9/30/14

PMP9365 Test Report

Contents

Figures

1) Block Diagram

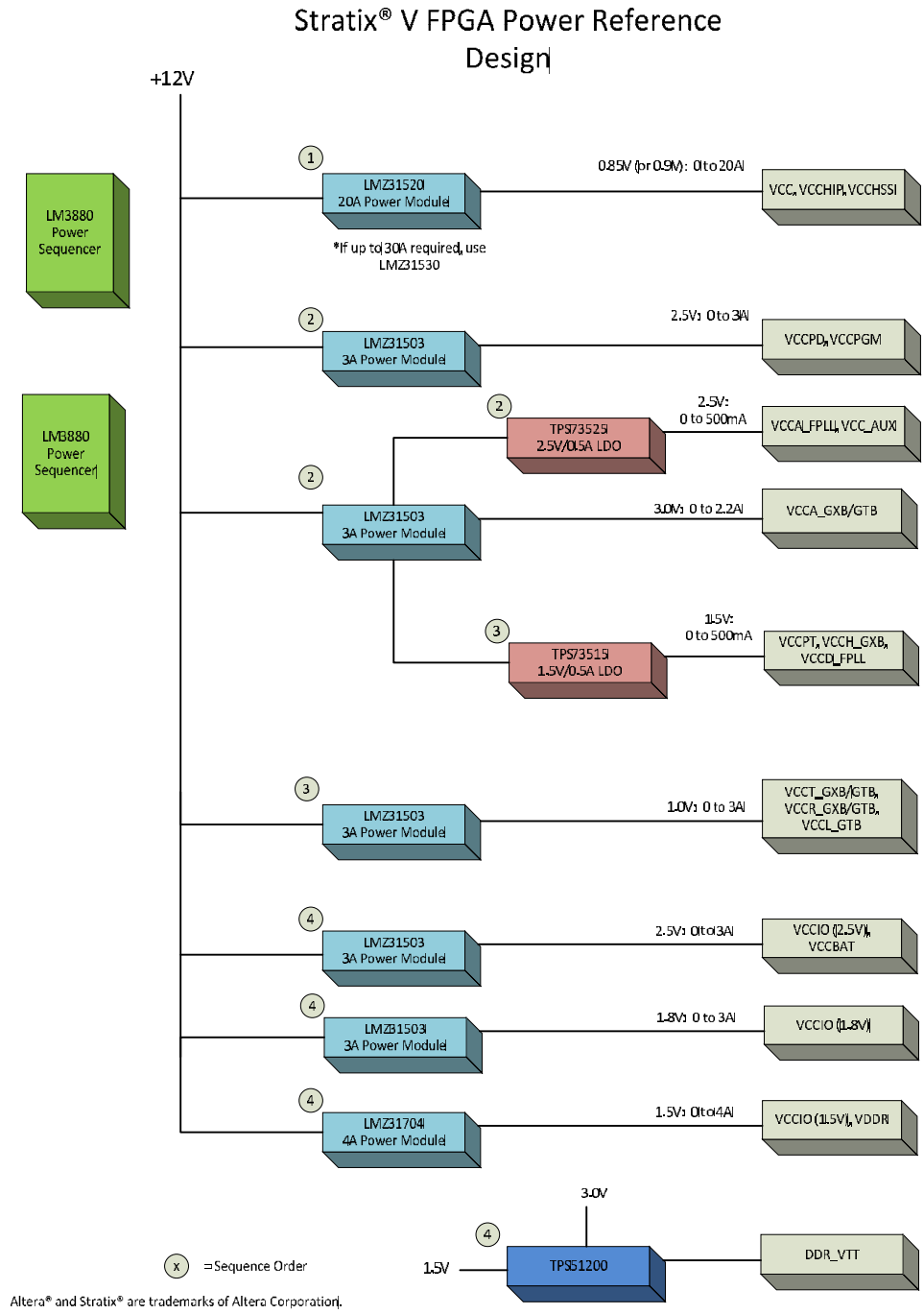


Figure 1. Block Diagram

2) Board Photos

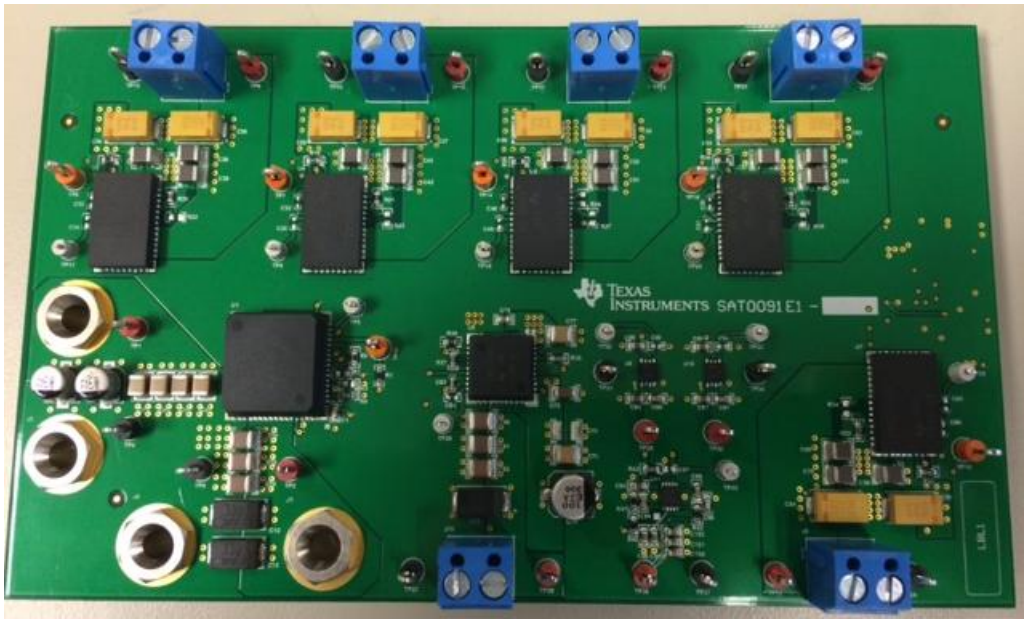


Figure 2. Board Photo Top

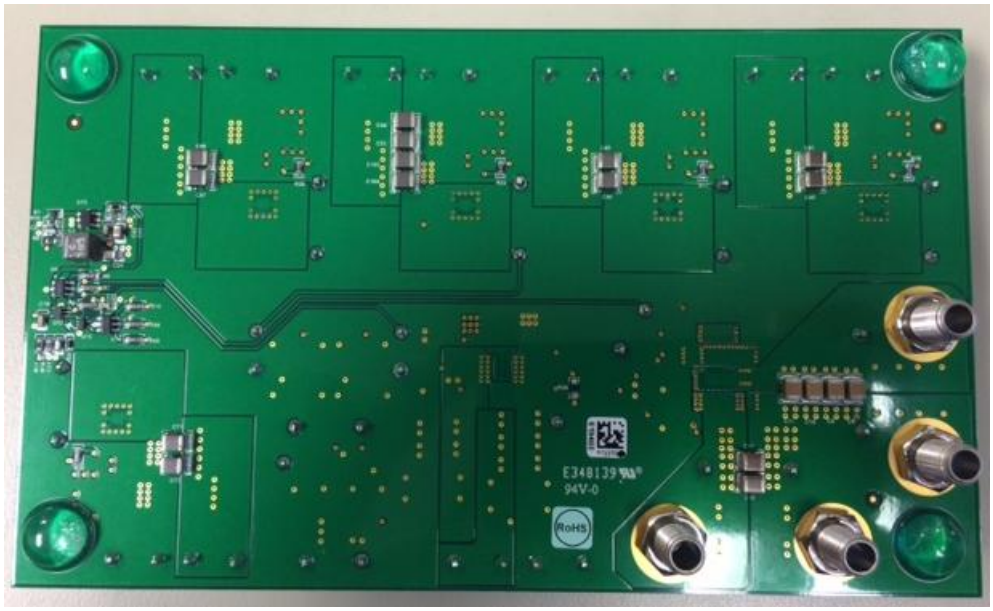
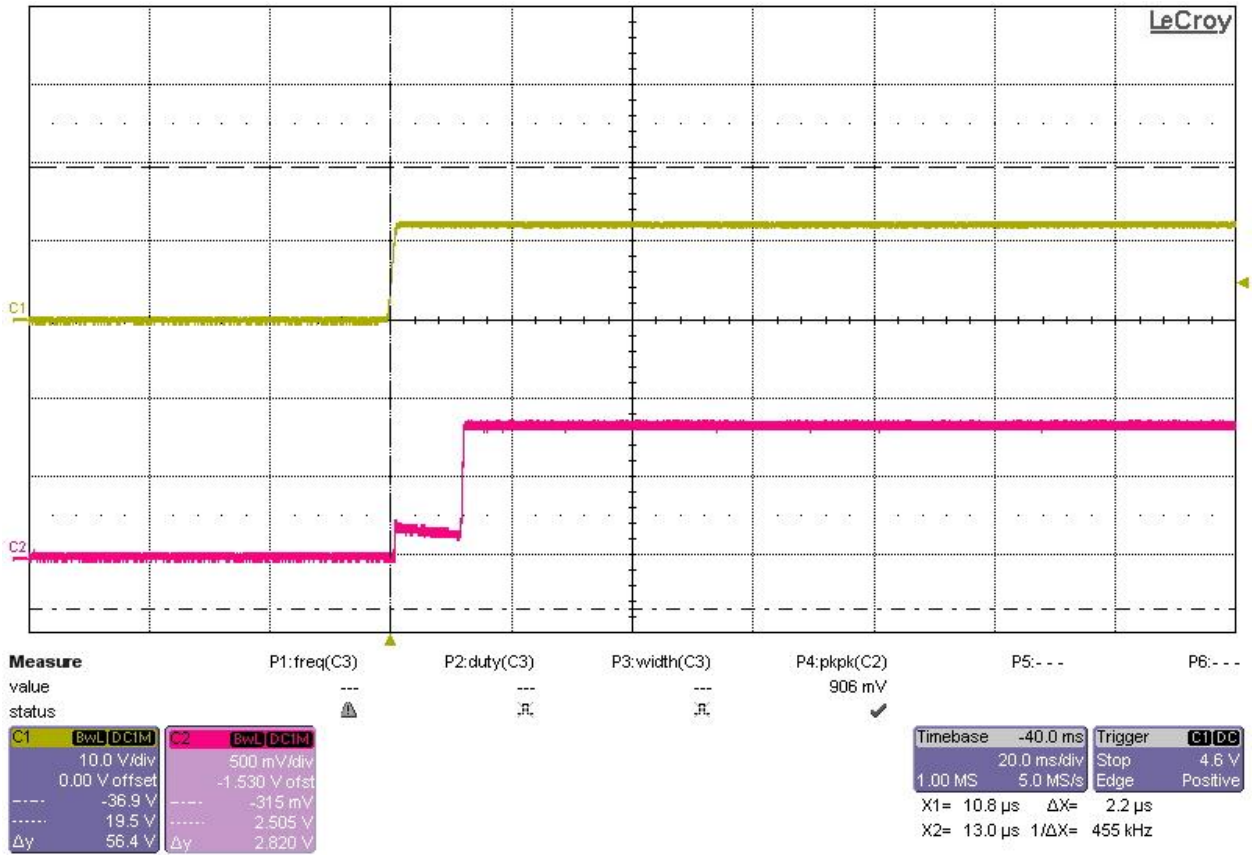


Figure 3. Board Photo Bottom

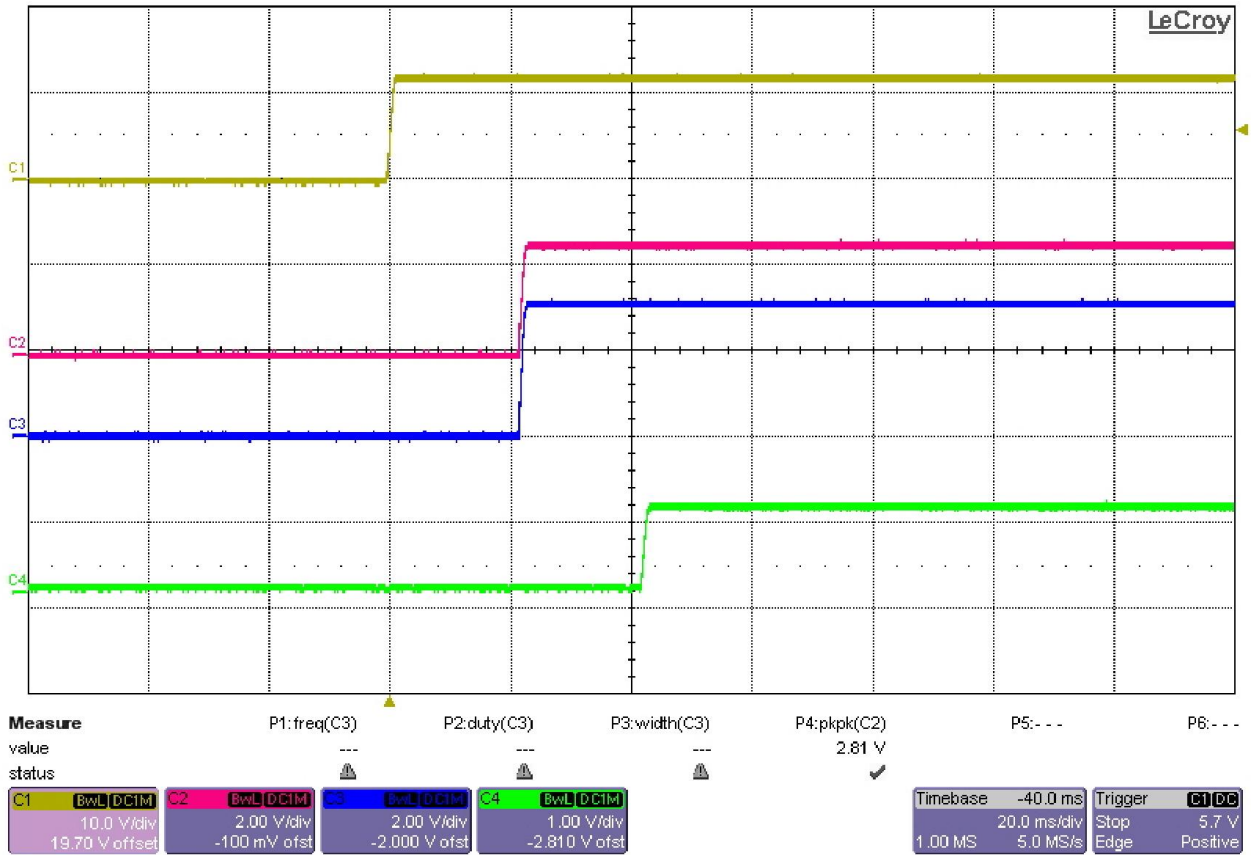
3) Startup Waveforms

Two LM3880's are used for power sequencing as shown in figures 4, 5, and 6. The power up sequence is in the following order: VCC, VCCPD, VCCA_GXB/GTB, VCCT_, VCCIO.



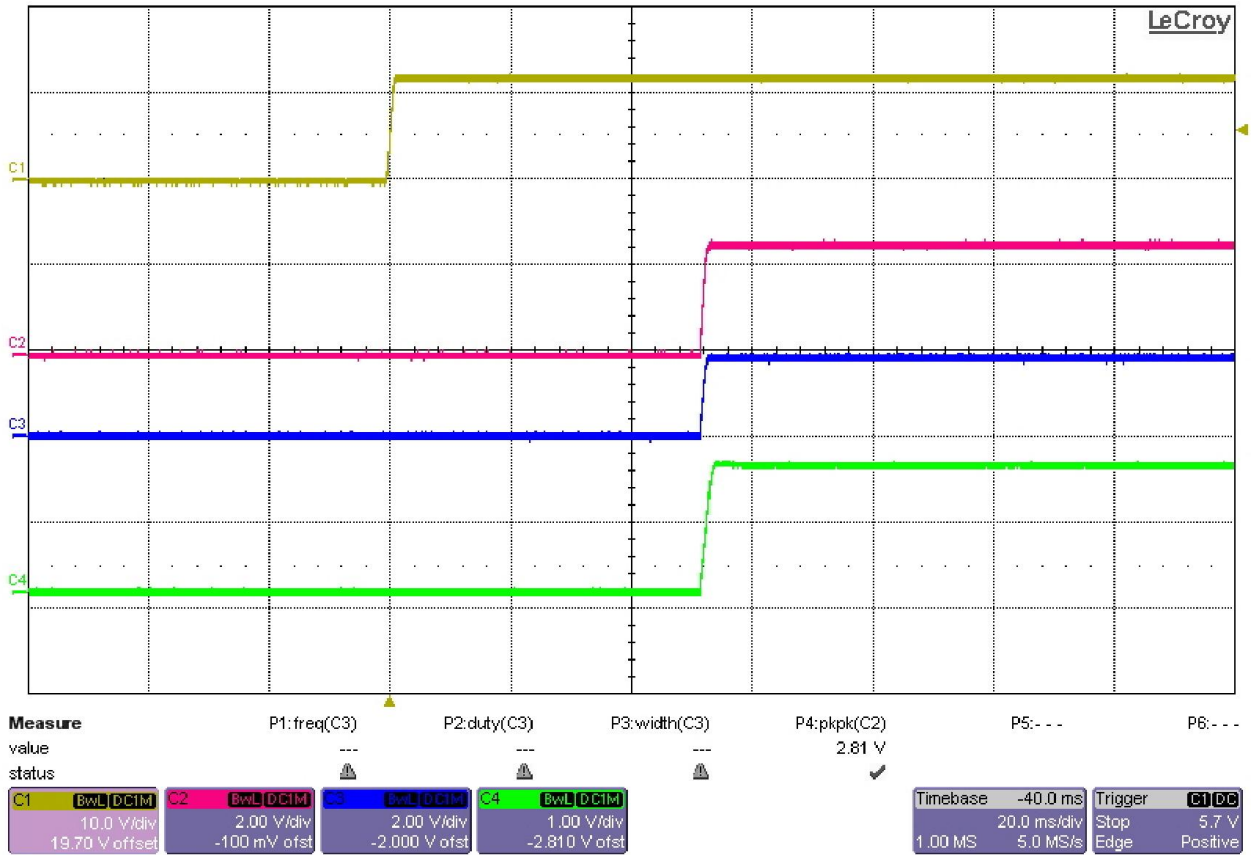
Ch.1: VIN
Ch.2: VCC

Figure 4. Startup Waveform



Ch.1: VIN
Ch.2: VCCPD
Ch.3: VCCA_GXB/GTB
Ch.4: VCCT_

Figure 5. Startup Waveform



Ch.1: VIN
Ch.2: VCCIO 2.5V
Ch.3: VCCIO_1.8V
Ch.4: VCCIO_1.5V

Figure 6. Startup Waveform

4) Efficiency

The efficiency of the converters is shown in the figures below. The input voltage is set to 12V.

