10/22/14

PMP10555 Test Report

Contents

Figures

1) Block Diagram

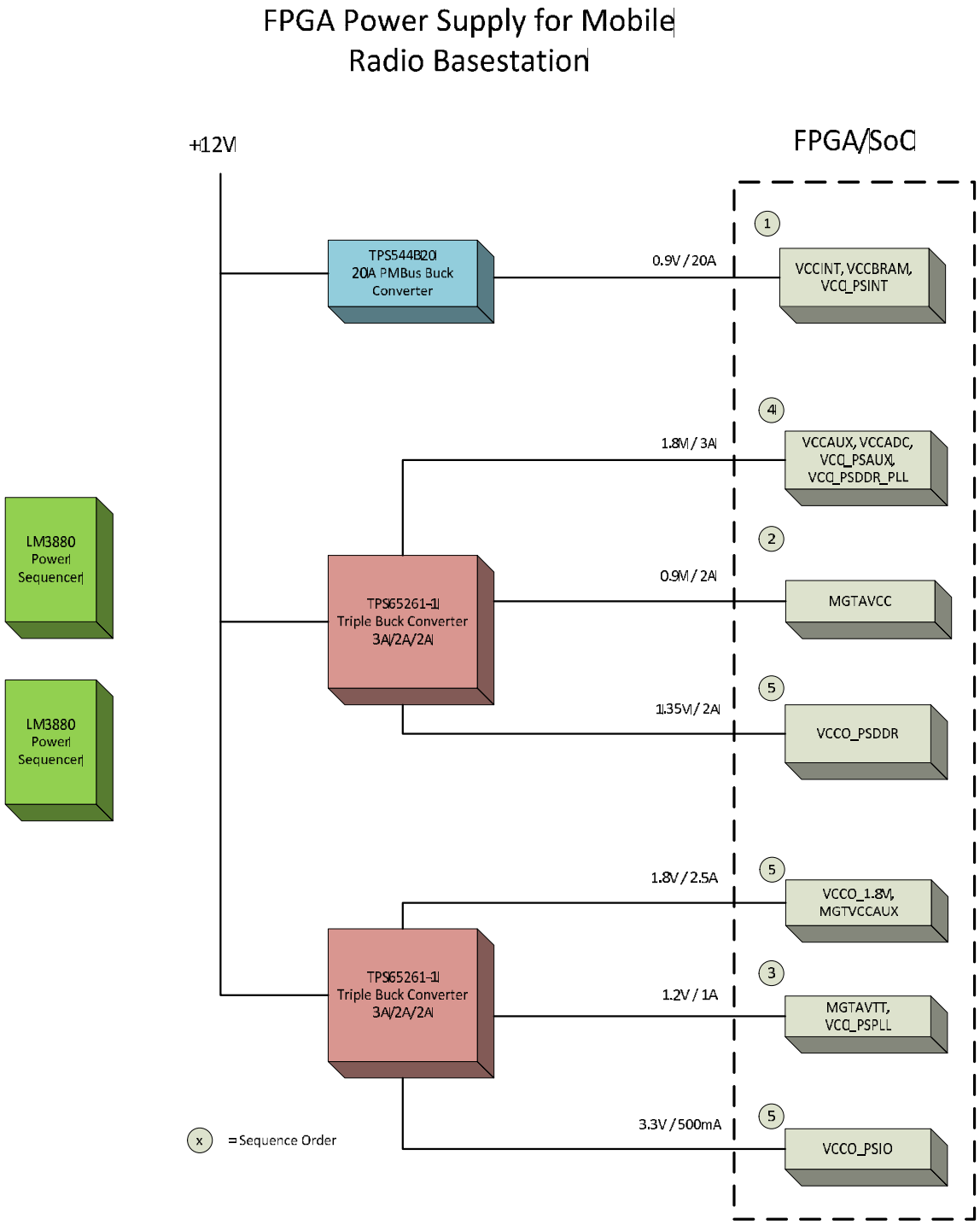


Figure 1. Block Diagram

2) Board Photos

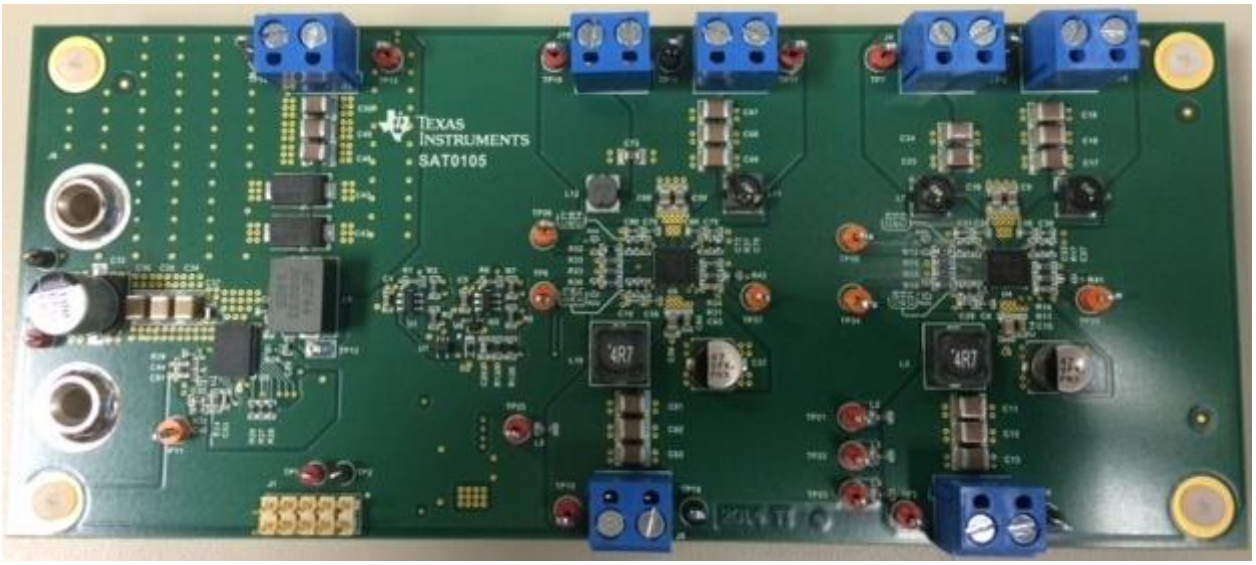


Figure 2. Board Photo Top

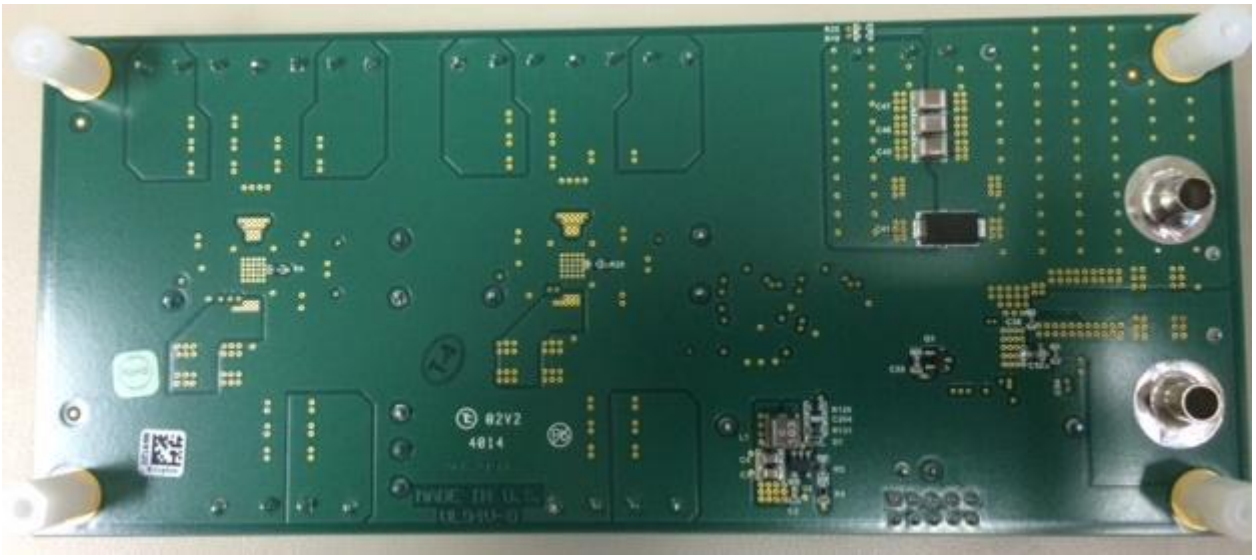
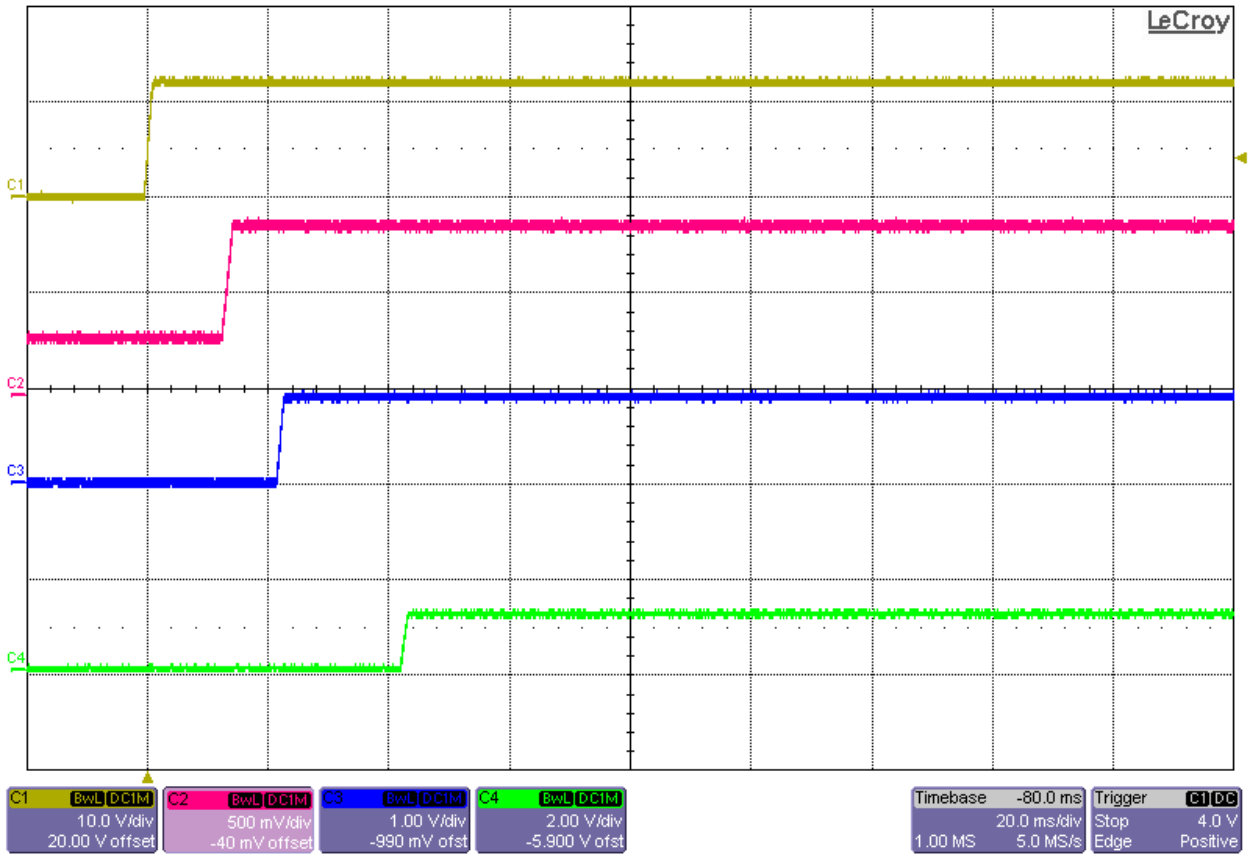


Figure 3. Board Photo Bottom

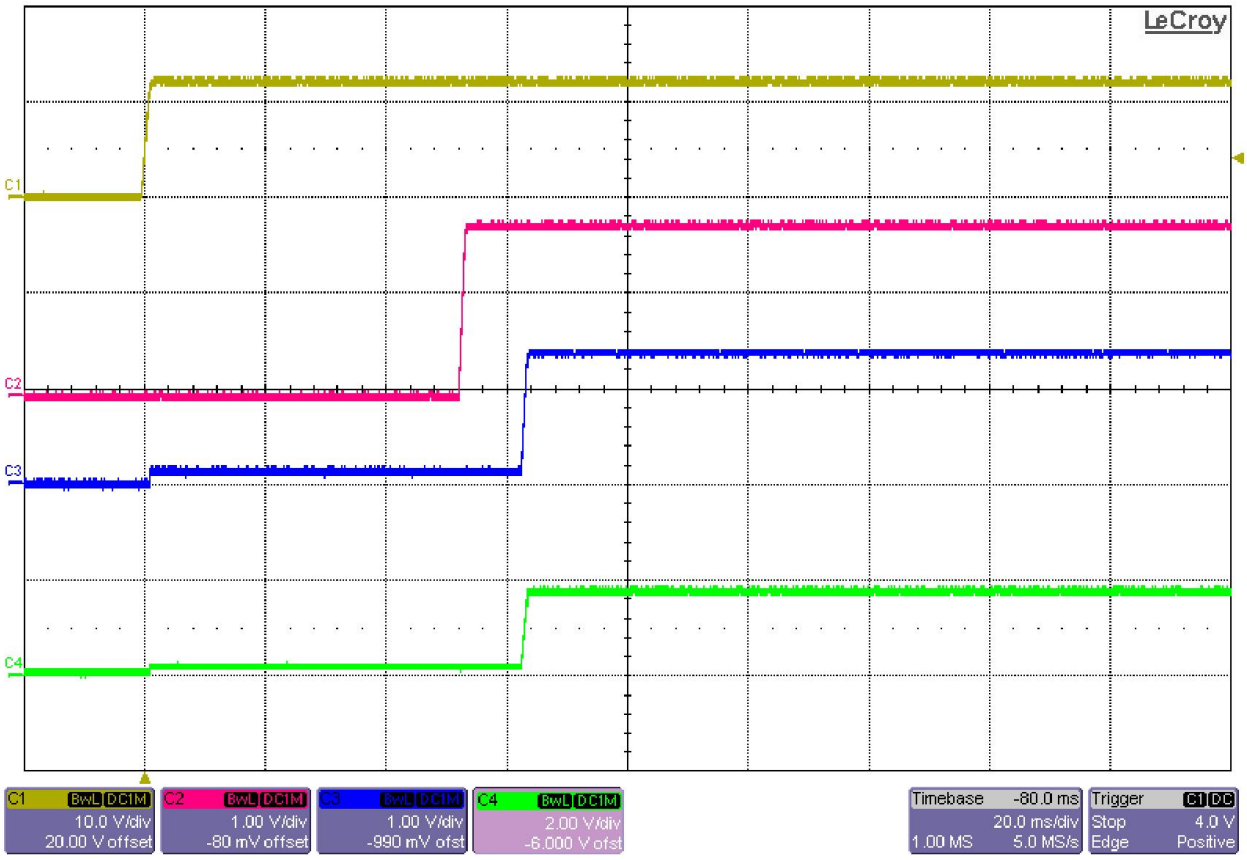
3) Startup Waveforms

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: VCCINT, MGTAVCC, MGTAVTT, VCCAUX, VCCO_PSDDR, MGTVCCAUX, VCCO_PSIO. The power down sequence is the reverse order of power up.



