

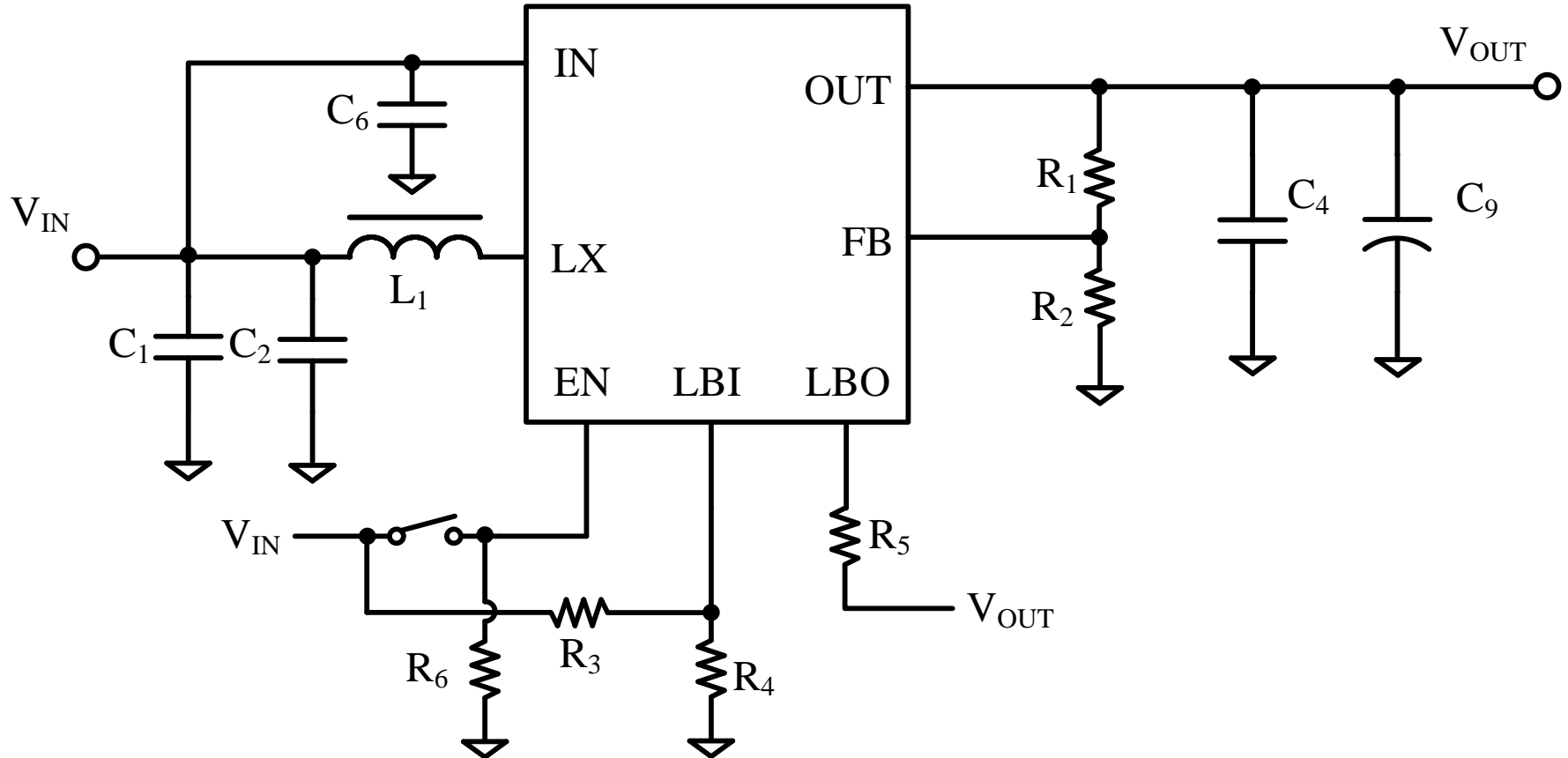


# **SY7066 Test Report**

Prepared by Silergy Corp.

31/Aug/2012

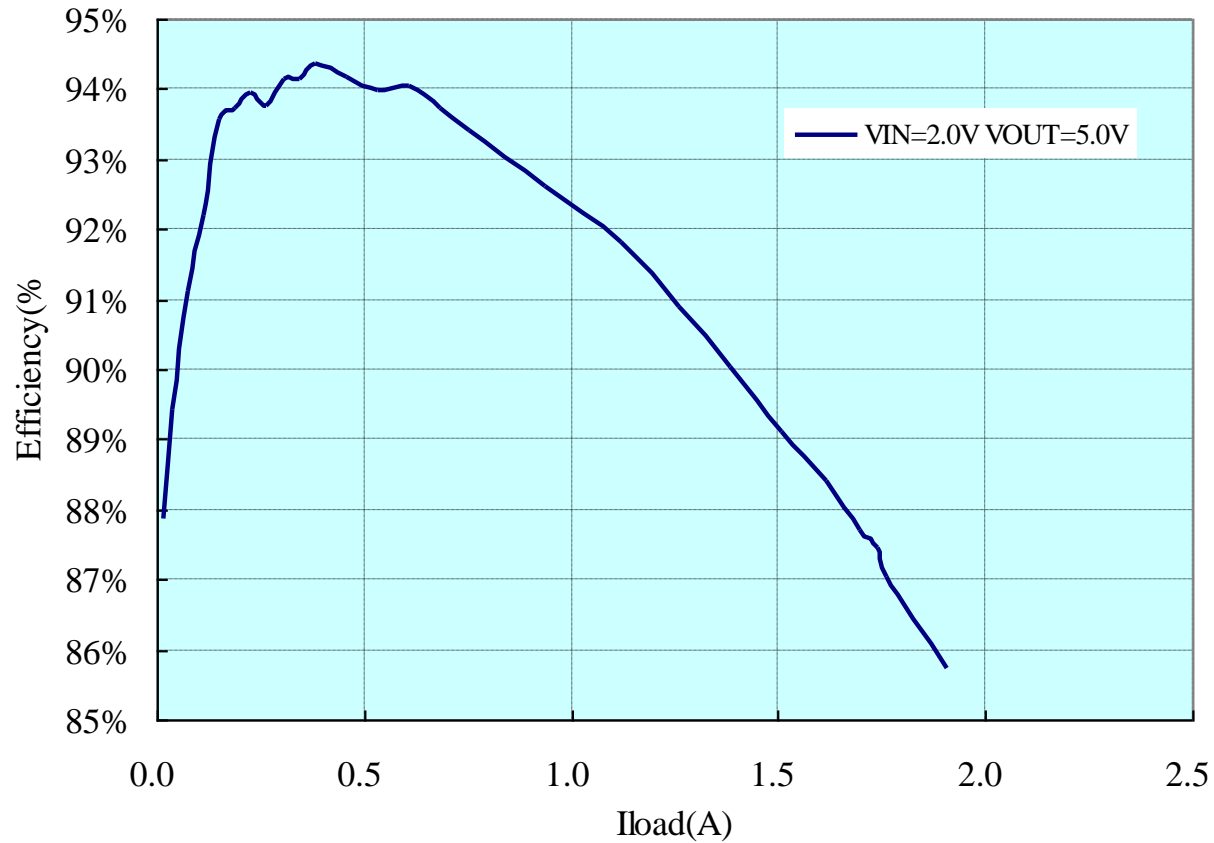
- Circuit Diagram of Test Board
- BOM List
- Test Item
  - Efficiency Test
  - Steady-state Waveform (Null/Light(10%)/Half/Full-Load)
  - Output Voltage Ripple (Null/Light(10%)/Half/Full-Load)
  - Load Transient (10%~Full-load)
  - ON/OFF (Null & Full-Load w/ VIN & EN ON/OFF)
  - Hard Short Protection (Null/Full-Load)



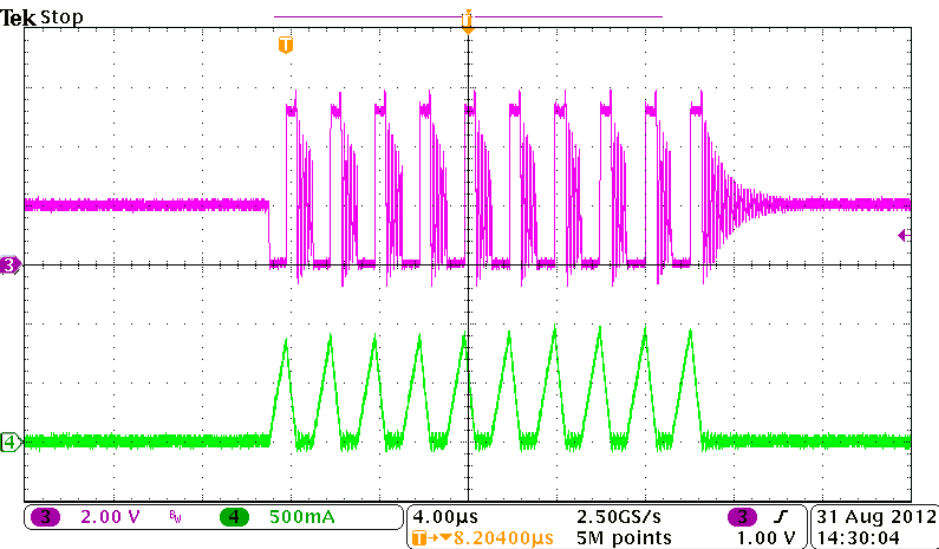
<b>Designator</b>	<b>Description</b>	<b>Part Number</b>	<b>Manufacturer</b>
L <sub>1</sub>	1.5uH/10A	SPM6530T-1R5M	TDK
C <sub>1</sub> , C <sub>2</sub>	22uF/6.3V, 0805, X5R	C2012X5R1A106M	TDK
C <sub>4</sub>	22uF/10V, 1206, X5R	C3216X5R1A226M	TDK
C <sub>9</sub>	100uF/16V, 6032	Tantalum Cap	
C <sub>6</sub>	1uF/25V, 0603, X5R	C1608X5R1E105K	TDK
R <sub>1</sub>	470kΩ, 0603, 1%		
R <sub>2</sub>	150kΩ, 0603, 1%		
R <sub>3</sub>	300kΩ, 0603, 1%		
R <sub>4</sub>	50kΩ, 0603, 1%		
R <sub>5</sub>	100kΩ, 0603, 1%		
R <sub>6</sub>	1MΩ, 0603, 1%		

$$V_{IN}=2.0V \quad V_{OUT}=5.0V$$

SY7066 Efficiency

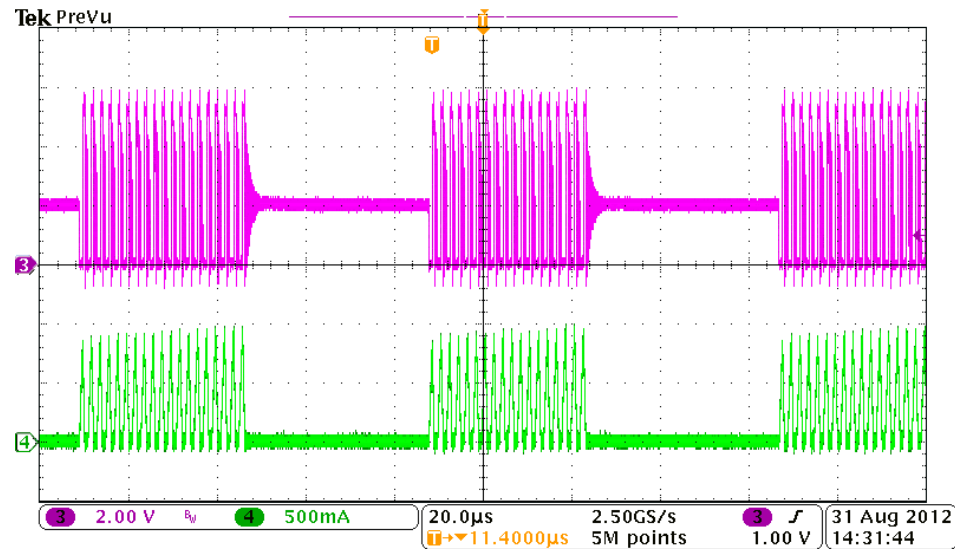


# Steady-state waveform(1)



Null load

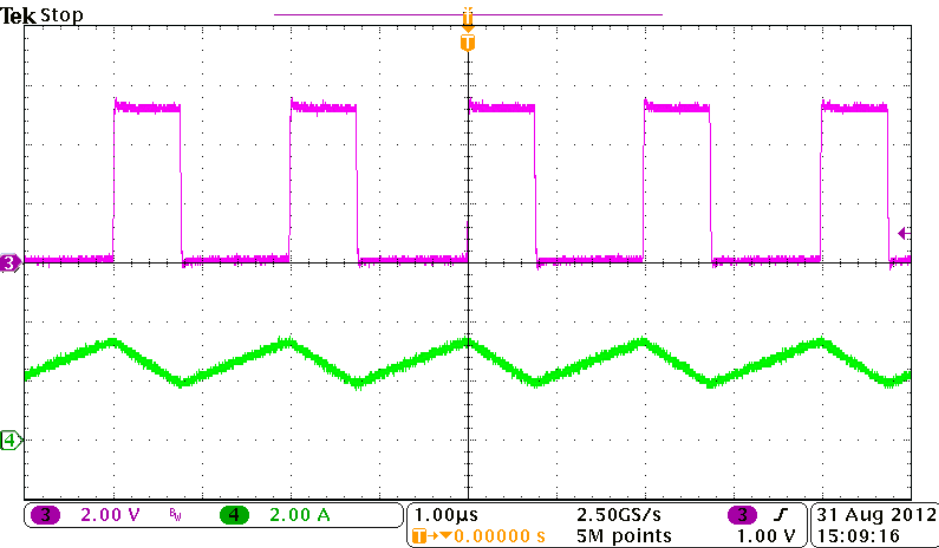
CH3(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (500mA/div)