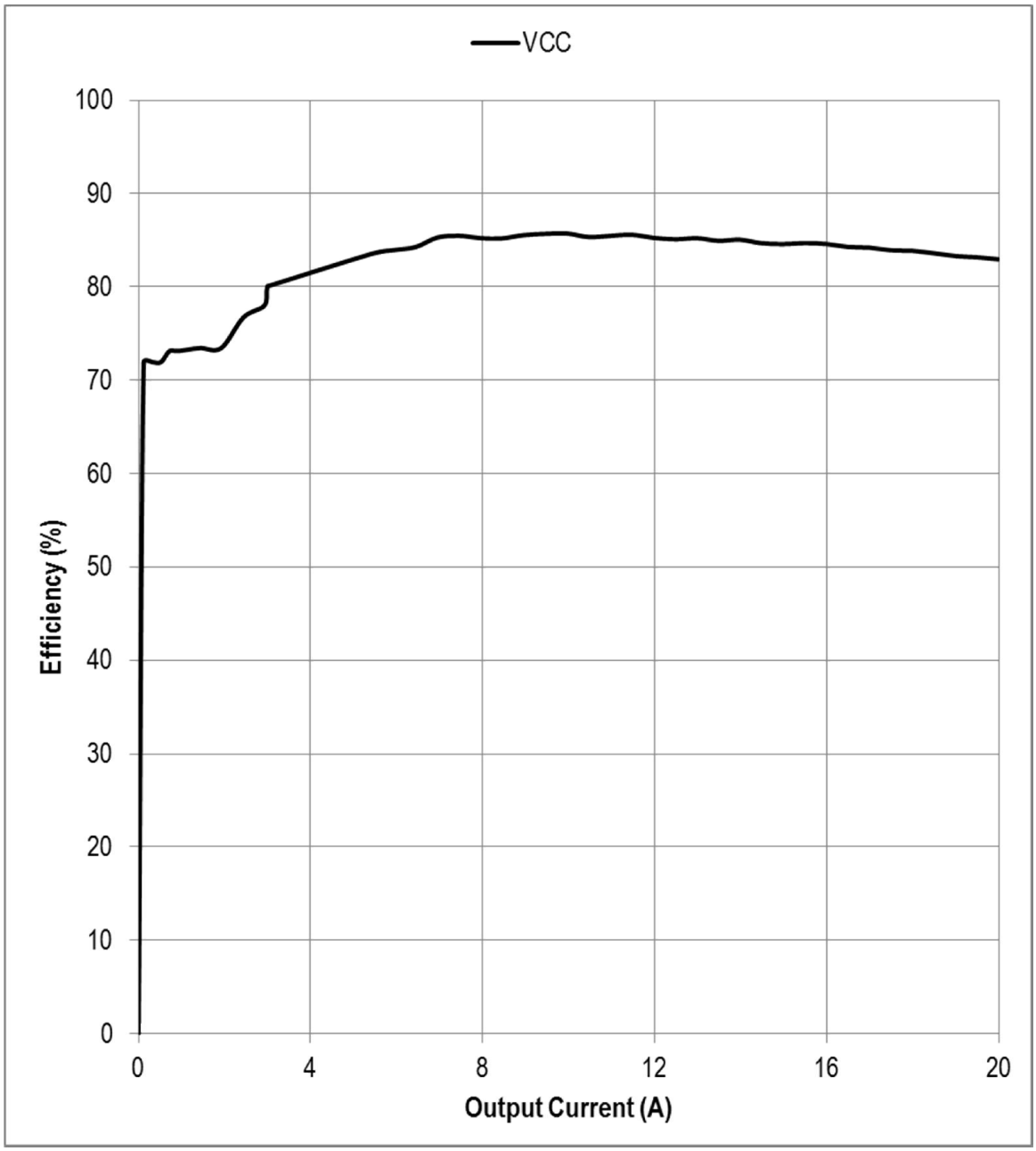


Figure 7. VIN = 12V, VCC Efficiency

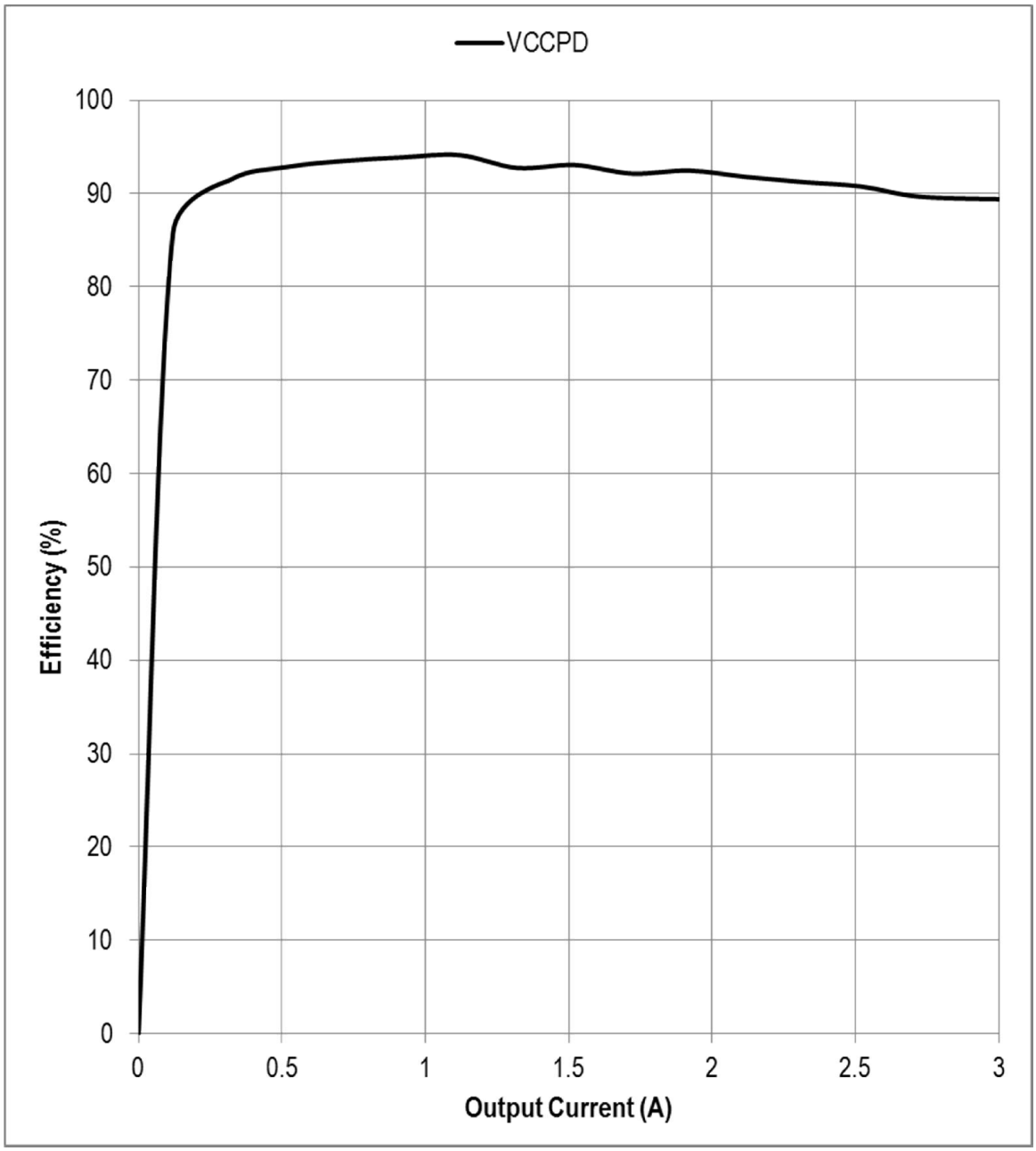


Figure 8. VIN = 12V, VCCPD Efficiency

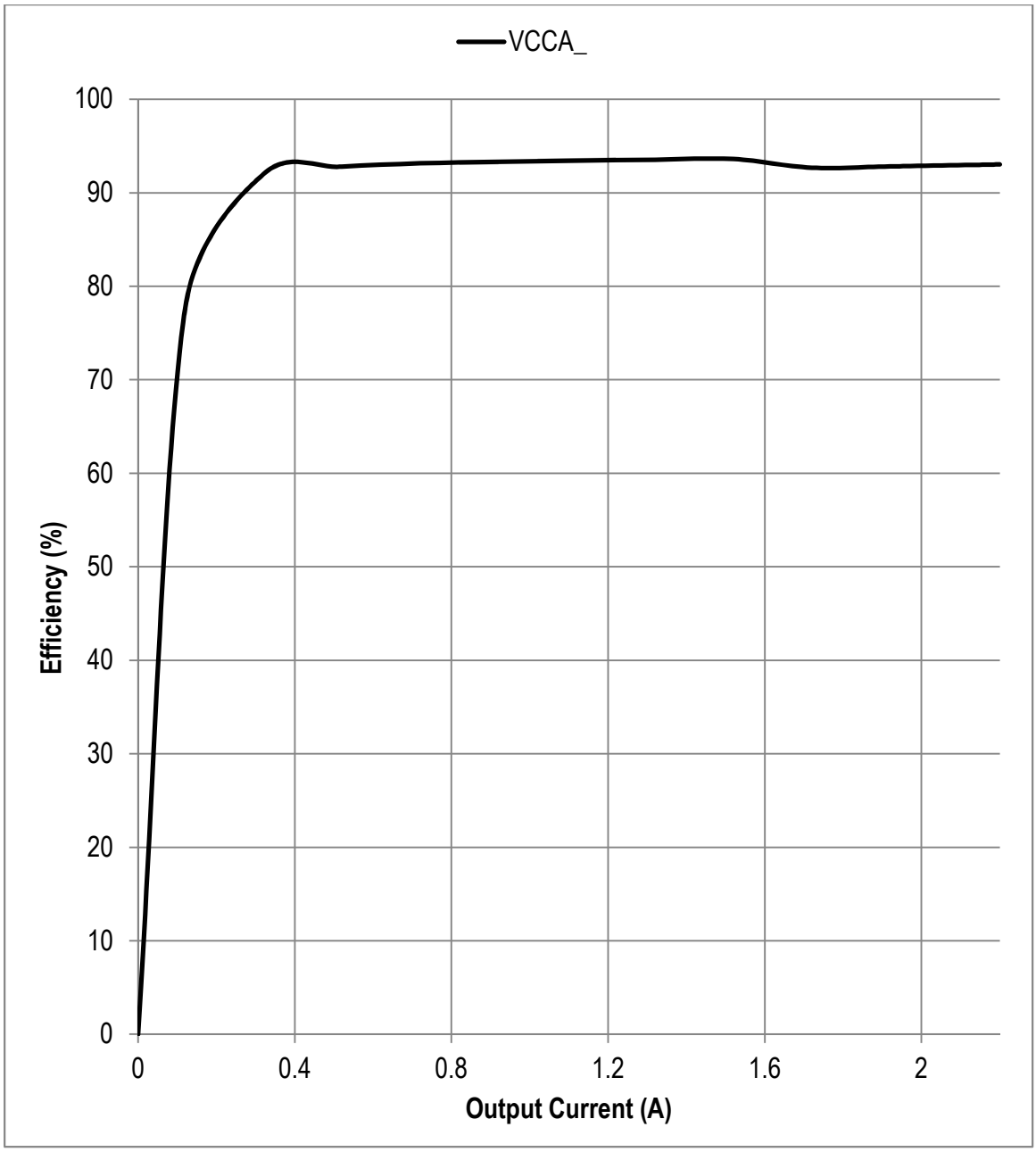


Figure 9. VIN = 12V, VCCA_GXB/GTB Efficiency

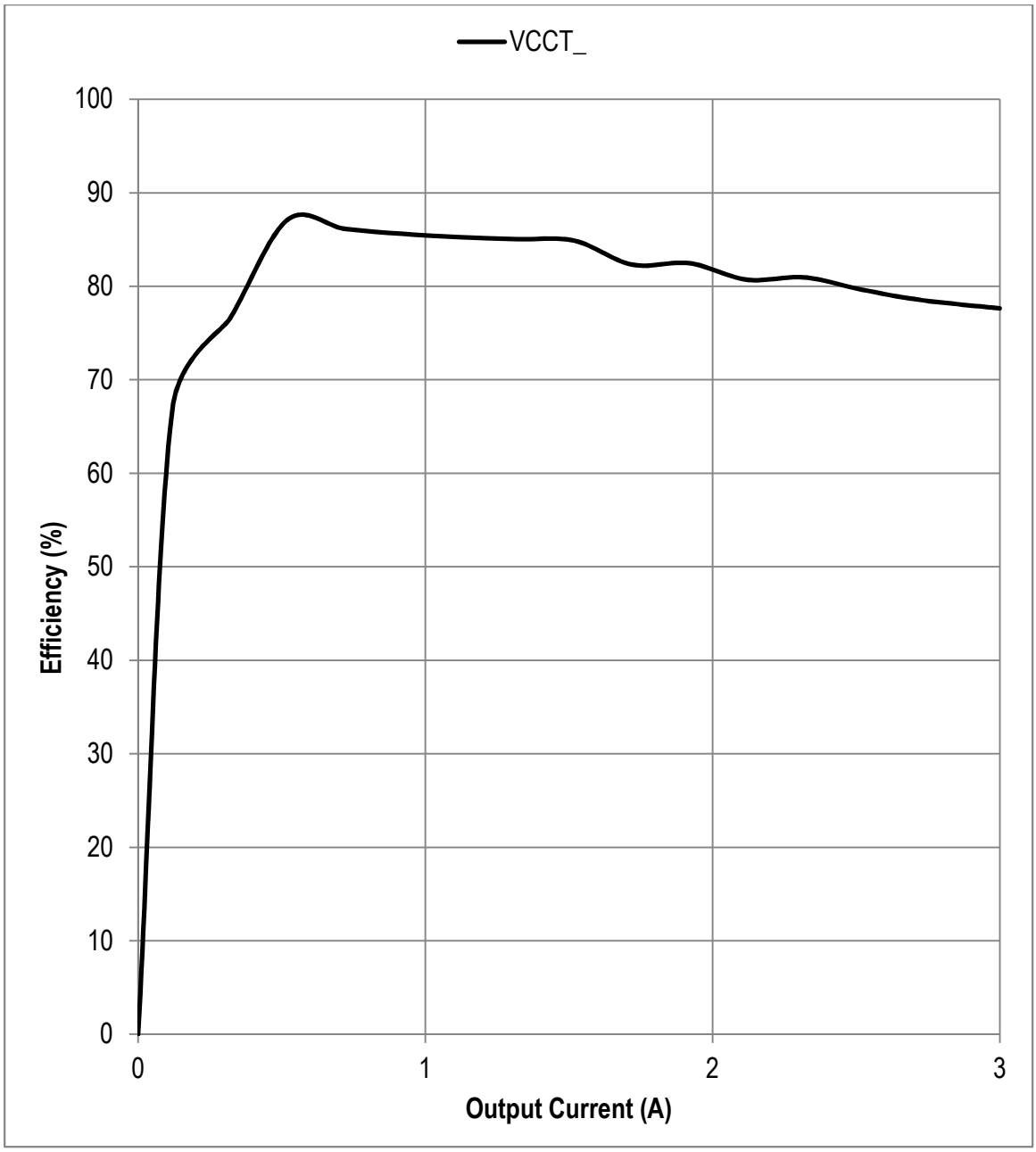


Figure 10. VIN = 12V, VCCT_ Efficiency