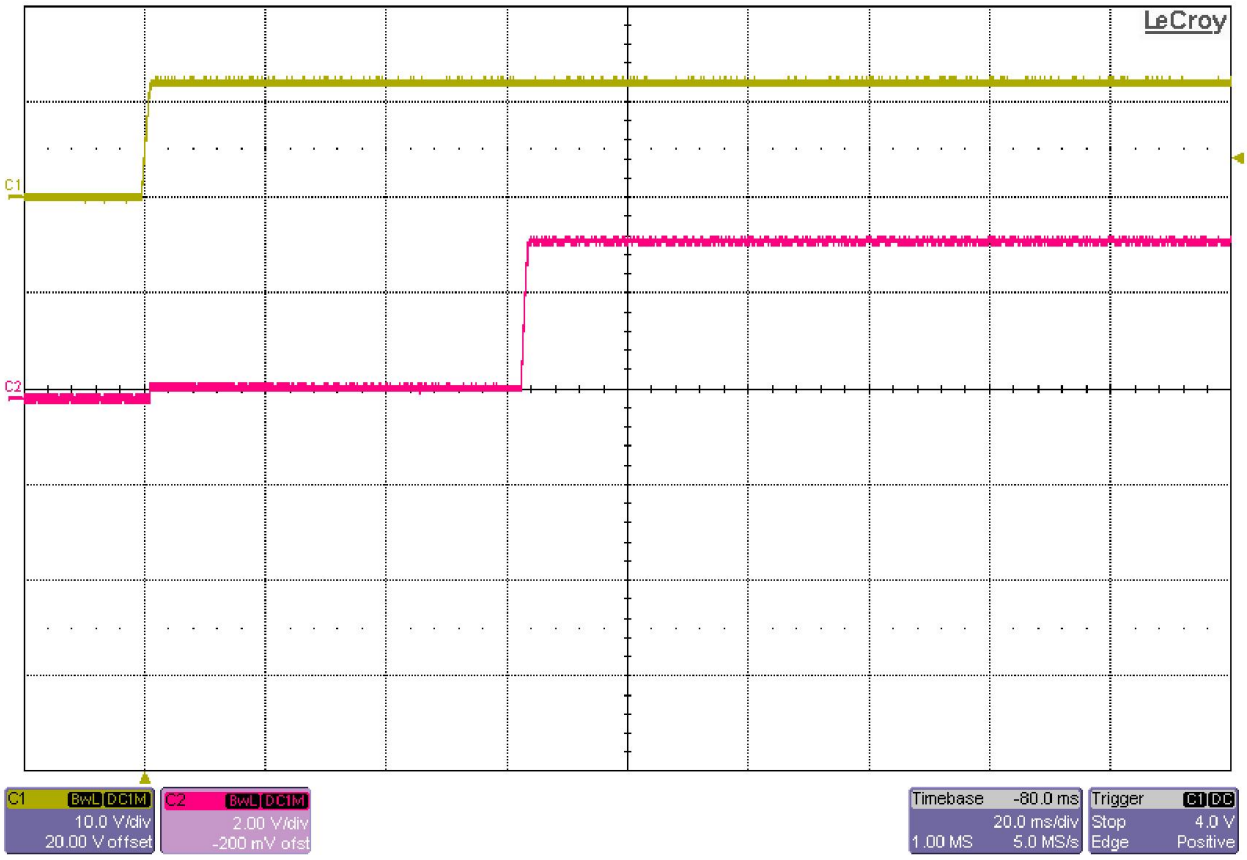
Ch.1: VIN
Ch.2: VCCINT
Ch.3: MGTAVCC
Ch.4: MGTAVTT

