Test Data
For PMP9282
9/6/2013

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1. Design Specifications

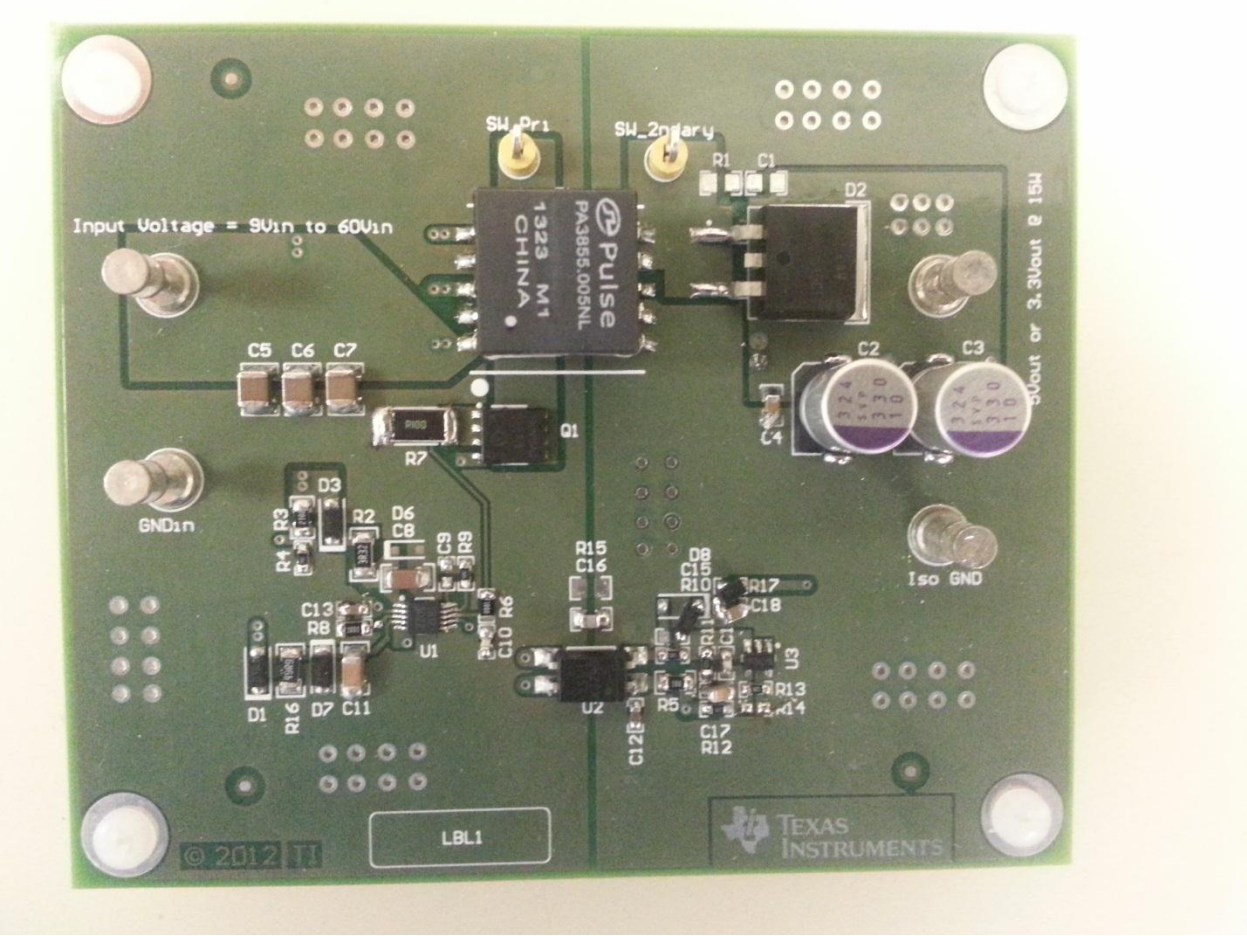
Vin Min.	**9VDC**
Vin Max.	**60VDC**
Vout	**3.3VDC**
Iout	**4.5A Max.**
Target Switching Frequency	**325KHz**

2. Circuit Description

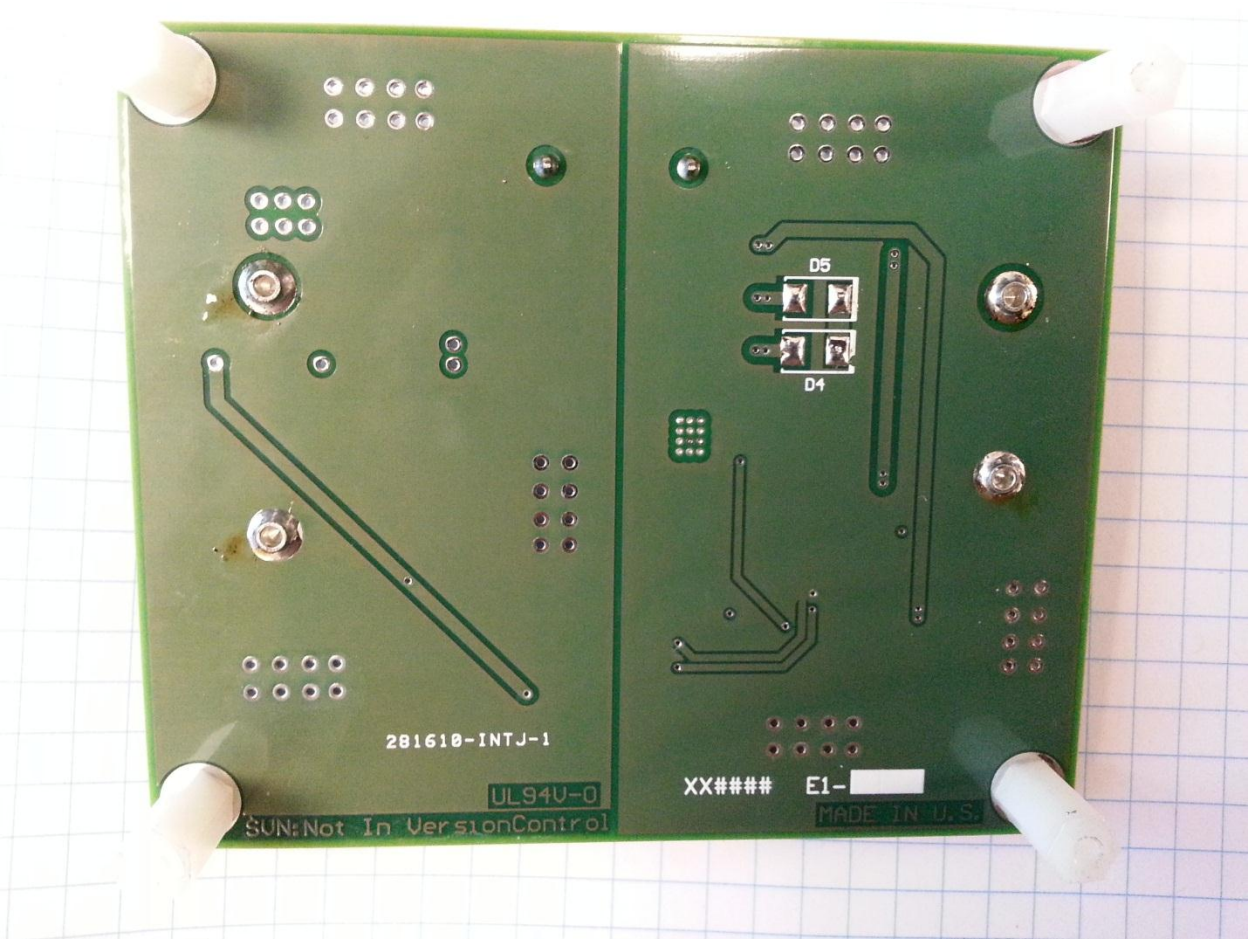
PMP9282 is an Isolated Flyback Converter which accepts an input voltage of 9Vin to 60Vin and provides an output of 3.3Vout capable of supplying 4.5A of current to the load. This design is built on the PMP9253 PCB.

3. PMP9282 Board Photos

Board Dimensions: 3.7” x 3.1”

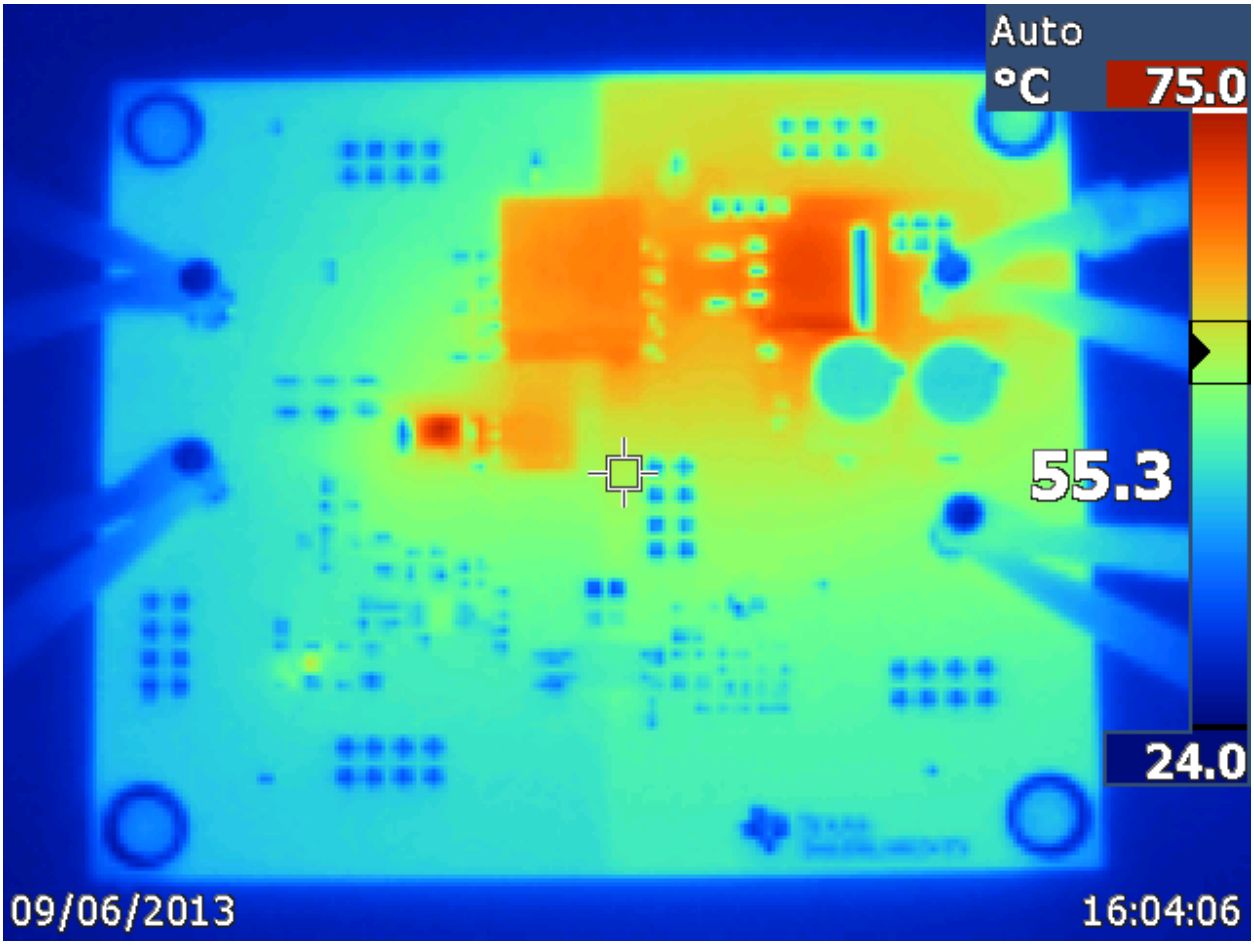


Board Photo (Top)

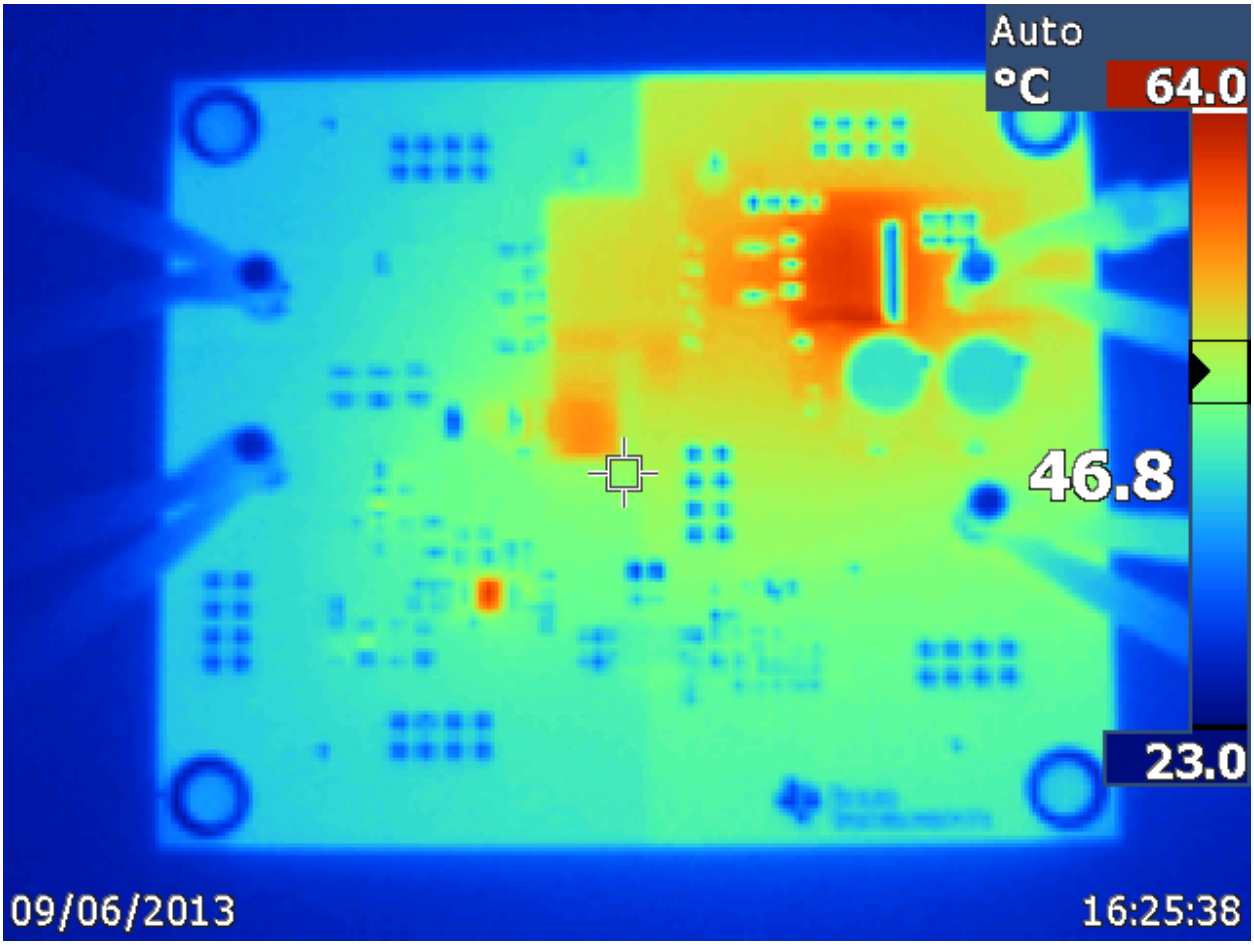


Board Photo (Bottom)