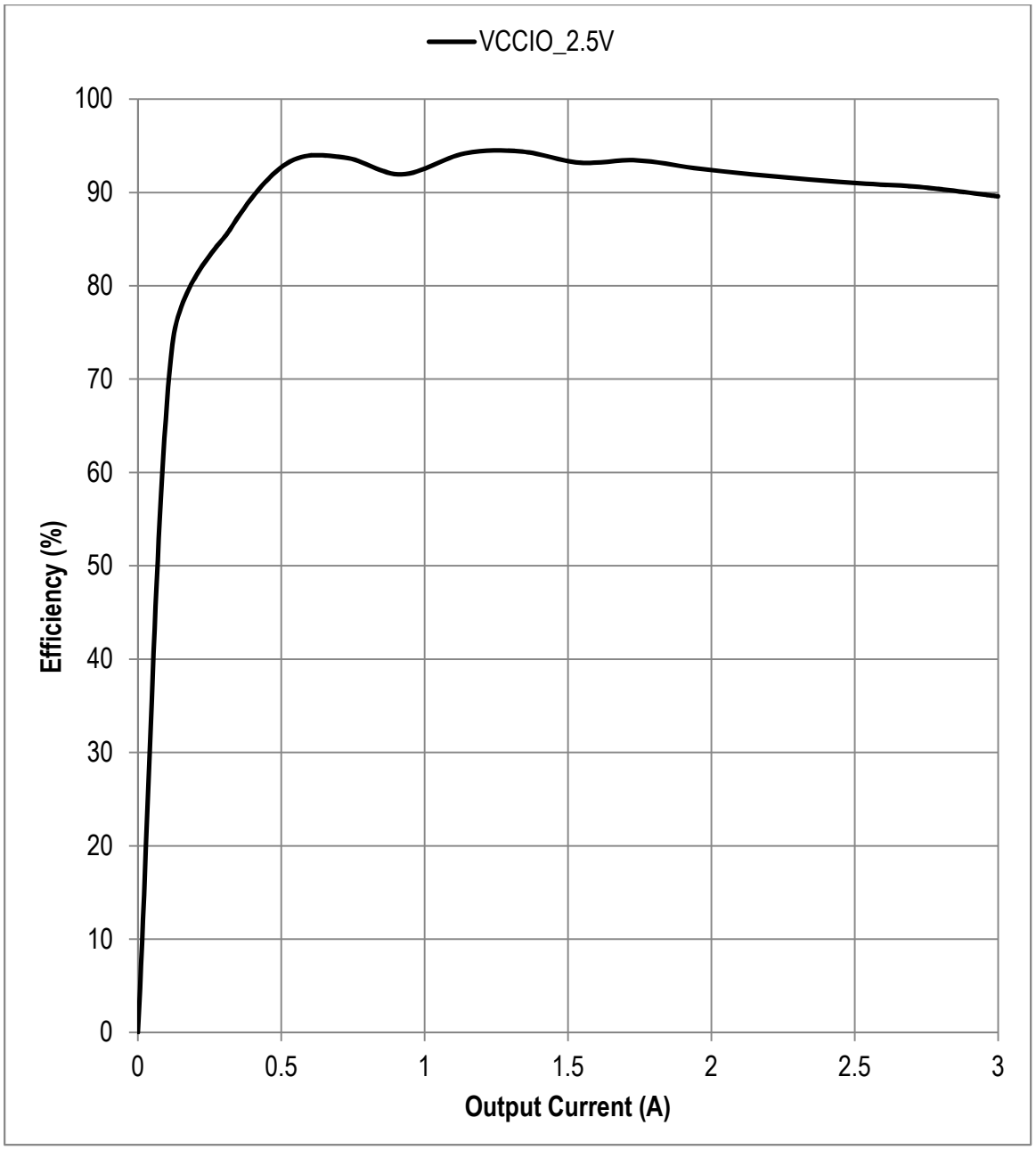


Figure 11. VIN = 12V, VCCIO 2.5V Efficiency

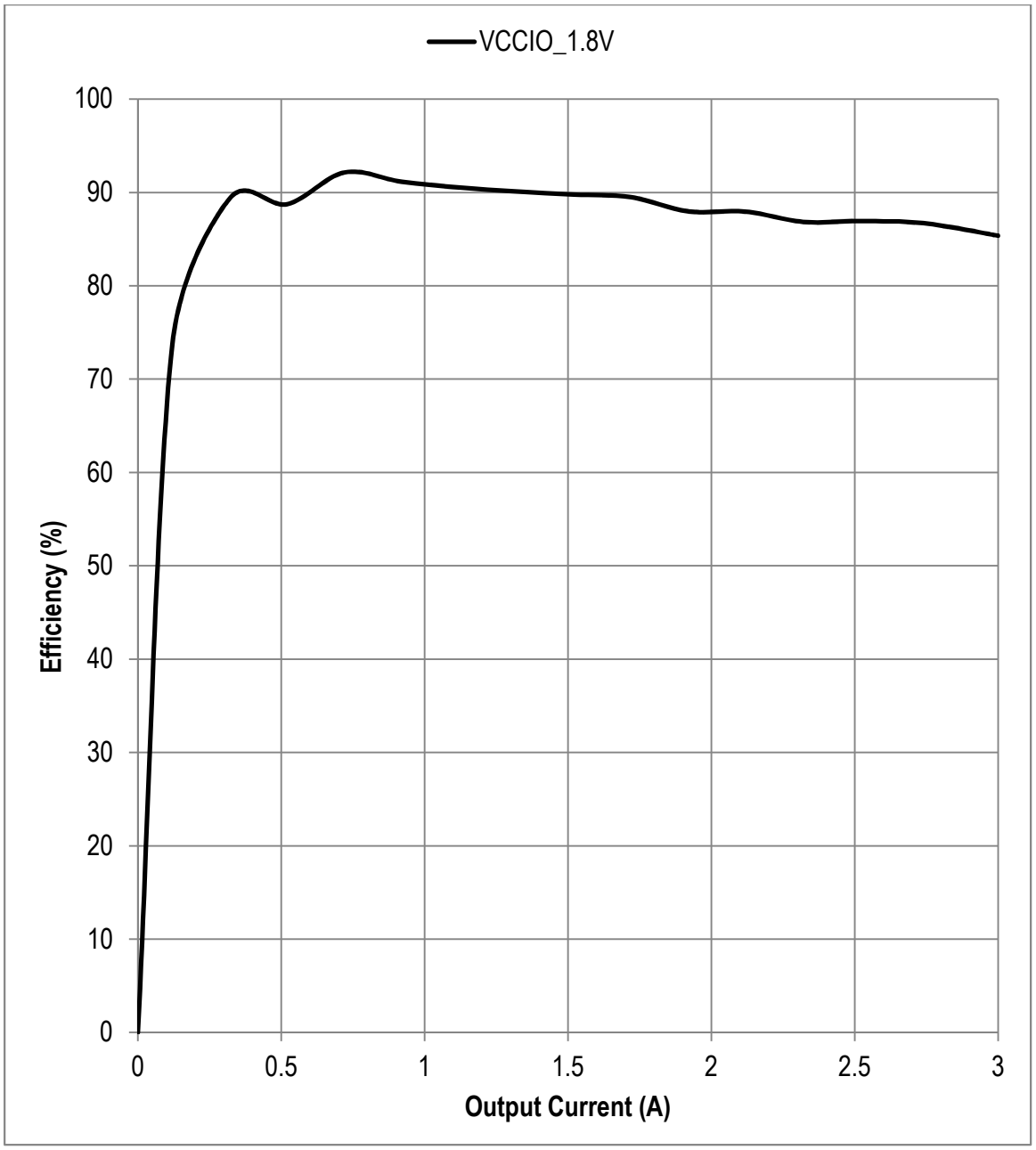


Figure 12. VIN = 12V, VCCIO 1.8V Efficiency

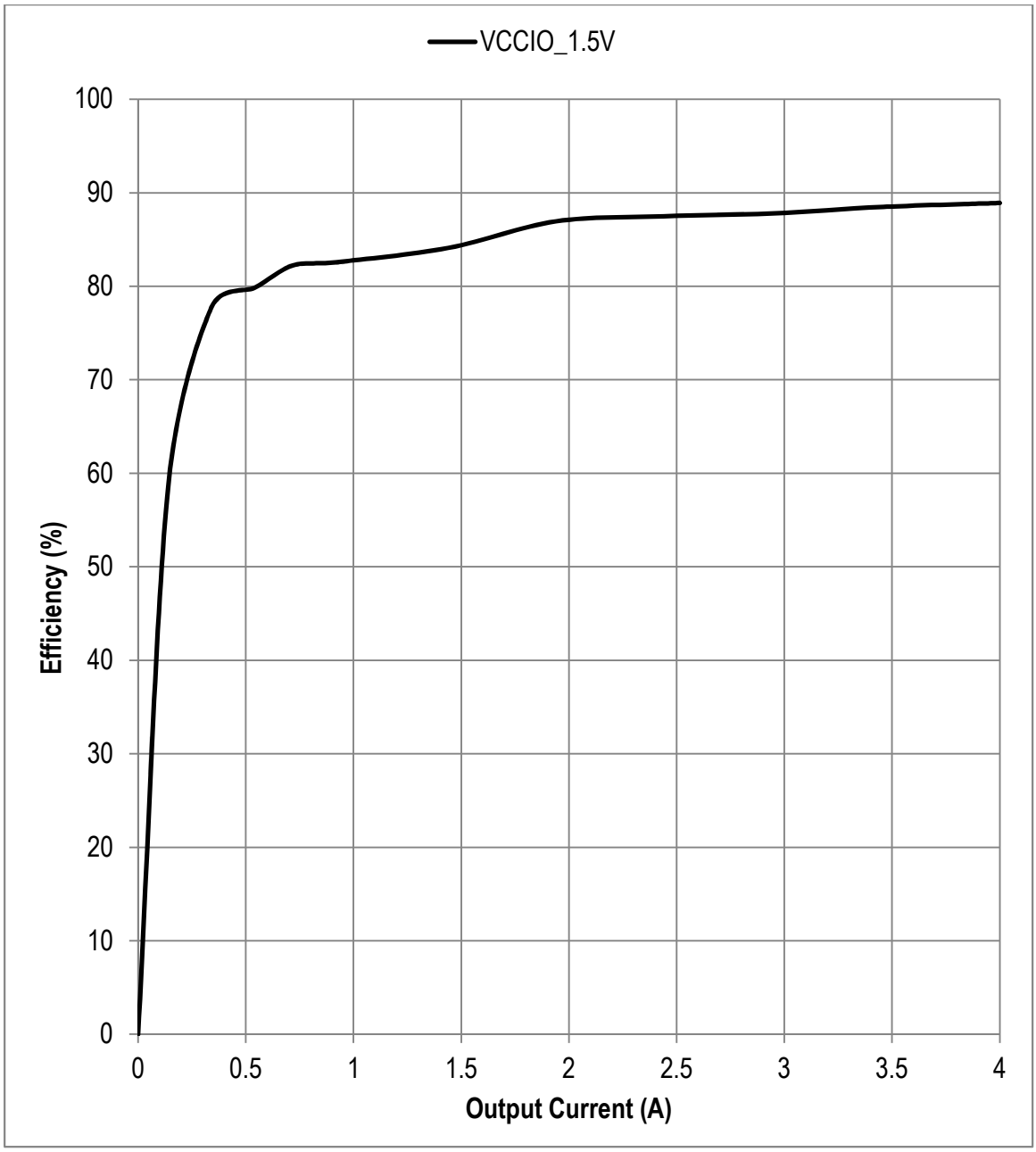


Figure 13. VIN = 12V, VCCIO 1.5V Efficiency

5) Load Regulation

The images below show the output load regulation. The input voltage is 12V.

