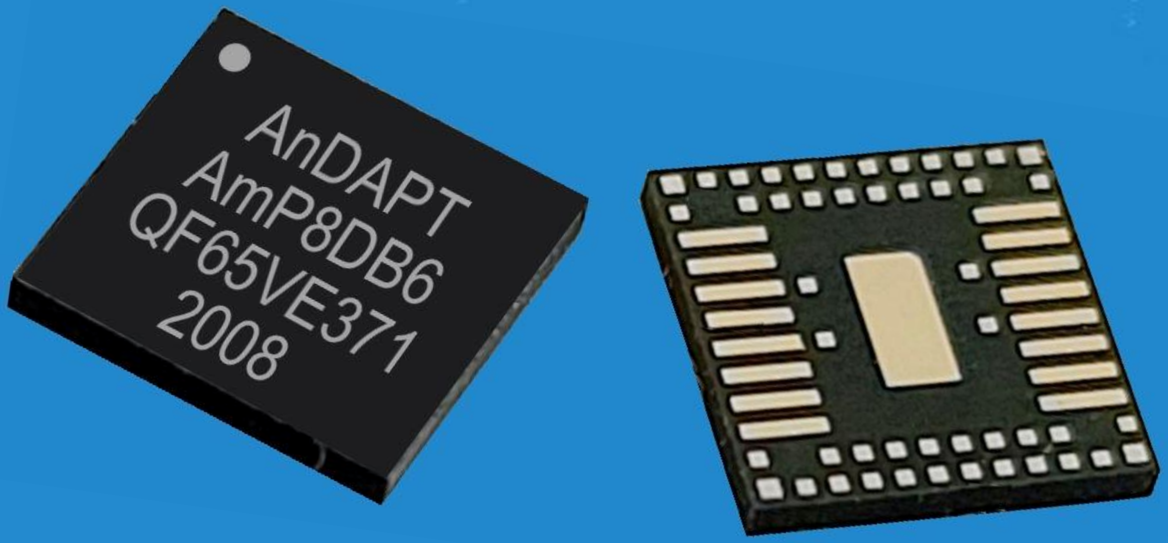

Xilinx Versal Premium –M Devices (Minimum Rails) Lower Loading Use-case

Power Mappings

AnDAPT Marketing Team

AnDAPT

Contents

- Versal Premium power maps
- AnDAPT integrated power supply design
- Bench data including efficiency, transients, ripple (no load and full-load) for each power rail
- AnDAPT PMICs meet or exceed all power performance specs provided by Xilinx

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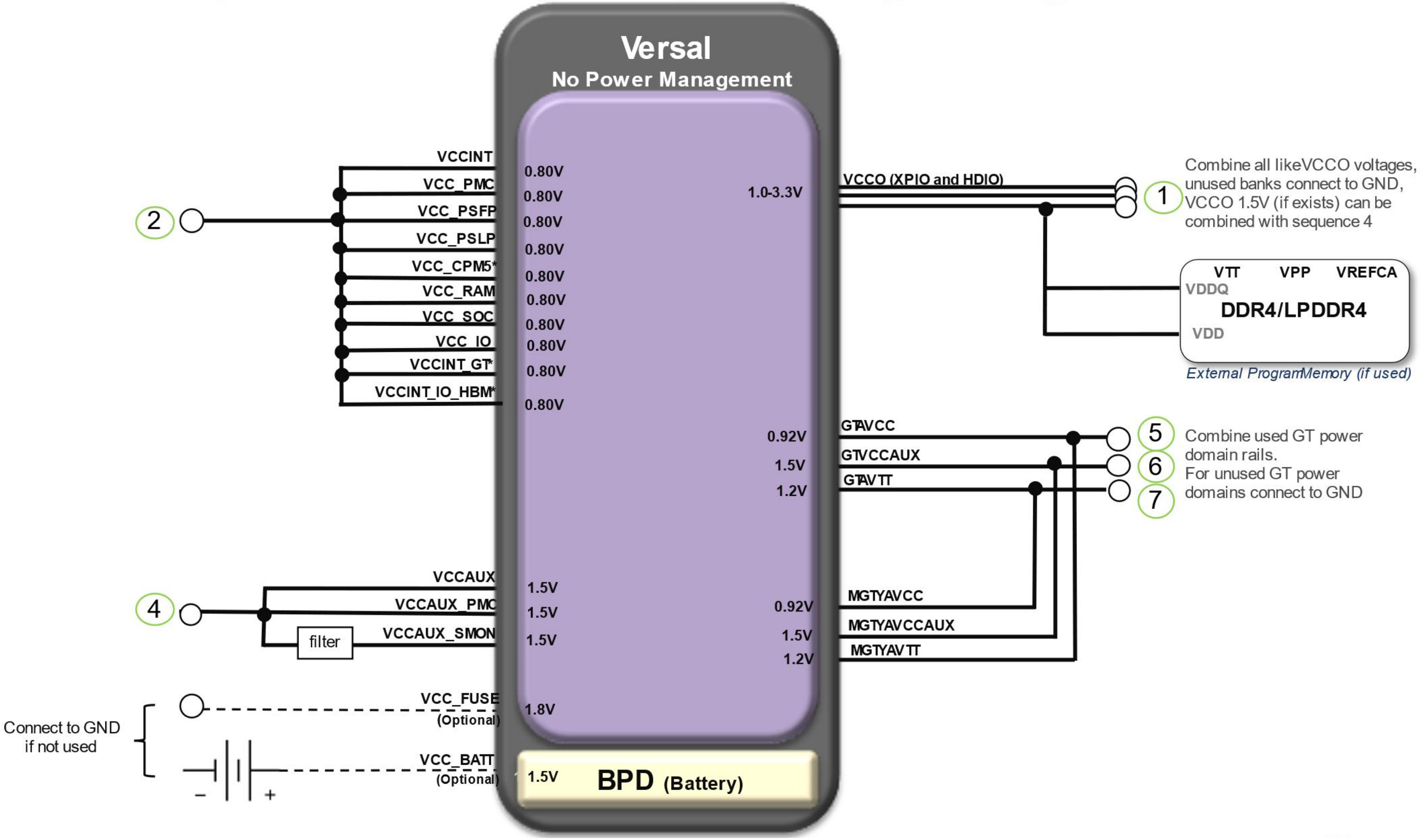
Xilinx Versal Premium Power Tree

Minimum Rails (No Power Management) – Mid/High Voltage



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Power Tree Mapping: Versal Premium –M (Minimum Rails, Lower Loading)

#	Rail	Seq	Power Component	Type	Upstream Rail	Vinput (V)	Vout (V)	Iout (A)	AnDAPT PMIC
1	VCCO_HDIO (VCCO_HDIO, VCCO_500, VCCO_501, VCCO_502, VCCO_503)	1	C200	Integ. Sync Buck	PVIN	12	1.8	0.1-3	ARD_X_VRPM_A_IC1
2	VCCO_XPIO	1	C200	Integ. Sync Buck	PVIN	12	1.5	0.1-3	
3	VCCINT (VCCINT, VCC_PMC, VCC_PSFP, VCC_PSLP, VCC_CPM5, VCC_RAM, VCC_GT, VCC_SOC, VCC_IO)	2	Ext.	Ext.	PVIN	12	0.8/0.88	80-180	
4	VCCAUX (VCCAUX, VCCAUX_PMC, VCCAUX_SMON)	2	C200	Integ. Sync Buck	PVIN	12	1.5	1.5-10	
5	MGTYAVCC (MGTYAVCC, GTAVCC)	3	C200	Sync Buck	PVIN	12	0.88/0.92	6-15	ARD_X_VRPM_A_IC2
6	MGTYAVCCAUX (MGTYAVCCAUX, GTAVCCAUX)	4	C200	Integ. Sync Buck	PVIN	12	1.5	1	
7	MGTYAVTT (MGTYAVTT, GTAVTT)	5	C220	Sync Buck High Curent	PVIN	12	1.2	8-24	

PVIN = 12V

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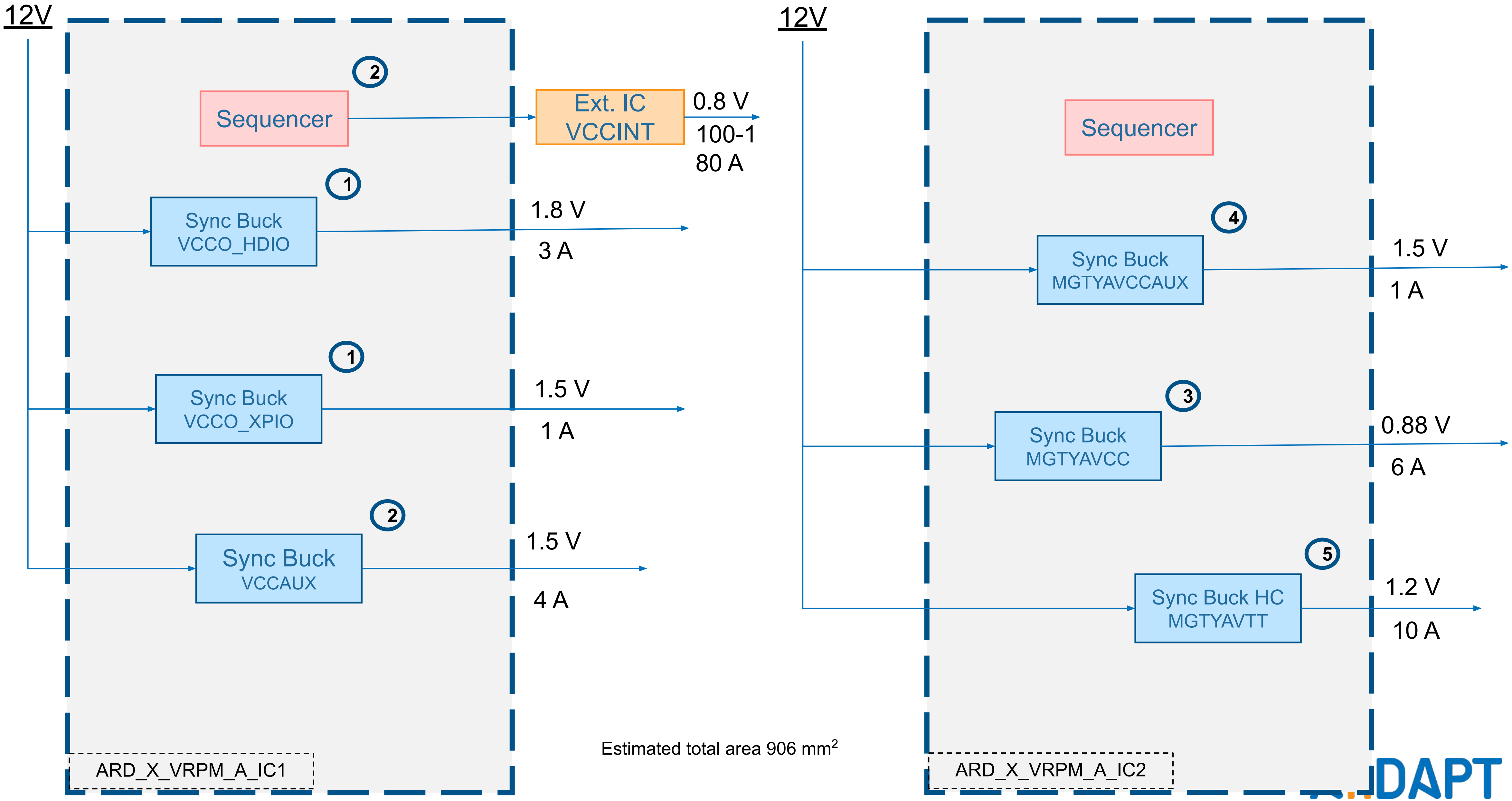
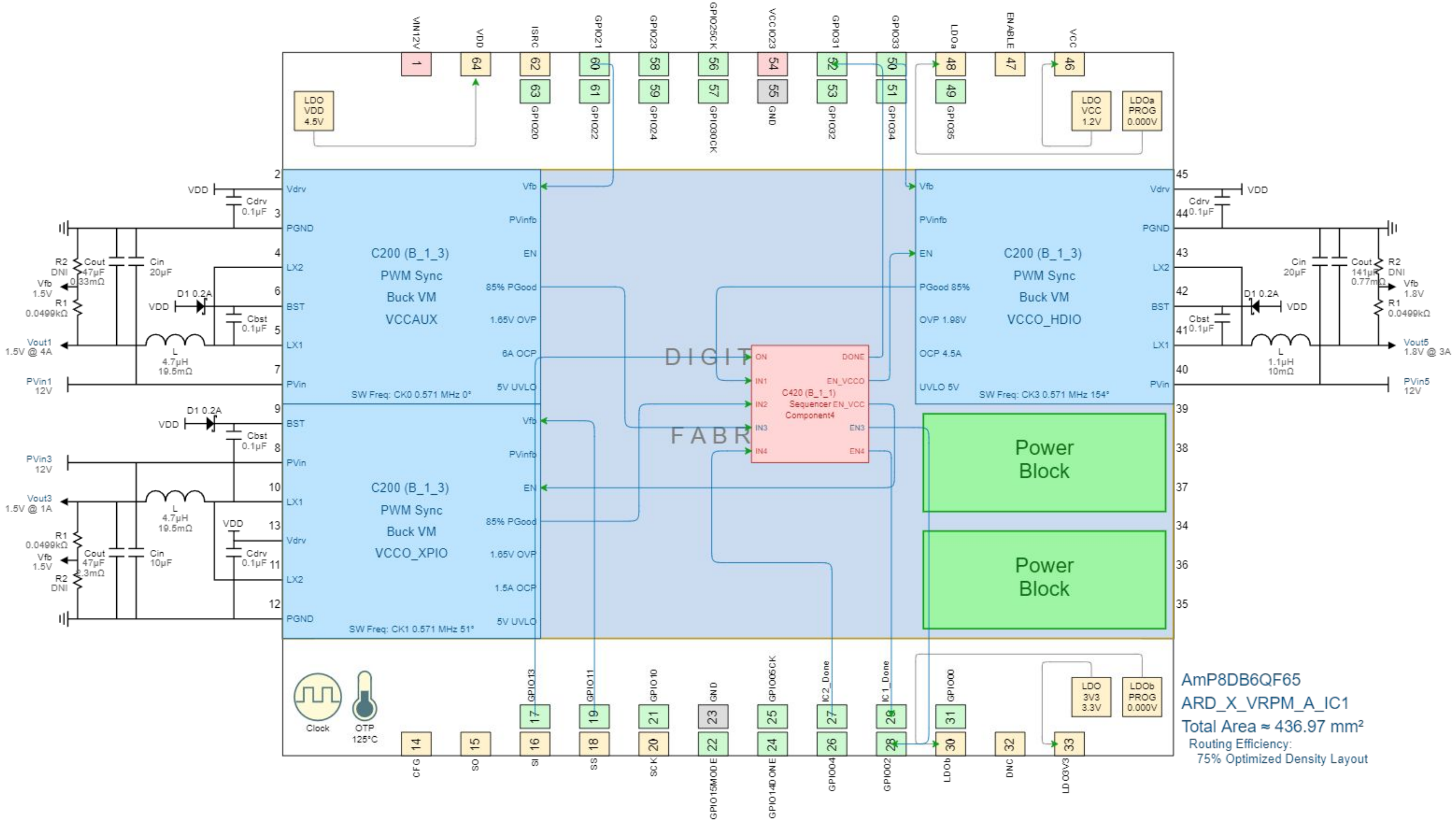
Power Tree Mapping- Design Lower Loading



