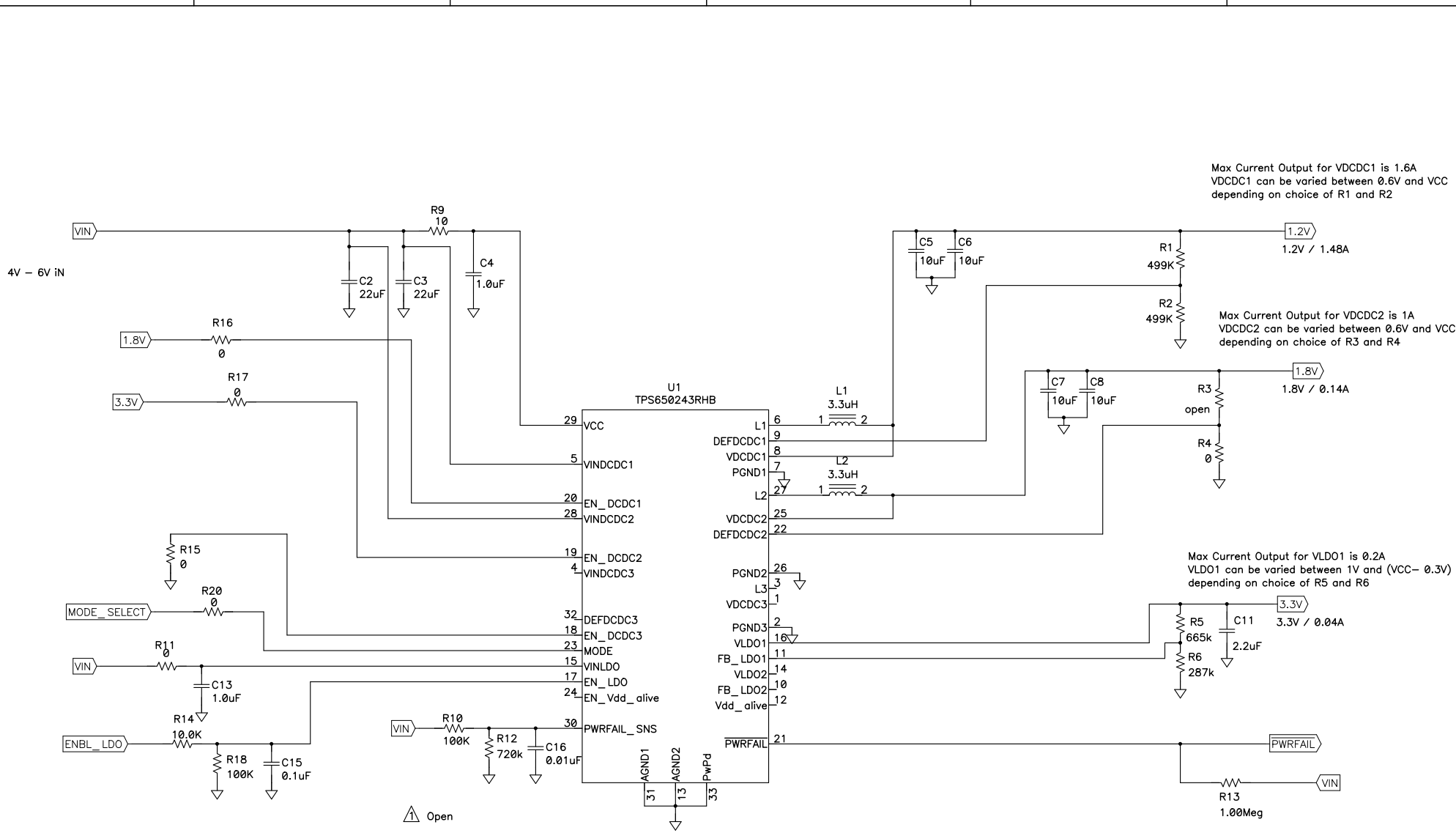


TEXAS INSTRUMENTS

Title: 5Vin Design with PMIC		
Size: C	Number: PMP4022	Rev: A
Date: 08/27/2008	Drawn by: T. Olabumuyi	
Filename: PMP4022REVA.sch	Sheet: 1 of 1	

Filename: PMP4022REVA_bom.xls
Date: 08/27/2008

PMP4022REVA BOM

COUNT	RefDes	Value	Description	Size	Part Number	MFR
1	C11	2.2uF	Capacitor, Ceramic, 6.3V, X5R,10%	0603	C1608X5R0J225K	TDK
1	C15	0.1uF	Capacitor, Ceramic, 6.3V, X5R,10%	0603	Std	Std
1	C16	0.01uF	Capacitor, Ceramic, 6.3V, X5R,10%	0603	Std	Std
2	C2, C3	22uF	Capacitor, Ceramic, 6.3V, X5R]	0805	C2012X5R0J226MT	TDK
2	C4, C13	1.0uF	Capacitor, Ceramic, 6.3V, X5R,10%	0603	C1608X5R0J105K	TDK
4	C5, C6, C7, C8	10uF	Capacitor, Ceramic, 6.3V, X5R, 10%	0805	C2012X5R0J106K	TDK
8	J1, J3, J4, J5, J9, J10, J13, J15	PTC36SAAN	Header, 2 pin, 100mil spacing, (36-pin strip)	0.100 x 2	PTC36SAAN	Sullins
4	JP3, JP4, JP7, JP8		Header, 3 pin, 100mil spacing, (36-pin strip)	0.100 x 3	PTC36SAAN	Sullins
1	L1	3.3uH	Inductor, 3.3uH, SMT, 3.39A, 18.3milliohm	0.300 sq"	DR74-3R3-R	Coiltronics
1	L2	3.3uH	Inductor, SMT, 3.3uH, 4.76A, 12.6milliohm	0.300 sq"	DR74-3R3-R	Coiltronics
1	R1	499K	Resistor, Chip, 499k,1/16W, 1%	0603		
1	R10	100K	Resistor, Chip, 1/16W, 1%	0603	Std	Std
5	R11, R16, R17, R20, R21	0	Resistor, Chip, 1/16W, 1%	0603	Std	Std
1	R12	720k	Resistor, Chip, 1/16W, 1%	0603	Std	Std
1	R13	1.00Meg	Resistor, Chip, 1.00Meg, 1/16W, 1%	0603	Std	Std
1	R14	10.0K	Resistor, Chip, 1/16W, 1%	0603	CRCW0603-xxxx-F	Vishay
1	R15	0	Resistor, Chip, short, 1/16W, 5%	0603	CRCW0603-xxxx-F	Vishay
1	R18	100K	Resistor, Chip, 1/16W, 5%	0603	CRCW0603-xxxx-F	Vishay
1	R2	499K	Resistor, Chip, 499k, 1/16W, 1%	0603		
1	R3	open	Resistor, Chip, open, 1/16W, 1%	0603		
1	R4	0	Resistor, Chip, short, 1/16W, 1%	0603		
1	R5	665k	Resistor, Chip, 665k, 1/16W, 1%	0603	Std	Std
1	R6	287k	Resistor, Chip, 332k, 1/16W, 1%	0603	Std	Std
1	R9	10	Resistor, Chip, 10, 1/16W, 5%	0603	Std	Std
1	U1	TPS650243RHB	IC, Power Management IC for Li-Ion Powered Systems	QFN-32	TPS650243RHB	TI

