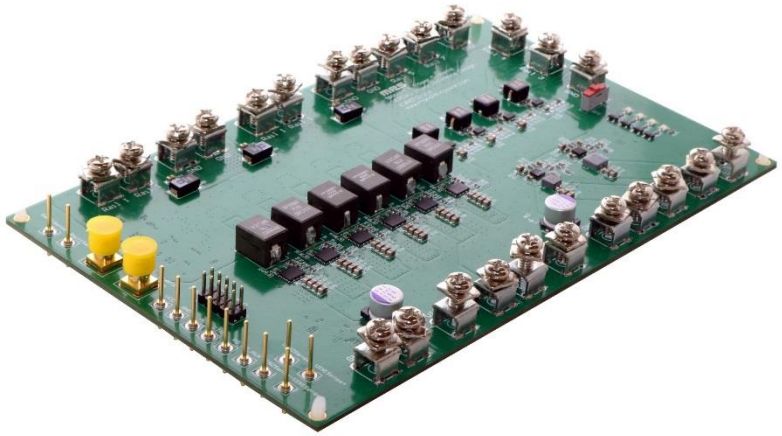
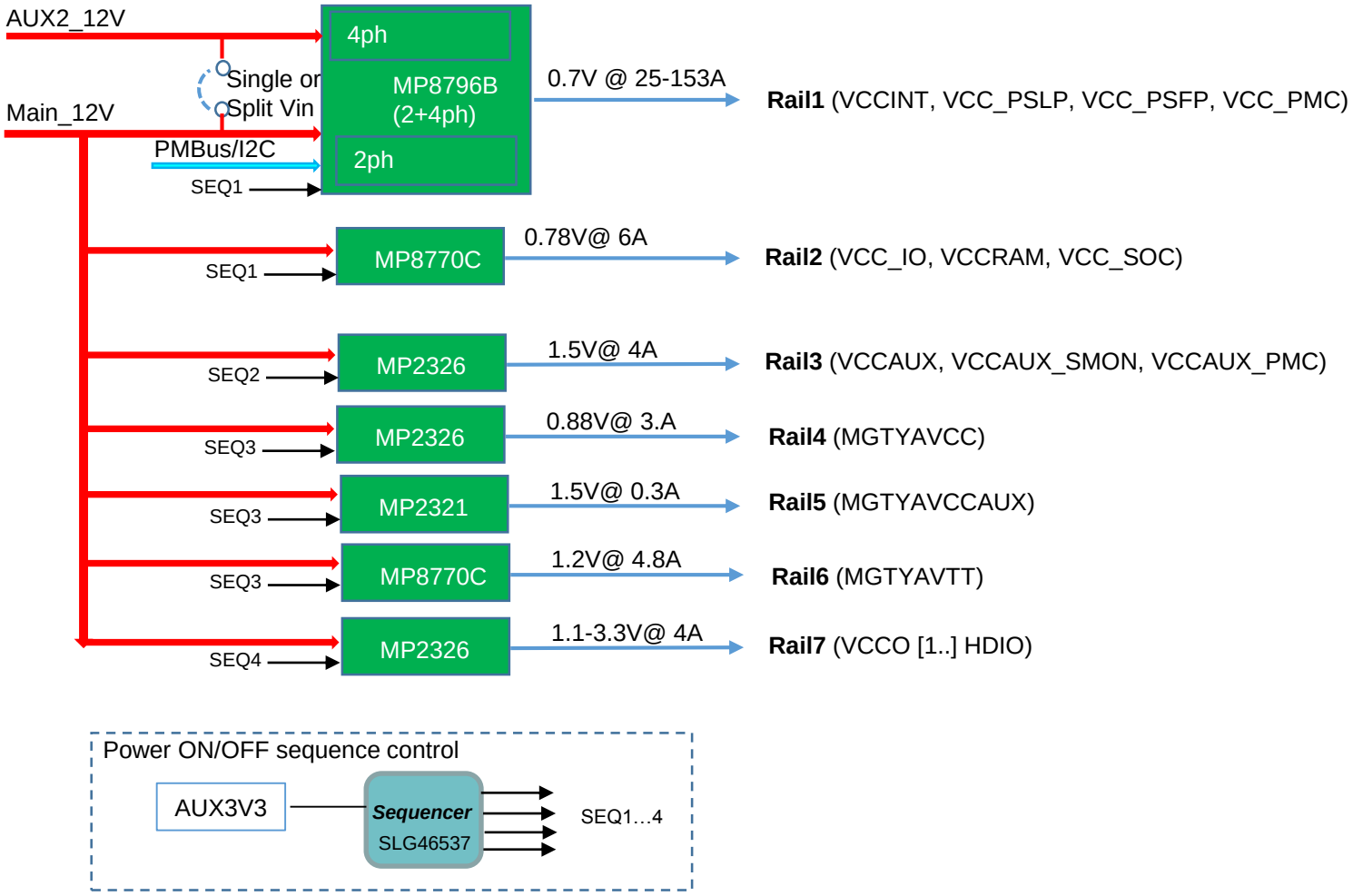
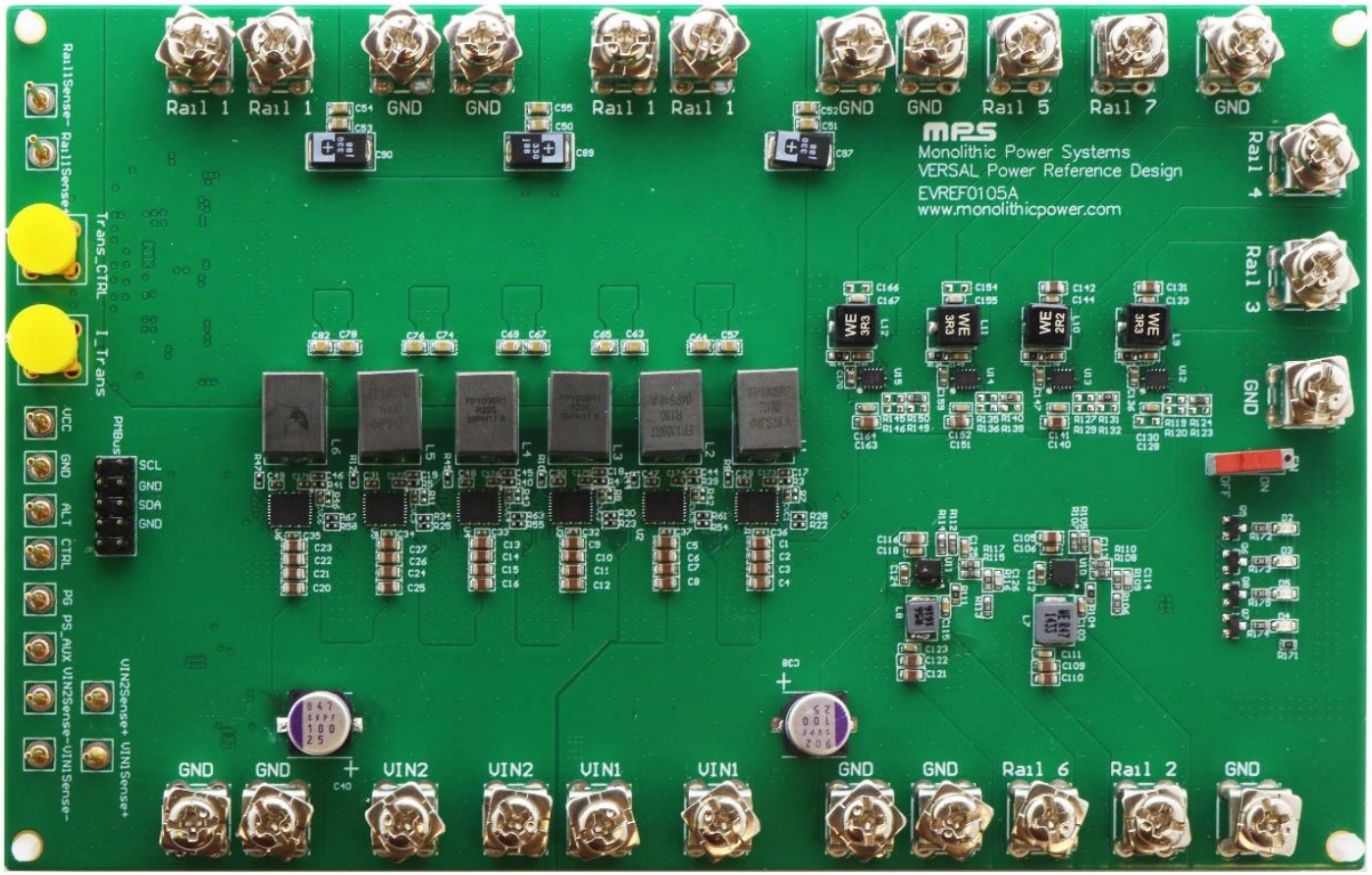
Xilinx VERSAL EVB Test Report
EVREF0105A
9/10/19