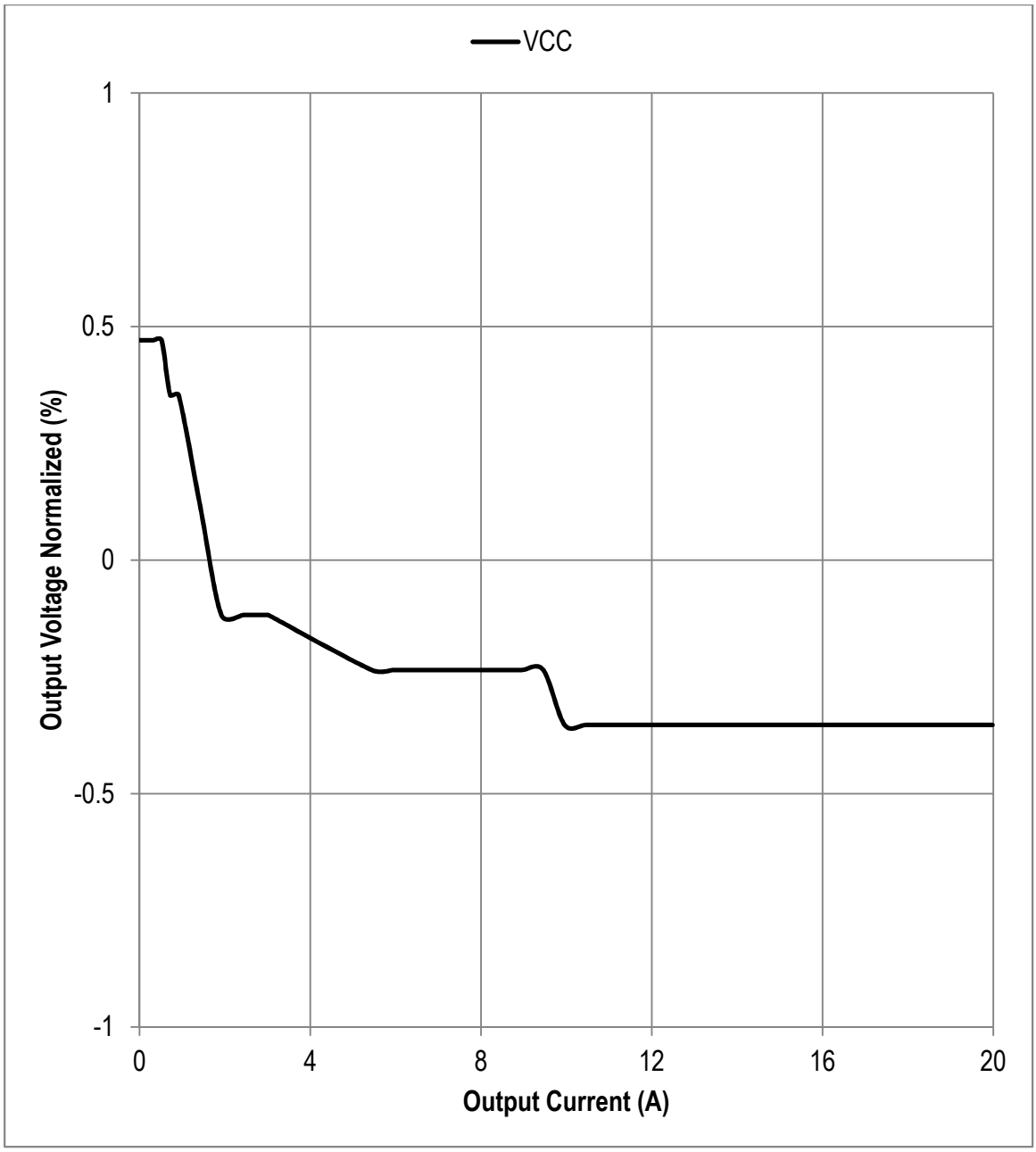


Figure 14. VIN = 12V, VCC Load Regulation

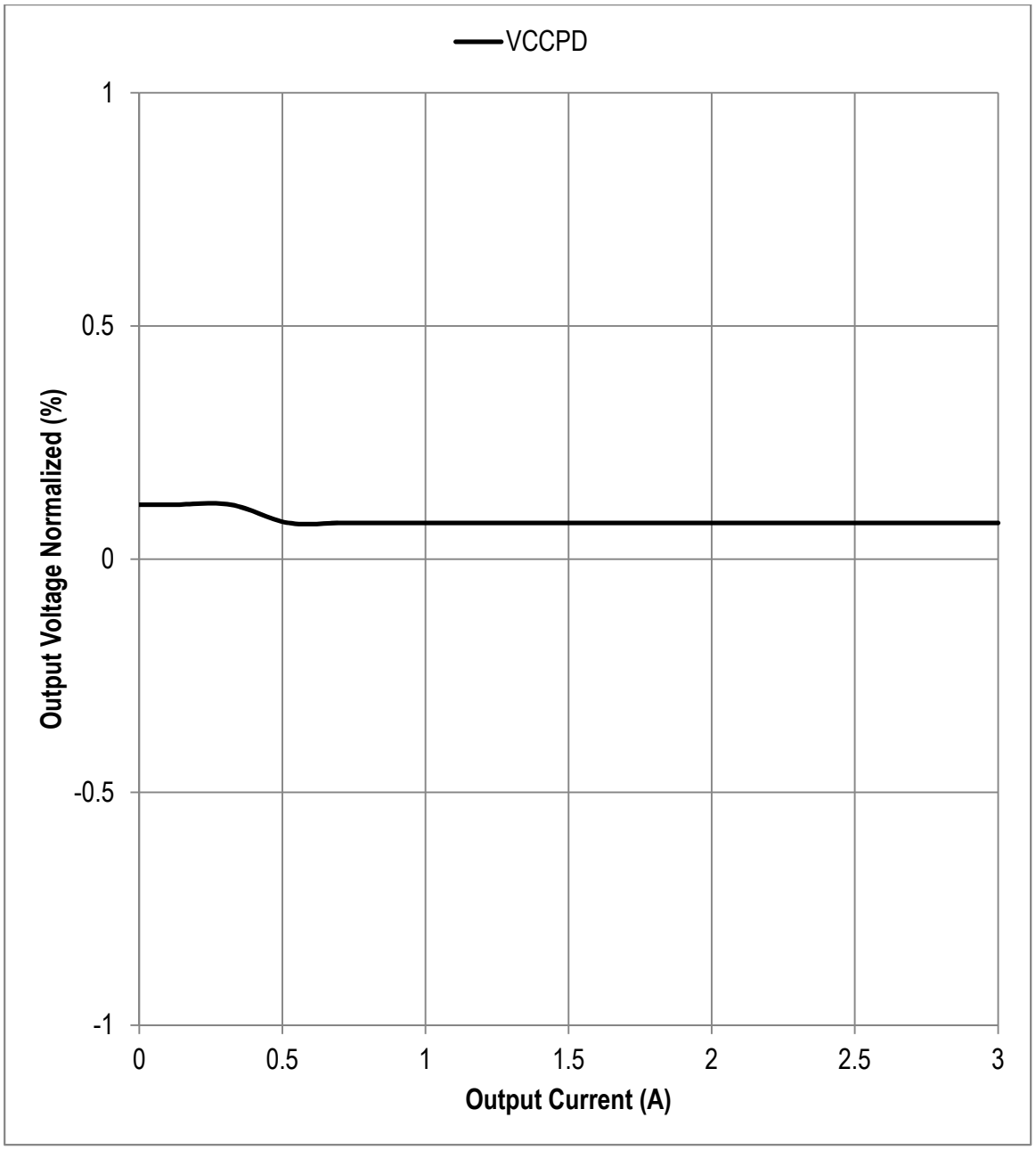


Figure 15. VIN = 12V, VCCPD Load Regulation

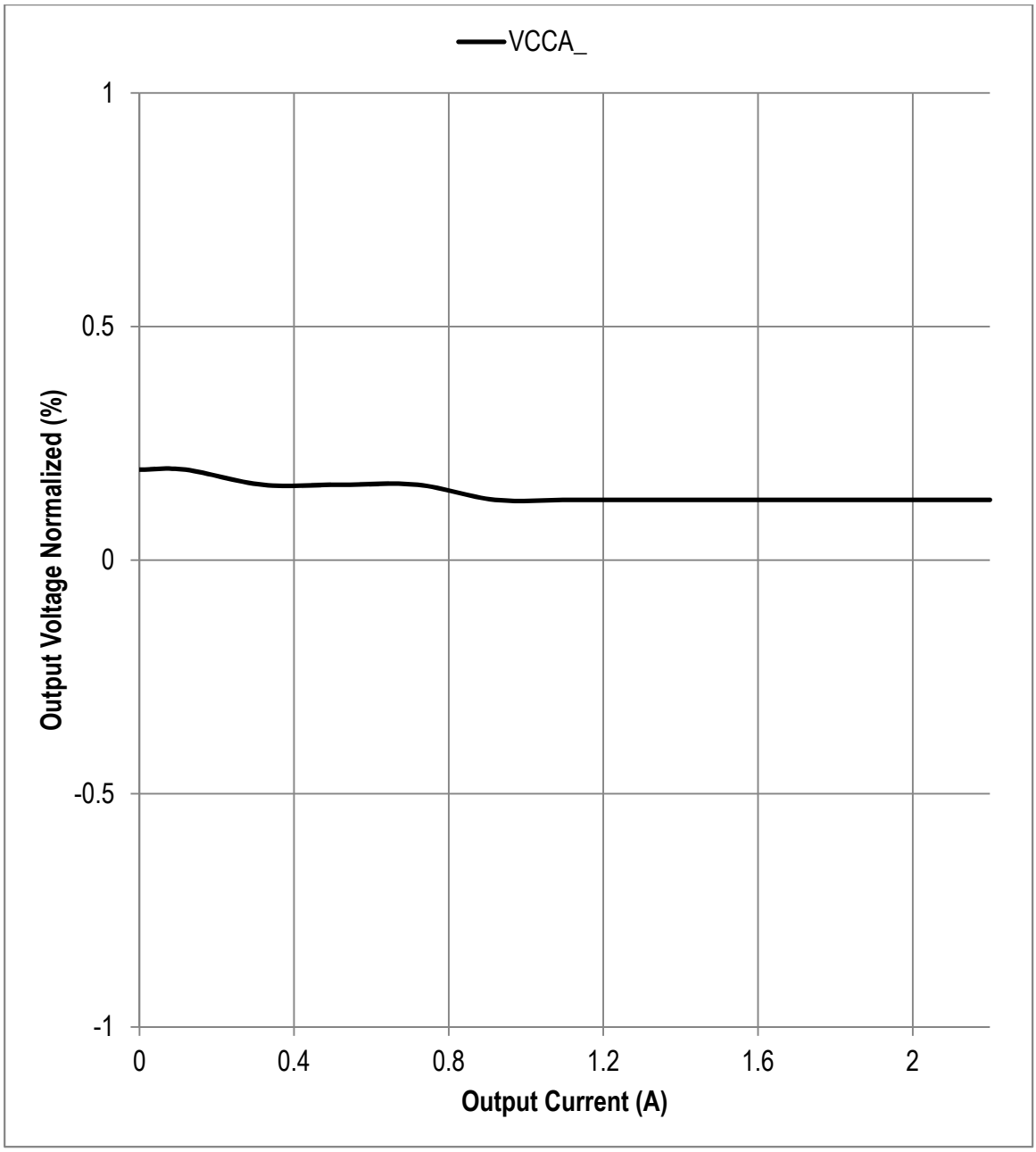


Figure 16. VIN = 12V, VCCA_GXB/GTB Load Regulation

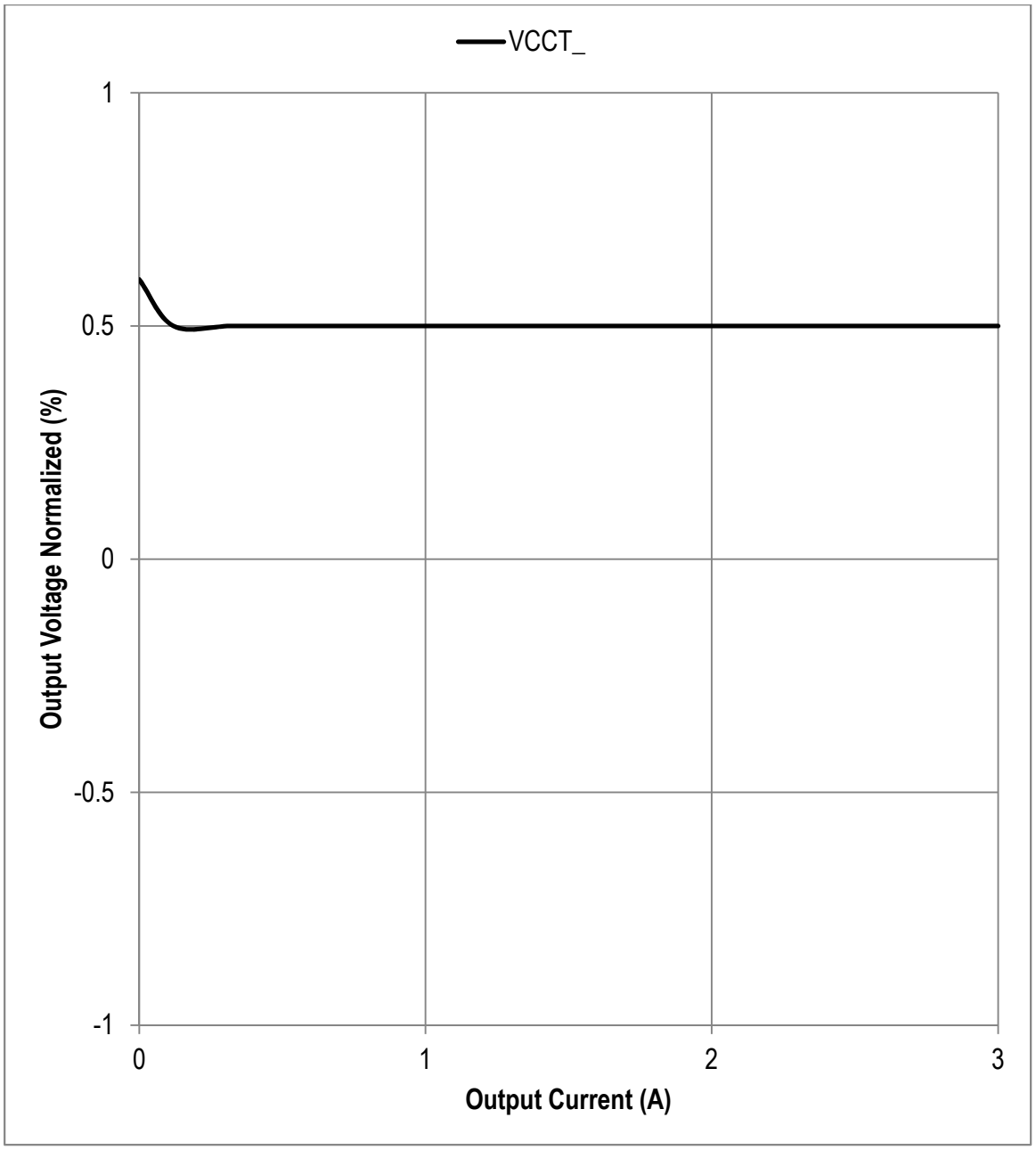


Figure 17. VIN = 12V, VCCT_ Load Regulation

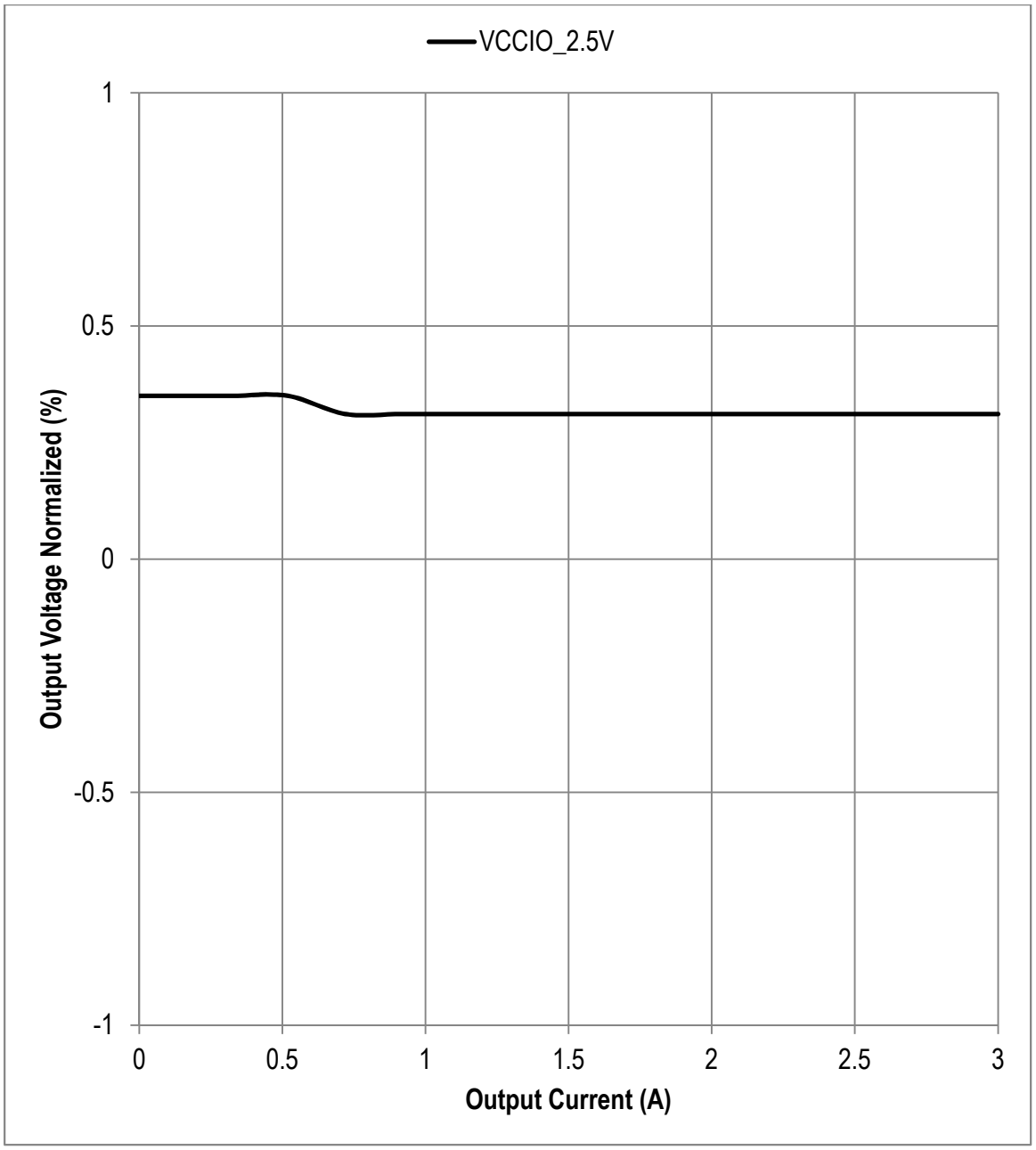