C642x – PMIC - (PMP4022-RevA)
9/11/08

The following test report includes measurements for the following output voltage rails for 5V input:

A. **Start Up Waveform for all outputs**
B. **1.2V @ 1.48A Using the TPS650243 Device – DCDC1**

1. Output Voltage Ripple (Measured Full Load)
2. Load Transient (50% to 100% Load Step)
3. Load Regulation
4. Efficiency
5. Switch Node

C. **1.8V @ 0.14A Using the TPS650243 Device - DCDC2**

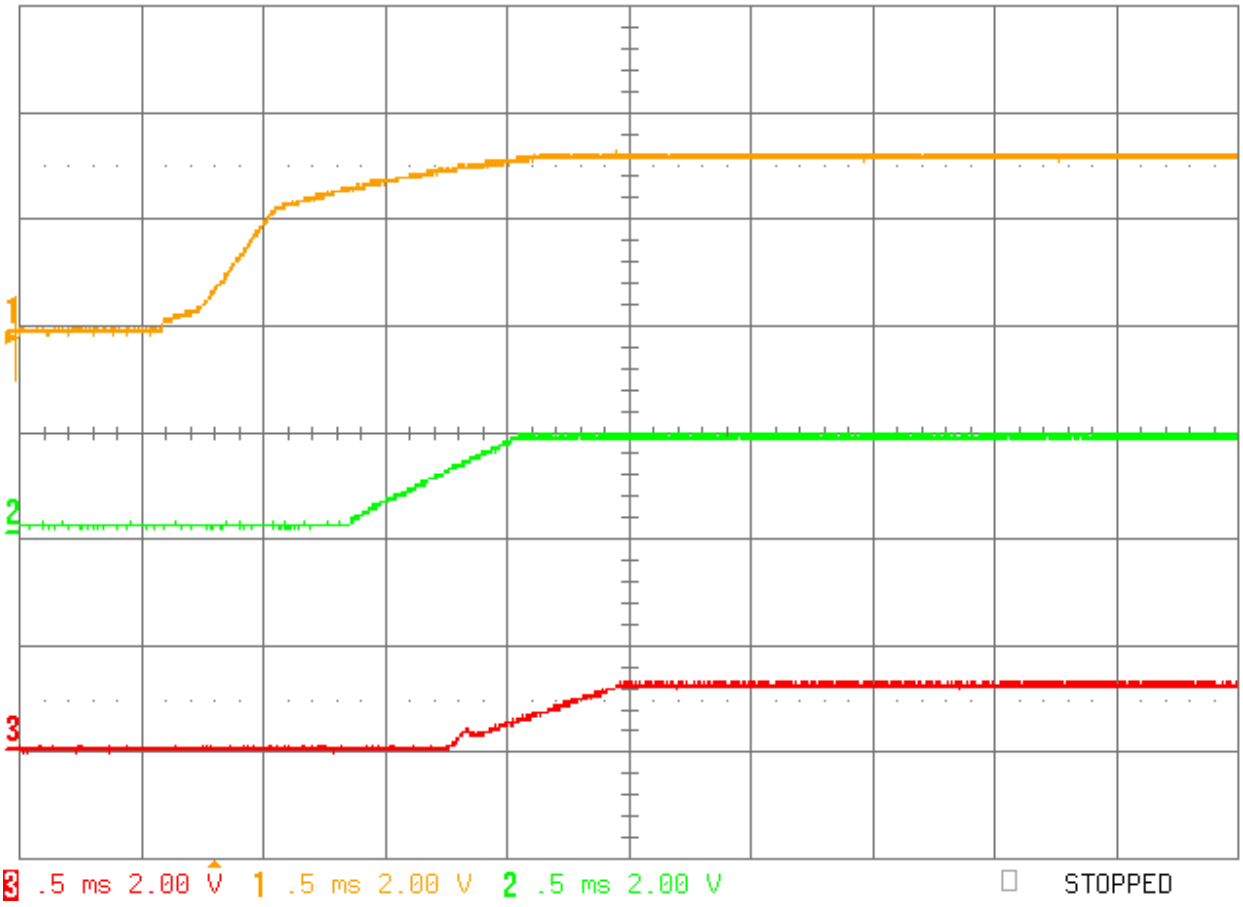
1. Output Voltage Ripple (Measured Full Load)
2. Load Transient (50% to 100% Load Step)
3. Load Regulation
4. Efficiency