EVREF0105A power tree



EVREF0105A board



Simple, Easy Solutions

Table of Contents

1. EVB Specification
3. DC Voltage Accuracy
4. Power Sequencing
5. Rail 1 – Steady state and Transient performance
6. Rail 2 – Steady state and Transient performance
7. Rail 3 – Steady state and Transient performance
8. Rail 4 – Steady state and Transient performance
9. Rail 5 – Steady state and Transient performance
10. Rail 6 – Steady state and Transient performance
11. Rail 7 – Steady state and Transient performance

Simple, Easy Solutions

EVB Specs

Rail	Power Rail	Vin (V)	Nominal Vout (V)	DC Accuracy* (%)	AC Ripple Noise*	Iout Typical/ Max (A)	Step Load	MPS part#	Power sequence
Rail1	VCCINT, VCC_PSLP, VCC_PSFP, VCC_PMC	12	0.7	+/-1%	+/-25mV Static load, +/-3% total	127A/ 153A	60% @ 200A/uS	MP8796B (6x)	1
Rail2	VCC_IO, VCCRAM, VCC_SOC	12	0.78	+/-1%	+/-3% total	4.9A/ 6A	40% @ 10A/uS	MP8770C	1
Rail3	VCCAUX, VCCAUX_SMON, VCCAUX_PMC	12	1.5	+/-1%	+/-3% total	3.1A/ 3.9A	90% @ 10A/uS	MP2326	2
Rail4	MGTYAVCC	12	0.88	+/-1%	10mVpp Static load, +/-3% Total	2.5A/ 3.1A	25% @ 10A/uS	MP2326	3
Rail5	MGTYAVAUX	12	1.5	+/-1%	10mVpp Static load, +/-3% Total	0.23A/ 0.3A	25% @ 10A/uS	MP2321	3
Rail6	MGTYAVTT	12	1.2	+/-1%	10mVpp Static load, +/-3% Total	3.9A/4.8A	25% @ 10A/uS	MP8770C	3
Rail7	VCCO (1.0V-3.3V)	12	1.8	+/-1%	+/-4% total	3.4A/ 4A	25% @ 10A/uS	MP2326	4
	* +/-% from nominal voltage								

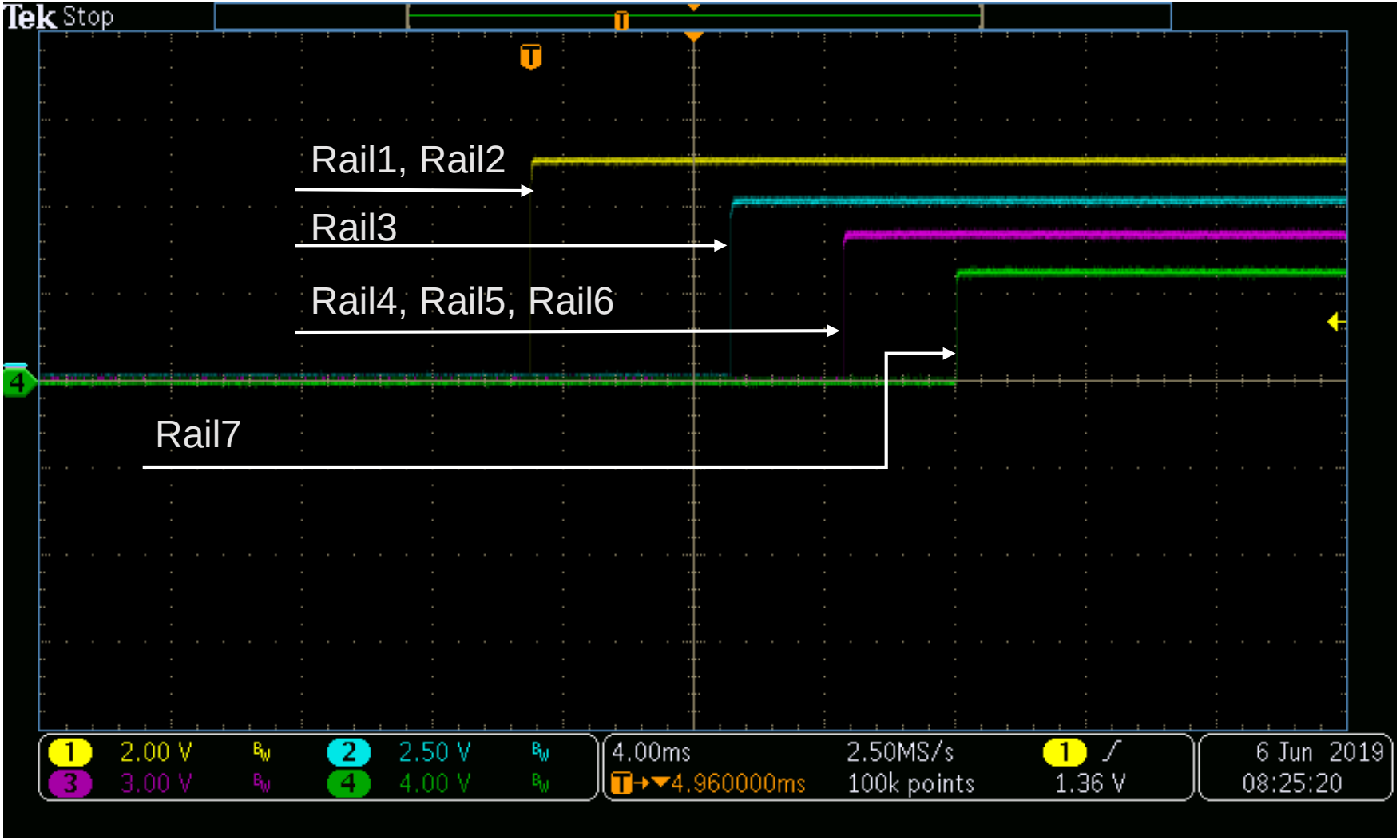
Simple, Easy Solutions

DC Voltage Accuracy

Power Rail	Target Voltage (V)	Actual Voltage (V)	DC Error (%)
Rail 1 (VCCINT, VCC_PSLP, VCC_PSFP, VCC_PMC)	0.7	0.7	+/- 0
Rail 2 (VCC_IO, VCCRAM, VCC_SOC)	0.78	0.773	-0.897
Rail 3 (VCCAUX, VCCAUX_SMON, VCCAUX_PMC)	1.5	1.5051	+0.34
Rail 4 (MGTYAVCC)	0.88	0.8853	+0.602
Rail 5 (MGTYAVCCAUX)	1.5	1.5047	+0.313
Rail 6 (MGTYAVTT)	1.2	1.1905	-0.791
Rail 7 (VCCO [1..] HDIO)	1.8	1.8036	+0.2