4. Thermal Data



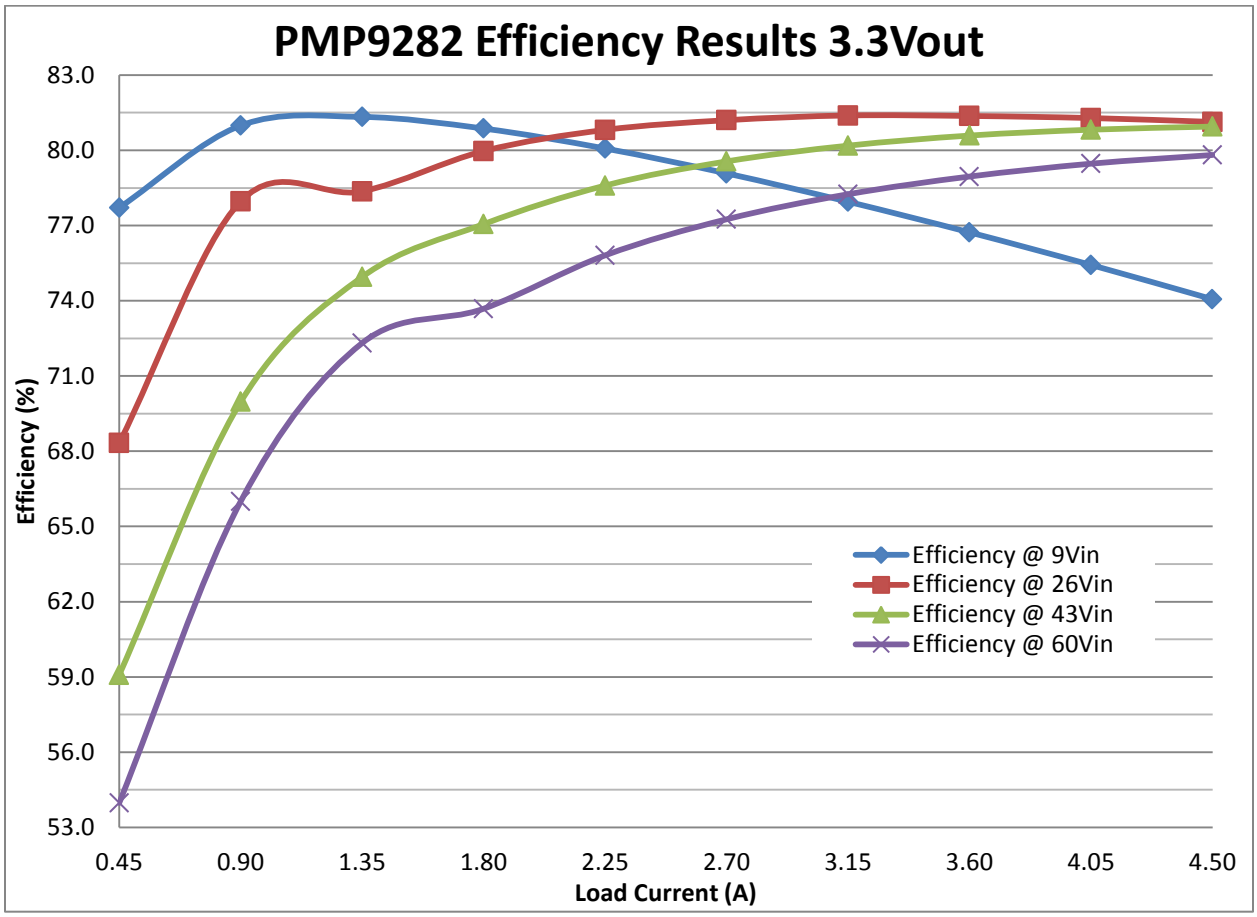
IR thermal image taken at steady state at 4.5A load and Vin = 9V with no airflow (for improved thermal performance, it is recommended to use 2oz Copper or heavier, heatsinks, higher power rated current sense resistor, and/or airflow)



IR thermal image taken at steady state at 4.5A load and Vin = 60V with no airflow (for improved thermal performance, it is recommended to use 2oz Copper or heavier, heatsinks, higher power rated current sense resistor, and/or airflow)

5. Efficiency

5.1 Efficiency Chart



5.2 Efficiency Data

Vin (V)	Iin (A)	Vout (V)	Iout (A)	Pin (W)	Pout (W)	Efficiency (%)
8.9965	0.2093	3.2511	0.4501	1.882967	1.46332	77.7
8.9962	0.4016	3.2507	0.9001	3.612874	2.925955	81.0
8.9955	0.5997	3.2502	1.3499	5.394601	4.387445	81.3
8.995	0.8042	3.2497	1.8001	7.233779	5.849785	80.9
8.9943	1.015	3.2487	2.2501	9.129215	7.3099	80.1
8.9931	1.233	3.2477	2.7	11.08849	8.76879	79.1
8.992	1.4592	3.2467	3.1502	13.12113	10.22775	77.9
8.9905	1.6938	3.2457	3.6	15.22811	11.68452	76.7
8.9892	1.938	3.2445	4.0501	17.42107	13.14055	75.4
8.9872	2.1927	3.2433	4.5	19.70623	14.59485	74.1

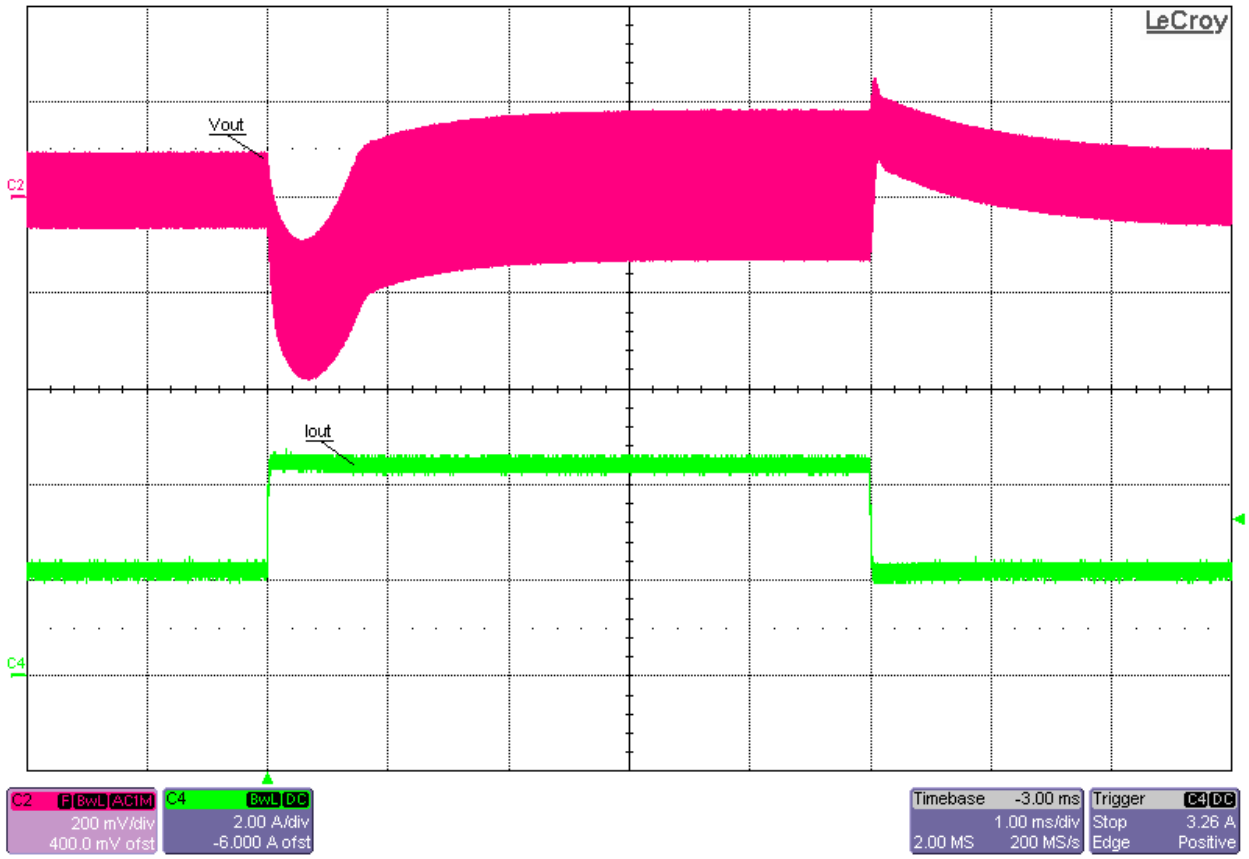
Vin (V)	Iin (A)	Vout (V)	Iout (A)	Pin (W)	Pout (W)	Efficiency (%)
25.996	0.08227	3.2474	0.45	2.138691	1.46133	68.3
25.996	0.14423	3.2476	0.9001	3.749403	2.923165	78.0
25.996	0.21541	3.2507	1.3499	5.599798	4.38812	78.4
25.996	0.2814	3.2498	1.8001	7.315274	5.849965	80.0
25.995	0.34797	3.249	2.2499	9.04548	7.309925	80.8
25.995	0.41552	3.2482	2.7002	10.80144	8.77079	81.2
25.995	0.48348	3.2473	3.15	12.56806	10.229	81.4
25.994	0.55257	3.2465	3.6	14.3635	11.6874	81.4
25.994	0.62212	3.2458	4.0499	16.17139	13.14517	81.3
25.993	0.69241	3.2448	4.5001	17.99781	14.60192	81.1

Vin (V)	Iin (A)	Vout (V)	Iout (A)	Pin (W)	Pout (W)	Efficiency (%)
42.999	0.05754	3.2484	0.45	2.474162	1.46178	59.1
42.999	0.09718	3.2483	0.9001	4.178643	2.923795	70.0
42.999	0.13607	3.2483	1.35	5.850874	4.385205	74.9
42.999	0.17643	3.2474	1.8001	7.586314	5.845645	77.1
42.999	0.21618	3.2468	2.2501	9.295524	7.305625	78.6
42.998	0.25623	3.2461	2.7002	11.01738	8.765119	79.6
42.998	0.29652	3.2455	3.15	12.74977	10.22333	80.2
42.998	0.33714	3.2448	3.6003	14.49635	11.68225	80.6
42.997	0.37808	3.244	4.0501	16.25631	13.13852	80.8
42.997	0.41931	3.243	4.5001	18.02907	14.59382	80.9

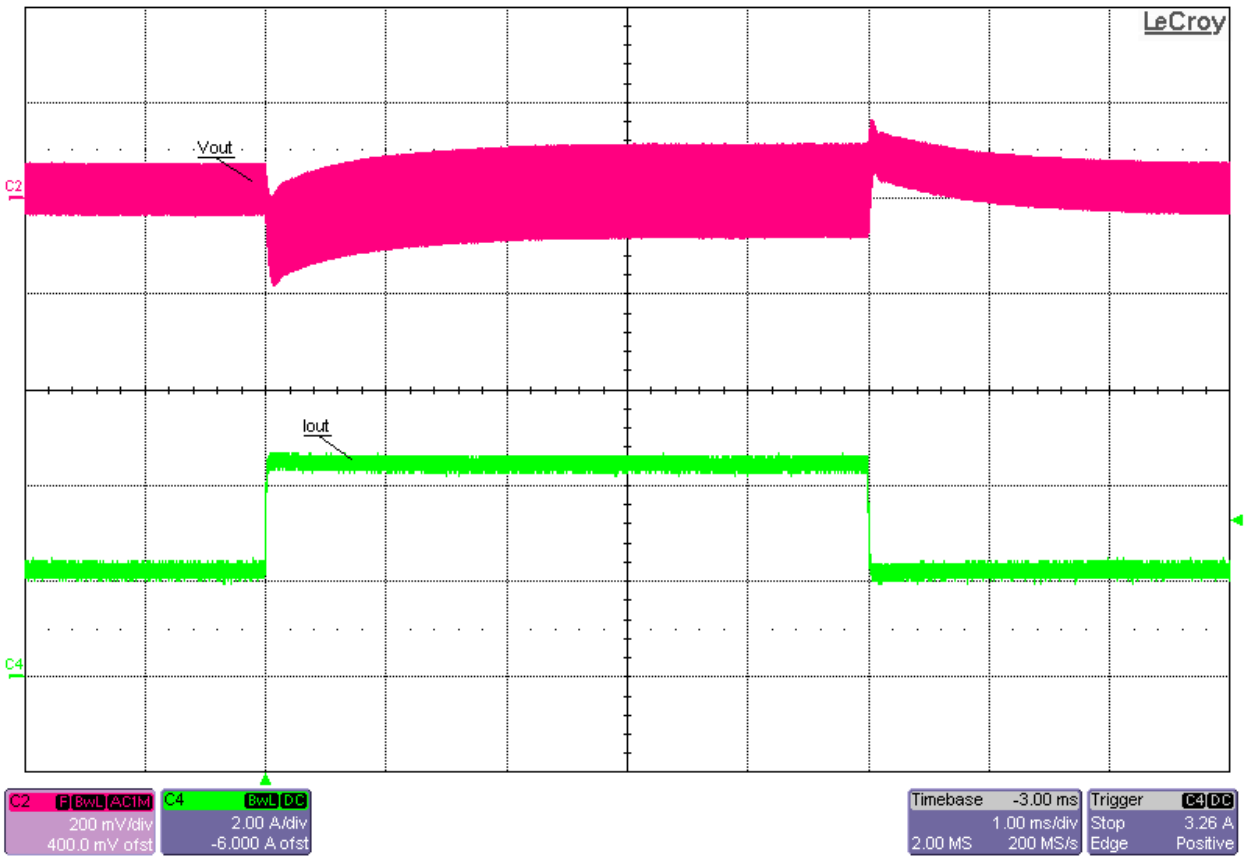
Vin (V)	Iin (A)	Vout (V)	Iout (A)	Pin (W)	Pout (W)	Efficiency (%)
60.005	0.04512	3.247	0.4501	2.707426	1.461475	54.0
60.005	0.07379	3.2469	0.9	4.427769	2.92221	66.0
60.004	0.10103	3.247	1.3501	6.062204	4.383775	72.3
60.004	0.13216	3.246	1.8001	7.930129	5.843125	73.7
60.004	0.16053	3.2454	2.2501	9.632442	7.302475	75.8
60.004	0.18901	3.2448	2.7	11.34136	8.76096	77.2
60.003	0.21766	3.2442	3.15	13.06025	10.21923	78.2
60.003	0.24647	3.2435	3.5999	14.78894	11.67628	79.0
60.003	0.27543	3.2427	4.05	16.52663	13.13294	79.5
60.003	0.30463	3.2418	4.5002	18.27871	14.58875	79.8