$I_{Load}=0.05A$

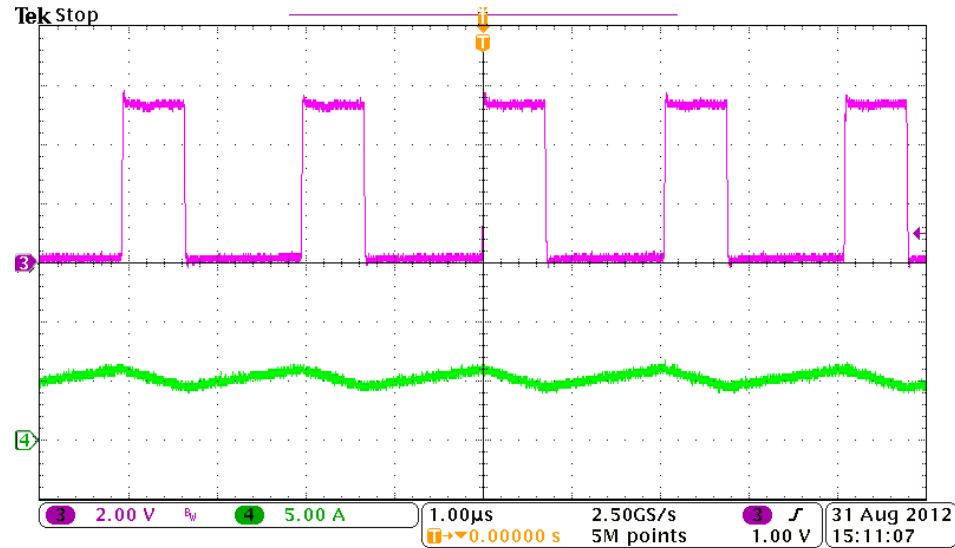
CH3(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (500mA/div)

# Steady-state waveform(2)



$$I_{Load}=0.05A$$

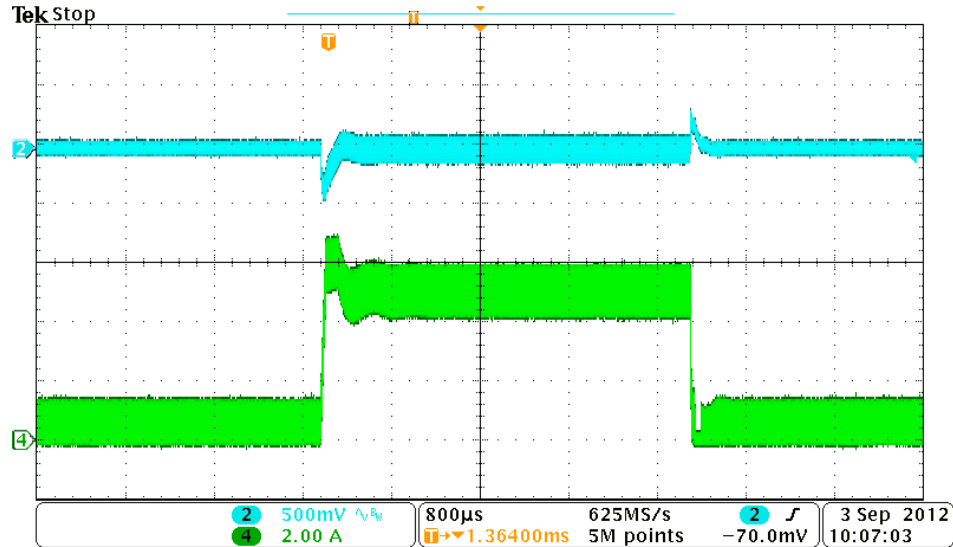
CH3(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



$$I_{Load}=1.8A$$

CH1(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (5.0A/div)

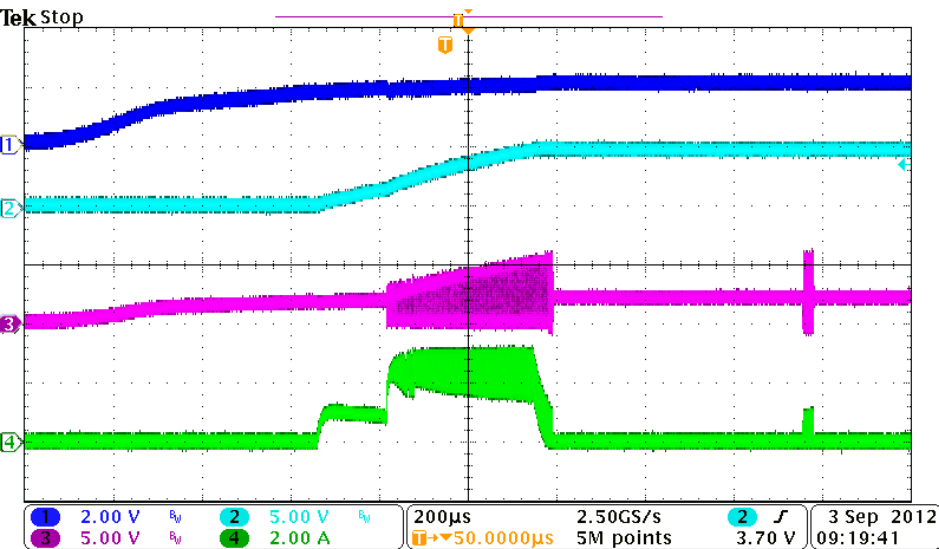




0.05A~1.8A

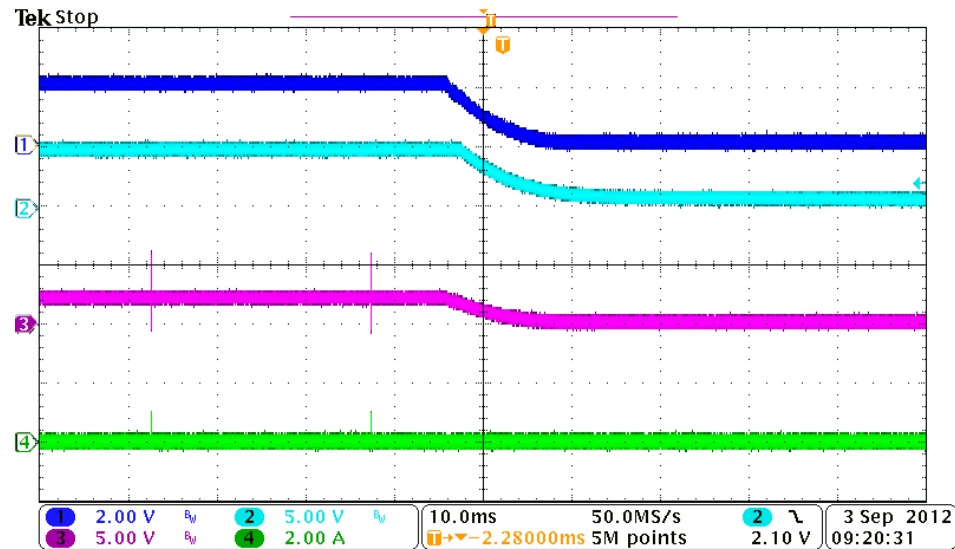
CH2(cyan):V<sub>OUT</sub> (500mV/div)

CH4(green):I<sub>L</sub> (2.0A/div)