D. **3.3V @ 0.04A Using the TPS650243 Device - LDO1**

1. Output Voltage Ripple (Measured Full Load)
2. Load Transient (50% to 100% Load Step,)

A Start Up Waveform All Outputs – TPS 650243

Sequence is 3.3V, 1.8V and 1.2V

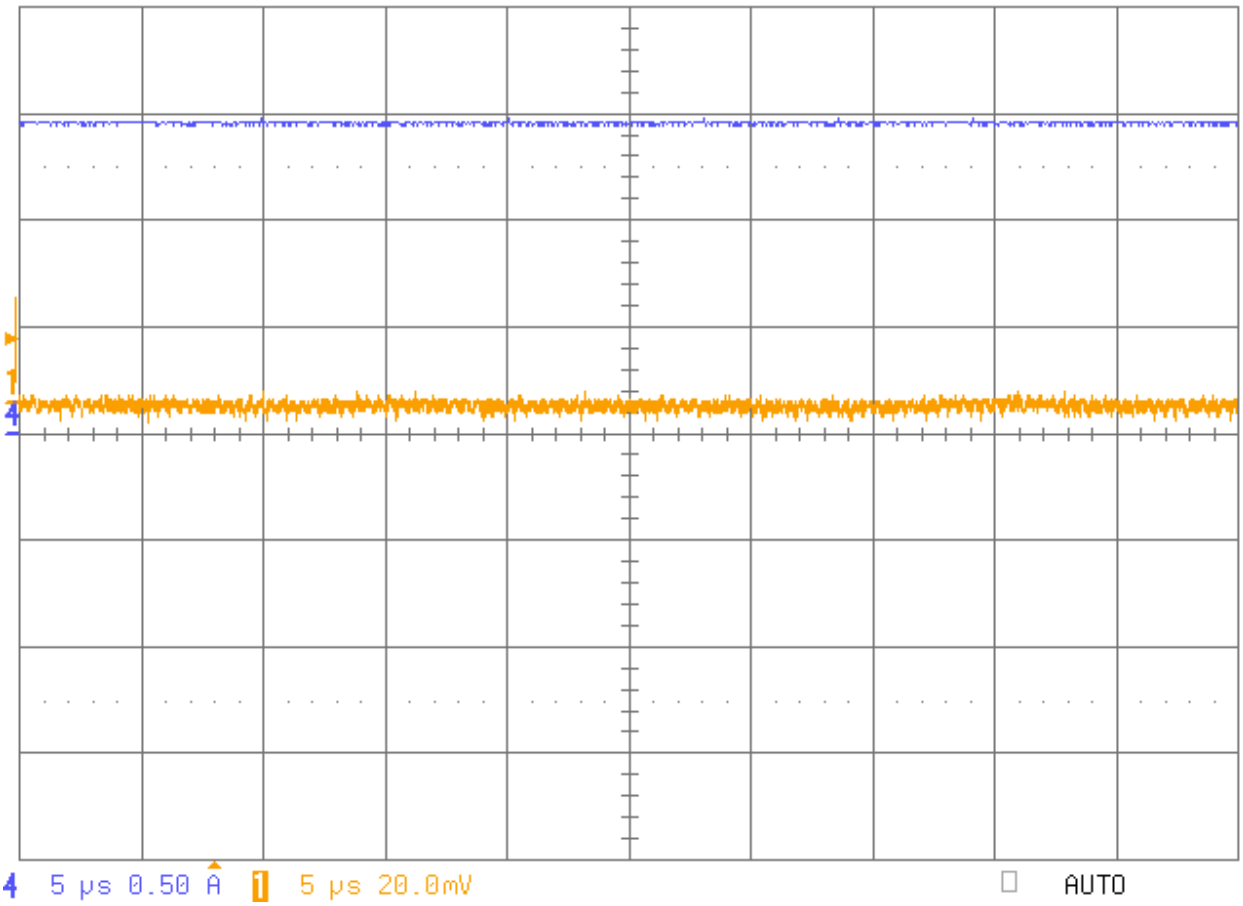


A 1.2V @ 1.48A – TPS 650243 – DCDC1

1 Output Ripple Voltage

The photo below shows the output voltage ripple. The input voltage is 5V.

Channel 1: 1.2V Output - Orange (20mV/Division; AC Coupled)
Channel 4: Output Current – Blue (0.5A/Division)