Estimated total area 906 mm^2

Mapping (WebAmP View) Design Lower Loading –IC1



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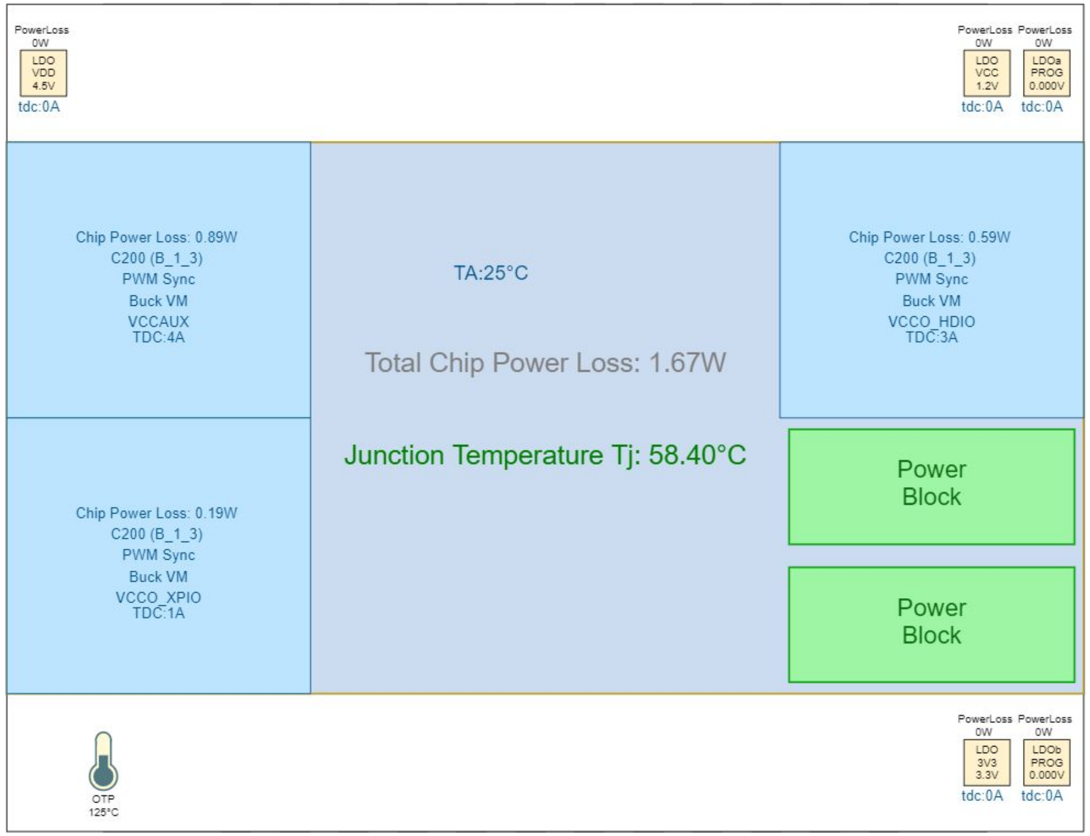
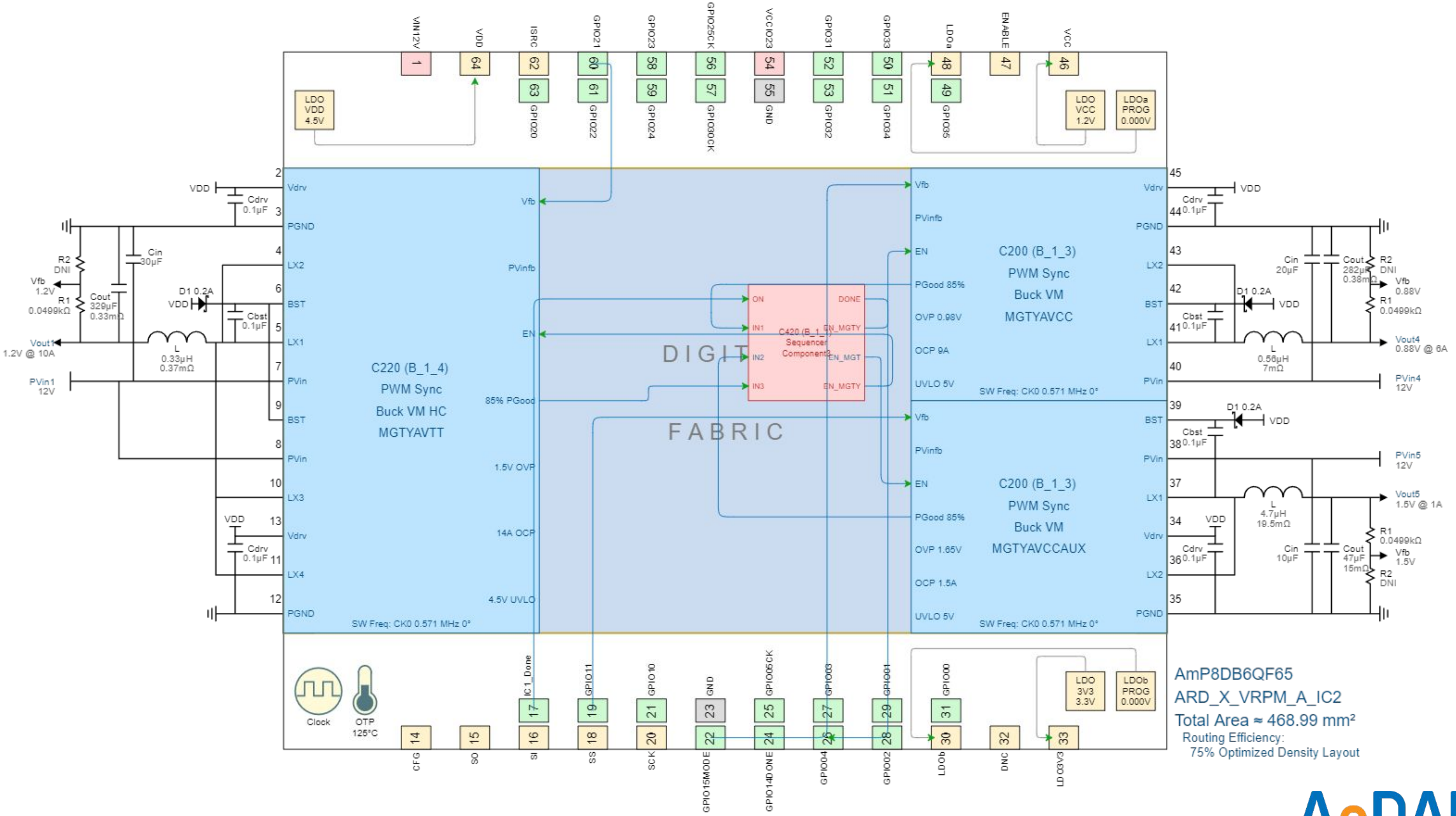
Mapping (Thermal View)
Design Lower Loading –IC1



AmP8DB6QF65
ARD_X_VRPM_A_IC1
Total Area ≈ 436.97 mm²
Routing Efficiency:
75% Optimized Density Layout

