Test Data
For PMP9253
9/4/2013

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1. Design Specifications

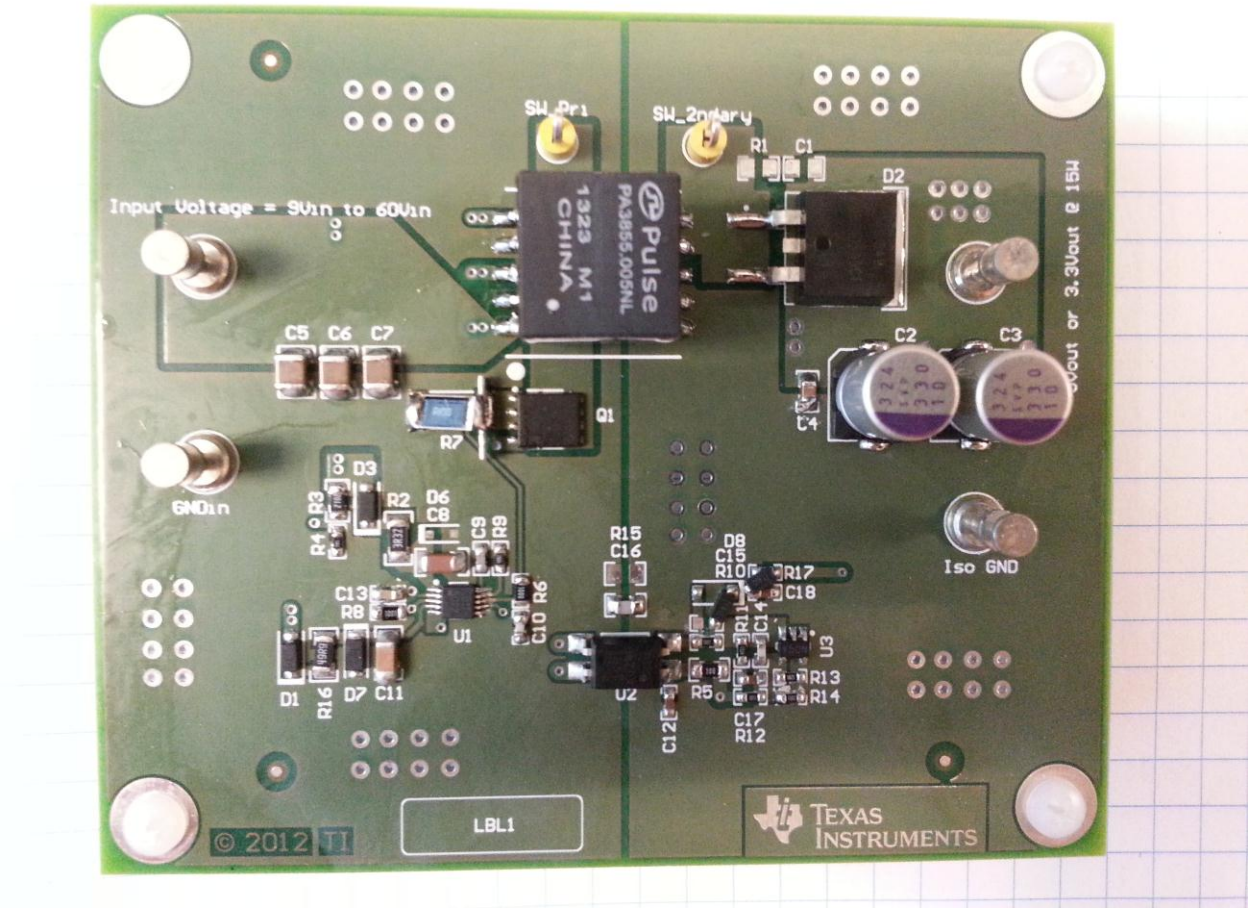
Vin Min.	**9VDC**
Vin Max.	**60VDC**
Vout	**5VDC**
Iout	**3A Max.**
Target Switching Frequency	**325KHz**

2. Circuit Description

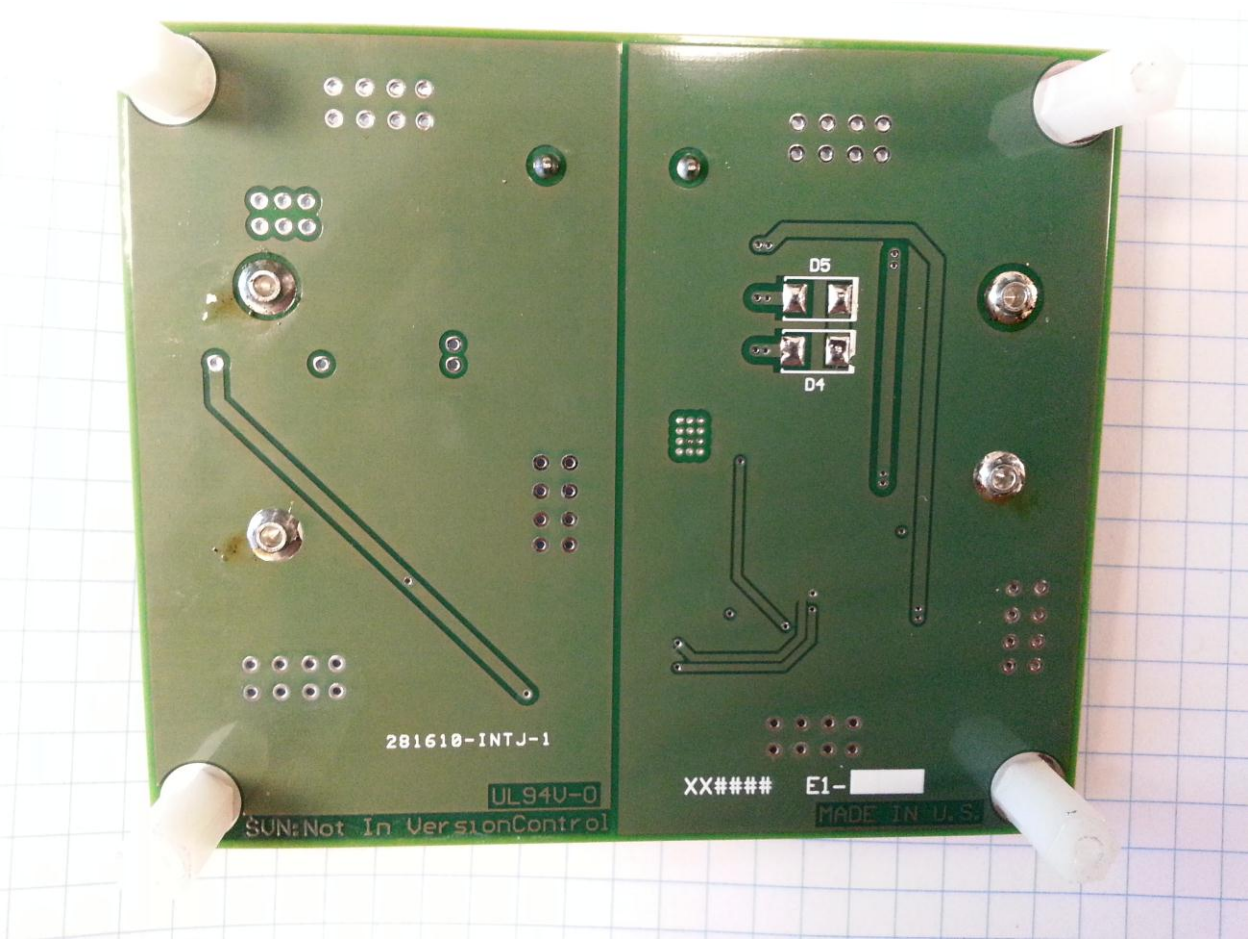
PMP9253 is an Isolated Flyback Converter which accepts an input voltage of 9Vin to 60Vin and provides an output of 5Vout capable of supplying 3A of current to the load.

3. PMP9253 Board Photos

Board Dimensions: 3.7” x 3.1”

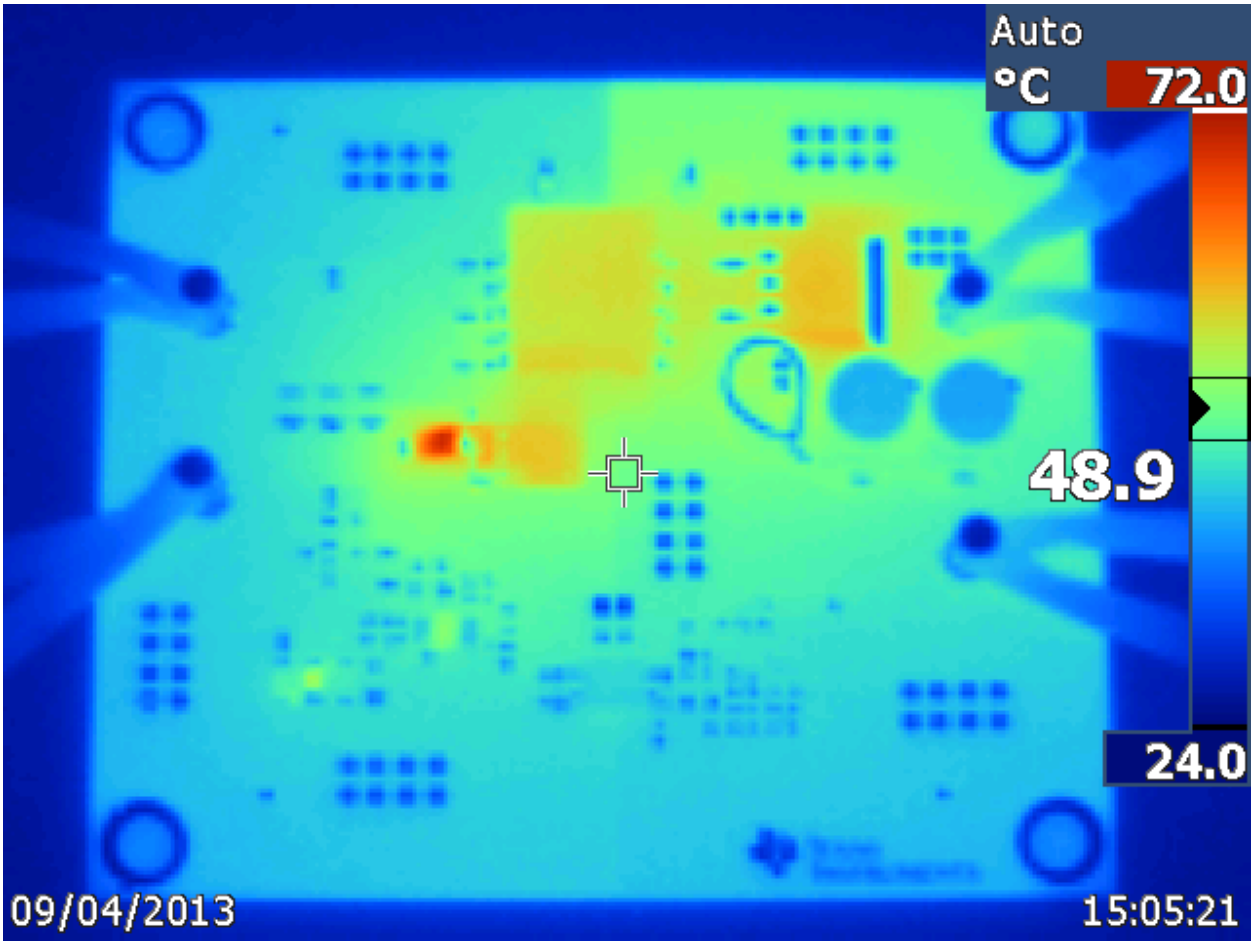


Board Photo (Top)

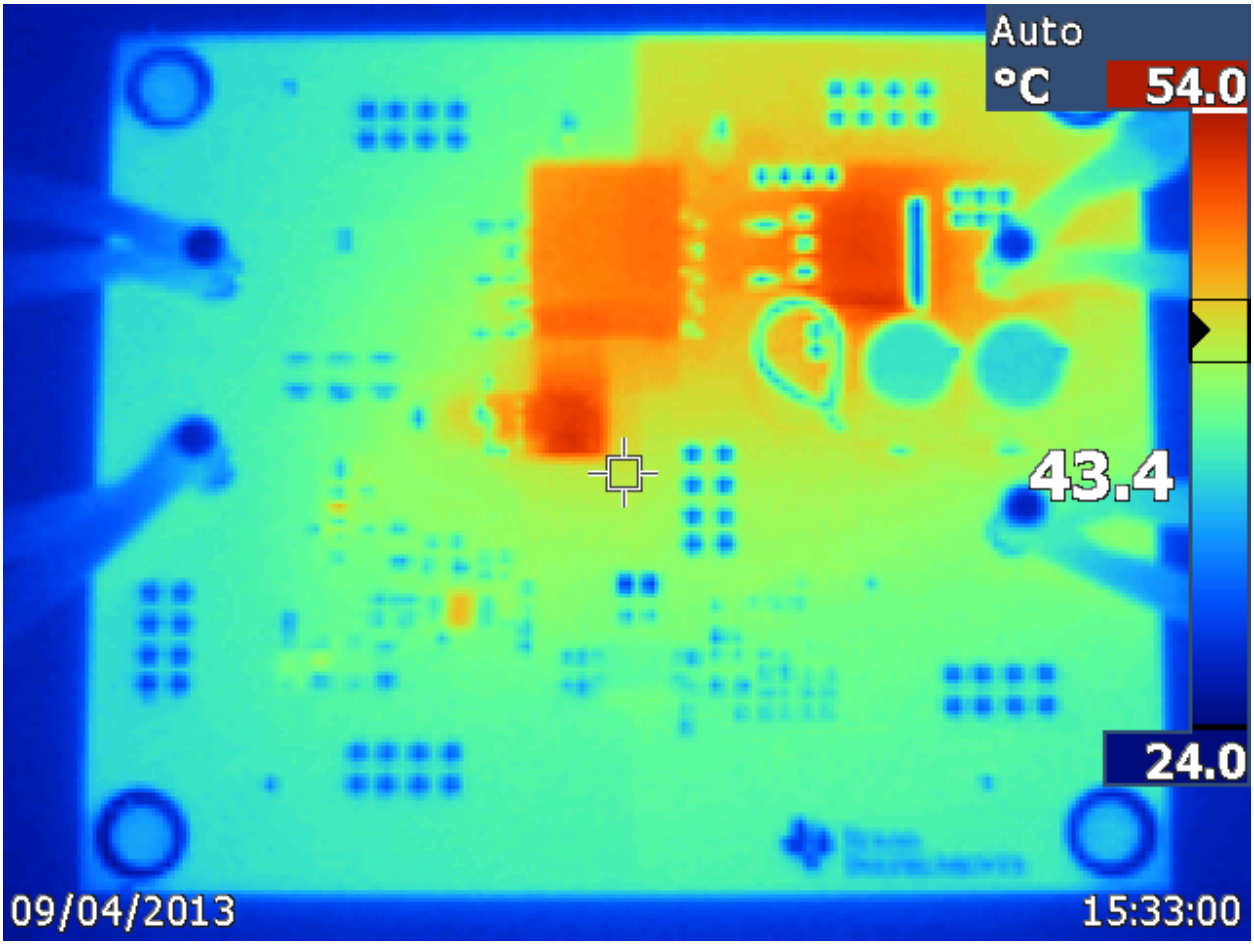


Board Photo (Bottom)

