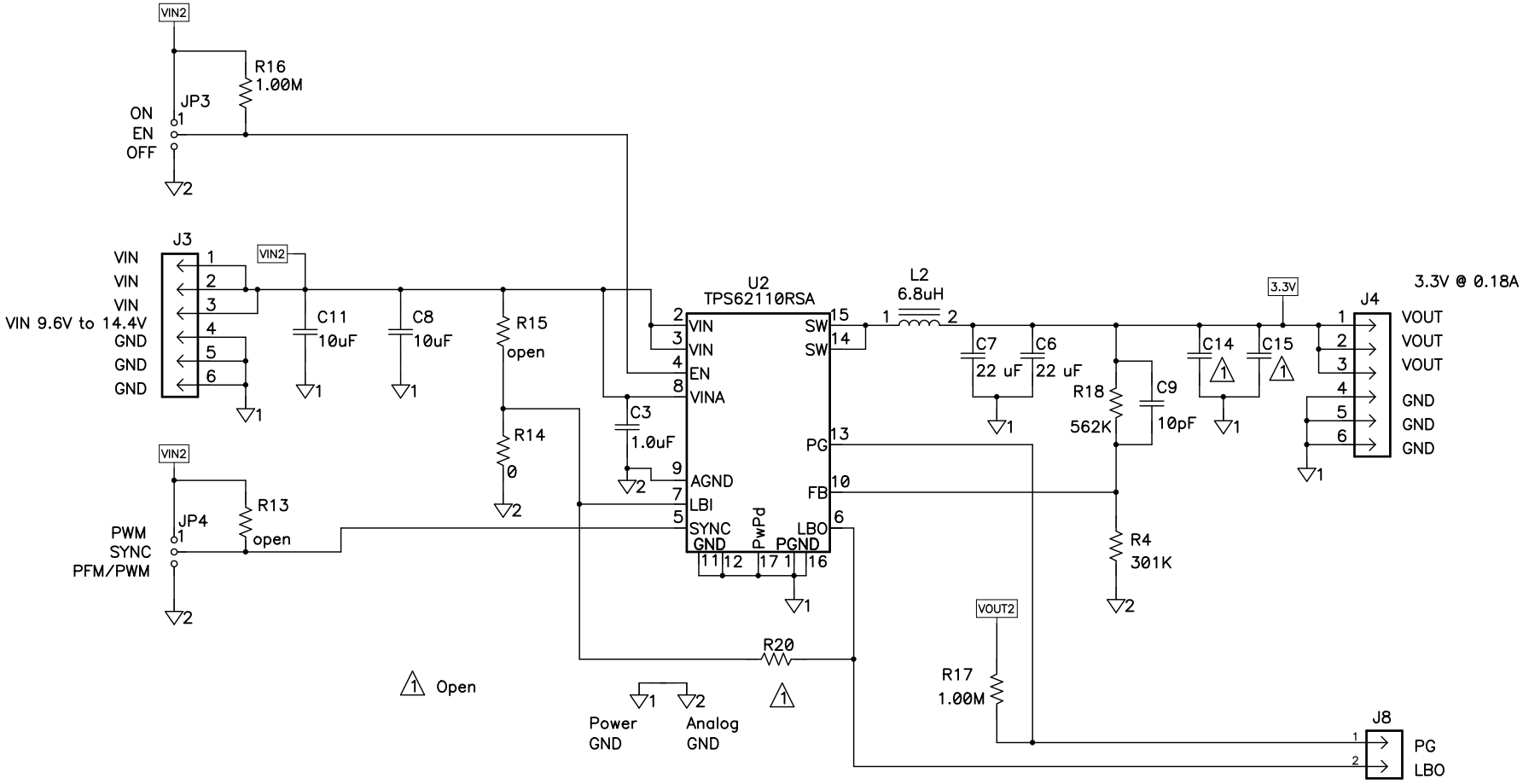
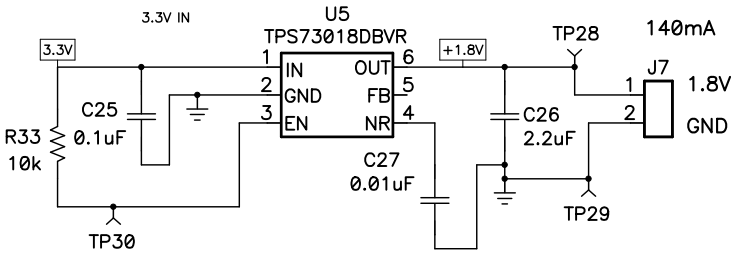
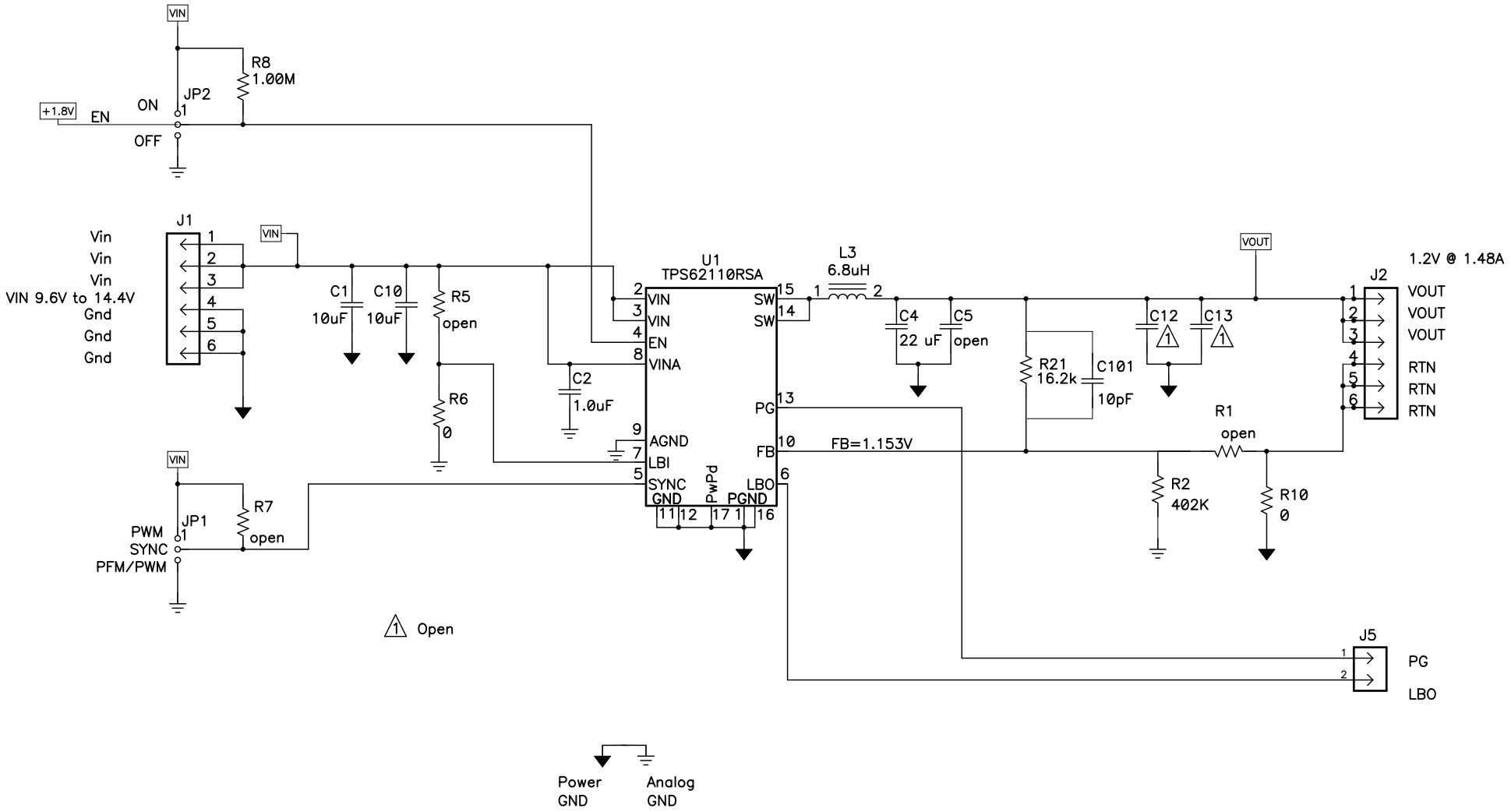