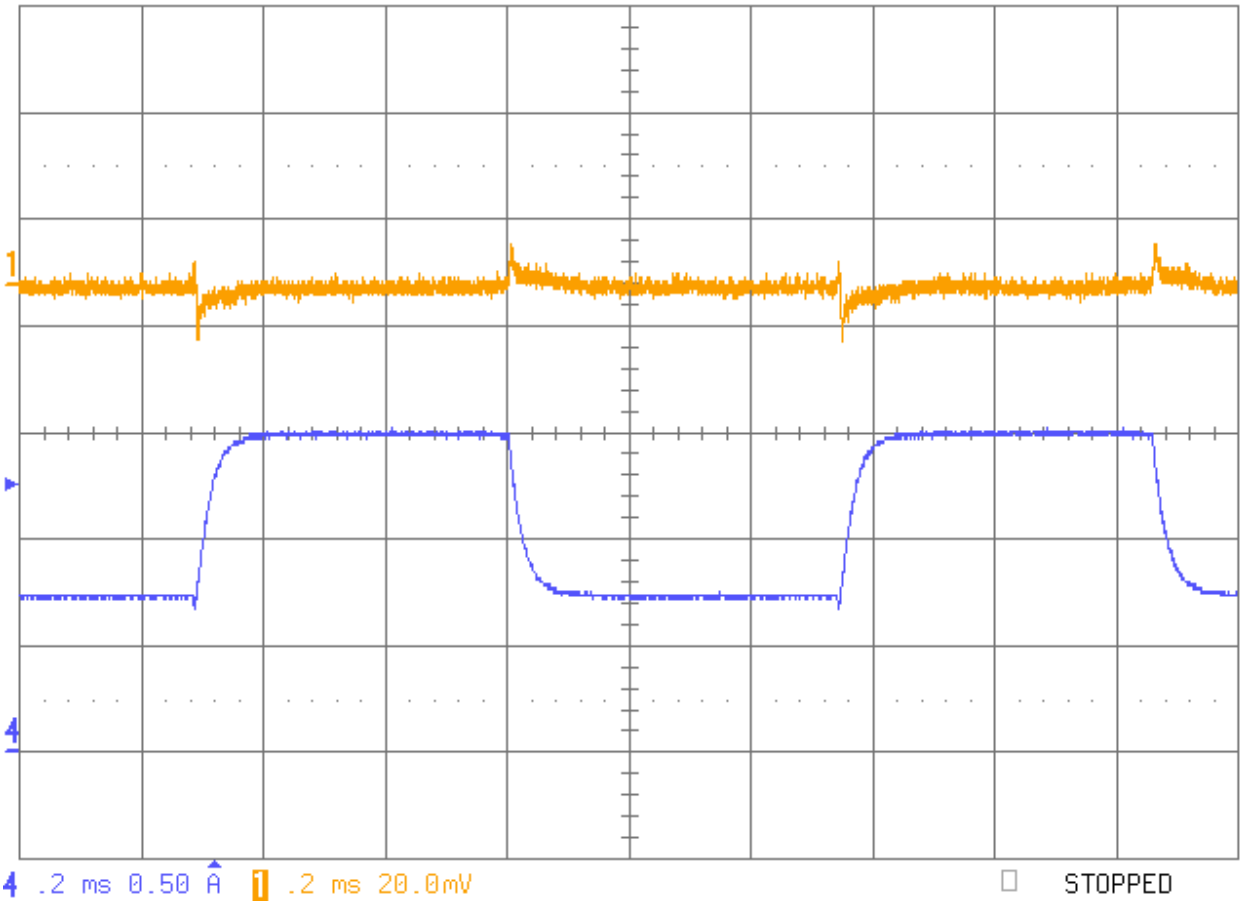


1.48A External Load; 5us/Division

2 Load Transients (1.2V @ 1.48A)

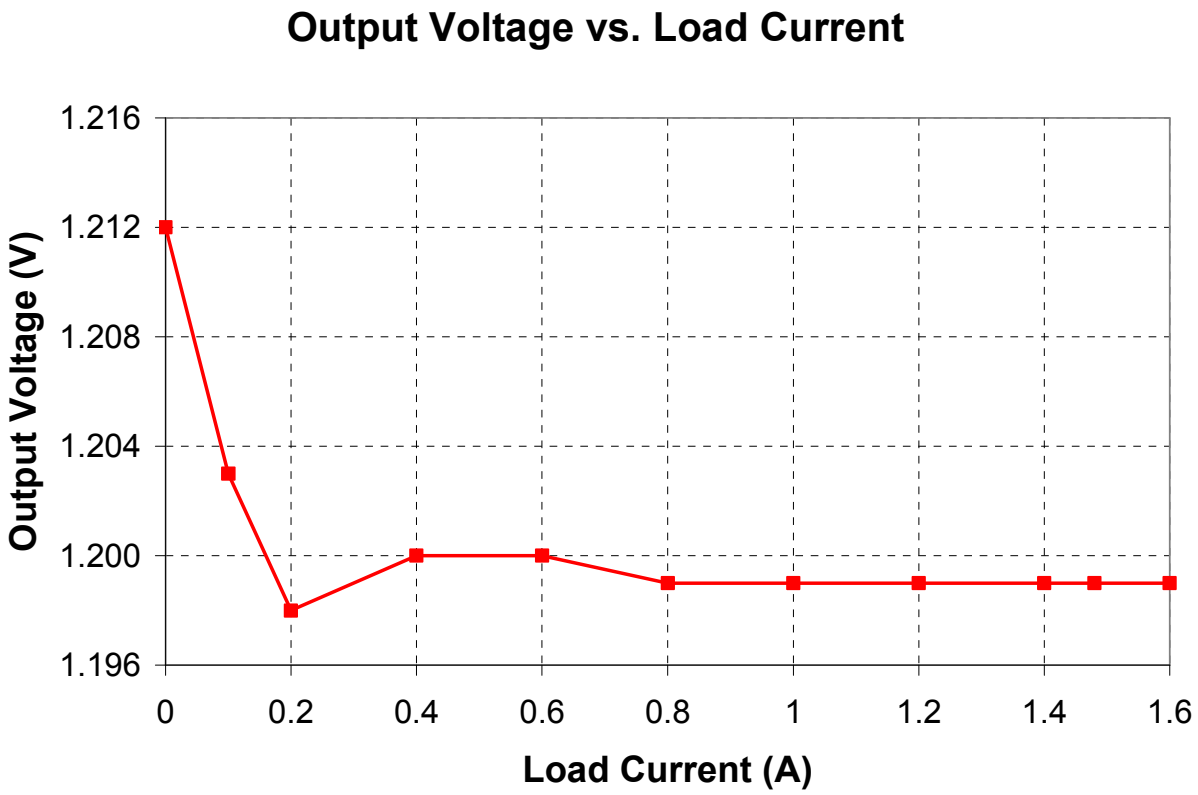
The photo below shows the transient response. The current is pulsed from 0.75A to 1.48A. The input voltage is 5V. The time-base is set to 200us/Division.

Channel 1: 1.2V Output - Orange (20mV/Division; AC Coupled)
Channel 4: Output Current - Blue (100mA/Division)