4. Thermal Data



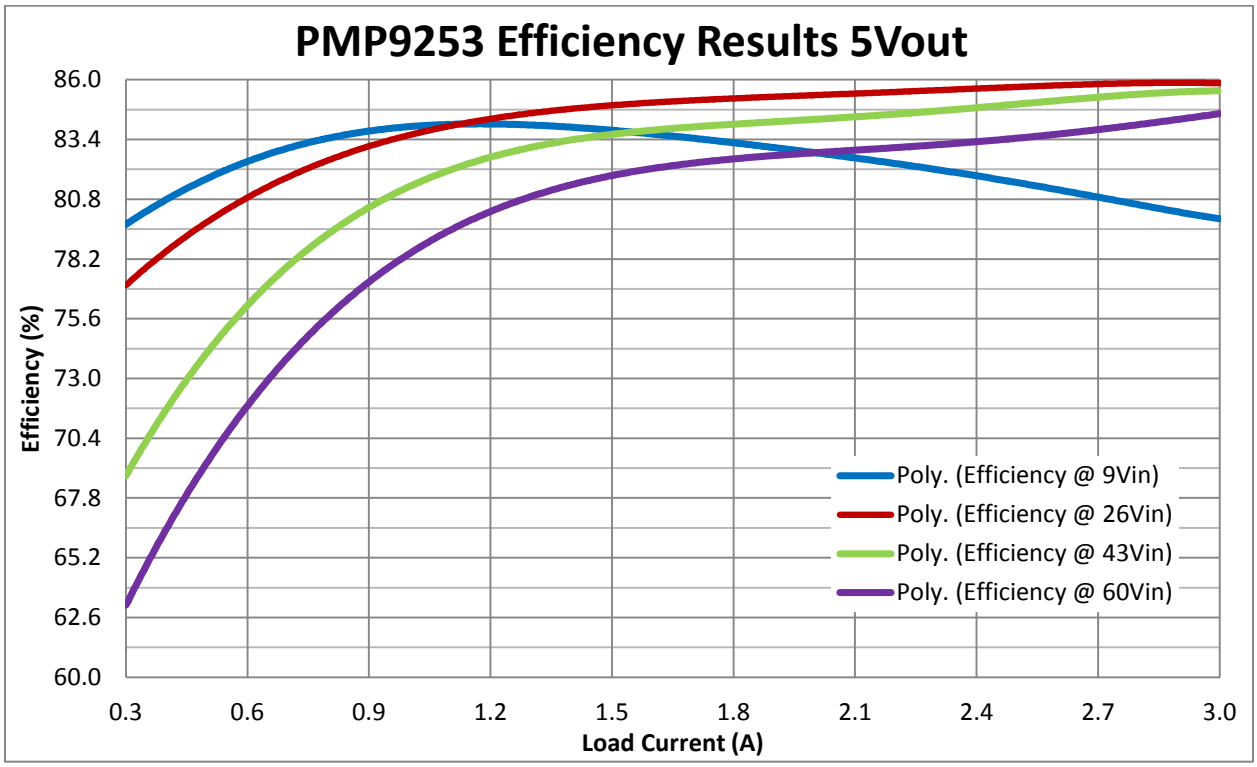
IR thermal image taken at steady state at 3A load and Vin = 9V with no airflow (for improved thermal performance, it is recommended to use 2oz Copper or heavier, heatsinks, higher power rated current sense resistor, and/or airflow)



IR thermal image taken at steady state at 3A 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 (%)
8.9967	0.2112	5.0501	0.2999	1.900103	1.514525	79.7
8.9963	0.4085	5.0492	0.5999	3.674989	3.029015	82.4
8.9962	0.6026	5.0488	0.8999	5.42111	4.543415	83.8
8.9958	0.8013	5.0483	1.2	7.208335	6.05796	84.0
8.9953	1.0046	5.0477	1.5001	9.036678	7.572055	83.8
8.9948	1.2128	5.0468	1.8001	10.90889	9.084745	83.3
8.994	1.4263	5.0458	2.0999	12.82814	10.59568	82.6
8.9932	1.6459	5.0448	2.4	14.80191	12.10752	81.8
8.9923	1.8719	5.0438	2.7	16.83269	13.61826	80.9
8.9912	2.1047	5.0426	3	18.92378	15.1278	79.9

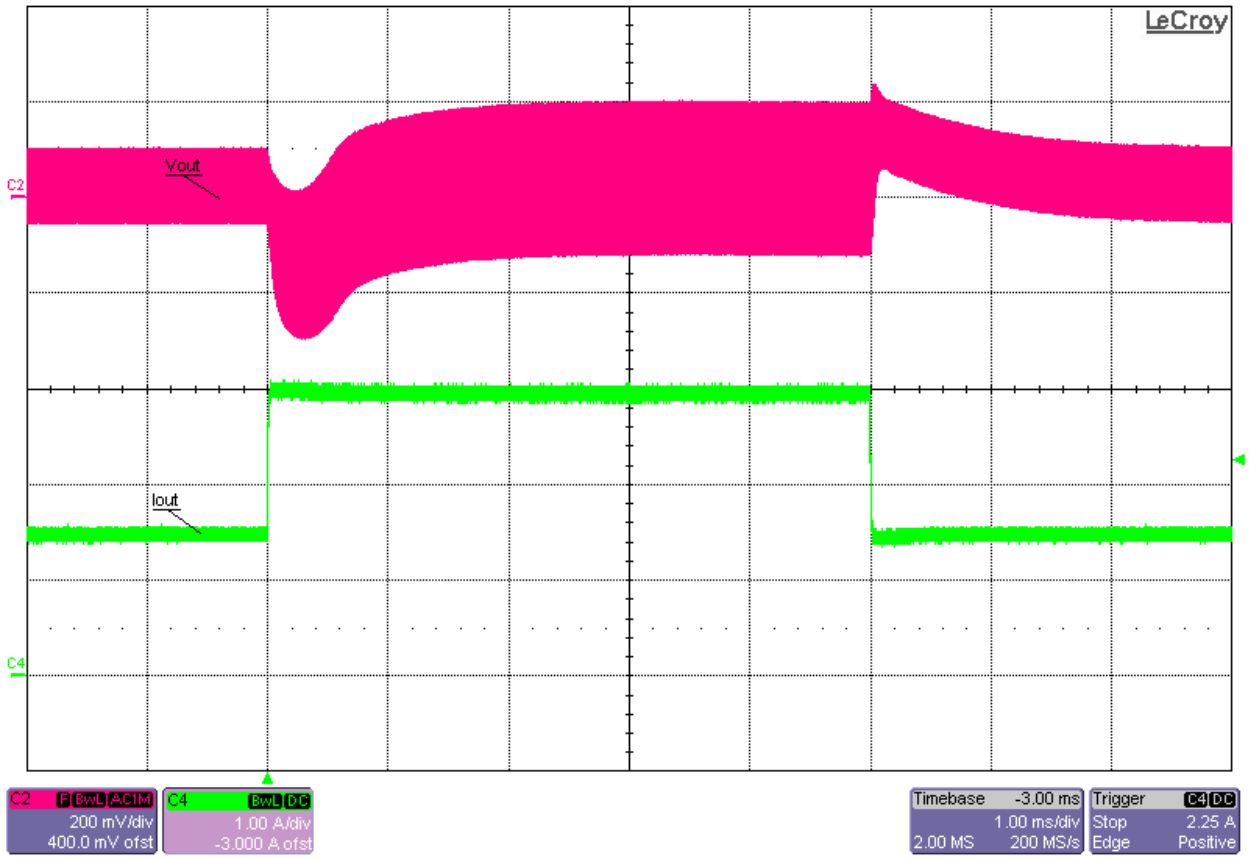
Vin (V)	Iin (A)	Vout (V)	Iout (A)	Pin (W)	Pout (W)	Efficiency (%)
25.997	0.0751	5.046	0.3	1.952375	1.5138	77.5
25.996	0.1472	5.0451	0.6	3.826611	3.02706	79.1
25.996	0.2049	5.046	0.9	5.32658	4.5414	85.3
25.996	0.2783	5.045	1.2	7.234687	6.054	83.7
25.996	0.3443	5.0441	1.5	8.950423	7.56615	84.5
25.996	0.4102	5.0436	1.8	10.66356	9.07848	85.1
25.995	0.4765	5.0431	2.1	12.38662	10.59051	85.5
25.995	0.5431	5.0425	2.4	14.11788	12.102	85.7
25.994	0.6104	5.042	2.7	15.86674	13.6134	85.8
25.994	0.678	5.0415	3	17.62393	15.1245	85.8

Vin (V)	Iin (A)	Vout (V)	Iout (A)	Pin (W)	Pout (W)	Efficiency (%)
43	0.0511	5.045	0.3	2.1973	1.5135	68.9
43	0.0929	5.0441	0.6001	3.9947	3.026964	75.8
42.999	0.1302	5.045	0.9	5.59847	4.5405	81.1
42.999	0.1718	5.0443	1.2001	7.387228	6.053664	81.9
42.999	0.2088	5.045	1.5	8.978191	7.5675	84.3
42.999	0.2524	5.0428	1.8001	10.85295	9.077544	83.6
42.998	0.2918	5.042	2.1001	12.54682	10.5887	84.4
42.998	0.3315	5.0413	2.4	14.25384	12.09912	84.9
42.998	0.3713	5.0406	2.7	15.96516	13.60962	85.2
42.997	0.4113	5.0399	3	17.68467	15.1197	85.5

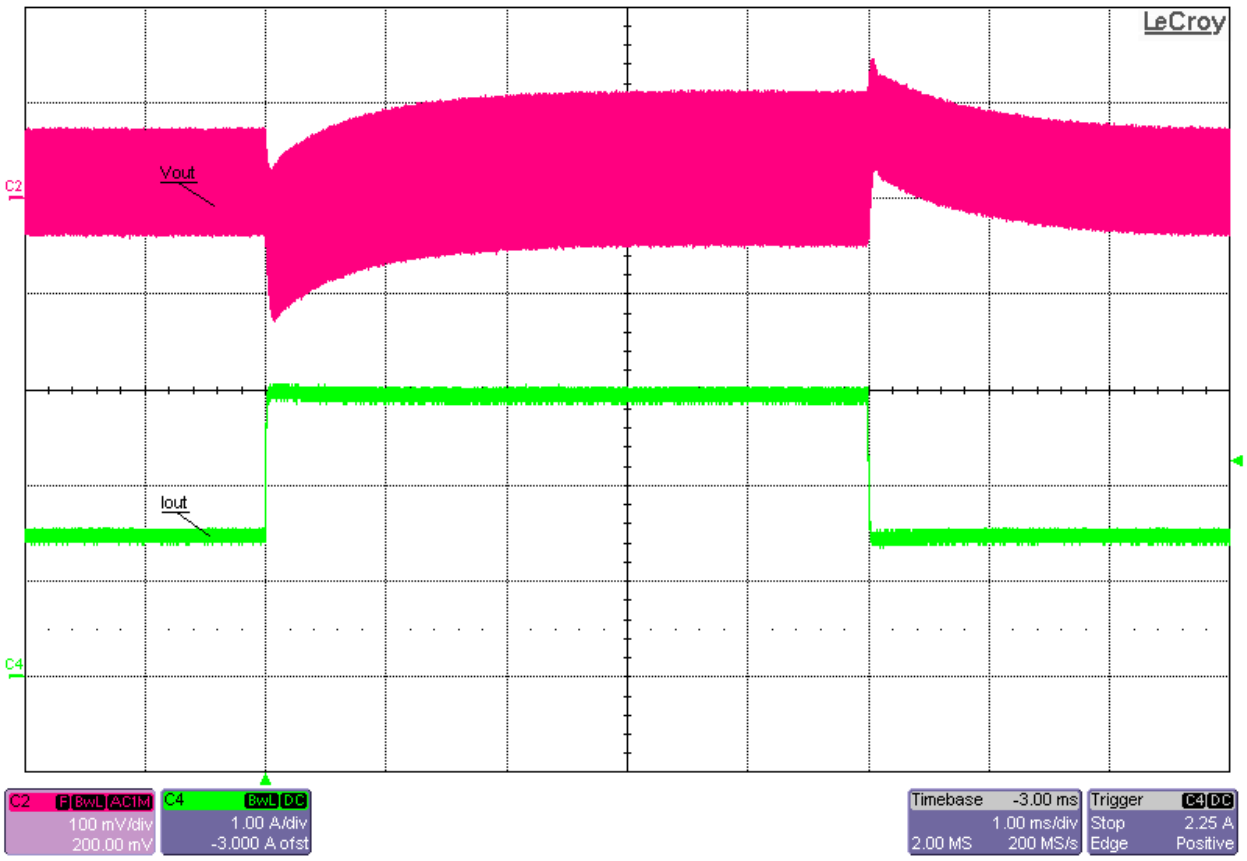
Vin (V)	Iin (A)	Vout (V)	Iout (A)	Pin (W)	Pout (W)	Efficiency (%)
60.004	0.0415	5.044	0.3001	2.490166	1.513704	60.8
60.004	0.0681	5.0446	0.6001	4.086272	3.027264	74.1
60.004	0.098	5.0439	0.8999	5.880392	4.539006	77.2
60.004	0.1263	5.0439	1.1999	7.578505	6.052176	79.9
60.004	0.1554	5.0433	1.4999	9.324622	7.564446	81.1
60.004	0.1818	5.0442	1.8001	10.90873	9.080064	83.2
60.003	0.2135	5.0413	2.1001	12.81064	10.58723	82.6
60.003	0.2418	5.0403	2.3999	14.50873	12.09622	83.4
60.003	0.27	5.0395	2.7	16.20081	13.60665	84.0
60.003	0.2984	5.0385	3.0001	17.9049	15.116	84.4