Mapping (WebAmP View) Design
Lower Loading –IC2



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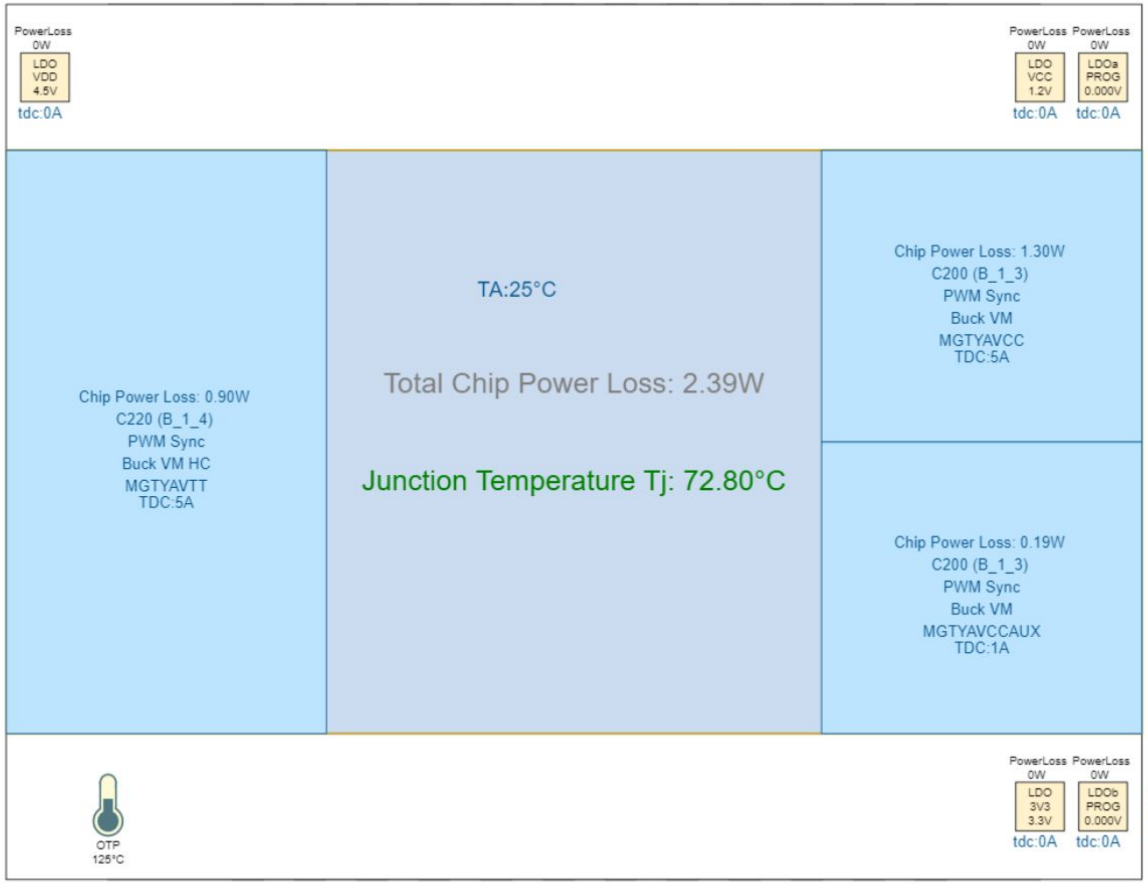
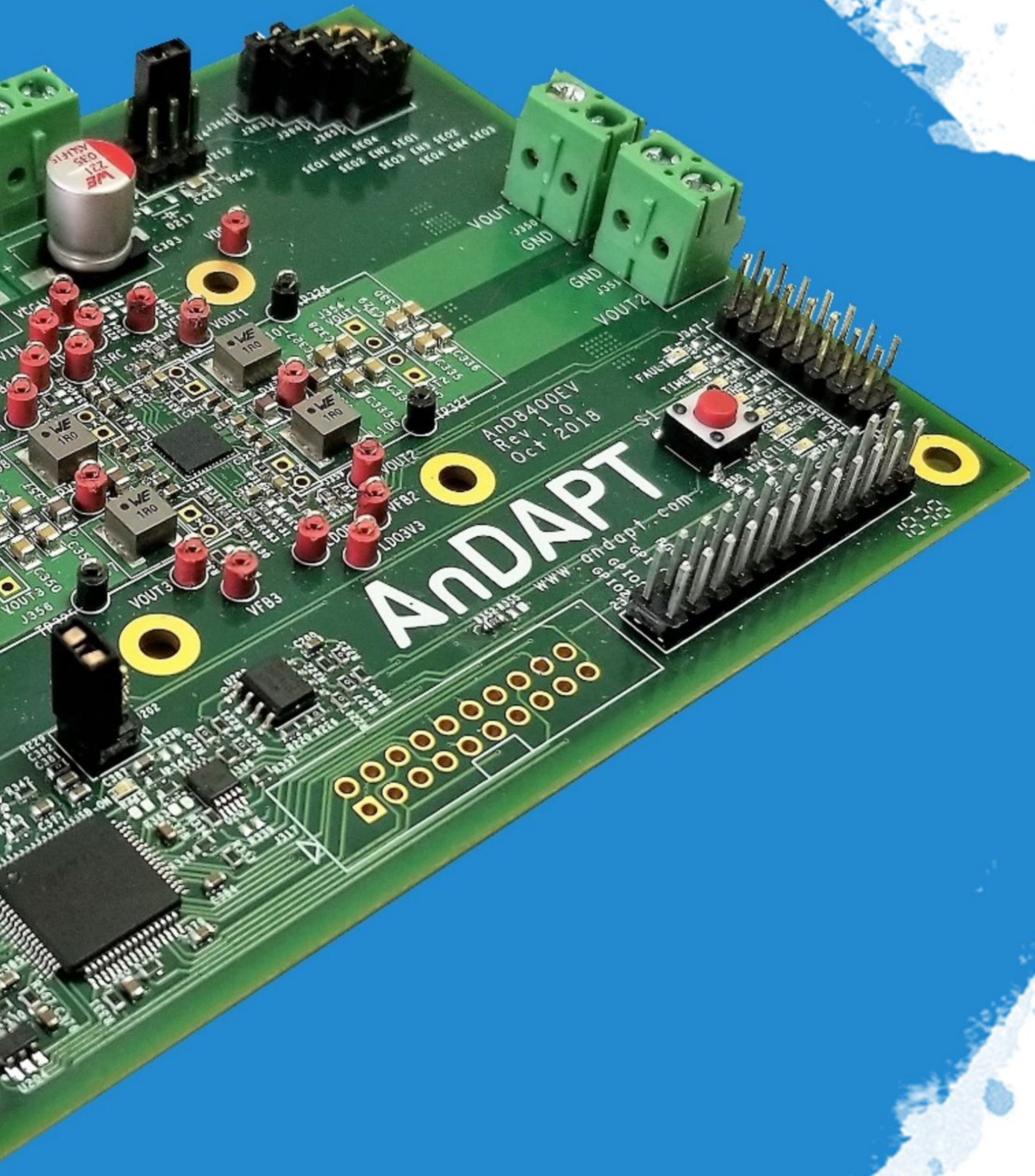
Mapping (Thermal View)
Design Lower Loading –IC2



AmP8DB6QF65
ARD_X_VRPM_A_IC2
Total Area ≈ 468.99 mm²
Routing Efficiency:
75% Optimized Density Layout



Test Data

Xilinx Versal Premium - M

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VCCO_HDIO
1.8 V / 3 A

- C200 (Synchronous buck)
- Fsw = 0.571 MHz
- L = 1.1 µH, P/N Wurth 744314110
- C = 3x47 uF

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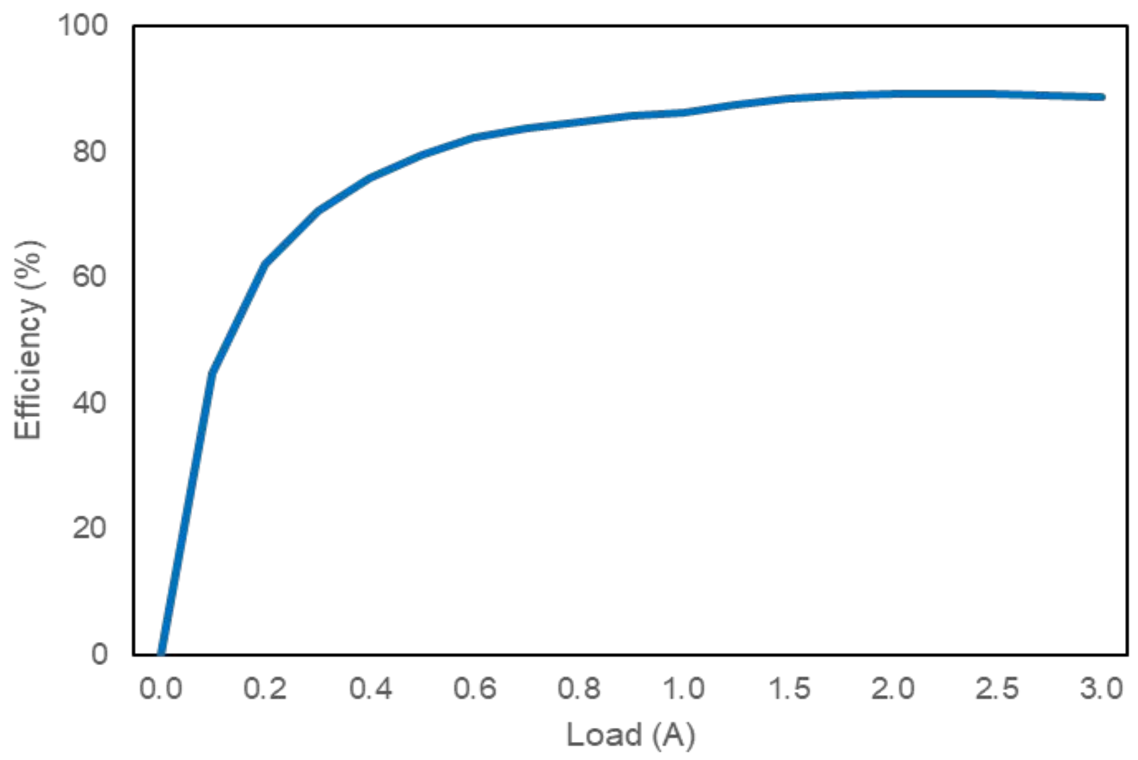
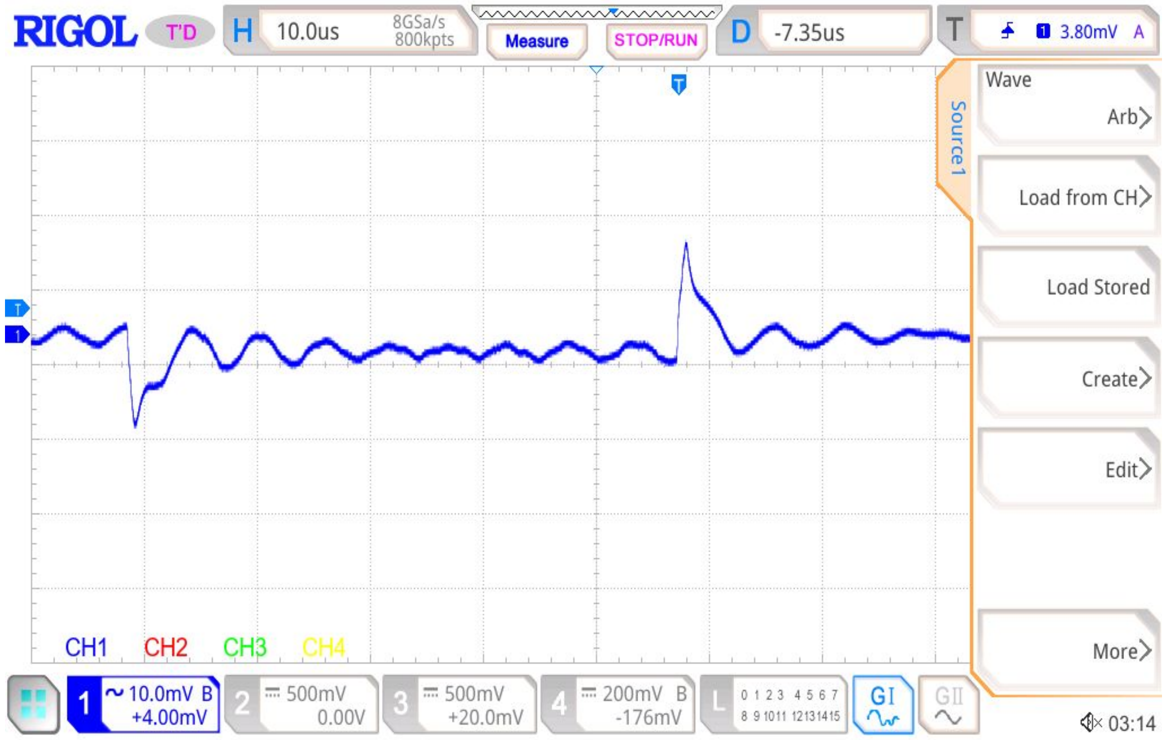
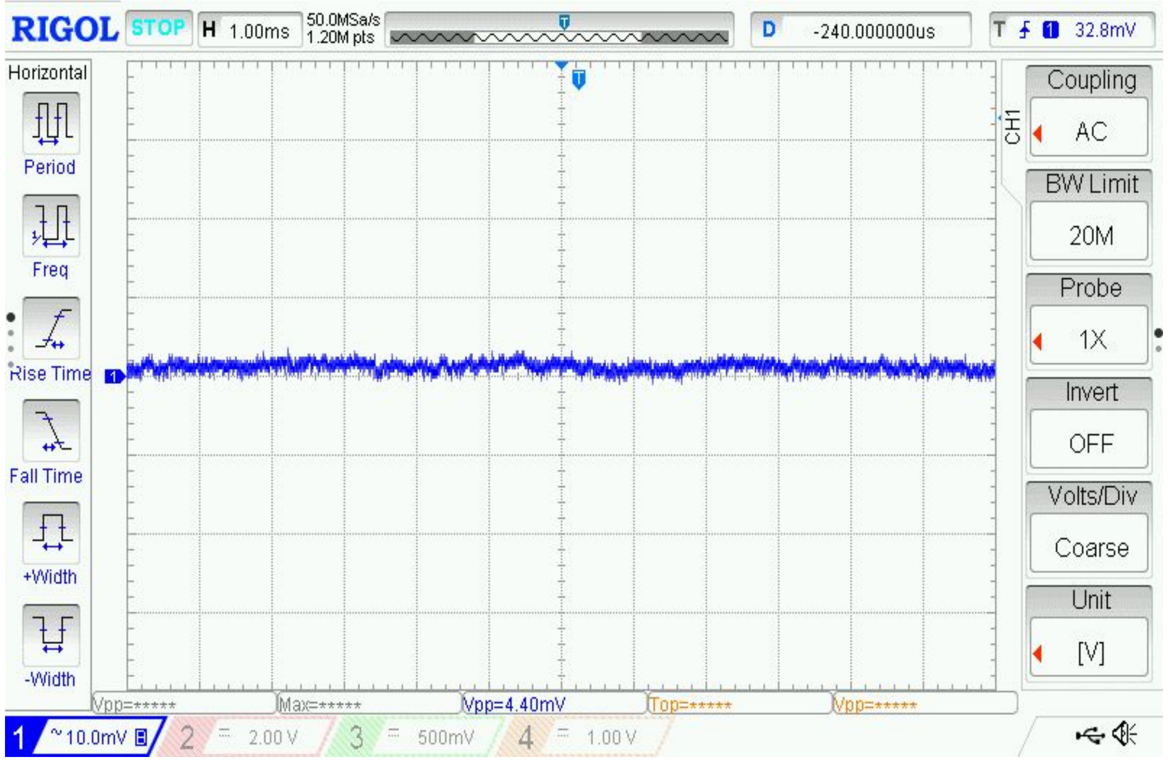
Efficiency & Transient