VIN2
R16
1.00M
JP3
ON
EN
OFF
J3
VIN
VIN
VIN
VIN 9.6V to 14.4V
GND
GND
GND
C11
10uF
C8
10uF
R15
open
R14
0
C3
1.0uF
U2
TPS62110RSA
VIN
VIN
EN
VINA
AGND
LBI
SYNC
GND
PwPd
PGND
SW
SW
PG
FB
LBO
L2
6.8uH
C7
22 uF
C6
22 uF
R18
562K
C9
10pF
C14
C15
3.3V
J4
VOUT
VOUT
VOUT
GND
GND
GND
3.3V @ 0.18A
JP4
PWM
SYNC
PFM/PWM
R13
open
R4
301K
VOUT2
R17
1.00M
R20
Open
Power
GND
Analog
GND
J8
PG
LBO
Texas Instruments
Title
TPS62110 Power
Size
B
Number
PMP4024
Rev
A
Date
8/26/08
Drawn by
T. Olabumuyi
Filename
PMP4024REVB.sch
Sheet
of



From PM 2807

Texas Instruments

Title: TPS73018 Power		
Size: B	Number: PMP4024	Rev: A
Date: 8/26/08	Drawn by: T. Olabumuyi	
Filename: PMP4024_REVB.SCH	Sheet: of	



Texas Instruments	
Title	TPS62110 Power
Size: B	Number: PMP4024 — Rev: A
Date: 8/26/08	Drawn by: T. Olabumuyi
Filename: PMP4024REVB.sch	Sheet: of

Filename: PMP4024REVB_bom.xls
Date: 08/27/2008

PMP4024REVB BOM

COUNT	RefDes	Value	Description	Size	Part Number	MFR
			1.2V and 3.3V SWIFT			
4	C1, C8, C10, C11	10uF	Capacitor, Ceramic, 25V, X5R, 20%	1206	C3216X5R1E106	TDK
1	C101	10pF	Capacitor, Ceramic, 10-pF, 50-V, C0G, 5%	0603	C1608C0G1H100DB	TDK
4	C12, C13, C14, C15	Open	Capacitor, Ceramic, 10V, X5R, 20%	1206	Std	Std
2	C2, C3	1.0uF	Capacitor, Ceramic, 25V, X7R, 10%	0603	C1608X7R1E105K	TDK
3	C4, C6, C7	22 uF	Capacitor, Ceramic, 10V, X5R, 20%	1206	C3216X5R1A226	TDK
1	C5	open	Capacitor, Ceramic, open, 10V, X5R, 20%	1206	C3216X5R1A226	TDK
1	C9	10pF	Capacitor, Ceramic, 50V, C0G, 5%	0603	C1608C0G1H100DB	TDK
4	J1, J2, J3, J4	PTC36SAAN	Header, Male 6-pin, 100mil spacing, (36-pin strip)	0.100 inch x 6	PTC36SAAN	Sullins
2	J5, J8	PTC36SAAN	Header, 2-pin, 100mil spacing, (36-pin strip)	0.100 x 2	PTC36SAAN	Sullins
4	JP1, JP2, JP3, JP4	PTC36SAAN	Header, 3-pin, 100mil spacing, (36-pin strip)	0.100 x 3	PTC36SAAN	Sullins
2	L1, L2	6.8uH	Inductor, SMT, 3.67A, 41.8 milliohm	0.276 x 0.276 inch	DR74-6R8-R	Coiltronics
5	R1, R5, R7, R13, R15	open	Resistor, Chip, open, 1/16-W, 1%	0603	Std	Std
1	R10	0	Resistor, Chip, short, 1/2W, 1%	1206	CRCW1206R510FKEA	Vishay
1	R18	562K	Resistor, Chip, 562k, 1/16-W, 1%	0603	Std	Std
1	R2	402K	Resistor, Chip, 402K, 1/16-W, 1%	0603	Std	Std
1	R20	Open	Resistor, Chip, 1/16-W, 1%	0603	Std	Std
1	R21	16.2k	Resistor, Chip, 16.2k, 1/16-W, 1%	0603	Std	Std
1	R4	301K	Resistor, Chip, 301k, 1/16-W, 1%	0603	Std	Std
2	R6, R14	0	Resistor, Chip, short, 1/16-W, 1%	0603	Std	Std
3	R8, R16, R17	1.00M	Resistor, Chip, 1/16-W, 1%	0603	Std	Std
2	SH1, SH2		Short jumper			
2	U1, U2	TPS62110RSA	IC, Synchronous Step-Down Converter, 17V, 1.2A	QFN-16	TPS62110RSA	TI
			1.8V LDO			
1	C25	0.1uF	Capacitor, Ceramic, 0.1-uF, 50-V, X7R, 15%	0603	Std	TDK
1	C26	2.2uF	Capacitor, Ceramic, 16V, X7R	0805	std	std
1	C27	0.01uF	Capacitor, Ceramic, 0.01uF, 50-V, X7R, 15%	0603	Std	TDK
1	J7	ED1609-ND	Terminal Block, 2-pin, 15-A, 5.1mm	0.40 x 0.35	ED1609	
1	R33	10k	Resistor, Chip, 1/16W, 1%	0603	Std	Std
2	TP28, TP30	5000	Test Point, Red, Thru Hole Color Keyed	0.100 x 0.100 inch	5000	Keystone
1	TP29	5001	Test Point, Black, Thru Hole Color Keyed	0.100 x 0.100 inch	5001	Keystone
1	U5	TPS73018DBVR	IC, UltraLow-Noise, High PSRR, Fast RF 200 mA, LDO Regula	SOT23-6	TPS73018DBVR	TI

C642x – TPS62110 & TPS73018 - (PMP4024-RevB) 9/15/08

The following test report includes measurements for the following output voltage rails using a **12V input**:

A. **Start Up Waveform for all outputs**
B. **1.2V @ 1.48A Using the TPS62110 Device**

1. Output Voltage Ripple (Measured Full Load)
2. Load Transient (25% to 100% Load Step)
3. Load Regulation
4. Efficiency
5. Switch Node

C. **3.3V @ 0.18A Using the TPS62110 Device**

1. Output Voltage Ripple (Measured Full Load)
2. Load Transient (25% to 100% Load Step)
3. Load Regulation
4. Efficiency
5. Switch Node