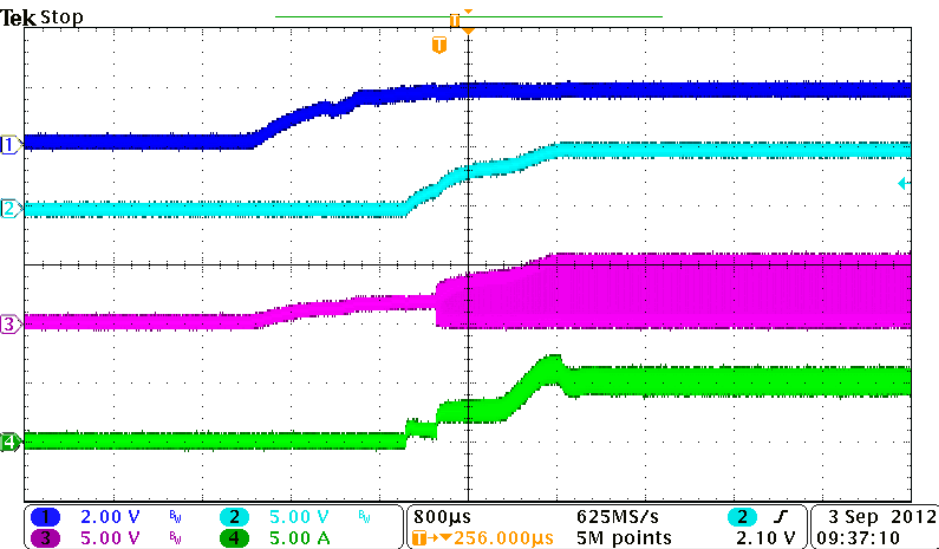
## Null load

CH1(Blue):  $V_{IN}$  (2.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



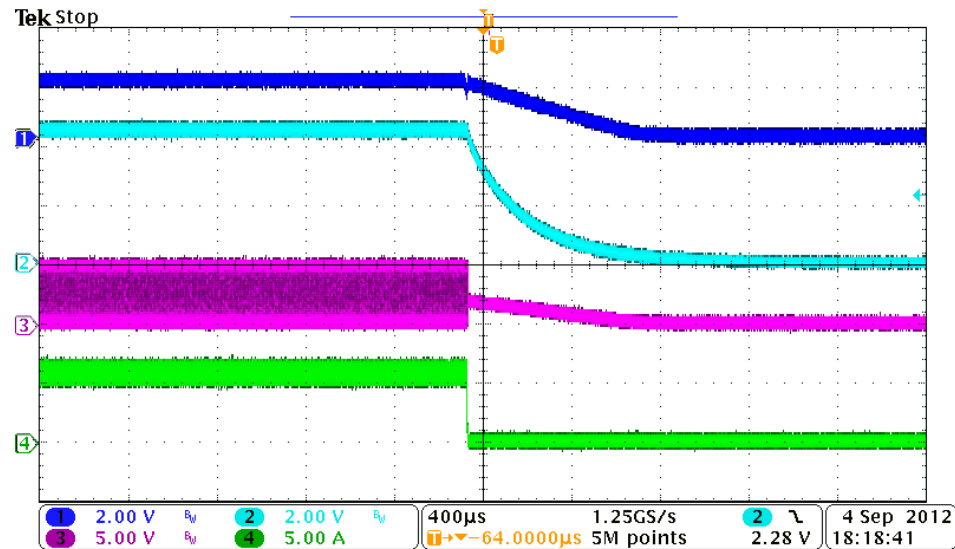
## Null load

CH1(Blue):  $V_{IN}$  (2.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



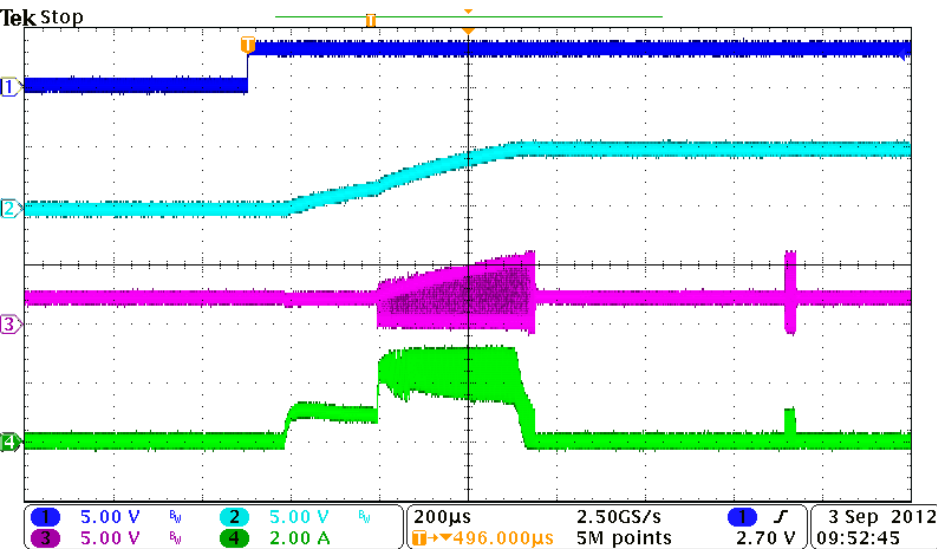
$$I_{Load}=1.8A$$

- CH1(Blue):  $V_{IN}$  (2.0V/div)
- CH2(cyan):  $V_{OUT}$  (5.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (5.0A/div)



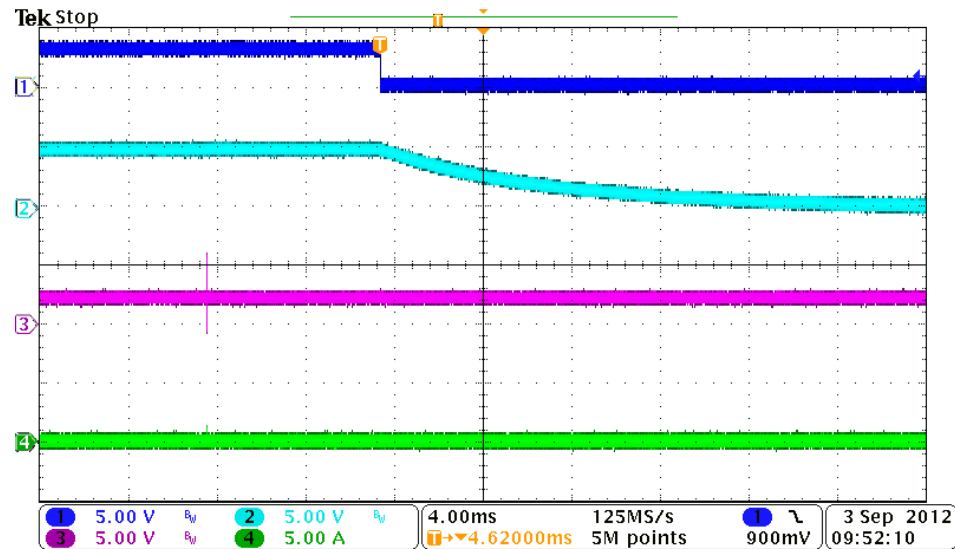
$$I_{Load}=1.8A$$

- CH1(Blue):  $V_{IN}$  (2.0V/div)
- CH2(cyan):  $V_{OUT}$  (2.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (5.0A/div)



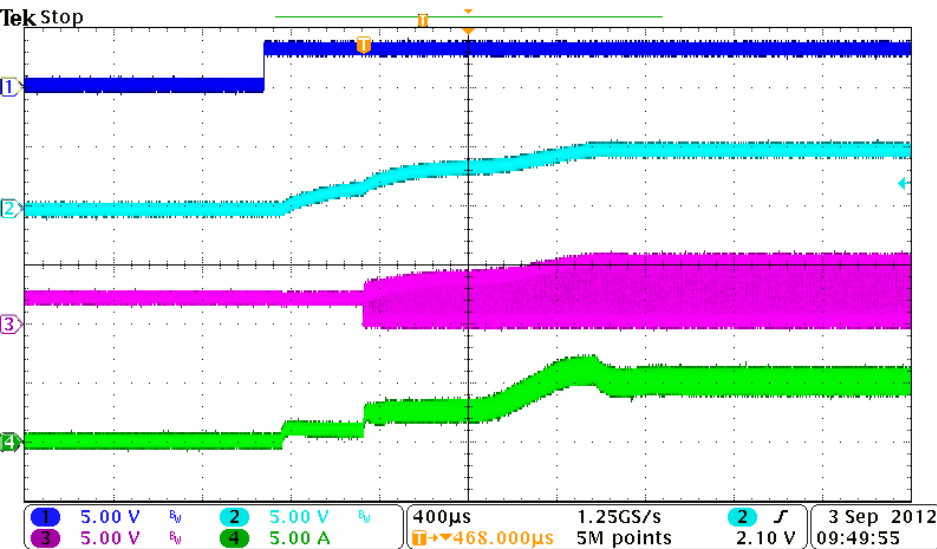
## Null load

CH1(Blue):  $V_{EN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



## Null load

CH1(Blue):  $V_{EN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (5.0A/div)



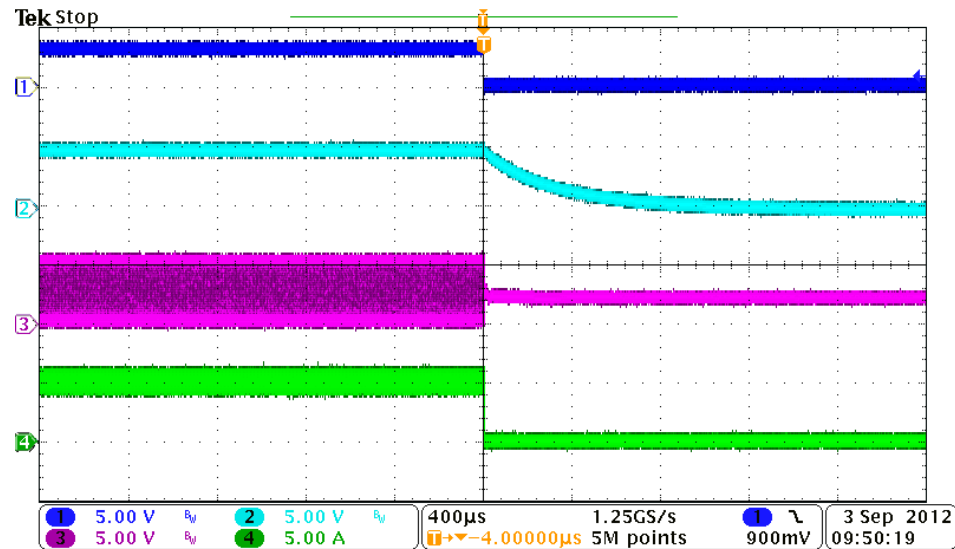
$$I_{Load}=1.8A$$

CH1(Blue):  $V_{EN}$  (5.0V/div)

CH2(cyan):  $V_{OUT}$  (5.0V/div)

CH3(pink):  $V_{LX}$  (5.0V/div)

CH4(green):  $I_L$  (5.0A/div)



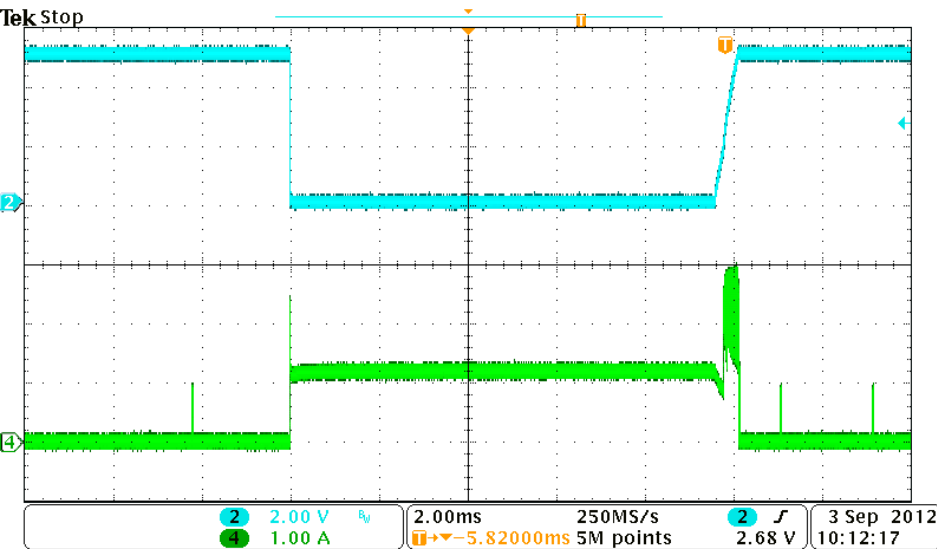
$$I_{Load}=1.8A$$

CH1(Blue):  $V_{EN}$  (5.0V/div)

CH2(cyan):  $V_{OUT}$  (5.0V/div)

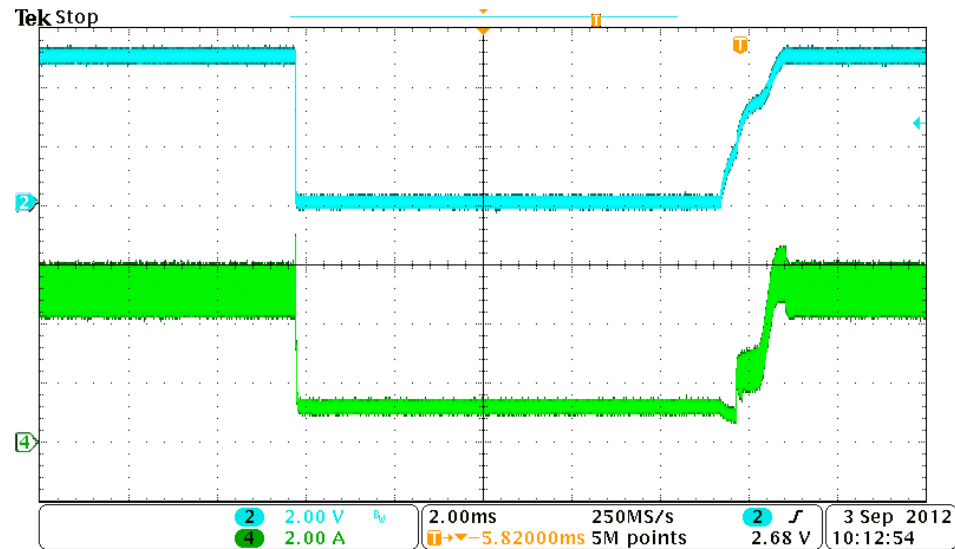
CH3(pink):  $V_{LX}$  (5.0V/div)

CH4(green):  $I_L$  (5.0A/div)



Null load to Hard short

CH2(cyan):  $V_{OUT}$  (2.0V/div)  
CH4(green):  $I_L$  (1.0A/div)