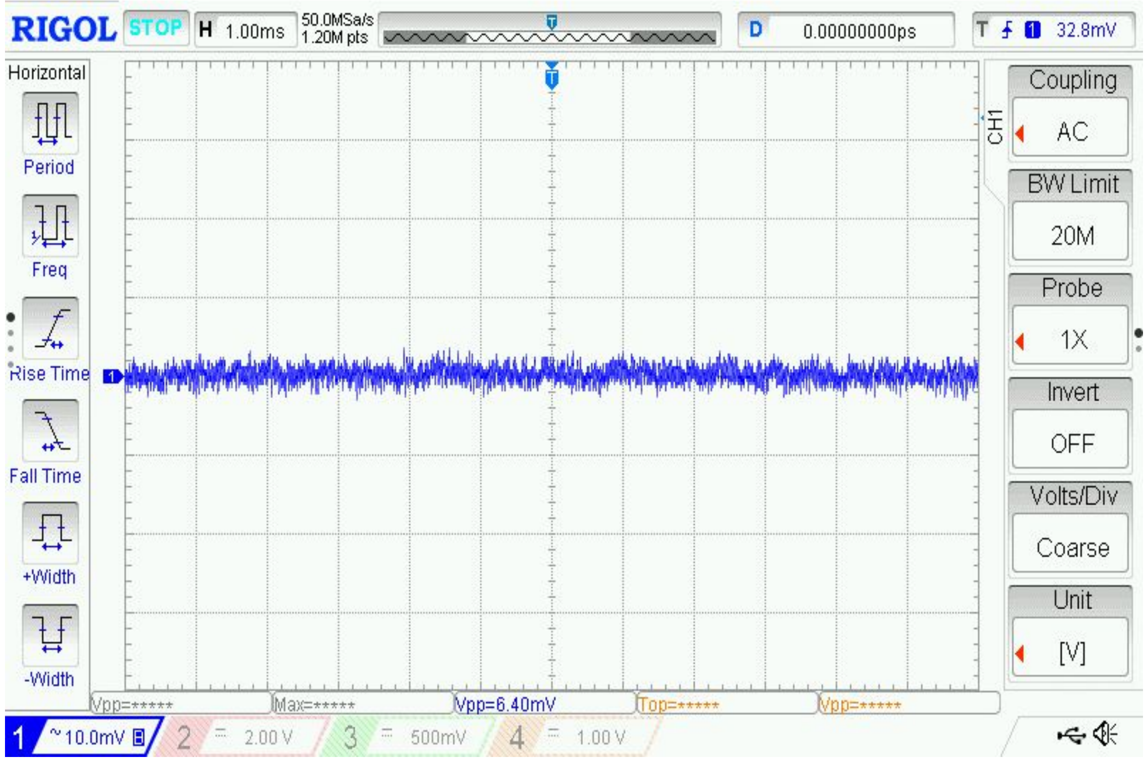




Vout = 1.8V
Transient 0A – 3 A@10 A/µs
V_{PP} = 32 mV
Fsw = 0.571 MHz
L = 1.1 µH, C = 3x47 uF

Ripple





No Load
V_{PP} = 4.40 mV

Vout = 1.8 V

3 A Load
V_{PP} = 6.4 mV

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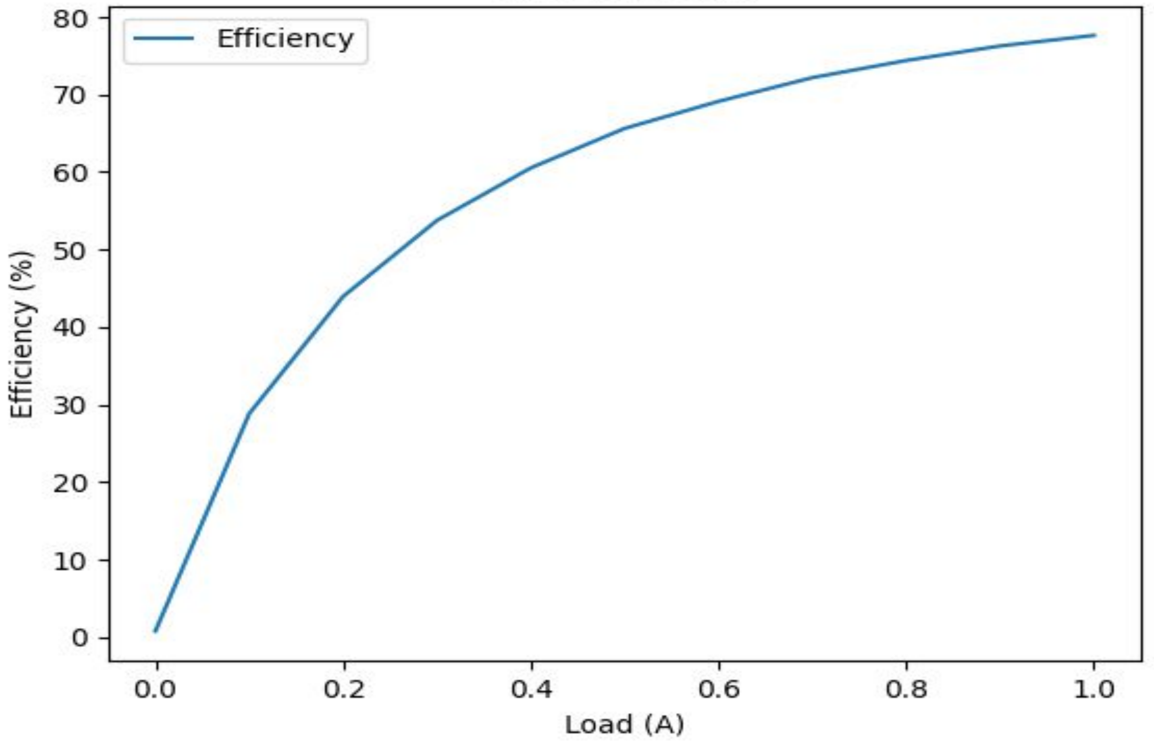
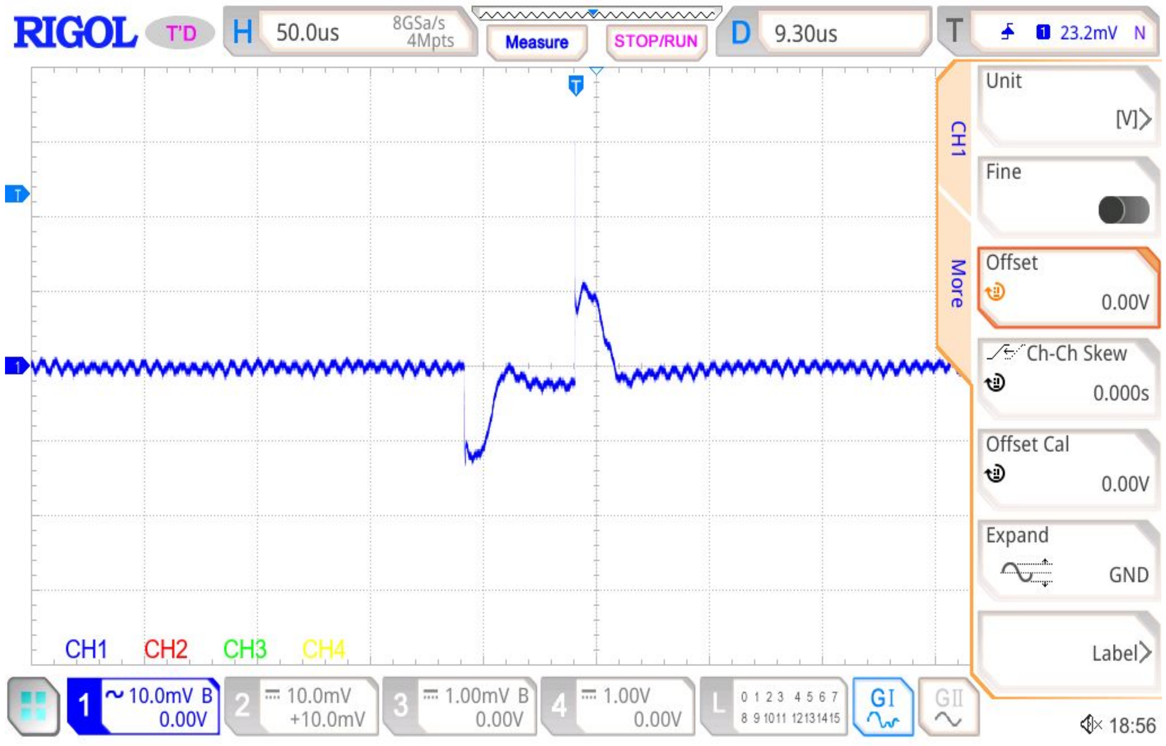
VCCO_XPIO
1.5 V / 1 A

- C200 (Synchronous Buck)
- Fsw = 0.571 MHz
- L = 4.7 µH, P/N Wurth 744311470
- C = 1x47 uF

Efficiency & Transient





Vout = 1.5V
Transient 0.67 – 1 A@10 A/µs
V_{PP} = 24 mV
Fsw = 0.571 MHz
L = 4.7 µH, C= 1x47 uF

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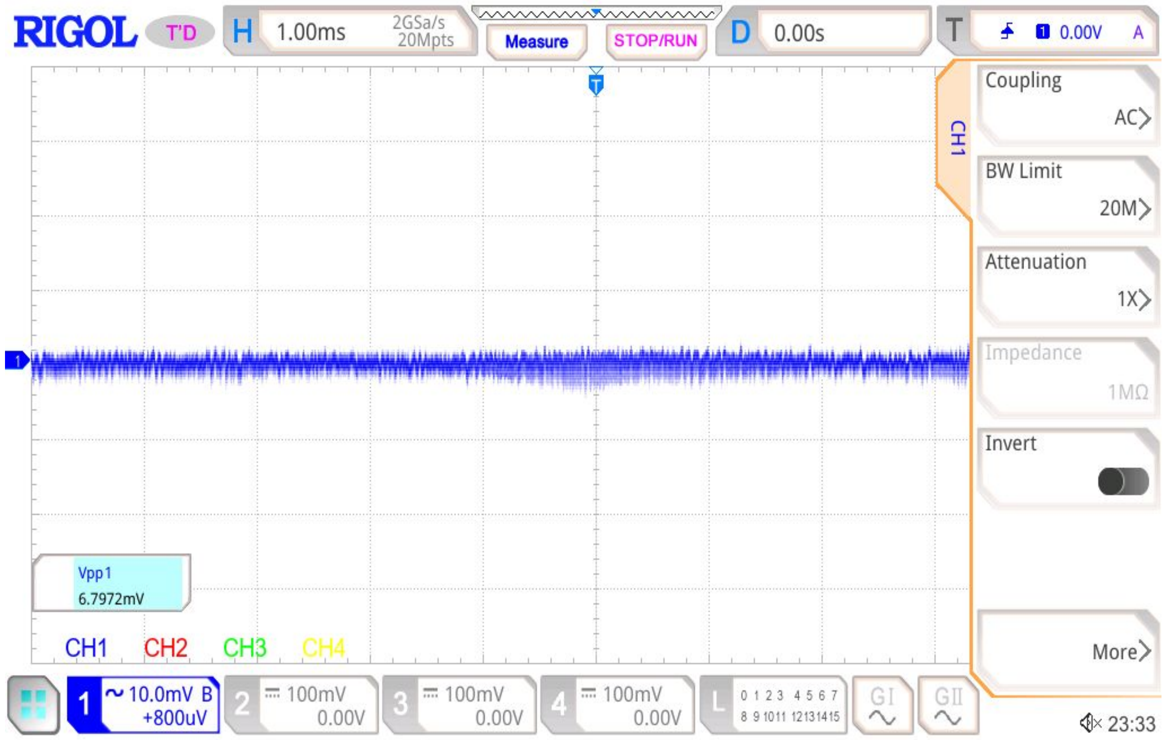
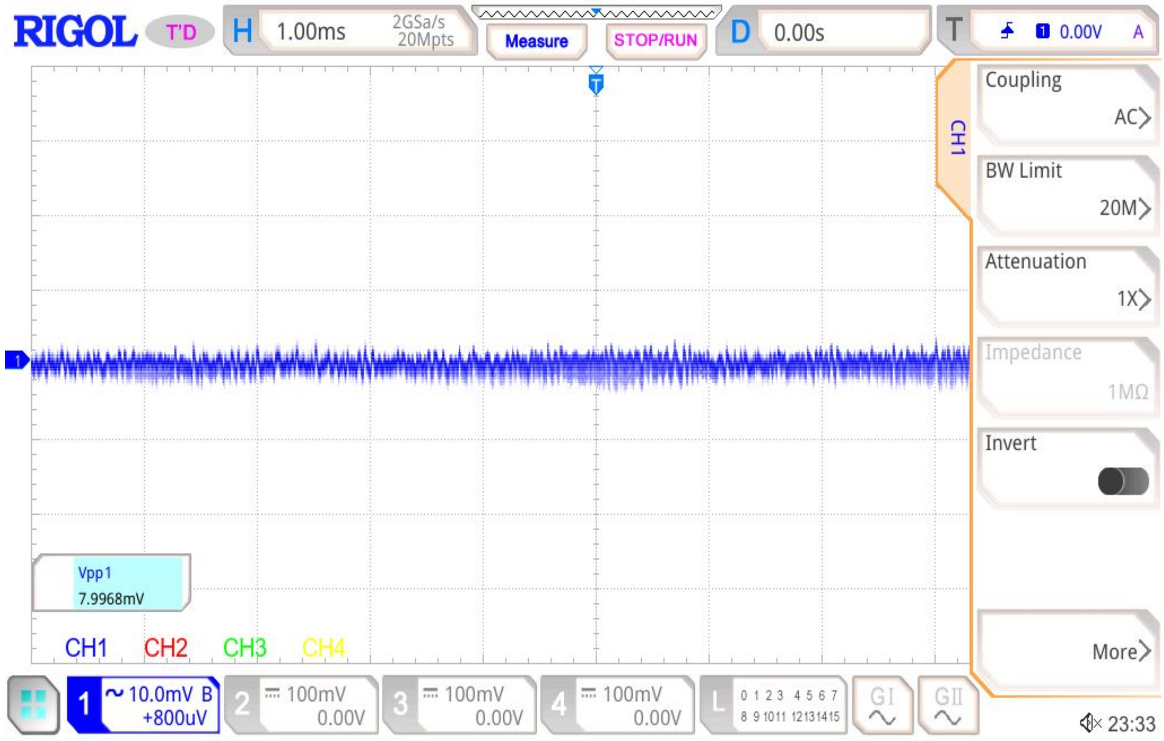
Ripple