Figure 18. VIN = 12V, VCCIO 2.5V Load Regulation

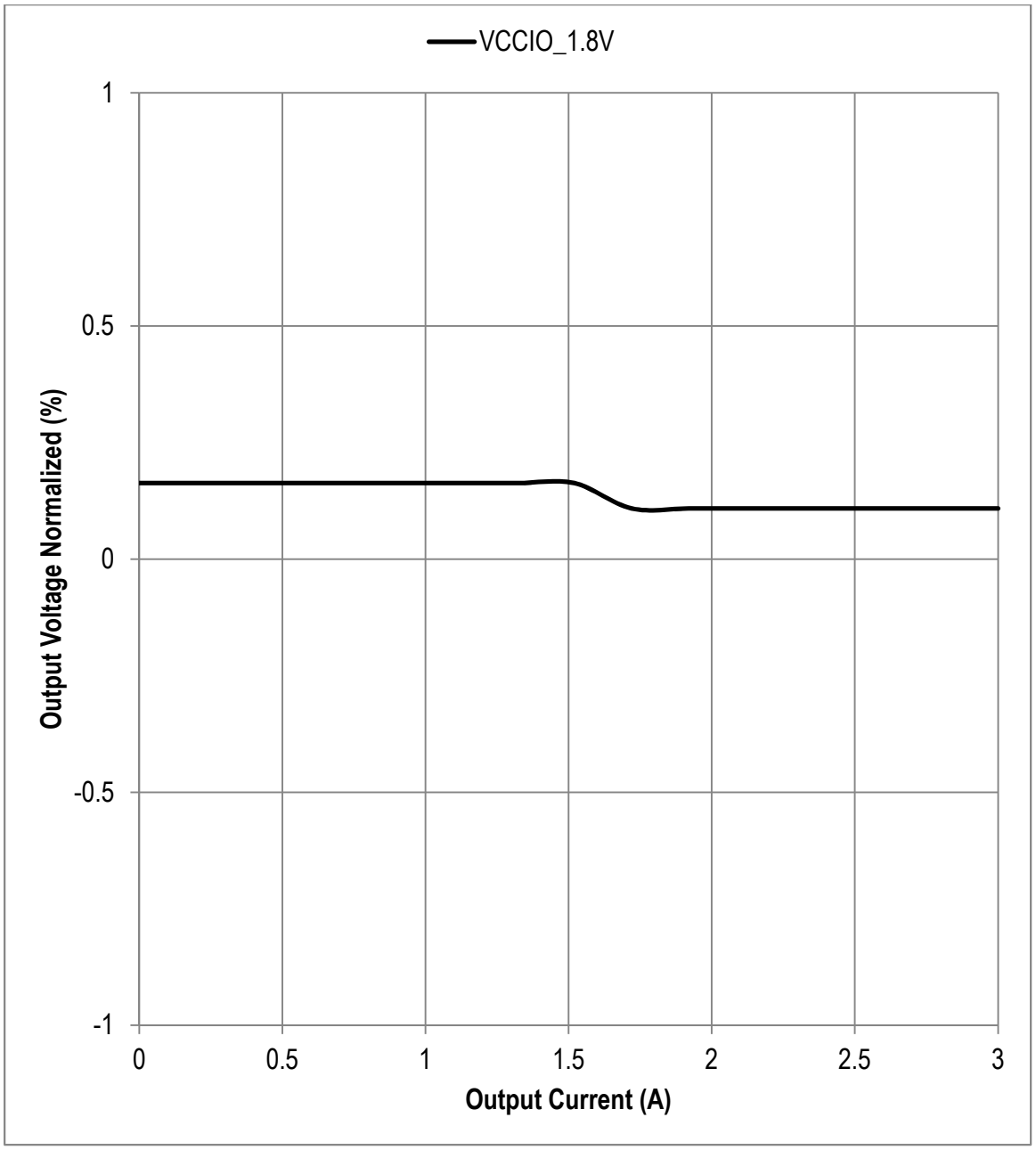


Figure 19. VIN = 12V, VCCIO 1.8V Load Regulation

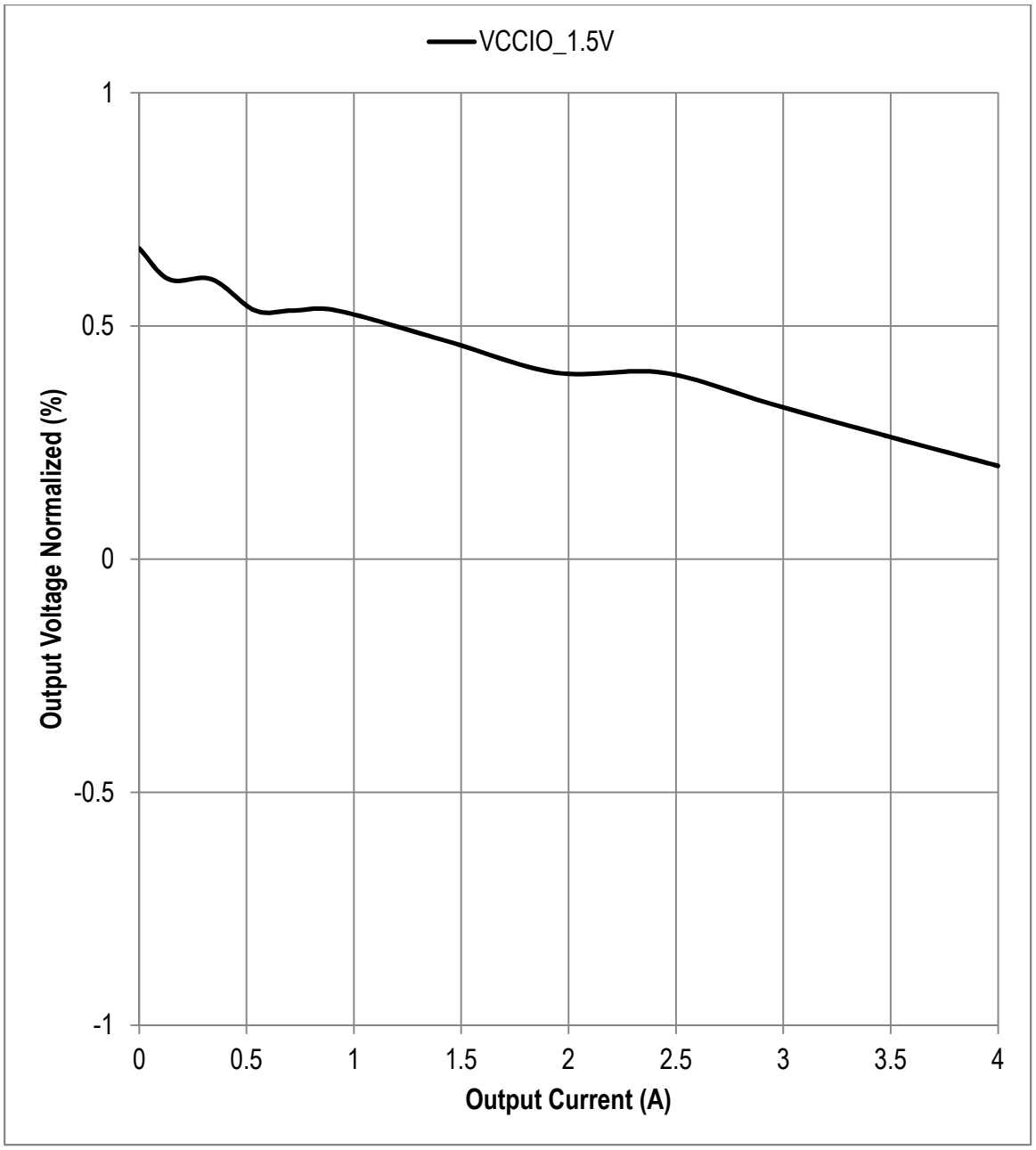


Figure 20. VIN = 12V, VCCIO 1.5V Load Regulation

6) Output Voltage Ripple

The images below shows the output voltage ripple when load is fully applied. The input voltage is 12V.