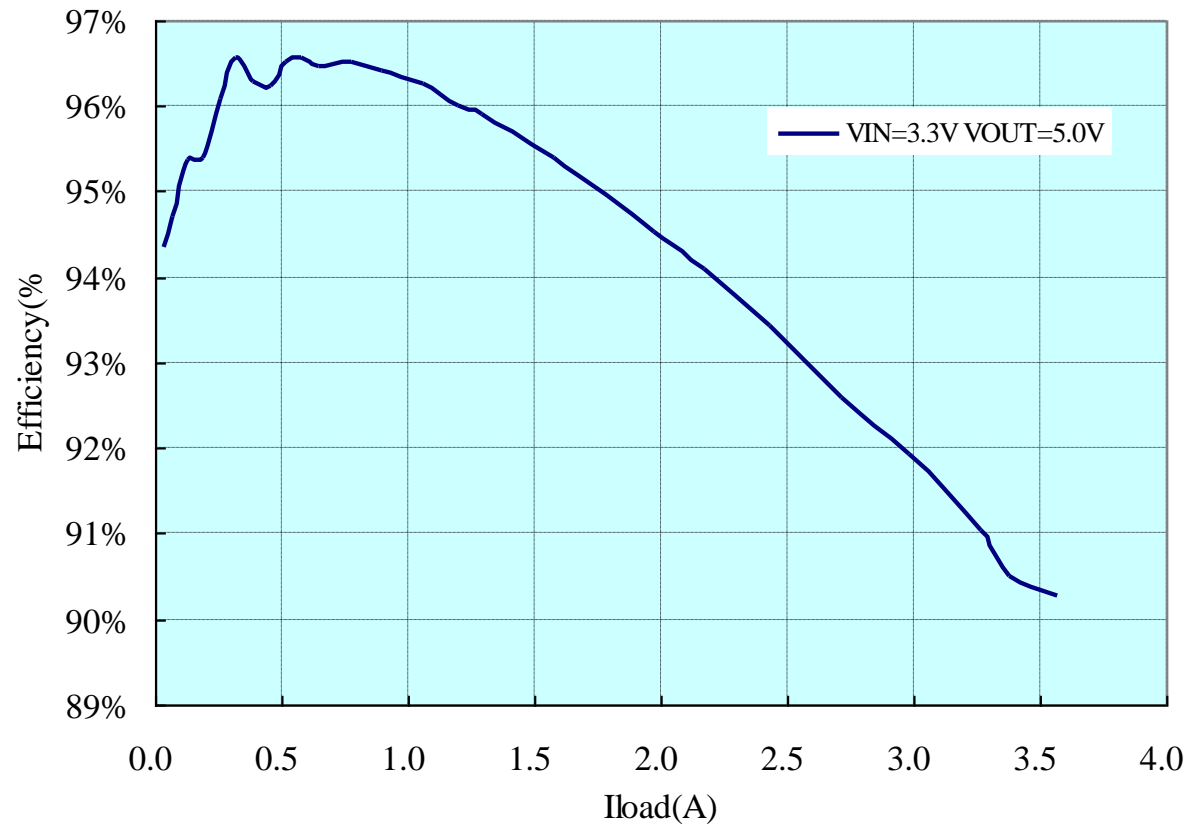


1.8A to Hard short

CH2(cyan):  $V_{OUT}$  (2.0V/div)  
CH4(green):  $I_L$  (2.0A/div)

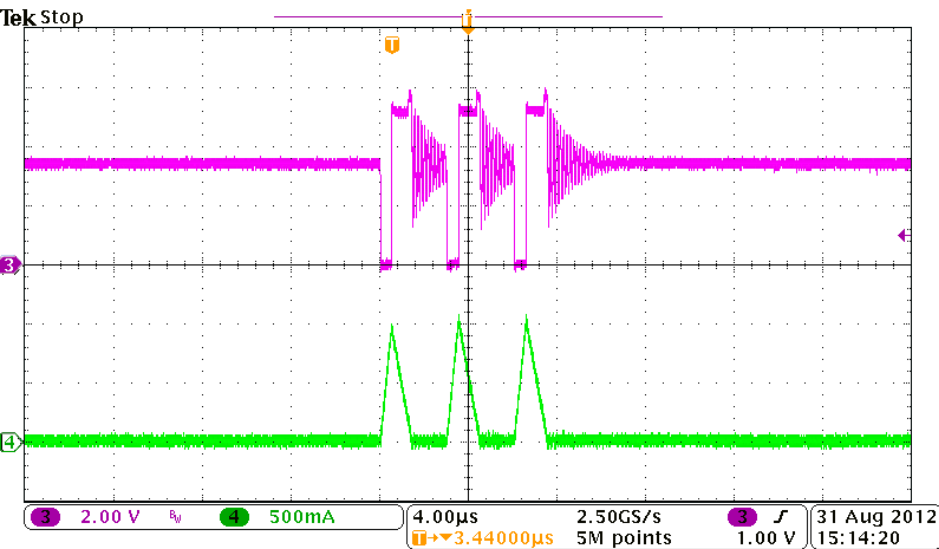
$$V_{IN}=3.3V \quad V_{OUT}=5.0V$$

SY7066 Efficiency



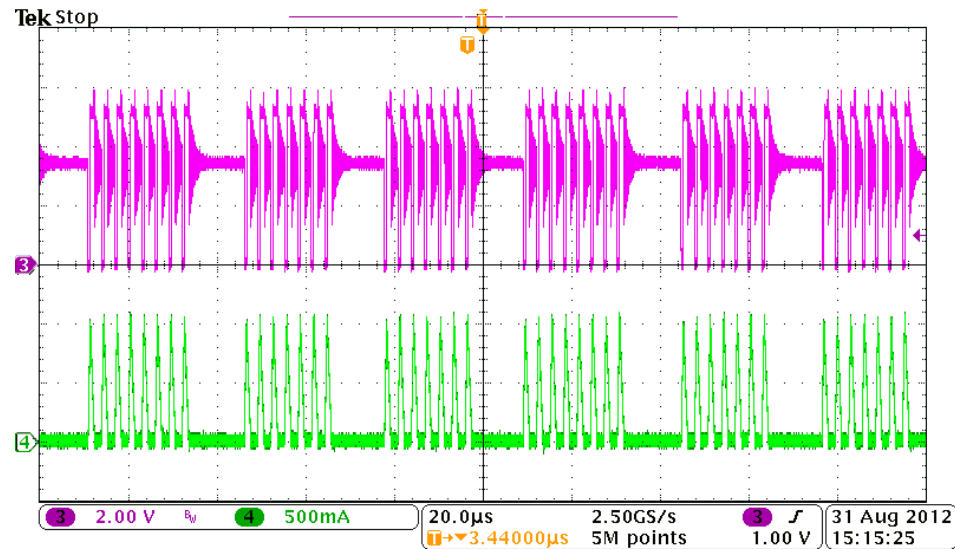


# Steady-state waveform(1)



Null load

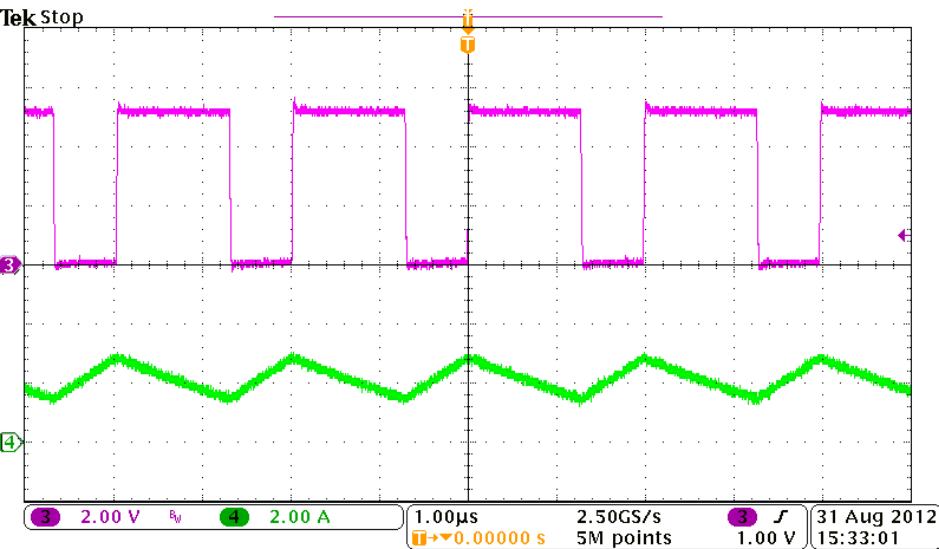
CH3(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (500mA/div)



$I_{Load}=0.1A$

CH3(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (500mA/div)

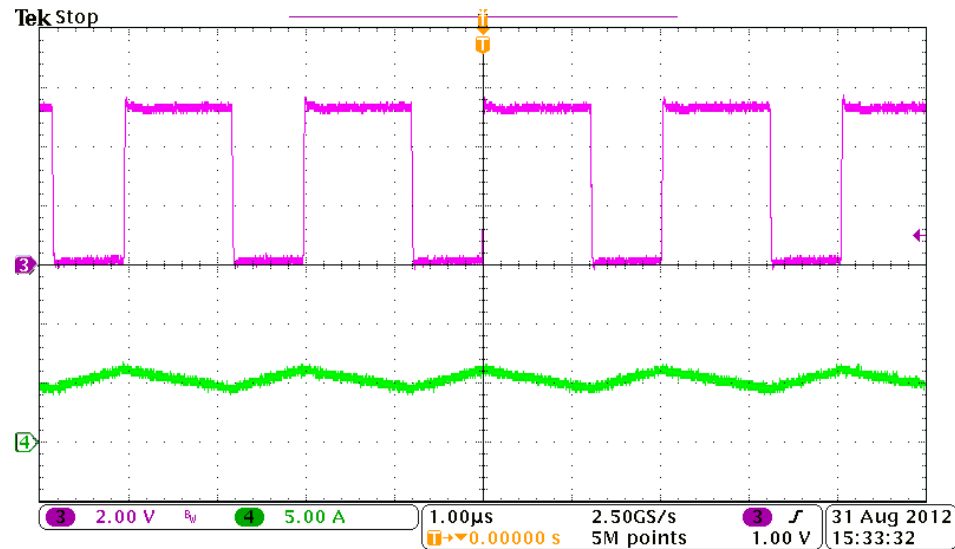
# Steady-state waveform(2)



$I_{Load}=1.3A$

CH3(pink):  $V_{LX}$  (2.0V/div)

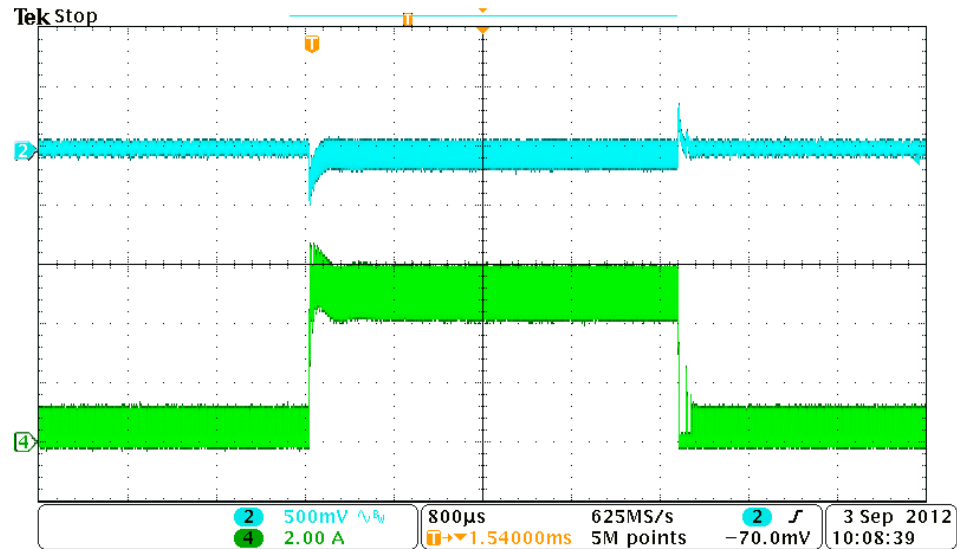
CH4(green):  $I_L$  (2.0A/div)



$I_{Load}=2.8A$

CH1(pink):  $V_{LX}$  (2.0V/div)