No Load
V_{PP} = 6.79 mV

Vout = 1.5 V

1 A Load
V_{PP} = 7.99 mV

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VCCAUX
1.5 V / 4 A

- C200 (Synchronous Buck)
- Fsw = 0.571 MHz
- L = 4.7 µH, P/N Wurth 744311470
- C = 1x47 uF

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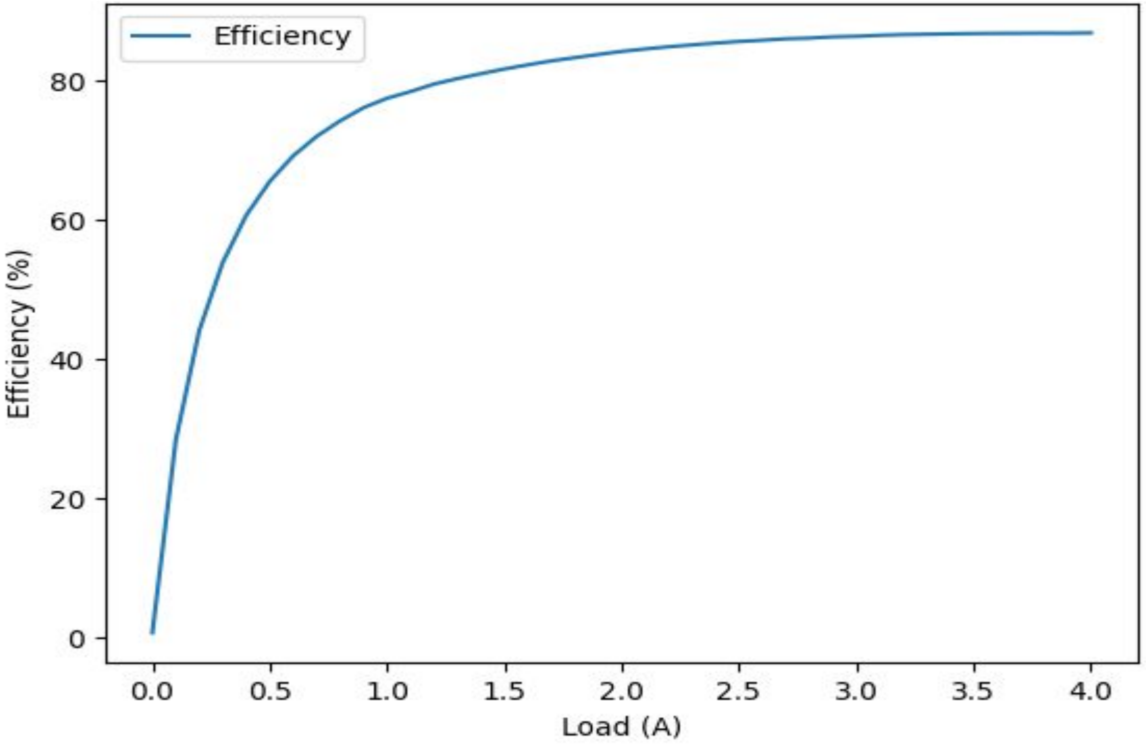
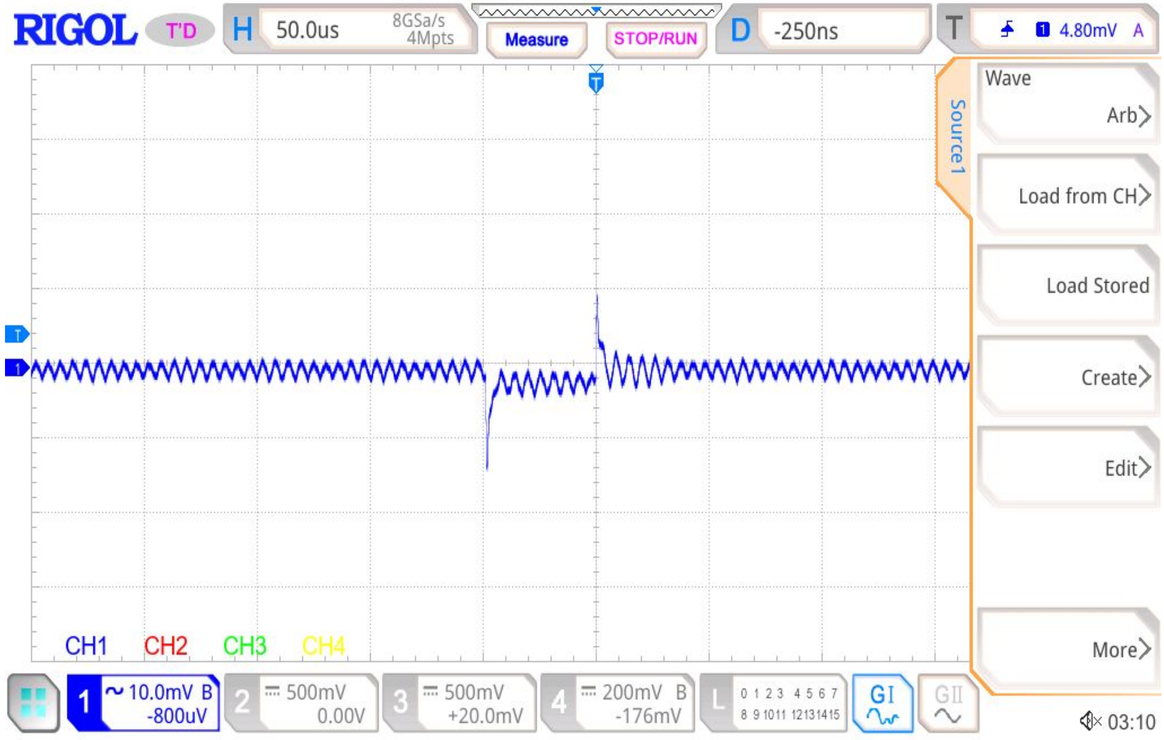
Efficiency & Transient





Vout = 1.5V
Transient 2.68A – 4A @ 10 A/µs
V_{PP} = 25 mV
Fsw = 0.571 MHz
L = 4.7 µH, C = 1x47 uF

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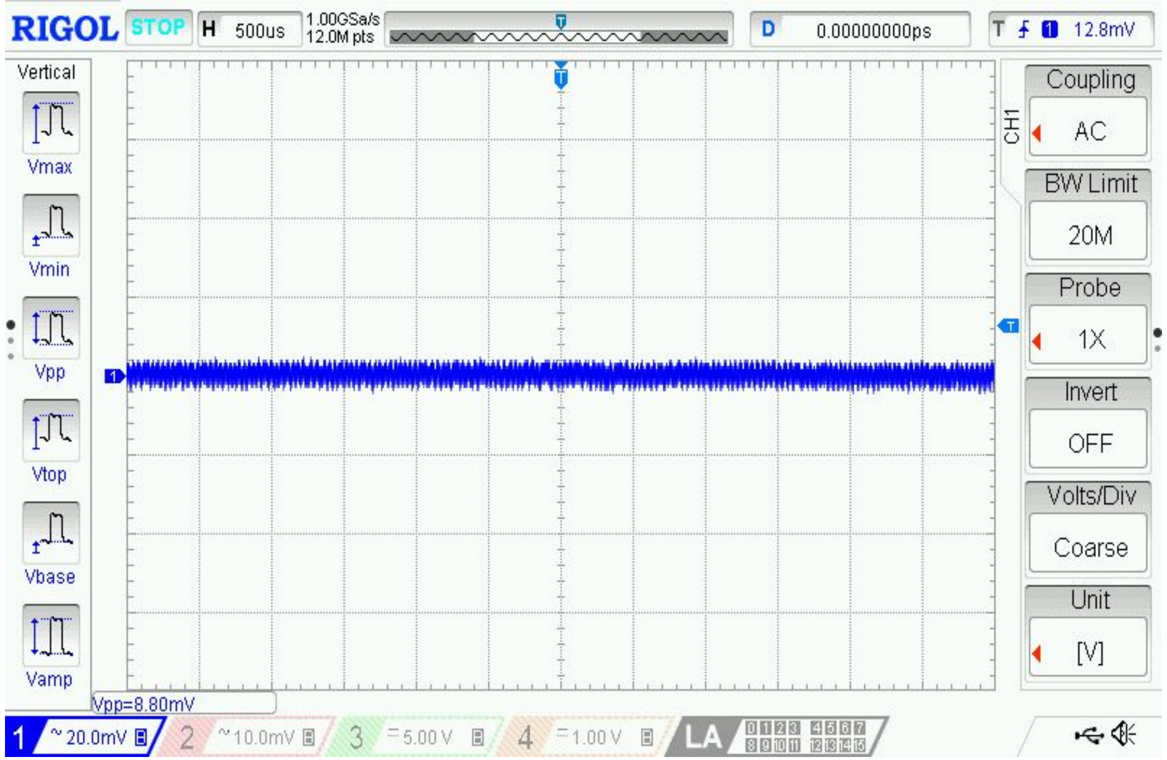
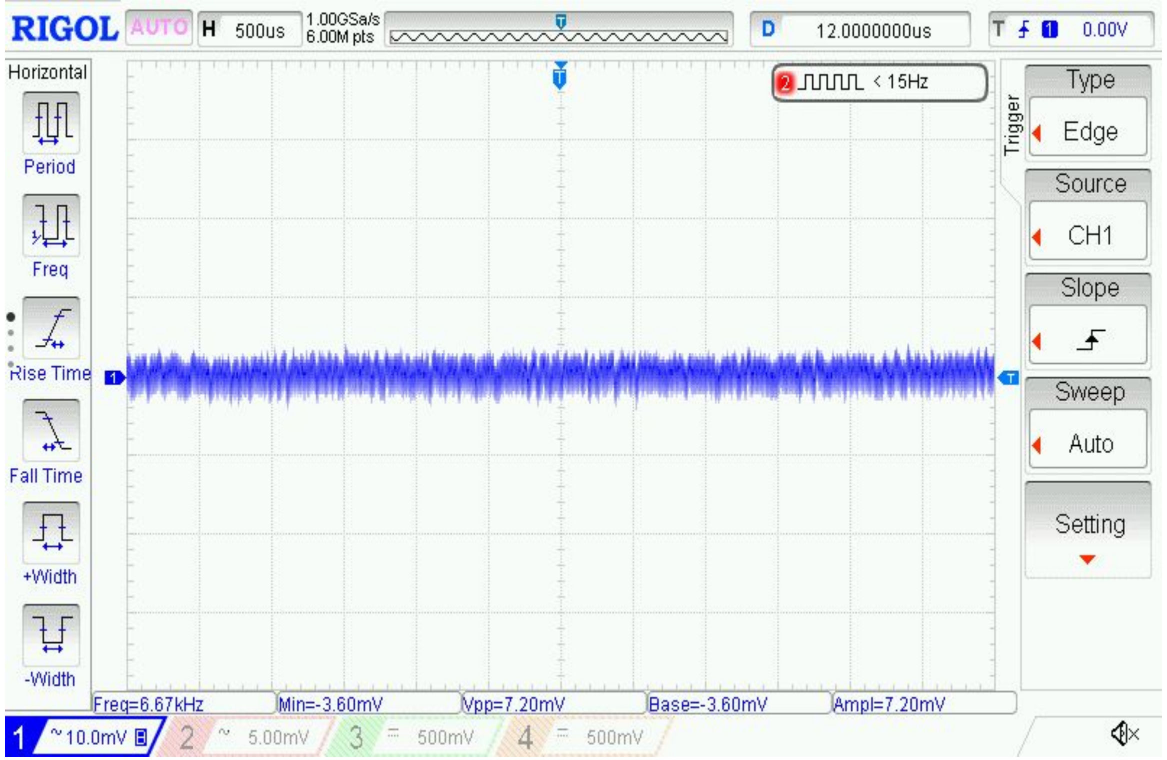
Ripple