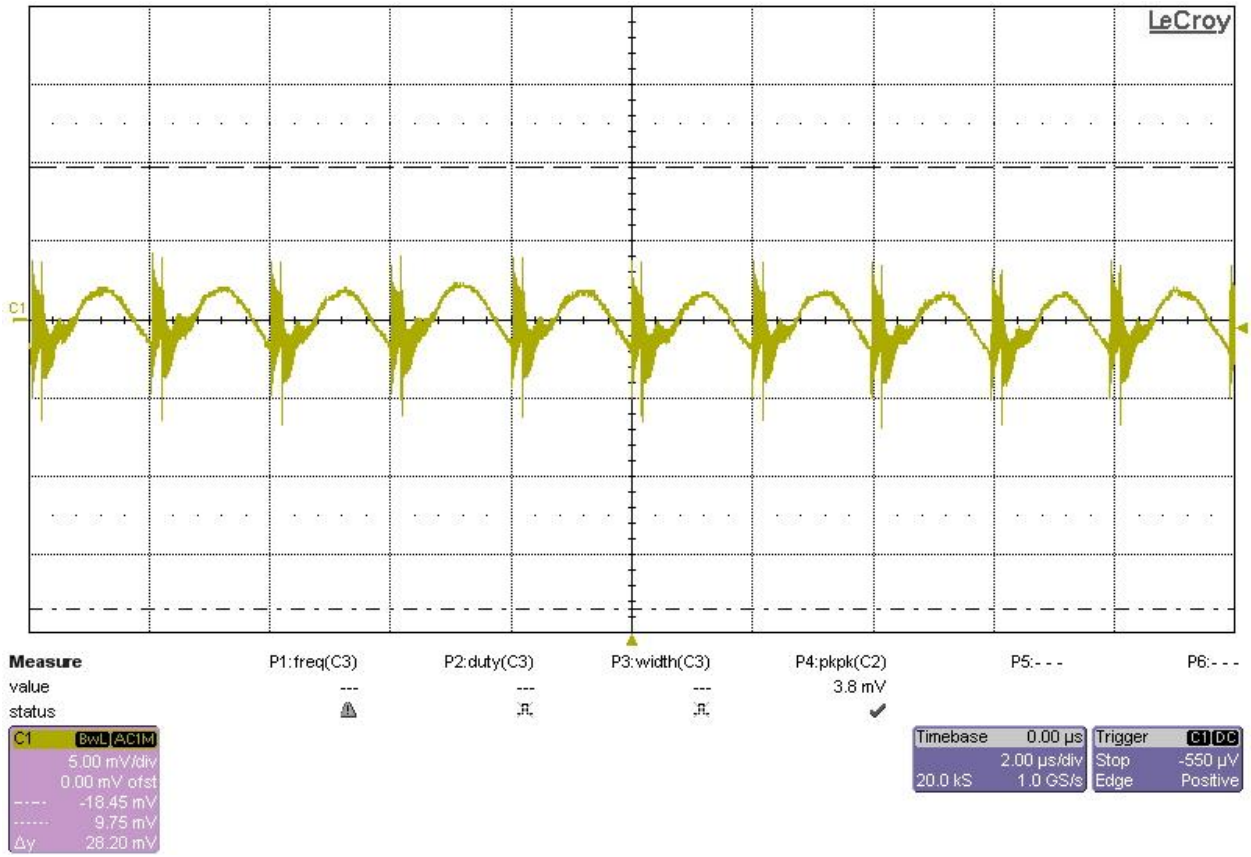


Figure 21. VIN = 12V, VCC Output Ripple @ IOUT = 20A

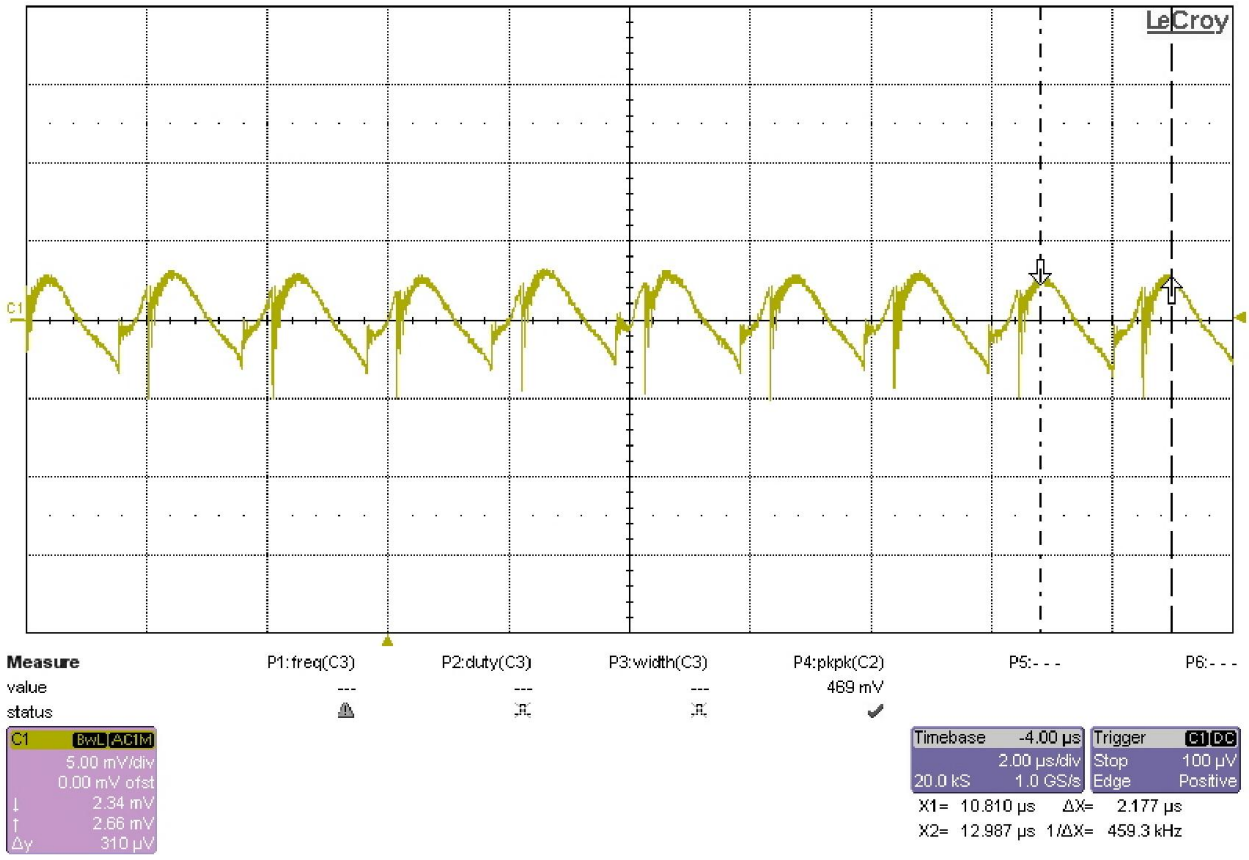


Figure 22. VIN = 12V, VCCPD Output Ripple @ IOUT = 3A

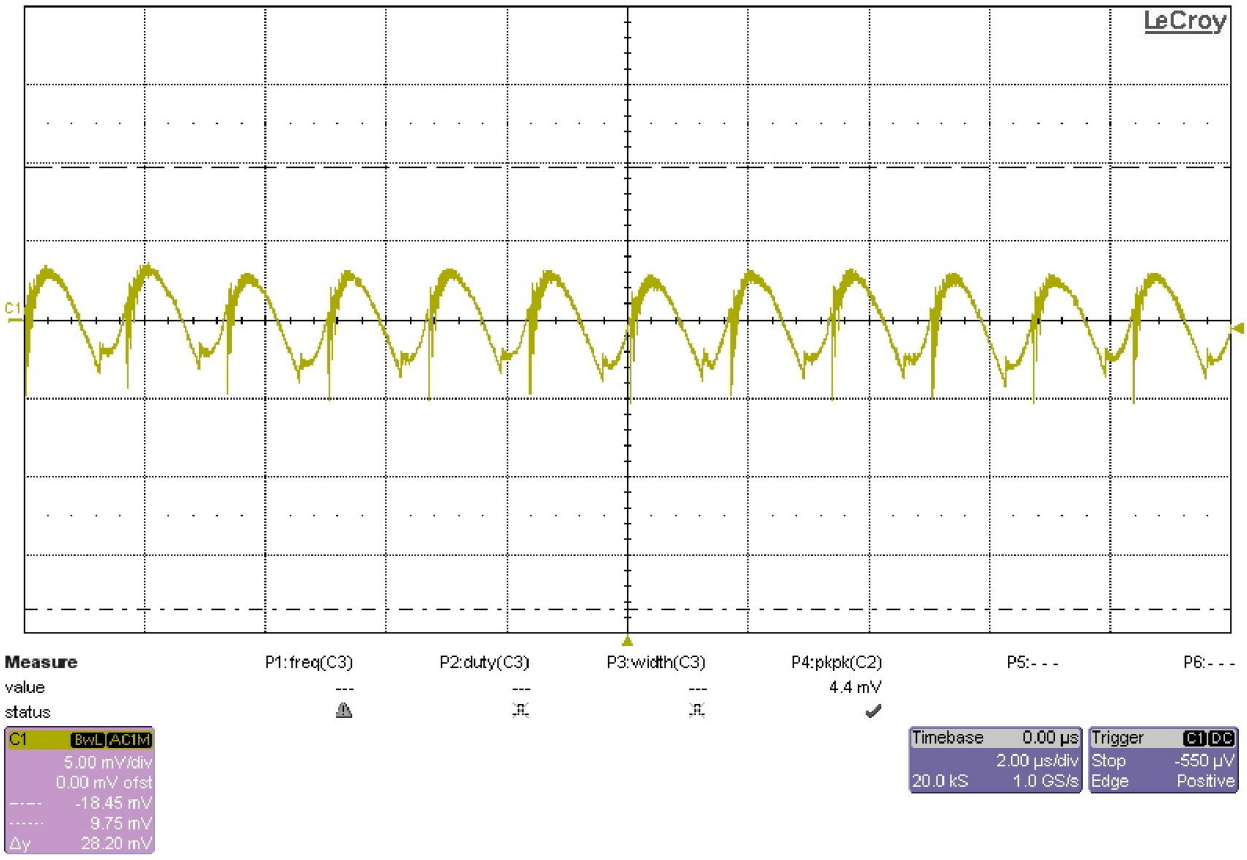


Figure 23. VIN = 12V, VCCA_GXB/GTB Output Ripple @ IOUT = 2.2A

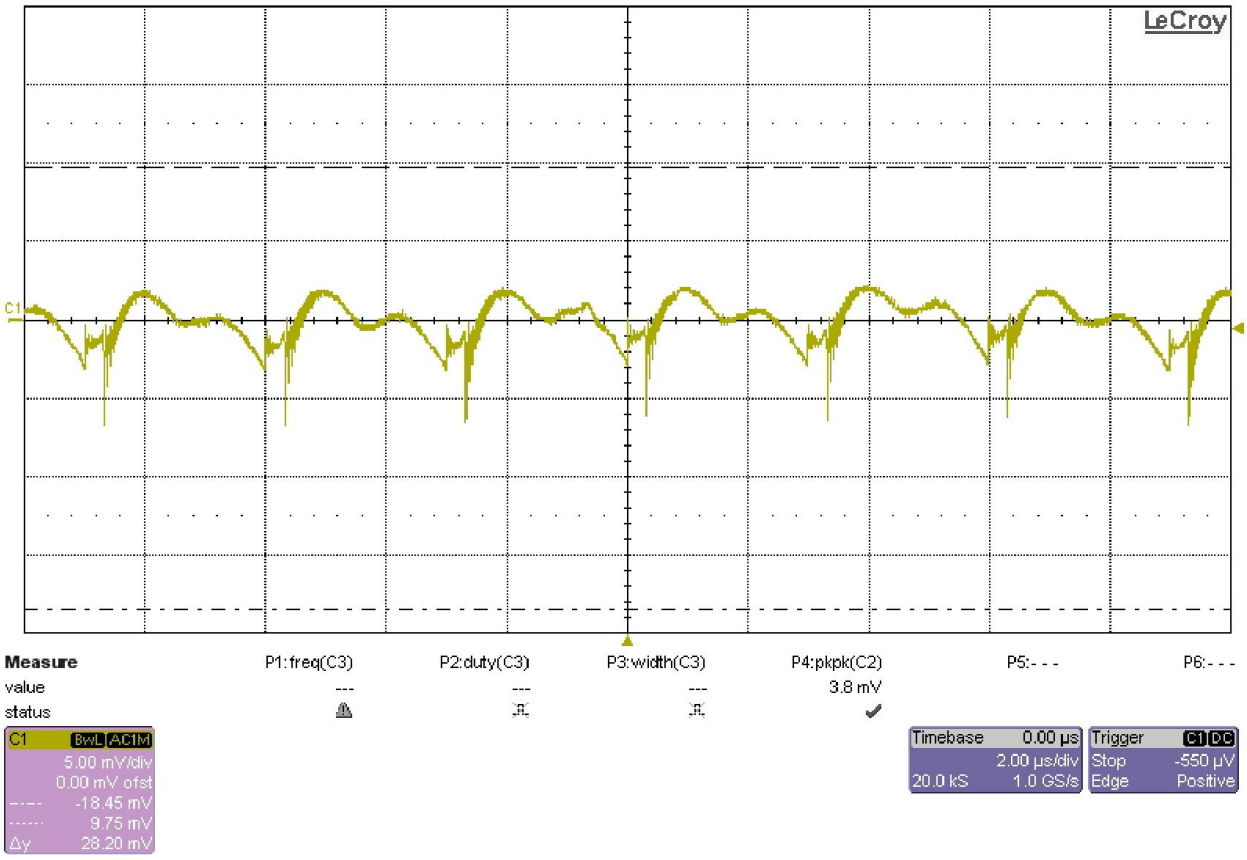


Figure 24. VIN = 12V, VCCT_ Output Ripple @ IOUT = 3A

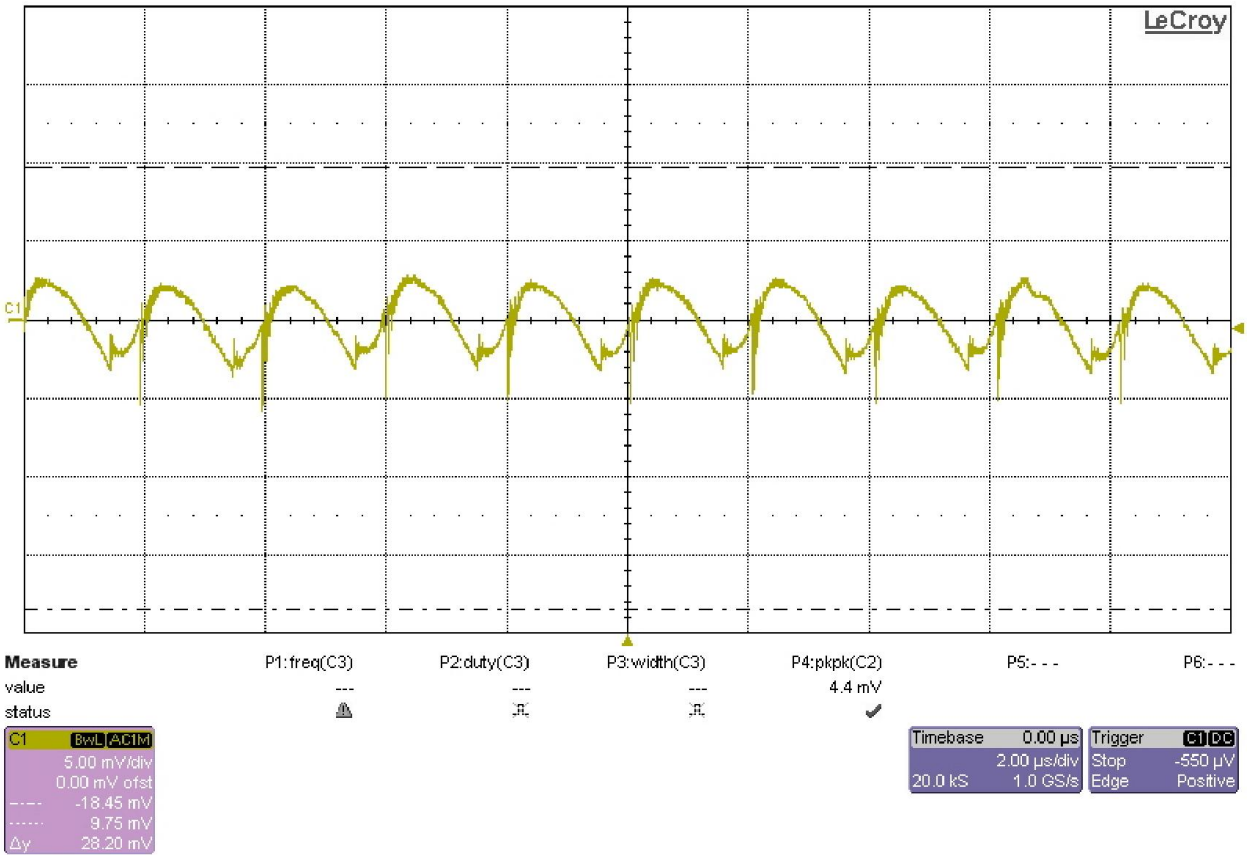


Figure 25. VIN = 12V, VCCIO 2.5V Output Ripple @ IOUT = 3A

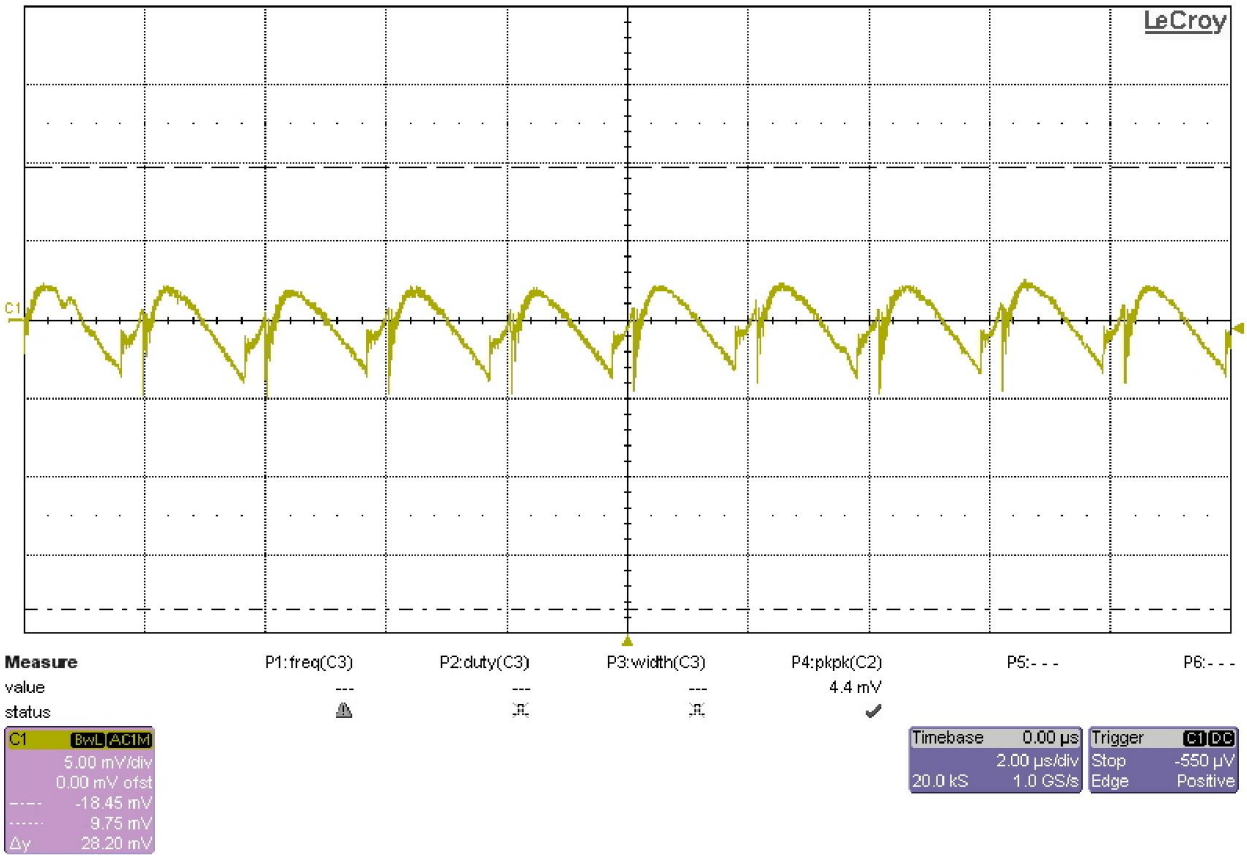


Figure 26. VIN = 12V, VCCIO 1.8V Output Ripple @ IOUT = 3A

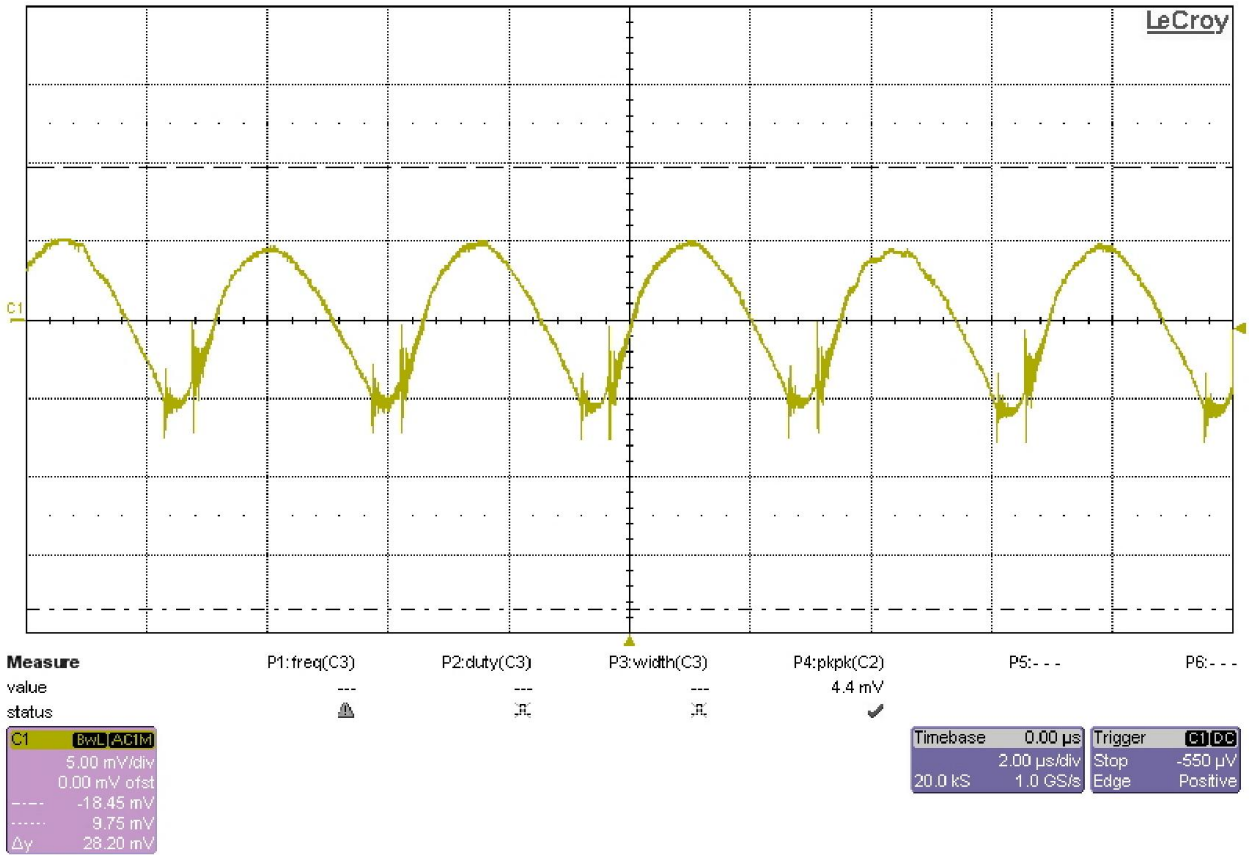


Figure 27. VIN = 12V, VCCIO 1.5V Output Ripple @ IOUT = 4A

7) Load Transients

The transient response of the converters is shown below. The input voltage is 12V. The output current is pulsed from 0 to 50% load.