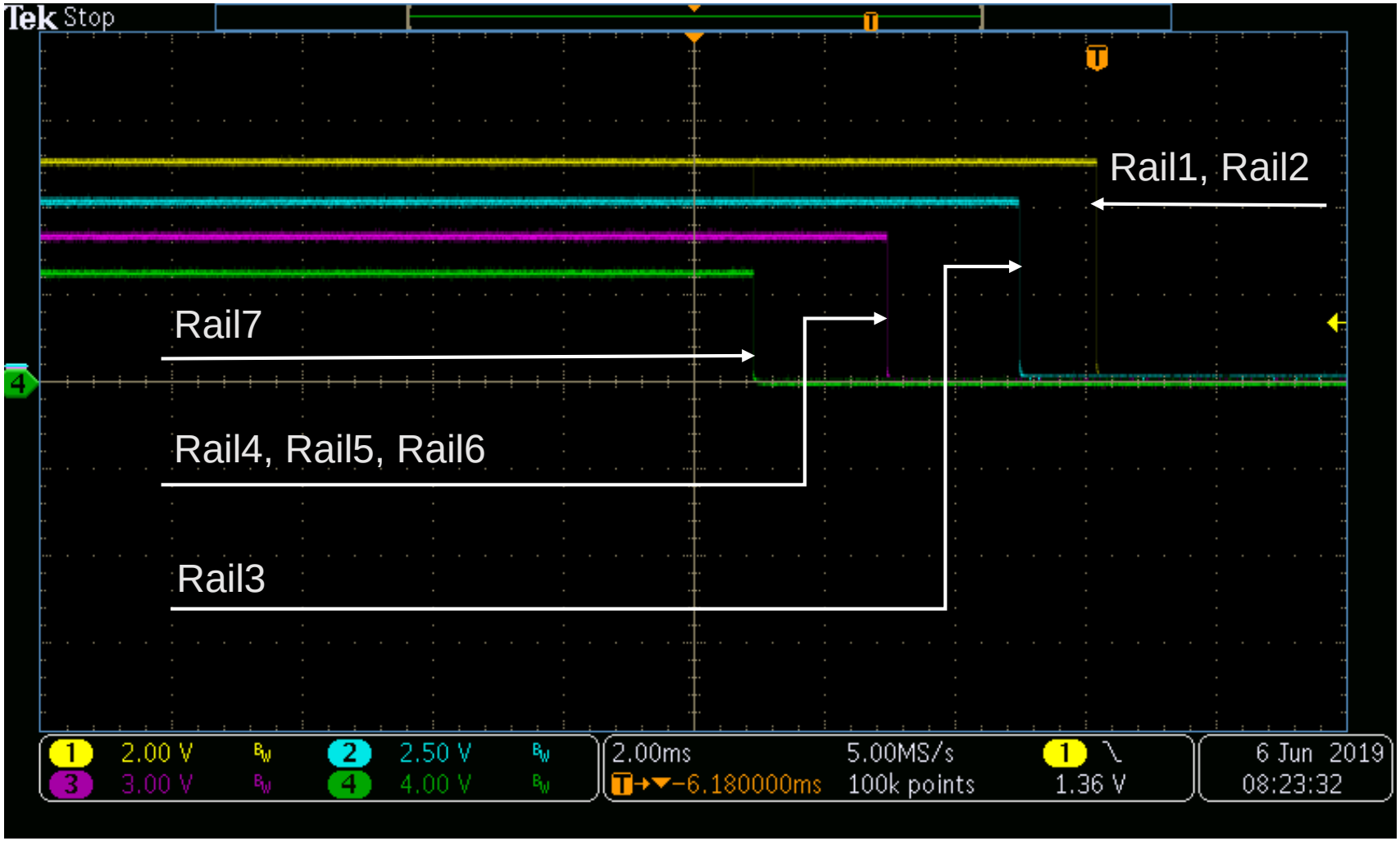
Simple, Easy Solutions

Power ON Sequence



Simple, Easy Solutions

Power OFF Sequence

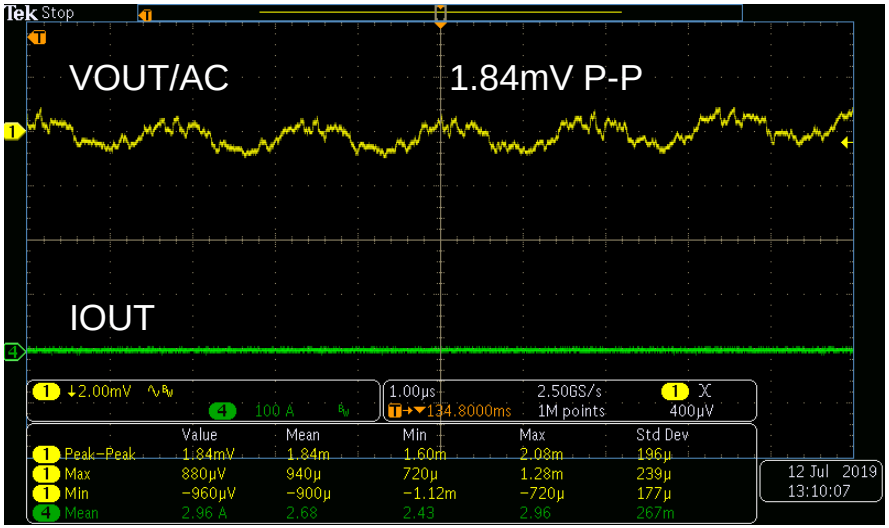


Simple, Easy Solutions

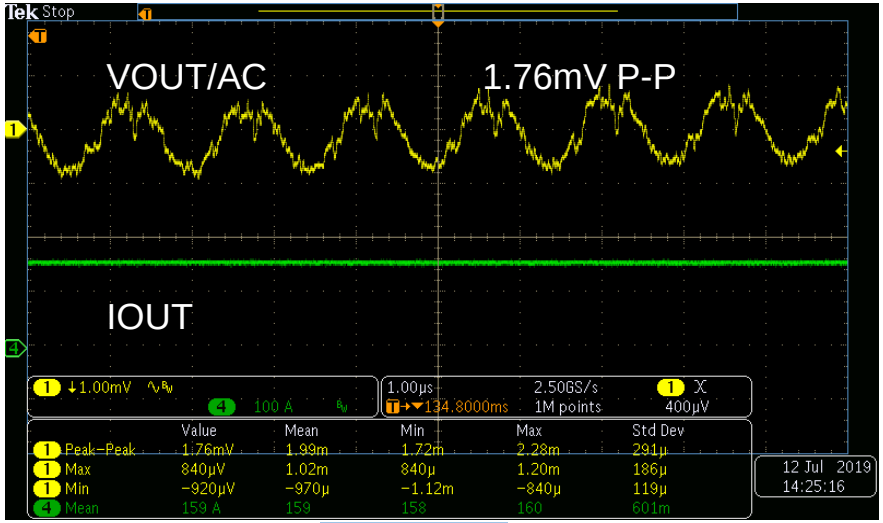
Rail1 - VCCINT, VCC_PSLP, VCC_PSFP, VCC_PMC (MP8796B) - Steady State Ripple