No Load
V_{PP} = 8.80 mV

Vout = 1.5 V

4 A Load
V_{PP} = 7.20 mV

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MGTYAVCCAUX
1.5 V / 1 A

- C200 (Synchronous Buck)
- Fsw = 0.571 MHz
- L = 4.7 µH, P/N Wurth 744311470
- C = 1x47 uF

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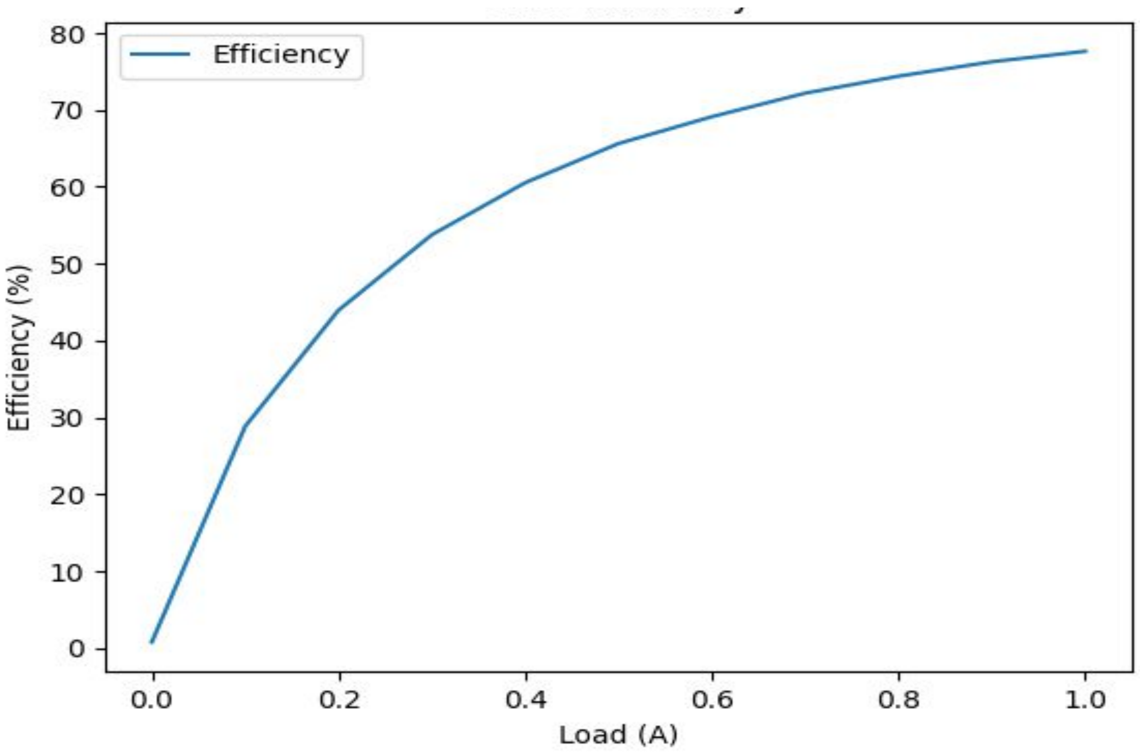
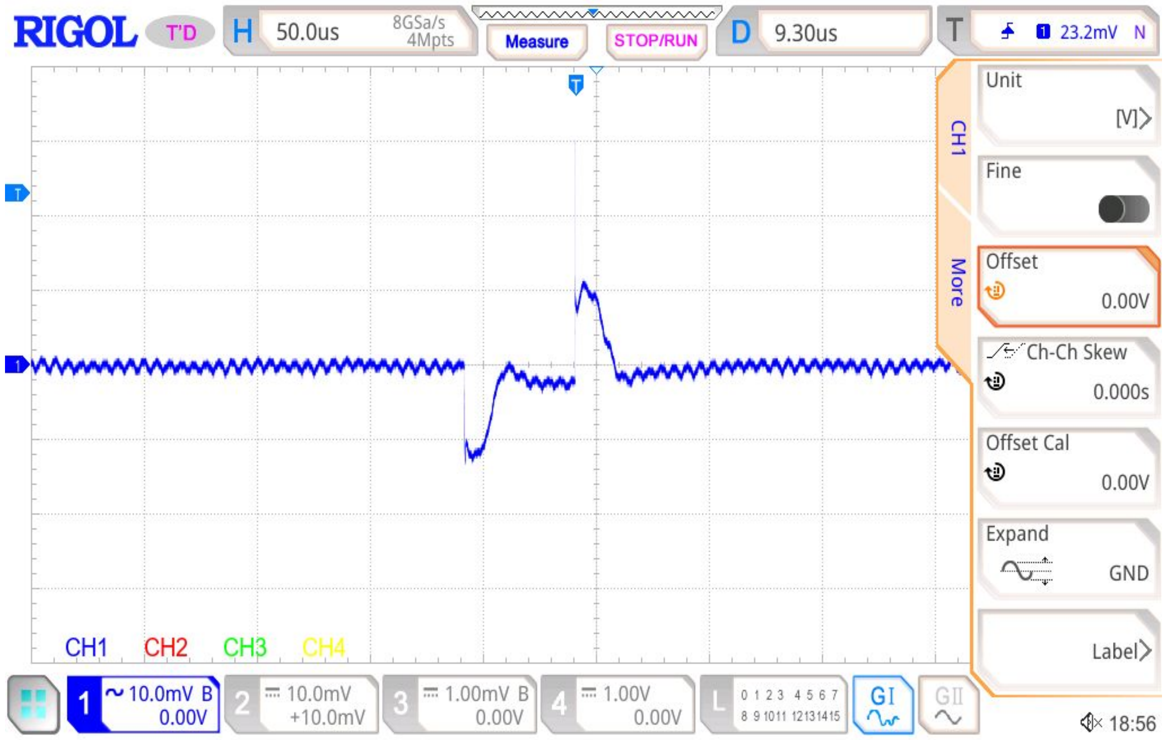
Efficiency & Transient





Vout = 1.5V
Transient 0.67 – 1 A@10 A/µs
V_{PP} = 30 mV
Fsw = 0.571 MHz
L = 4.7 µH, C = 1x47 uF

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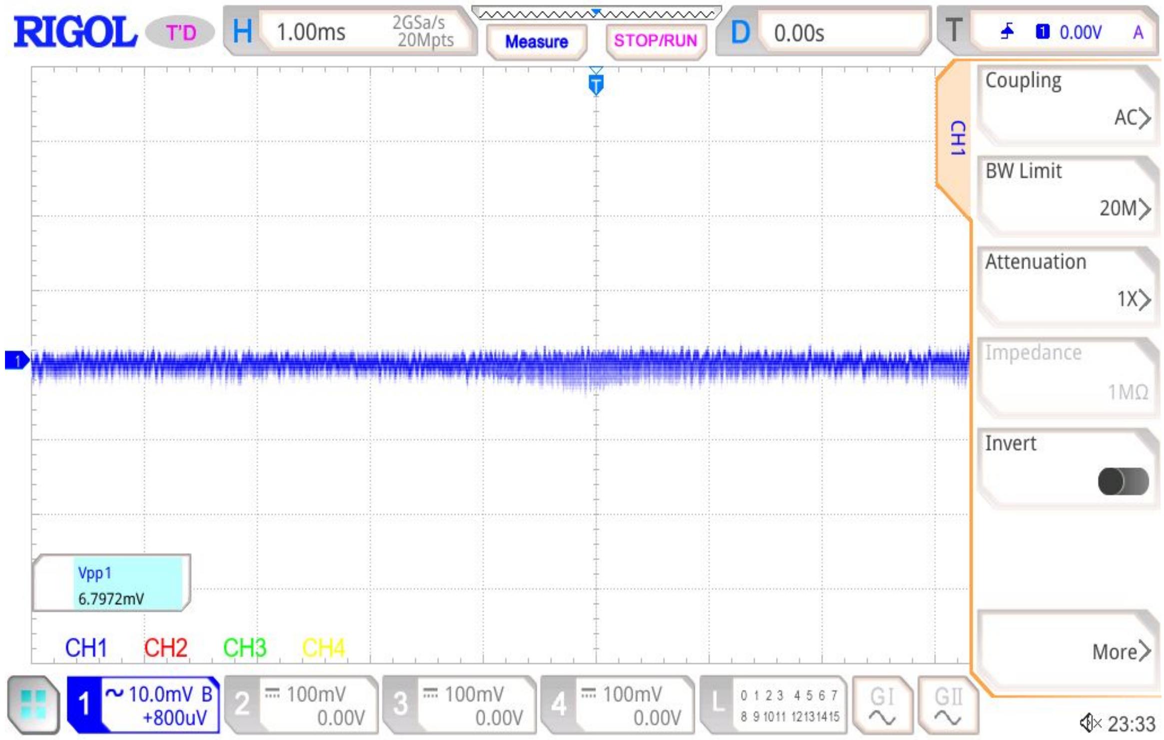
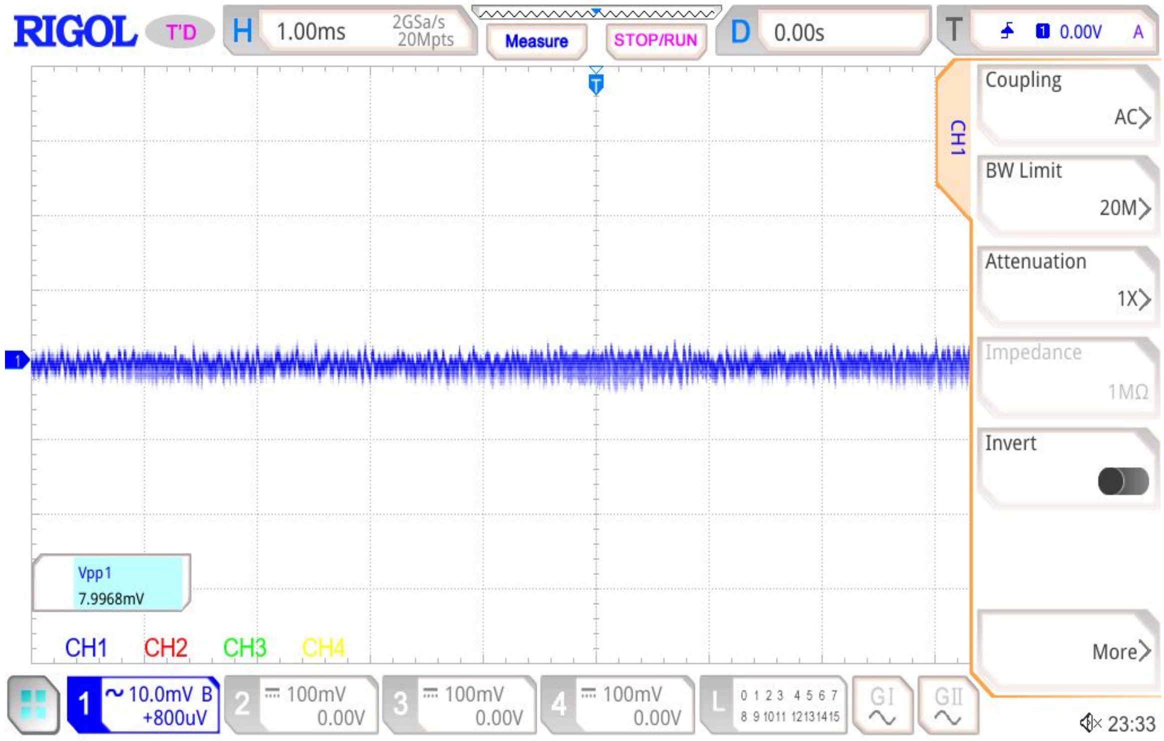
Ripple



No Load
V_{PP} = 6.79 mV



1 A Load
V_{PP} = 7.99 mV

Vout = 1.5 V

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MGTYAVCC
0.88 V / 6 A

- C200 (Synchronous Buck)
- Fsw = 0.571 MHz
- L = 0.56 µH, P/N Wurth 744383560056
- C = 6x47 uF