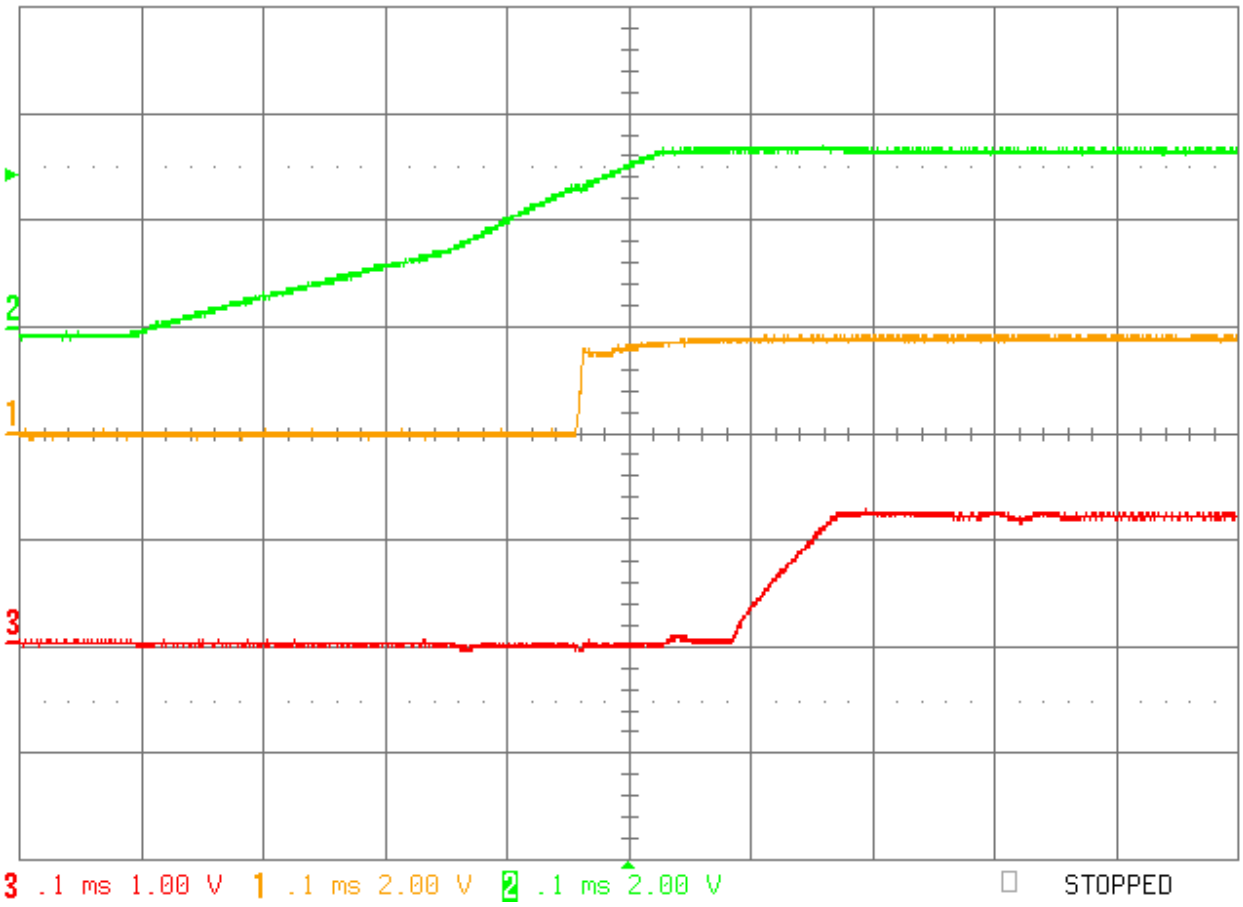
D. **1.8V @ 0.14A Using the TPS73018 Device - LDO**

1. Output Voltage Ripple (Measured Full Load)
2. Load Transient (25% to 100% Load Step)

A Start Up Waveform All Outputs – TPS 62110 & TPS73018

Sequence is 3.3V, 1.8V and 1.2V, with 12Vin

Channel 2: 3.3V DC/DC –green - TPS62110 – 2V/Div
Channel 1: 1.8V LDO – orange - TPS 73018 -2V/Div
Channel 3: 1.2V DC/DC – red - TPS62110 -2V/Div

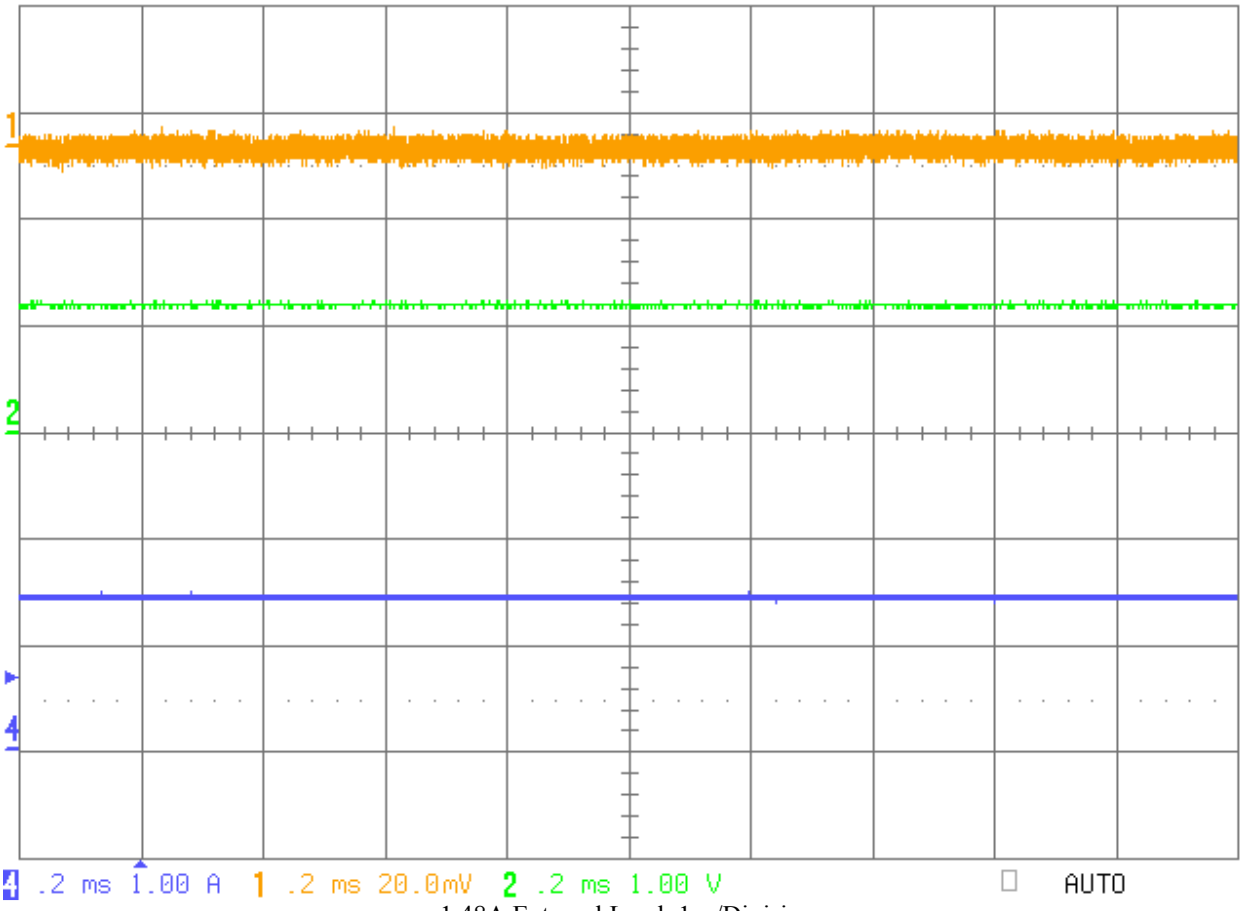


B. 1.2V @ 1.48A – TPS 62110 – DCDC

1 Output Ripple Voltage for 1.2V @ 1.48A (TPS62110)

The photo below shows the output voltage ripple. The input voltage is 12V.