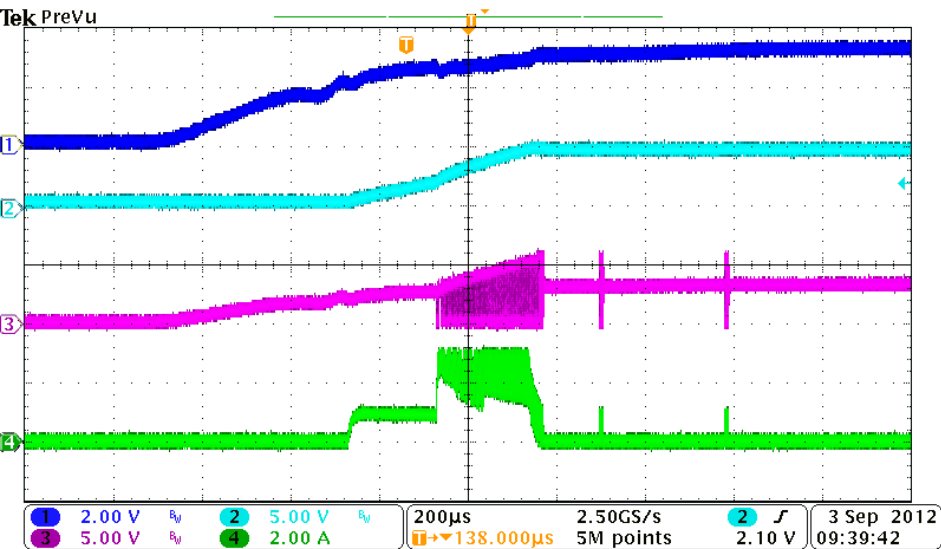
CH4(green):  $I_L$  (5.0A/div)



0.1A~2.8A

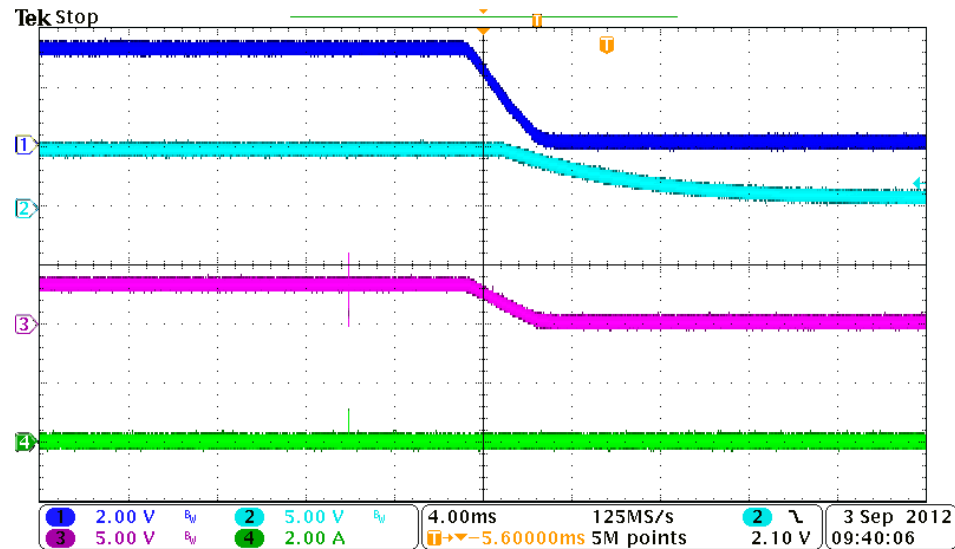
CH2(cyan):  $\Delta V_{OUT}$  (500mV/div)

CH4(green):  $I_L$  (2.0A/div)



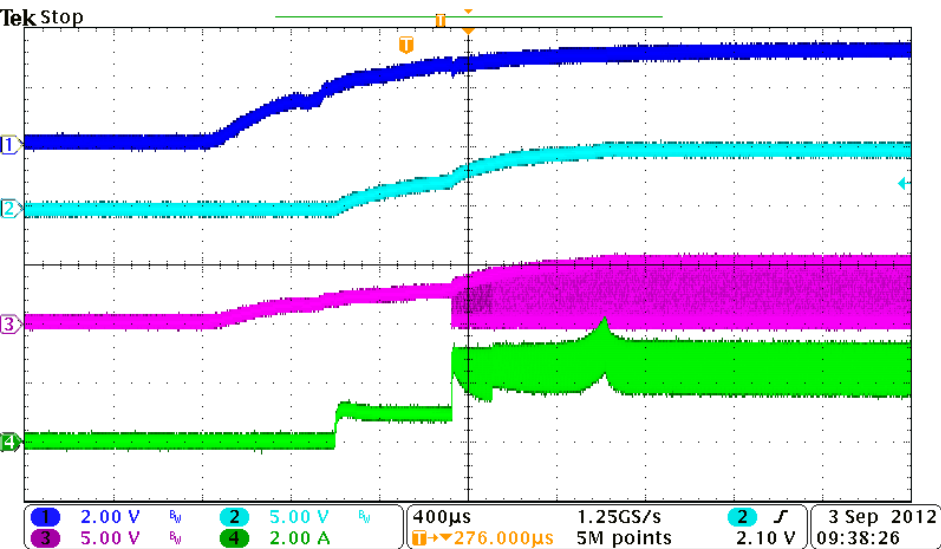
## Null load

CH1(Blue):  $V_{IN}$  (2.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



## Null load

CH1(Blue):  $V_{IN}$  (2.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



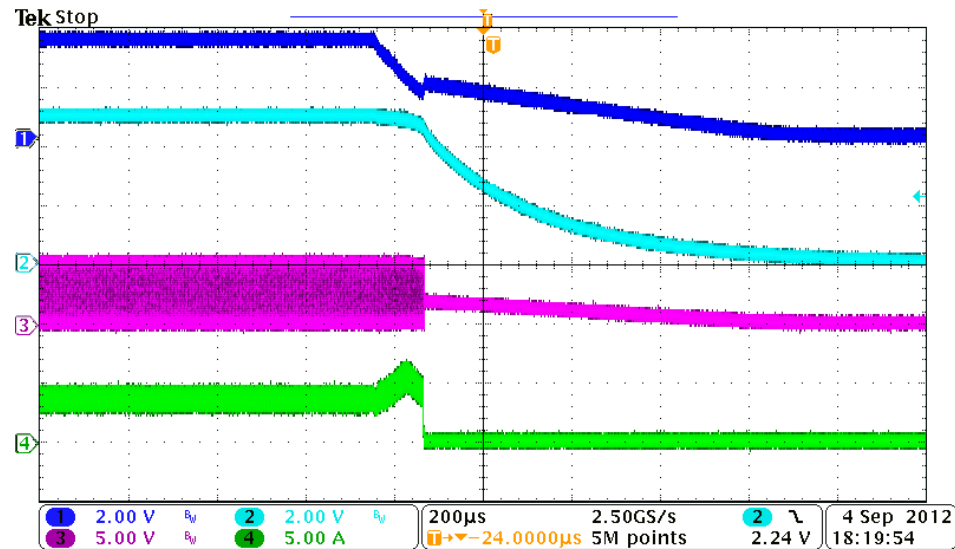
$$I_{Load}=1.4A$$

CH1(Blue):  $V_{IN}$  (2.0V/div)

CH2(cyan):  $V_{OUT}$  (5.0V/div)

CH3(pink):  $V_{LX}$  (5.0V/div)

CH4(green):  $I_L$  (2.0A/div)



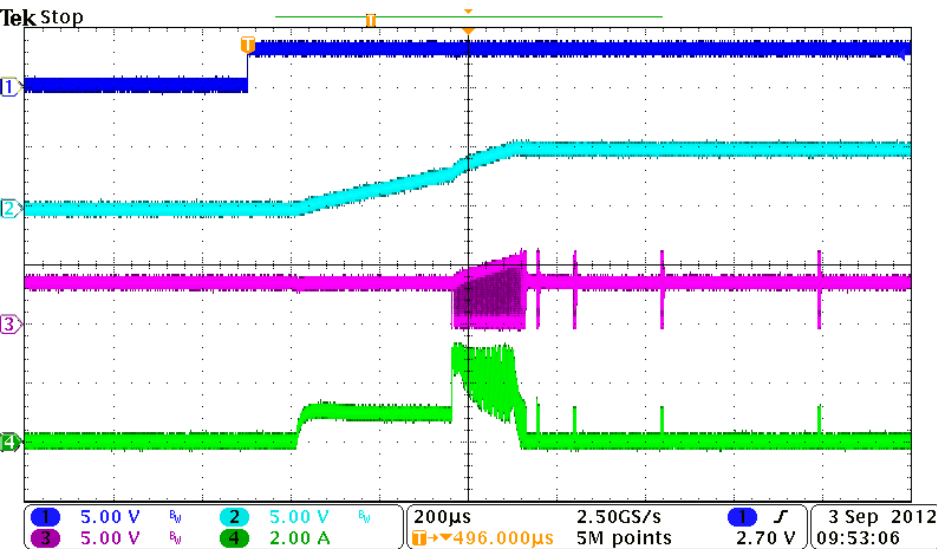
$$I_{Load}=1.4A$$

CH1(Blue):  $V_{IN}$  (2.0V/div)

CH2(cyan):  $V_{OUT}$  (2.0V/div)

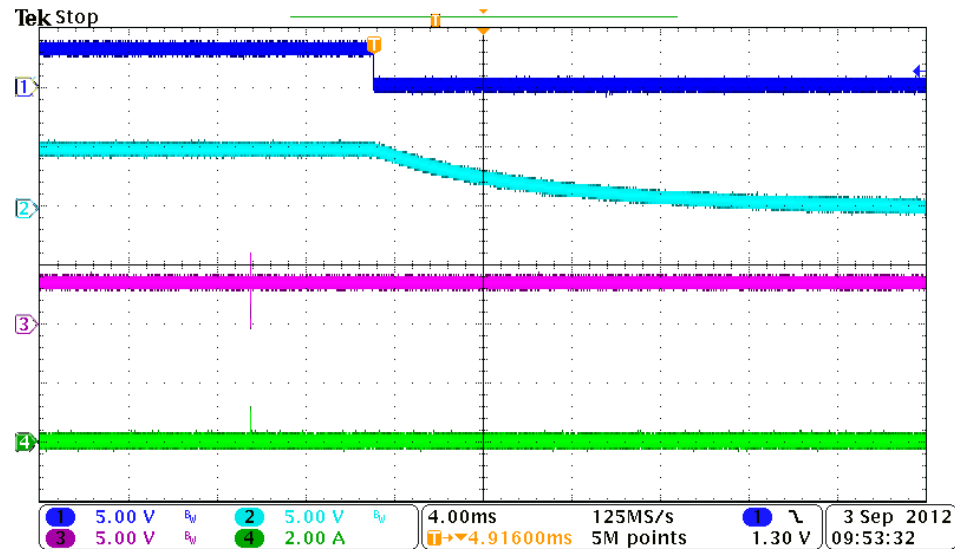
CH3(pink):  $V_{LX}$  (5.0V/div)

CH4(green):  $I_L$  (2.0A/div)