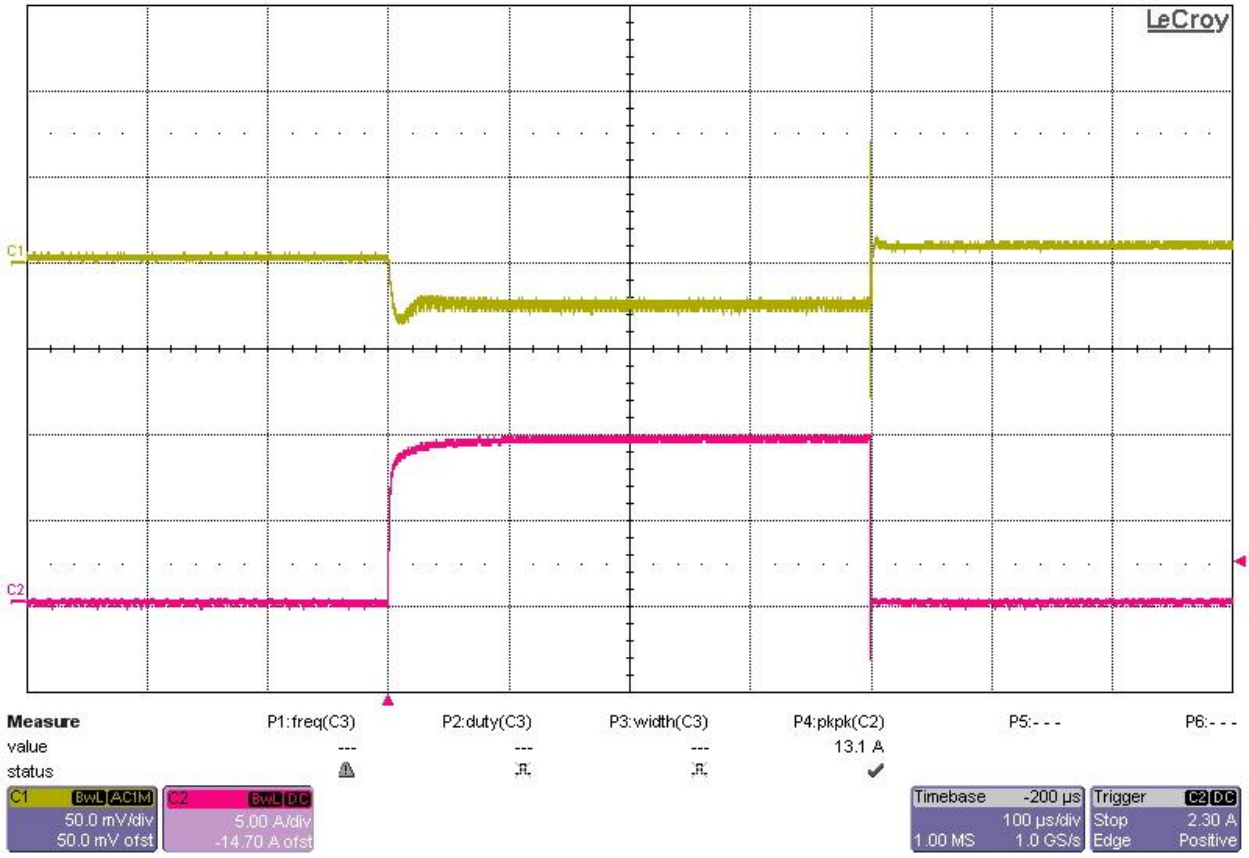


Figure 28. VIN = 12V, VCC Load Transient

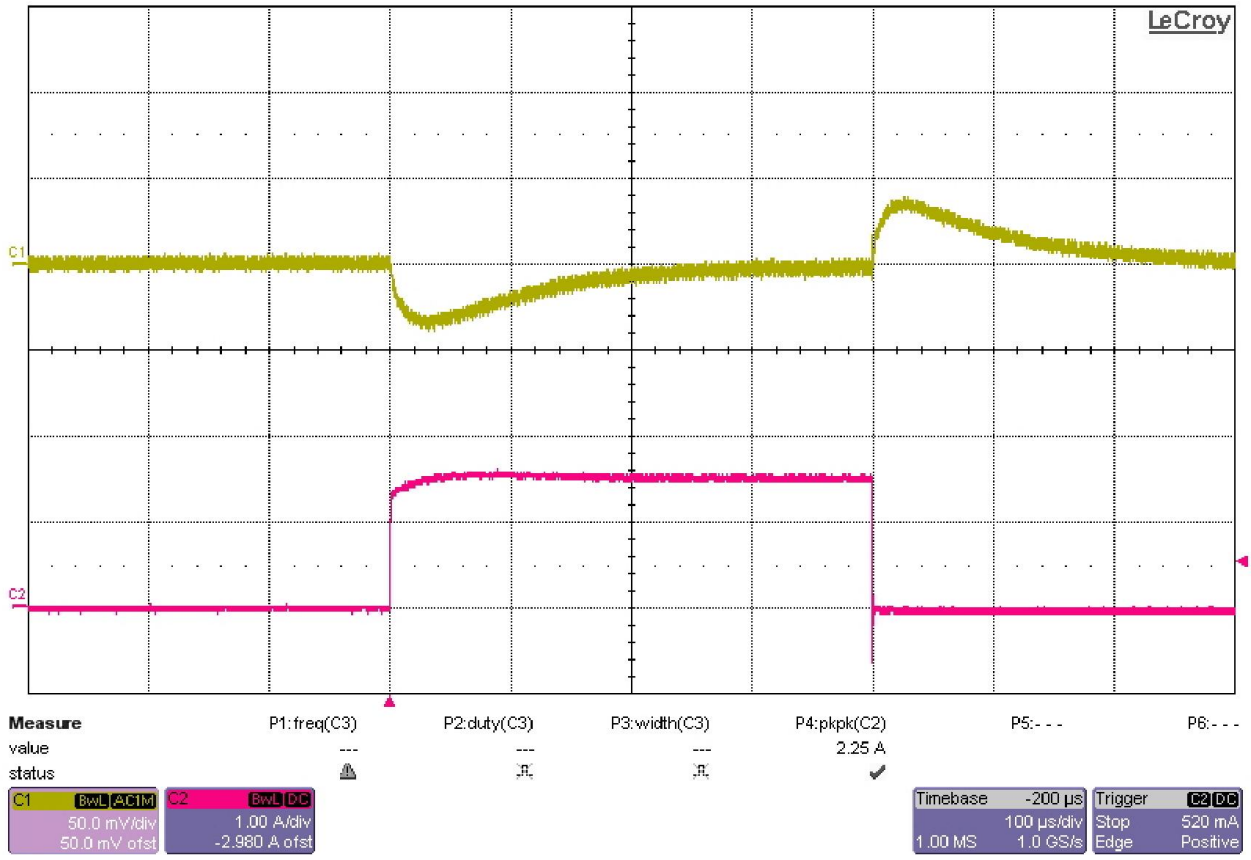


Figure 29. VIN = 12V, VCCPD Load Transient

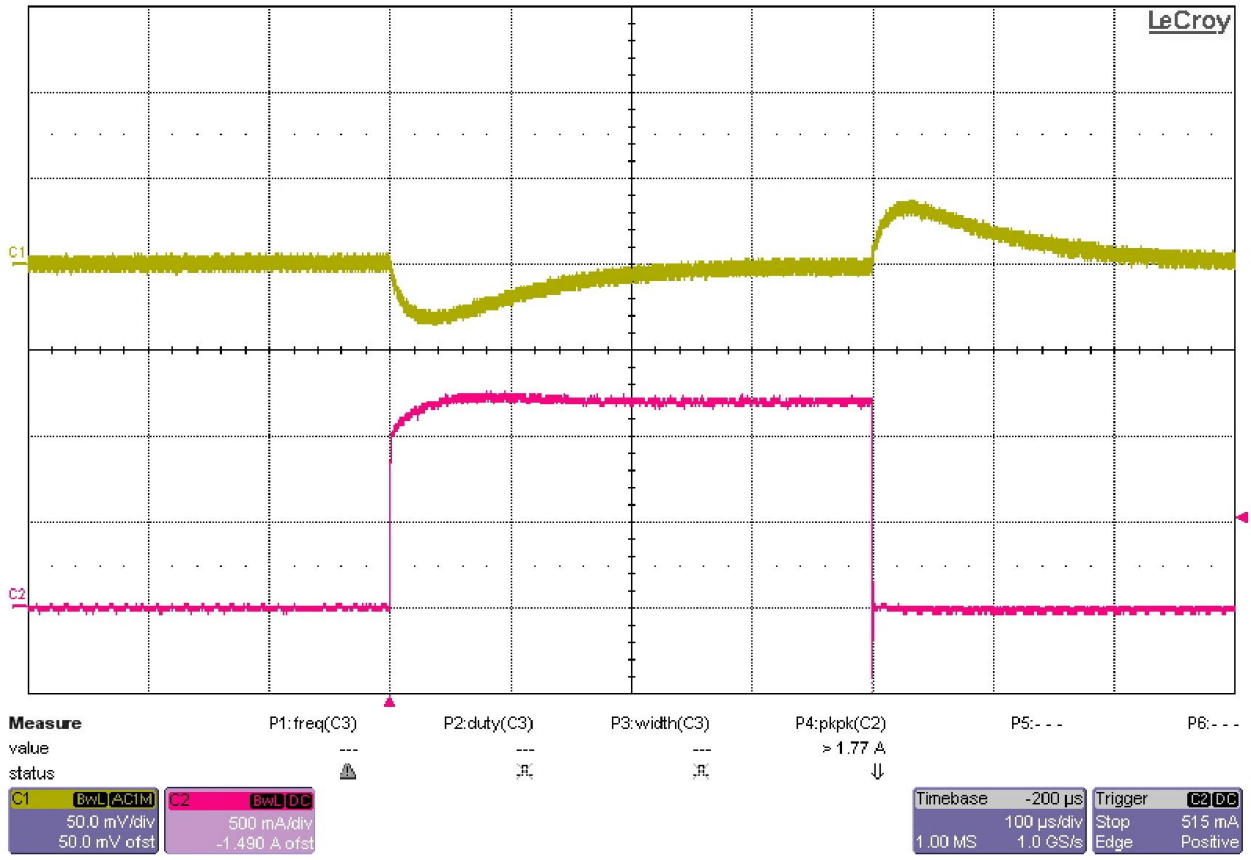


Figure 30. VIN = 12V, VCCA_GXB/GTB Load Transient

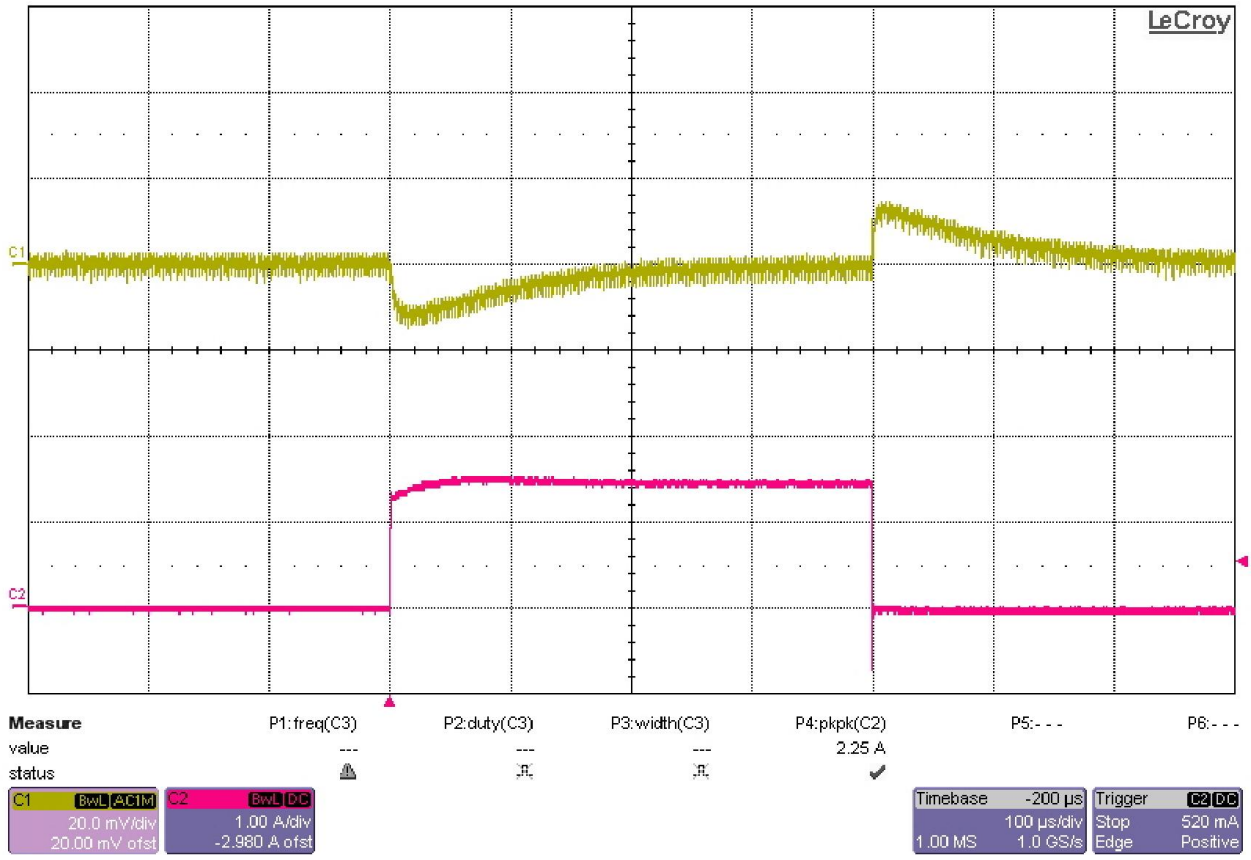


Figure 31. VIN = 12V, VCCT_ Load Transient

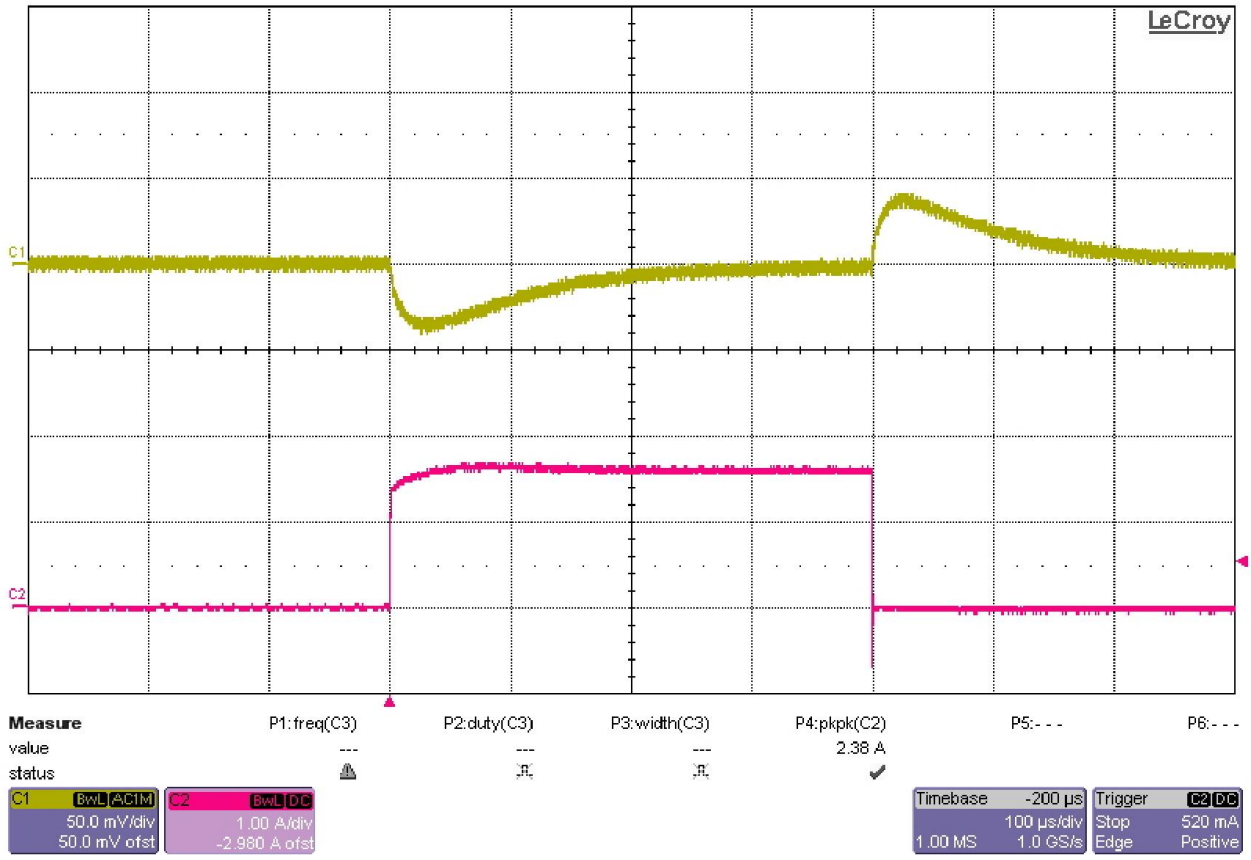


Figure 32. VIN = 12V, VCCIO 2.5V Load Transient

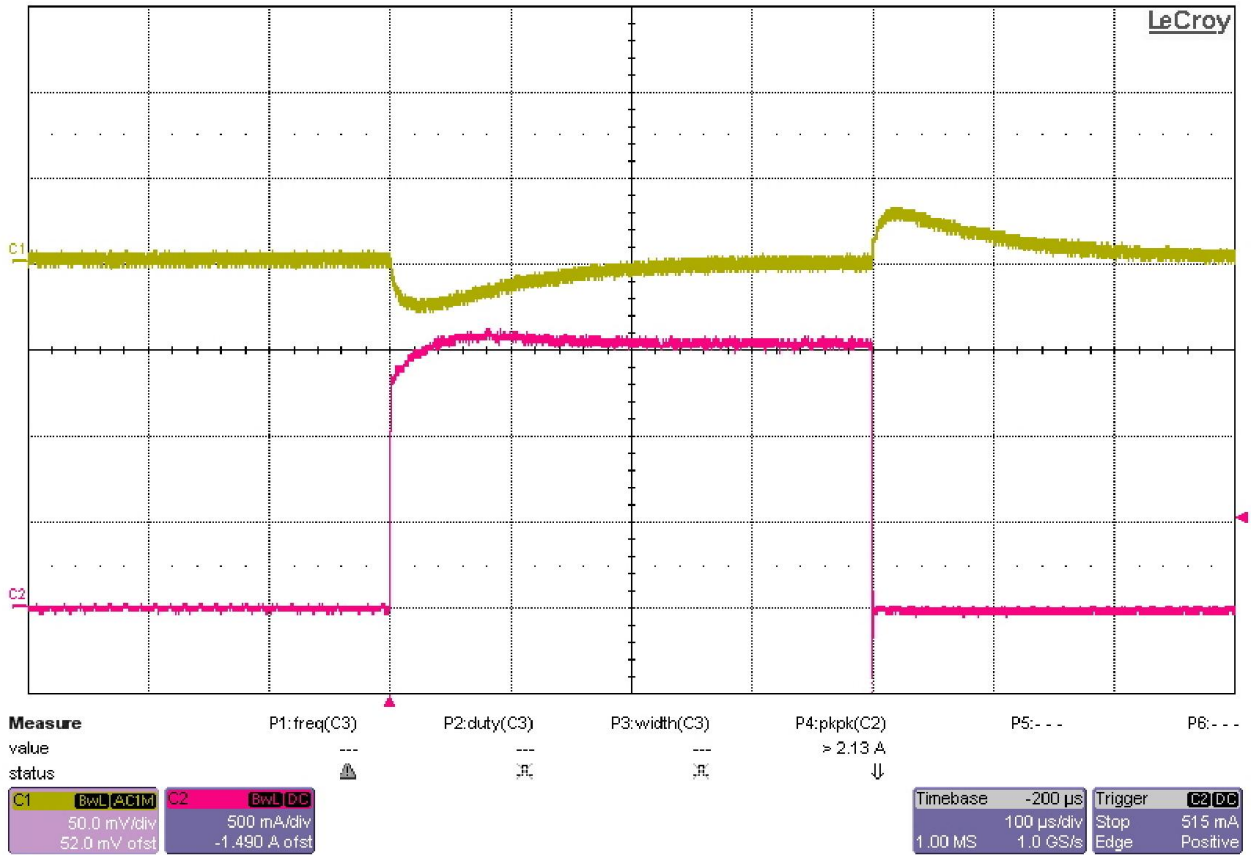


Figure 33. VIN = 12V, VCCIO 1.8V Load Transient

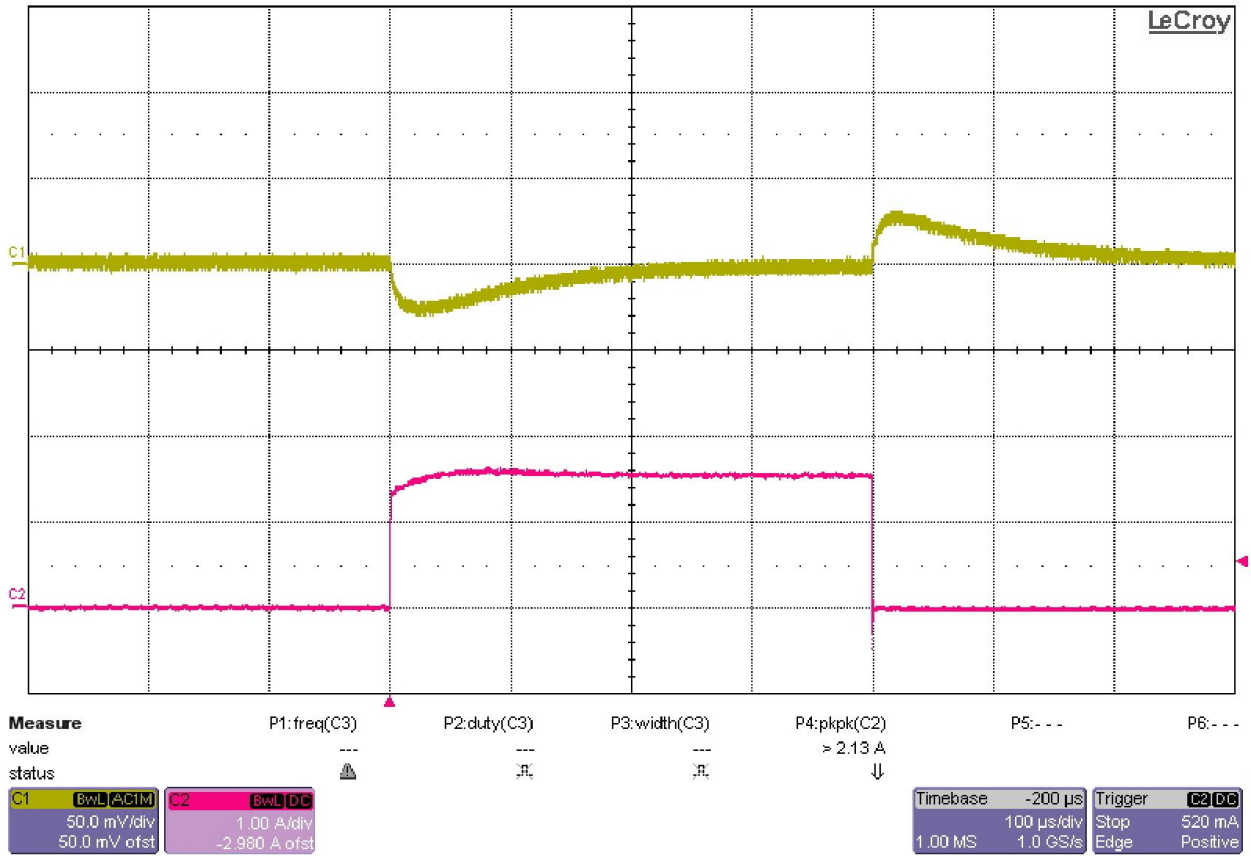


Figure 34. VIN = 12V, VCCIO 1.5V Load Transient

8) Thermal Image

Thermal images at full load of each device are shown below, the remaining rails are not drawing any current during these tests. The input voltage is 12V.