Channel 1: 1.2V Output - Orange (20mV/Division; AC Coupled)
Channel 2: 1.2V Output – Green (1V/Division, DC Coupled)
Channel 4: Output Current – Blue (1A/Division. DC Coupled)

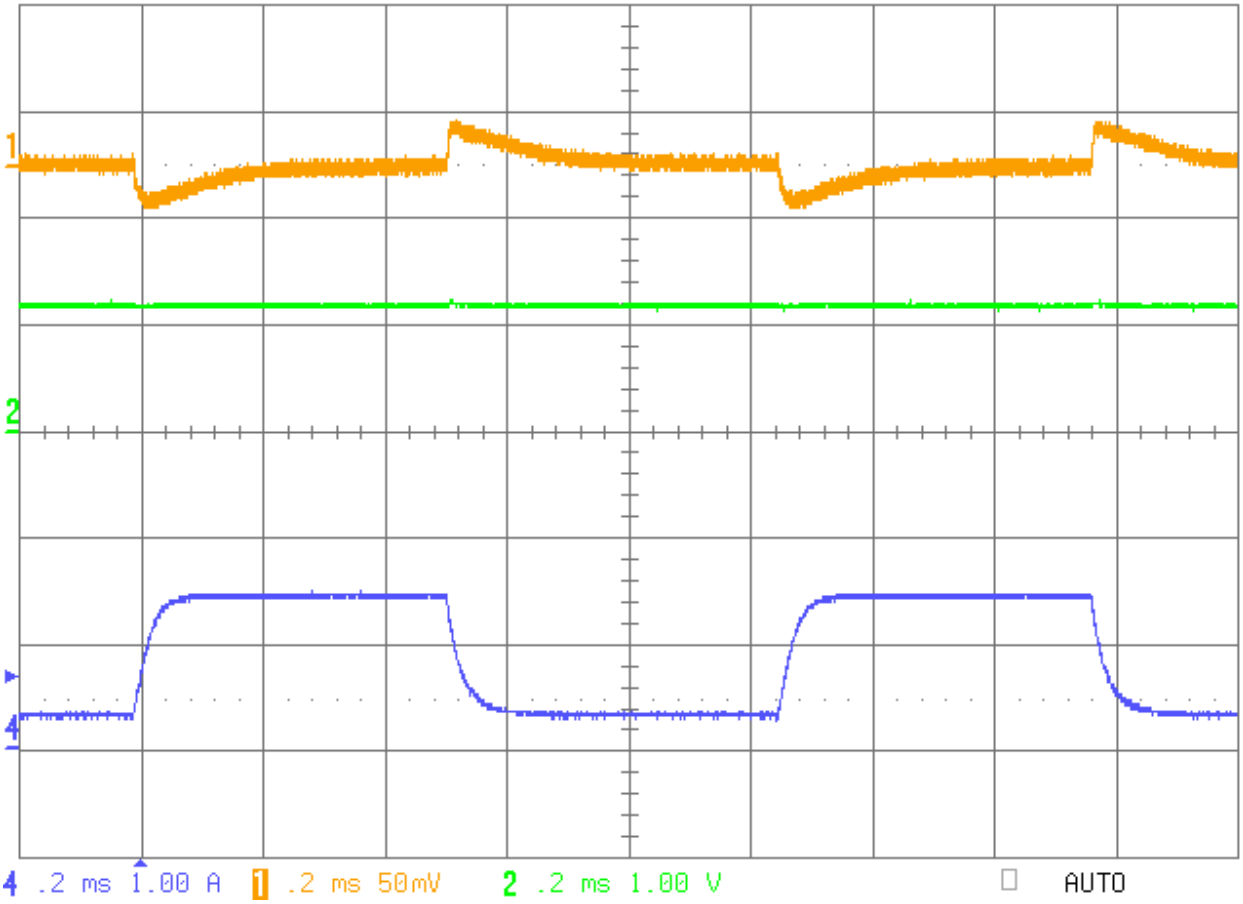


1.48A External Load; 1us/Division

2 Load Transients – 1.2V @ 1.48A (TPS62110) 25% to 100% Load Step

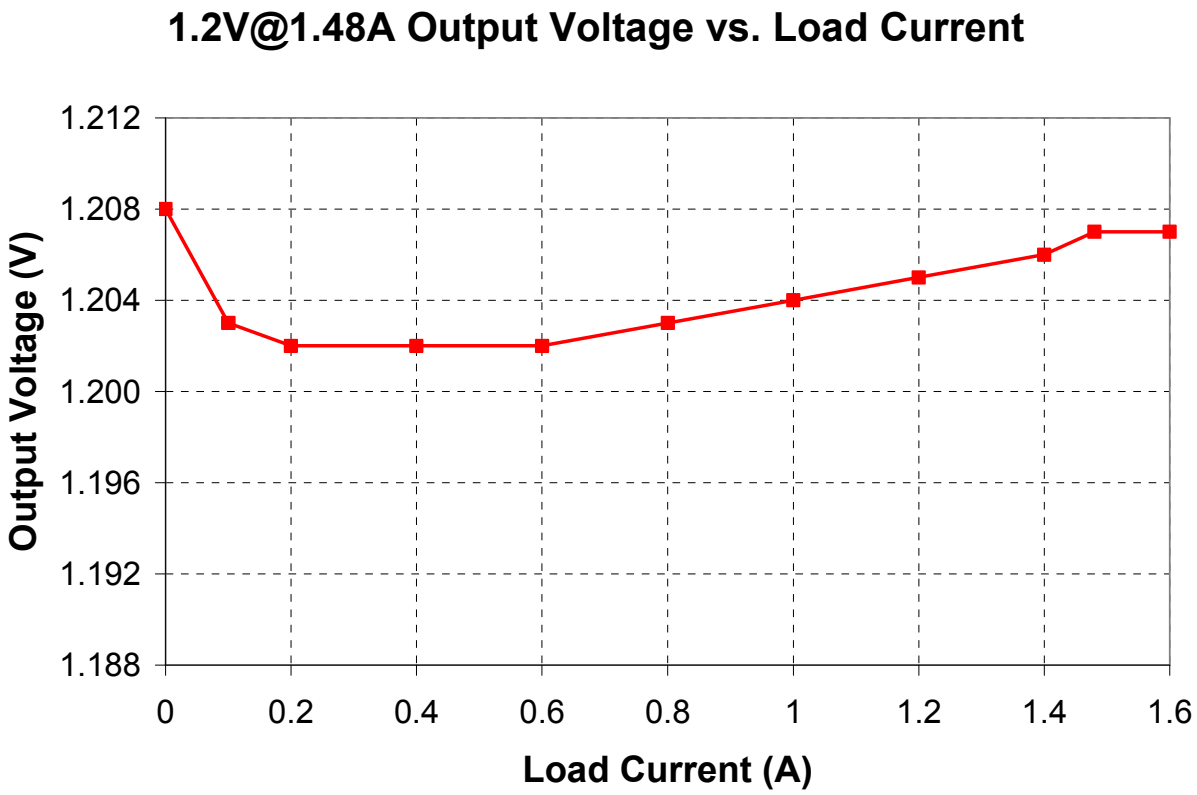
The photo below shows the transient response. The current is pulsed from 0.37A to 1.48A. The input voltage is 12V. The time-base is set to 200us/Division.