Figure 4. Startup Waveform



Ch.1: VIN
Ch.2: VCCAUX
Ch.3: VCCO_PSDDR
Ch.4: MGTVCCAUX

Figure 5. Startup Waveform



Ch.1: VIN
Ch.2: VCCO_PSIO

Figure 6. Startup Waveform

4) Efficiency

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

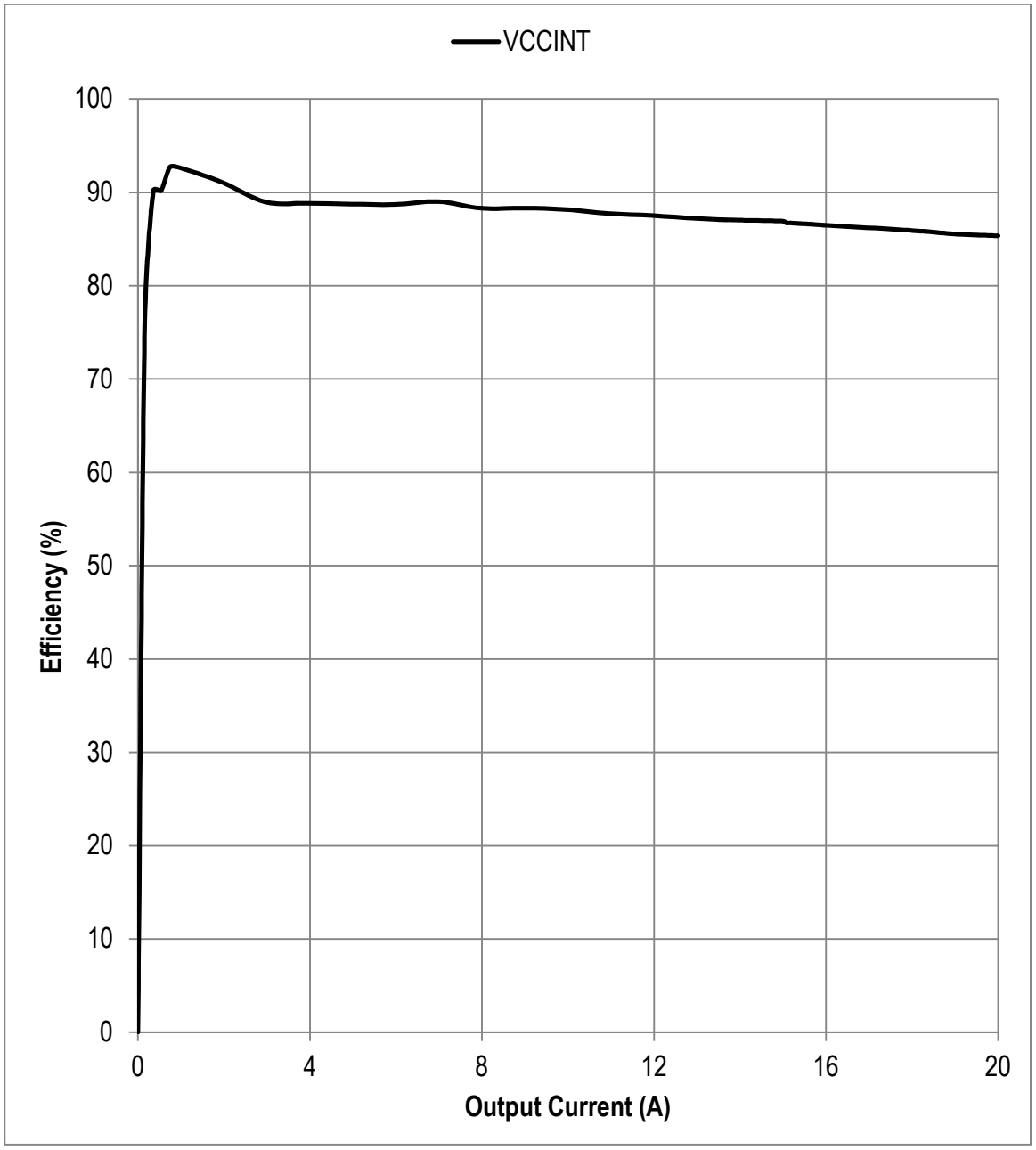


Figure 7. VIN = 12V, VOUT = 0.9V; VCCINT Efficiency

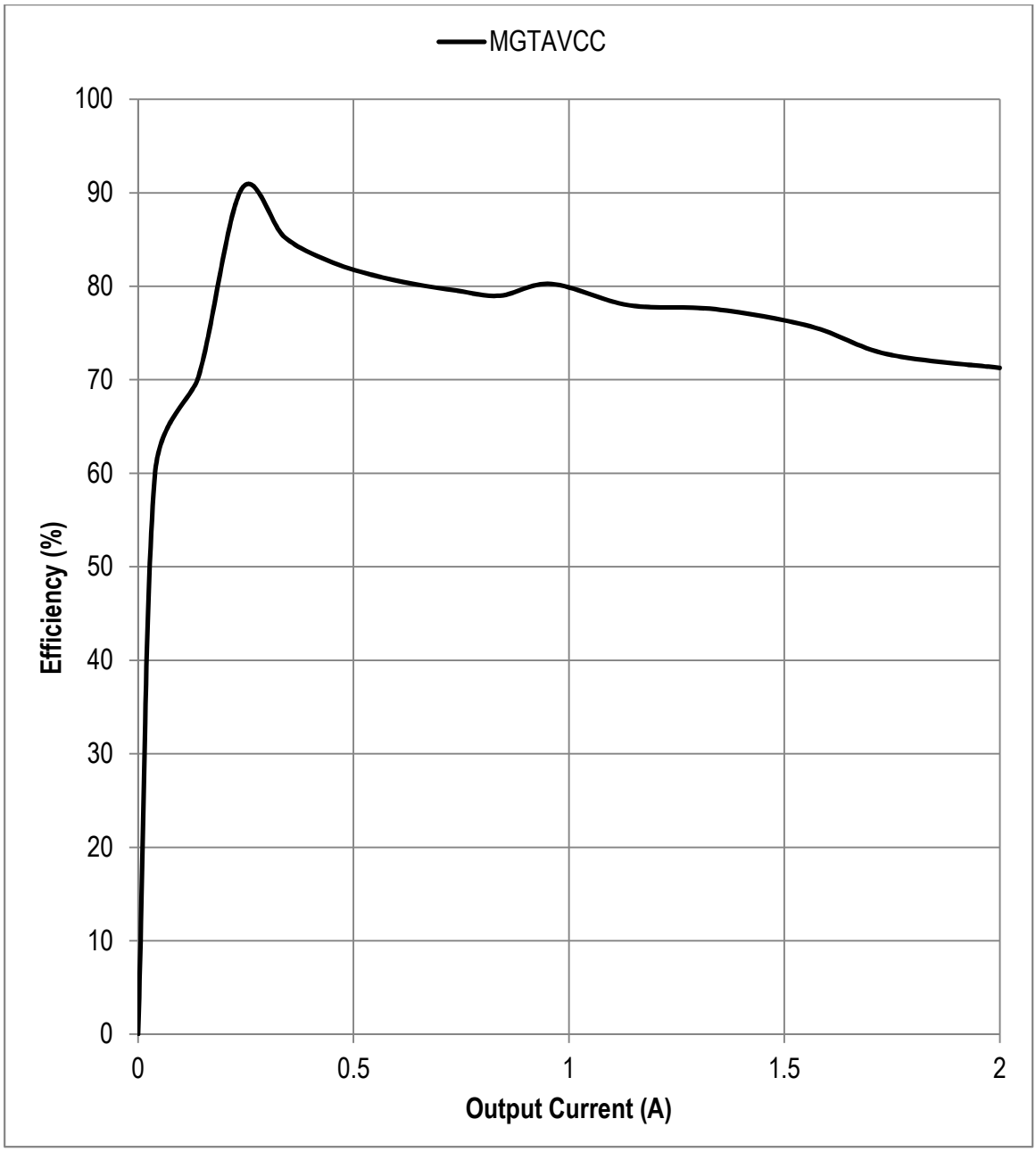


Figure 8. VIN = 12V, VOUT = 0.9V; MGTAVCC Efficiency

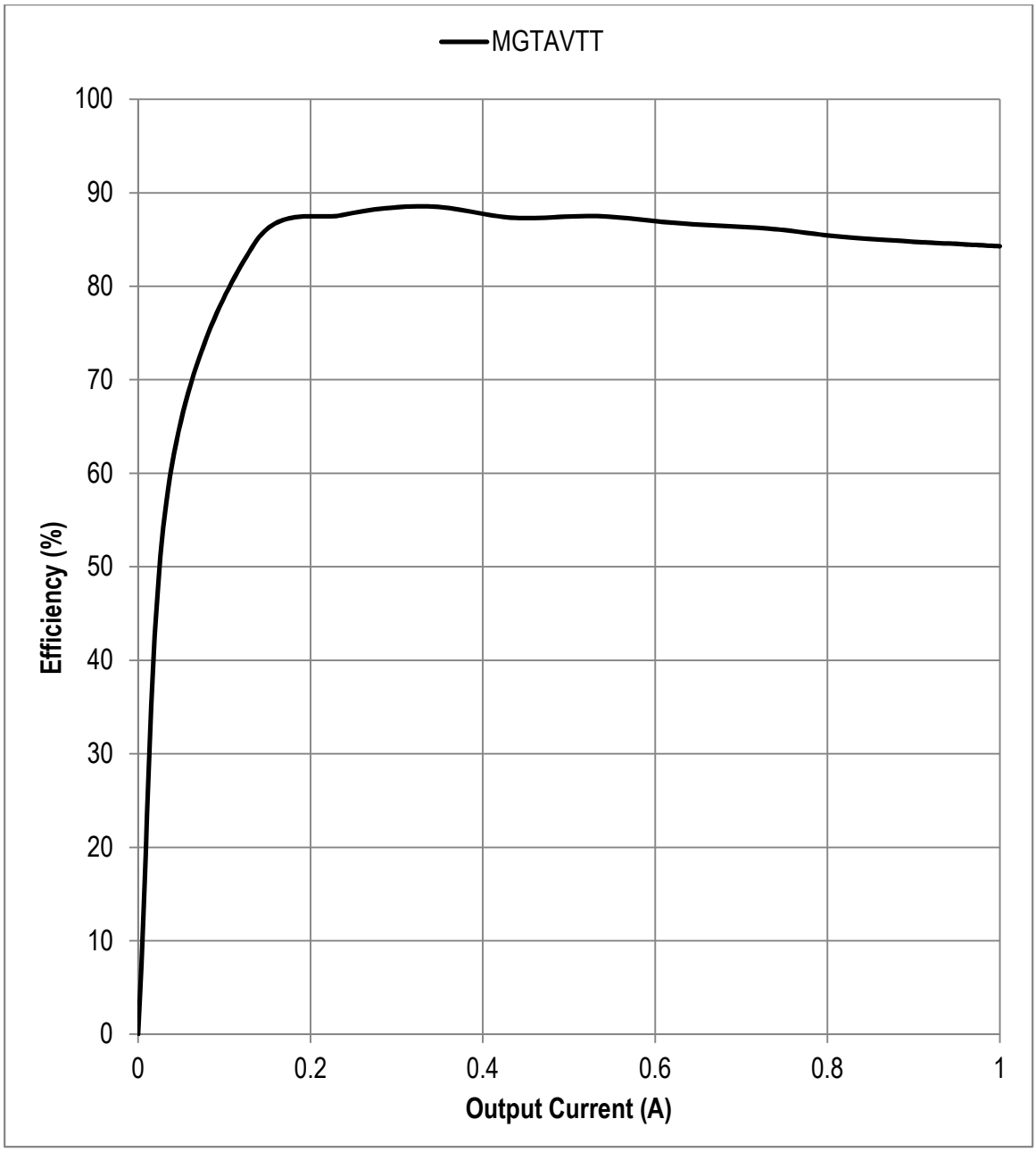