6 Waveforms

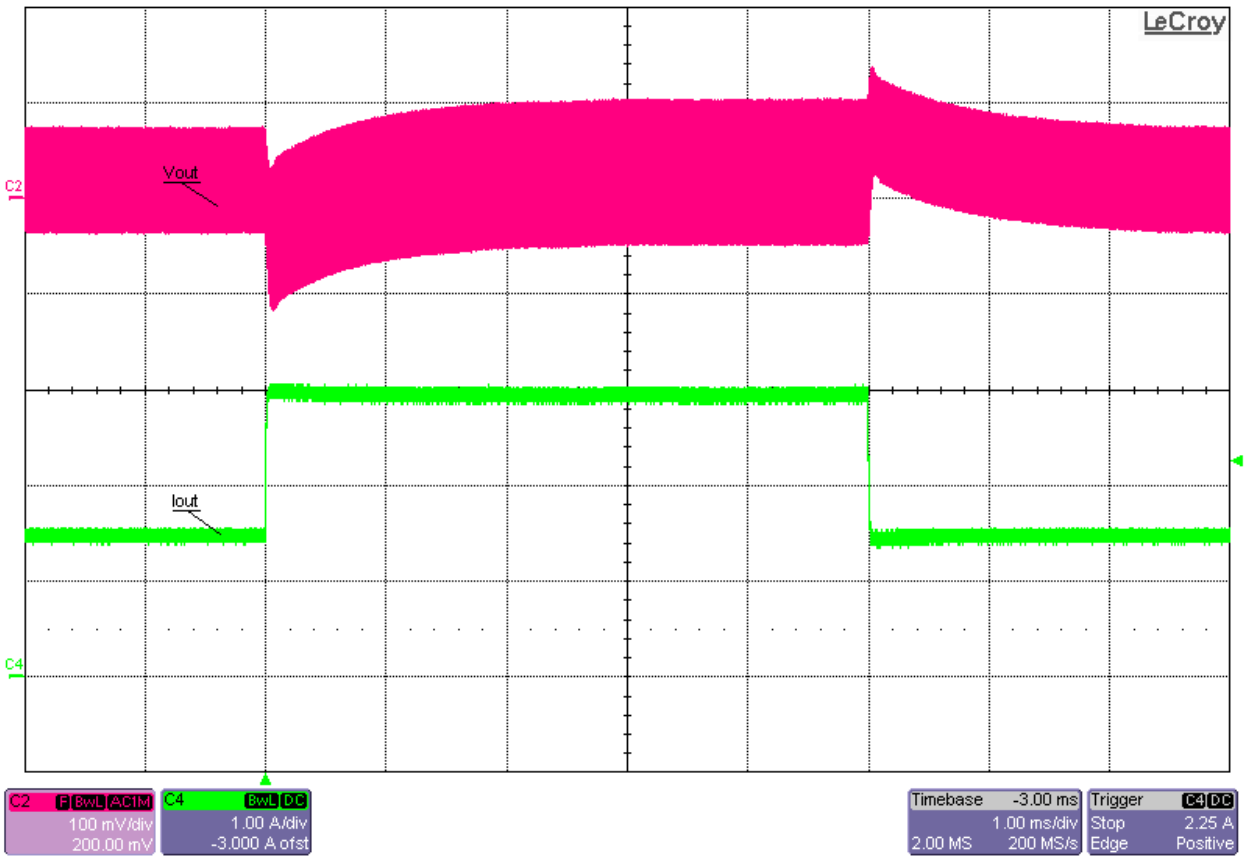
6.1 Load Transient Response



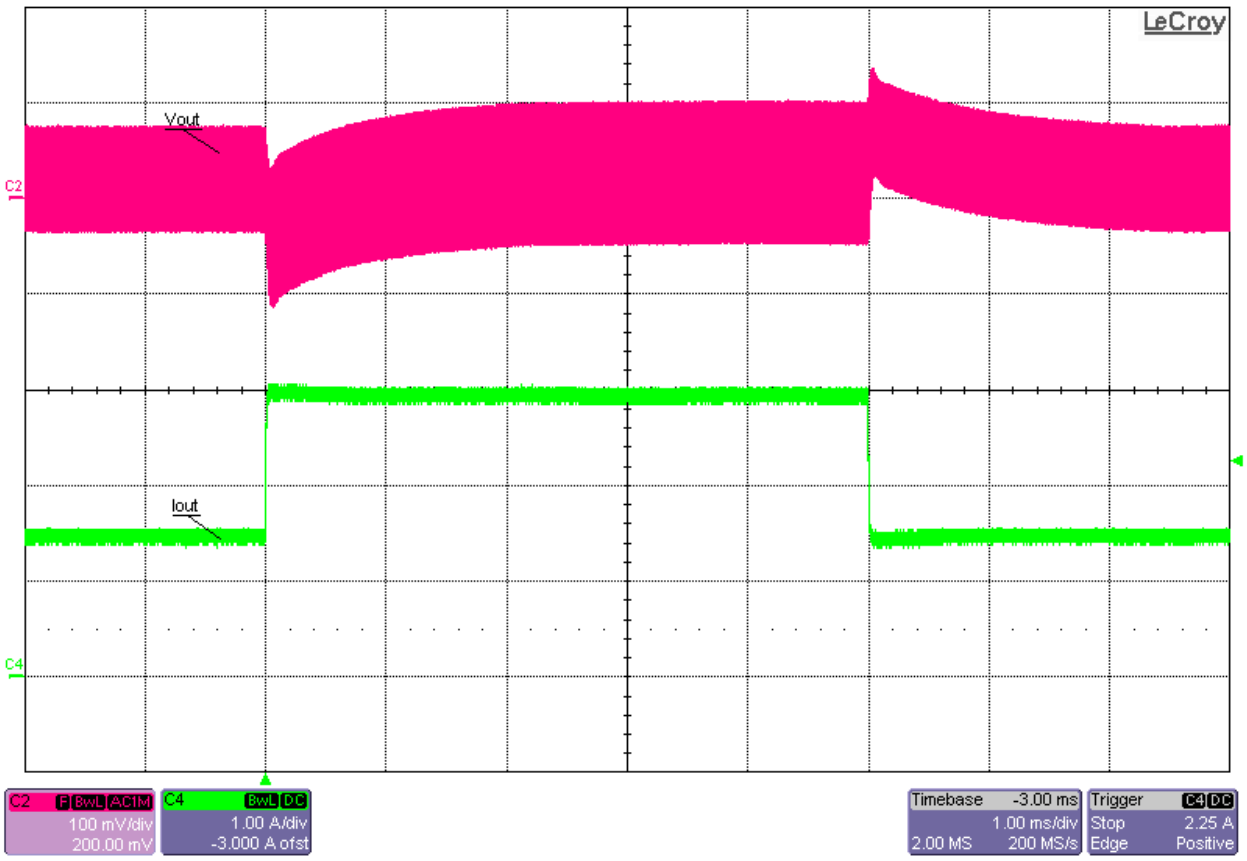
Load Transient Response at Vin = 9V with 50%-to-100% (1.5A-to-3A) Load Step