6 Waveforms

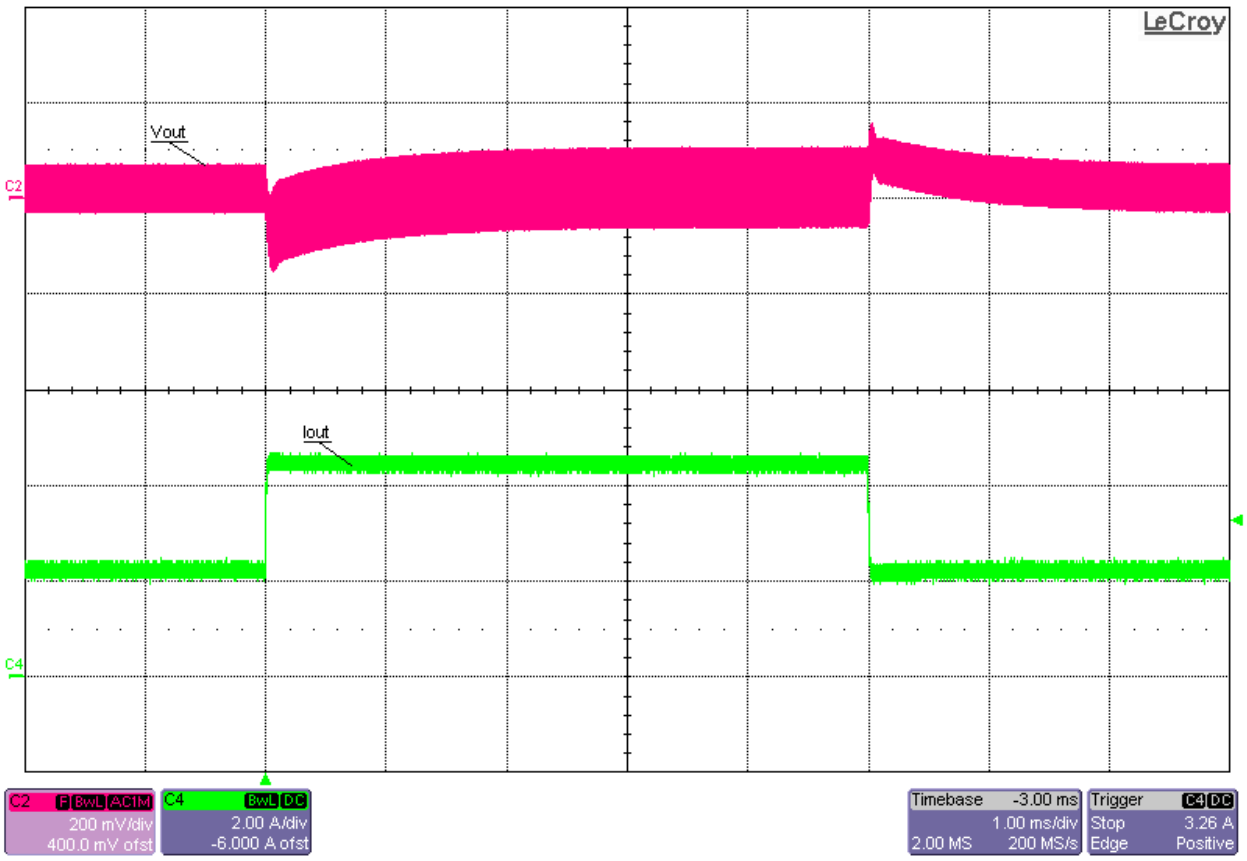
6.1 Load Transient Response



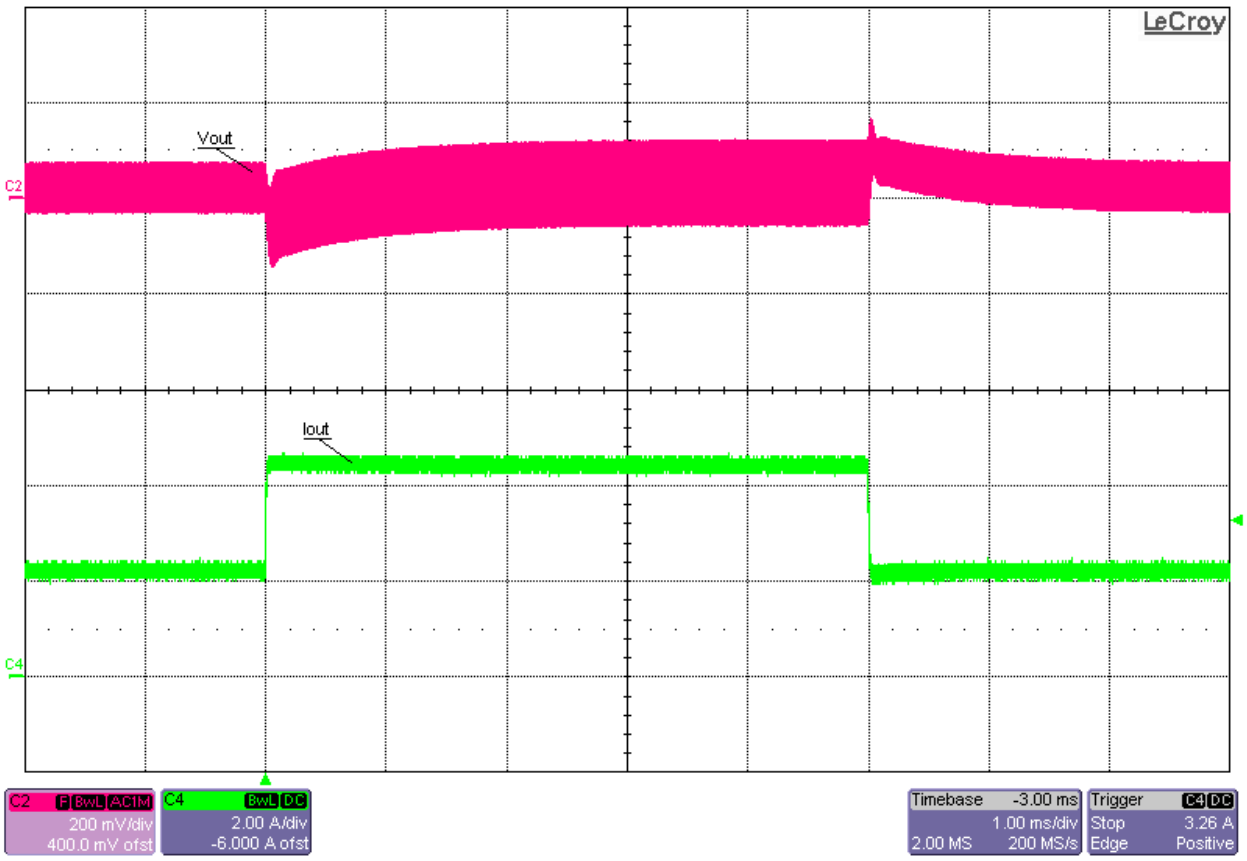
Load Transient Response at Vin = 9V with 50%-to-100% (2.25A-to-4.5A) Load Step