Channel 1: 1.2V Output - Orange (50mV/Division; AC Coupled)
Channel2: 1.2V Output – Green (1V/Division, DC Coupled)
Channel 4: Output Current - Blue (1A/Division)



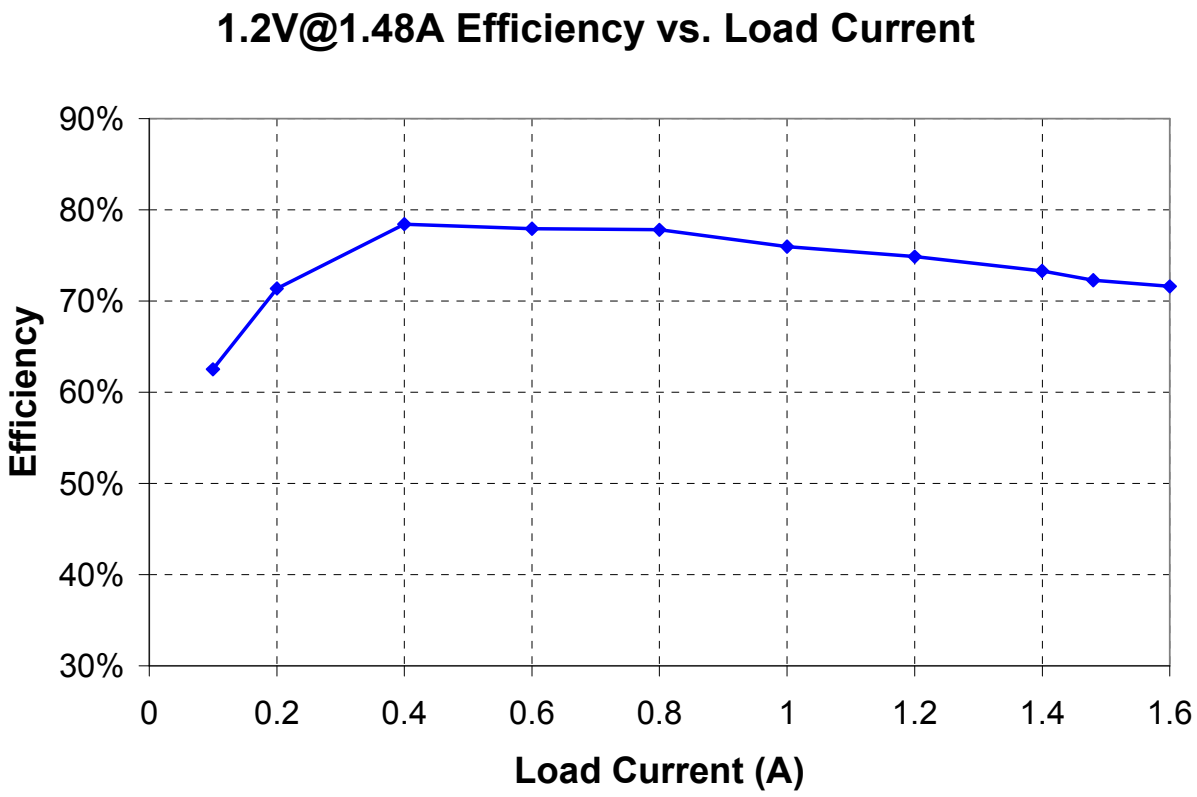
3 Load Regulation (TPS62110)

The load regulation is shown in the figure below. The input voltage is 12V.



4 Efficiency (TPS62110)

The efficiency is shown in the figure below. The input voltage is 12V.

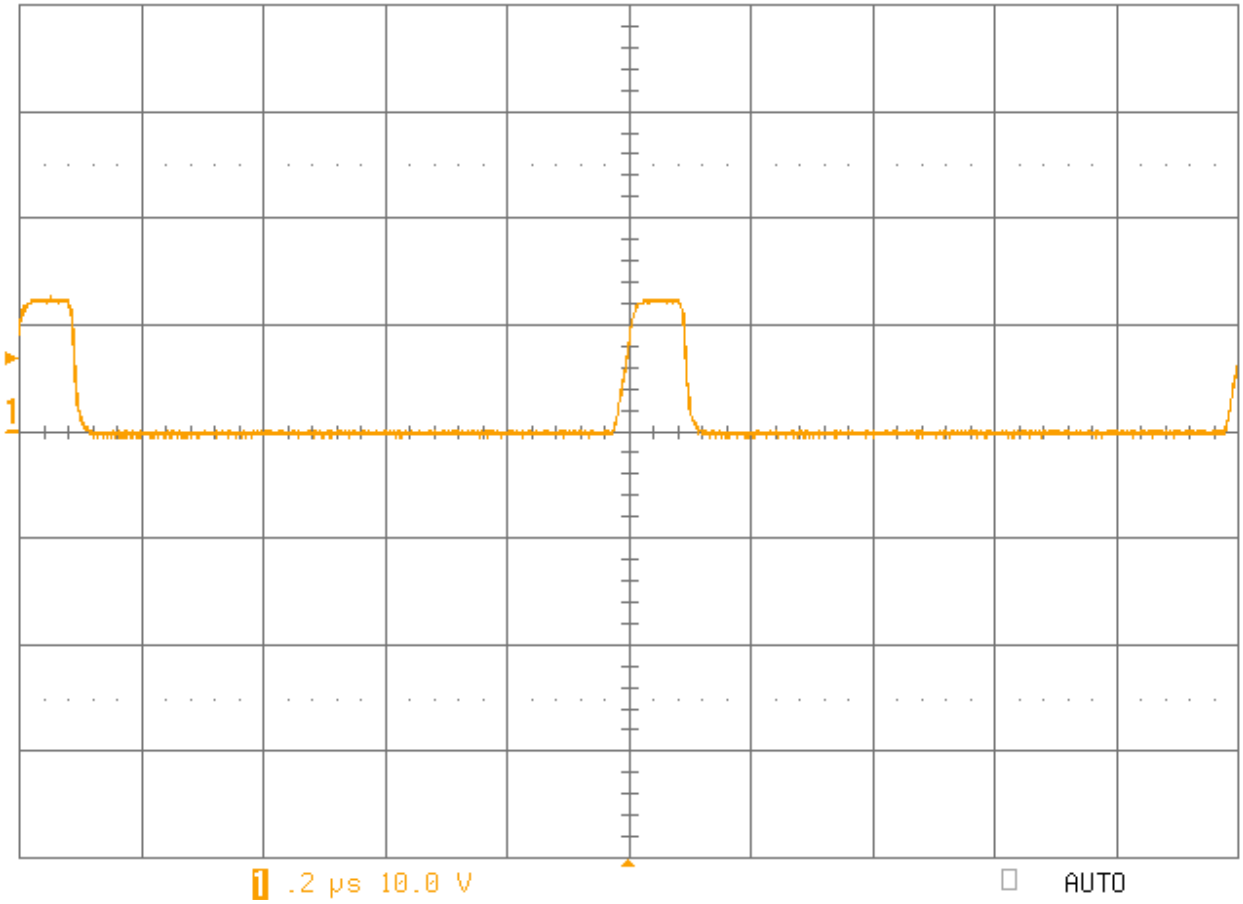


5 Switch Node Waveforms 1.2V @ 1.48A (TPS62110)

The plot below shows the switching waveforms for the converter. The input is 12V.