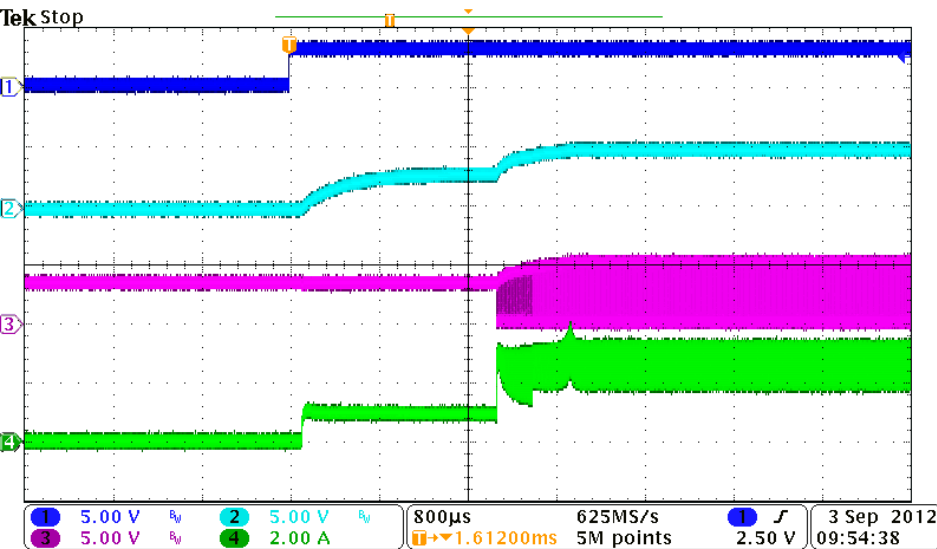
### Null load

CH1(Blue):  $V_{EN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



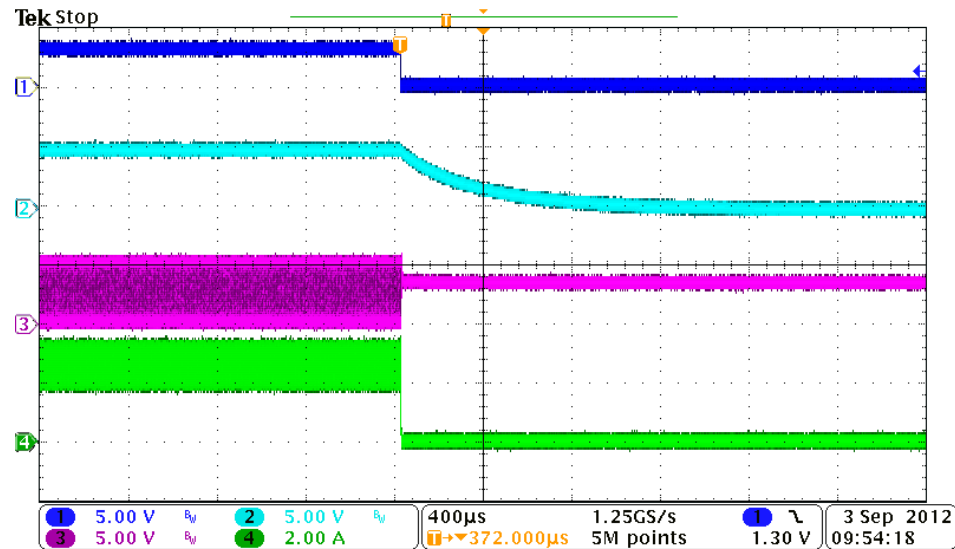
### Null load

CH1(Blue):  $V_{EN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



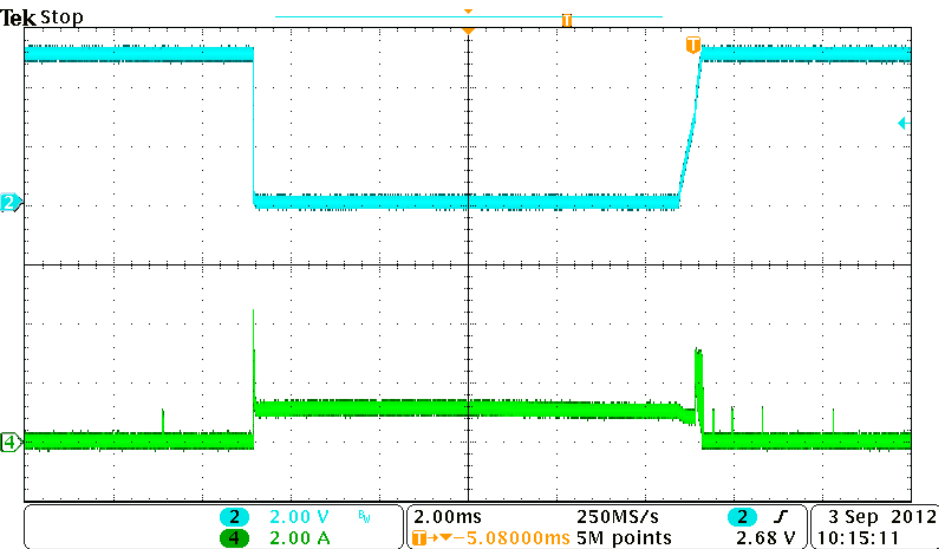
$$I_{Load}=1.4A$$

- CH1(Blue):  $V_{EN}$  (5.0V/div)
- CH2(cyan):  $V_{OUT}$  (5.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (2.0A/div)



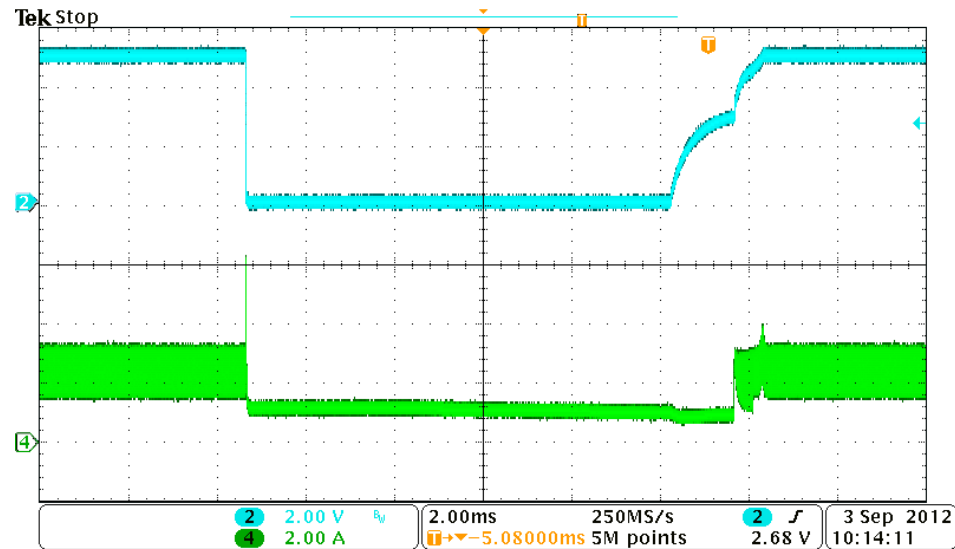
$$I_{Load}=1.4A$$

- CH1(Blue):  $V_{EN}$  (5.0V/div)
- CH2(cyan):  $V_{OUT}$  (5.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (2.0A/div)



Null load to Hard short

CH2(cyan):  $V_{OUT}$  (2.0V/div)  
CH4(green):  $I_L$  (2.0A/div)



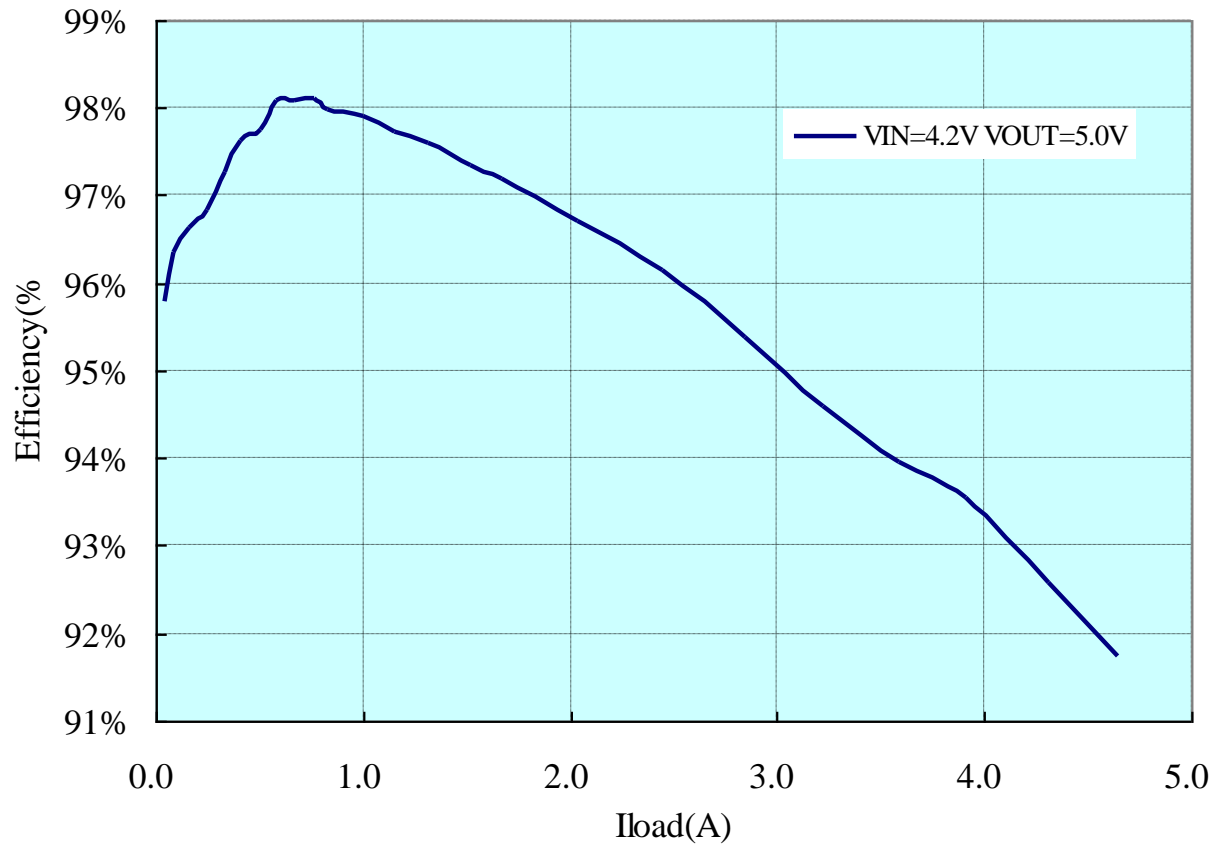
1.4A to Hard short

CH2(cyan):  $V_{OUT}$  (2.0V/div)  
CH4(green):  $I_L$  (2.0A/div)

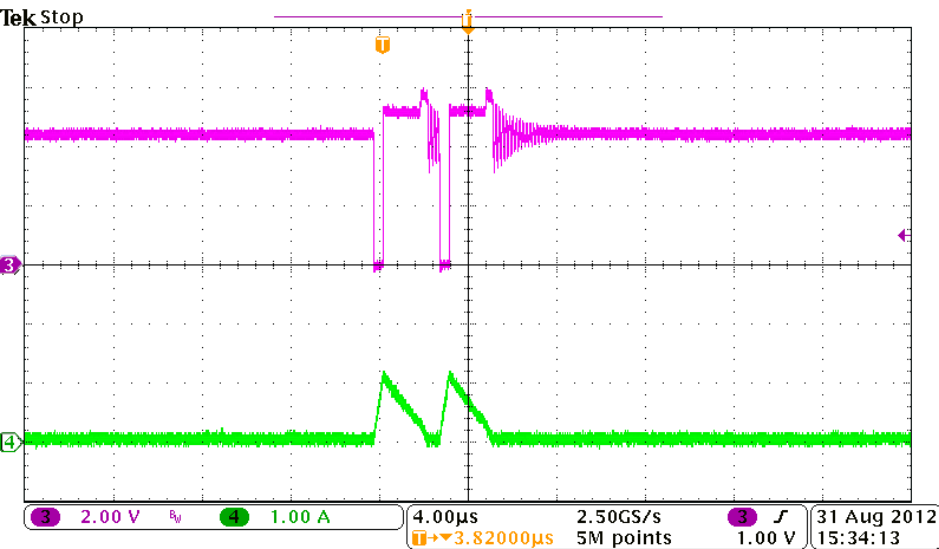


$$V_{IN}=4.2V \quad V_{OUT}=5.0V$$

SY7066 Efficiency



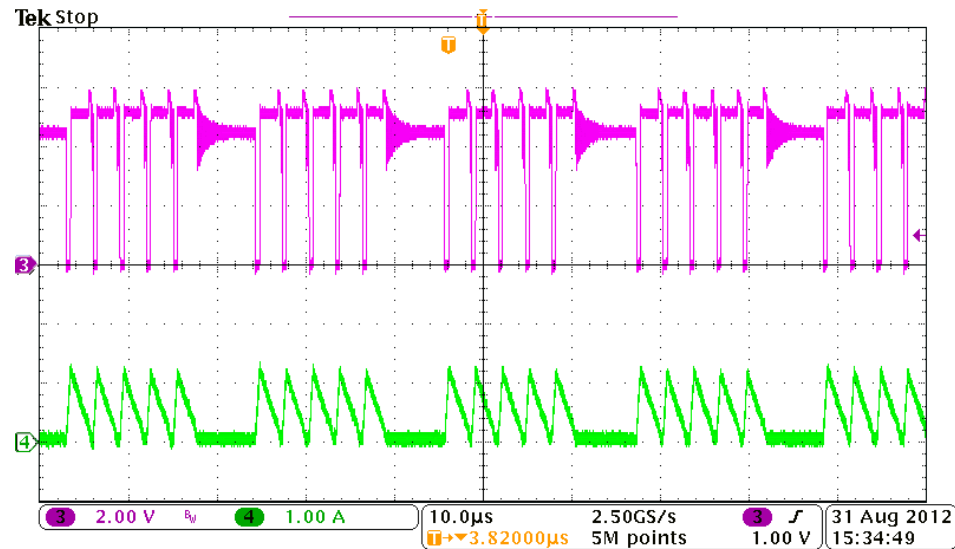
# Steady-state waveform(1)