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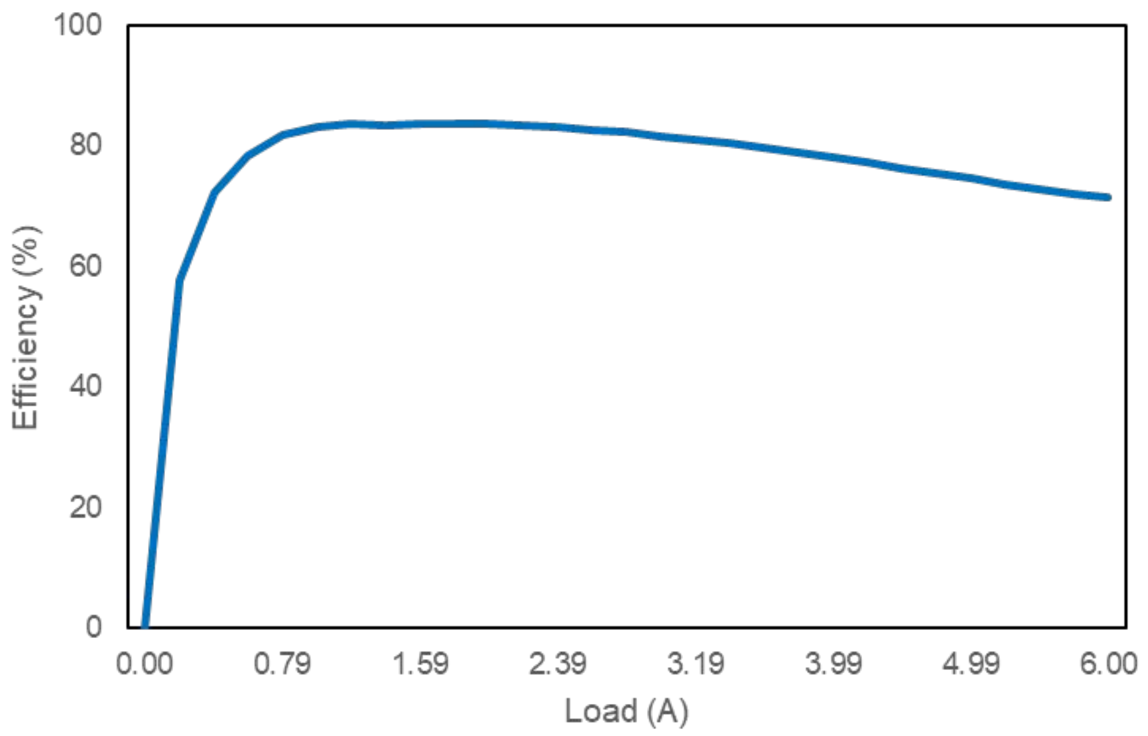
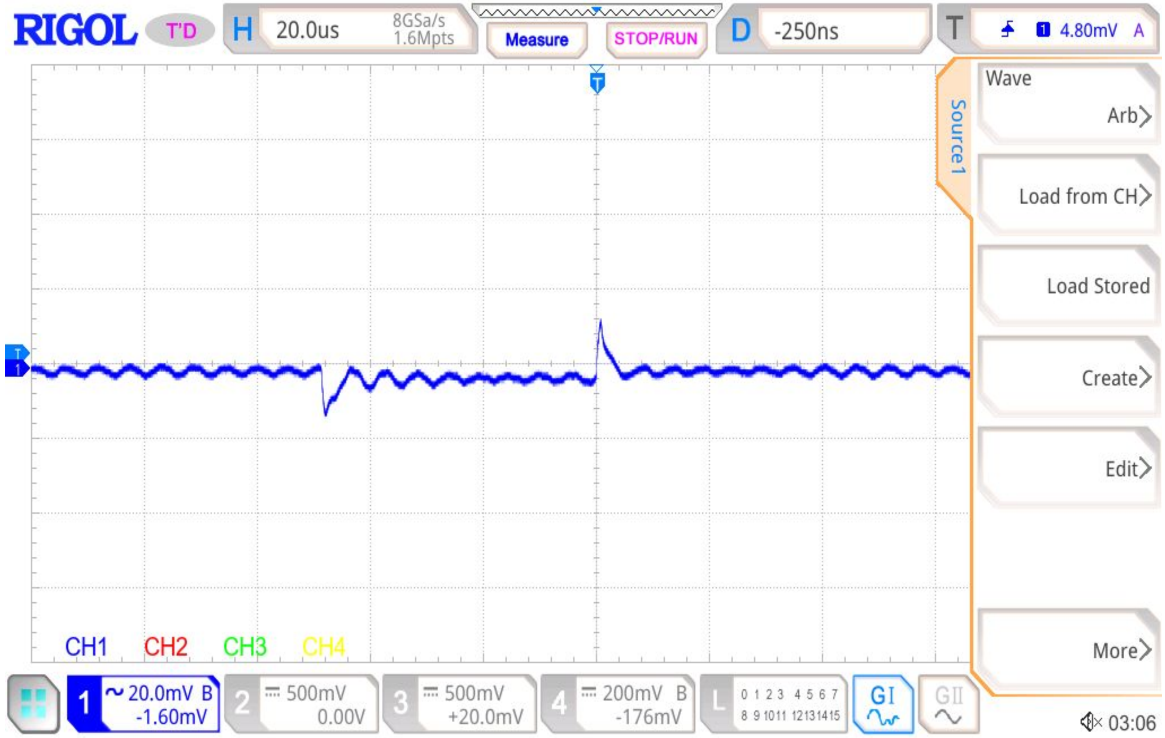
Efficiency & Transient





Vout = 0.88V
Transient 4.02 – 6A@10 A/µs
V_{PP} = 24 mV
Fsw = 0.571 MHz
L = 0.56 µH, C = 6x47 uF

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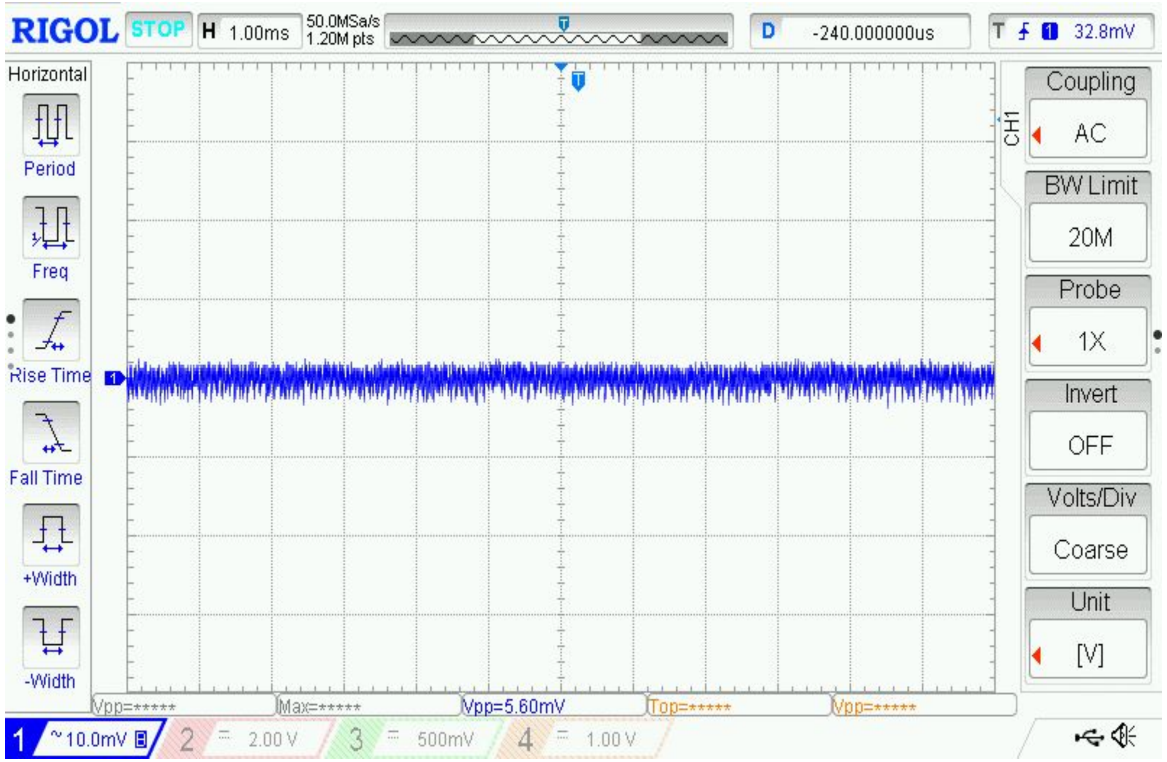
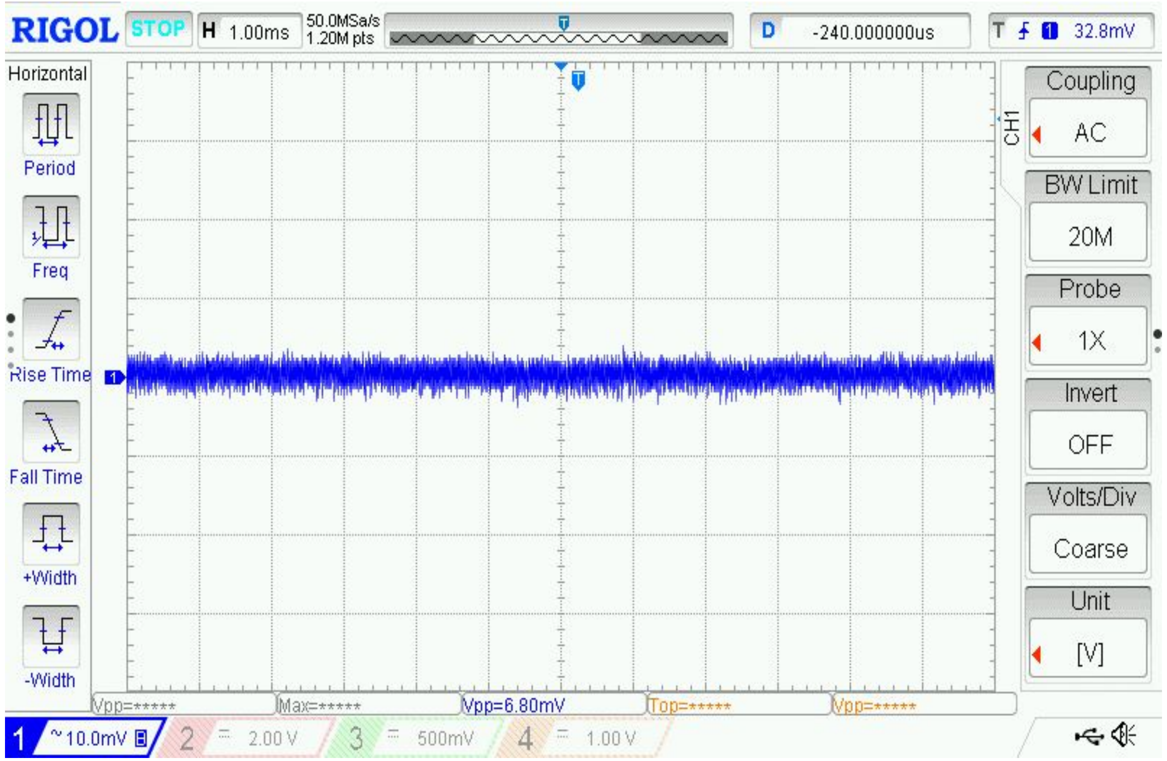
Ripple





No Load
V_{PP} = 5.6 mV

Vout = 0.88 V

6 A Load
V_{PP} = 6.80 mV

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MGTYAVTT 1.2 V /10 A

- C220 (High Current Synchronous Buck)
- Fsw = 0.571 MHz
- L = 0.33 µH, P/N Wurth 744308033
- C = 7x47 uF