Load Transient Response at Vin = 26V with 50%-to-100% (1.5A-to-3A) Load Step

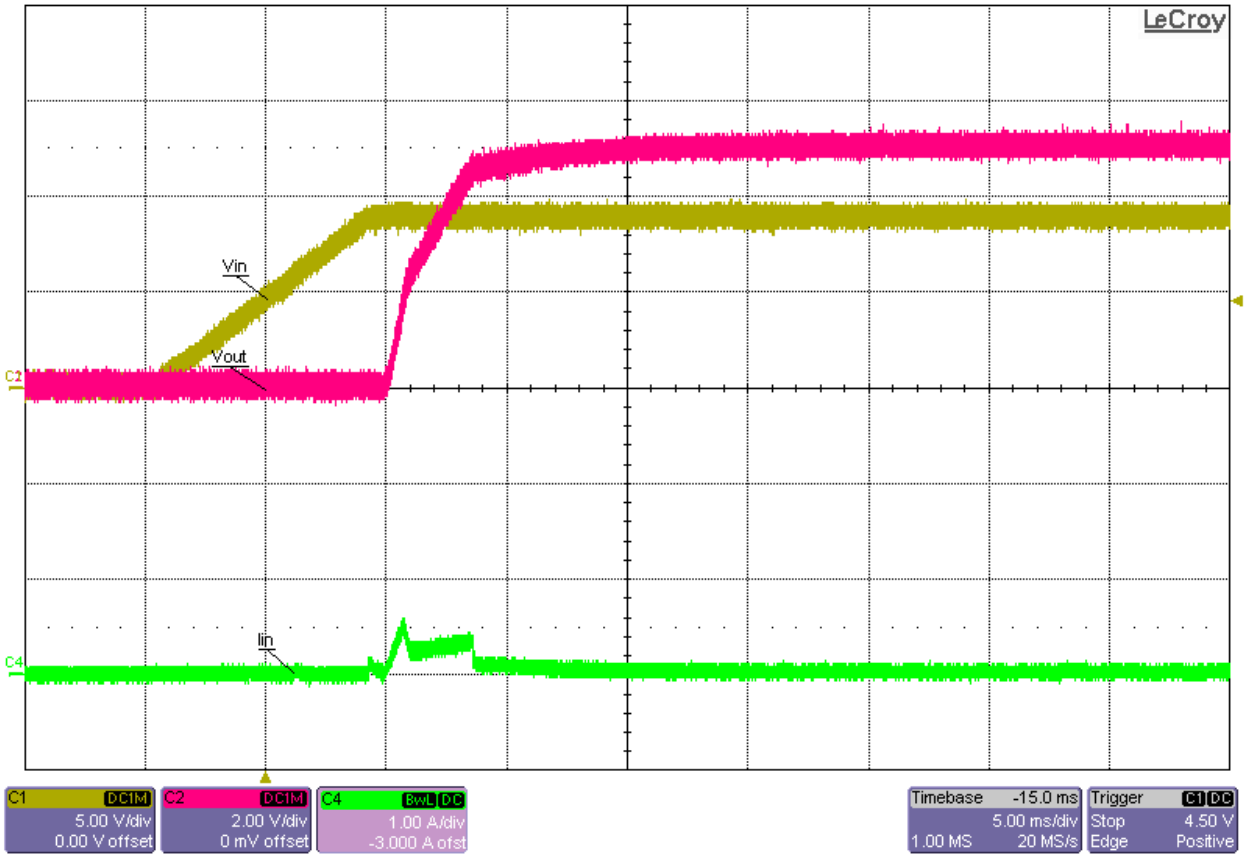


Load Transient Response at Vin = 43V with 50%-to-100% (1.5A-to-3A) Load Step

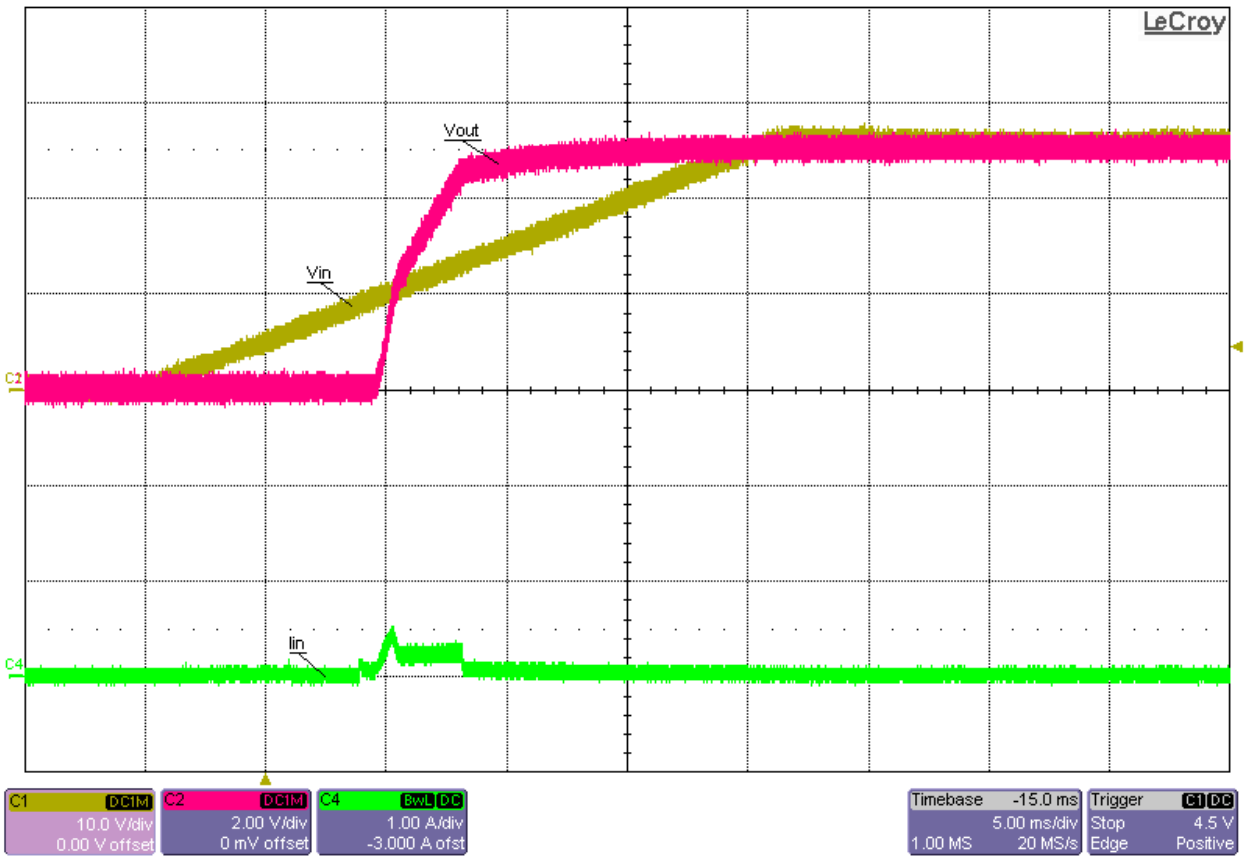


Load Transient Response at Vin = 60V with 50%-to-100% (1.5A-to-3A) Load Step

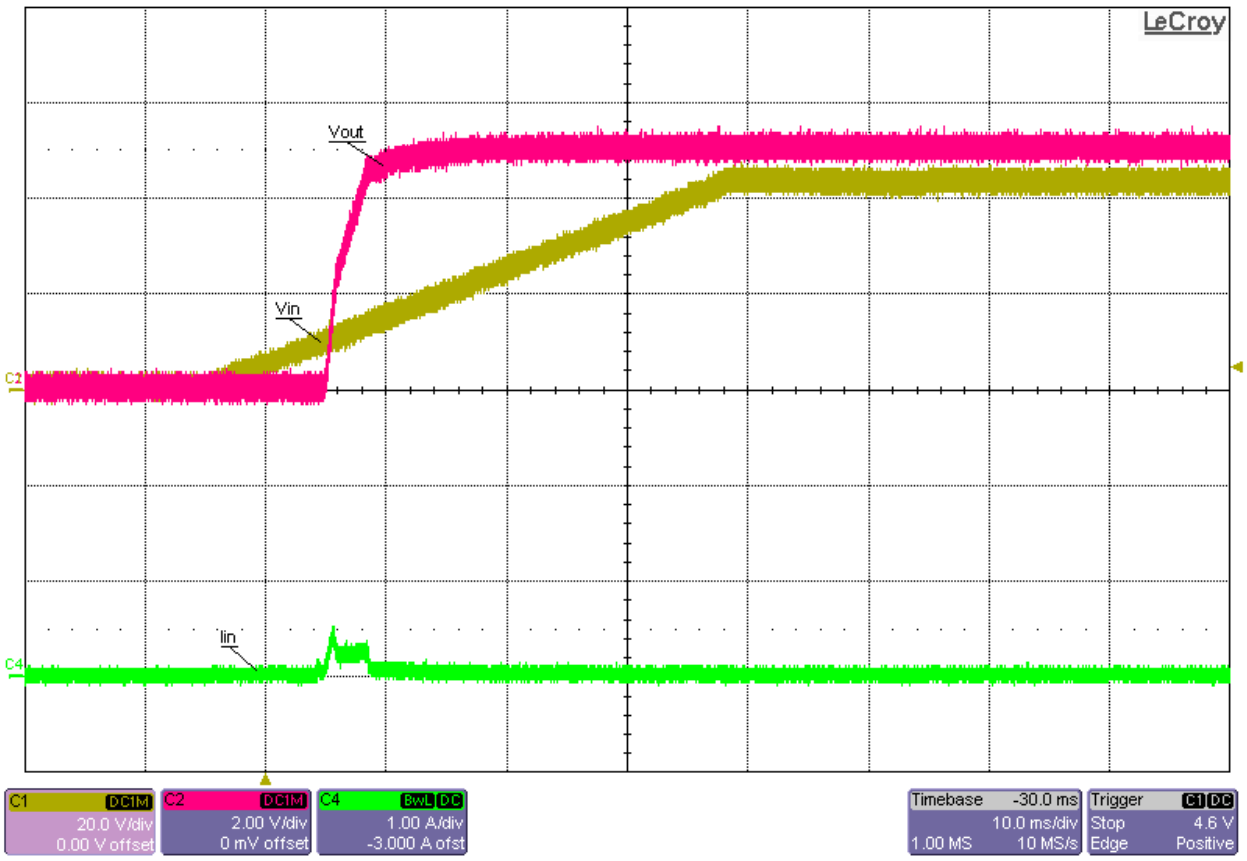
6.2 Startup



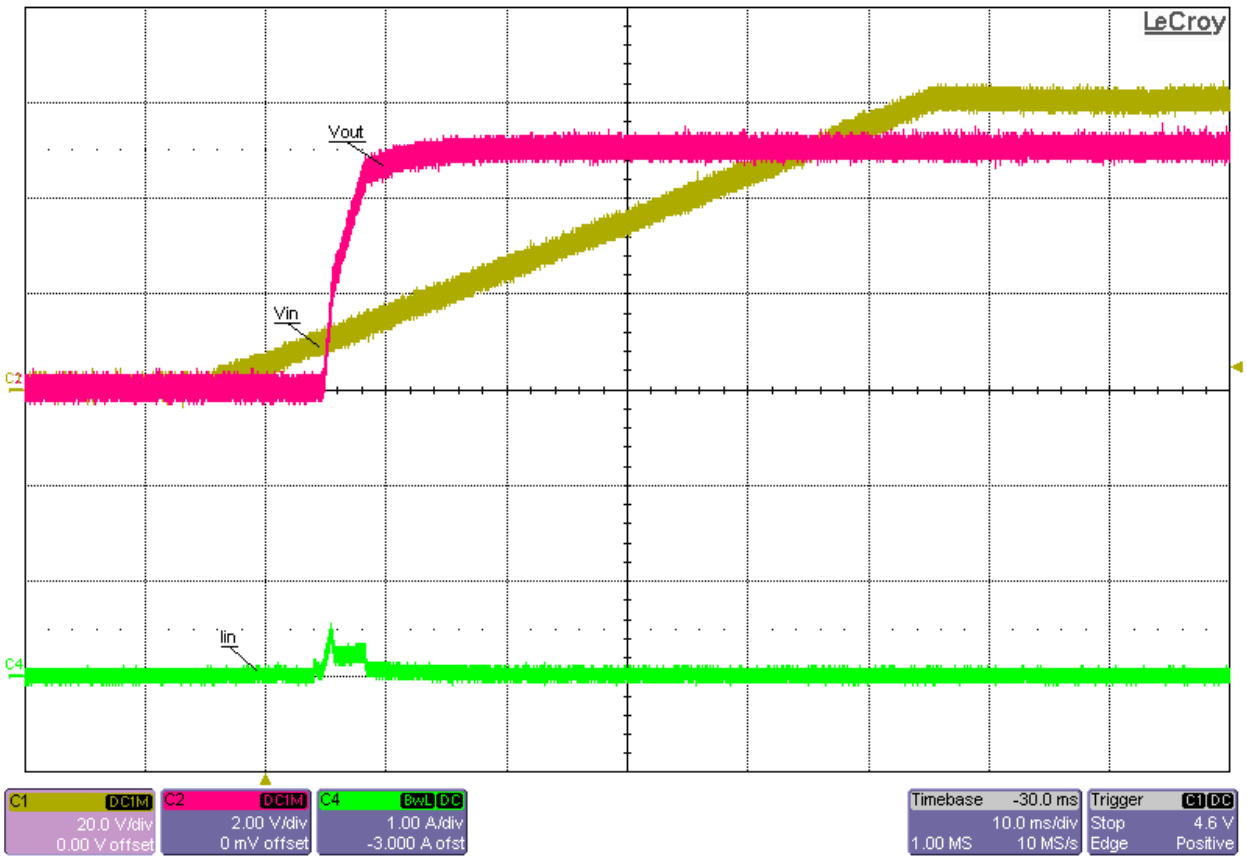
Startup into No Load (Vin = 9V)



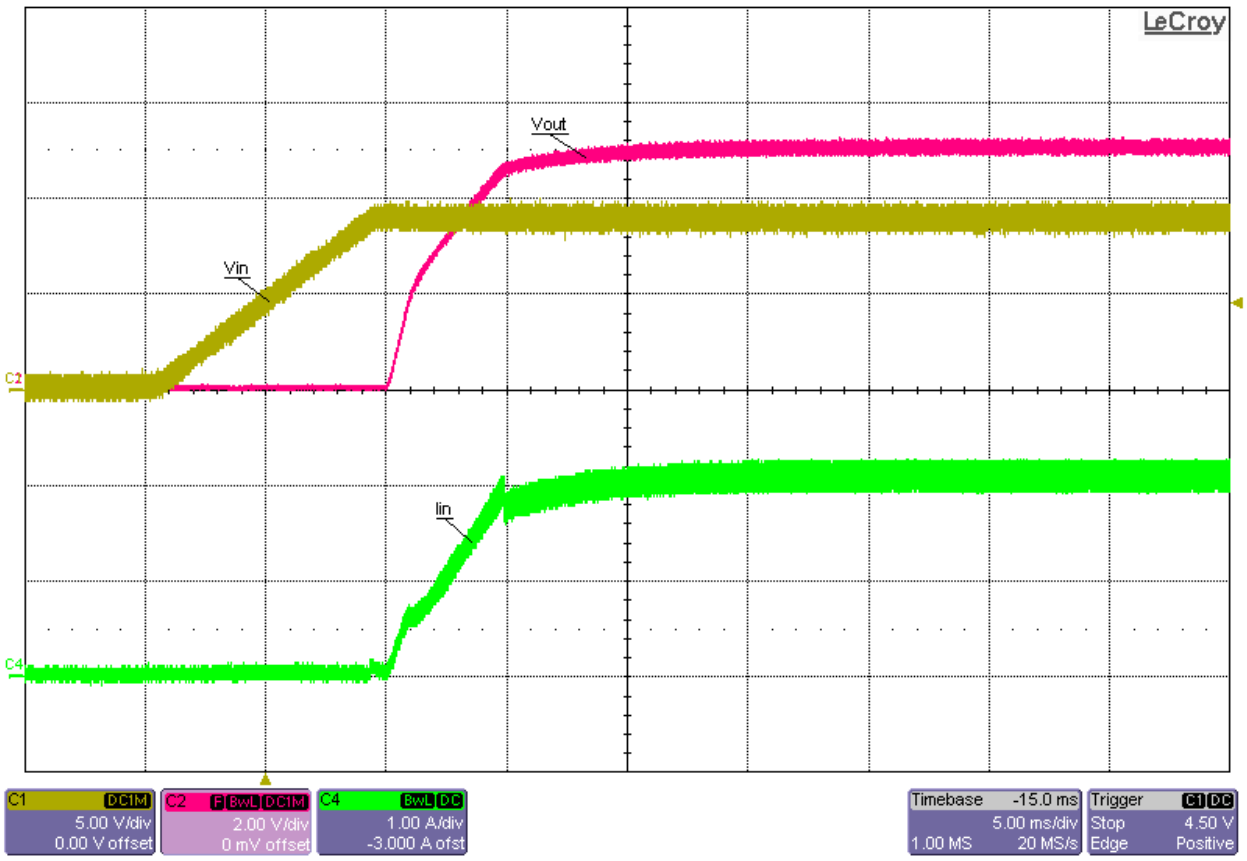
Startup into No Load (Vin = 26V)



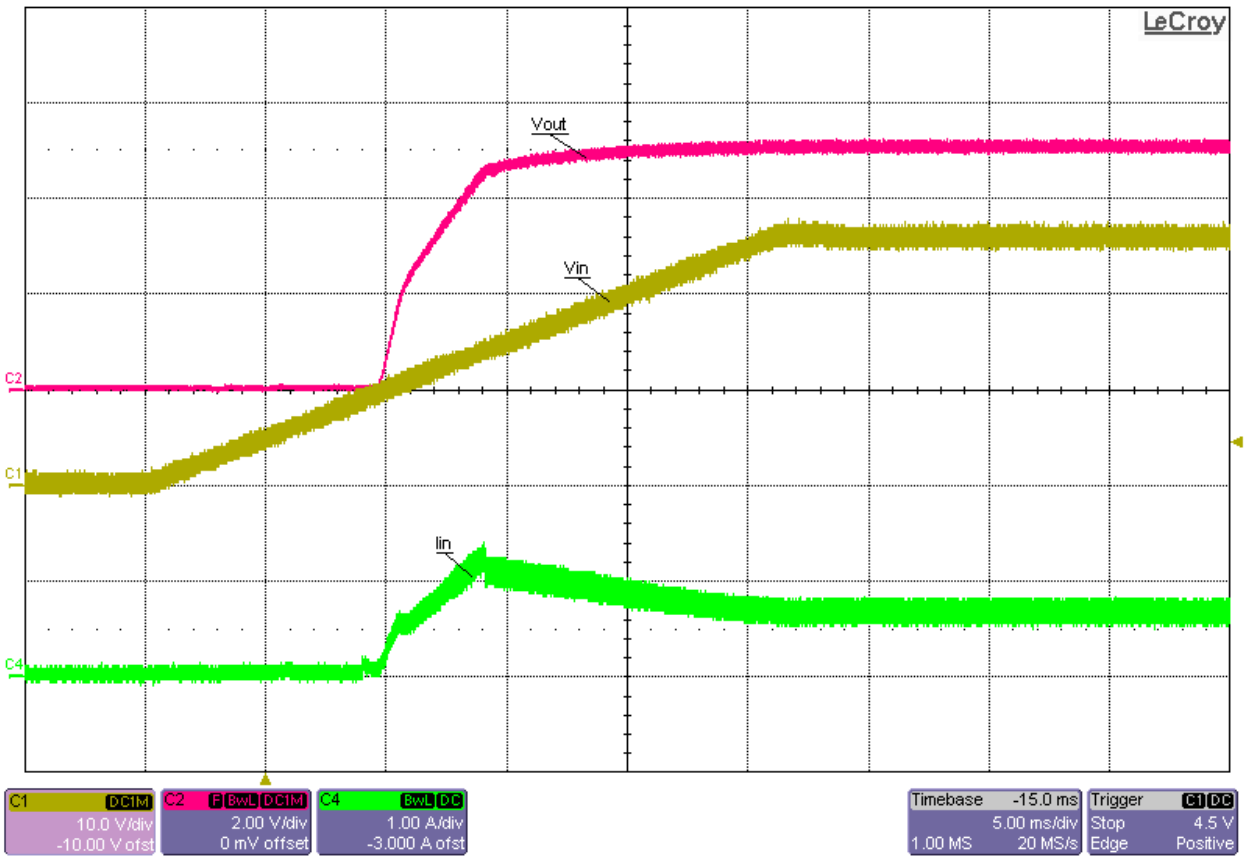
Startup into No Load (Vin = 43V)



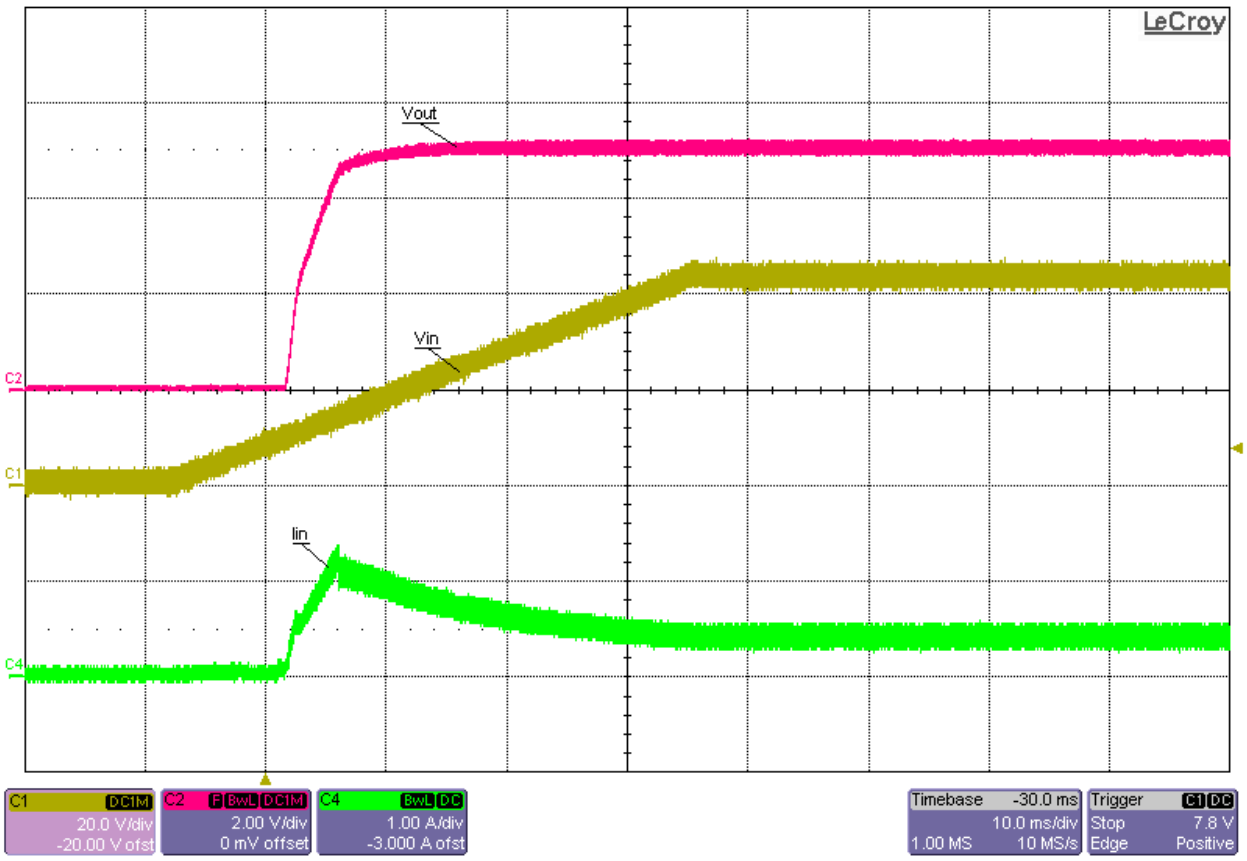
Startup into No Load (Vin = 60V)