Figure 9. VIN = 12V, VOUT = 1.2V; MGTAVTT Efficiency

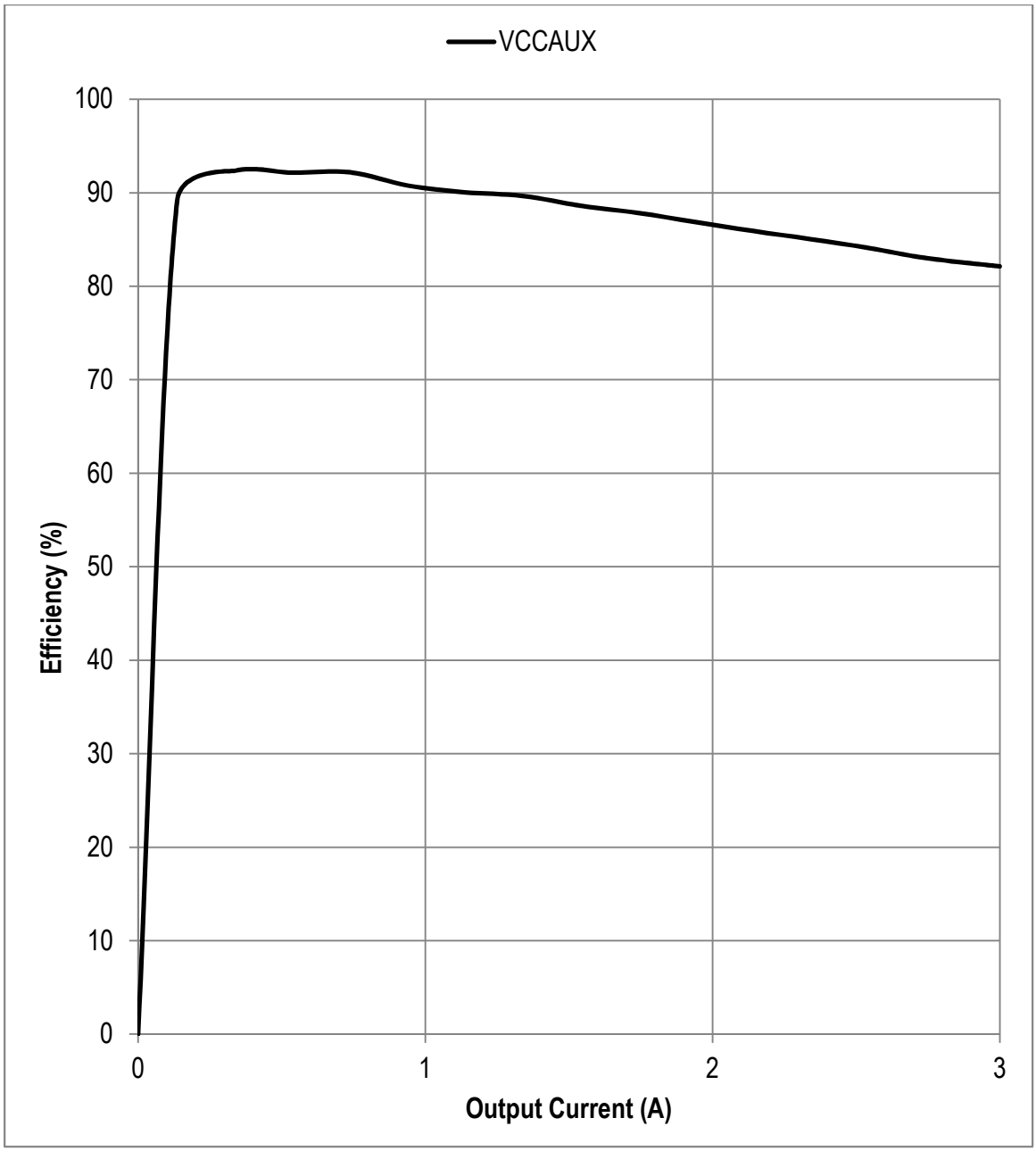


Figure 10. VIN = 12V, VOUT = 1.8V; VCCAUX Efficiency

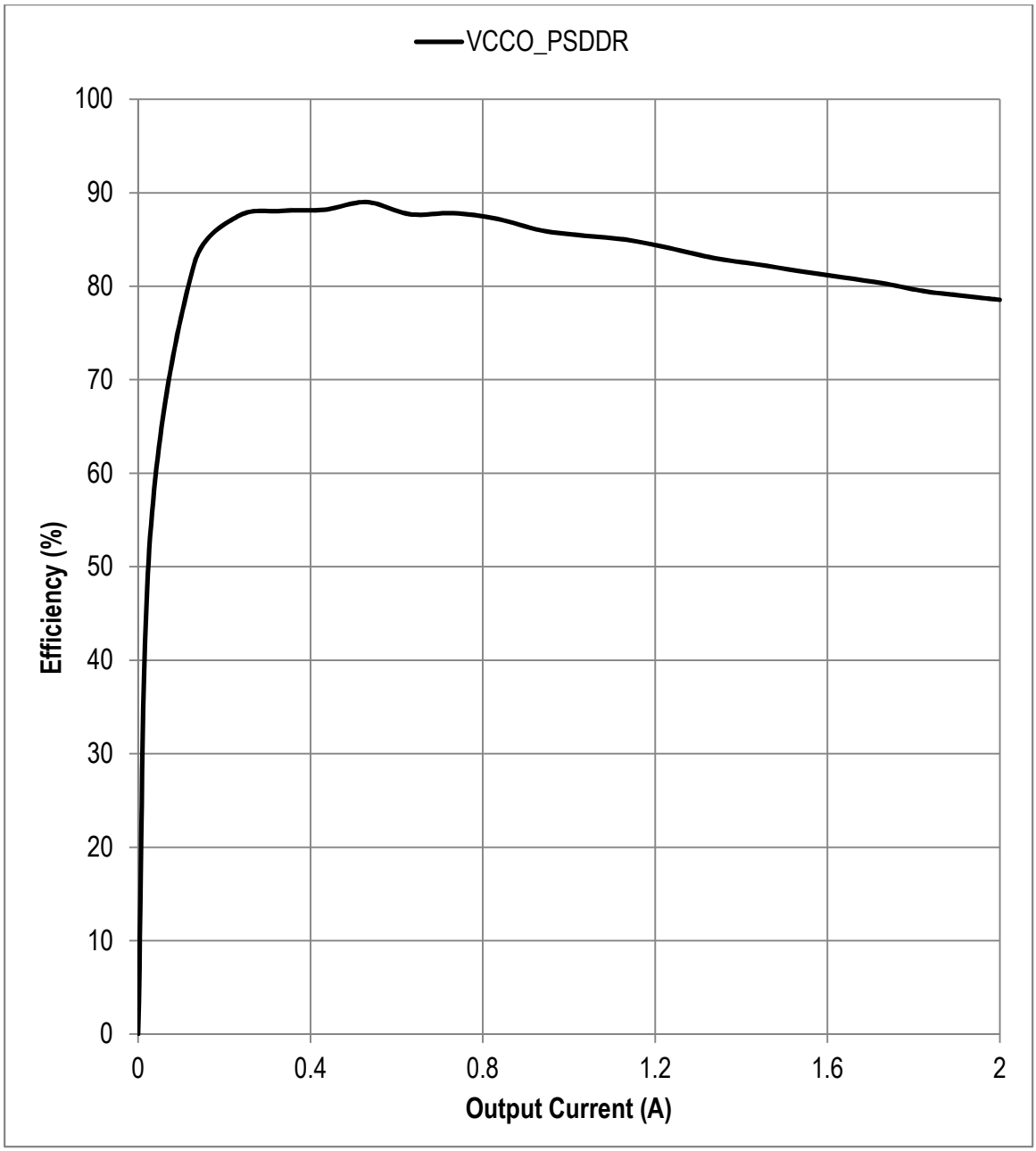


Figure 11. VIN = 12V, VOUT = 1.35V; VCCO_PSDDR Efficiency

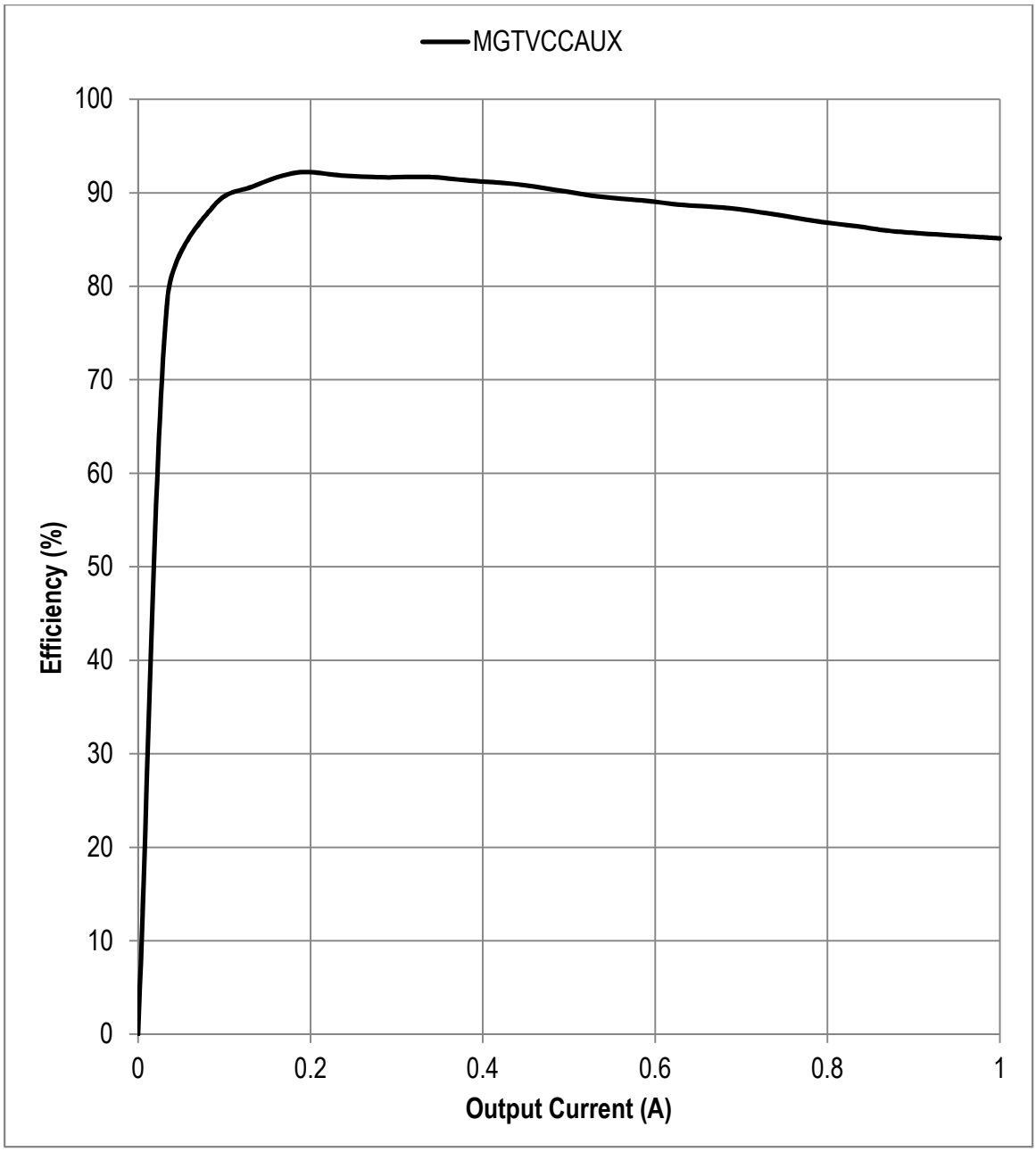


Figure 12. VIN = 12V, VOUT = 1.8V; MGTVCCAUX Efficiency

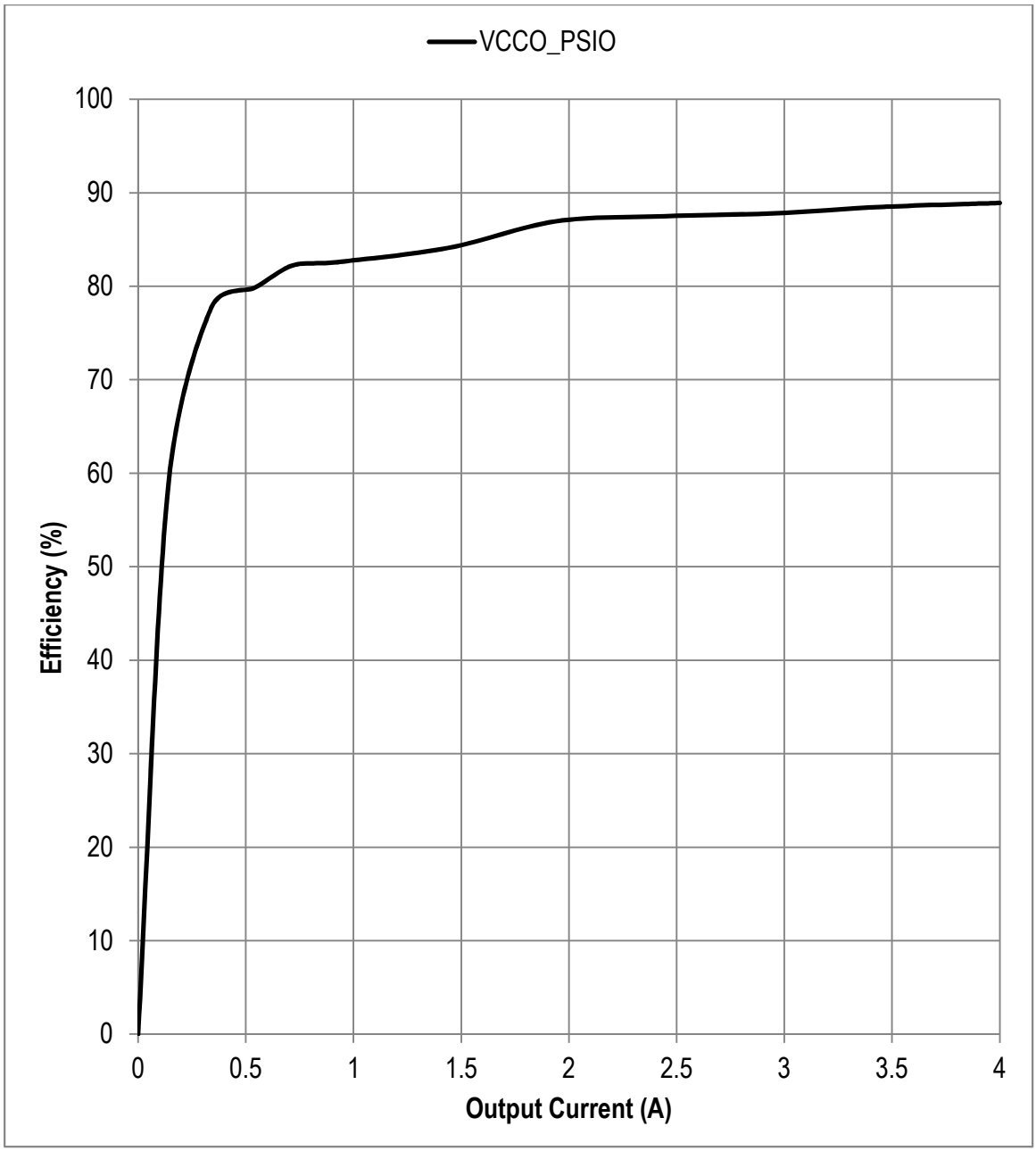


Figure 13. VIN = 12V, VOUT = 3.3V; VCCO_PSIO Efficiency

5) Load Regulation

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