Test condition: Vin=12V, Vo=0.7V

Load (A)	Ripple p-p (mV)
No Load (0A)	1.84
Max Load (160A)	1.76



Io=0A

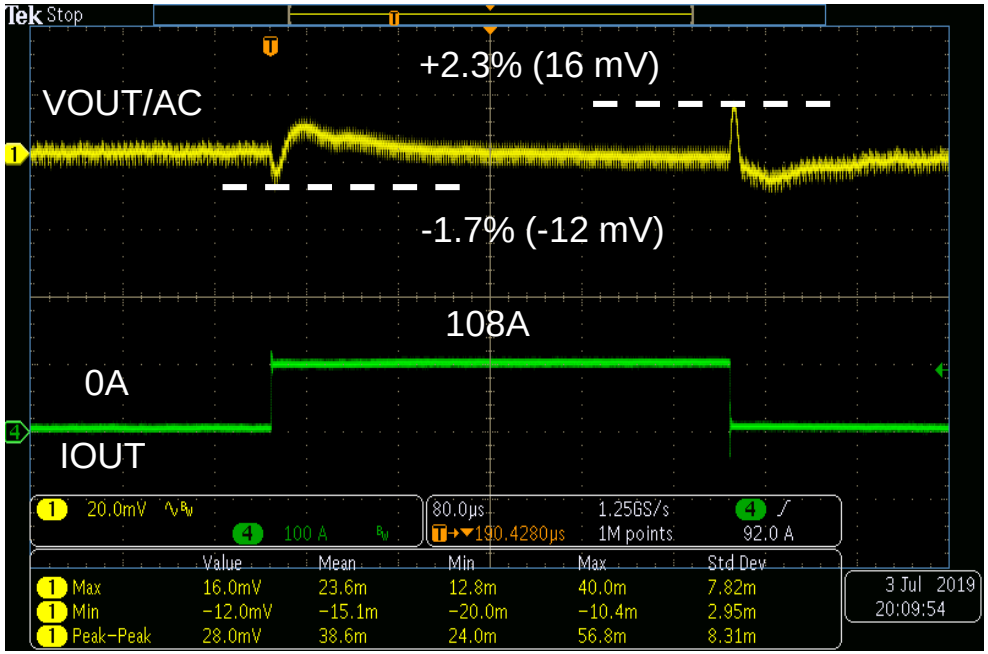


Io=160A

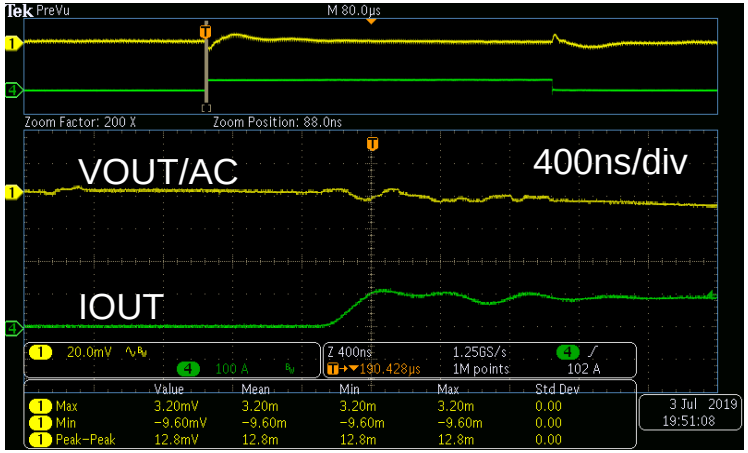
Simple, Easy Solutions

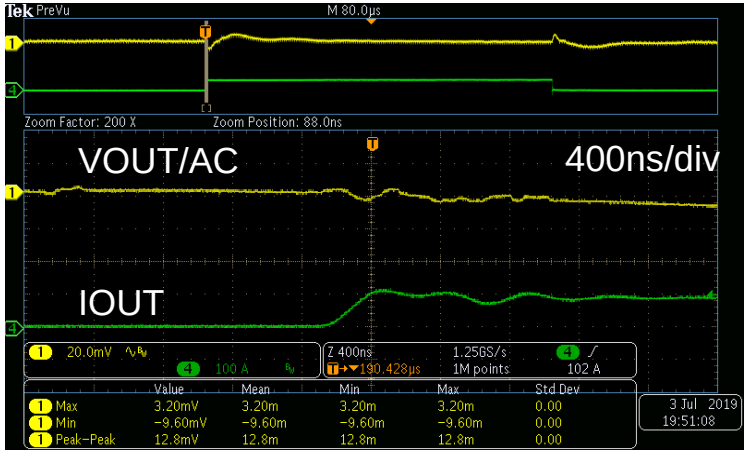
Rail1 - VCCINT, VCC_PSLP, VCC_PSFP, VCC_PMC (MP8796B) - Transient Load

Parameter	Value
Input voltage	12V
Output voltage	0.7V
Transient Step	0-108A
Slew Rate	200A/us



Zoomed In



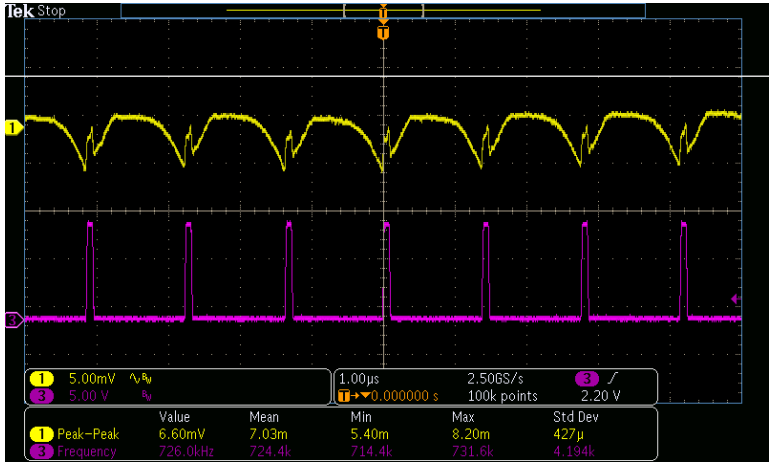


Simple, Easy Solutions

Rail2 - VCC_IO, VCCRAM, VCC_SOC (MP8770C) - Steady State Ripple

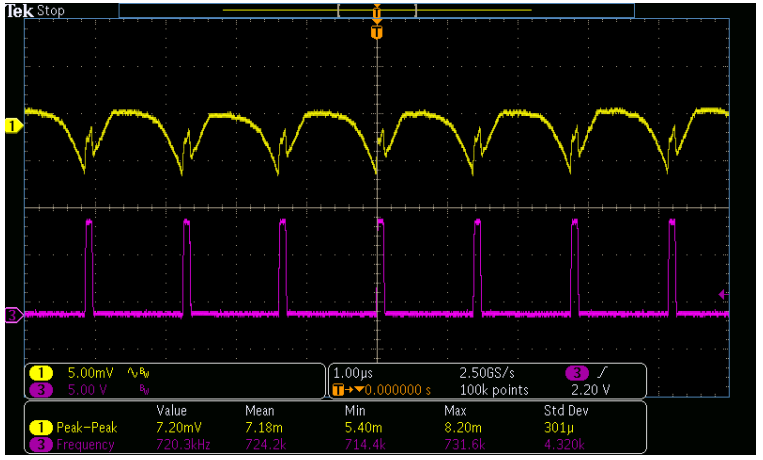
Test condition: Vin=12V, Vo=0.78V

Load (A)	Ripple p-p (mV)
No Load (0A)	6.6
Typical Load (4.9A)	7
Max Load (6A)	7.2



Io=0A

Io=4.9A

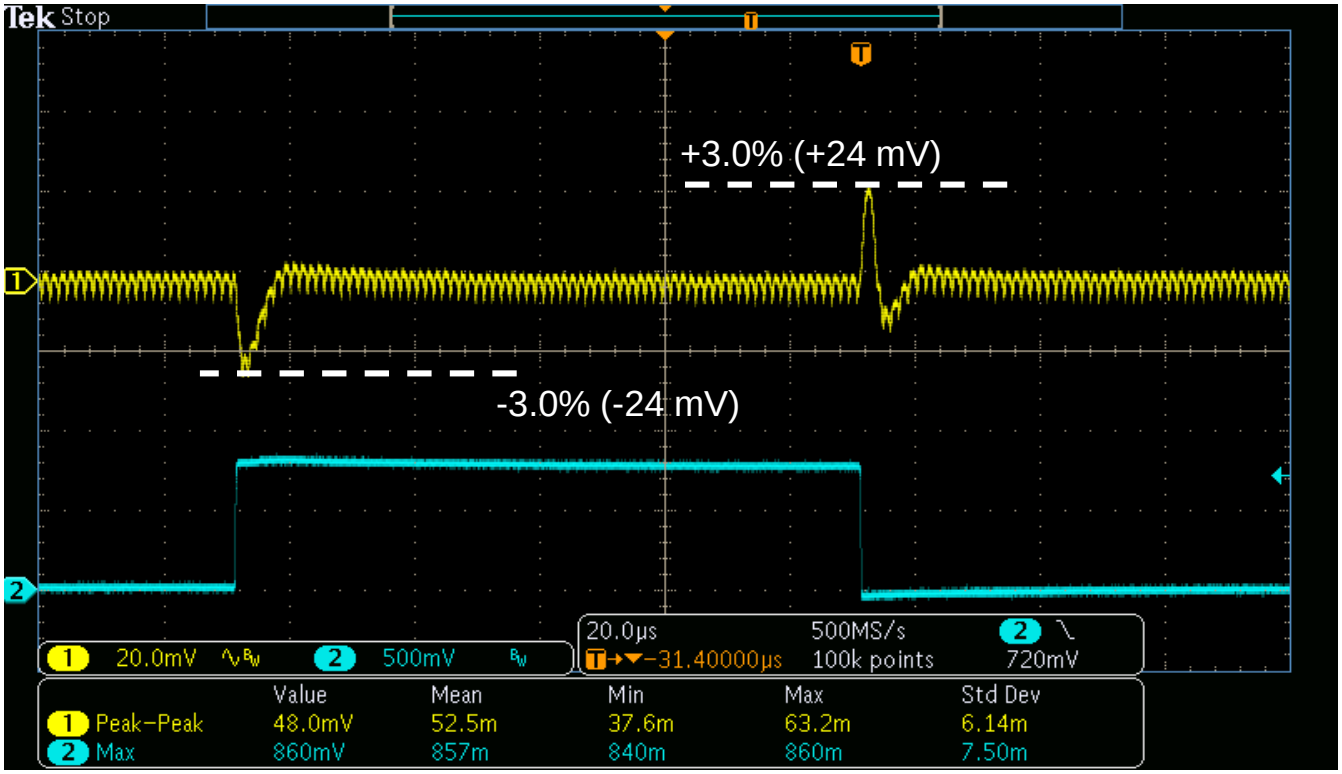


Io=6A

Simple, Easy Solutions

Rail2 - VCC_IO, VCCRAM, VCC_SOC (MP8770C) - Transient Load

Parameter	Value
Input voltage	12V
Output voltage	0.78V
Transient Step	2.9-4.9A (40%)
Slew Rate	10A/us