Channel 1: Switch Node - Orange (10V/Division)

)



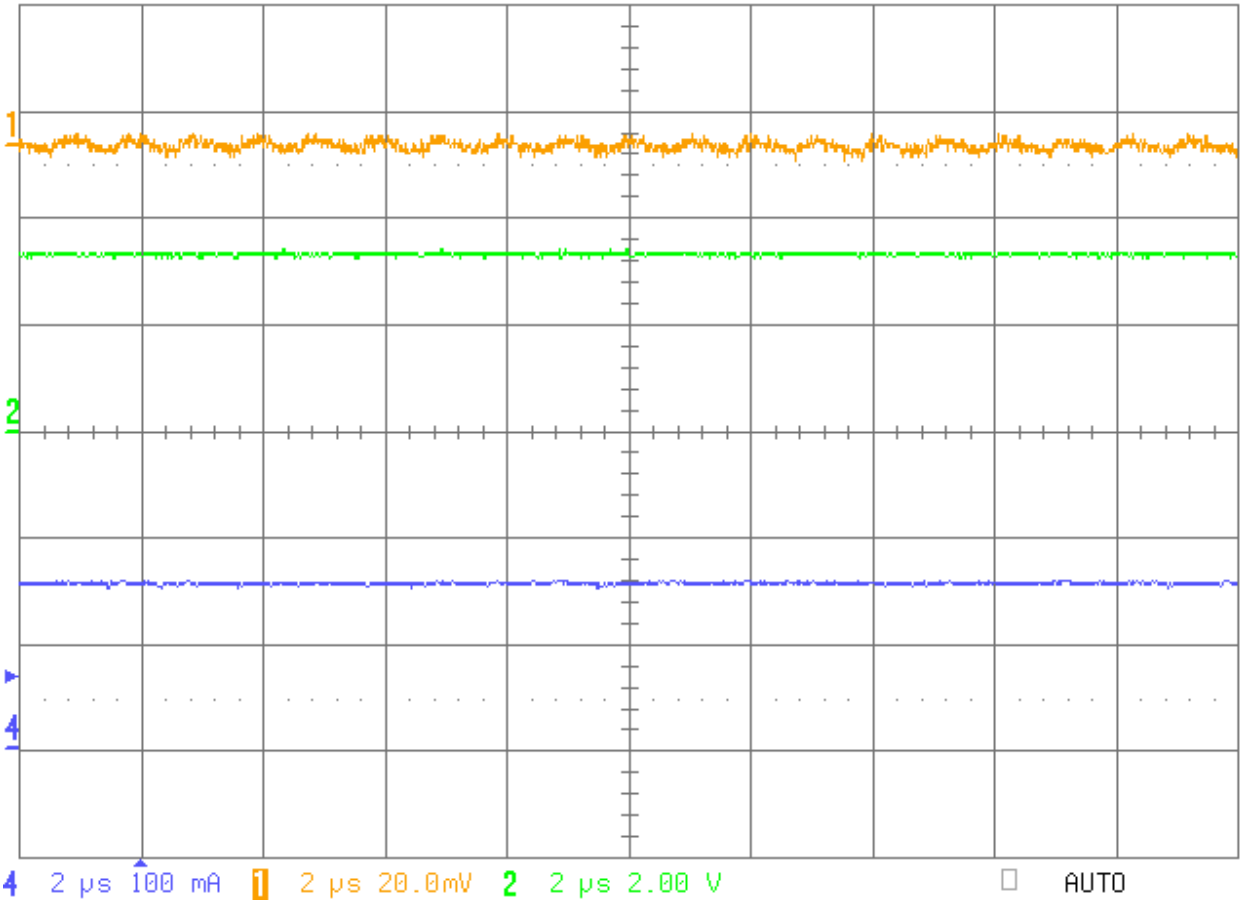
Switchnode 1.2V@1.48A External Load,

C. 3.3V @ 0.18A – TPS 62110 – DCDC

1 Output Ripple Voltage for 3.3V @ 0.18A (TPS62110)

The photo below shows the output voltage ripple. The input voltage is 12V.

Channel 1: 3.3V Output - Orange (20mV/Division; AC Coupled)
Channel 3: 3.3V Output – Green (2V/Division, DC Coupled)
Channel 4: Output Current – Blue (100 mA/Division. DC Coupled)