Null load

CH3(pink):  $V_{LX}$  (2.0V/div)

CH4(green):  $I_L$  (1.0A/div)

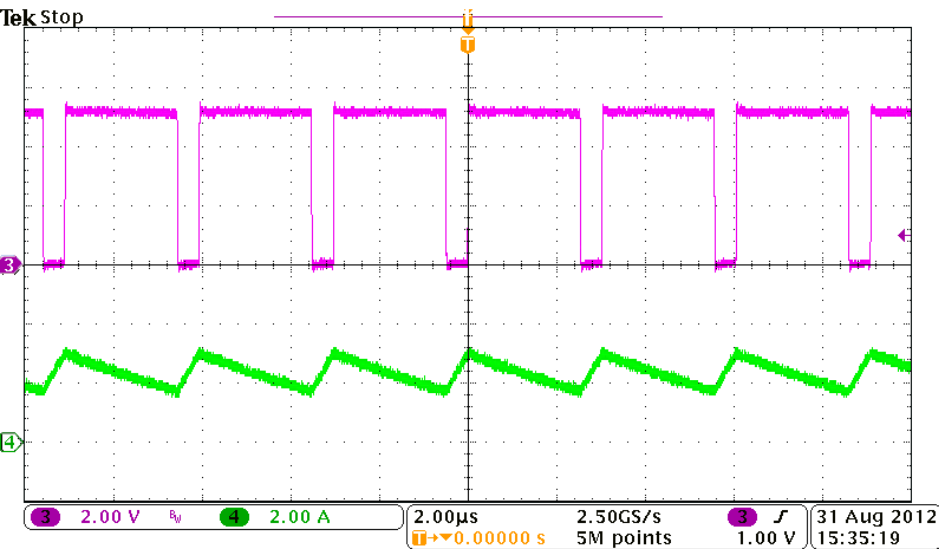


$I_{Load}=0.3A$

CH3(pink):  $V_{LX}$  (2.0V/div)

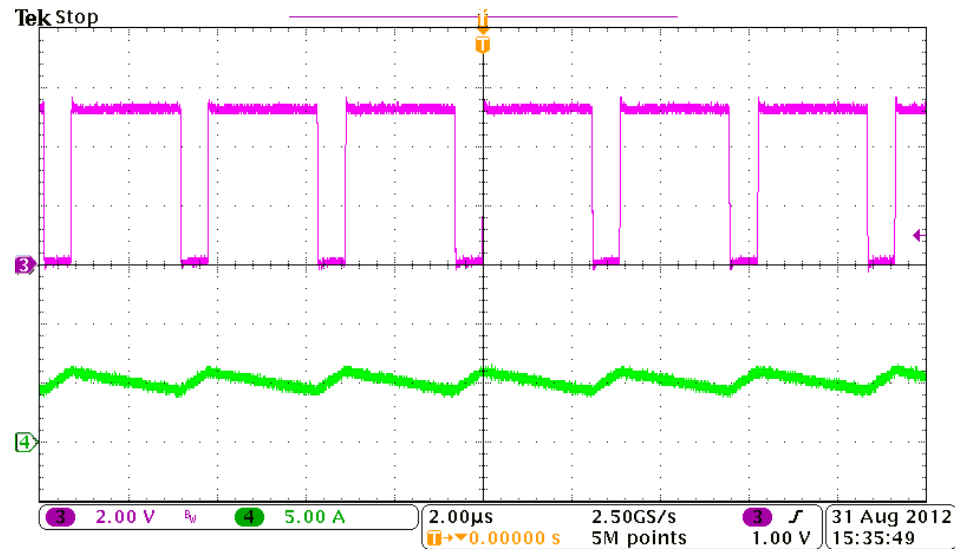
CH4(green):  $I_L$  (1.0A/div)

# Steady-state waveform(2)



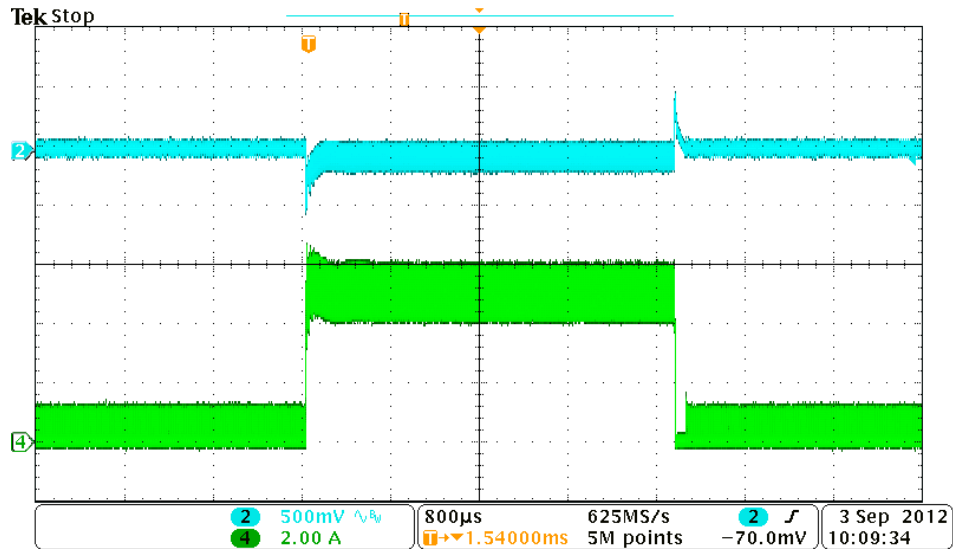
$I_{Load}=1.9A$

CH3(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



$I_{Load}=3.9A$

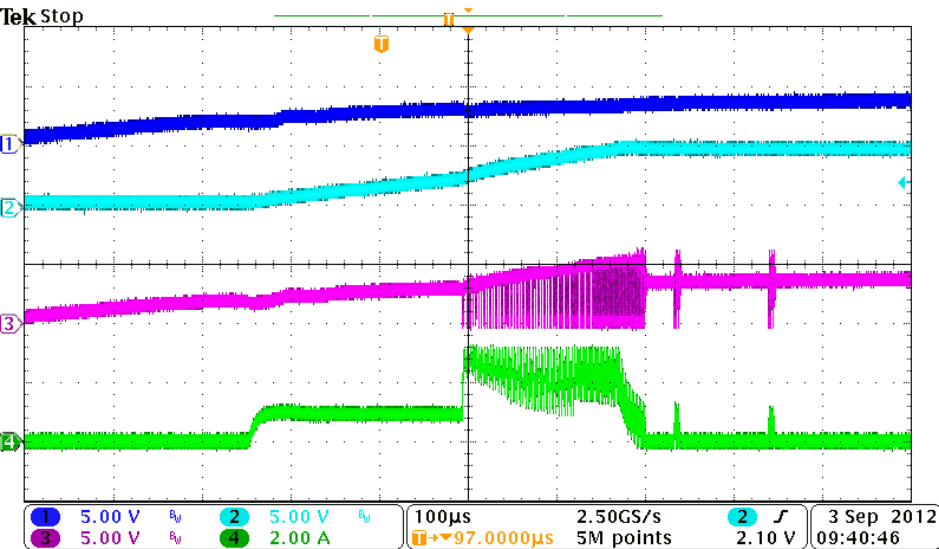
CH1(pink):  $V_{LX}$  (2.0V/div)  
 CH4(green):  $I_L$  (5.0A/div)



0.3A~3.9A

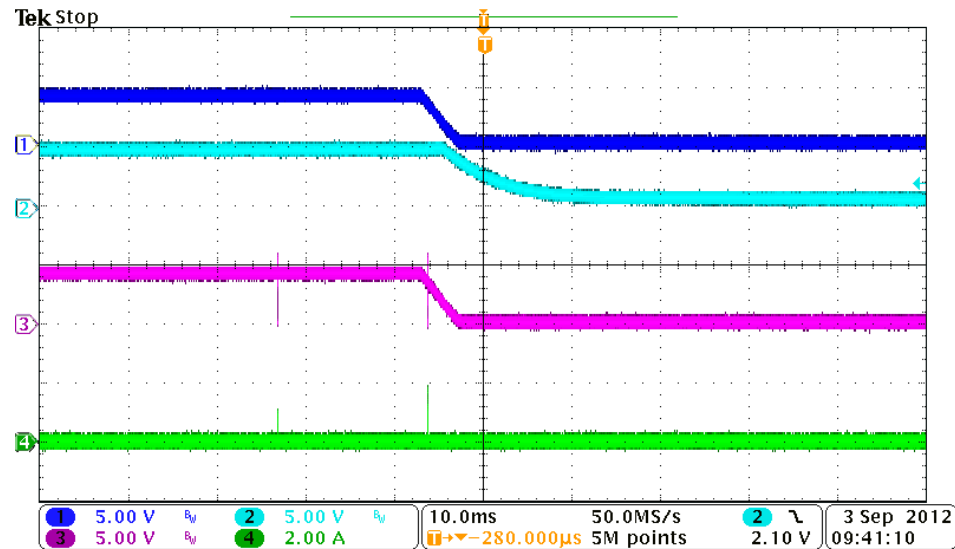
CH2(cyan):  $\Delta V_{OUT}$  (500mV/div)

CH4(green):  $I_L$  (2.0A/div)