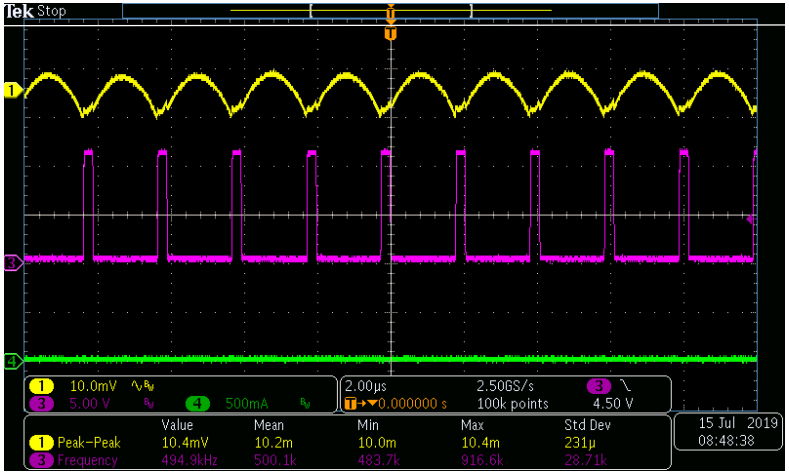


Simple, Easy Solutions

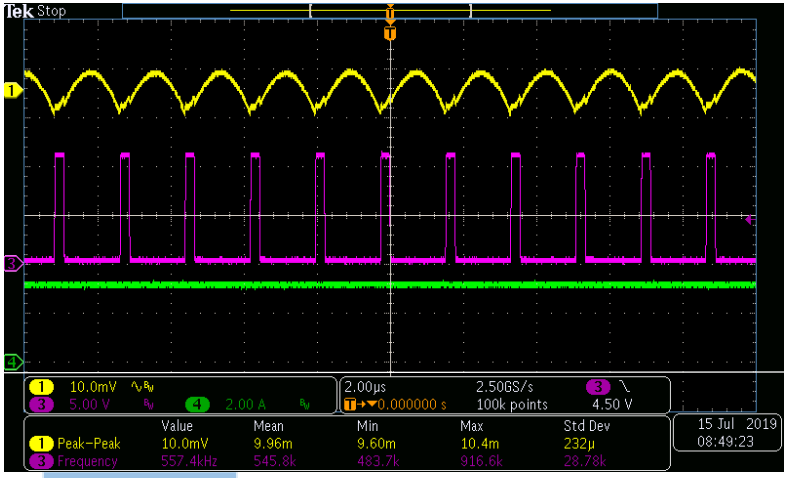
Rail3 - VCCAUX, VCCAUX_SMON, VCCAUX_PMC (MP2326) – Steady State Ripple

Test condition: Vin=12V, Vo=1.5V

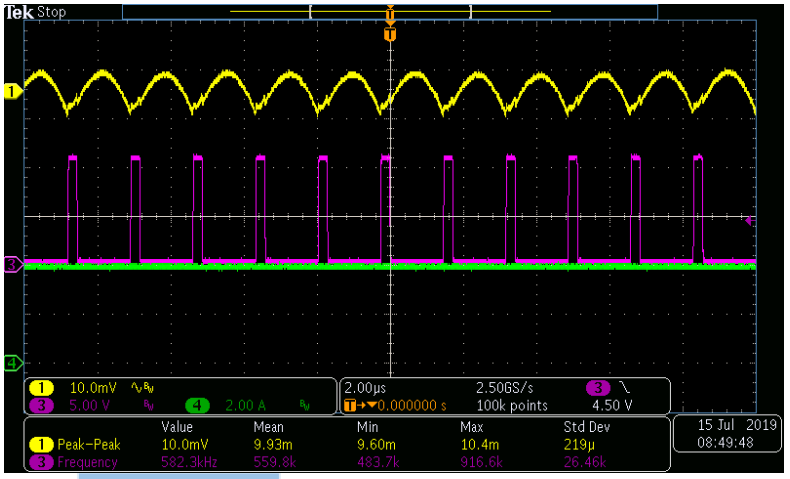
Load (A)	Ripple p-p (mV)
No Load (0A)	10.4
Typical Load (3.1A)	10
Max Load (3.9A)	10



Io=0A



Io=3.1A

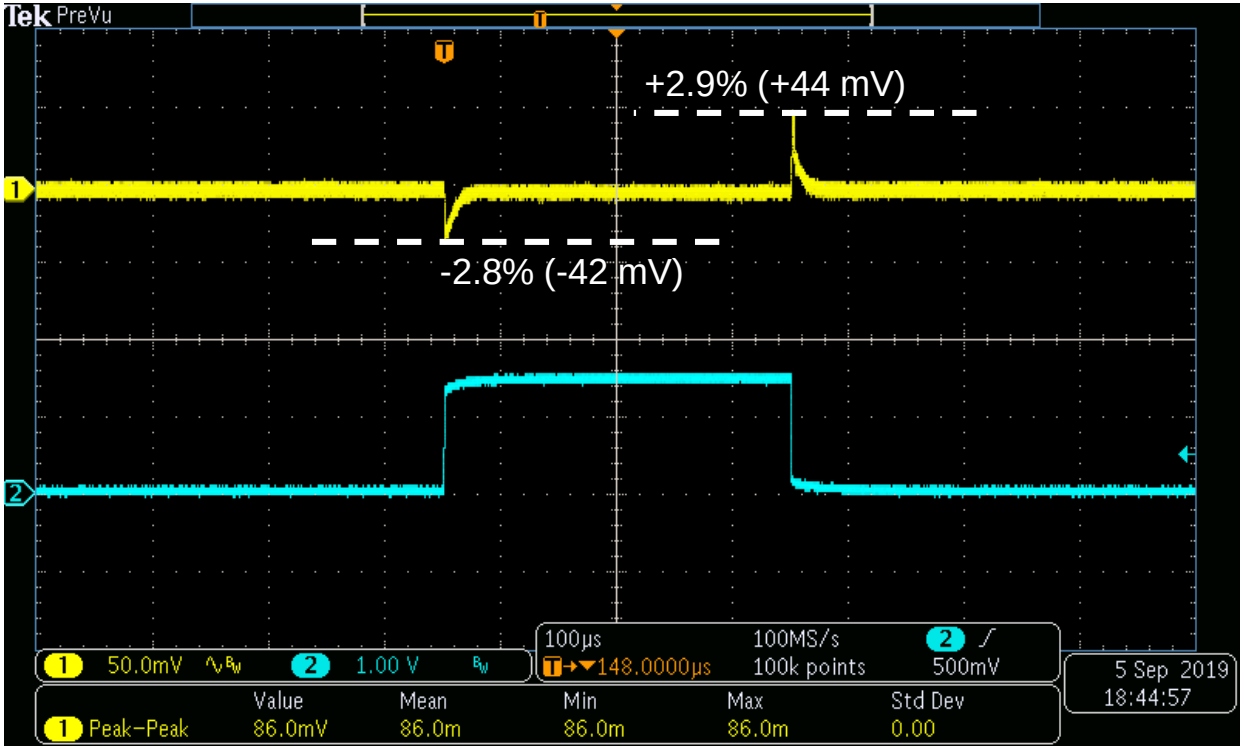


Io=3.9A

Simple, Easy Solutions

Rail3 - VCCAUX, VCCAUX_SMON, VCCAUX_PMC (MP2326) – Transient Load

Parameter	Value
Input voltage	12V
Output voltage	1.5V
Transient Step	0.31-3.9A (90%)
Slew Rate	10A/us