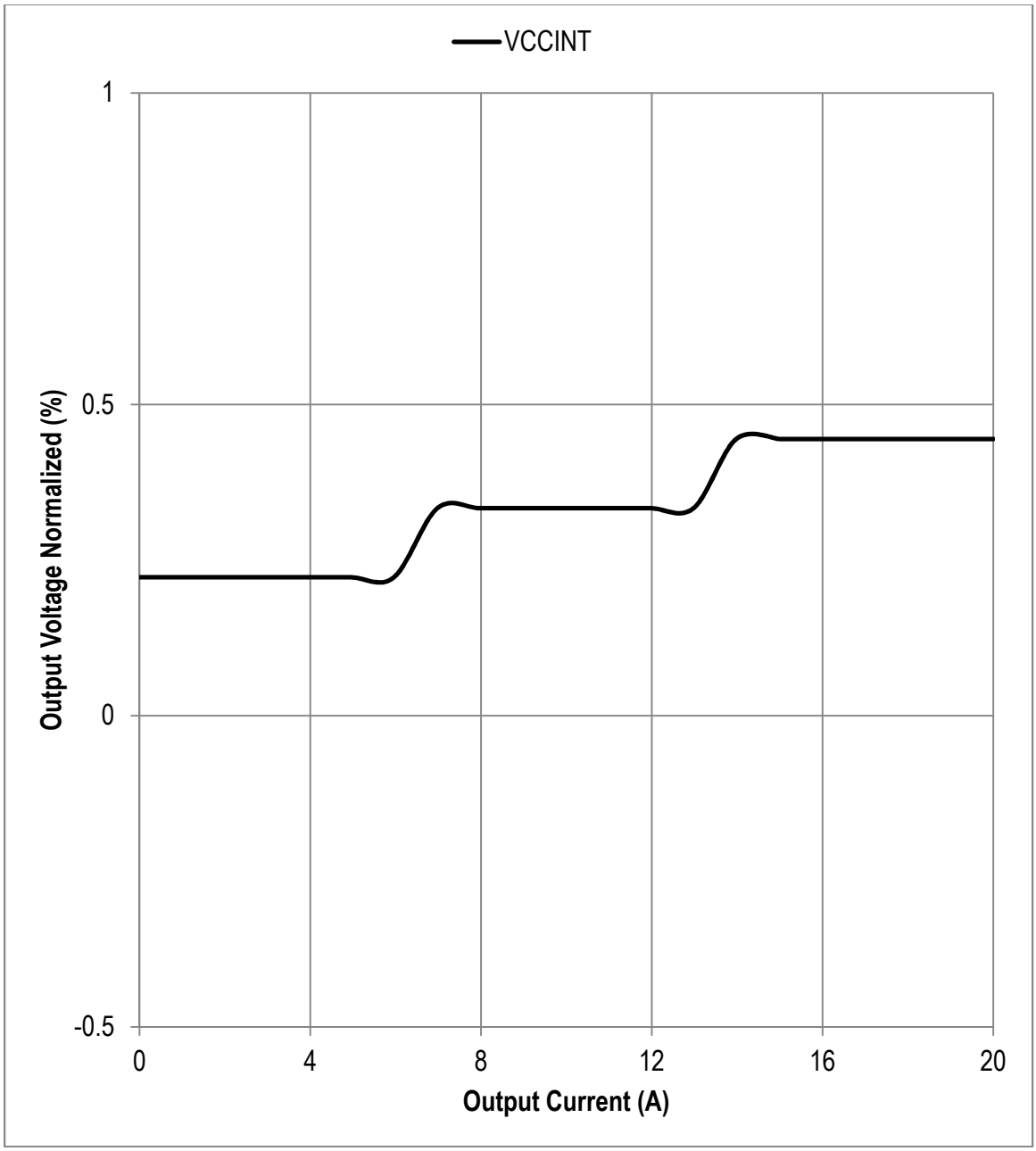


Figure 14. VIN = 12V, VCCINT Load Regulation

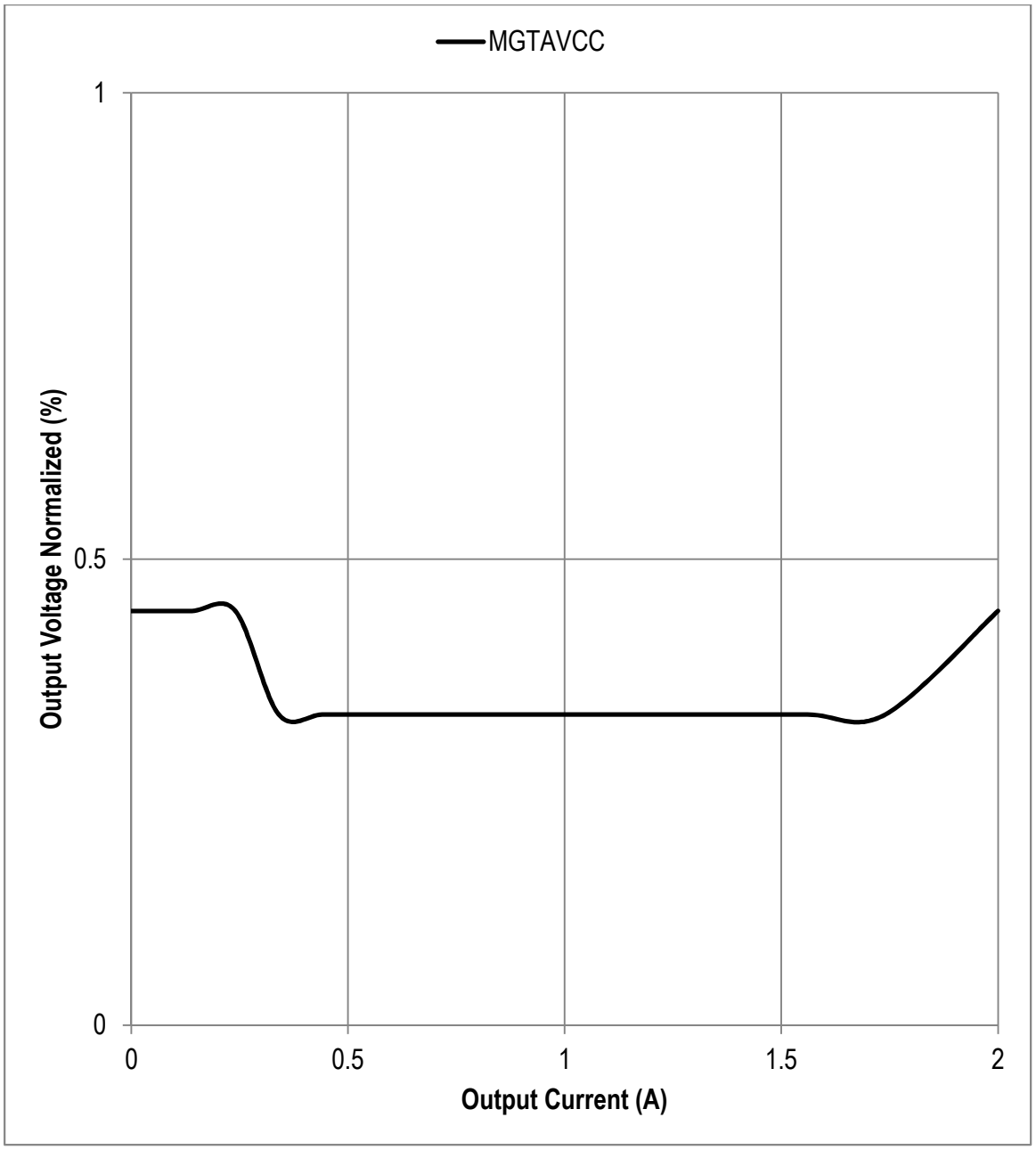


Figure 15. VIN = 12V, MGTAVCC Load Regulation

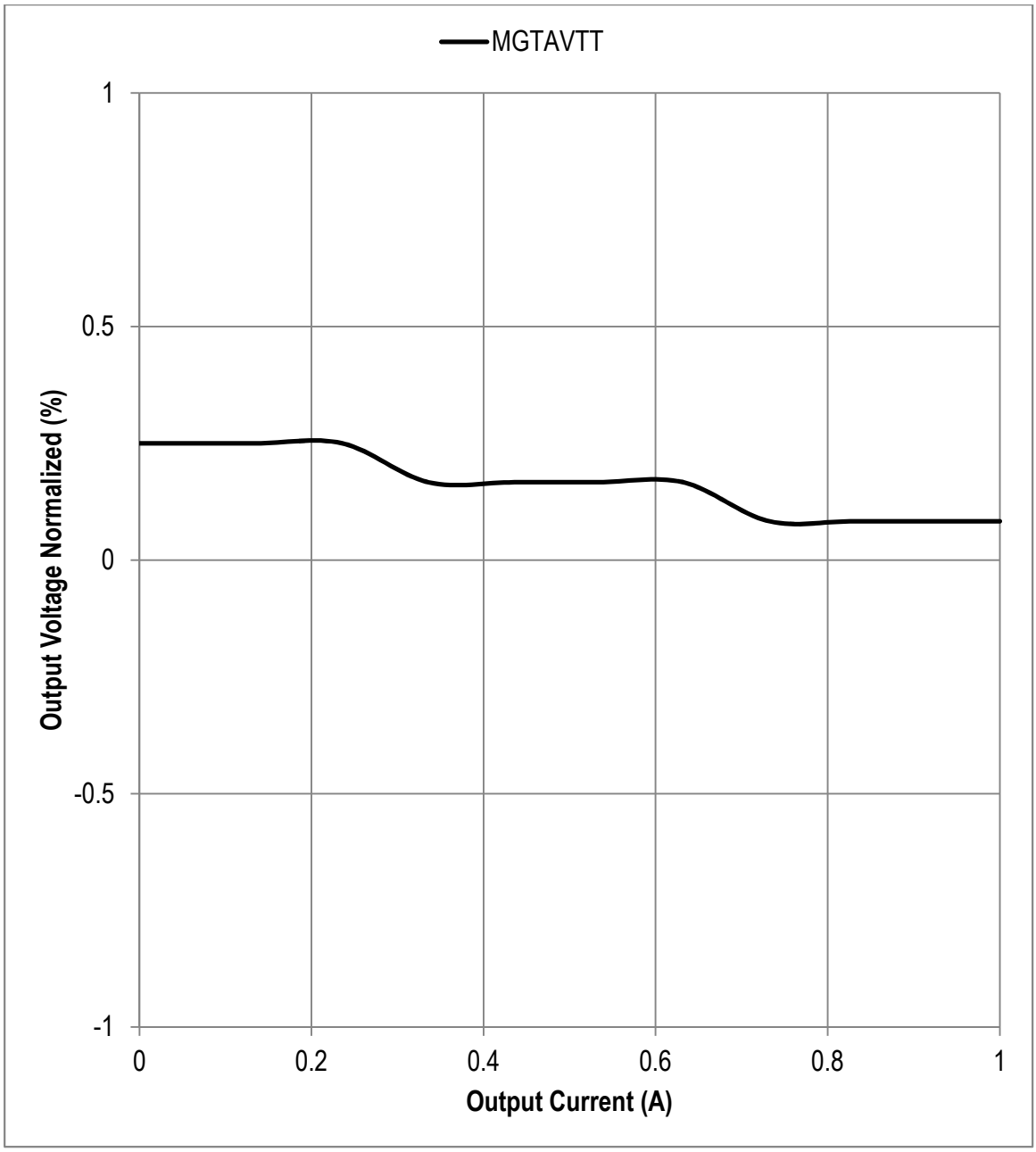


Figure 16. VIN = 12V, MGTAVTT Load Regulation

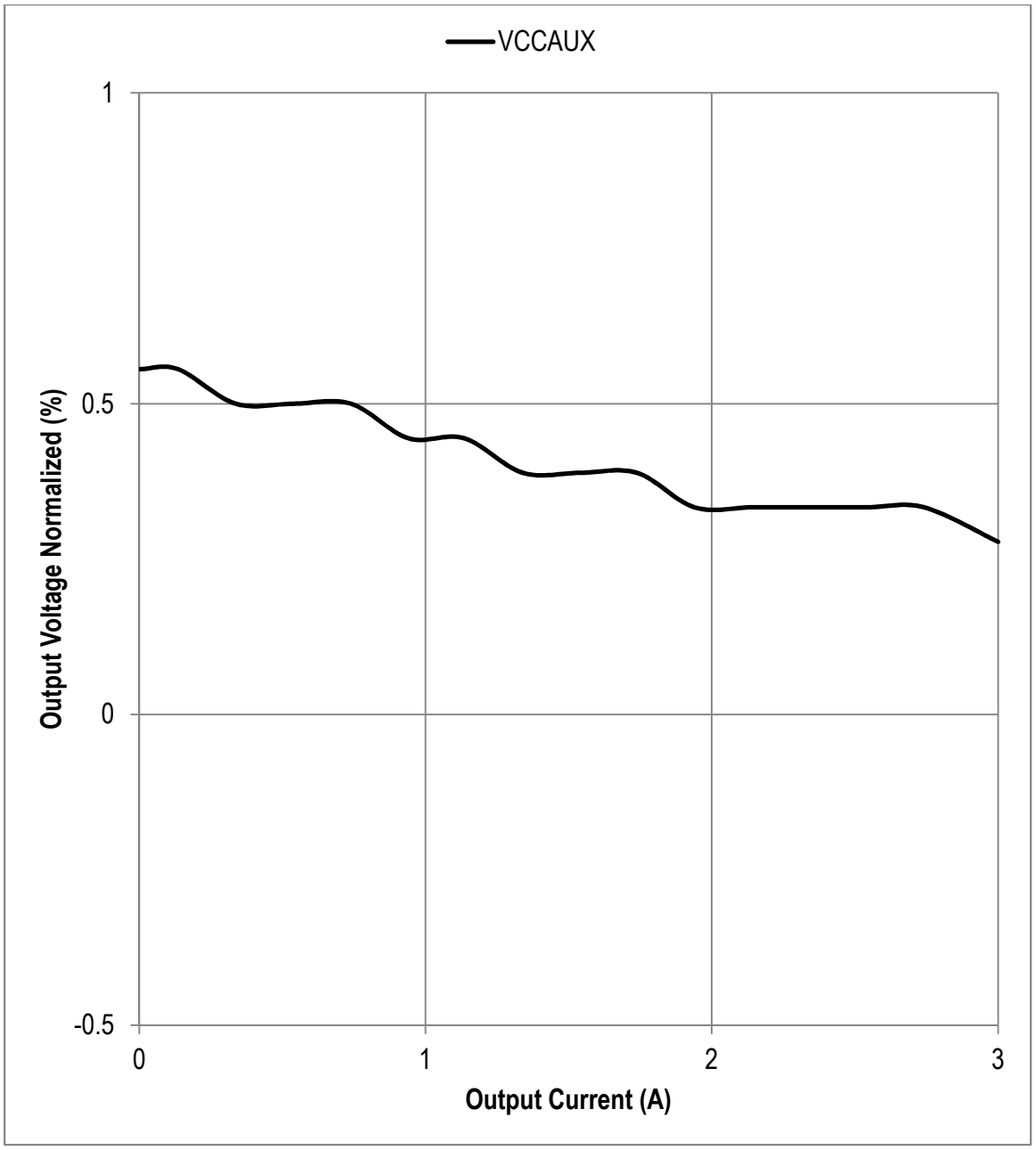


Figure 17. VIN = 12V, VCCAUX Load Regulation

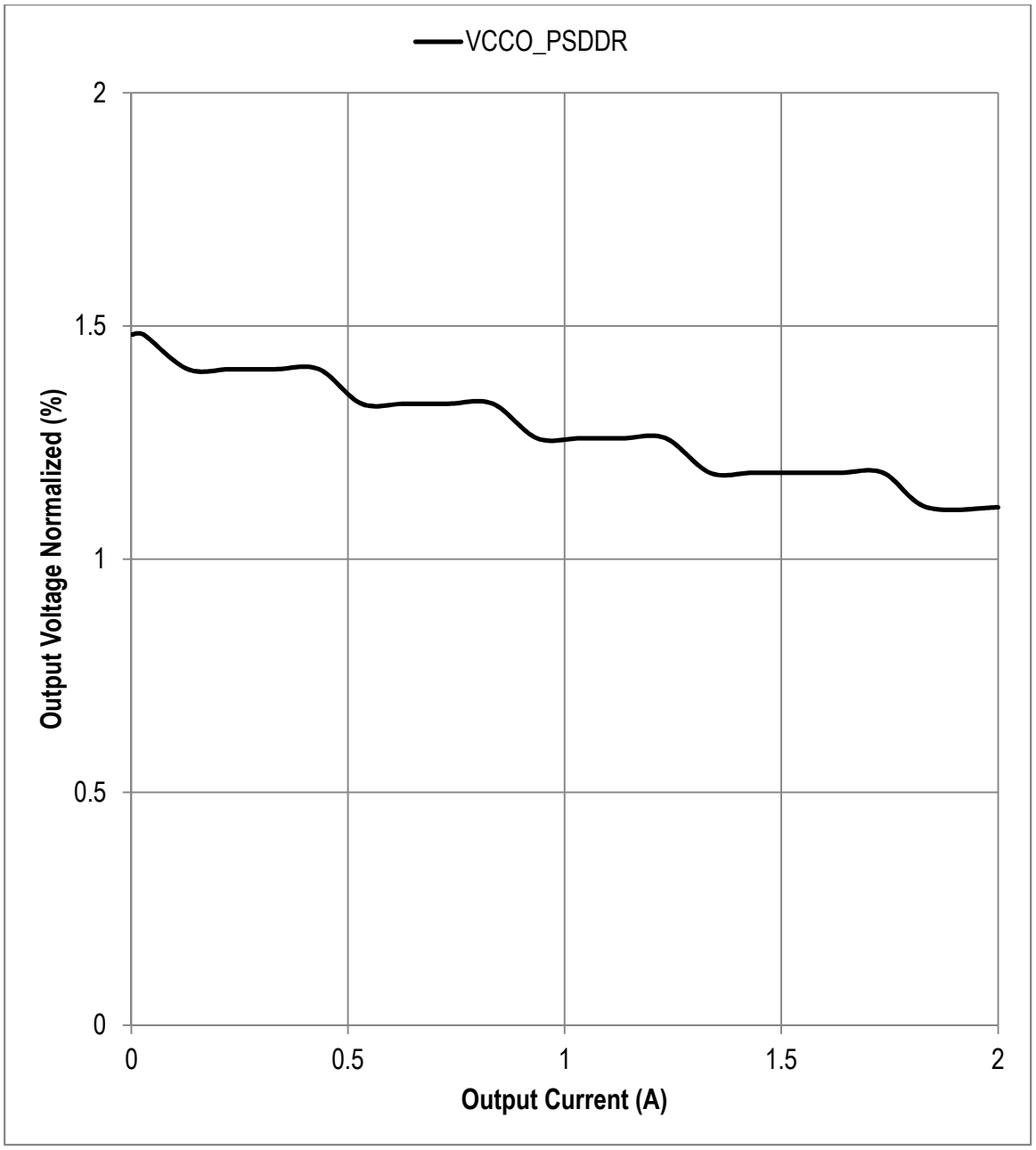


Figure 18. VIN = 12V, VCCO_PSDDR Load Regulation

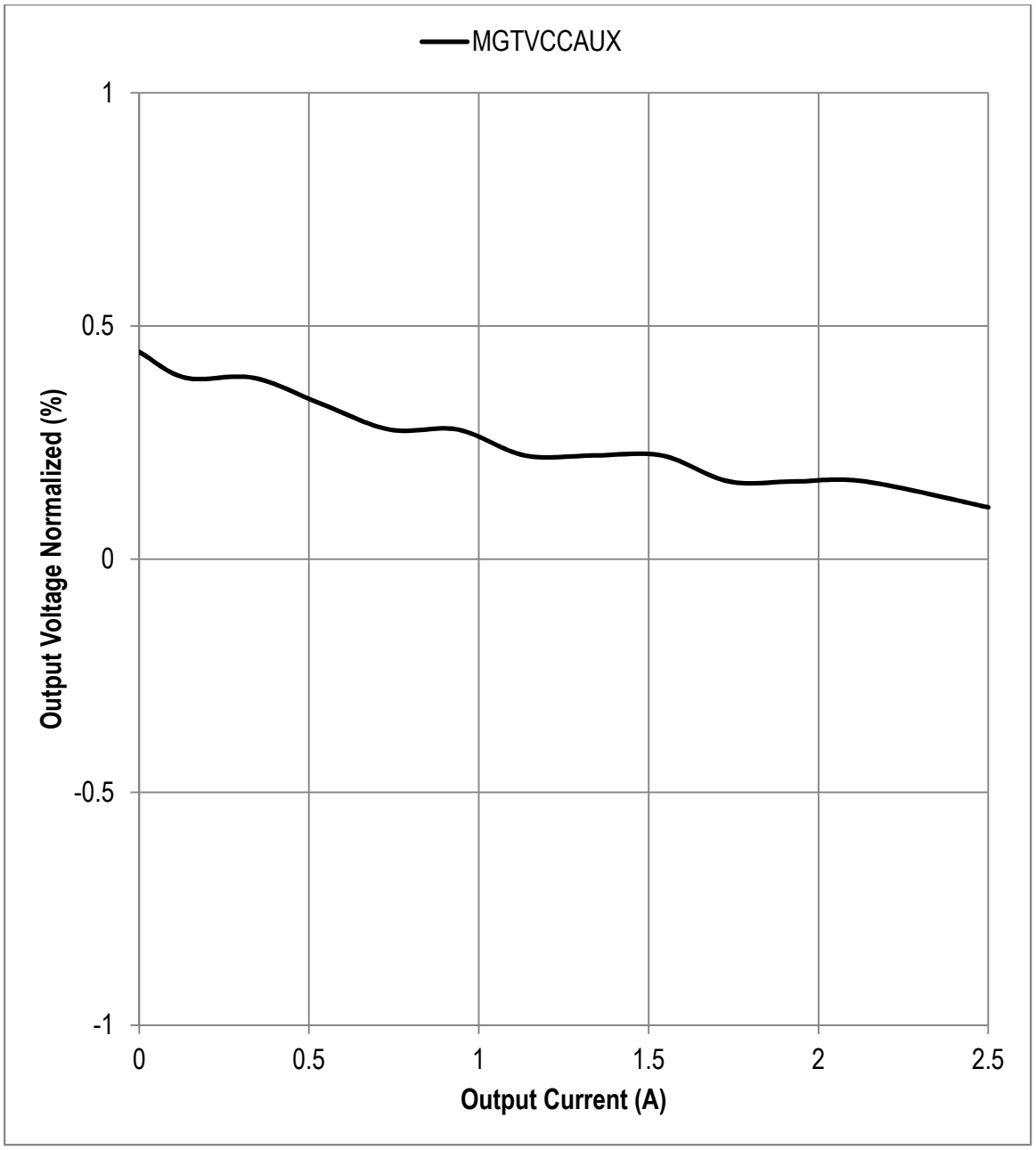