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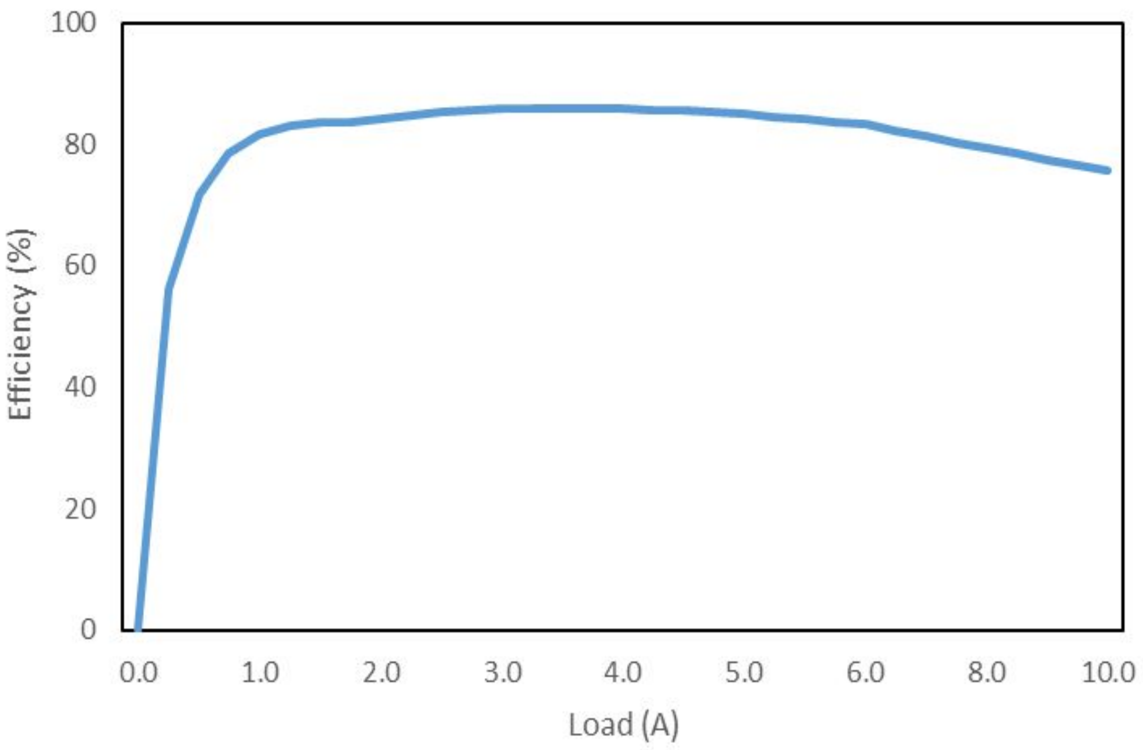
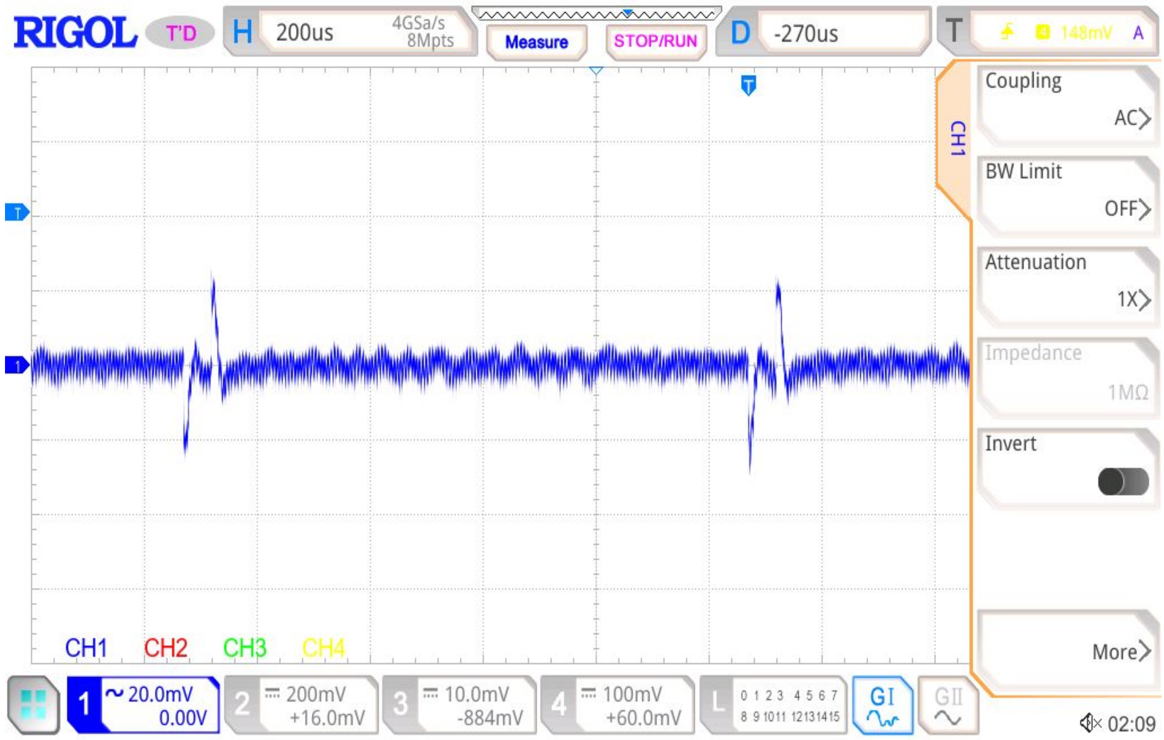
Efficiency & Transient





Vout = 1.2V
Transient 6.7 – 10 A@10 A/μs
V_{PP} = 44 mV
Fsw = 0.571 MHz
L = 0.33 μH, C = 7x47 uF

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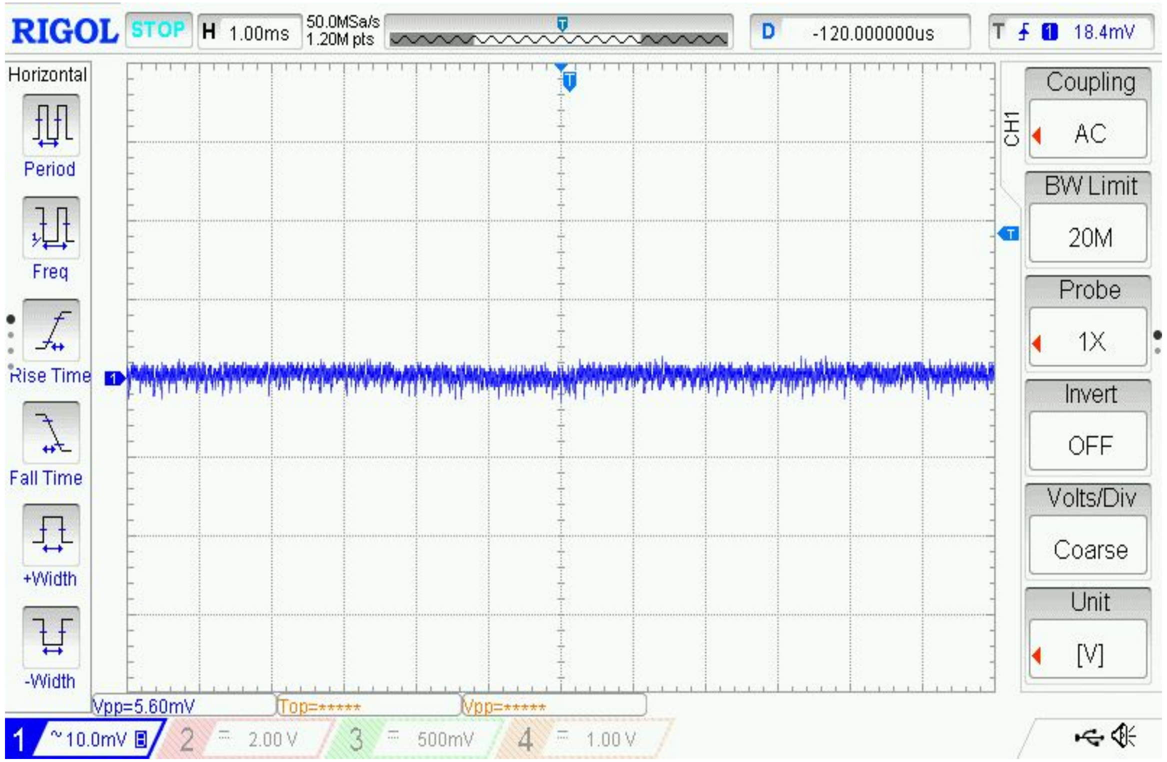
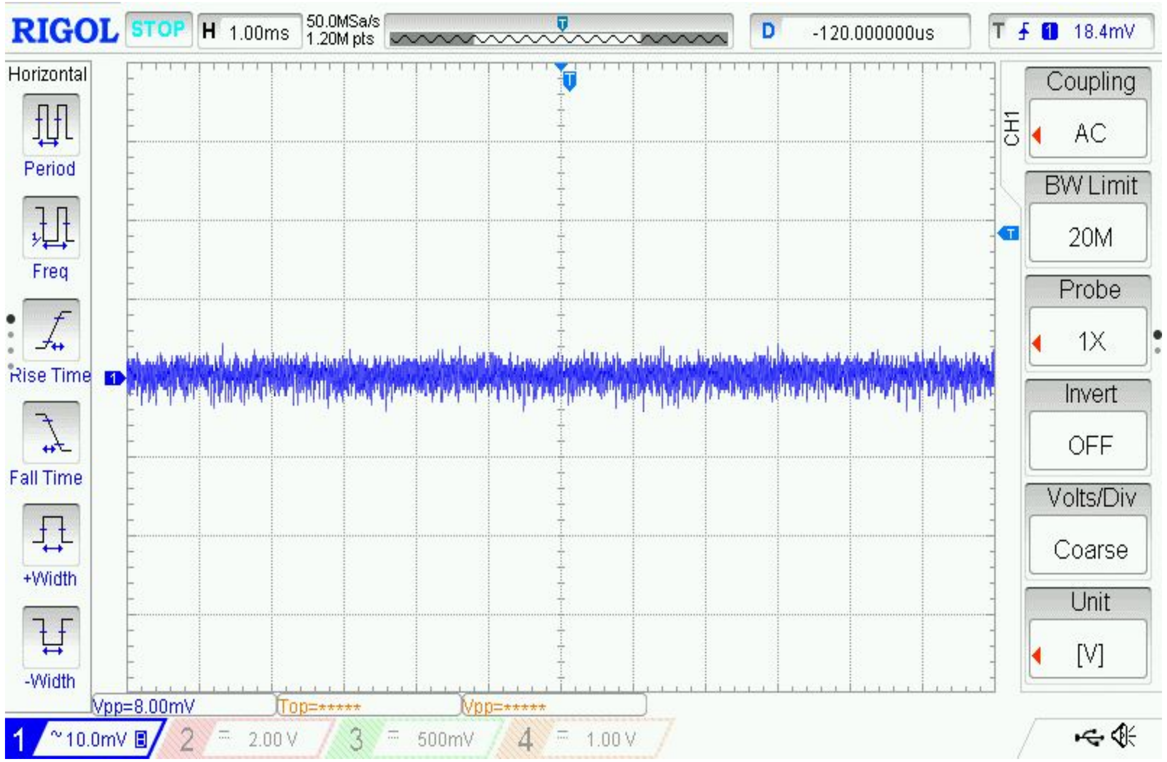
Ripple





No Load
V_{PP} = 5.60 mV

Vout = 1.2 V

10 A Load
V_{PP} = 8 mV

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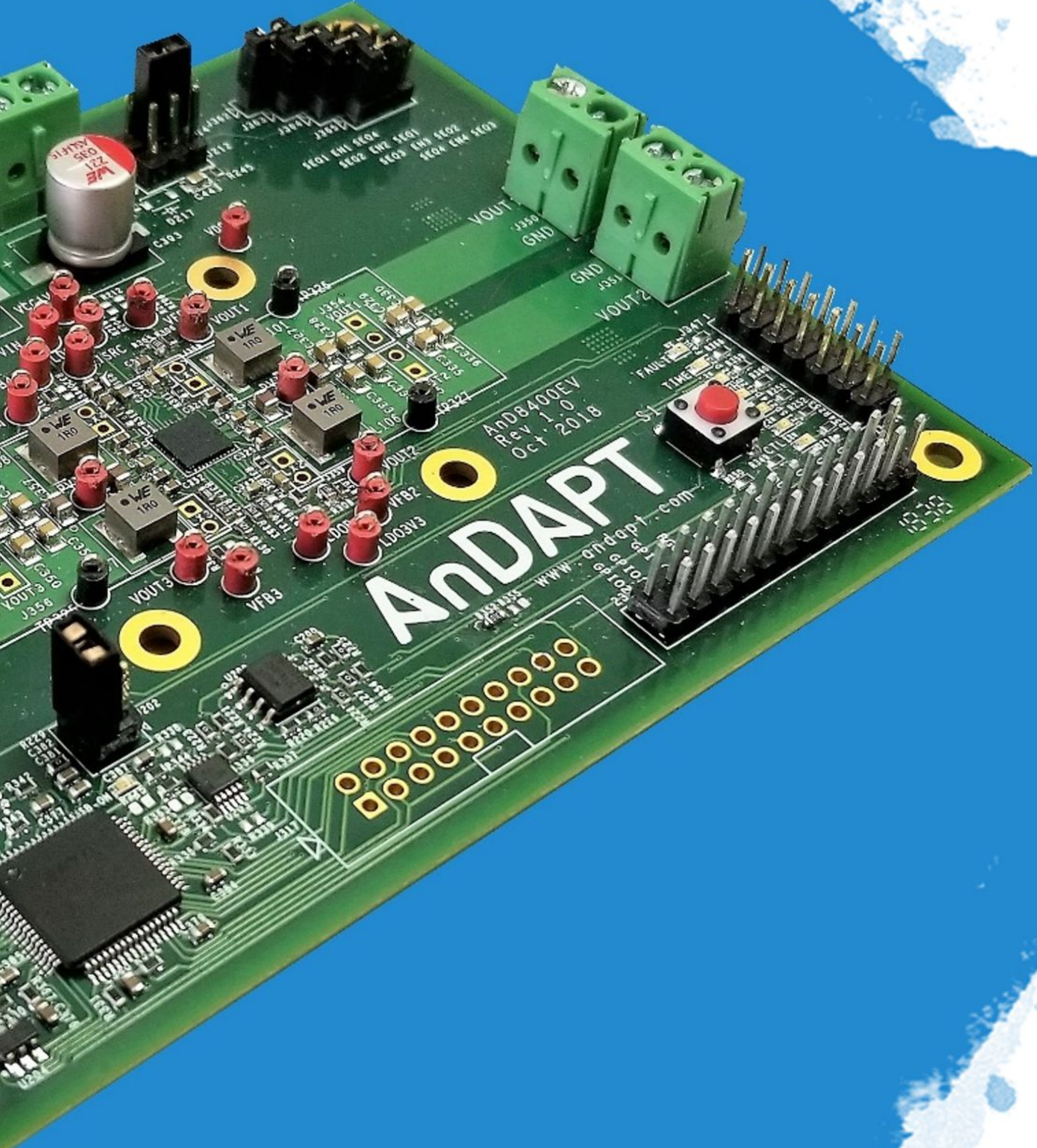

Thank You

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