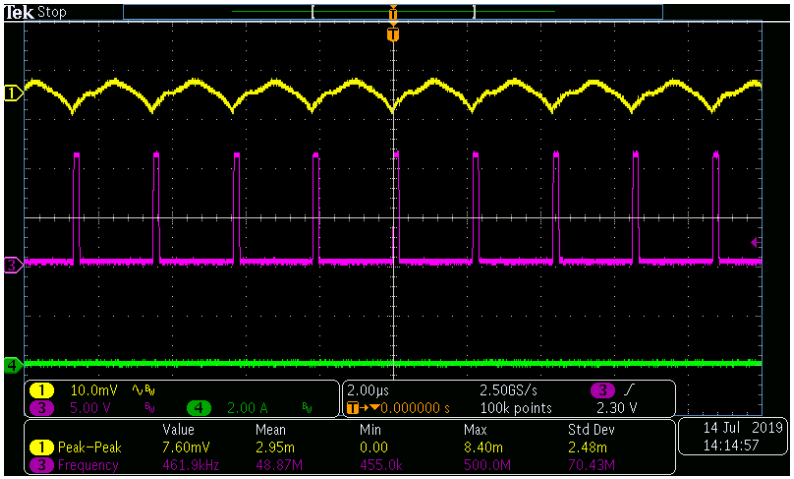


Simple, Easy Solutions

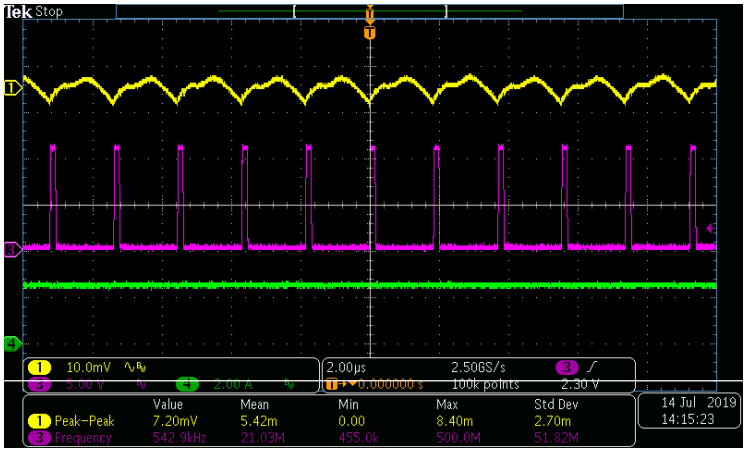
Rail4 - MGTYAVCC (MP2326) – Steady State Ripple

Test condition: Vin=12V, Vo=0.88V

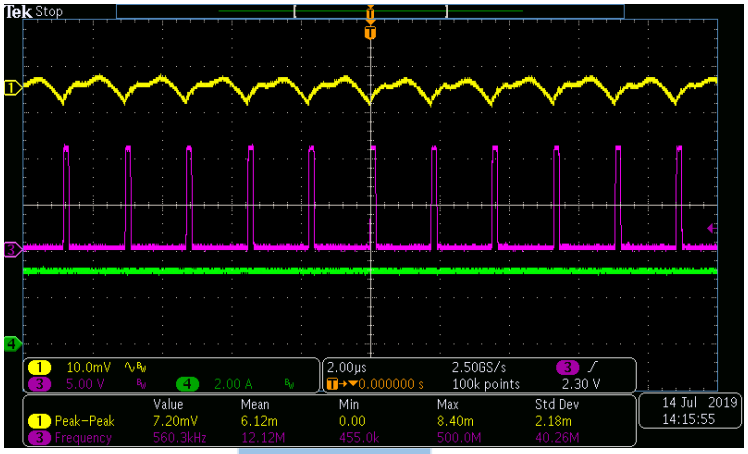
Load (A)	Ripple p-p (mV)
No Load (0A)	7.6
Typical Load (2.5A)	7.2
Max Load (3.1A)	7.2



Io=0A



Io=2.5A

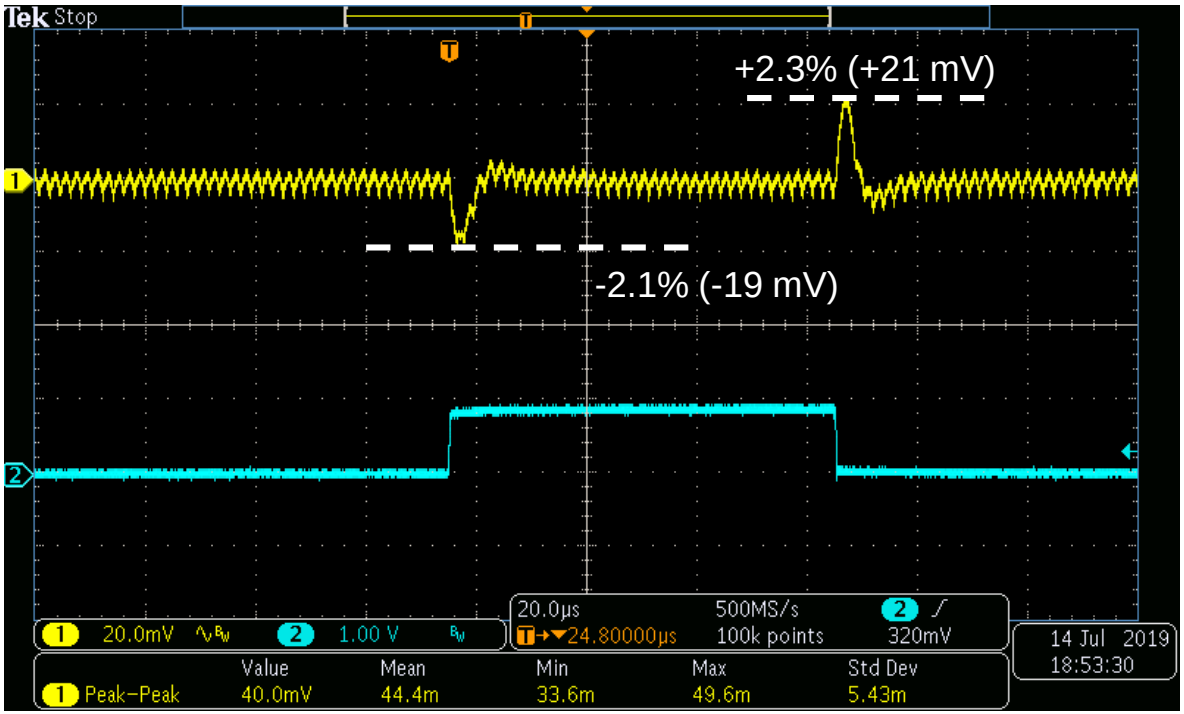


Io=3.1A

Simple, Easy Solutions

Rail4 - MGTYAVCC (MP2326) – Transient Load

Parameter	Value
Input voltage	12V
Output voltage	0.88V
Transient Step	1.8A-2.5A (25%)
Slew Rate	10A/us

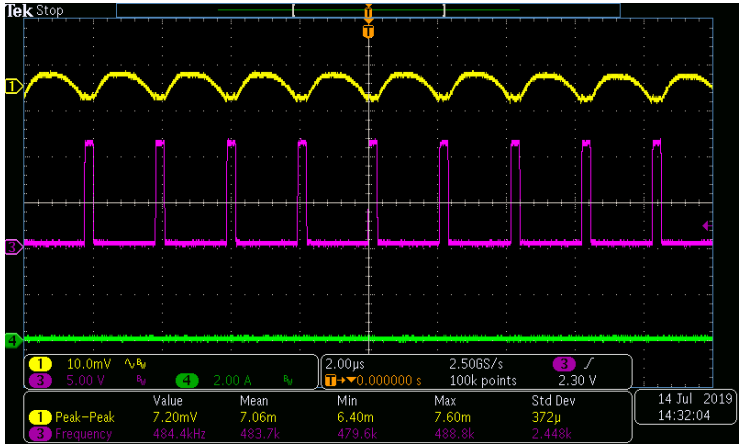


Simple, Easy Solutions

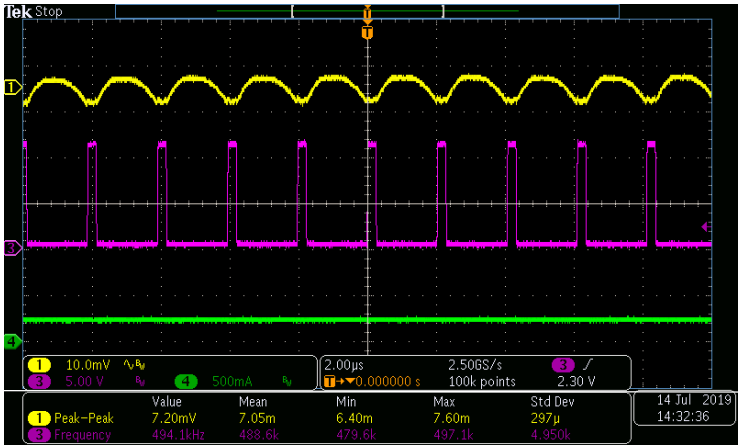
Rail5 – MGTYAVCCAUX (MP2321) – Steady State Ripple