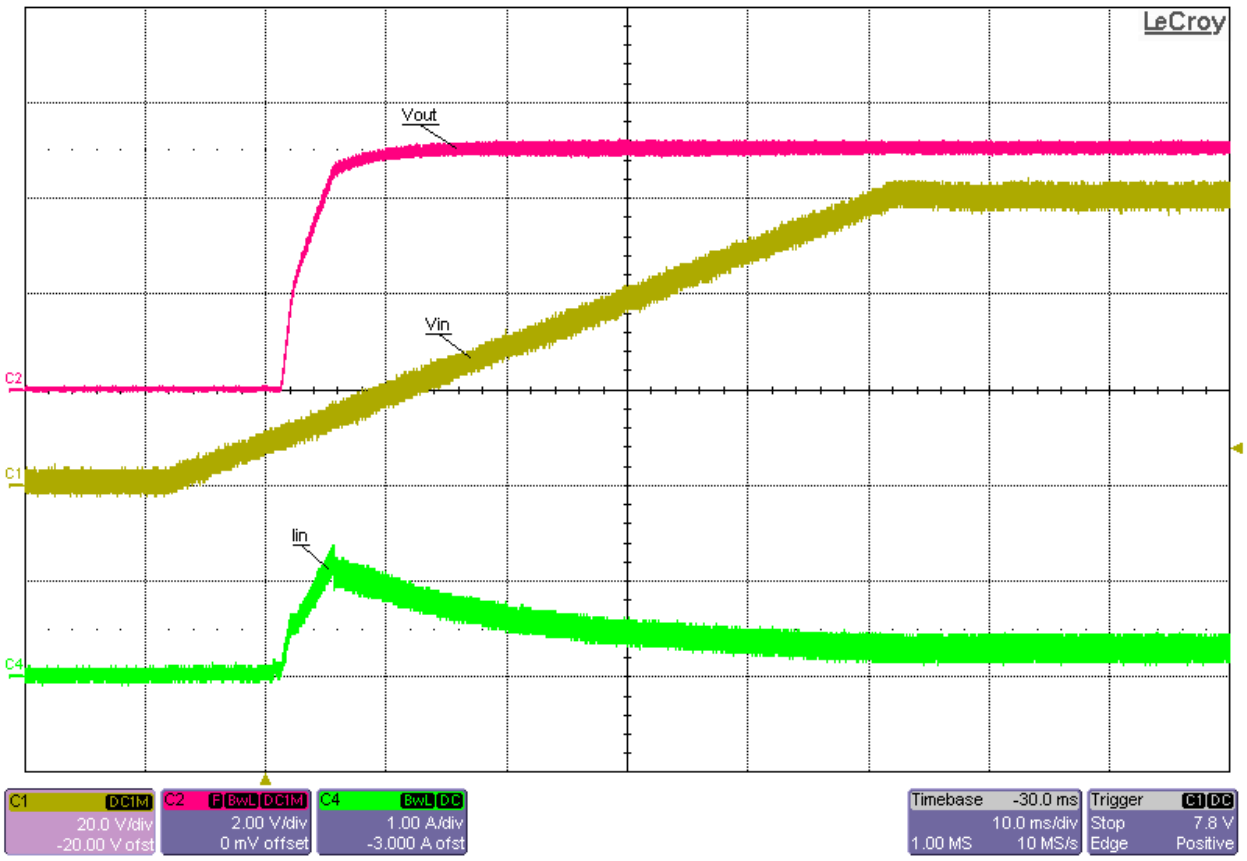
Startup into Full (3A) Load (Vin = 9V)



Startup into Full (3A) Load (Vin = 26V)

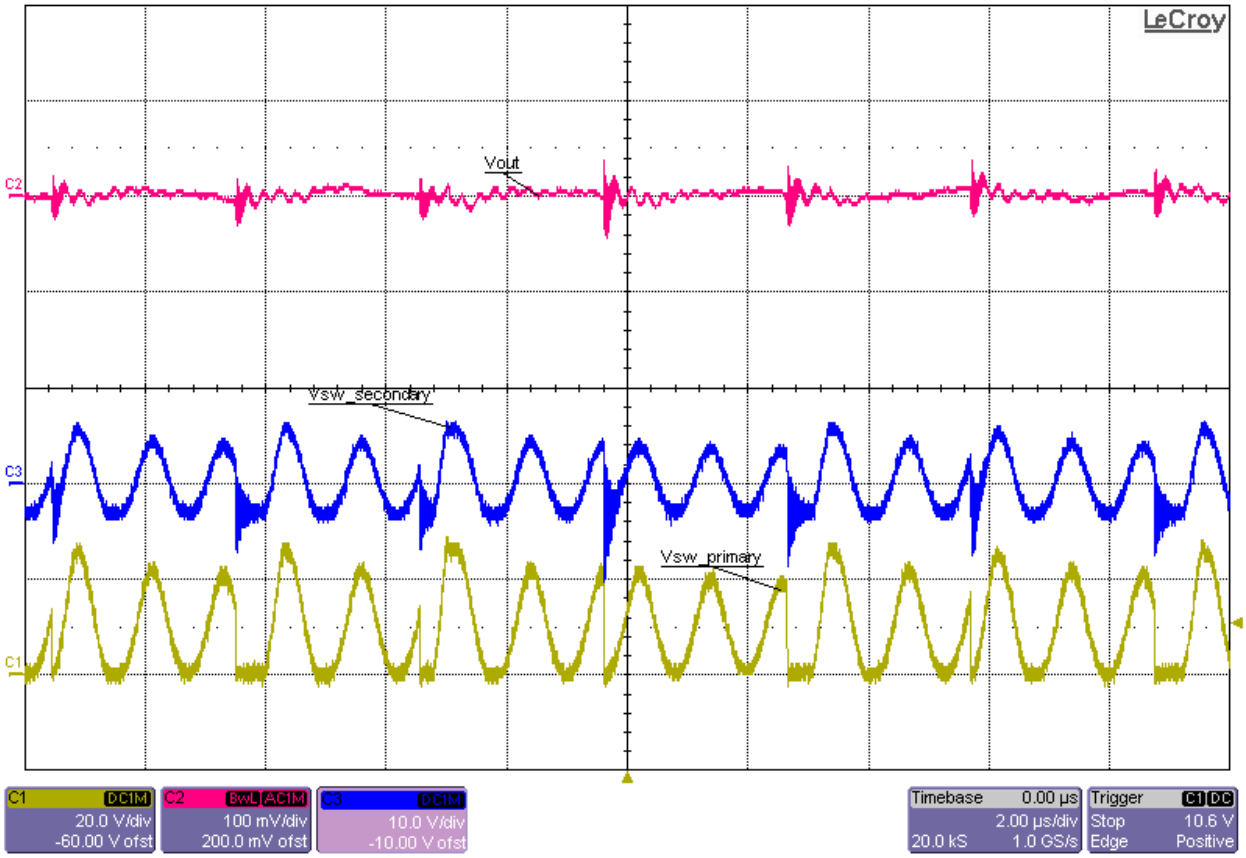


Startup into Full (3A) Load (Vin = 43V)

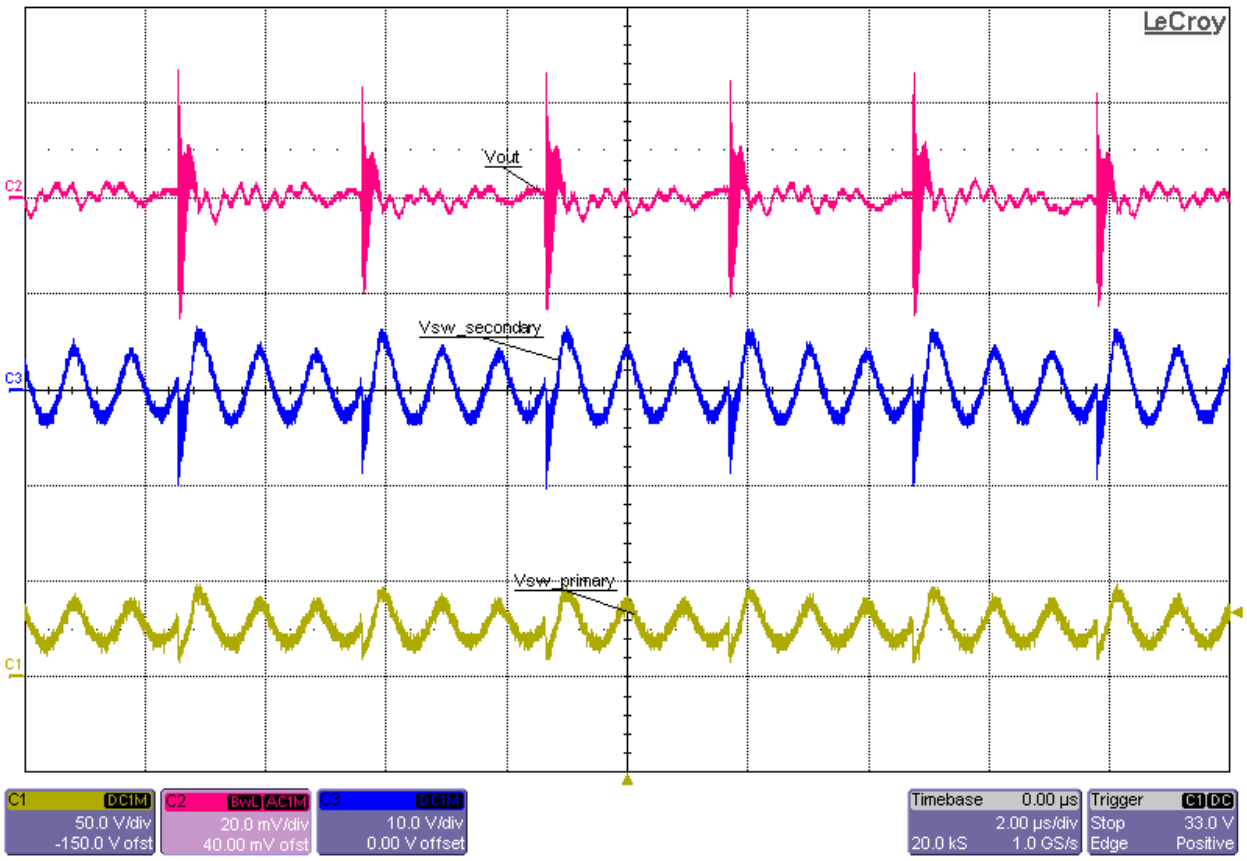


Startup into Full (3A) Load (Vin = 60V)

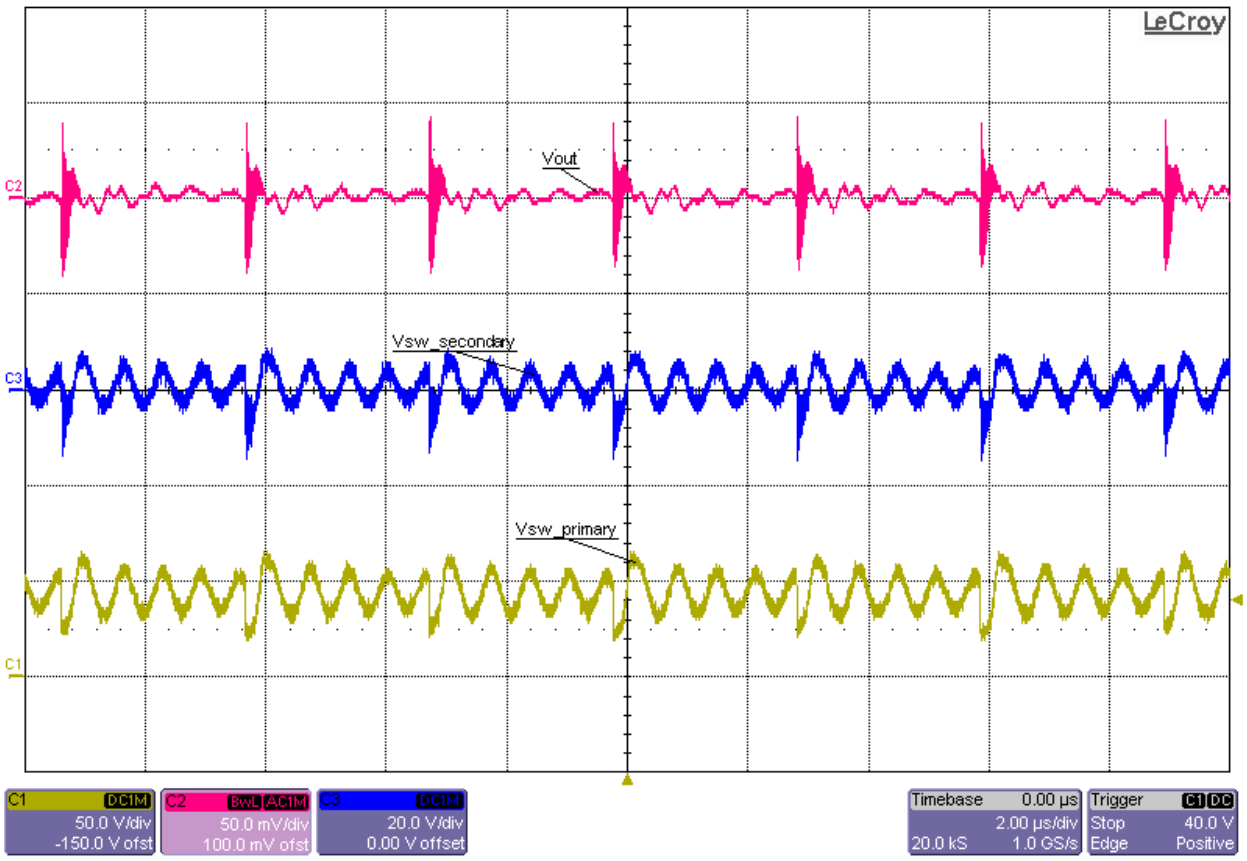
6.3 Output Voltage Ripple and Switch Node Voltage