Load Transient Response at Vin = 26V with 50%-to-100% (2.25A-to-4.5A) Load Step

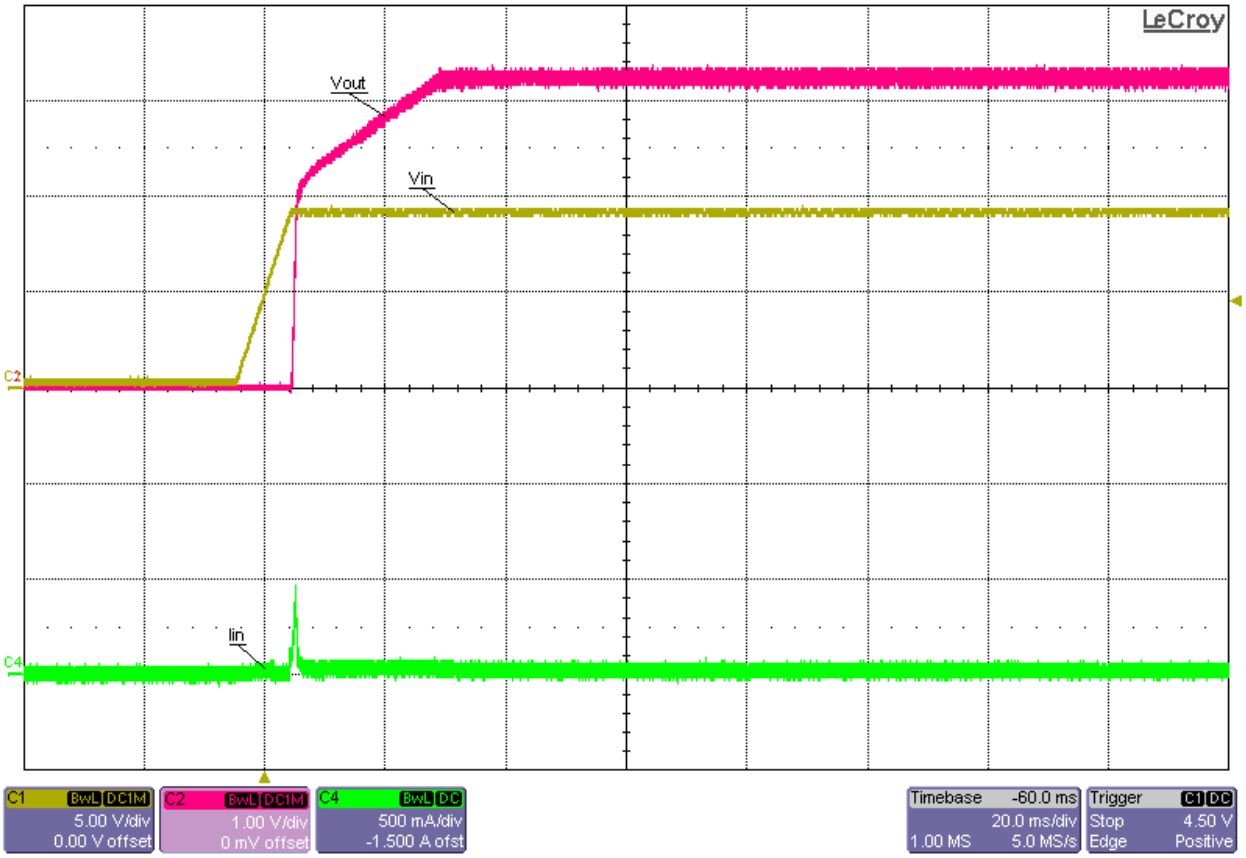


Load Transient Response at Vin = 43V with 50%-to-100% (2.25A-to-4.5A) Load Step

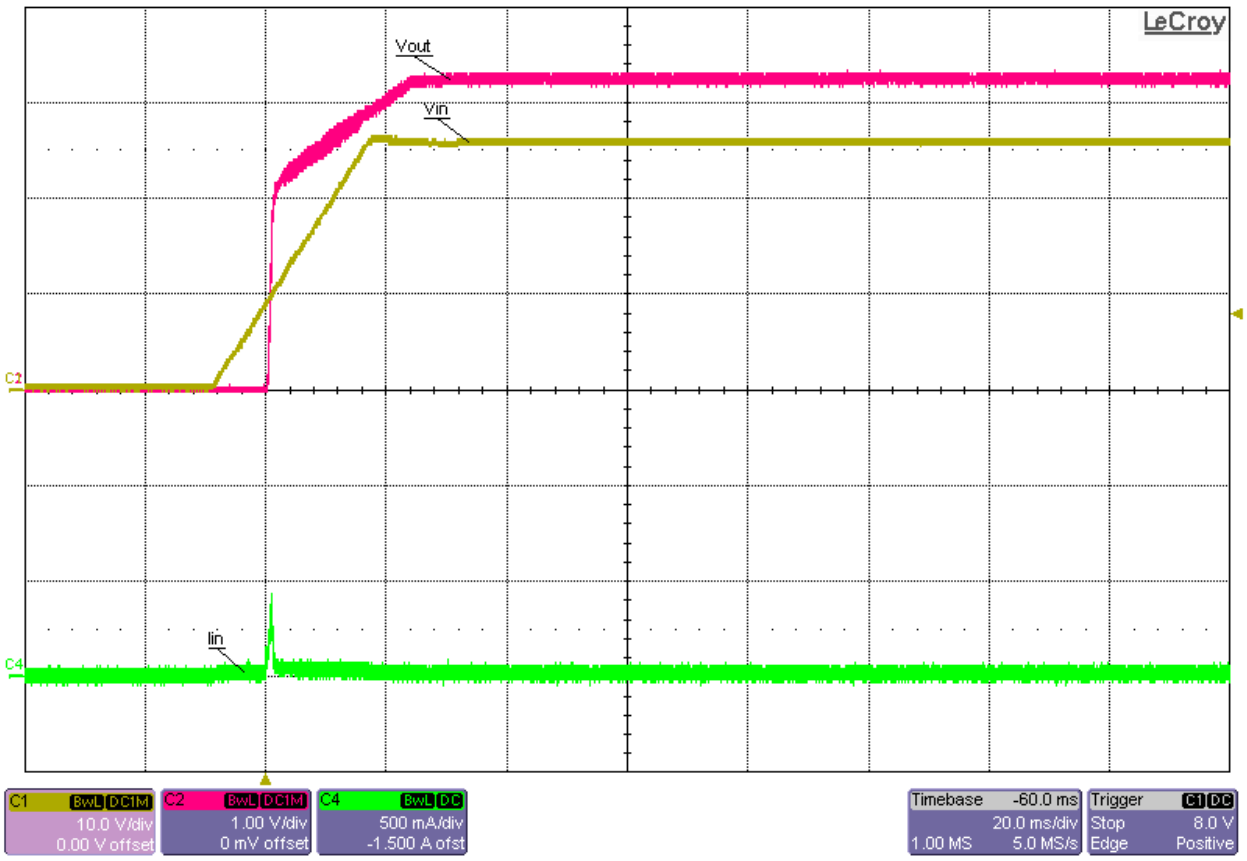


Load Transient Response at Vin = 60V with 50%-to-100% (2.25A-to-4.5A) Load Step

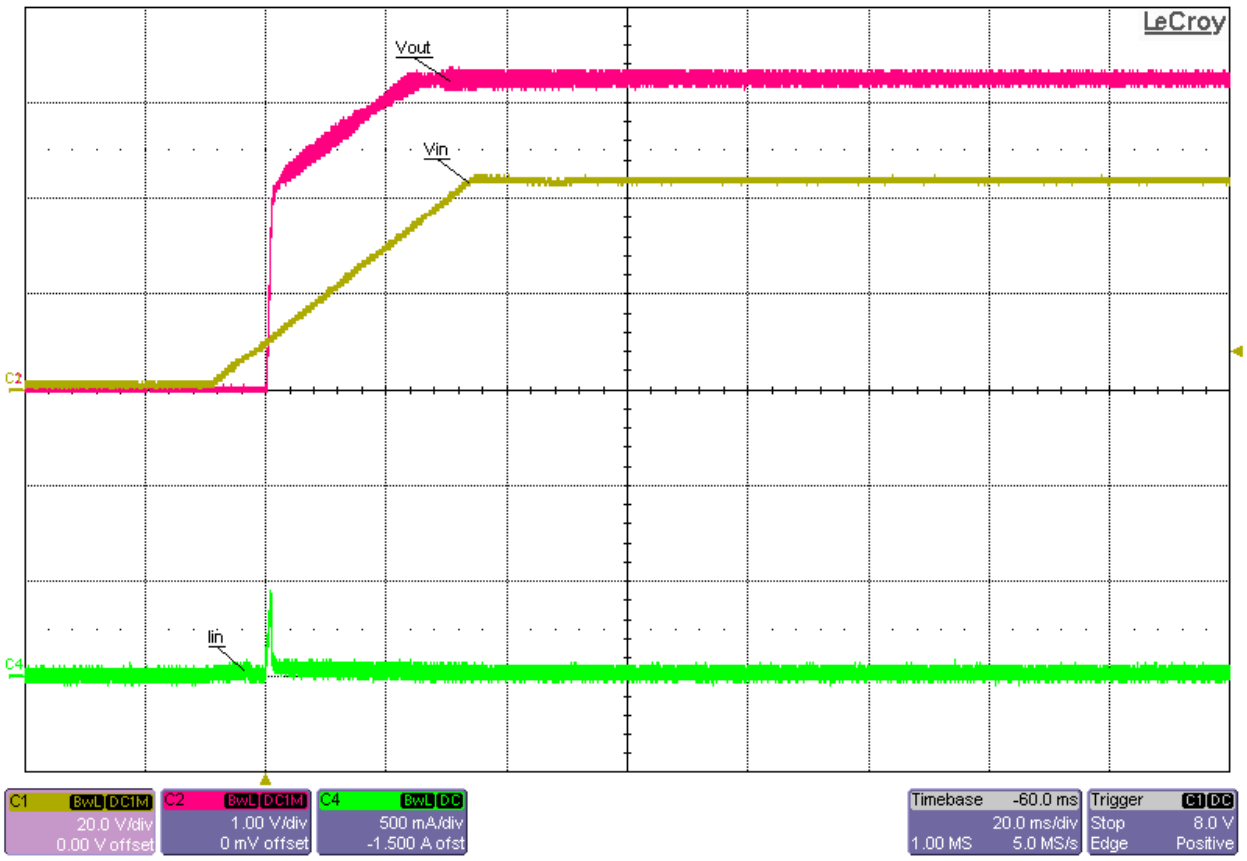
6.2 Startup



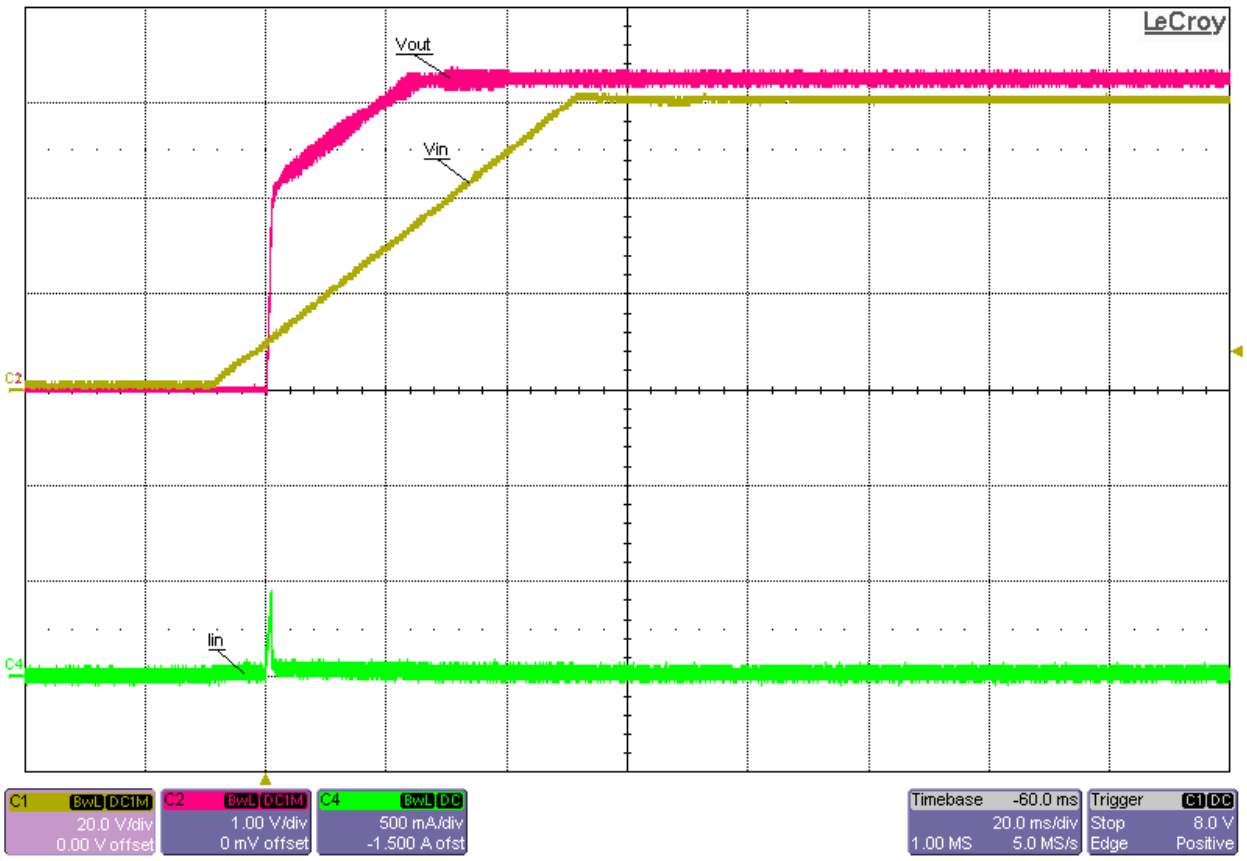
Startup into No Load (Vin = 9V)



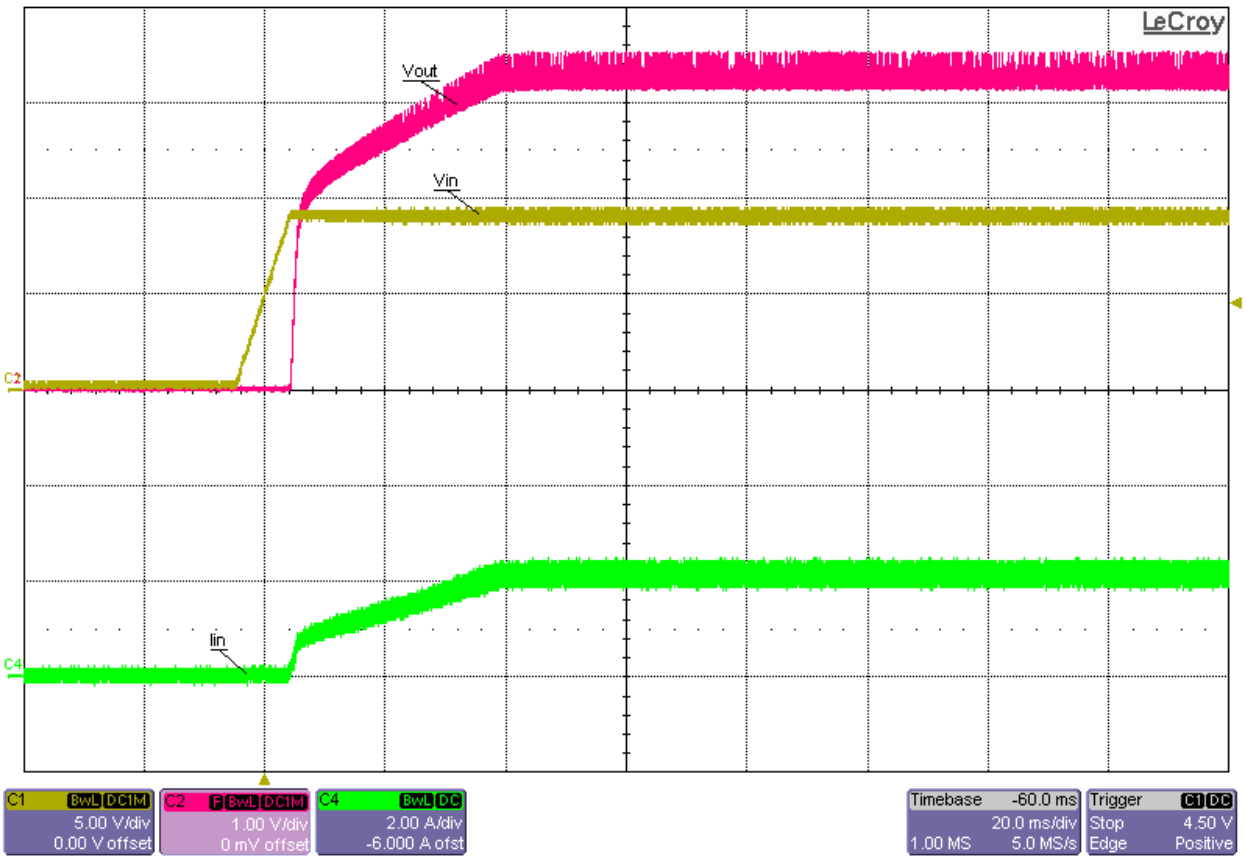
Startup into No Load (Vin = 26V)



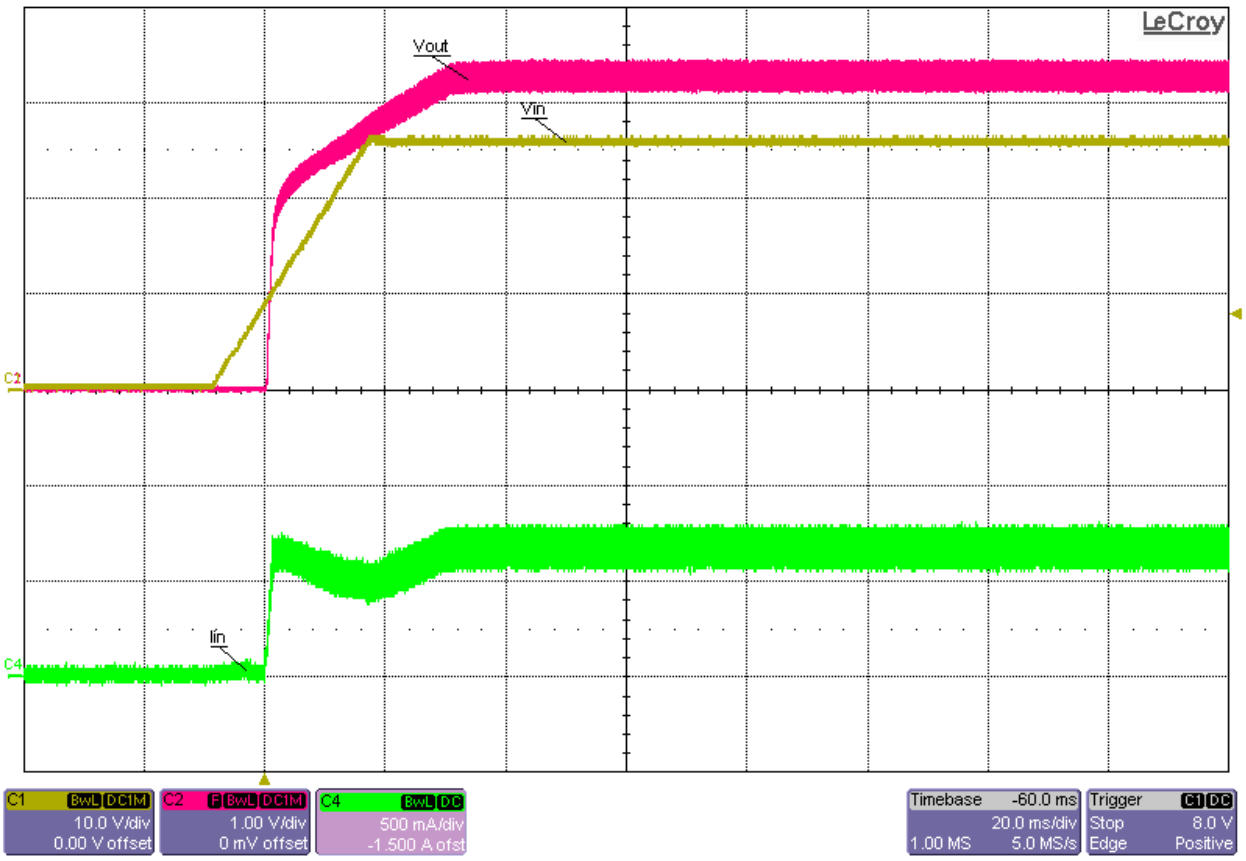
Startup into No Load (Vin = 43V)



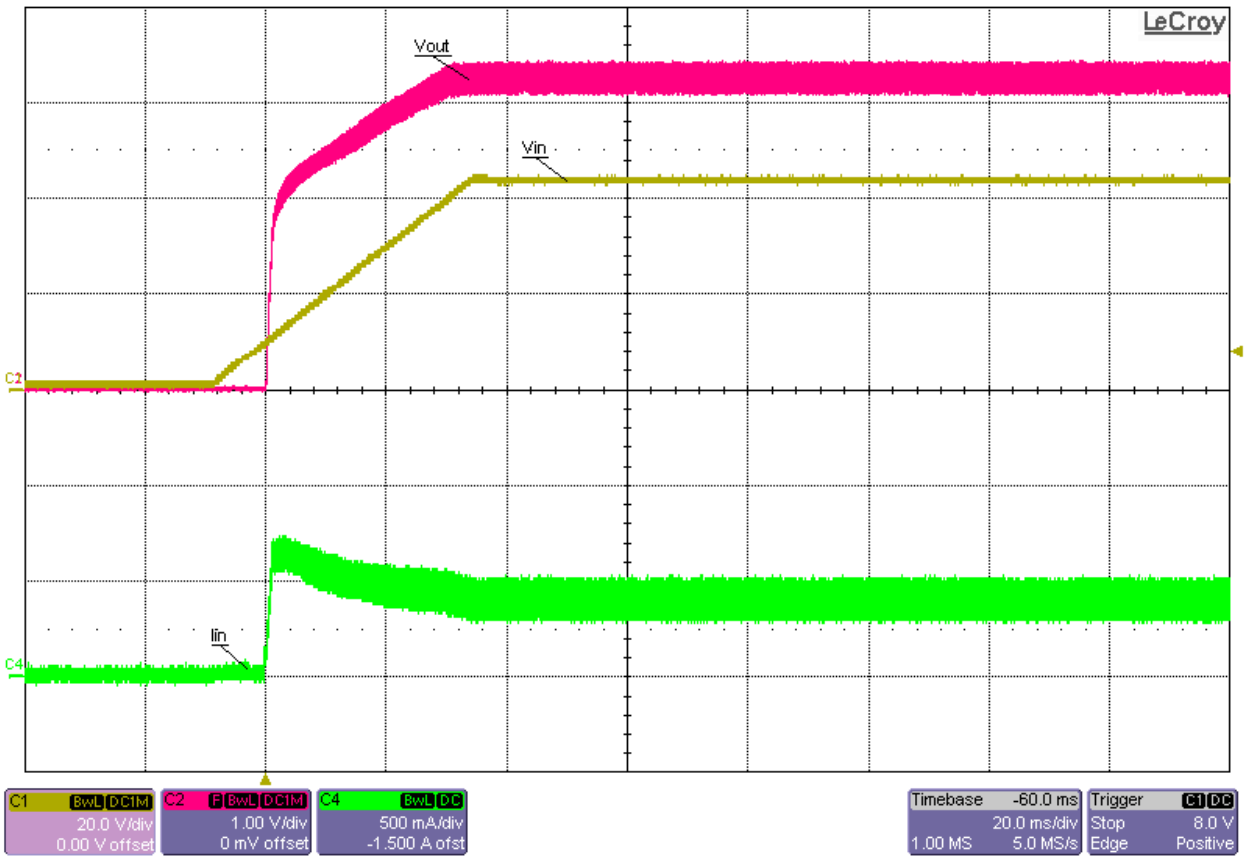
Startup into No Load (Vin = 60V)