Test condition: Vin=12V, Vo=1.5V

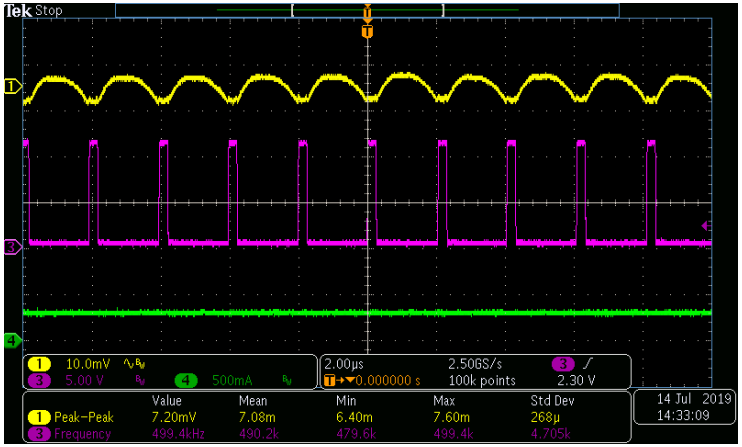
Load (A)	Ripple p-p (mV)
No Load (0A)	7.2
Typical Load (0.23A)	7.2
Max Load (0.29A)	7.2



Io=0A



Io=0.23A



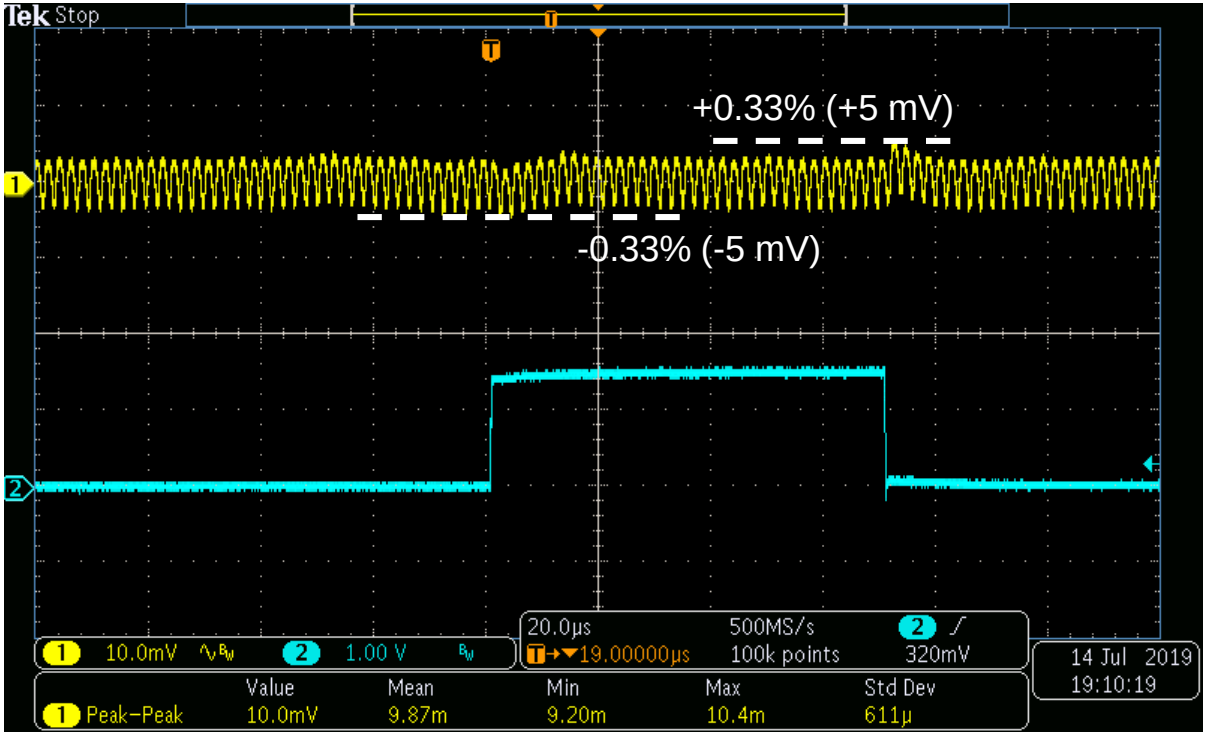
Io=0.3A

Simple, Easy Solutions

Rail5 – MGTYAVCCAUX (MP2321) – Transient Load

Test condition: Vin=12V, Slew rate=10A/uS

Parameter	Value
Input voltage	12V
Output voltage	1.5V
Transient Step	0.18A-0.23A (25%)
Slew Rate	10A/us

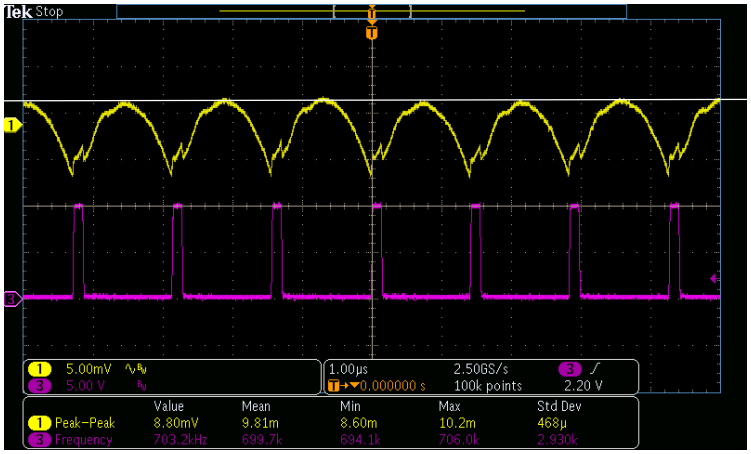


Simple, Easy Solutions

Rail6 - MGTYAVTT (MP8770C) – Steady State Ripple

Test condition: Vin=12V, Vo=1.2V

Load (A)	Ripple p-p (mV)
No Load (0A)	8.8
Typical Load (3.9A)	9.4
Max Load (4.8A)	9.8