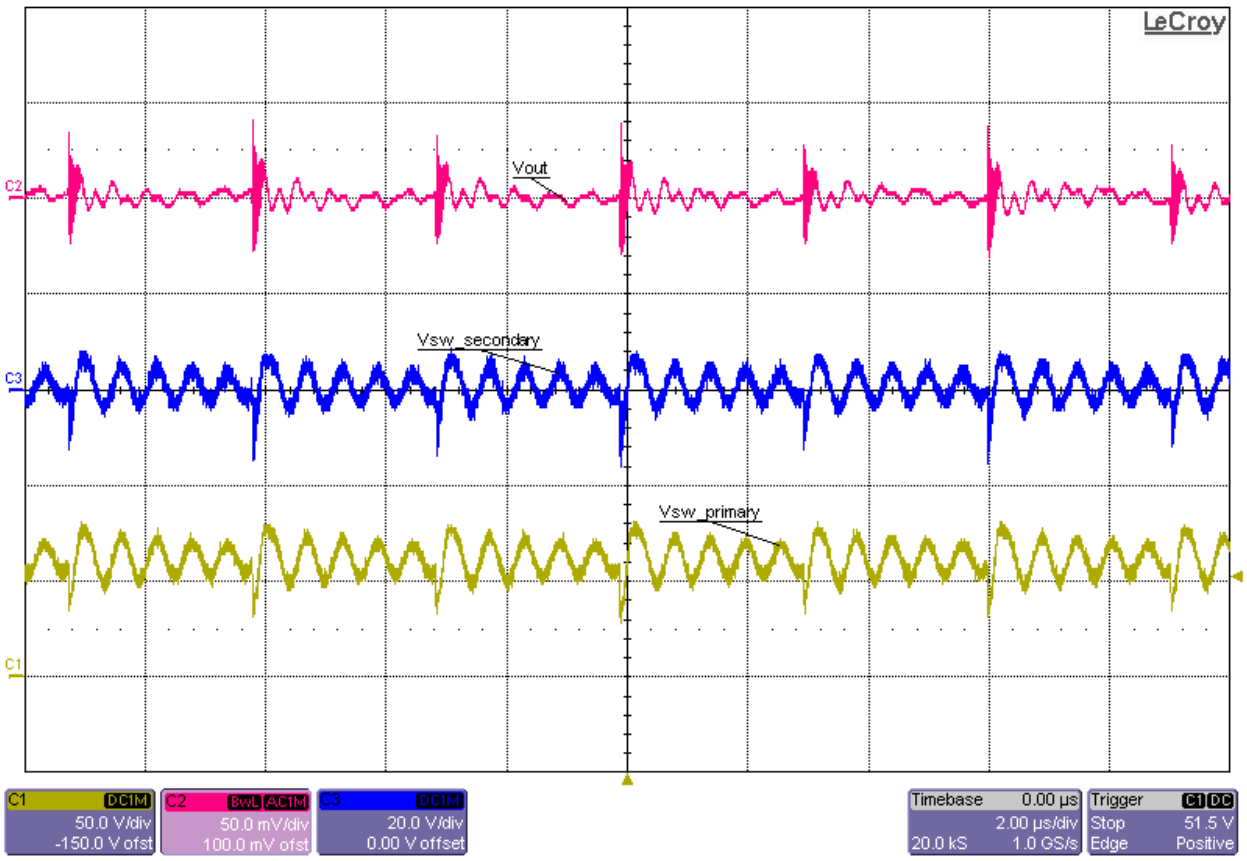
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 9V and No Load (Vripple < 60mVp-p)



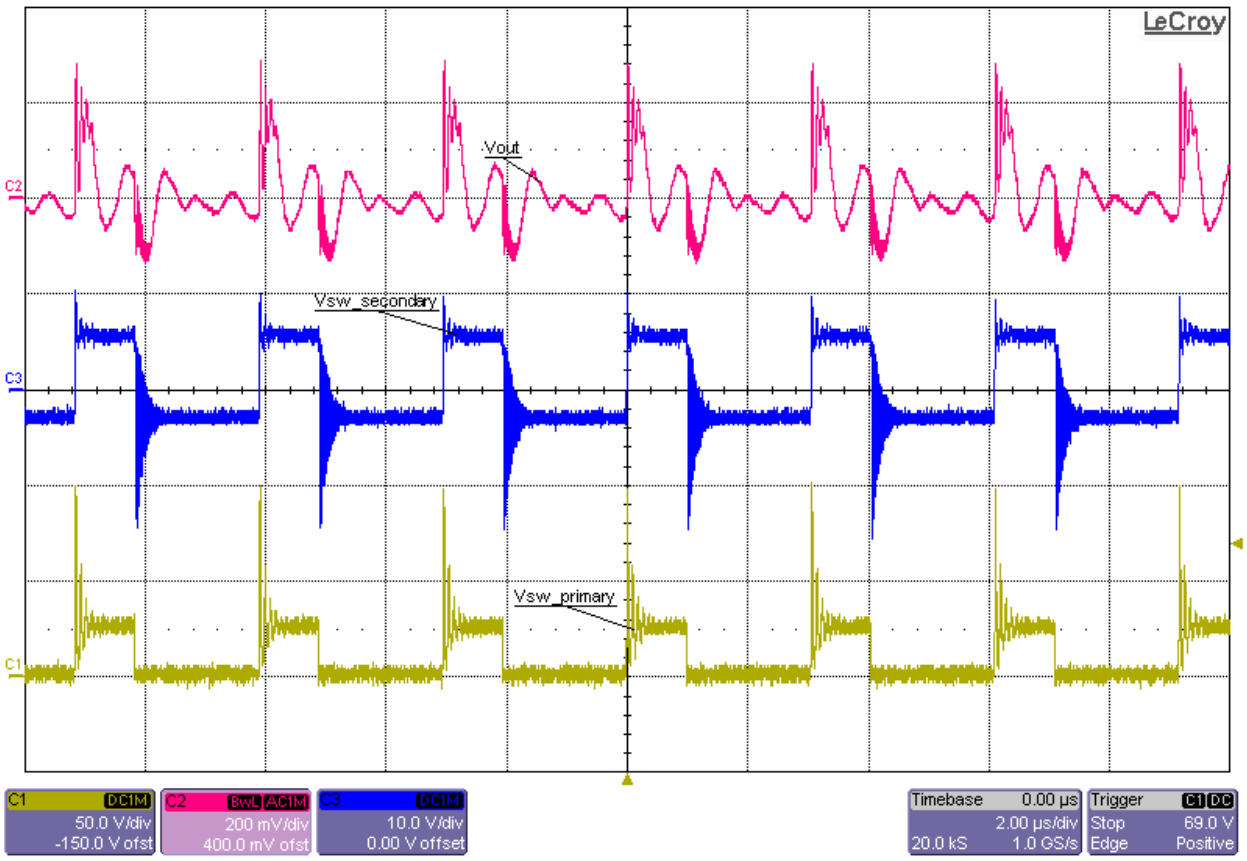
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 26V and No Load (Vripple < 50mVp-p)



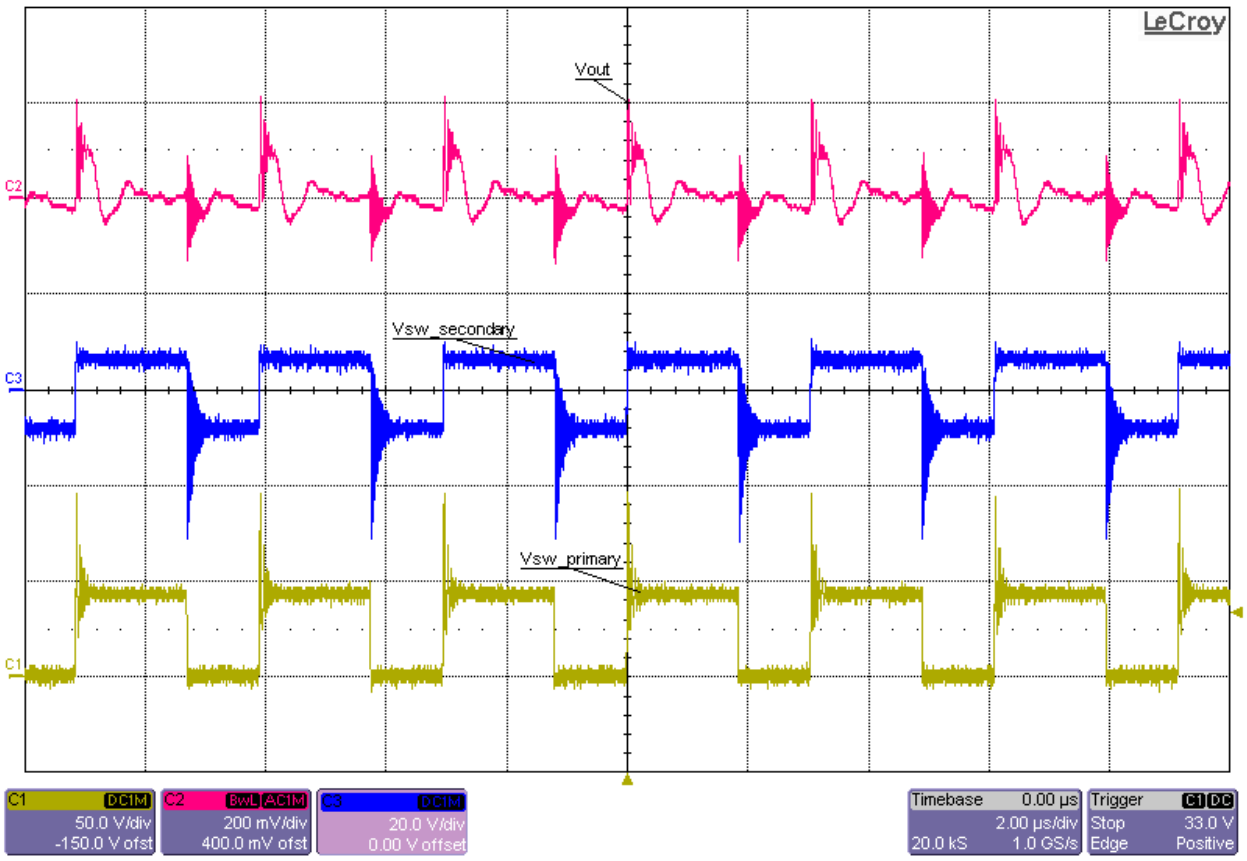
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 43V and No Load (Vripple < 75mVp-p)



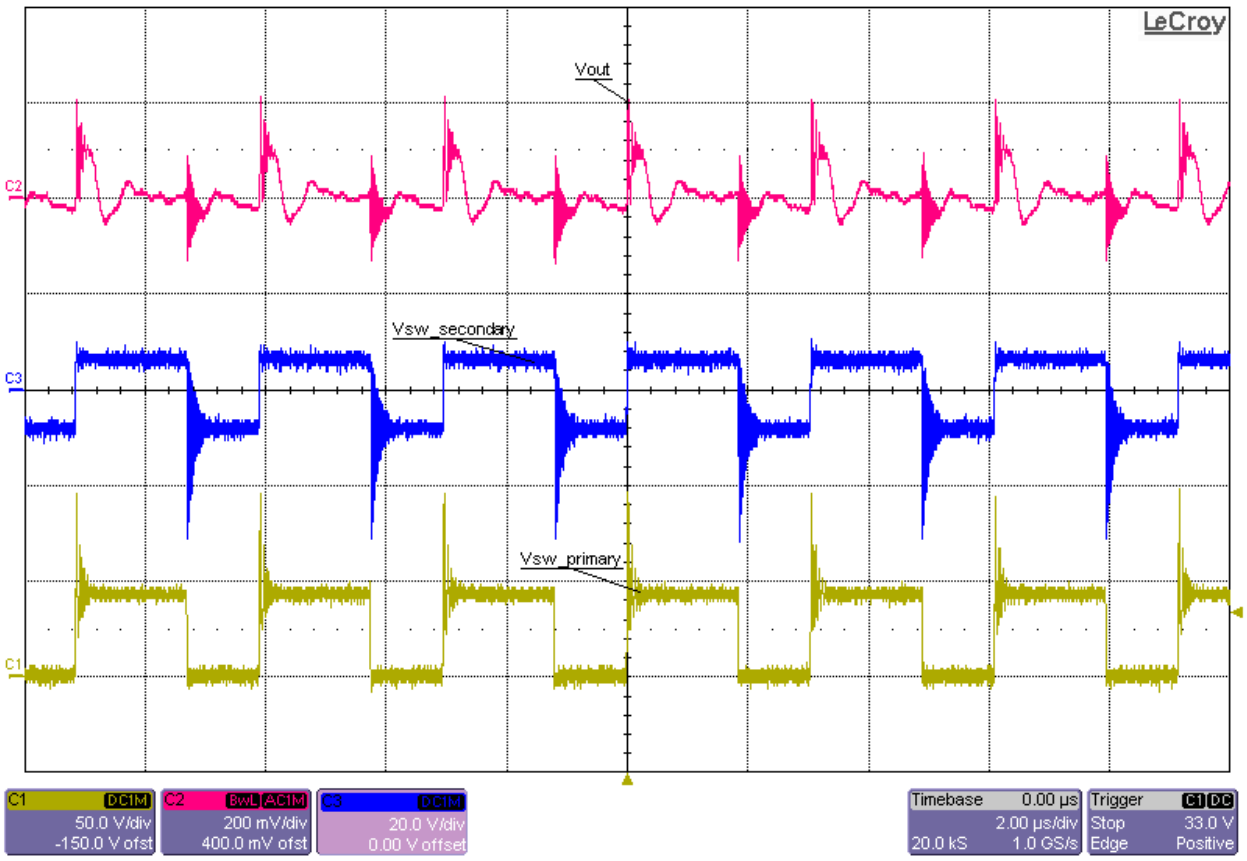
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 60V and No Load (Vripple < 70mVp-p)