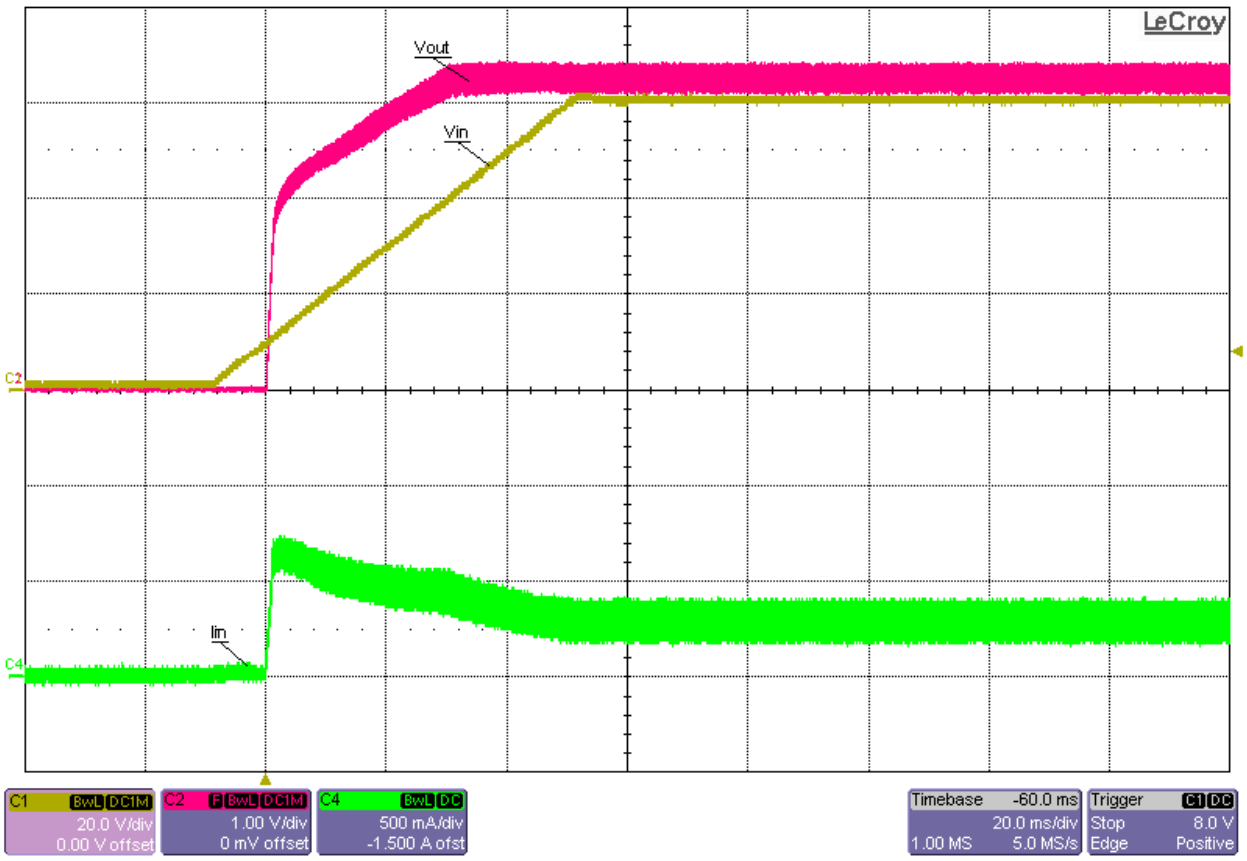
Startup into Full (4.5A) Load (Vin = 9V)



Startup into Full (4.5A) Load (Vin = 26V)

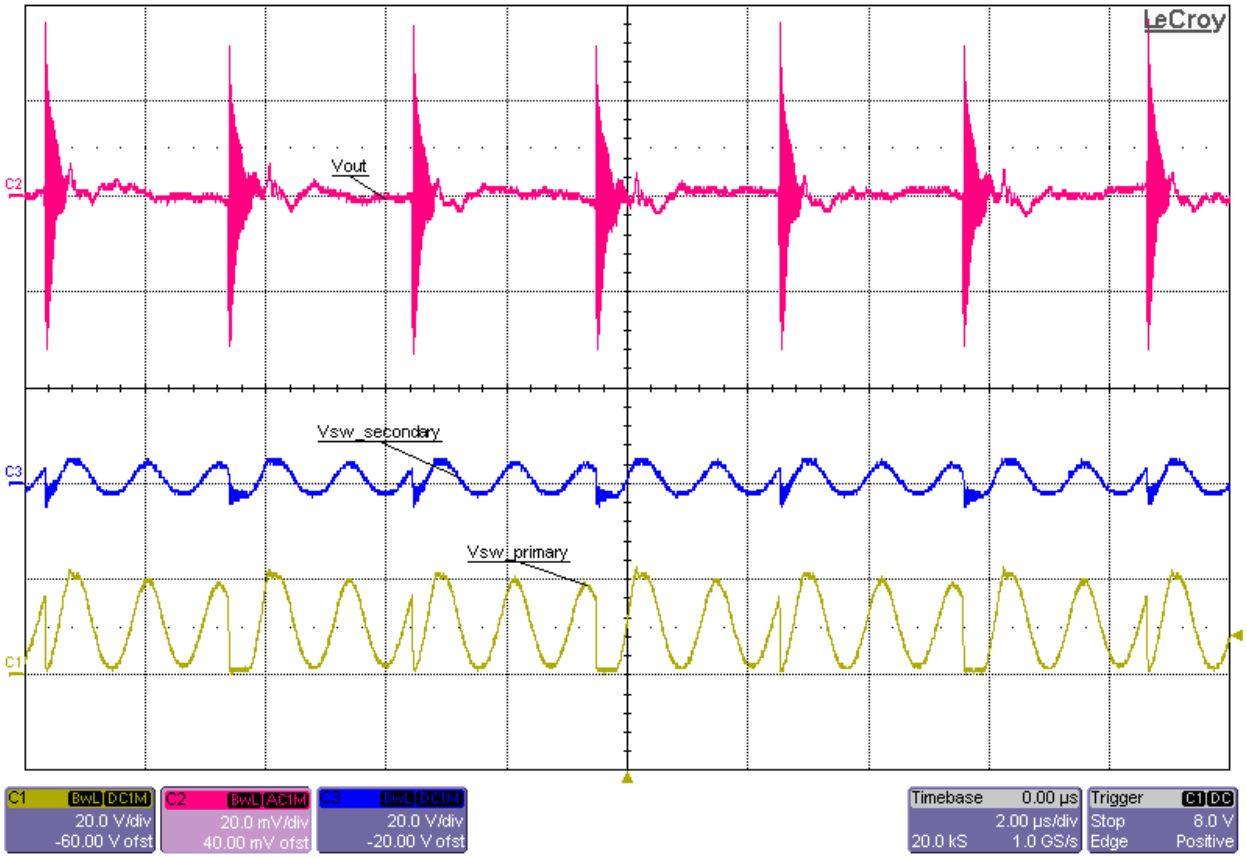


Startup into Full (4.5A) Load (Vin = 43V)

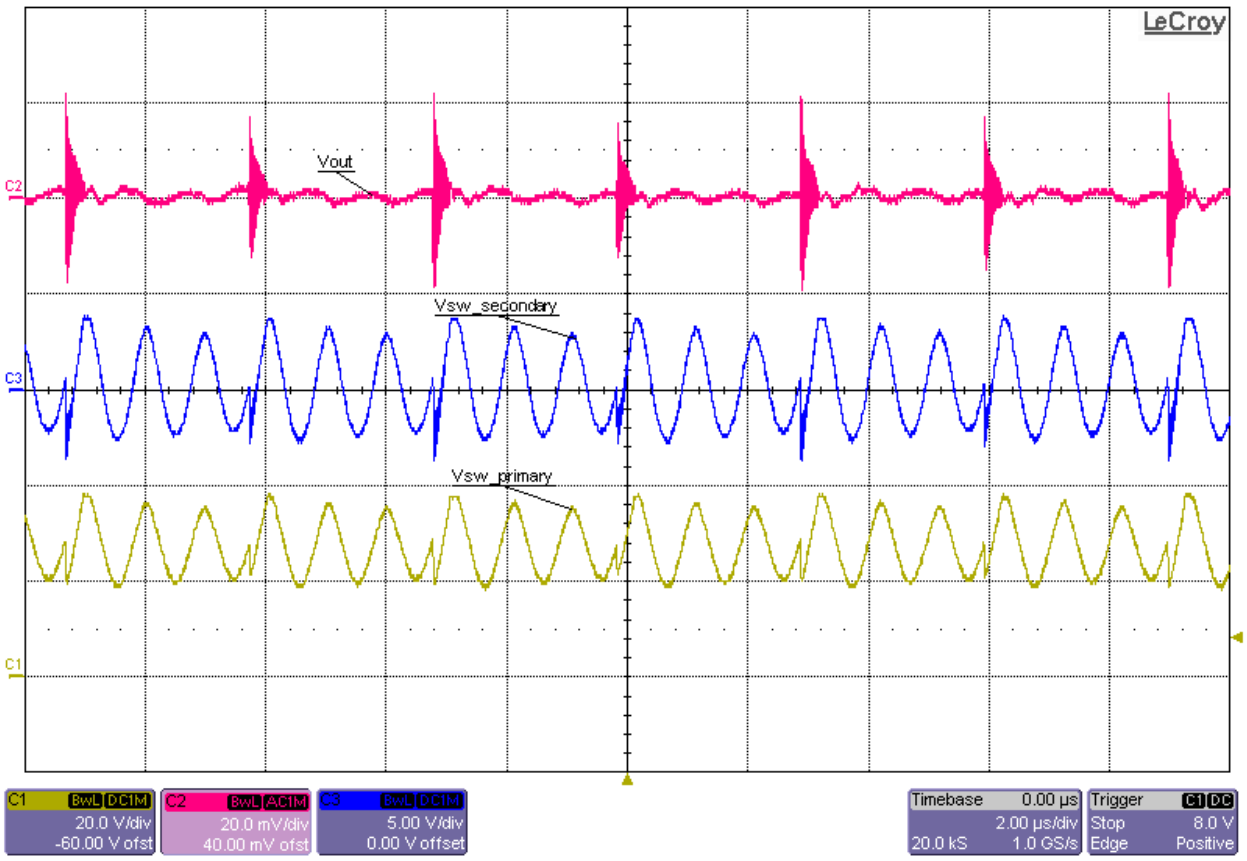


Startup into Full (4.5A) Load (Vin = 60V)

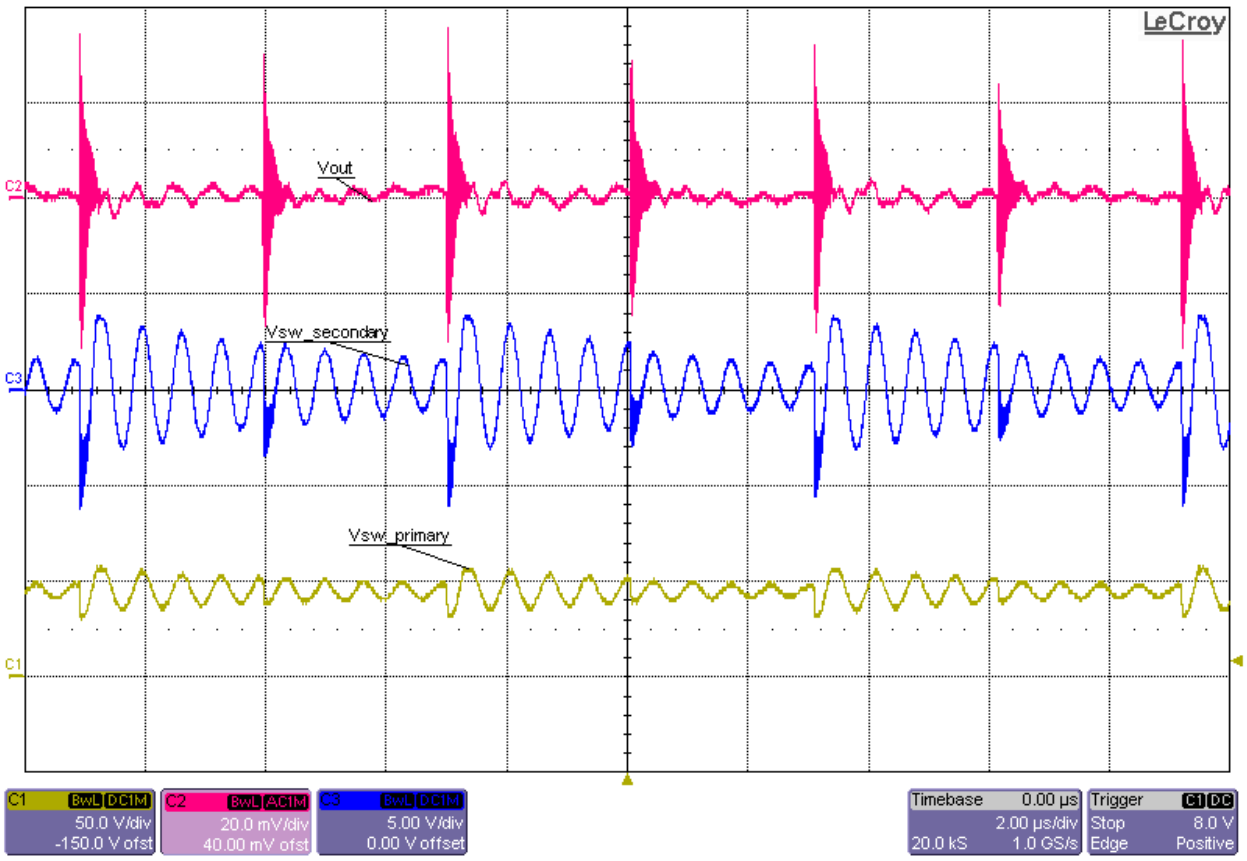
6.3 Output Voltage Ripple and Switch Node Voltage