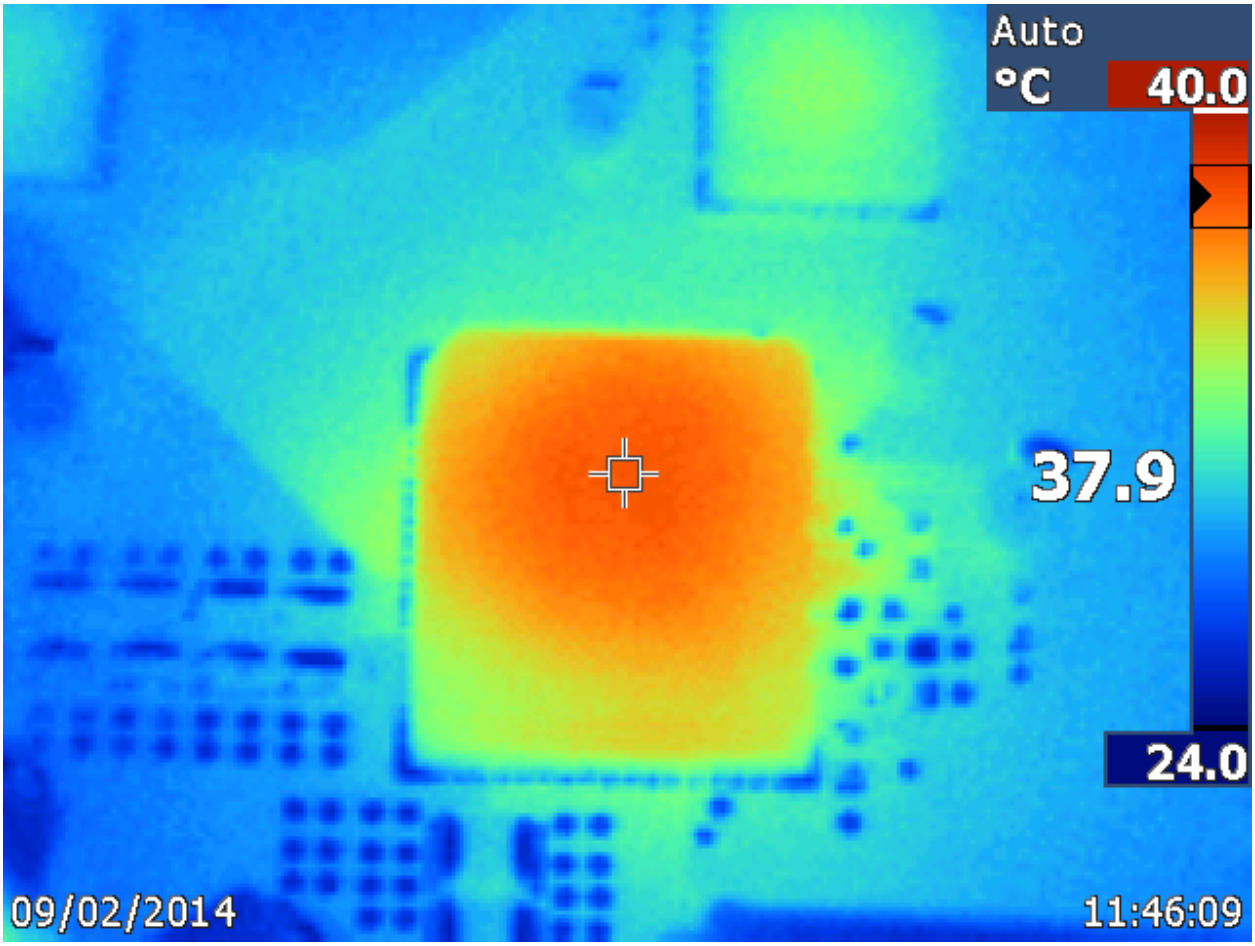


Figure 35. VIN = 12V, VCC Thermal Image @ Full Load

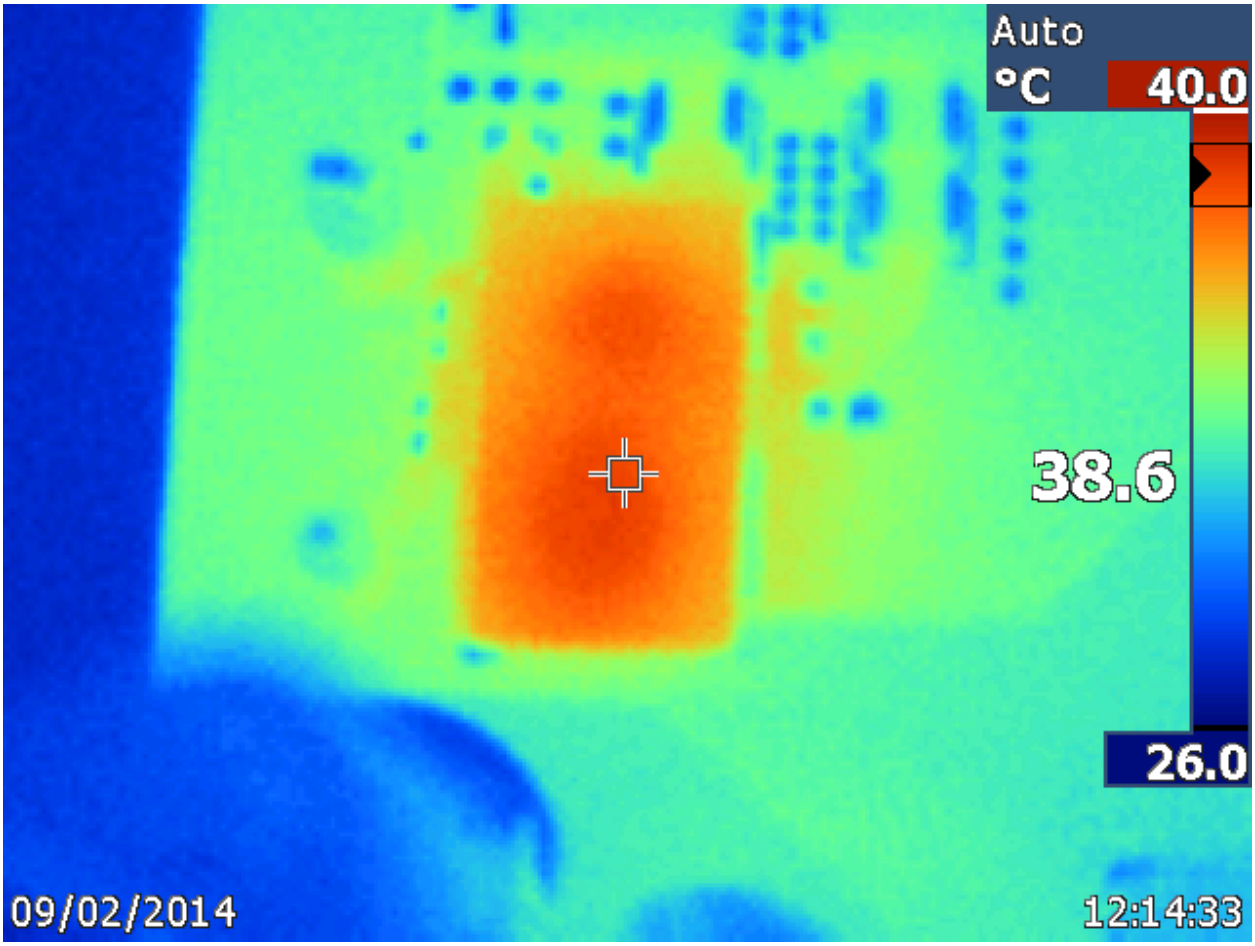


Figure 36. VIN = 12V, VCCPD Thermal Image @ Full Load

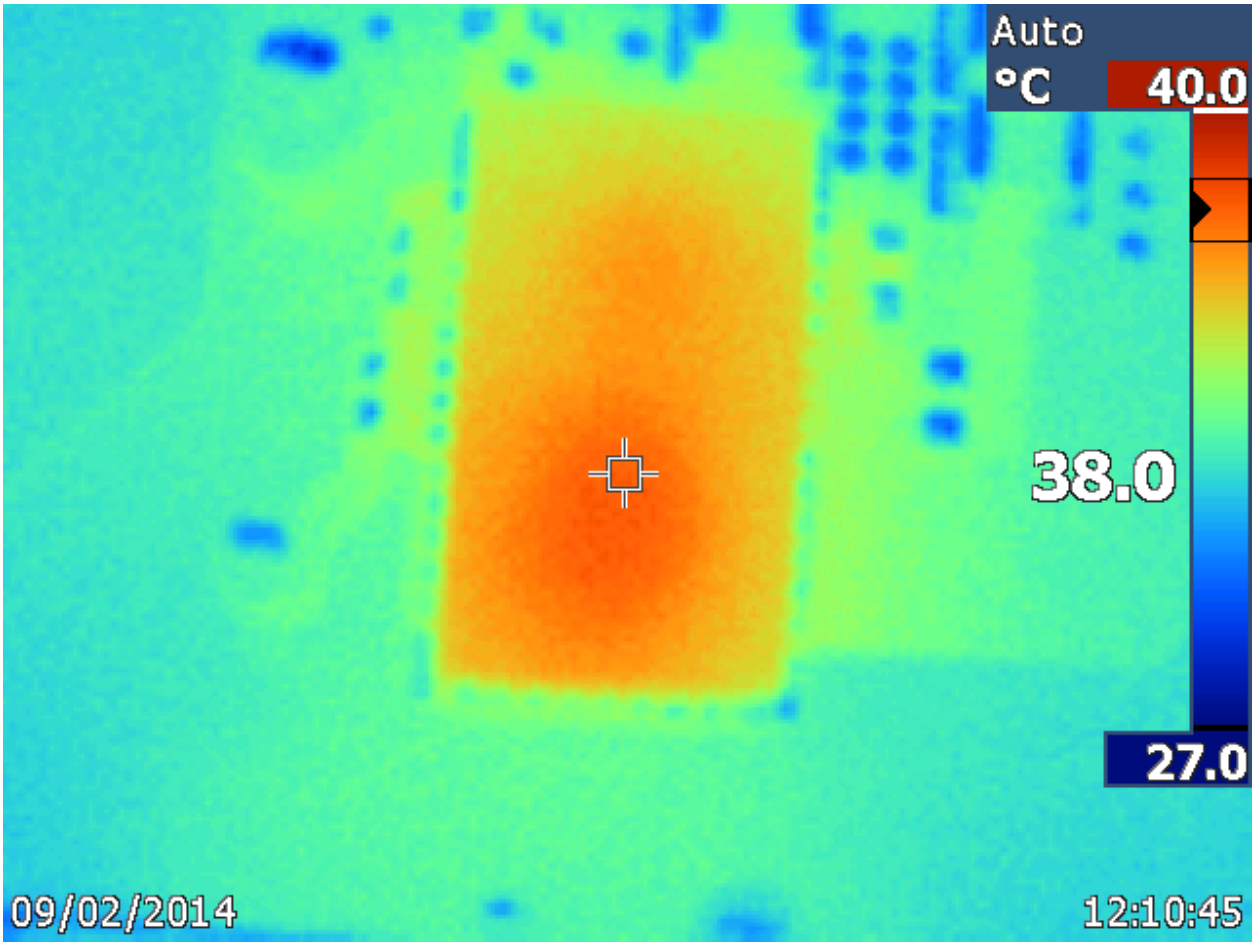


Figure 37. VIN = 12V, VCCA_GXB/GTB Thermal Image @ Full Load

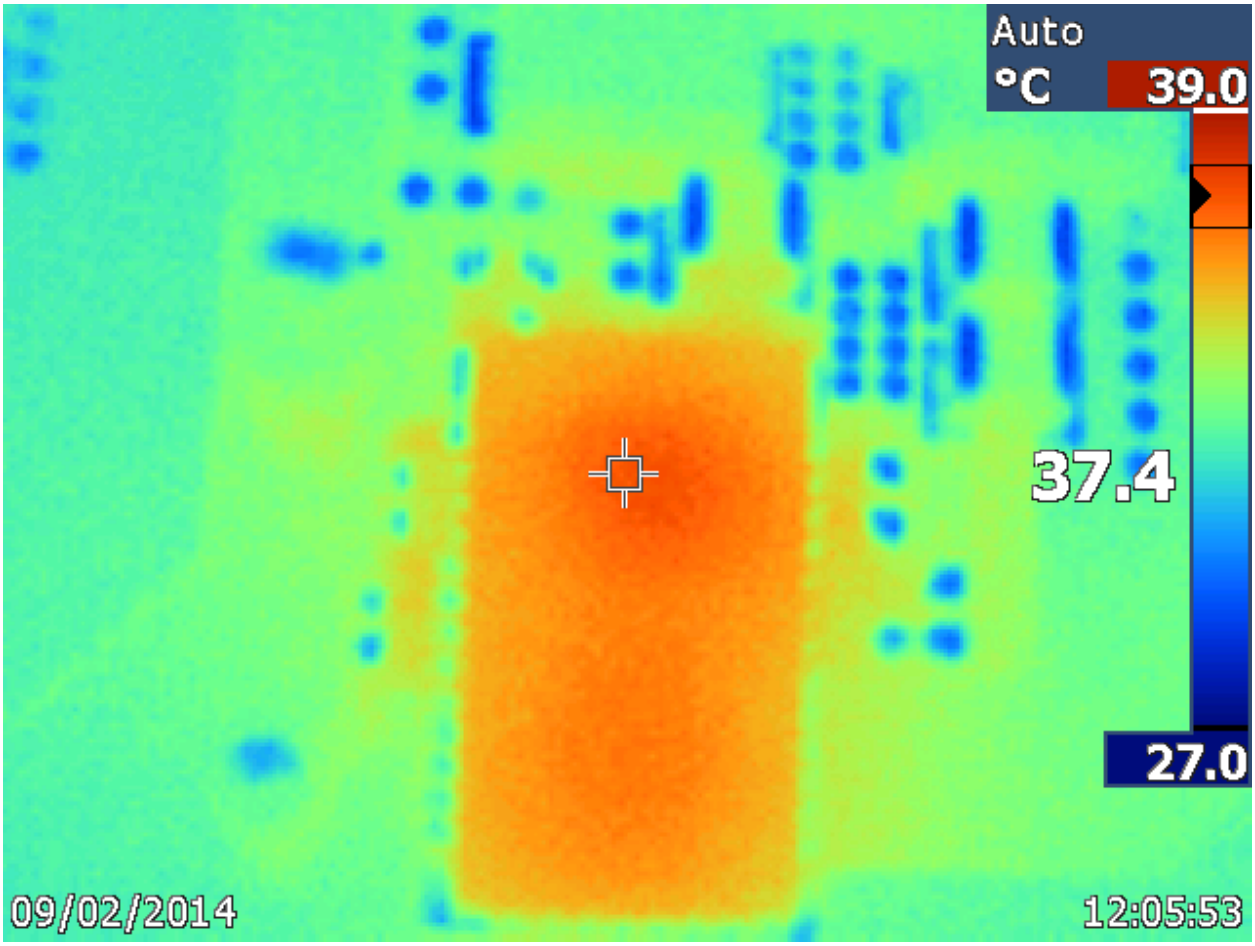


Figure 38. VIN = 12V, VCCT_ Thermal Image @ Full Load

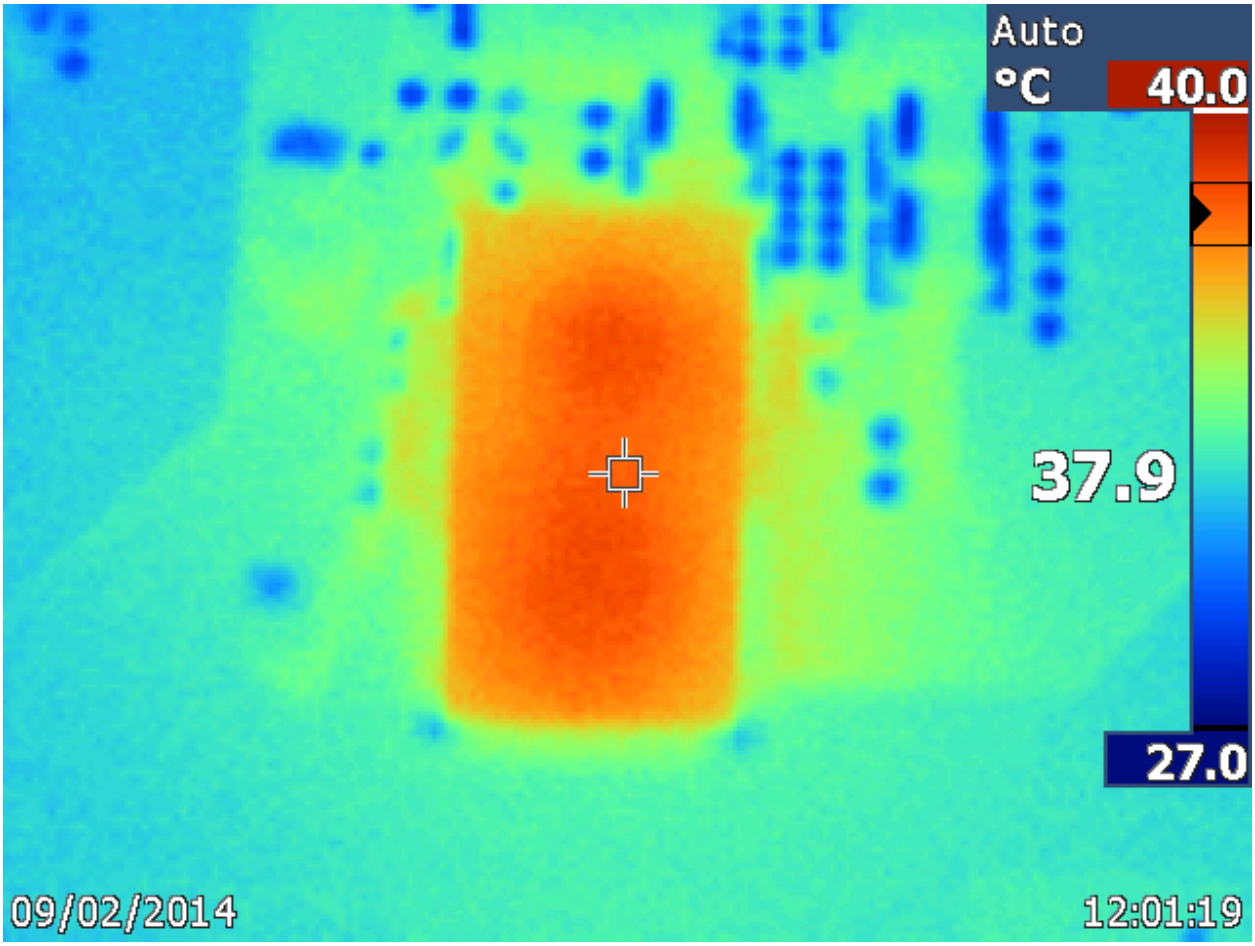


Figure 39. VIN = 12V, VCCIO 2.5V Thermal Image @ Full Load

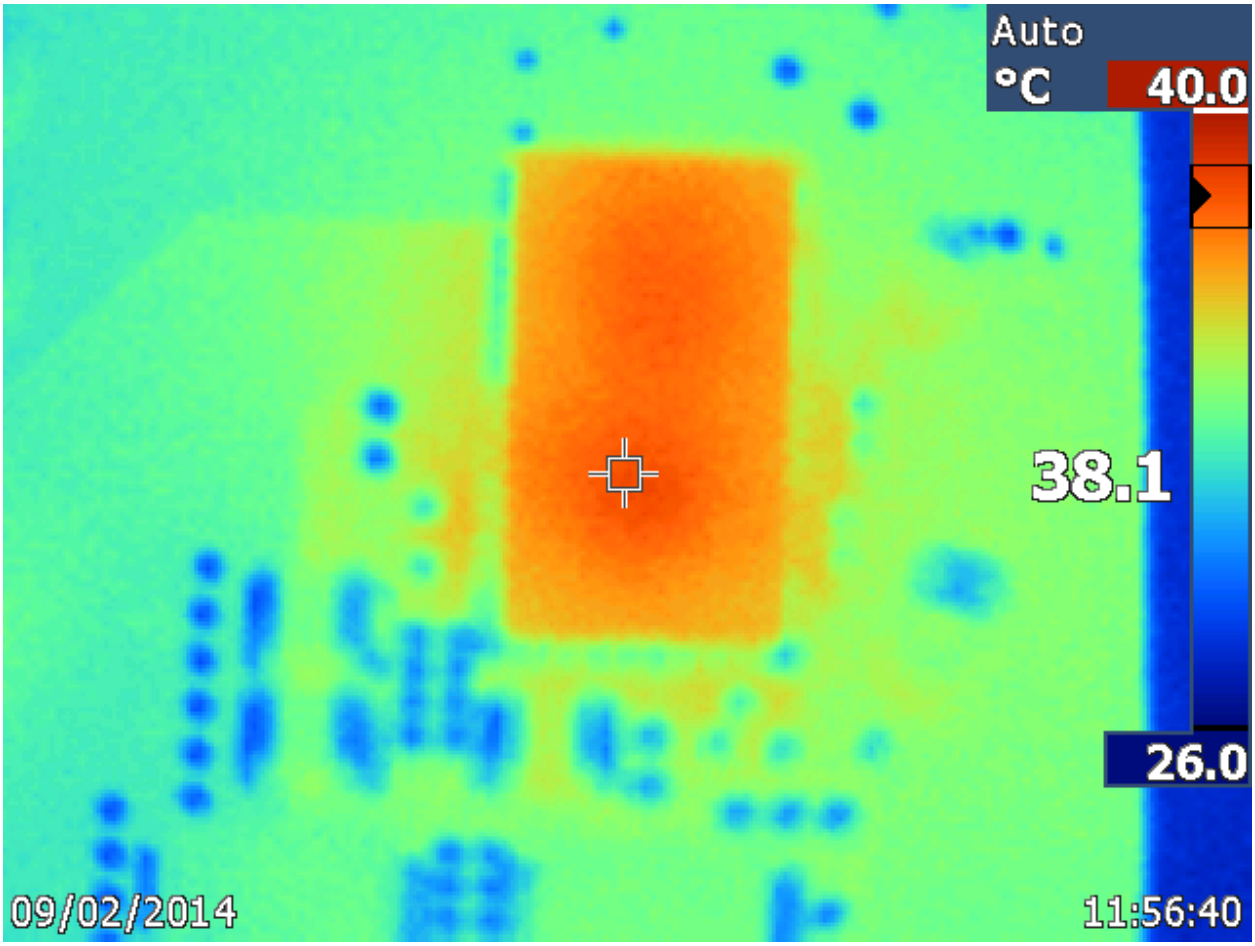


Figure 40. VIN = 12V, VCCIO 1.8V Thermal Image @ Full Load

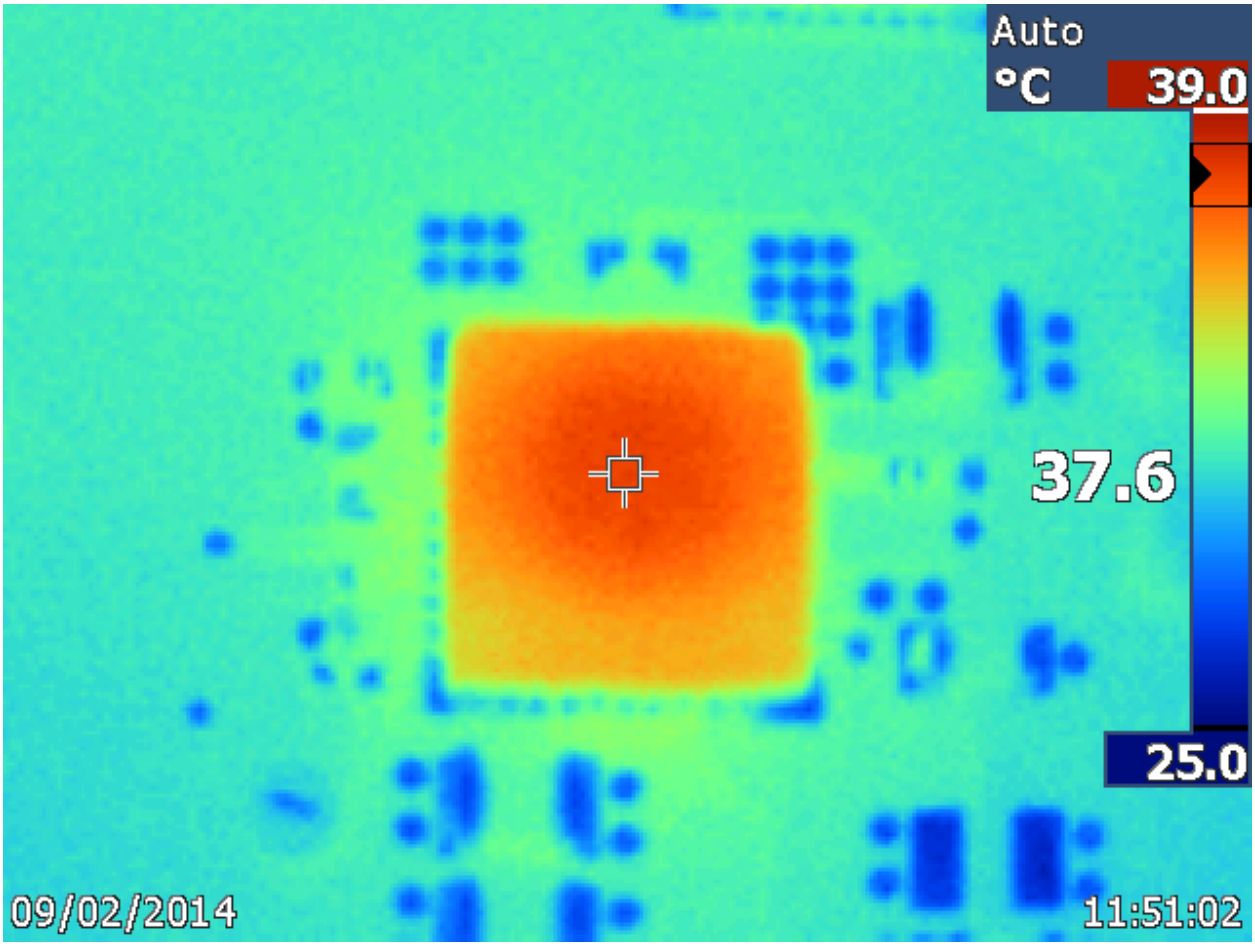


Figure 41. VIN = 12V, VCCIO 1.5V Thermal Image @ Full Load

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale (https:www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265