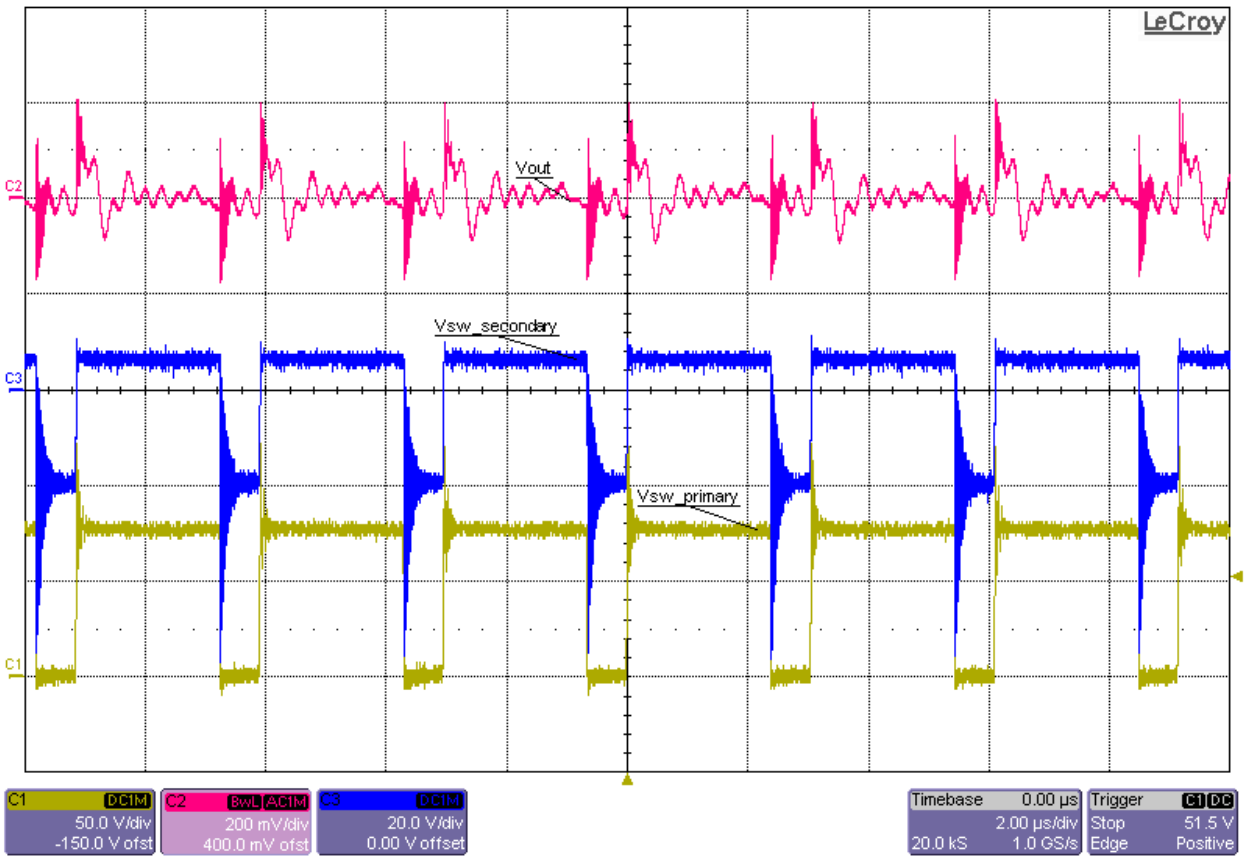
Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 9V and 3A Load (Vripple ≈ 340mVp-p)



Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 26V and 3A Load (Vripple ≈ 180mVp-p)

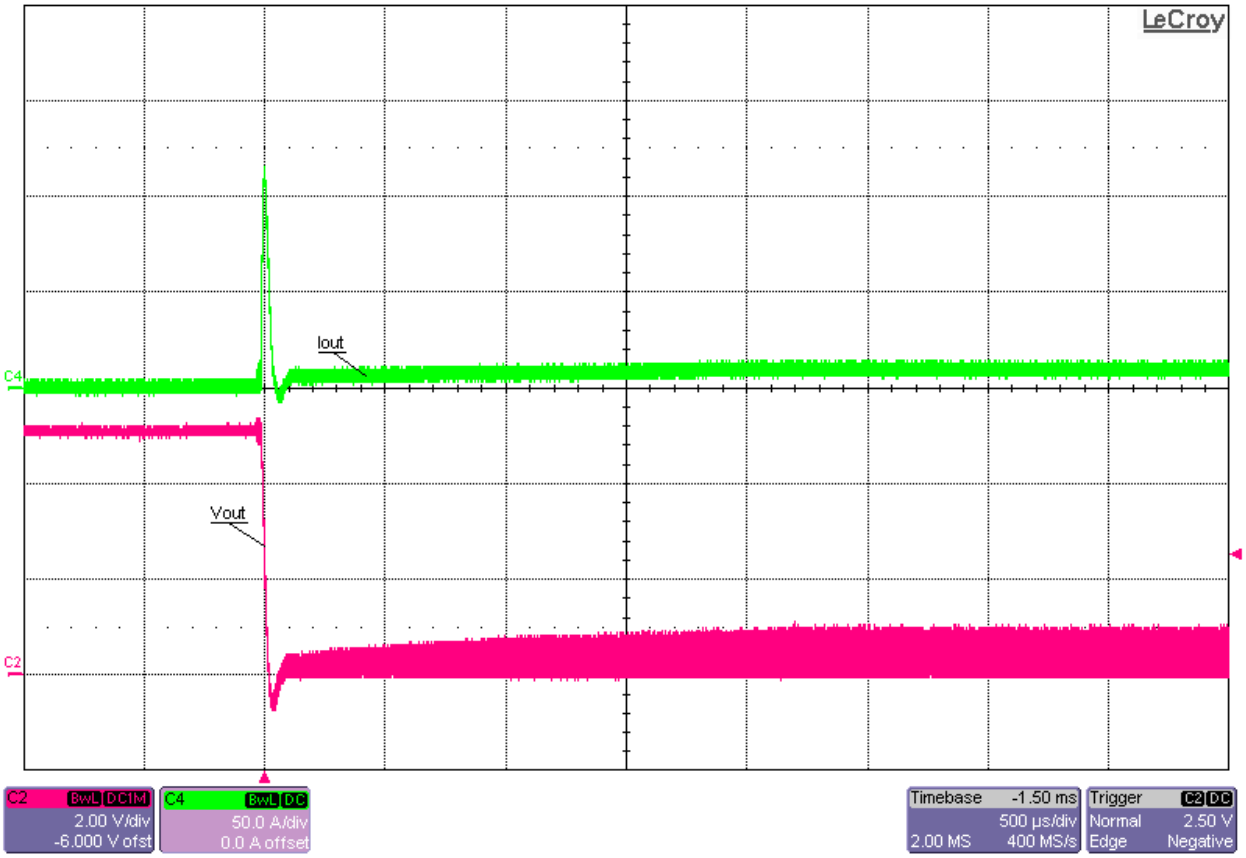


Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 43V and 3A Load (Vripple ≈ 160mVp-p)

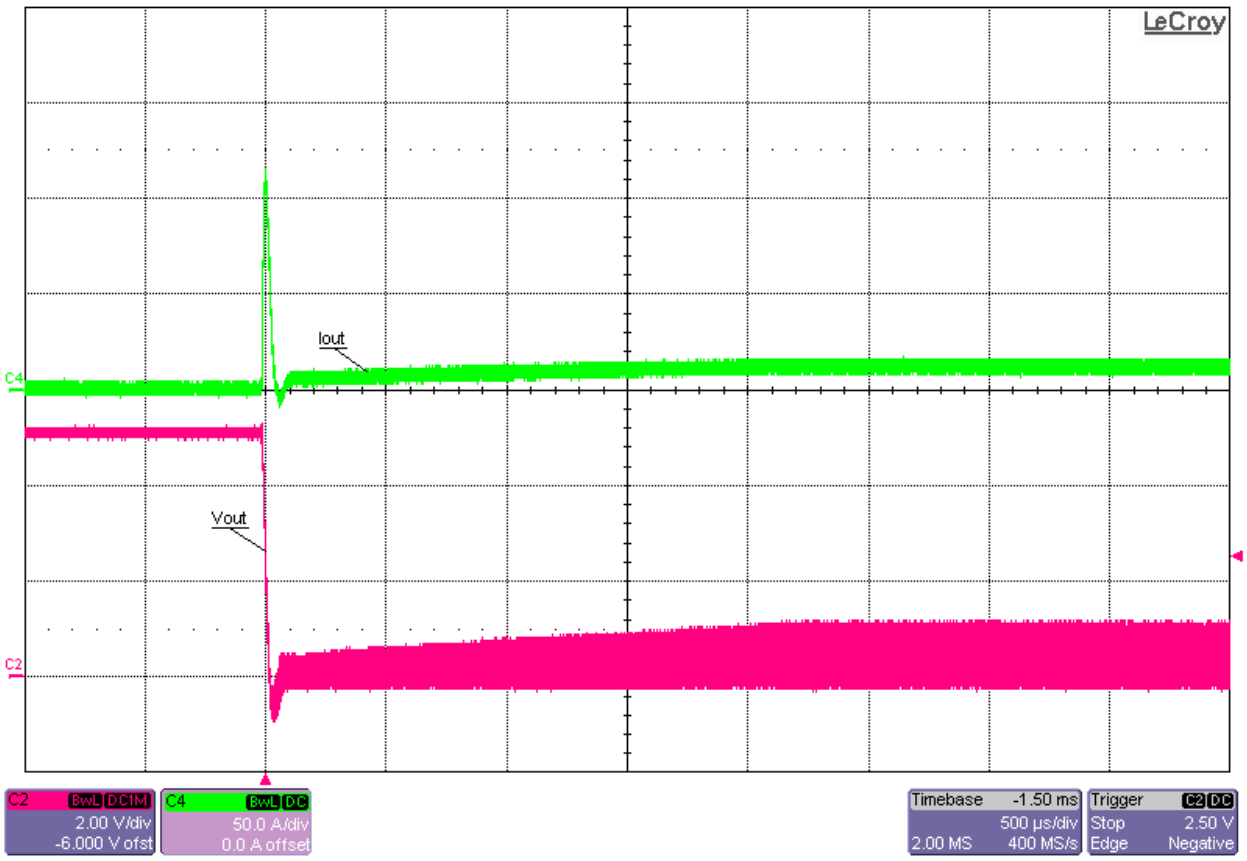


Primary and Secondary Switch Nodes and Output Voltage Ripple at Vin = 60V and 3A Load (Vripple ≈ 220mVp-p)