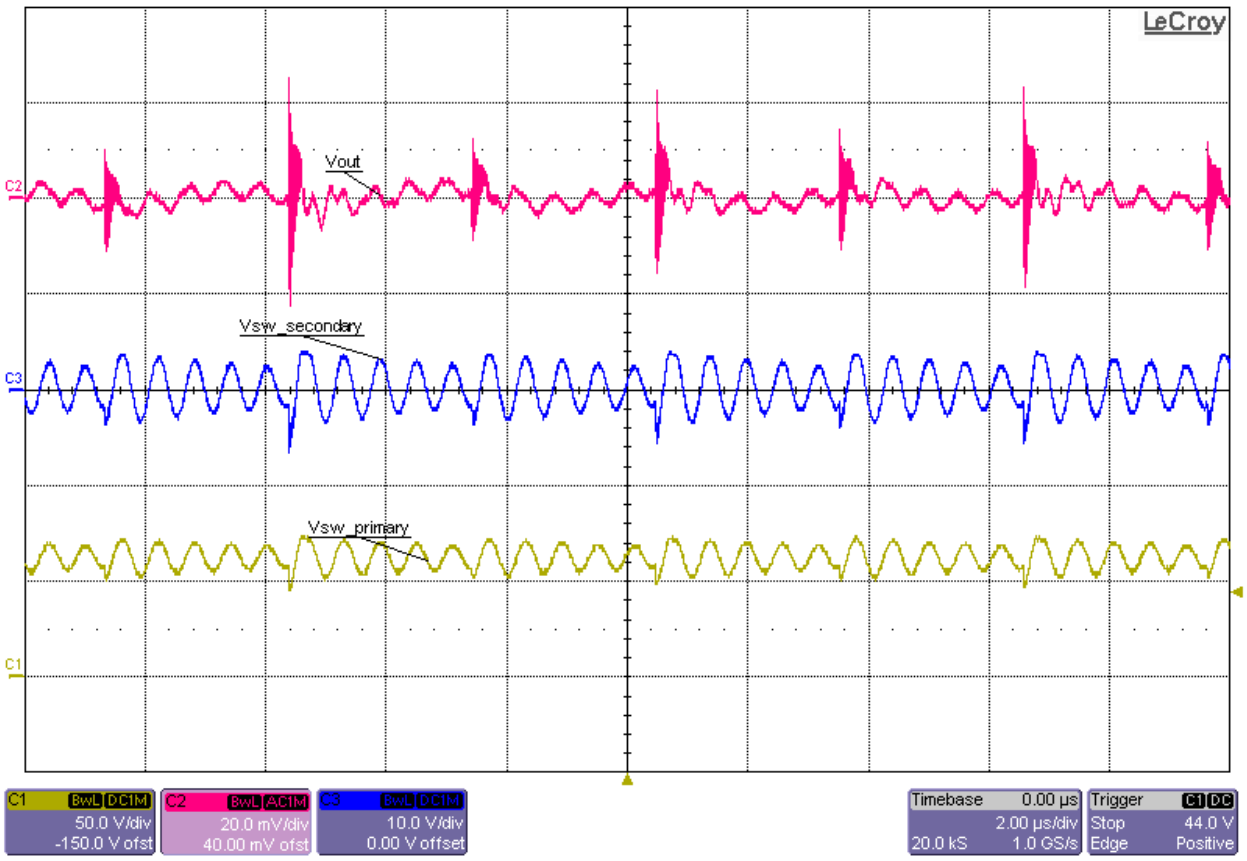
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 9V and No Load (Vripple ≈ 8mVp-p)



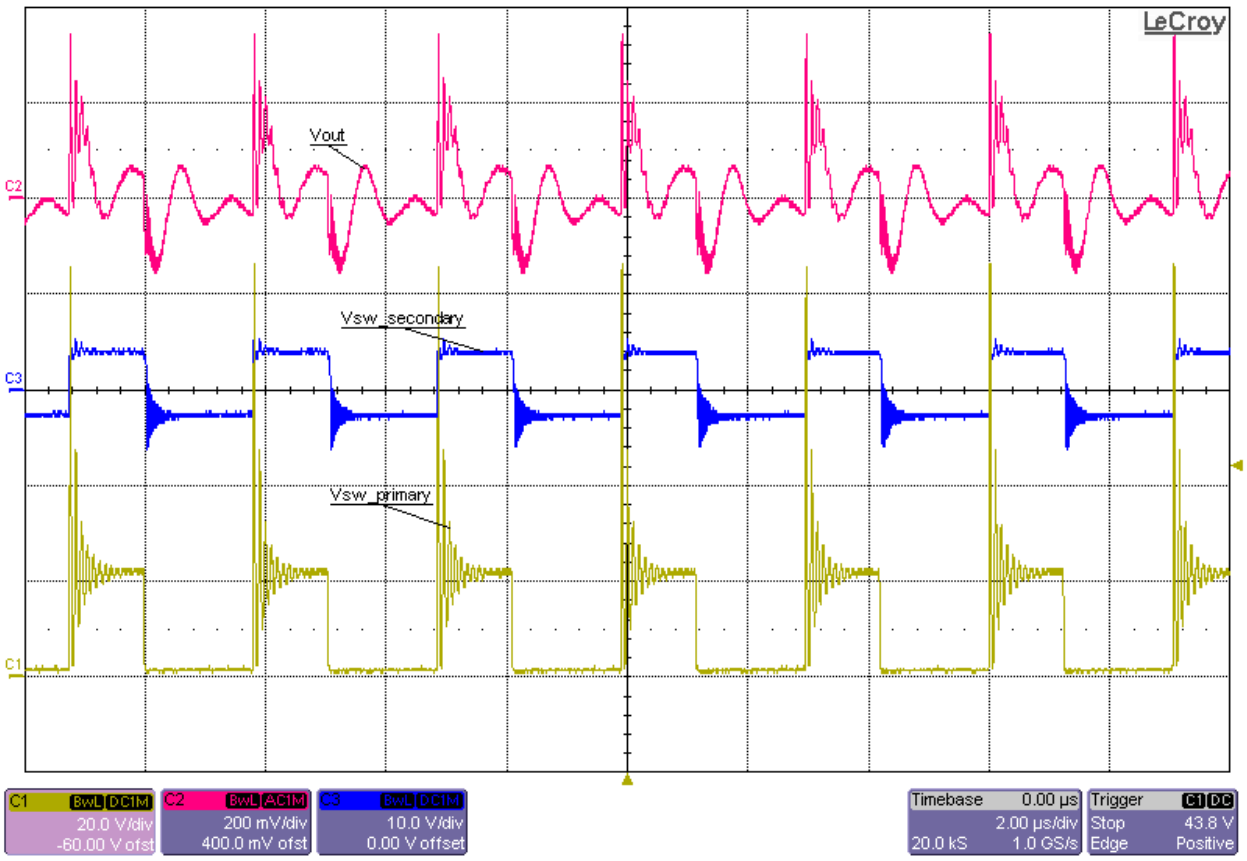
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 26V and No Load (Vripple ≈ 8mVp-p)



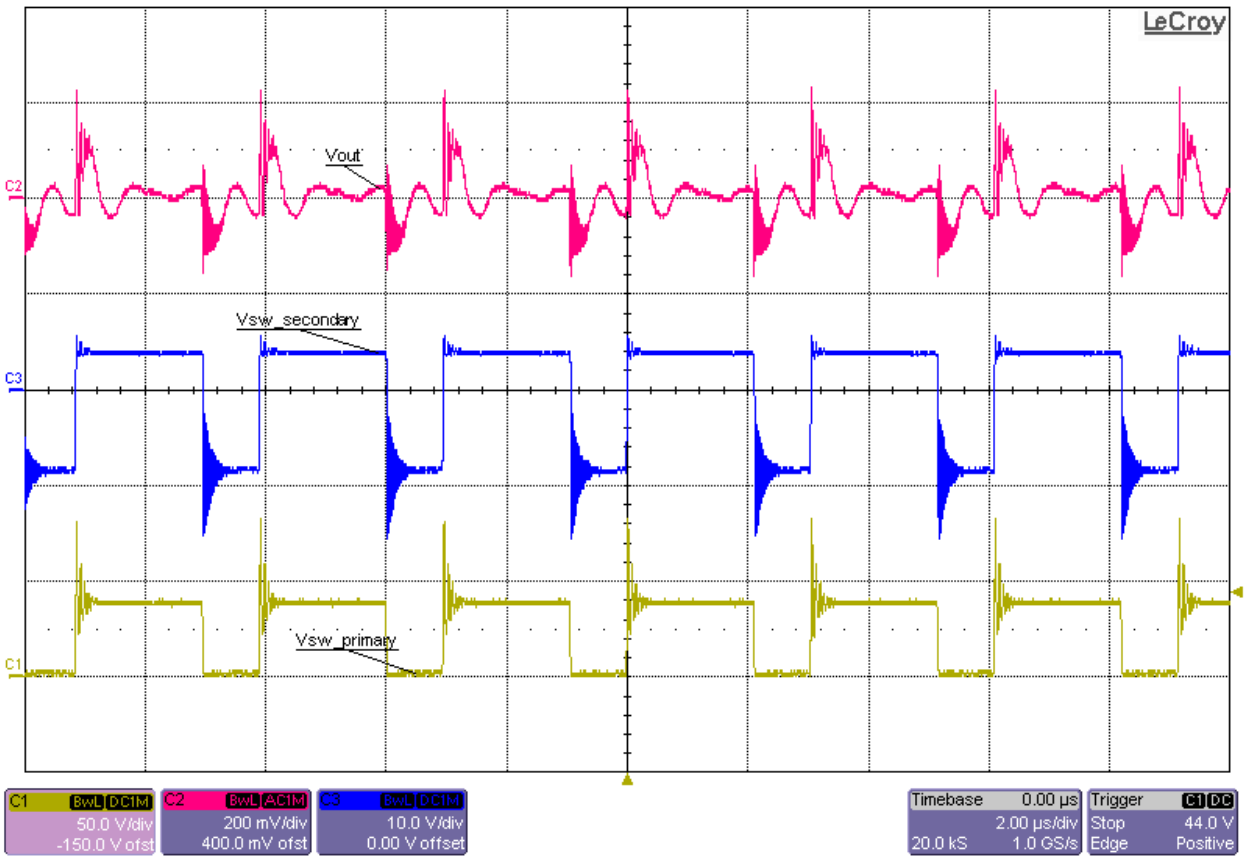
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 43V and No Load (Vripple ≈ 8mVp-p)



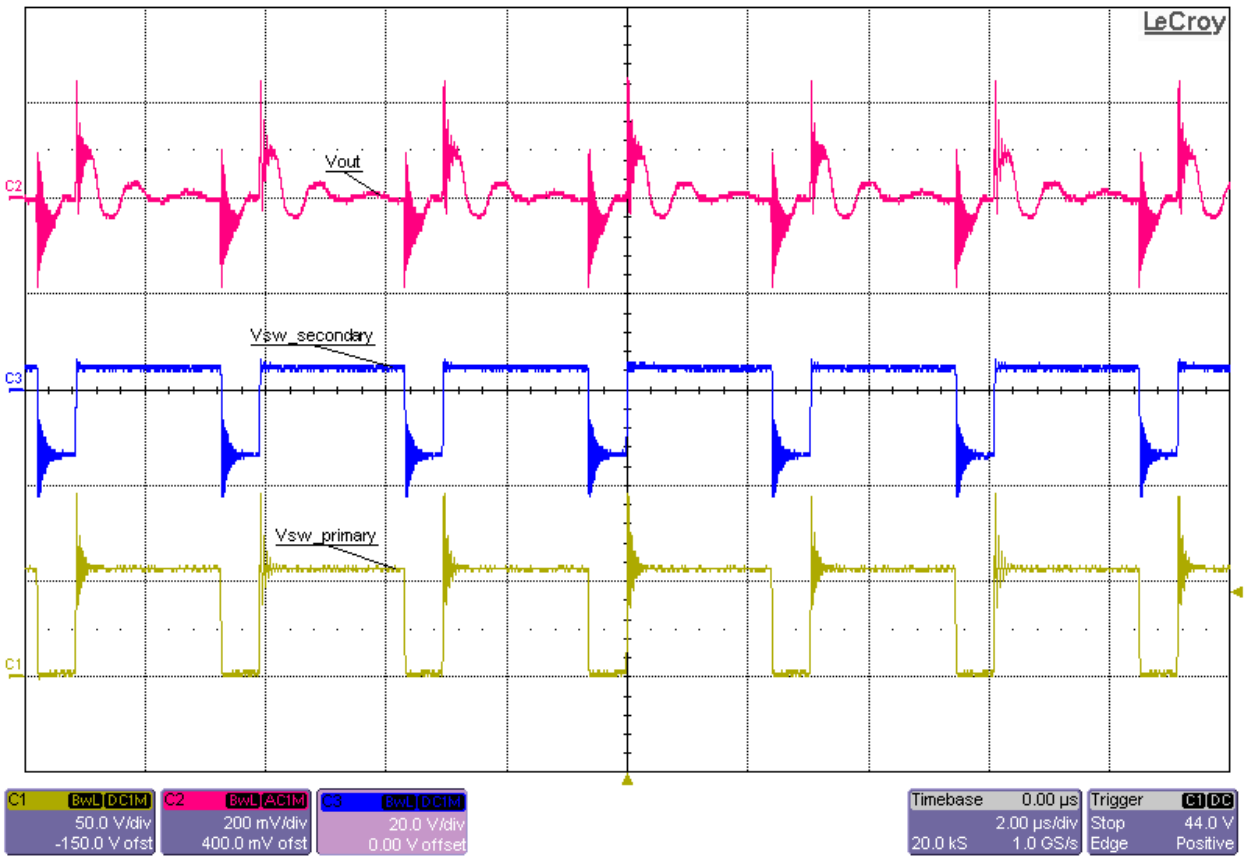
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 60V and No Load (Vripple ≈ 10mVp-p)