Figure 19. VIN = 12V, MGTVCCAUX Load Regulation

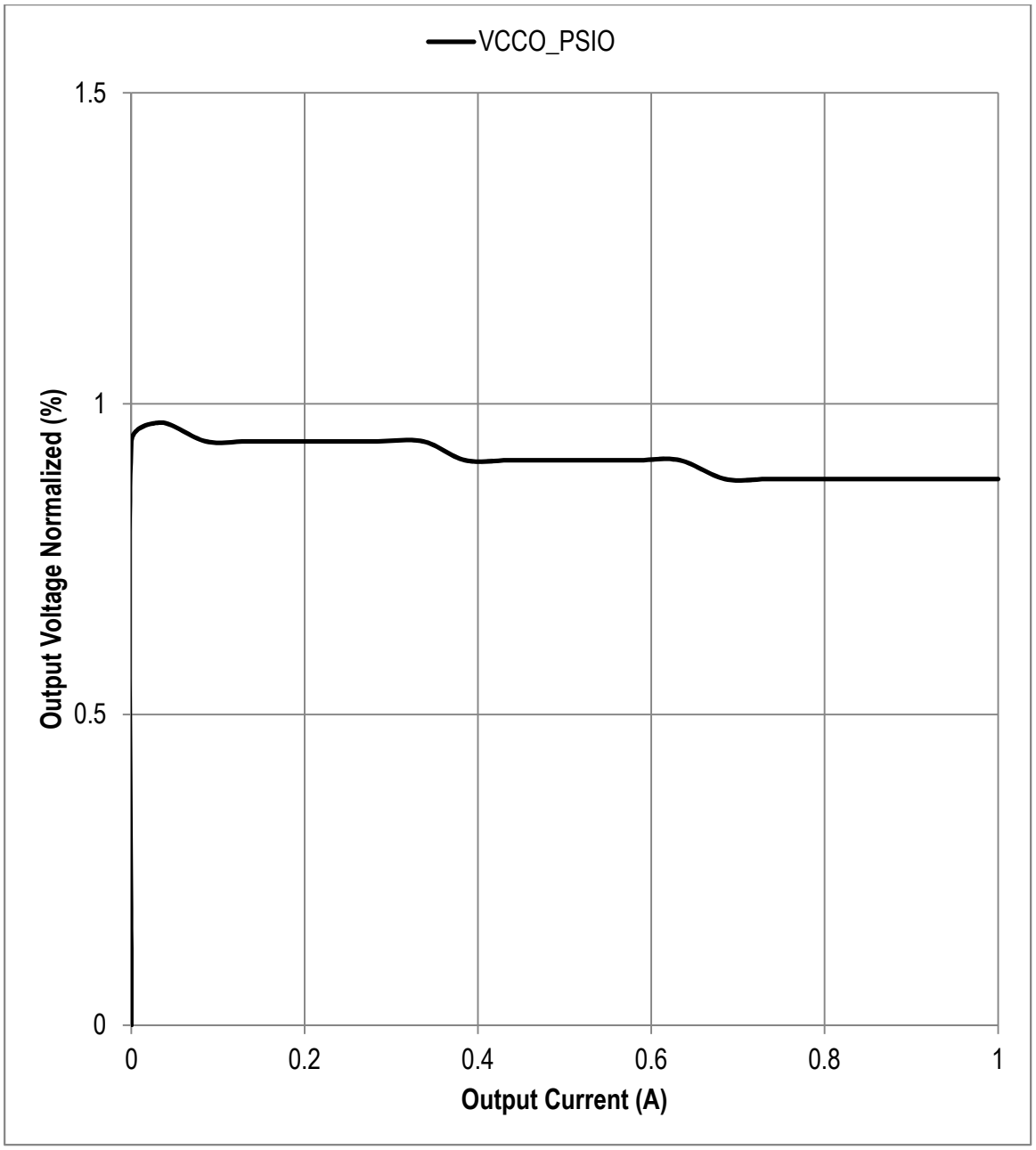


Figure 20. VIN = 12V, VCCO_PSIO Load Regulation

6) Output Voltage Ripple

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

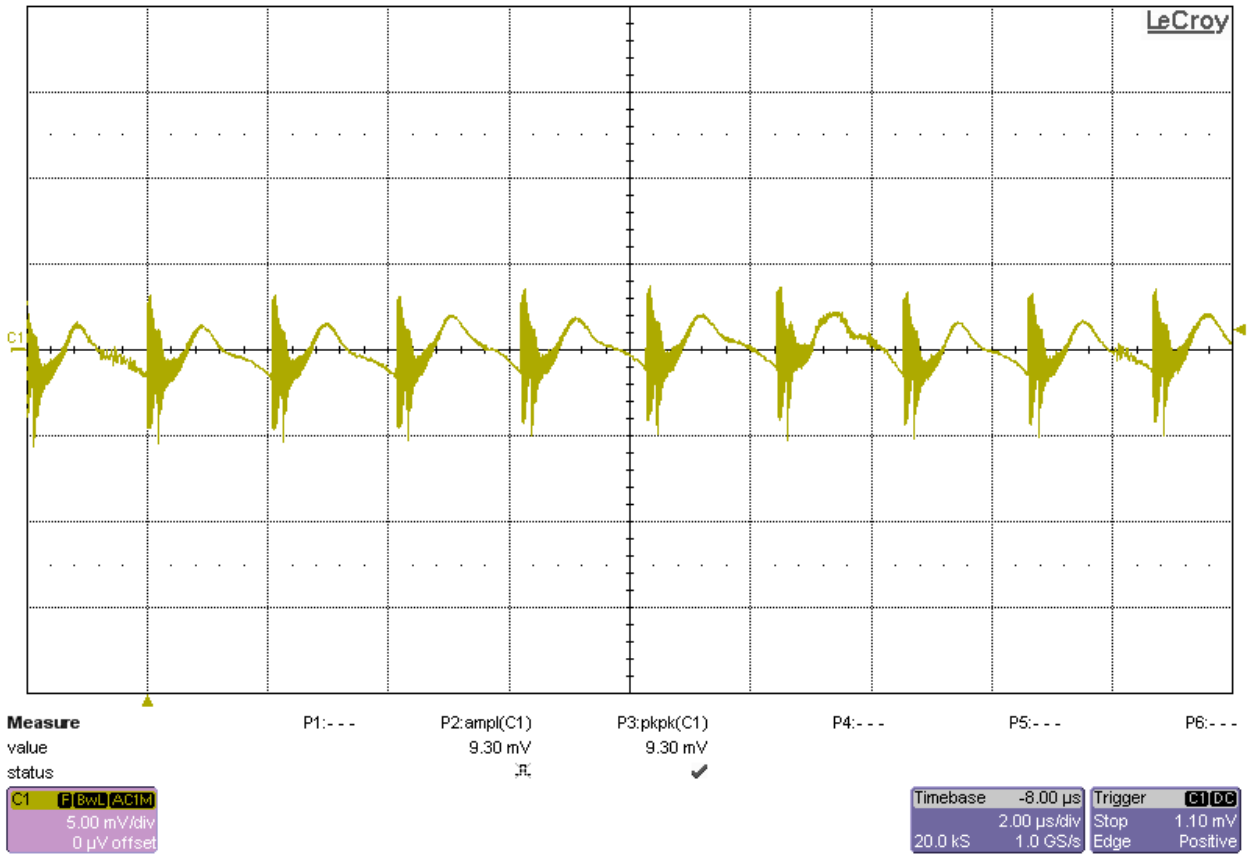


Figure 21. VIN = 12V, VCCINT Output Ripple @ IOUT = 20A

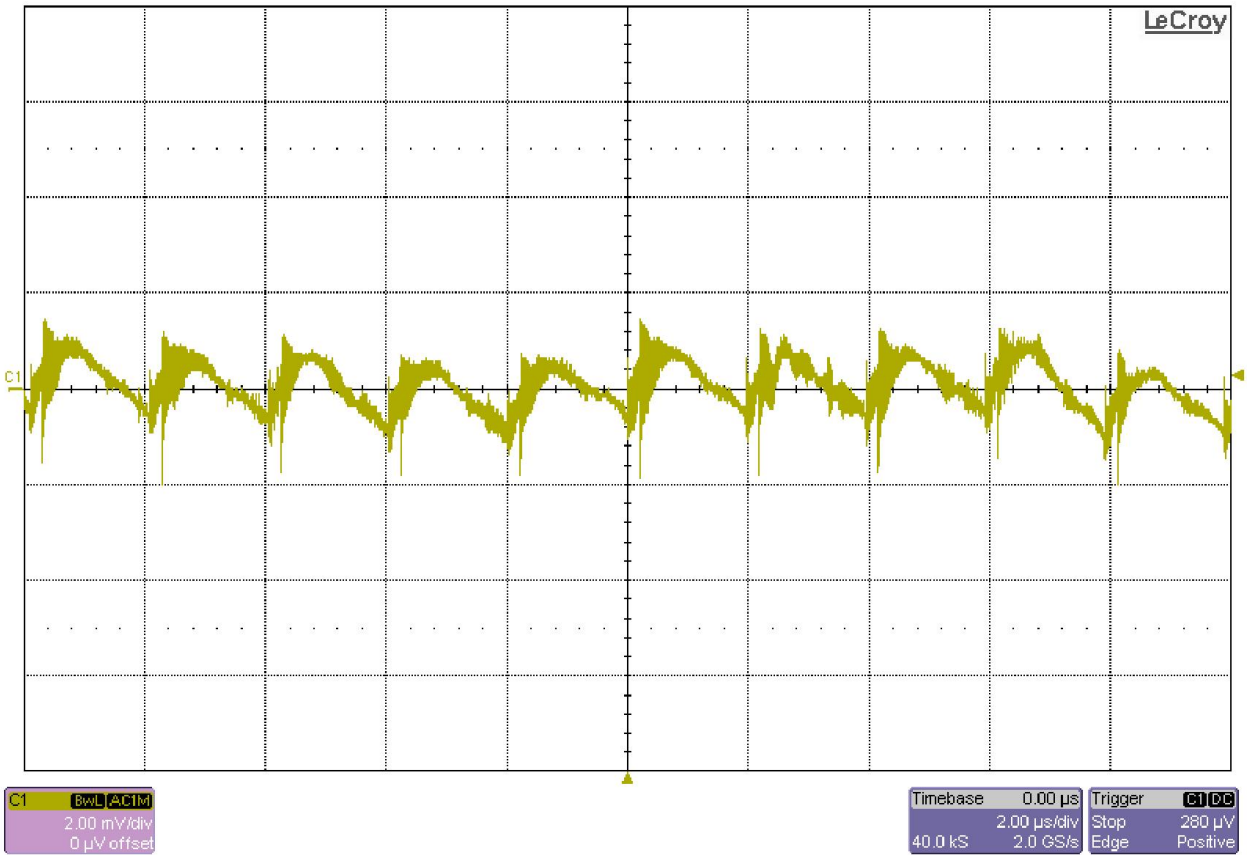


Figure 22. VIN = 12V, MGTAVCC Output Ripple @ IOUT = 2A

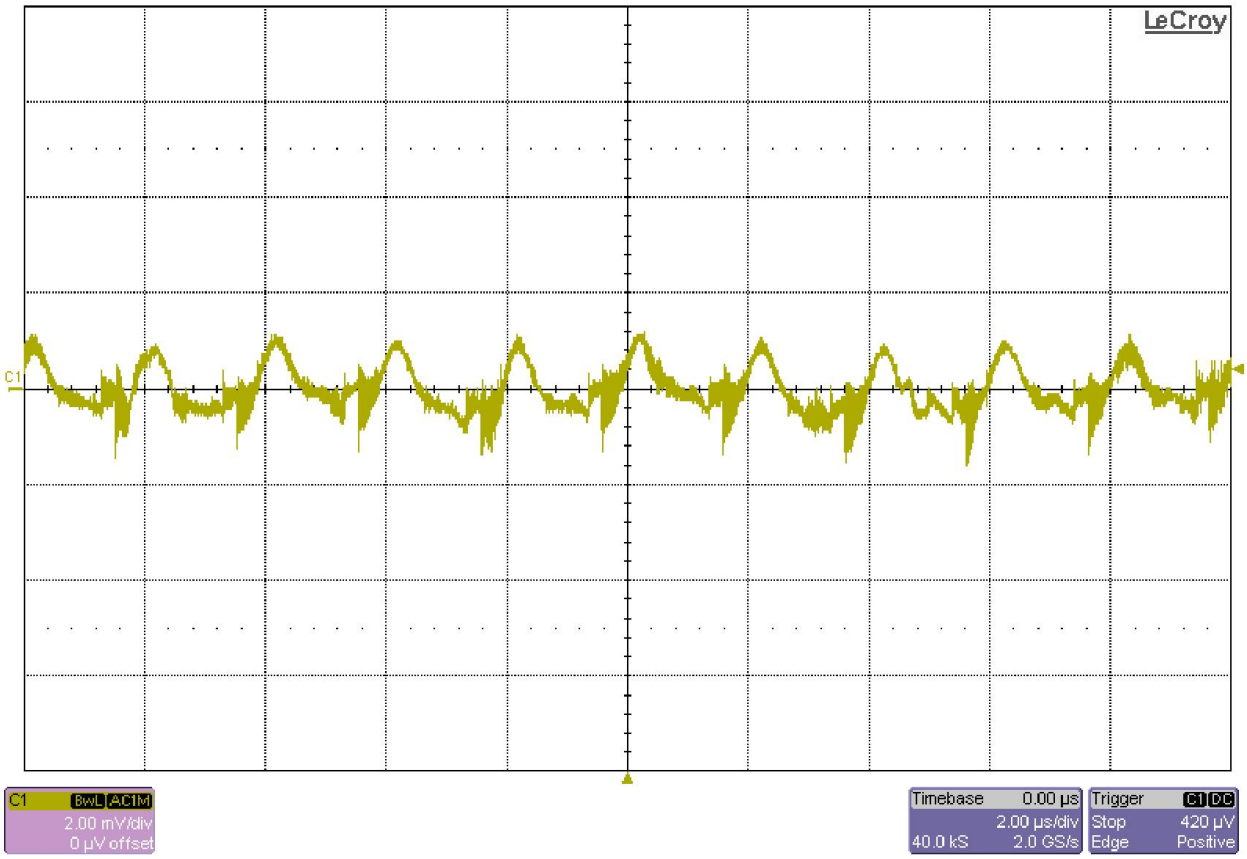