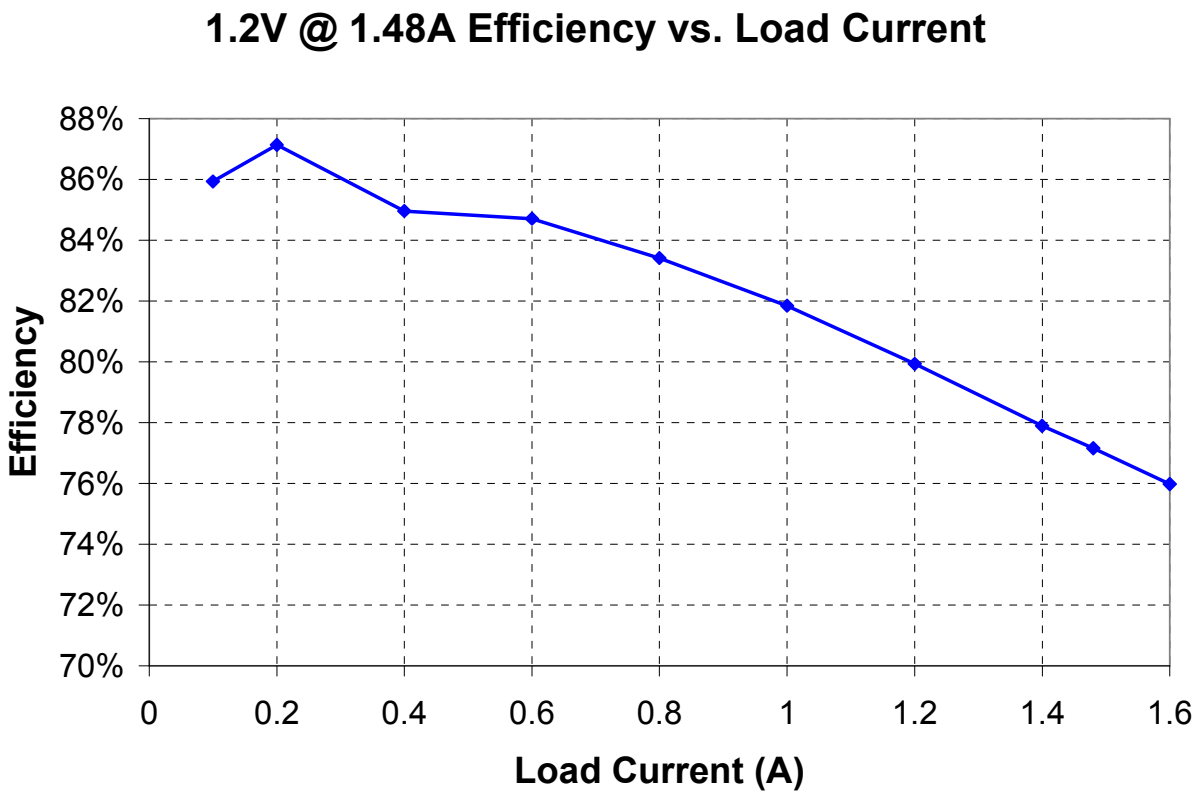
3 Load Regulation – 1.2V @ 1.48A

The load regulation is shown in the figure below. The input voltage is 5V.



4 Efficiency – 1.2V @ 1.48A

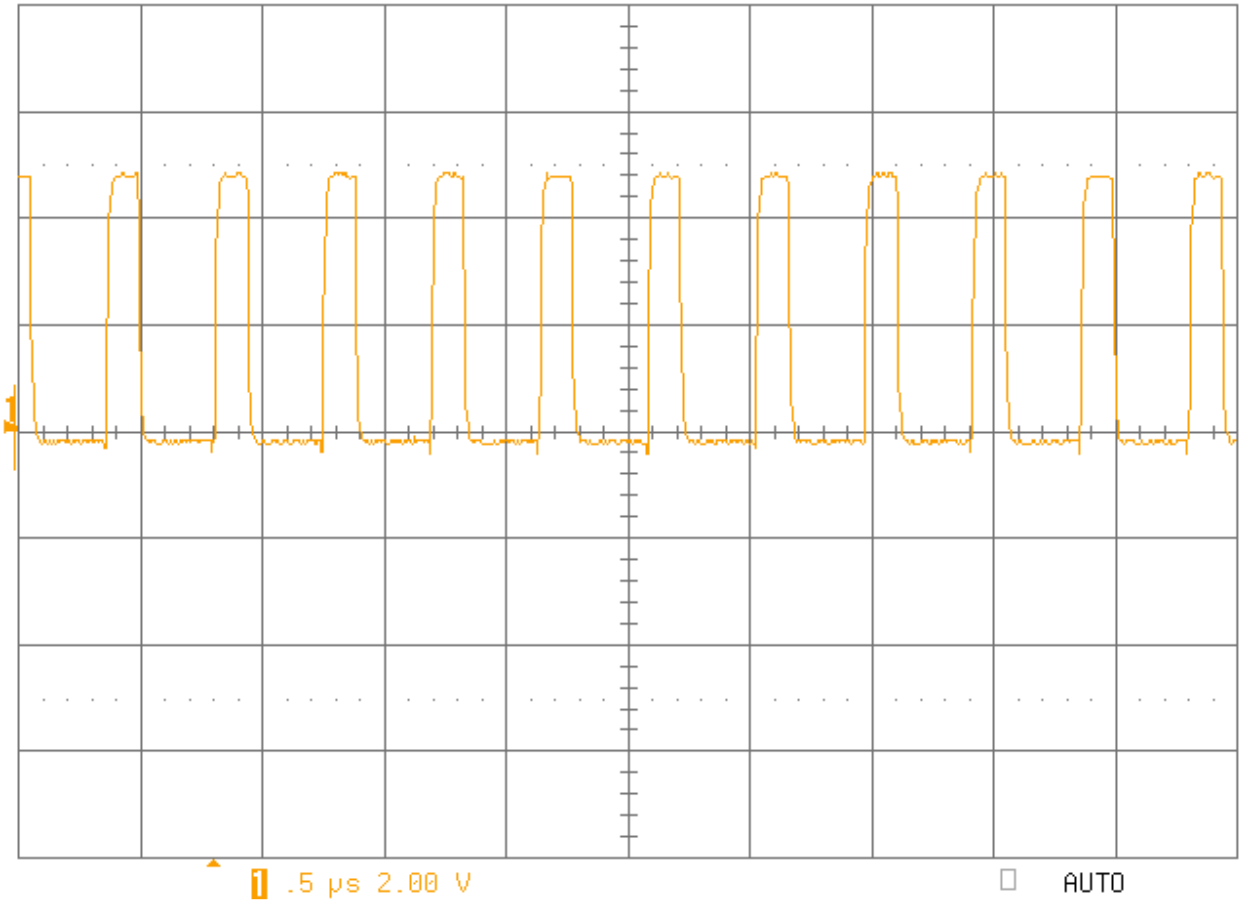
The efficiency is shown in the figure below. The input voltage is 5V.



5 Switch Node Waveforms – 1.2V @ 1.48A

The plot below shows the switching waveforms for the converter. The input is 5V.