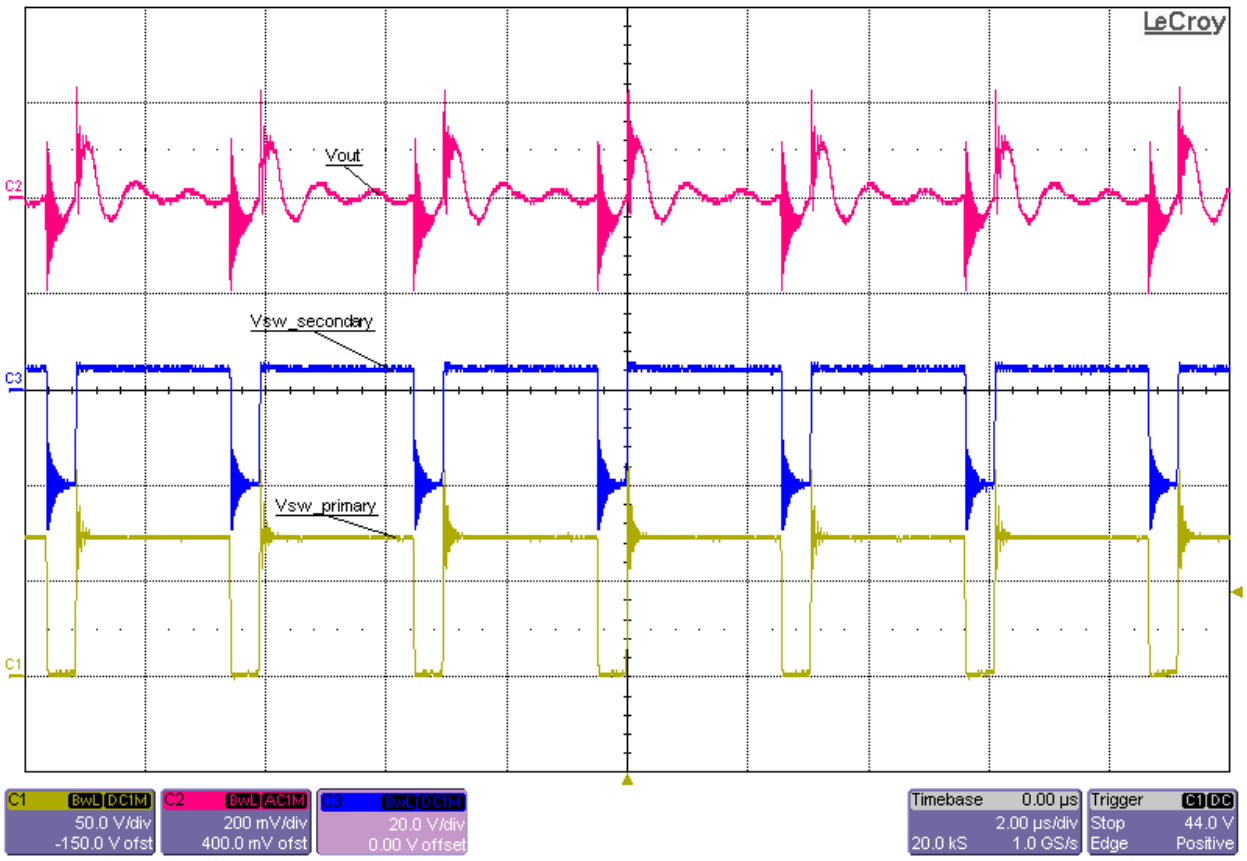
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 9V and 4.5A Load (Vripple ≈ 320mVp-p)



Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 26V and 4.5A Load (Vripple ≈ 160mVp-p)

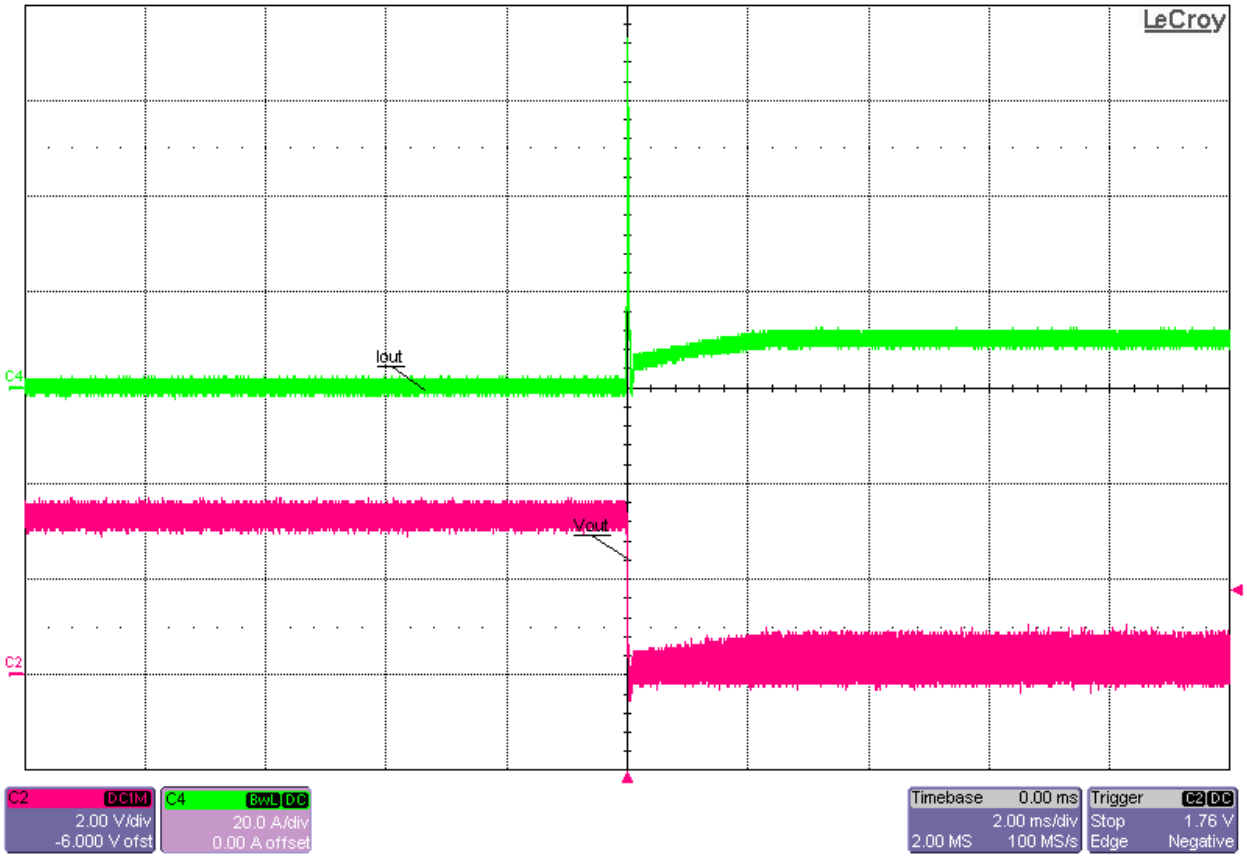


Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 43V and 4.5A Load (Vripple ≈ 160mVp-p)

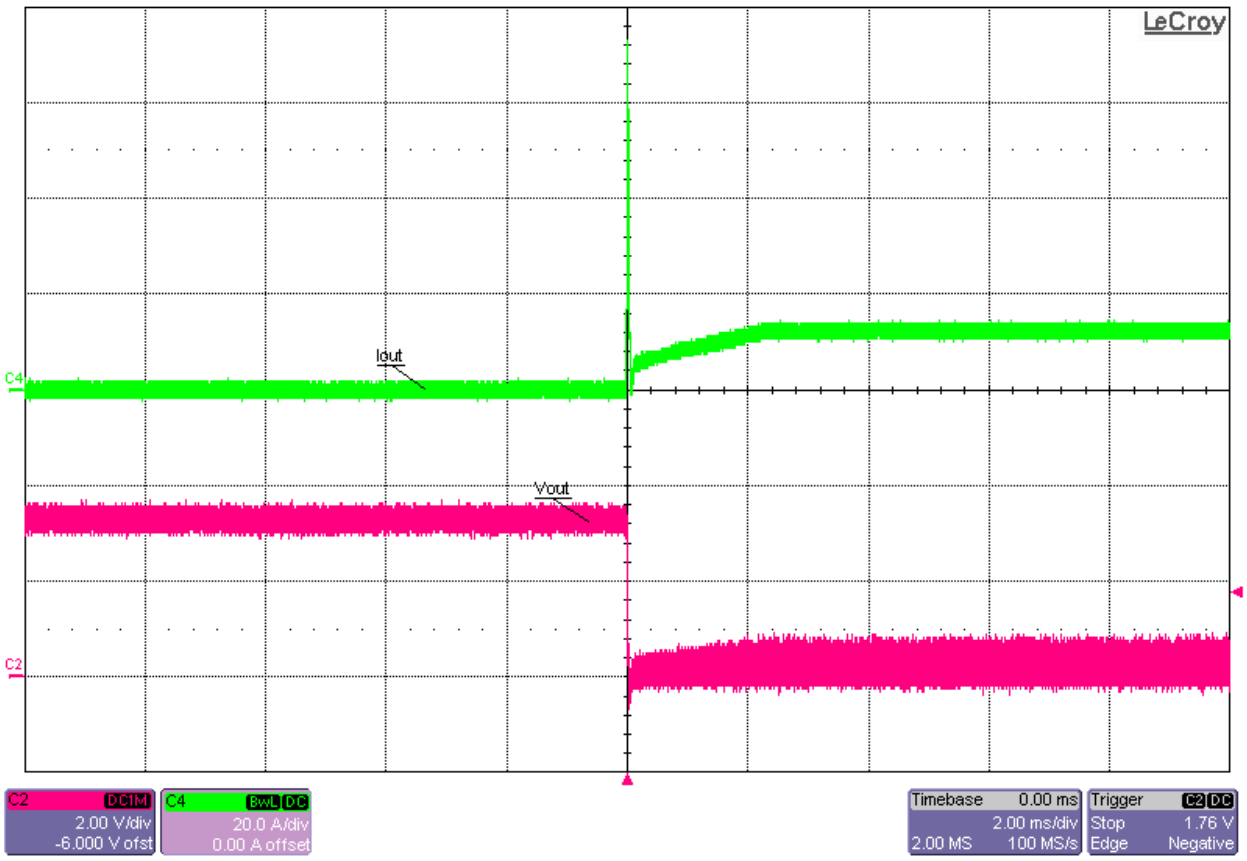


Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 60V and 4.5A Load (Vripple ≈ 180mVp-p)