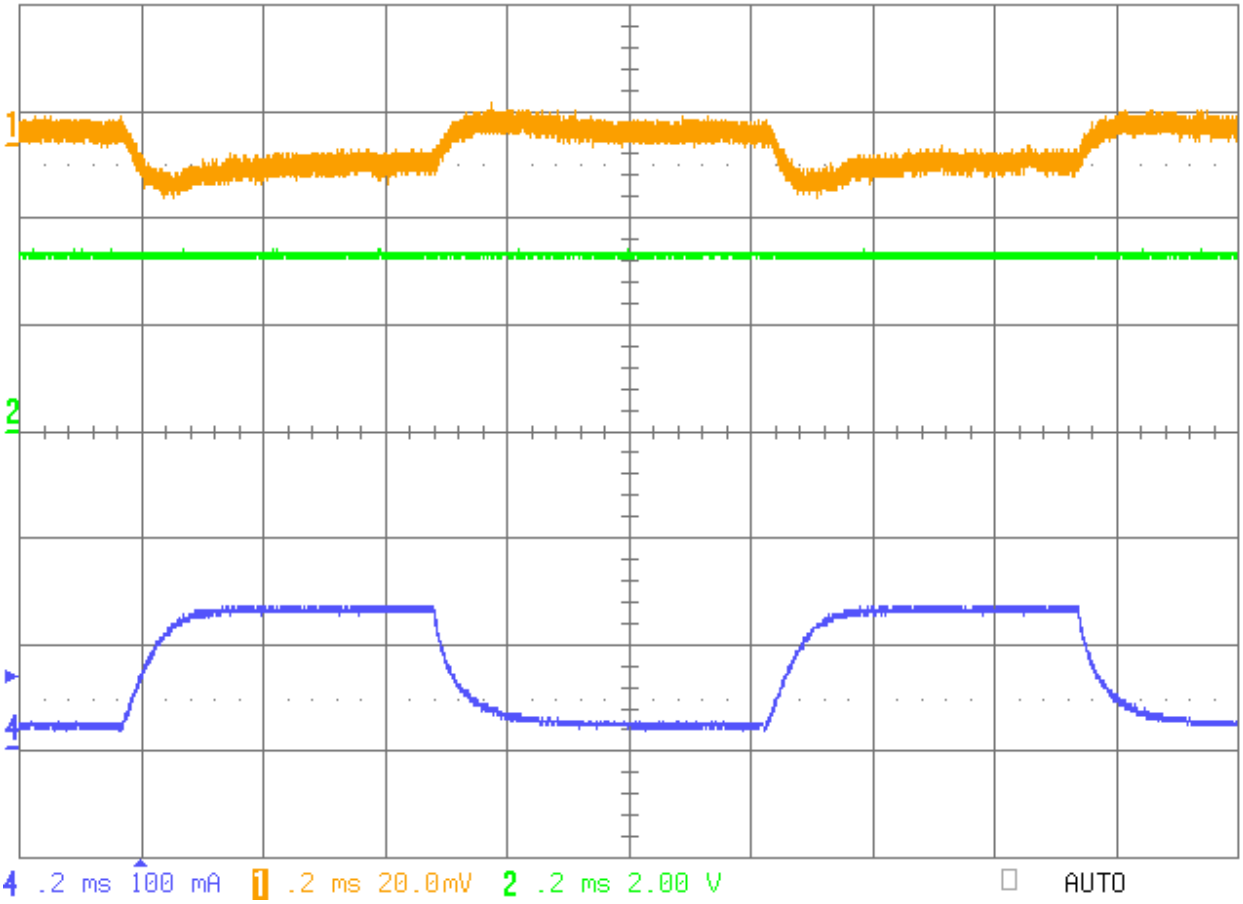


3.3V @ 0.18A External Load; 1us/Division

2 Load Transients – 3.3V @ 0.18A (TPS62110)

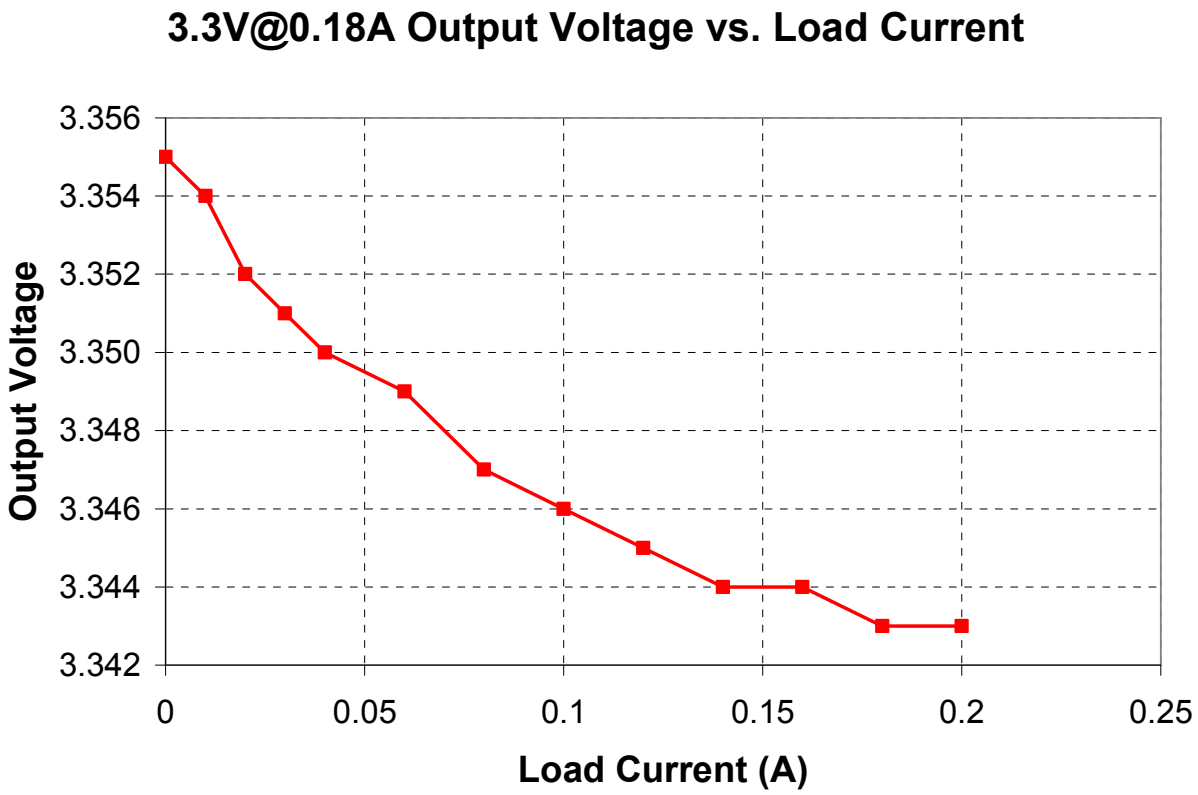
The photo below shows the transient response. The current is pulsed from 0.04A to 0.18A. The input voltage is 12V. The time-base is set to 200us/Division.

Channel 1: 1.2V Output - Orange (20mV/Division; AC Coupled)
Channel 2: 3.3V Output – Green (2V/Division, DC Coupled)
Channel 4: Output Current - Blue (100mA/ Division)



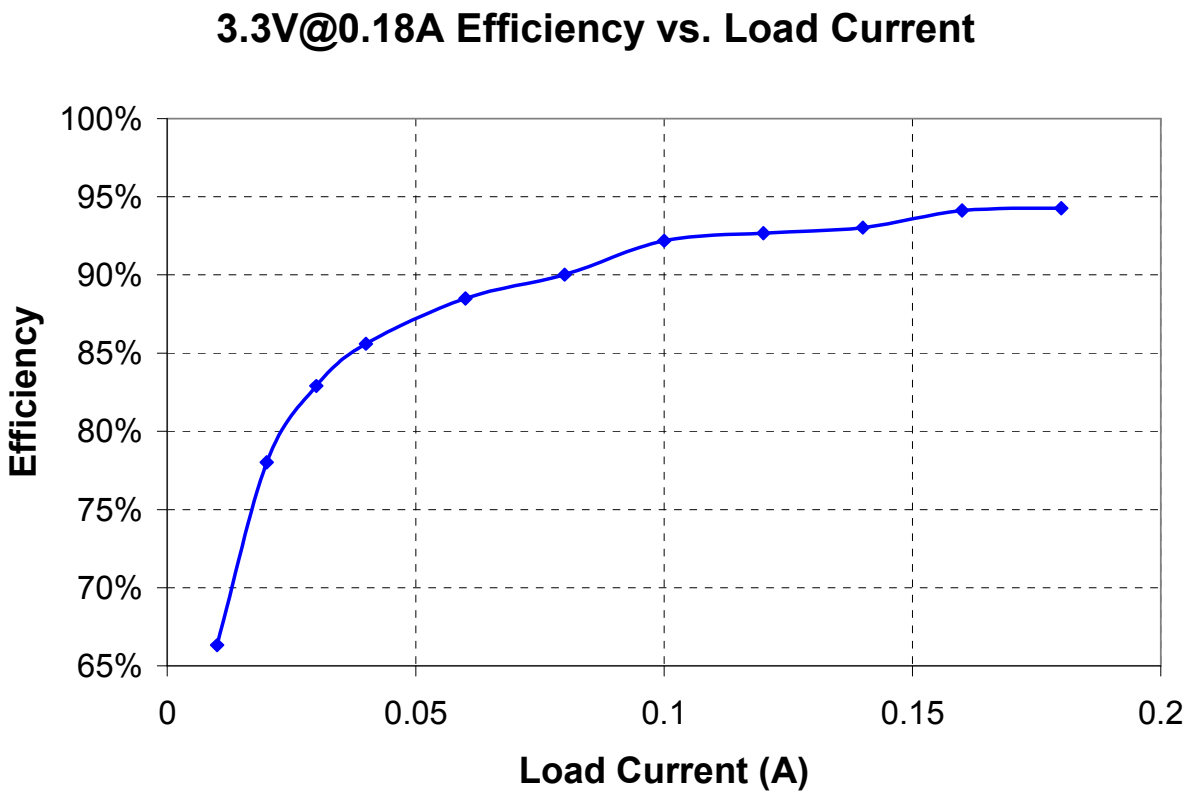
3 Load Regulation (TPS62110)

The load regulation is shown in the figure below. The input voltage is 12V.