Channel 2: Switch Node - Orange (2V/Division)



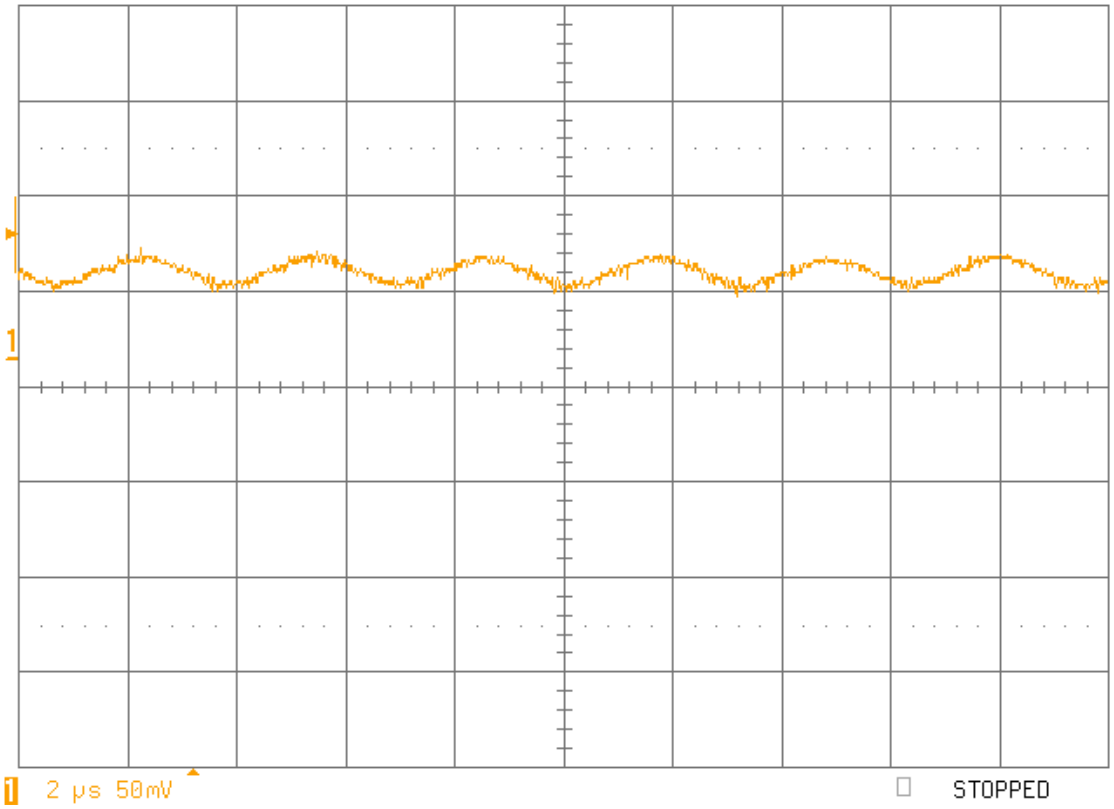
Switchnode 1.2V@1.48A External Load,

B 1.8V @ 0.14A – TPS 650243 – DCDC1

1. Output Ripple Voltage for 1.8V @ 0.14A

The photo below shows the output voltage ripple. The input voltage is 5V.

Channel 1: 1.8V Output - Orange (20mV/Division; AC Coupled)