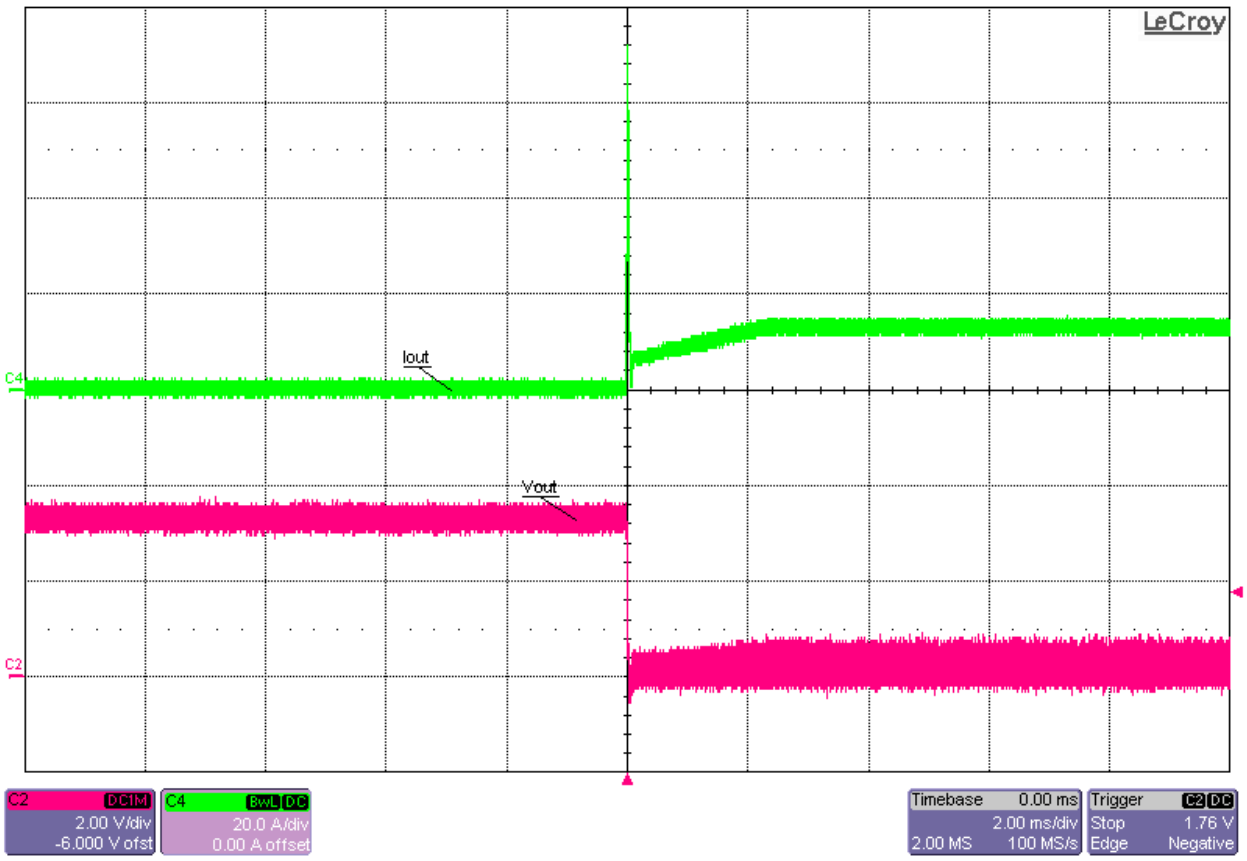
6.4 Short Circuit Application



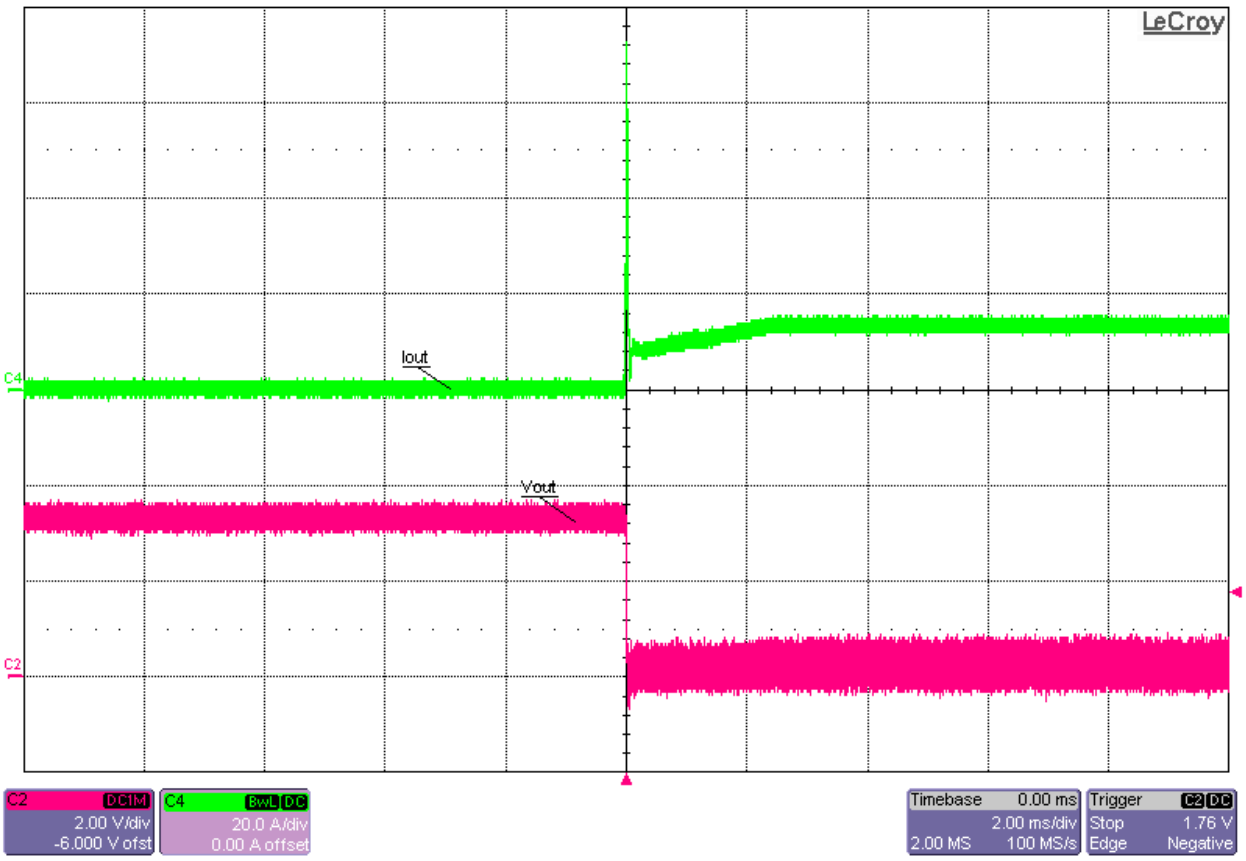
Short Circuit Applied at 9Vin



Short Circuit Applied at 26Vin

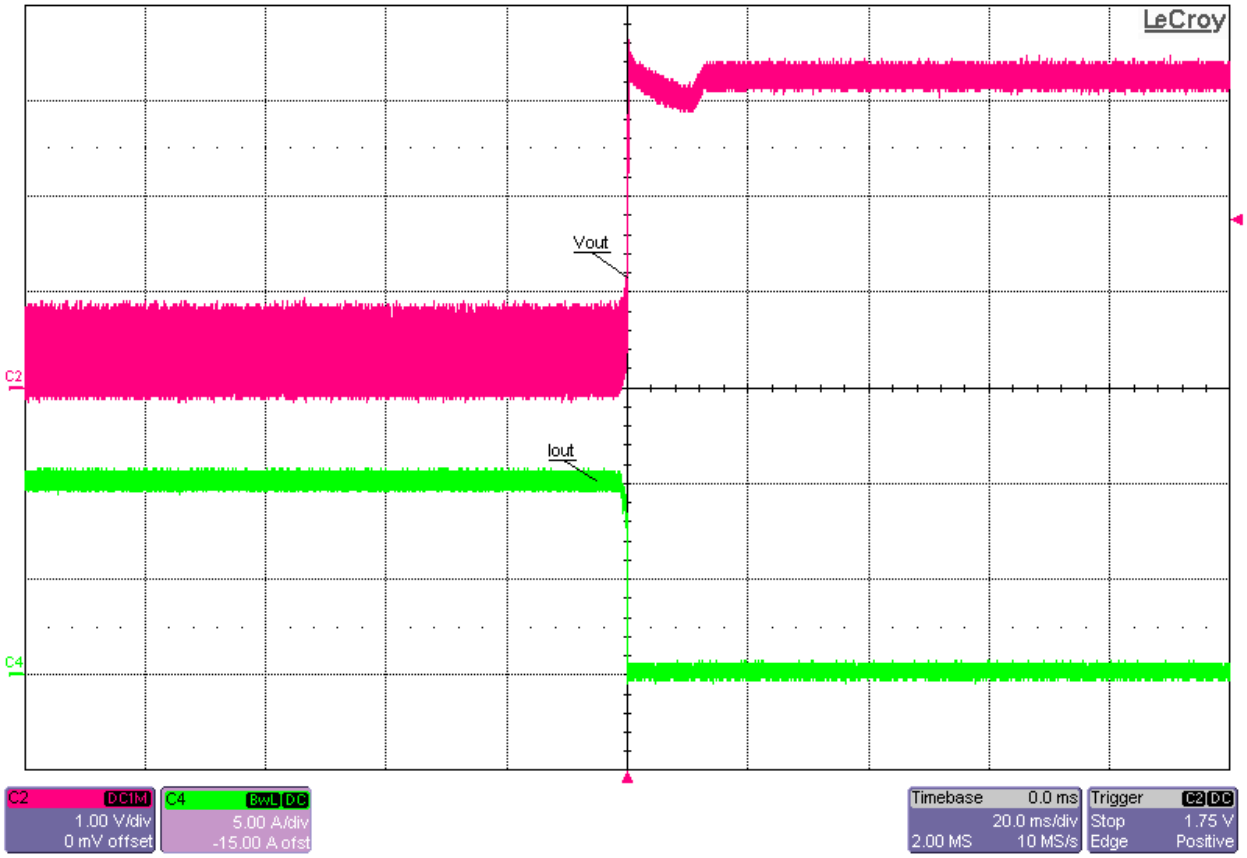


Short Circuit Applied at 43Vin

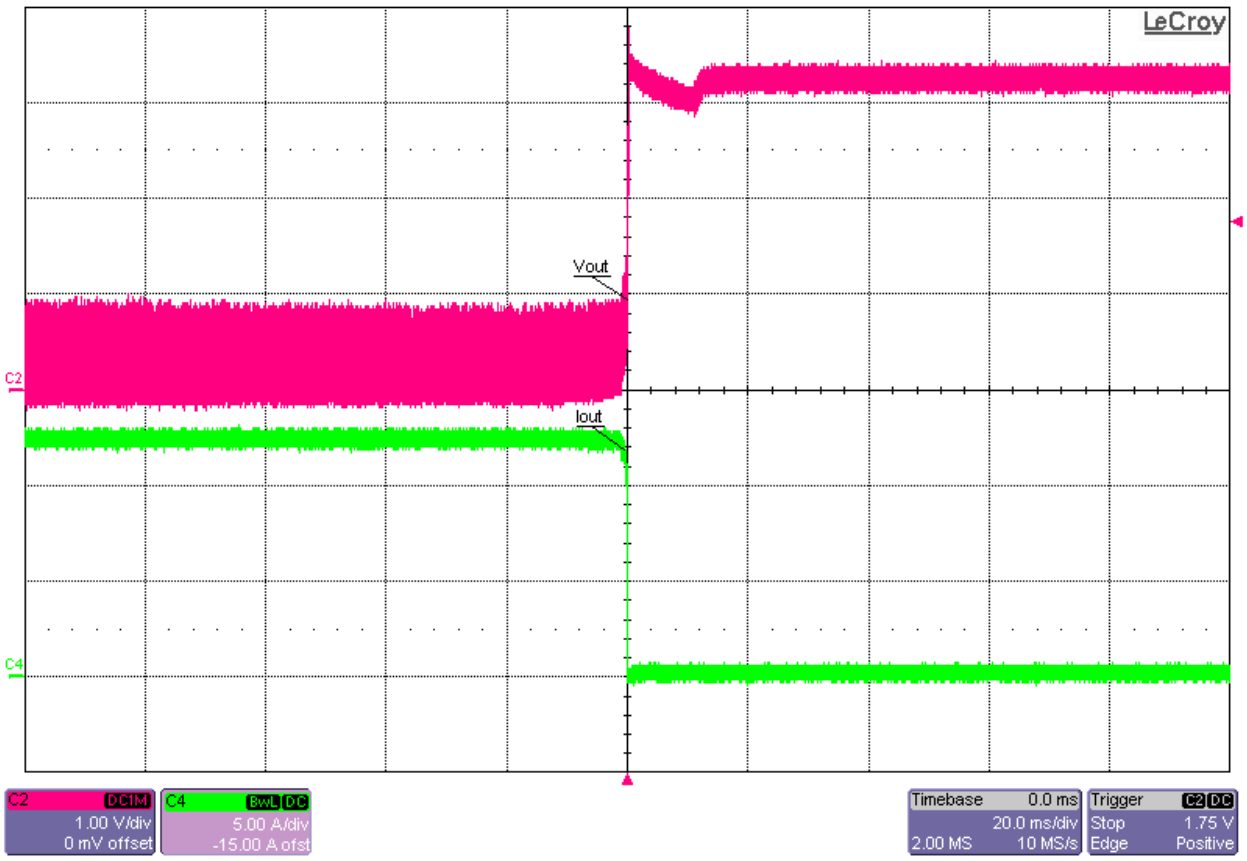


Short Circuit Applied at 60Vin

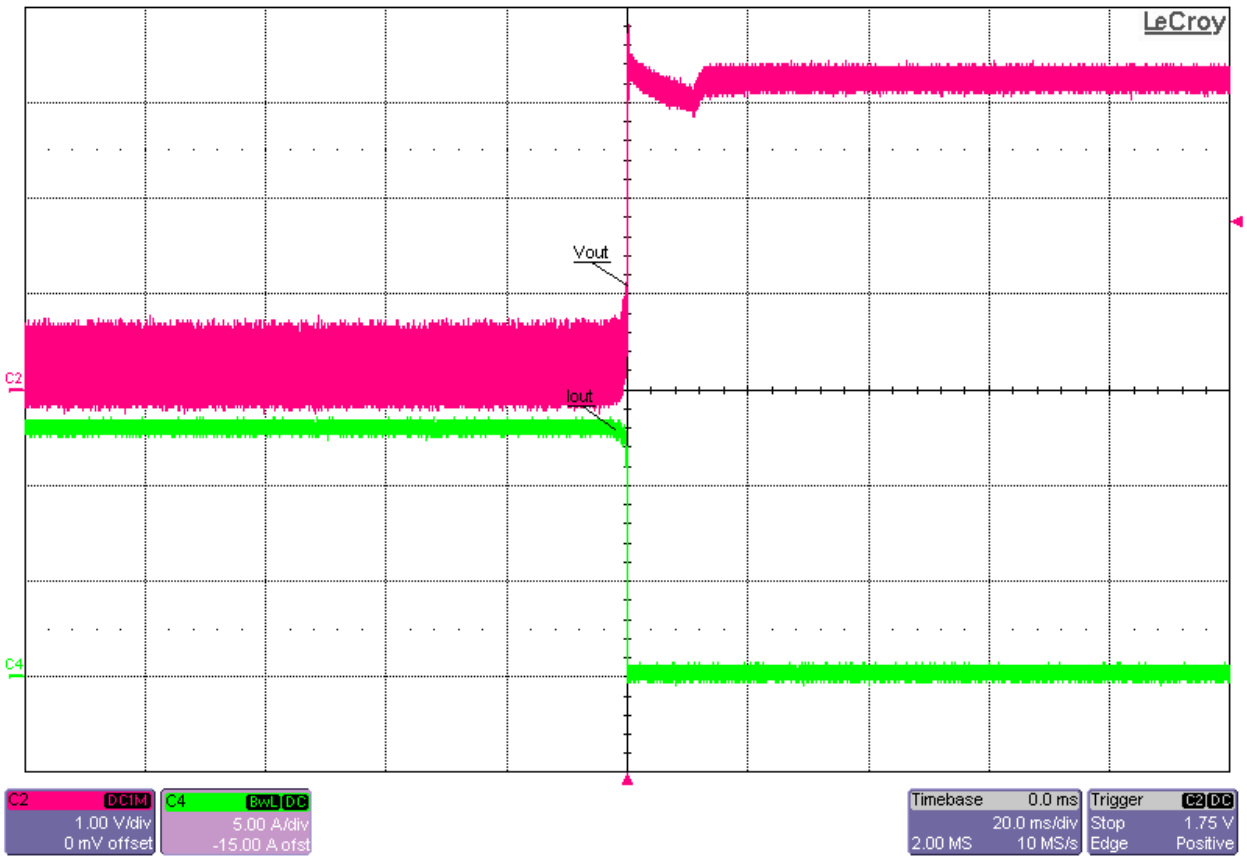
6.5 Short Circuit Recovery



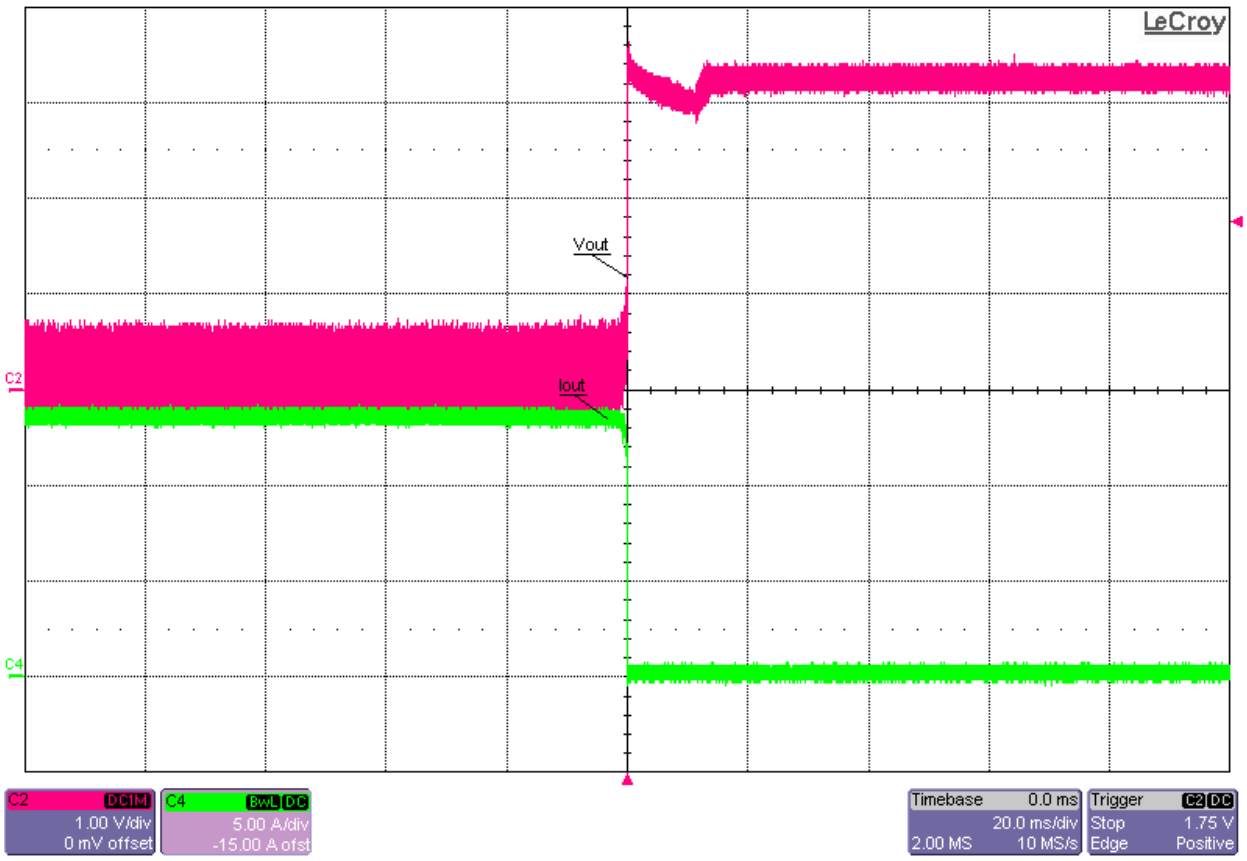
Short Circuit Recovery at 9Vin



Short Circuit Recovery at 26Vin



Short Circuit Recovery at 43Vin



Short Circuit Recovery at 60Vin

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