Figure 23. VIN = 12V, MGTAVTT Output Ripple @ IOUT = 1A

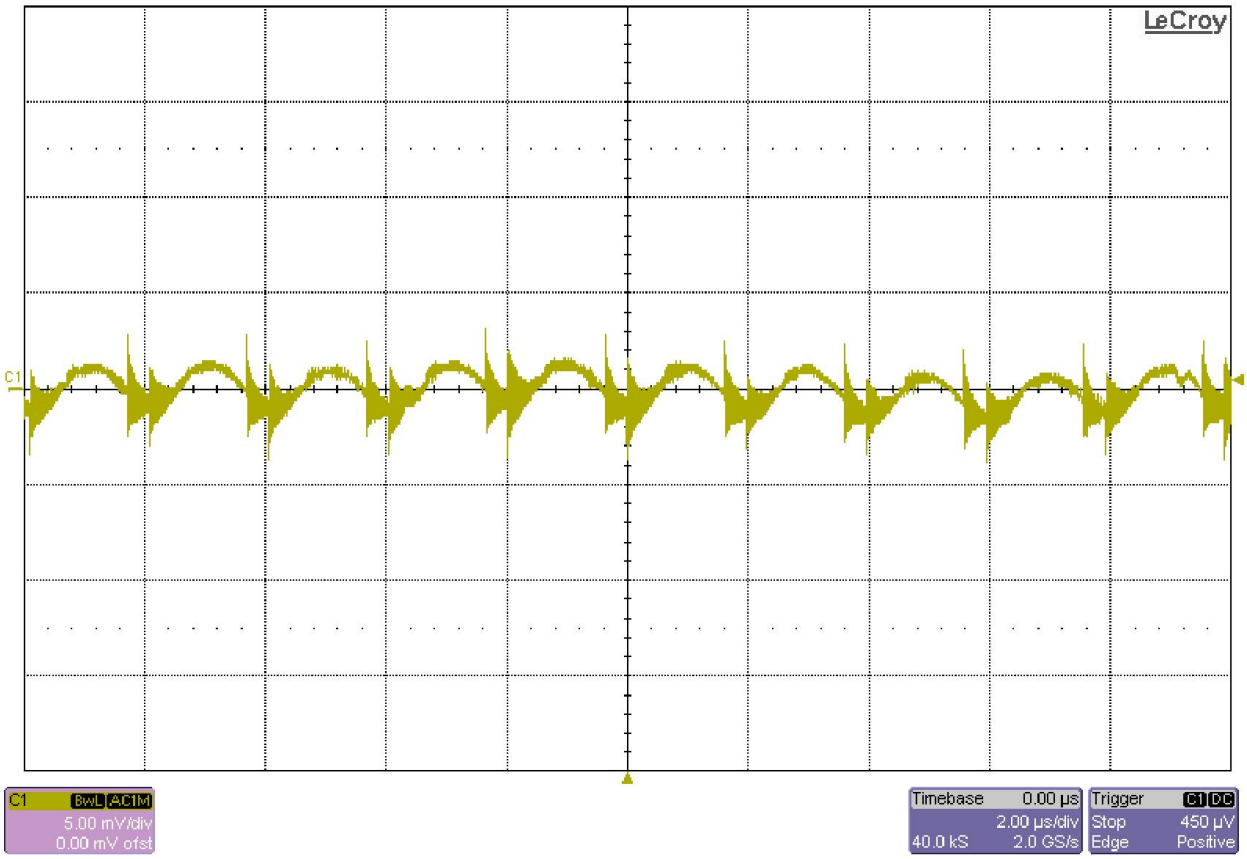


Figure 24. VIN = 12V, VCCAUX Output Ripple @ IOUT = 3A

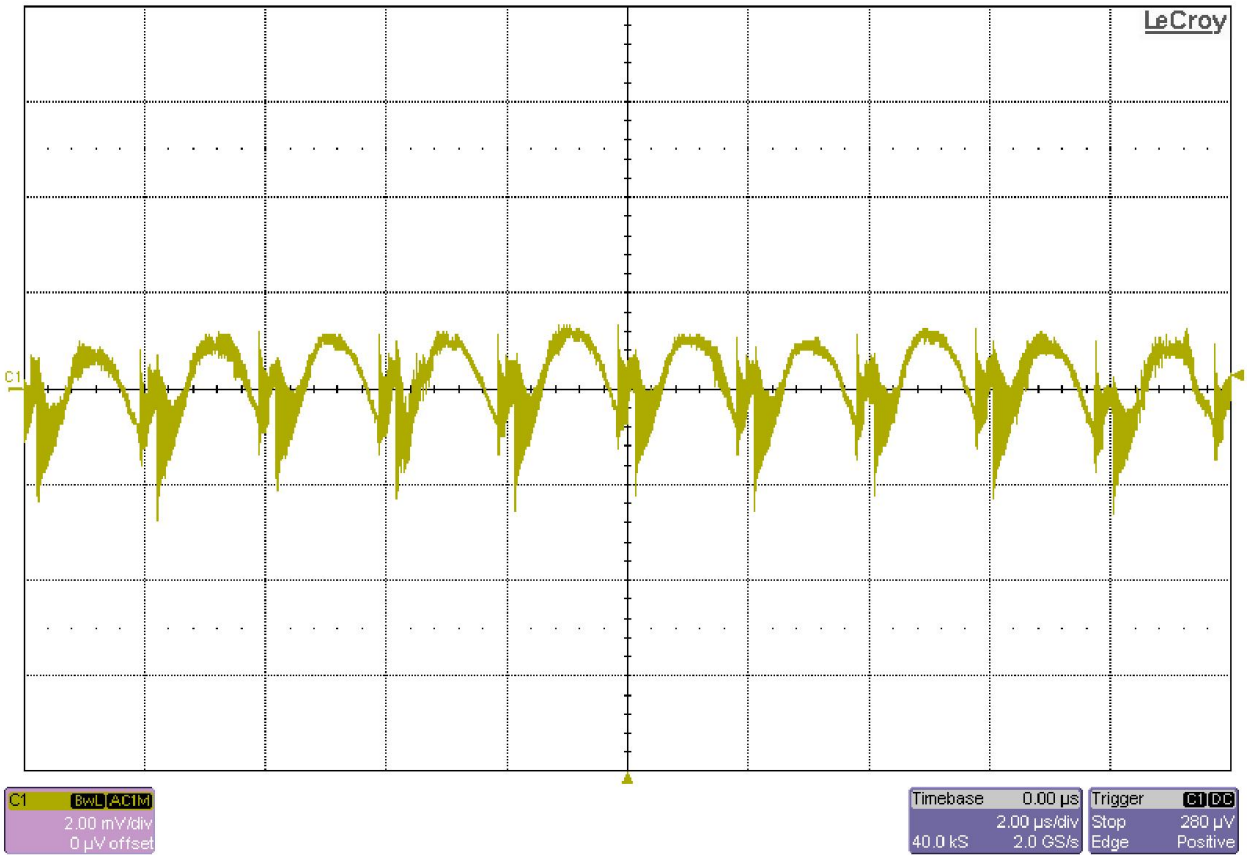


Figure 25. VIN = 12V, VCCO_PSDDR Output Ripple @ IOUT = 2A

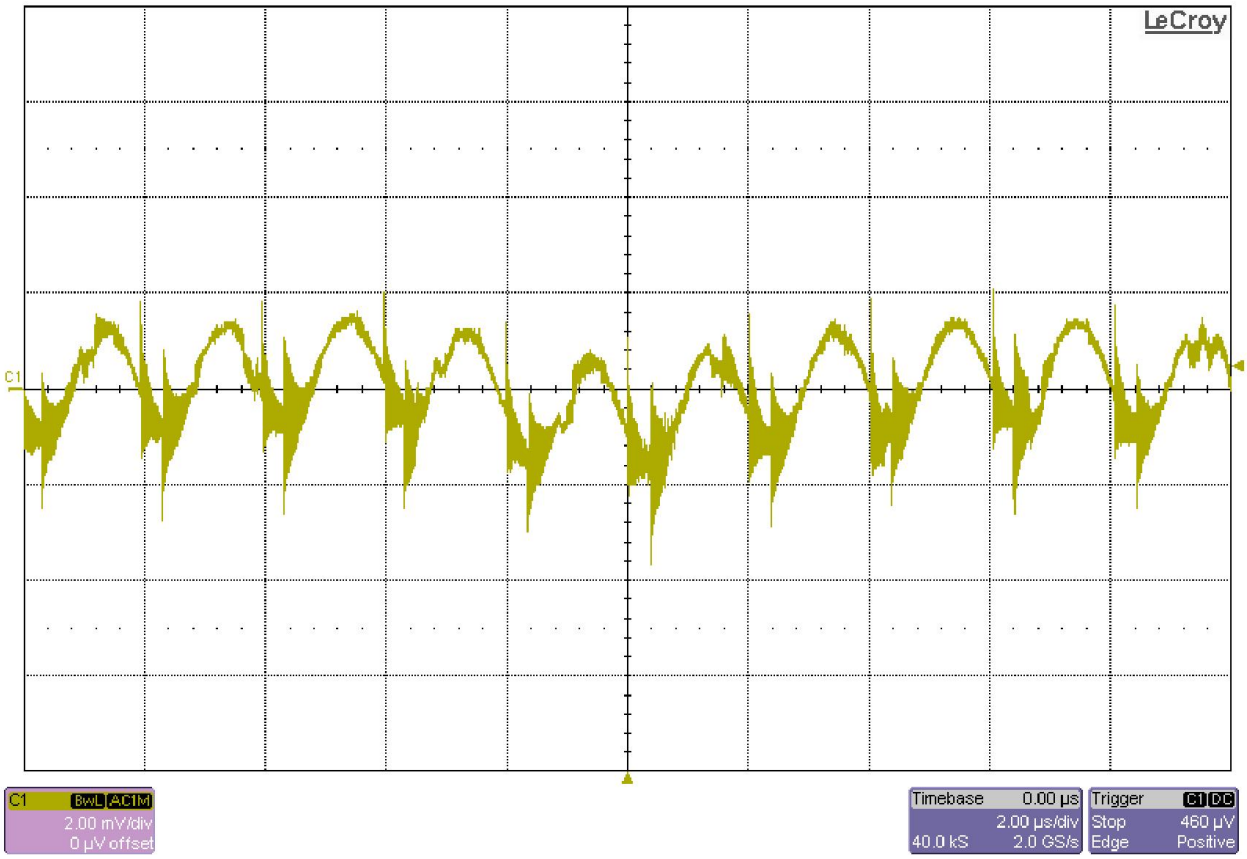


Figure 26. VIN = 12V, MGTVCCAUX Output Ripple @ IOUT = 2.5A

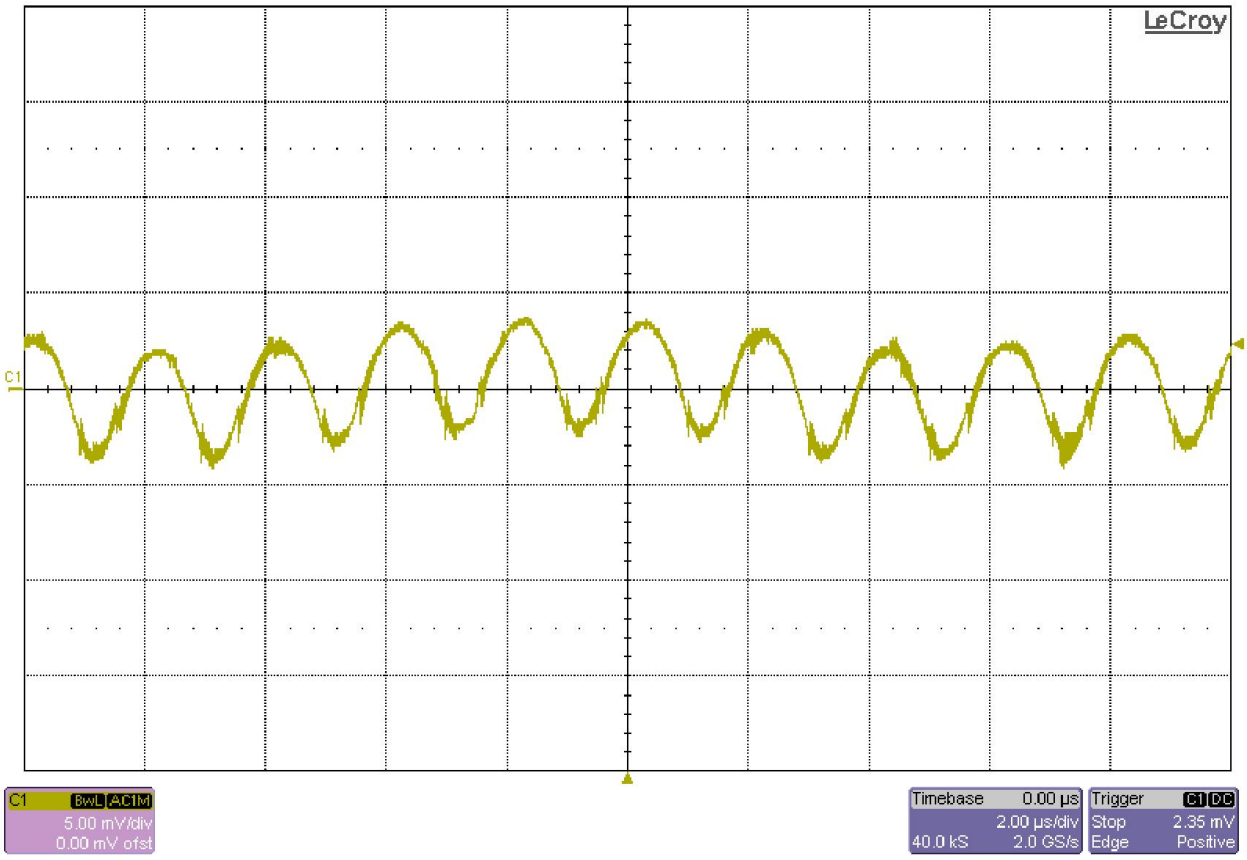


Figure 27. VIN = 12V, VCCO_PSIO Output Ripple @ IOUT = 500mA

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.