Io=0A

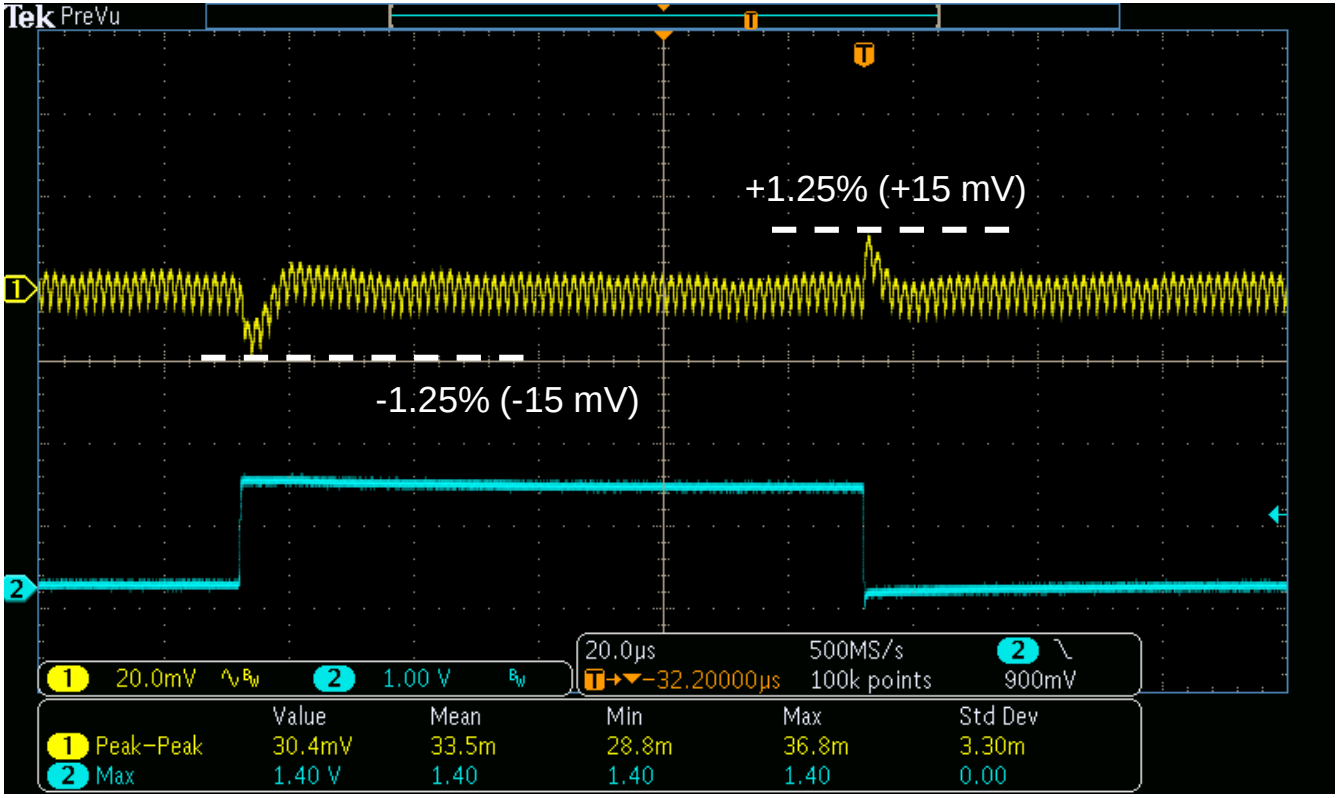
Io=3.9A

Io=4.8A

Simple, Easy Solutions

Rail6 - MGTYAVTT (MP8770C) – Transient Load

Parameter	Value
Input voltage	12V
Output voltage	1.2V
Transient Step	2.9A-3.9A (25%)
Slew Rate	10A/us

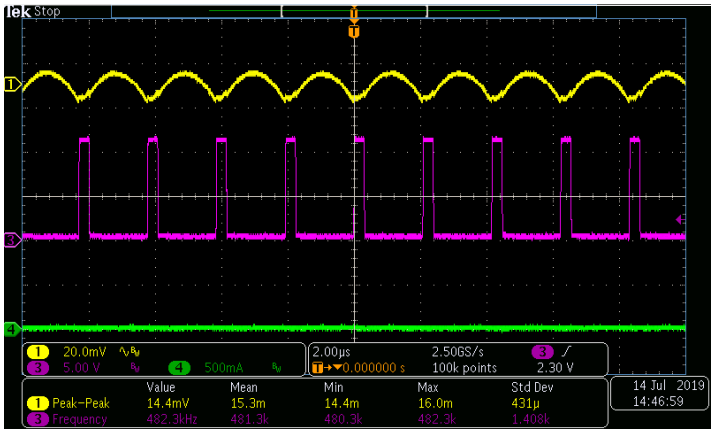


Simple, Easy Solutions

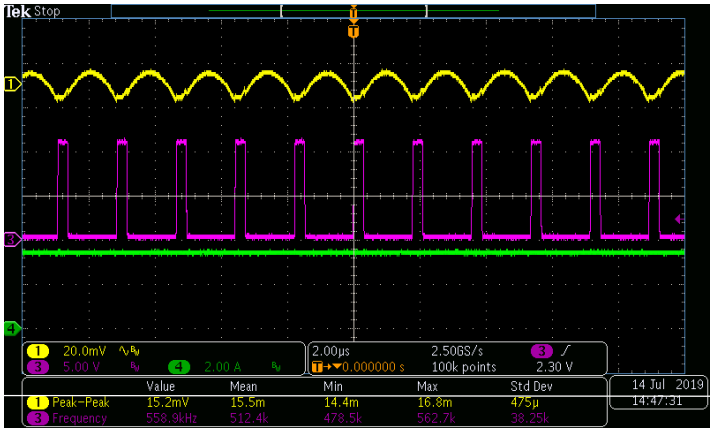
Rail7 - VCCO [1..] HDIO (MP2326) – Steady State Ripple

Test condition: Vin=12V, Vo=1.8V

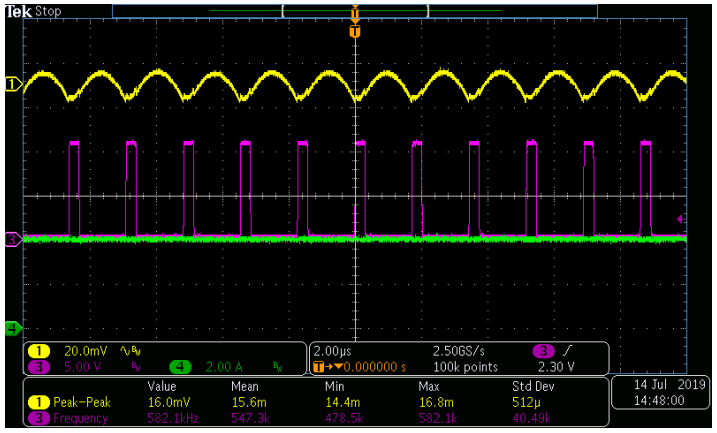
Load (A)	Ripple p-p (mV)
No Load (0A)	14.4
Typical Load (3.4A)	15.2
Max Load (4.0A)	16.0



Io=0A



Io=3.4A

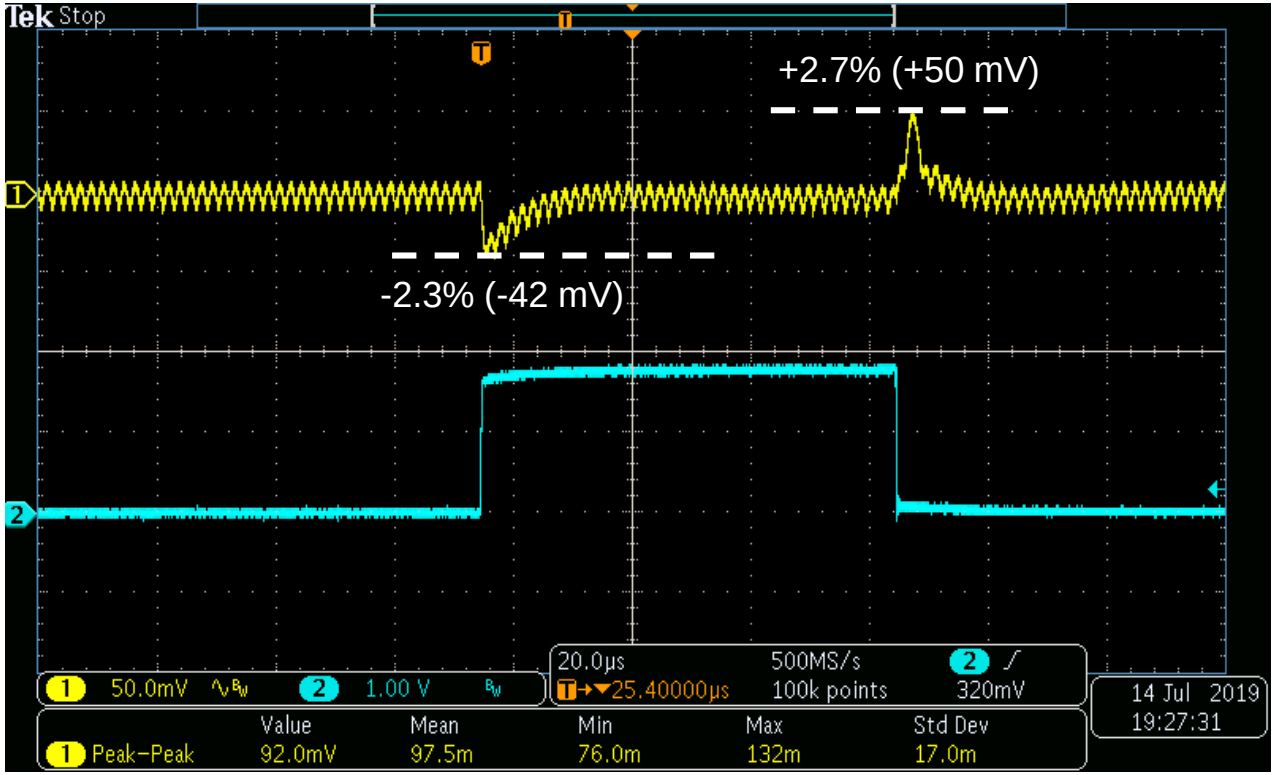


Io=4A

Simple, Easy Solutions

Rail7 - VCCO [1..] HDIO (MP2326) – Transient Load

Parameter	Value
Input voltage	12V
Output voltage	1.8V
Transient Step	2.55A-3.4A (25%)
Slew Rate	10A/us



Simple, Easy Solutions