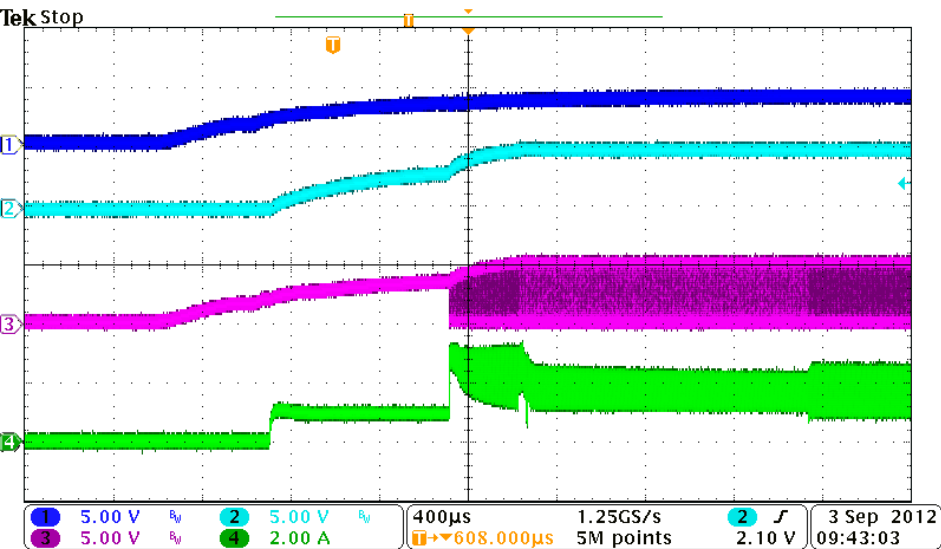
## Null load

CH1(Blue):  $V_{IN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



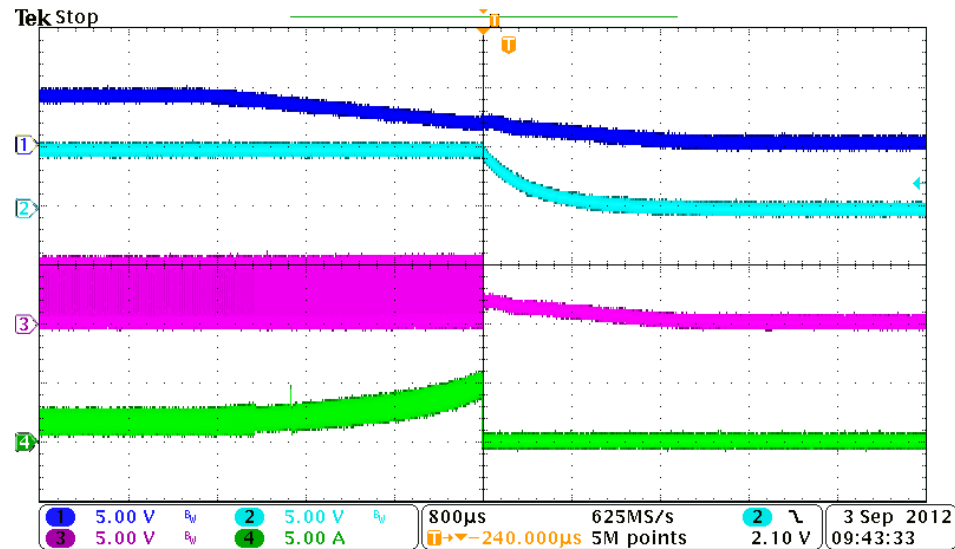
## Null load

CH1(Blue):  $V_{IN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



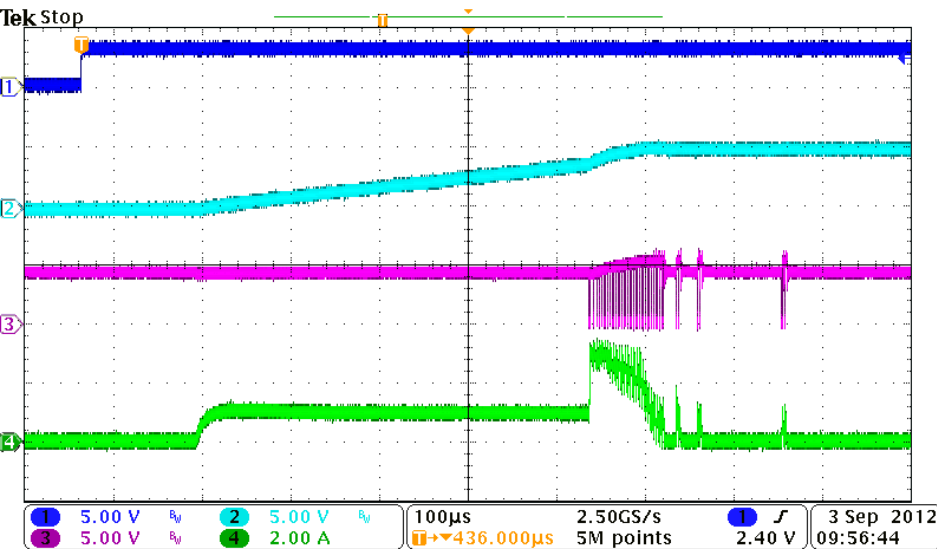
$$I_{Load}=1.25A$$

- CH1(Blue):  $V_{IN}$  (5.0V/div)
- CH2(cyan):  $V_{OUT}$  (5.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (2.0A/div)



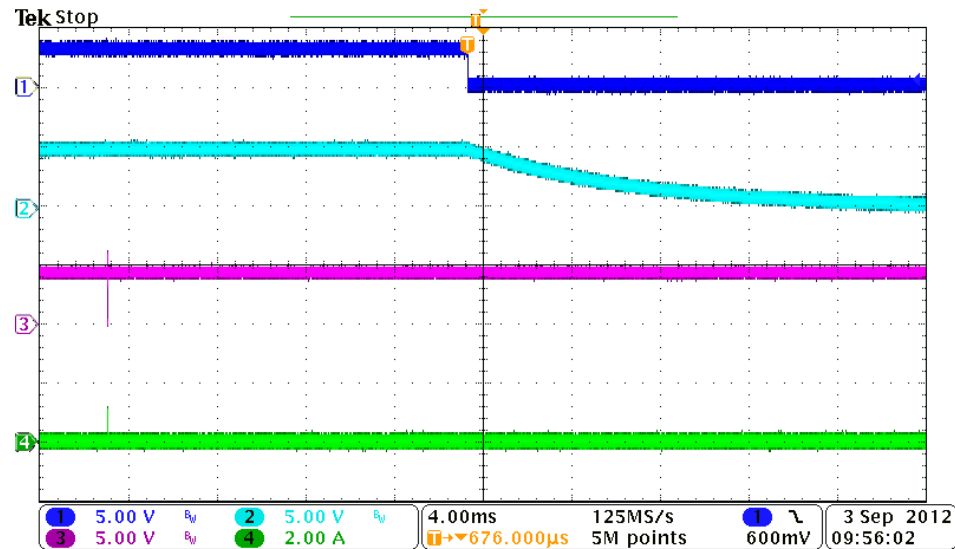
$$I_{Load}=1.25A$$

- CH1(Blue):  $V_{IN}$  (5.0V/div)
- CH2(cyan):  $V_{OUT}$  (5.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (5.0A/div)



### Null load

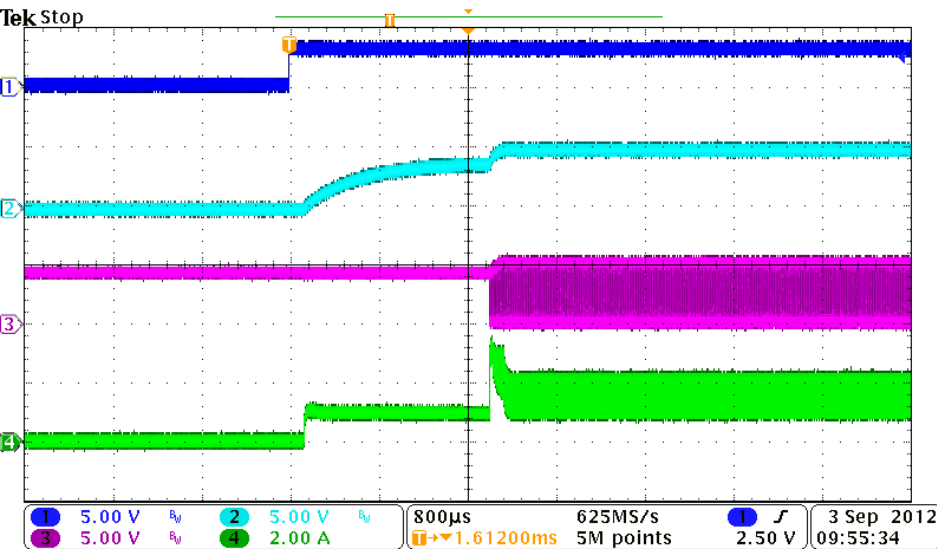
CH1(Blue):  $V_{EN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)



### Null load

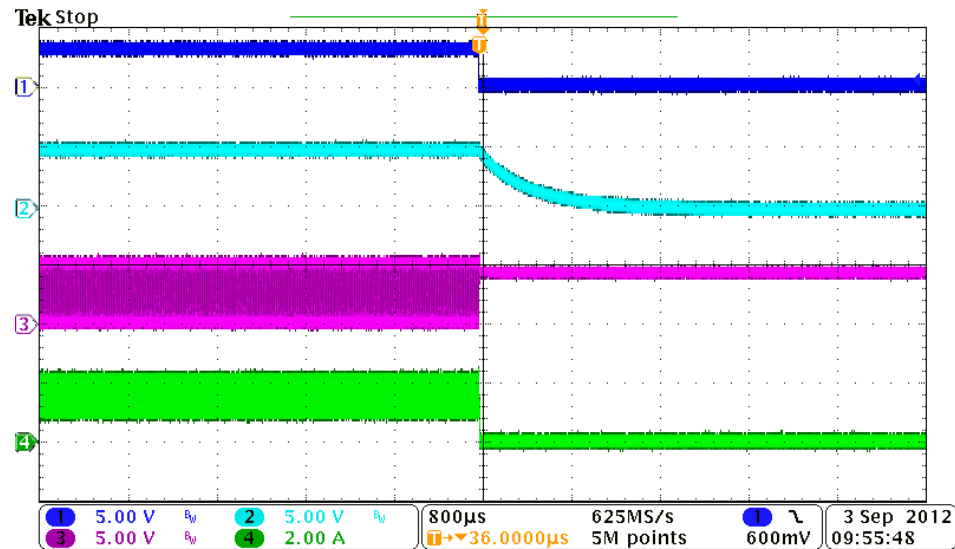
CH1(Blue):  $V_{EN}$  (5.0V/div)  
 CH2(cyan):  $V_{OUT}$  (5.0V/div)  
 CH3(pink):  $V_{LX}$  (5.0V/div)  
 CH4(green):  $I_L$  (2.0A/div)





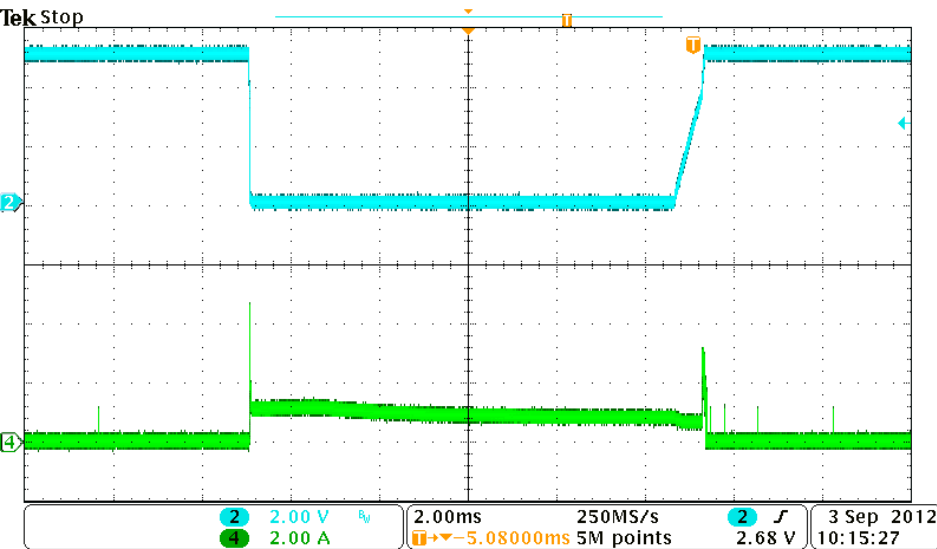
$$I_{Load}=1.25A$$

- CH1(Blue):  $V_{EN}$  (5.0V/div)
- CH2(cyan):  $V_{OUT}$  (5.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (2.0A/div)



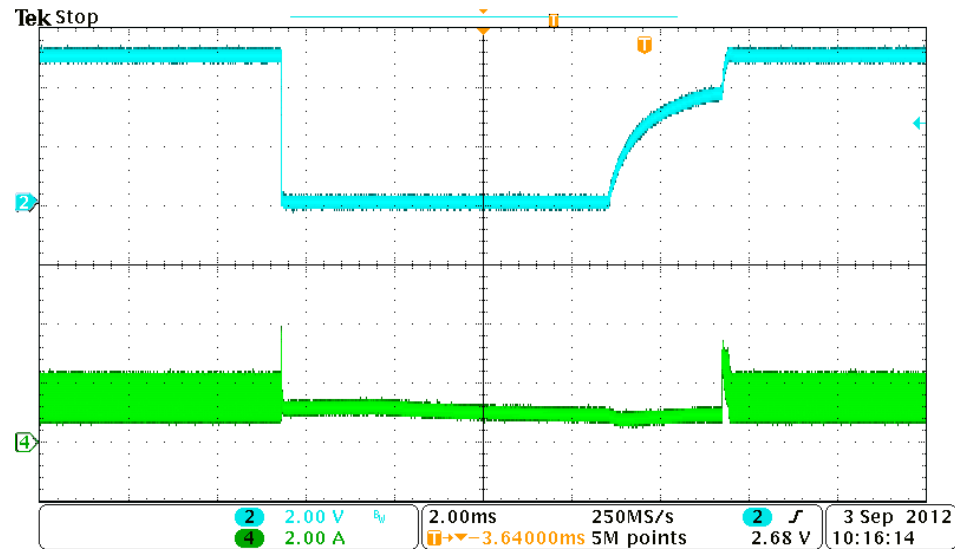
$$I_{Load}=1.25A$$

- CH1(Blue):  $V_{EN}$  (5.0V/div)
- CH2(cyan):  $V_{OUT}$  (5.0V/div)
- CH3(pink):  $V_{LX}$  (5.0V/div)
- CH4(green):  $I_L$  (2.0A/div)



Null load to Hard short

CH2(cyan):  $V_{OUT}$  (2.0V/div)  
CH4(green):  $I_L$  (1.0A/div)



1.25A to Hard short

CH2(cyan):  $V_{OUT}$  (2.0V/div)  
CH4(green):  $I_L$  (2.0A/div)



**The End**