4 Efficiency (TPS62110)

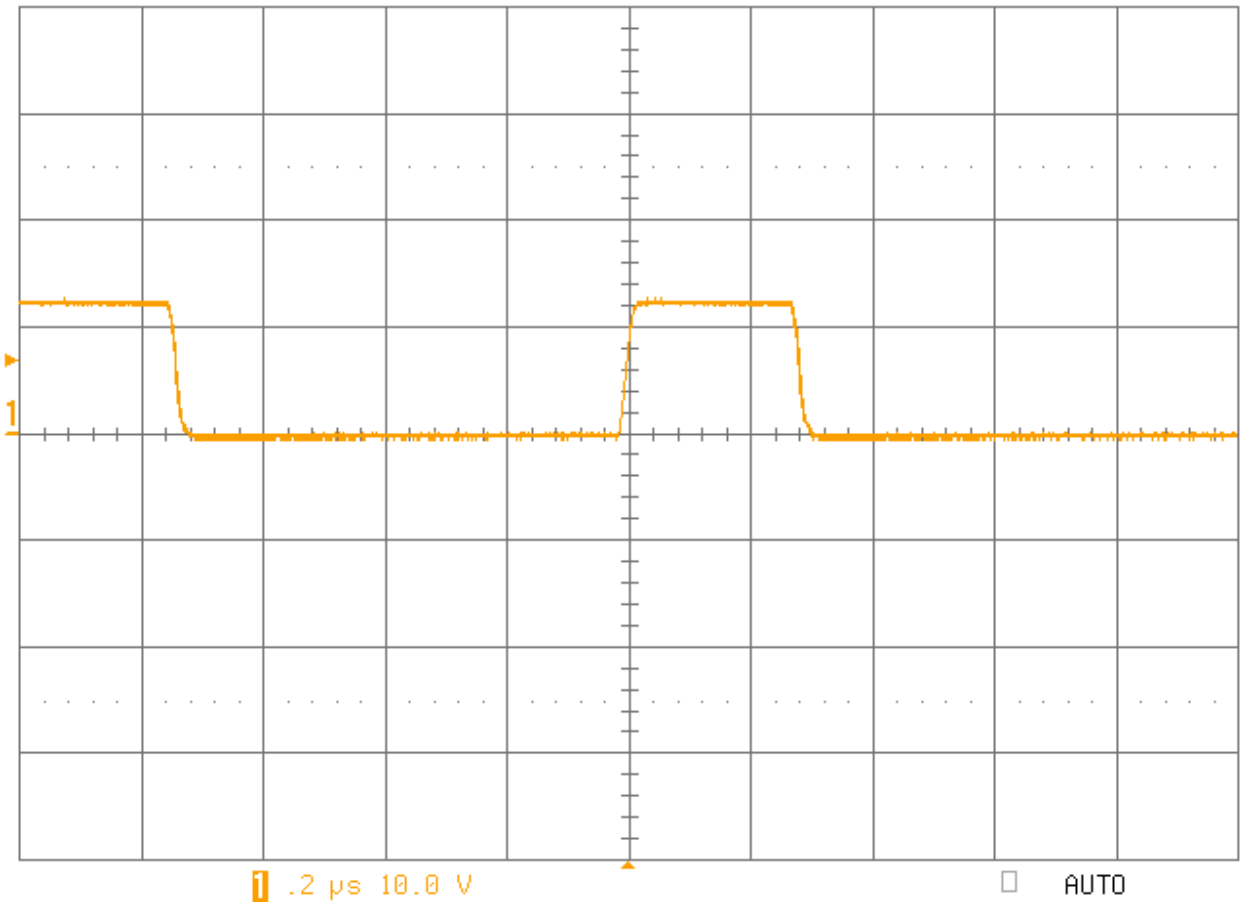
The efficiency is shown in the figure below. The input voltage is 12V.



5 Switch Node Waveforms 3.3V @ 0.18A (TPS62110)

The plot below shows the switching waveforms for the converter. The input is 12V.

Channel 1: Switch Node - Orange (10V/Division)



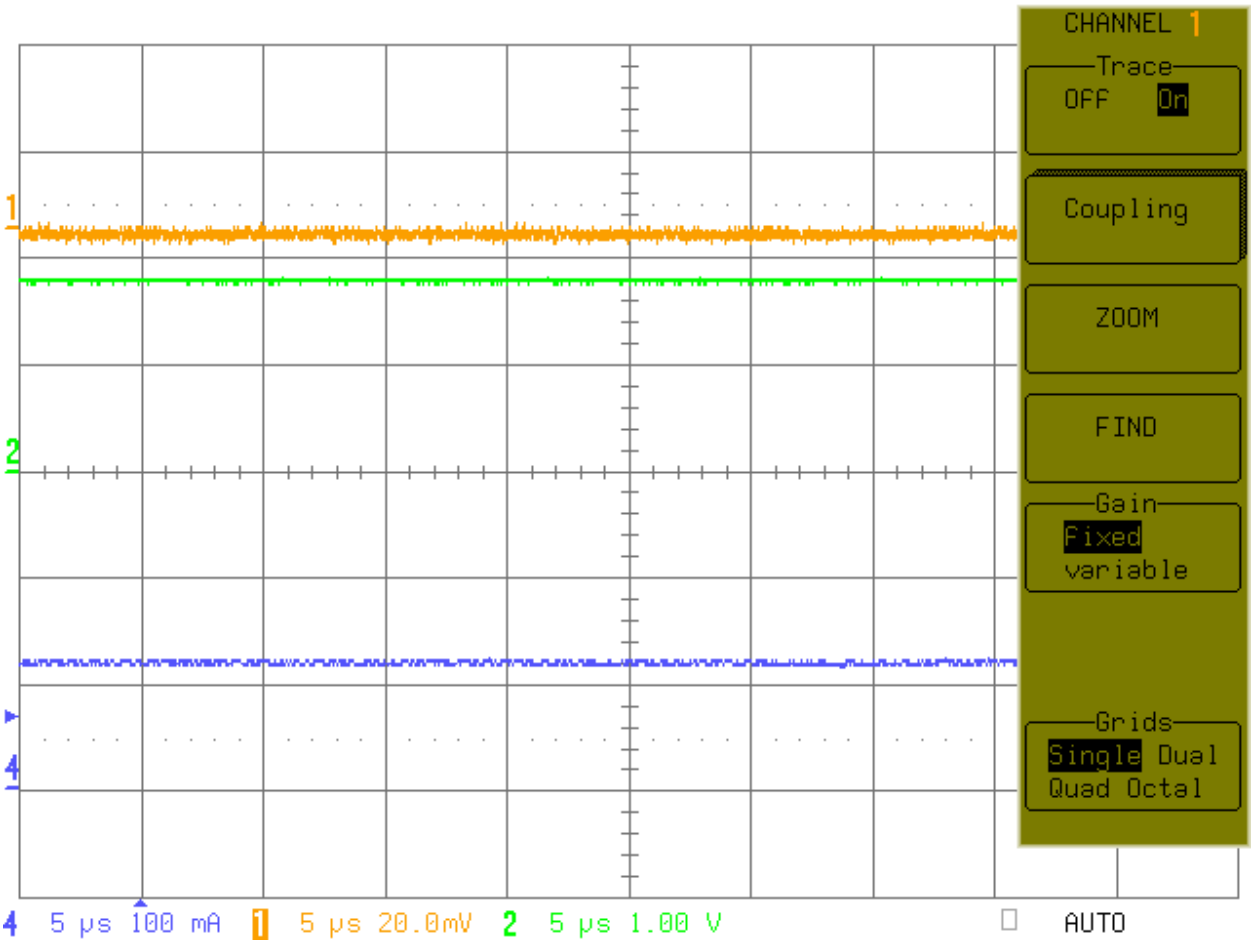
Switchnode 3.3V@0.18A External Load,

D. 1.8V @ 0.14A – TPS 73018 – LDO

1. Output Ripple Voltage for 1.8V @ 0.14A LDO (TPS73018)

The photo below shows the output voltage ripple. The input voltage is 12V.

Channel 1: 1.8V Output - Orange (20mV/Division; AC Coupled)
Channel 3: 1.8V Output – Red (2V/Division, DC Coupled)
Channel 4: Current Output – Blue (100mA/Division)



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

2. Load Transients – 1.8V @ 0.14A TPS 73018

25% to 100% Load Step

The photo below shows the transient response. The current is pulsed from 0.035A to 0.14A. The input voltage is 12V. The time-base is set to 200us/Division.

Channel 1: 1.8V Output - Orange (20mV/Division; AC Coupled)
Channel 2: 1.8V Output - Green (1V/Division; DC Coupled)
Channel 4: Output Current - Blue (100mA/Division)