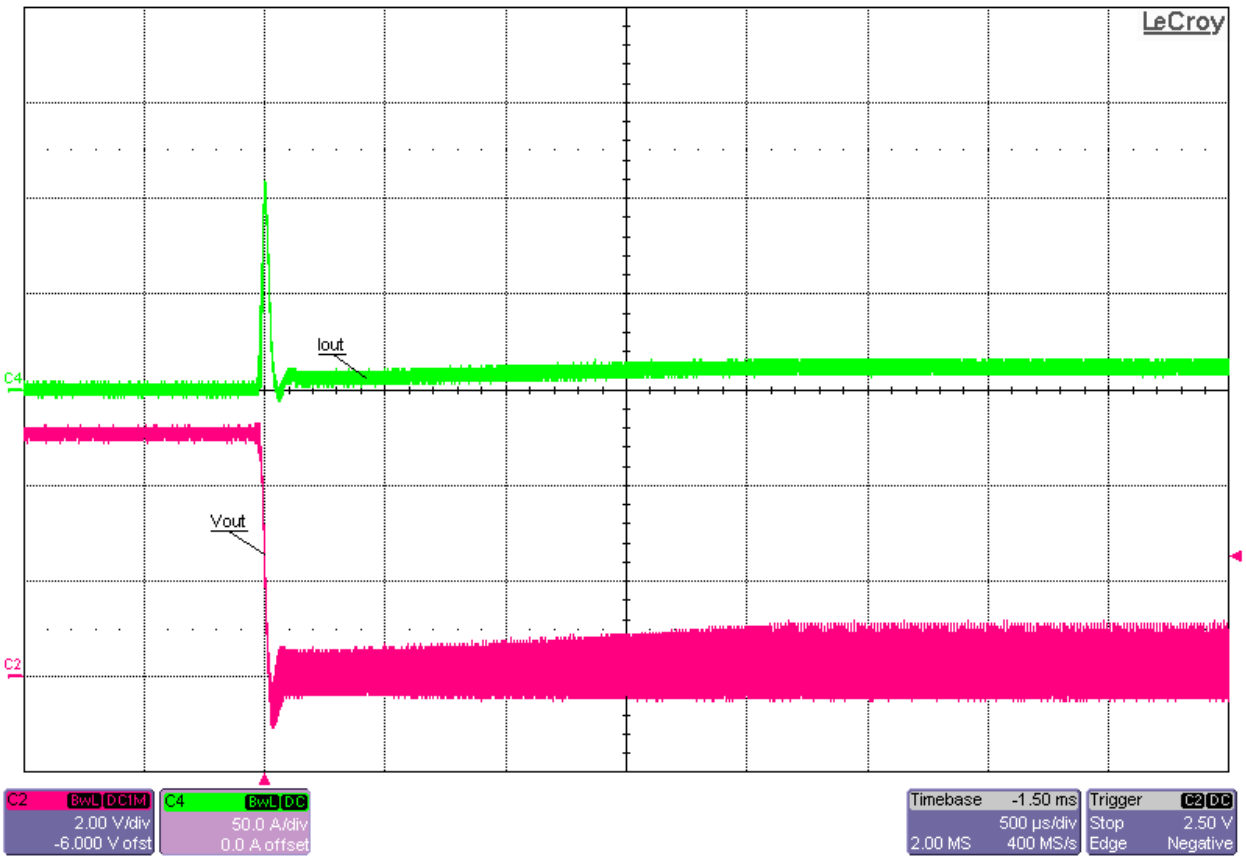
6.4 Short Circuit Application



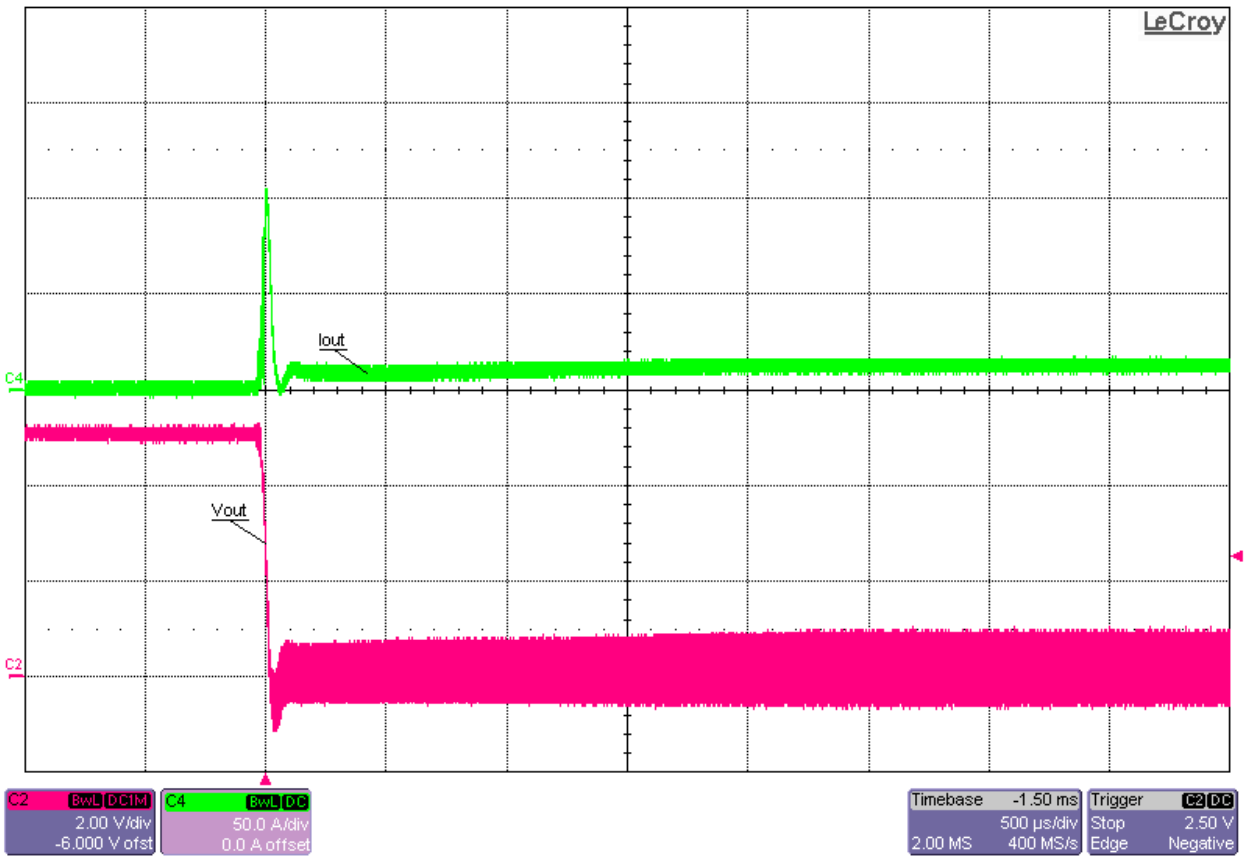
Short Circuit Applied at 9Vin



Short Circuit Applied at 26Vin

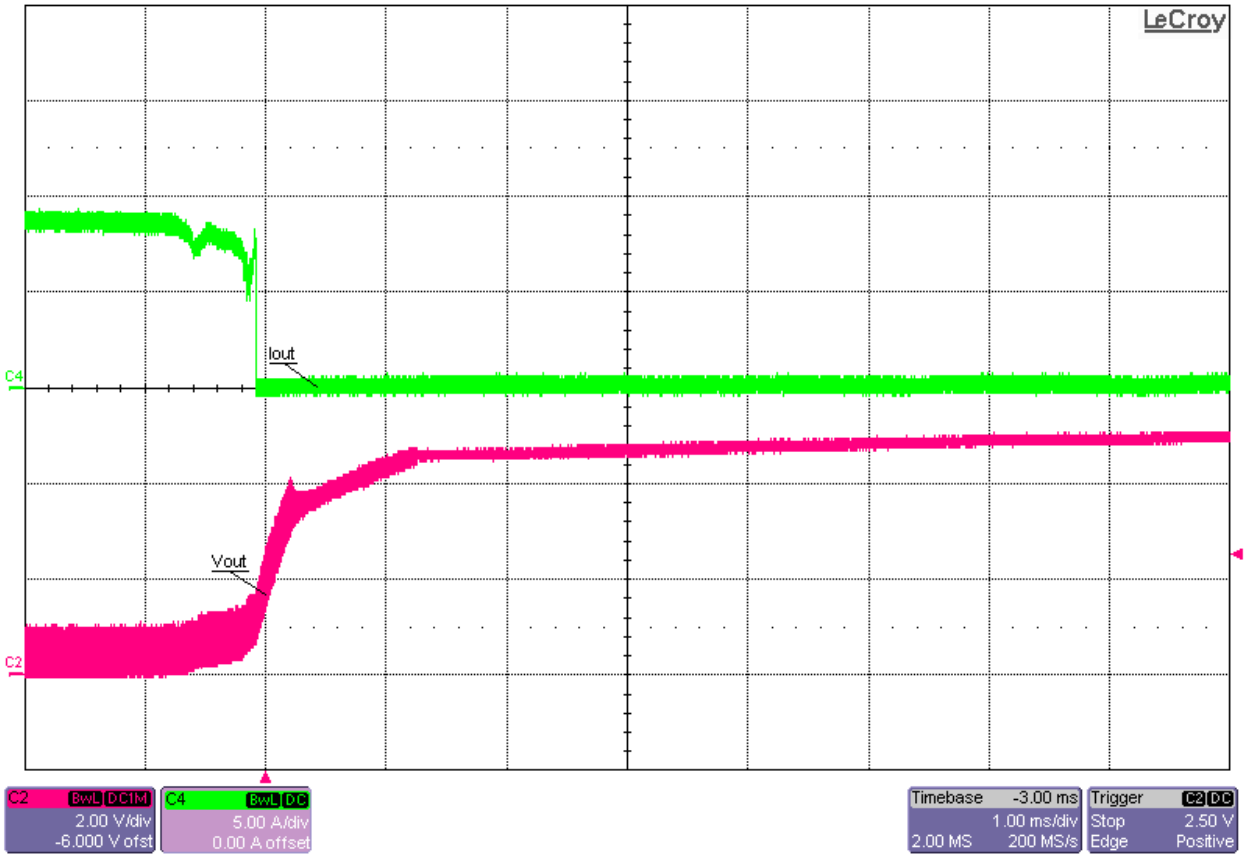


Short Circuit Applied at 43Vin

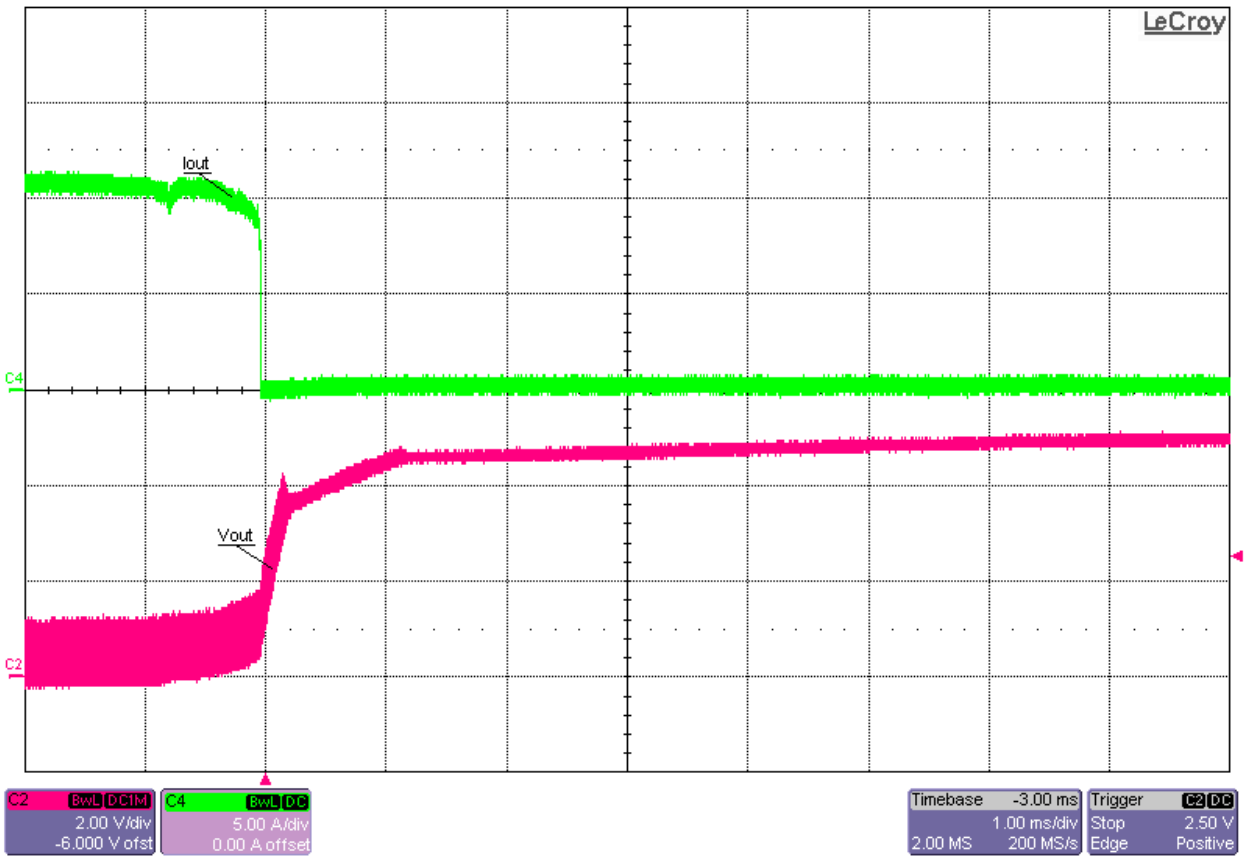


Short Circuit Applied at 60Vin

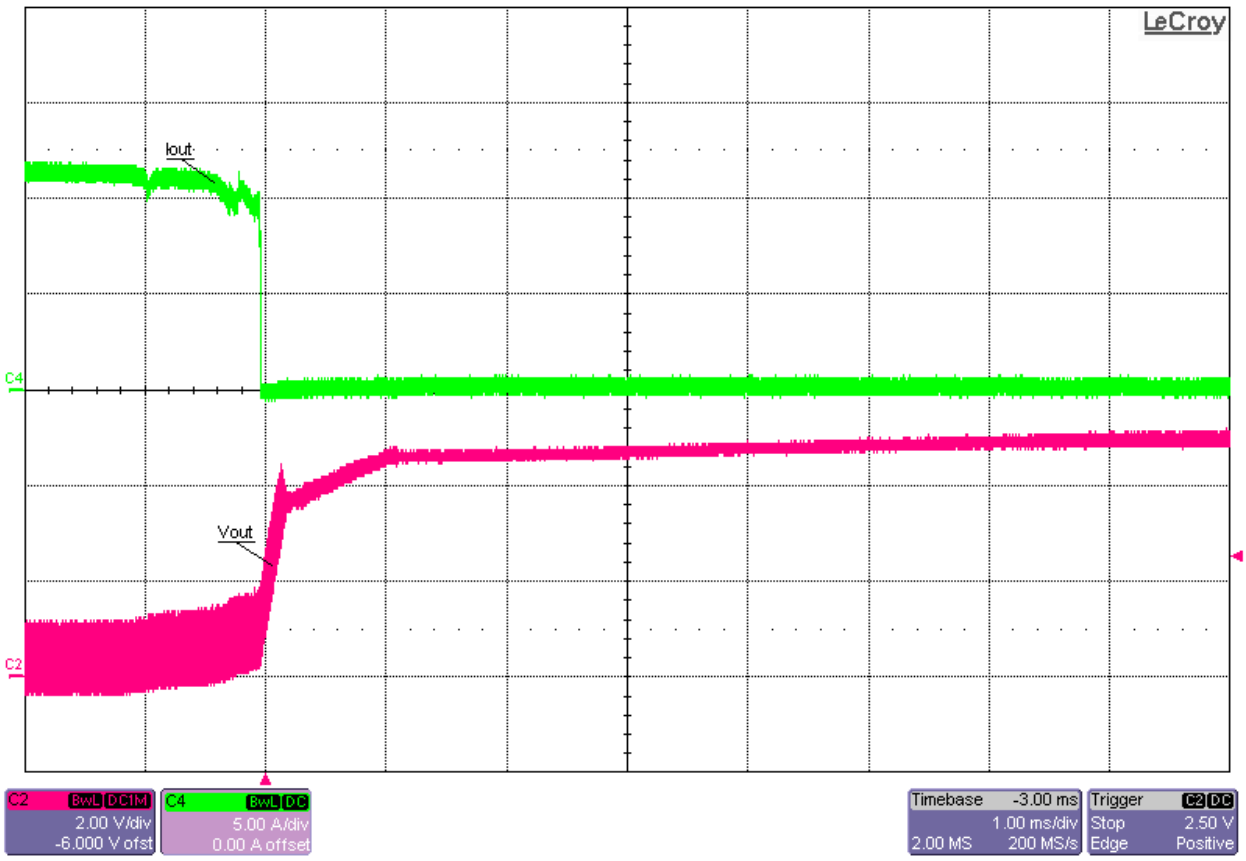
6.5 Short Circuit Recovery



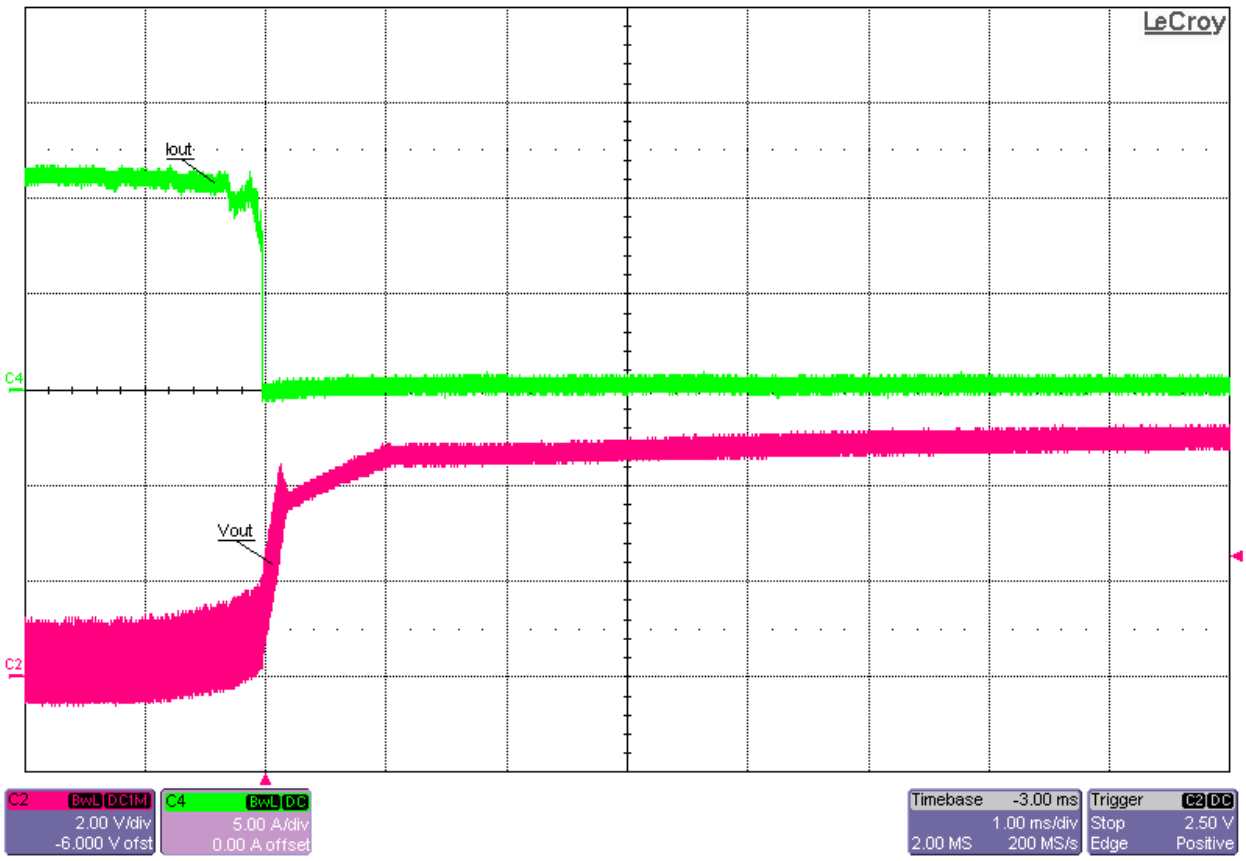
Short Circuit Recovery at 9Vin



Short Circuit Recovery at 26Vin



Short Circuit Recovery at 43Vin



Short Circuit Recovery at 60Vin

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