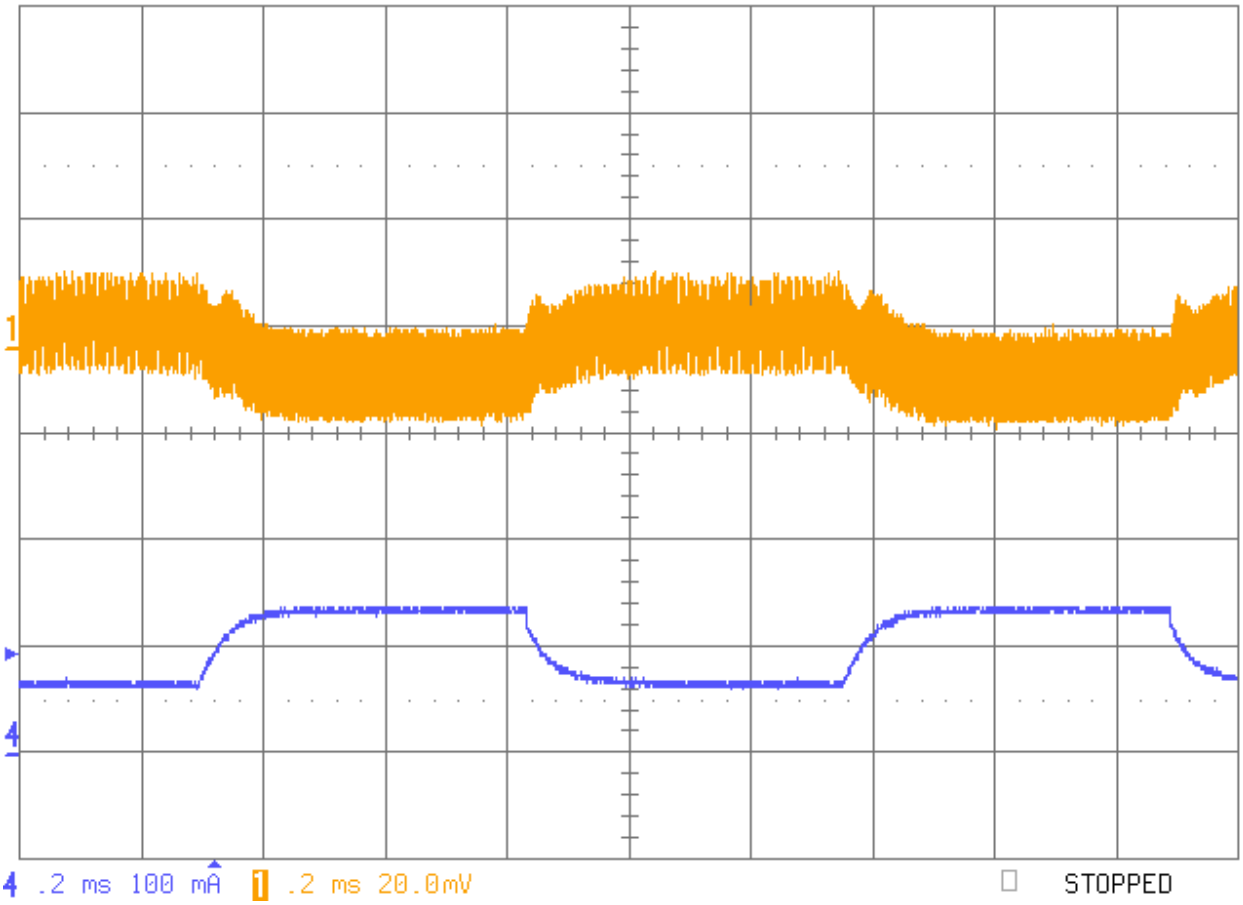


1.8V@0.14A External Load; 5us/Division

2. Load Transients – 1.8V @ 0.14A

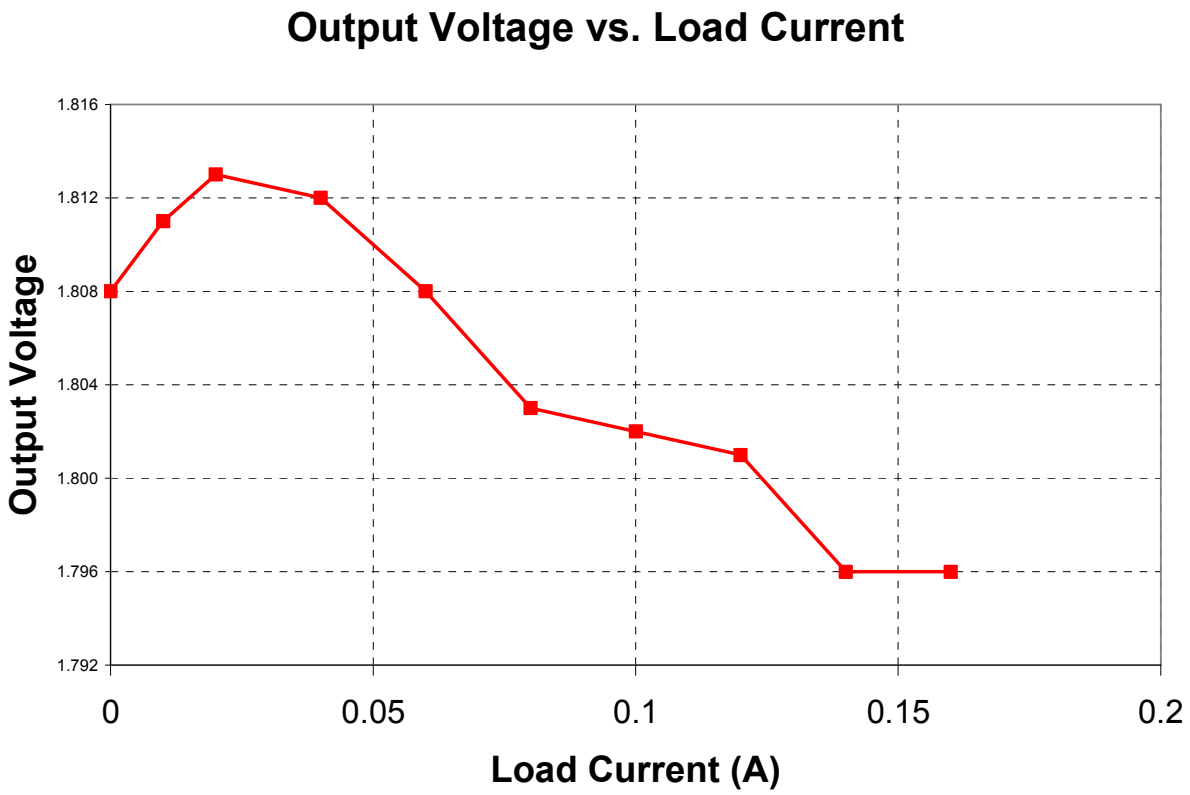
The photo below shows the transient response. The current is pulsed from 0.07A to 0.14A. The input voltage is 5V. The time-base is set to 200us/Division.

Channel 1: 1.8V Output - Orange (20mV/Division; AC Coupled)
Channel 4: Output Current - Blue (100mA/Division)



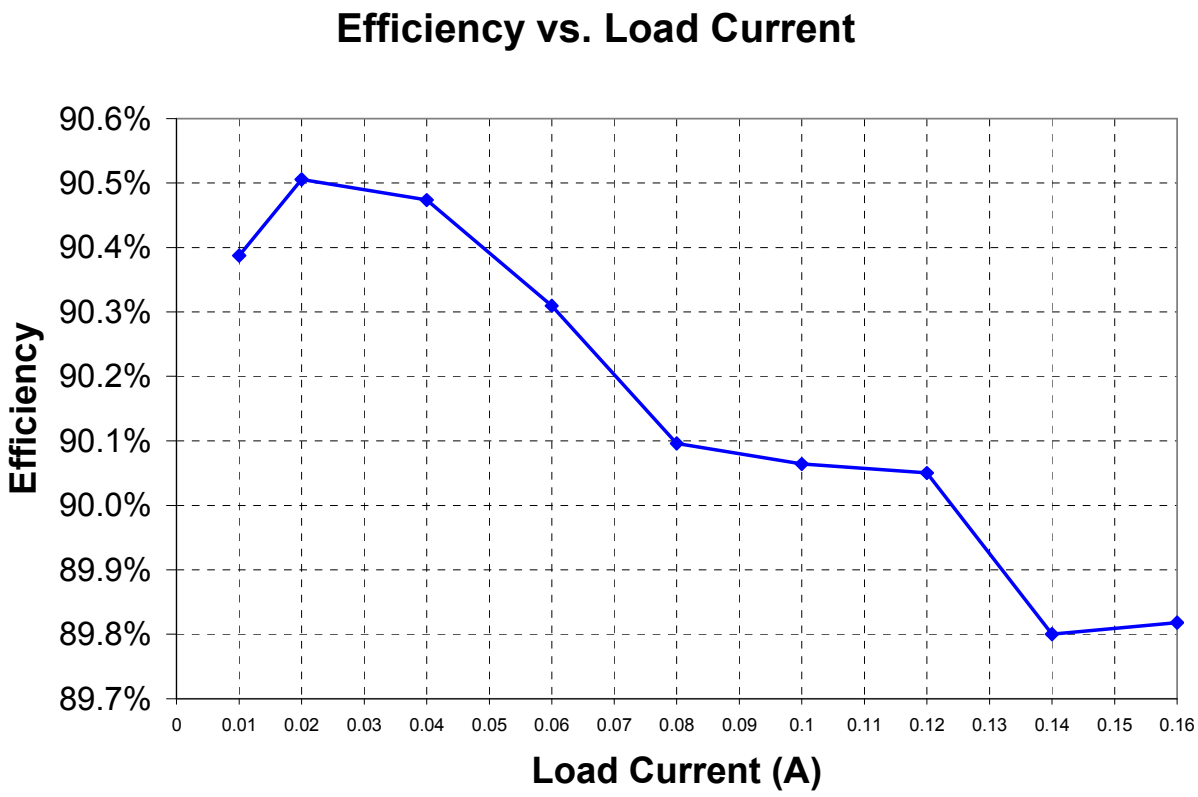
3. Load Regulation – 1.8V @ 0.14A

The load regulation is shown in the figure below. The input voltage is 5V.



4. Efficiency – 1.8V @ 0.14A

The efficiency is shown in the figure below. The input voltage is 5V.

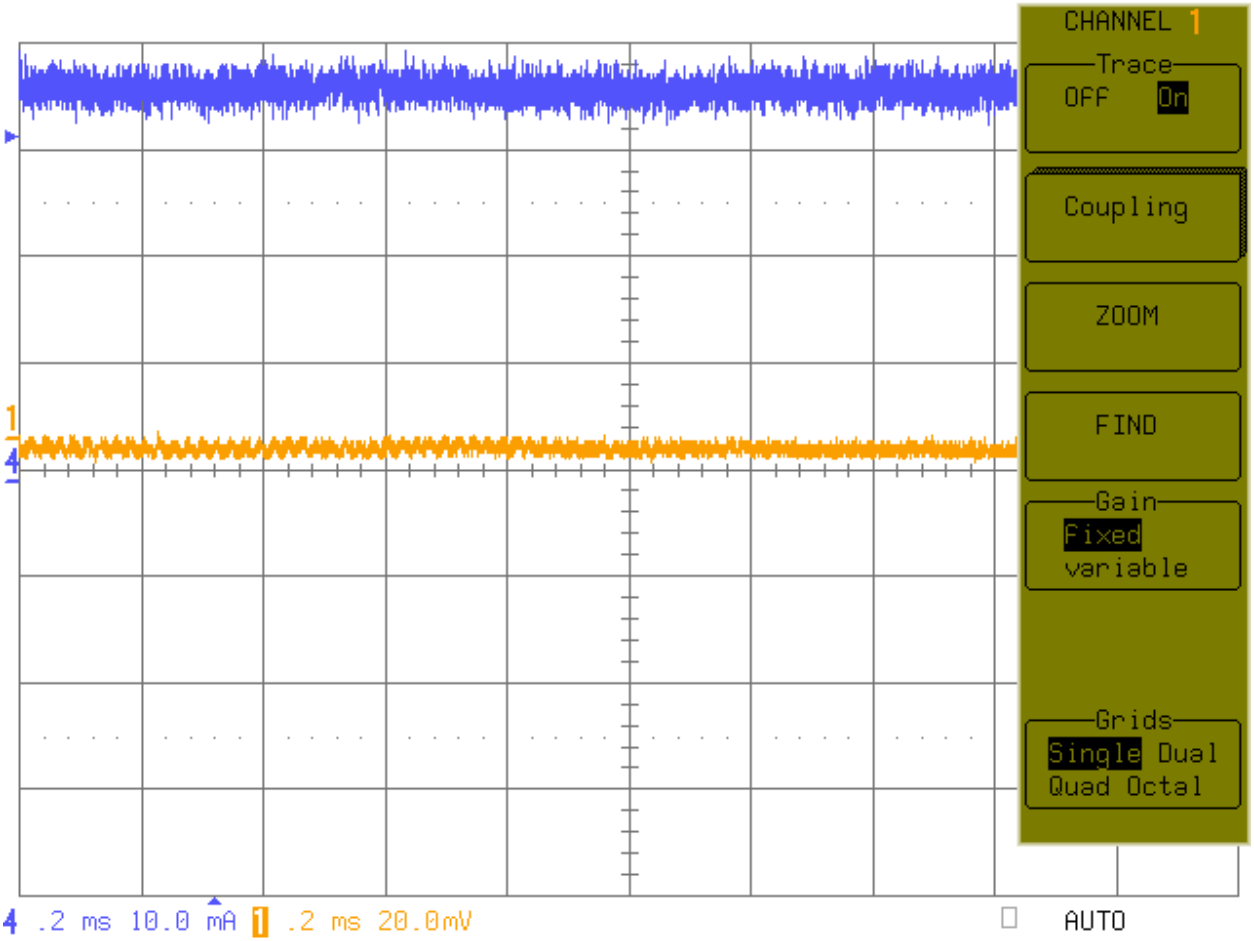


B 3.3V @ 0.04A – TPS 650243 – LDO1

1. Output Ripple Voltage for 3.3V @ 0.04A

The photo below shows the output voltage ripple. The input voltage is 5V.

Channel 1: 3.3V Output - Orange (20mV/Division; AC Coupled)
Channel 4: Current Output – Blue (10mA/Division)



3.3V@0.04A External Load; 5us/Division

2. Load Transients – 3.3V @ 0.04A

The photo below shows the transient response. The current is pulsed from 0.02A to 0.04A. The input voltage is 5V. The time-base is set to 200us/Division.

Channel 1: 3.3V Output - Orange (20mV/Division; AC Coupled)
Channel 4: Output Current - Blue (10mA/Division)