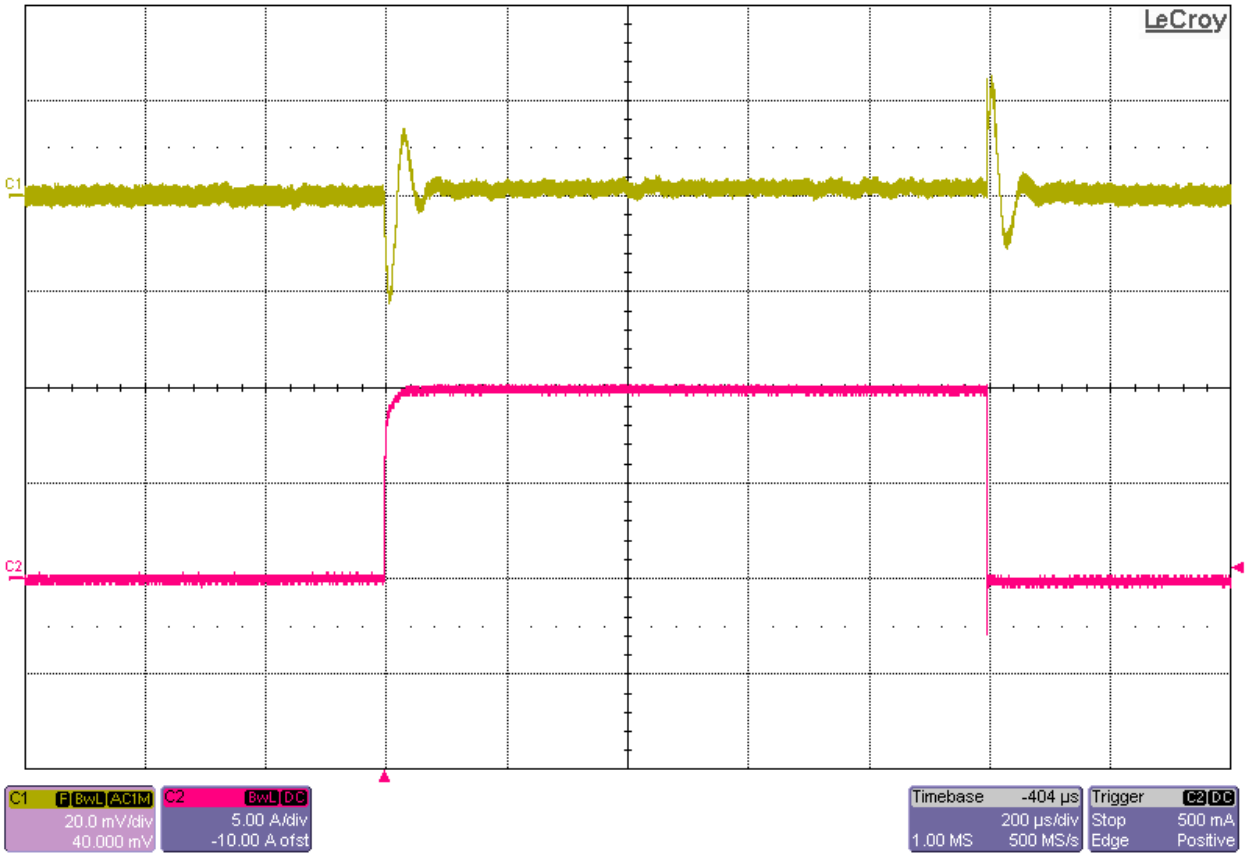


Figure 28. VIN = 12V, VCCINT Load Transient

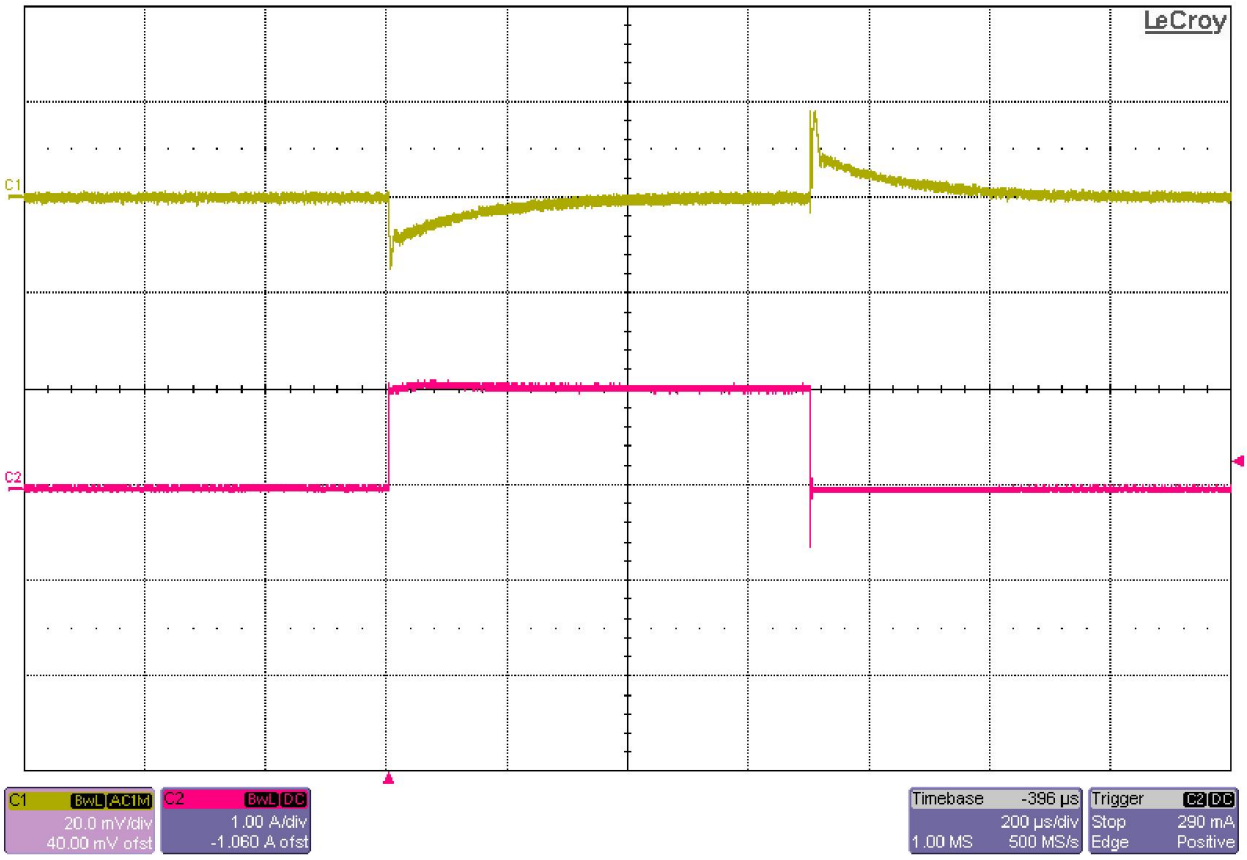


Figure 29. VIN = 12V, MGTAVCC Load Transient

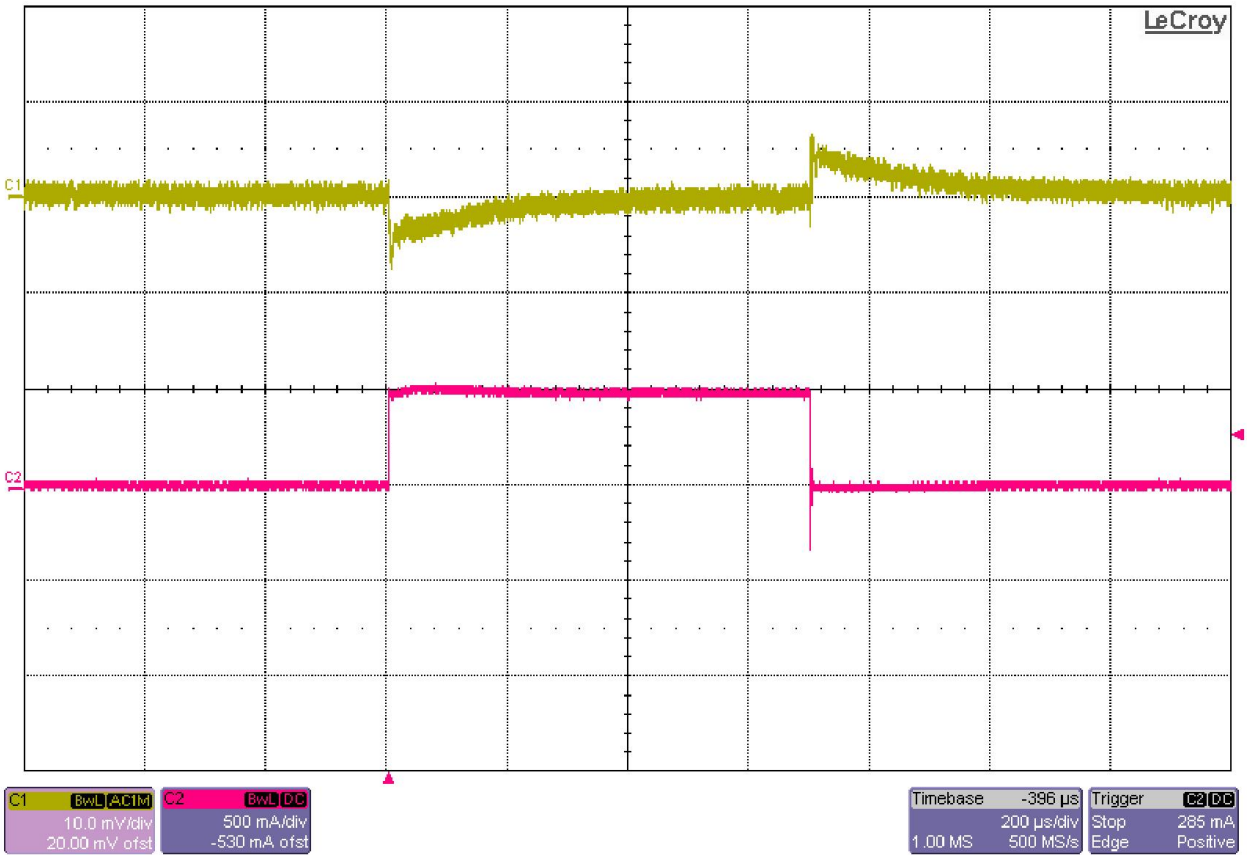


Figure 30. VIN = 12V, MGTAVTT Load Transient

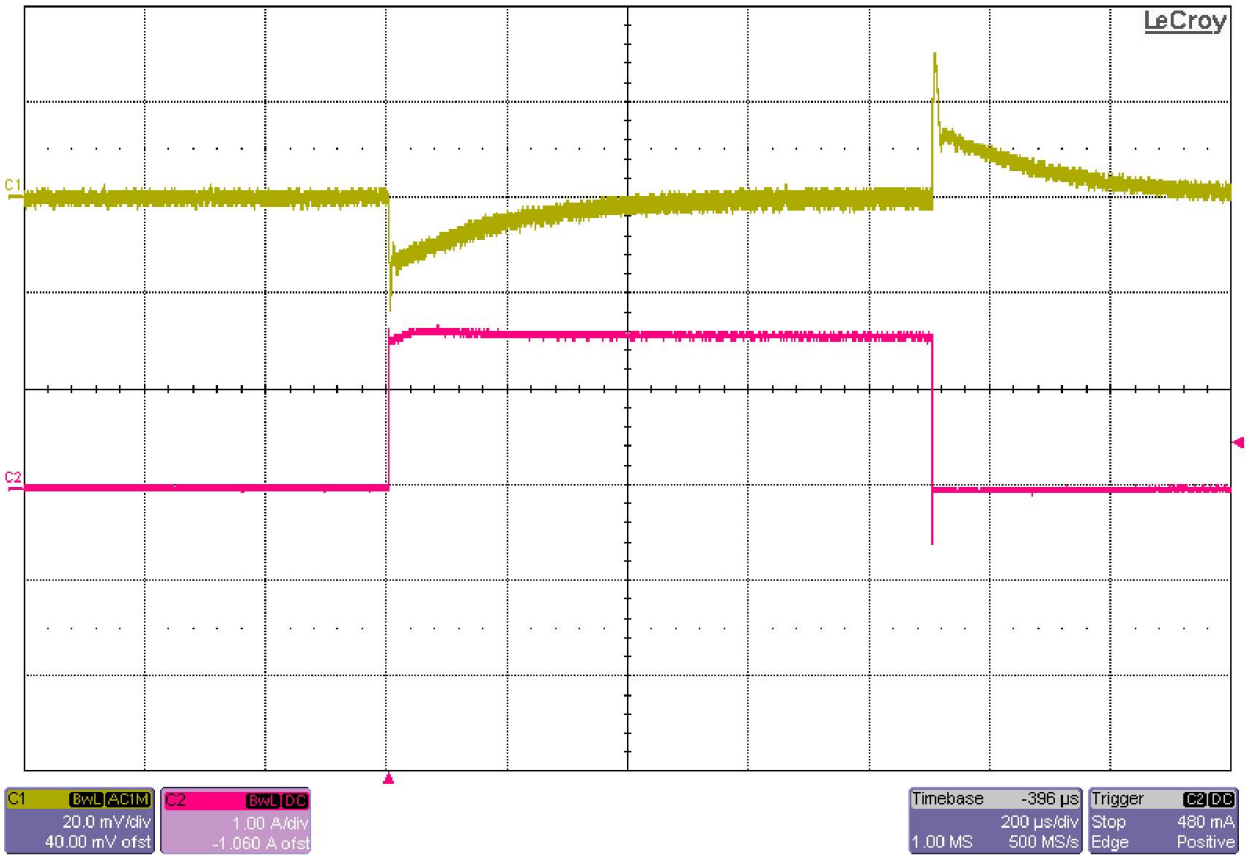


Figure 31. VIN = 12V, VCCAUX Load Transient

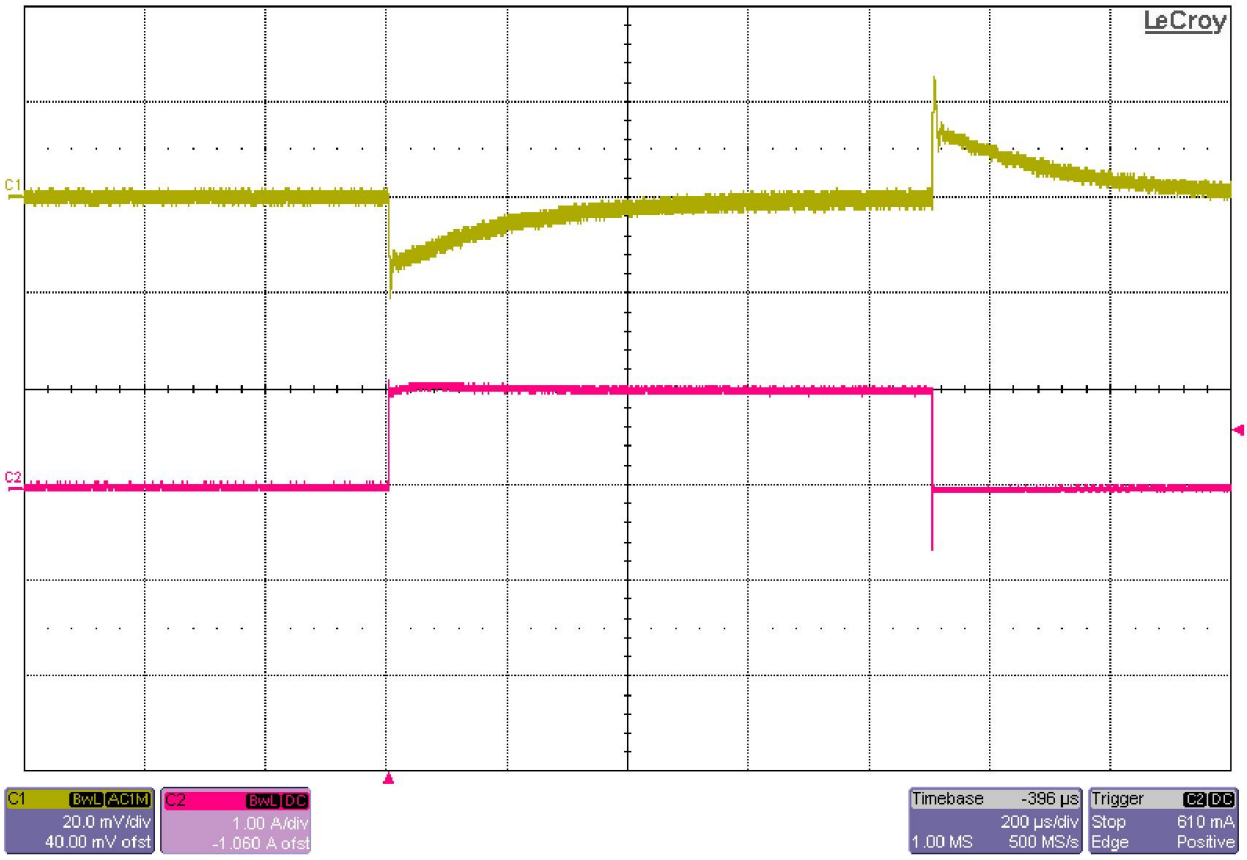


Figure 32. VIN = 12V, VCCO_PSDDR Load Transient

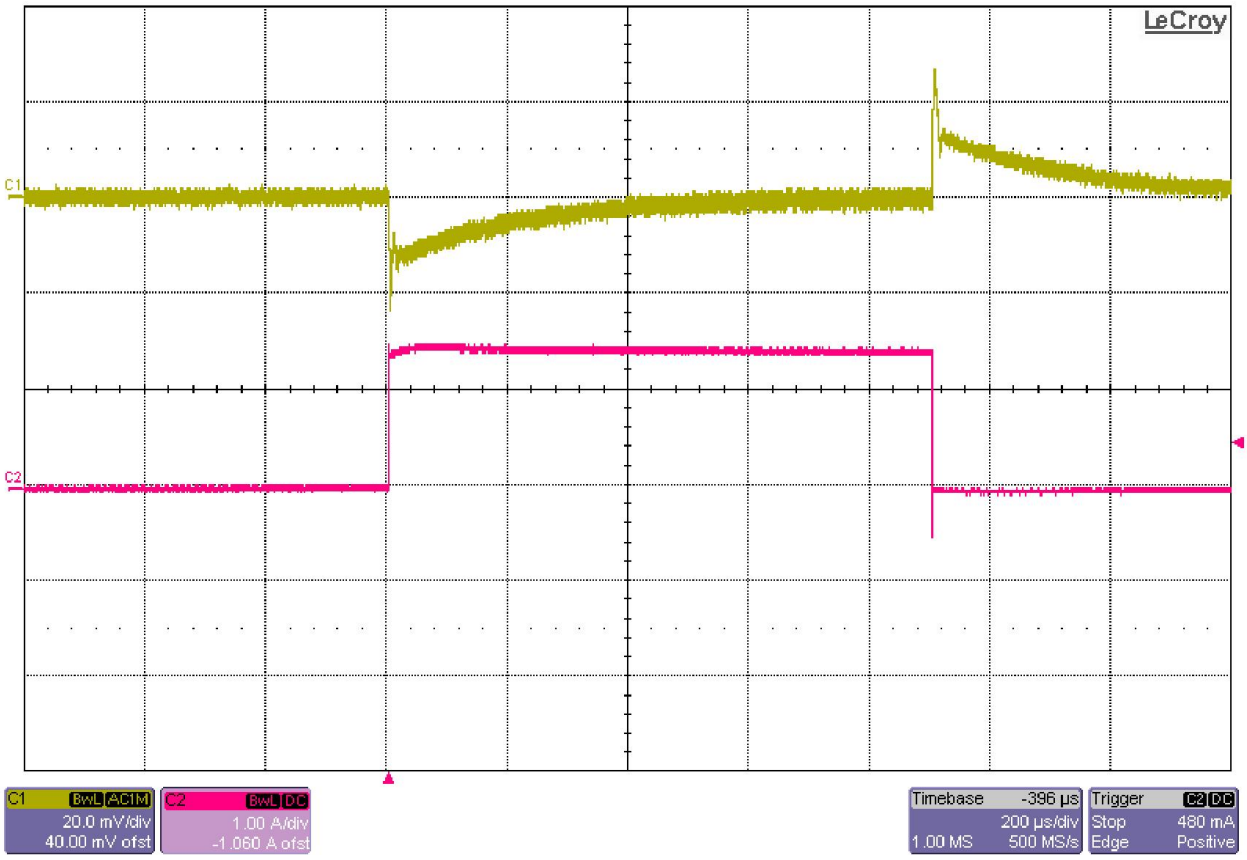


Figure 33. VIN = 12V, MGTVCCAUX Load Transient

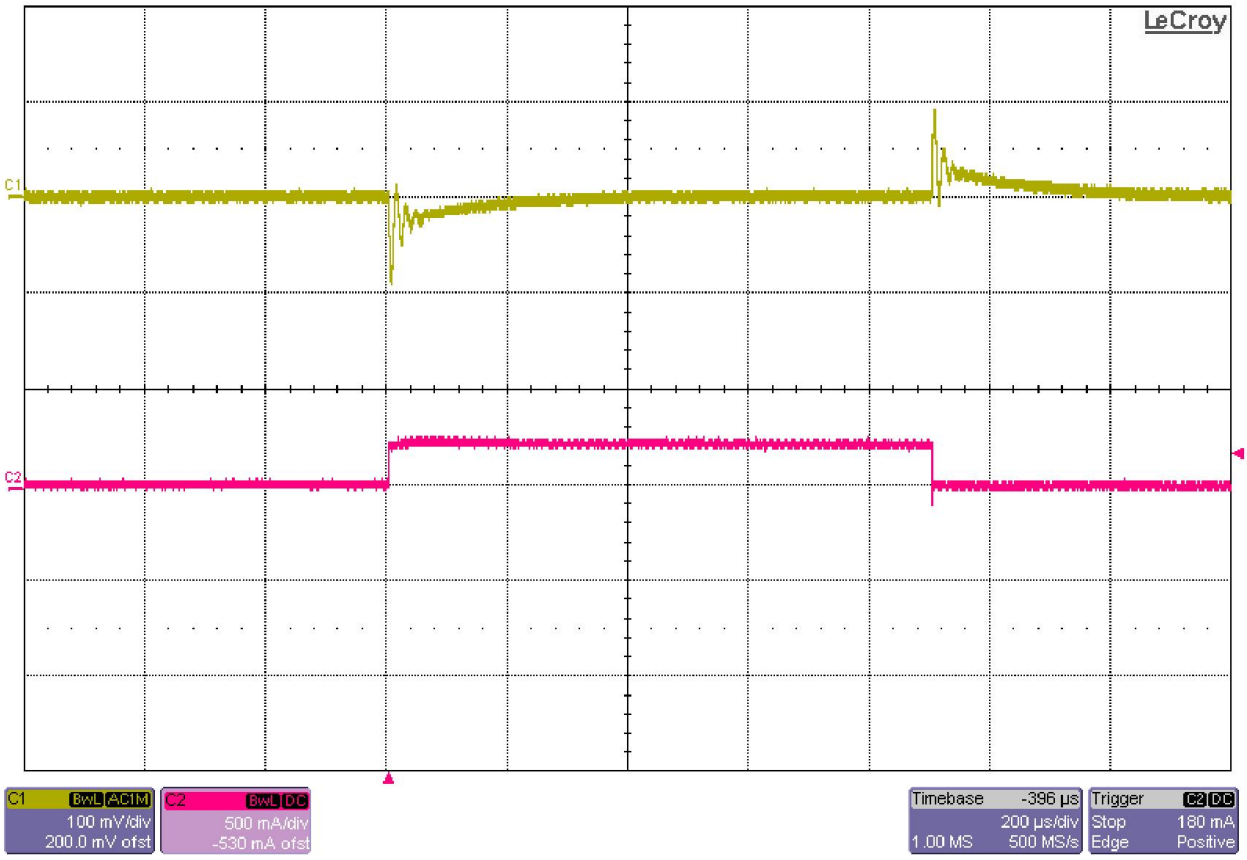


Figure 34. VIN = 12V, VCCO_PSIO Load Transient

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 unless otherwise noted. The input voltage is 12V.

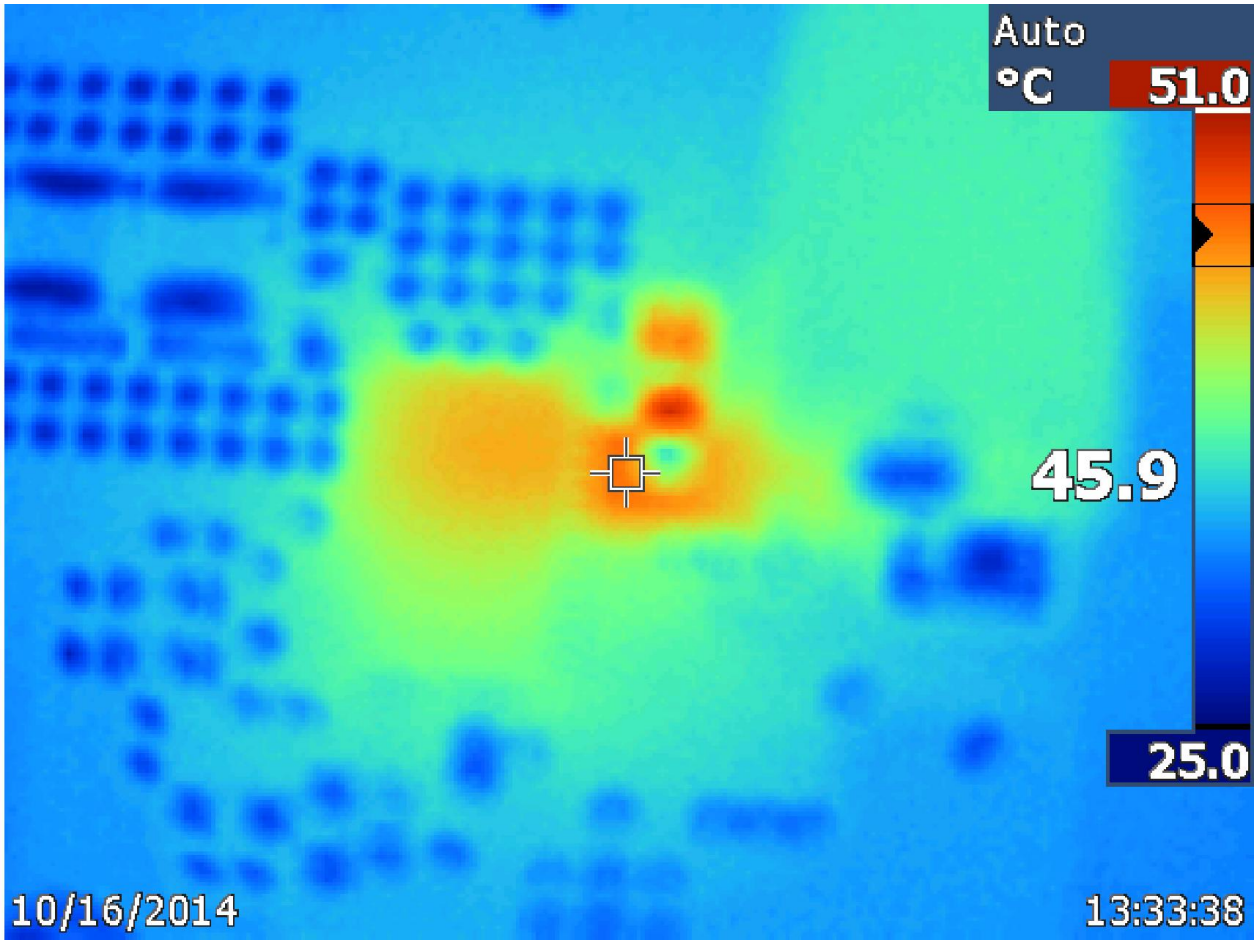


Figure 35. VIN = 12V, VCCINT Thermal Image @ Full Load

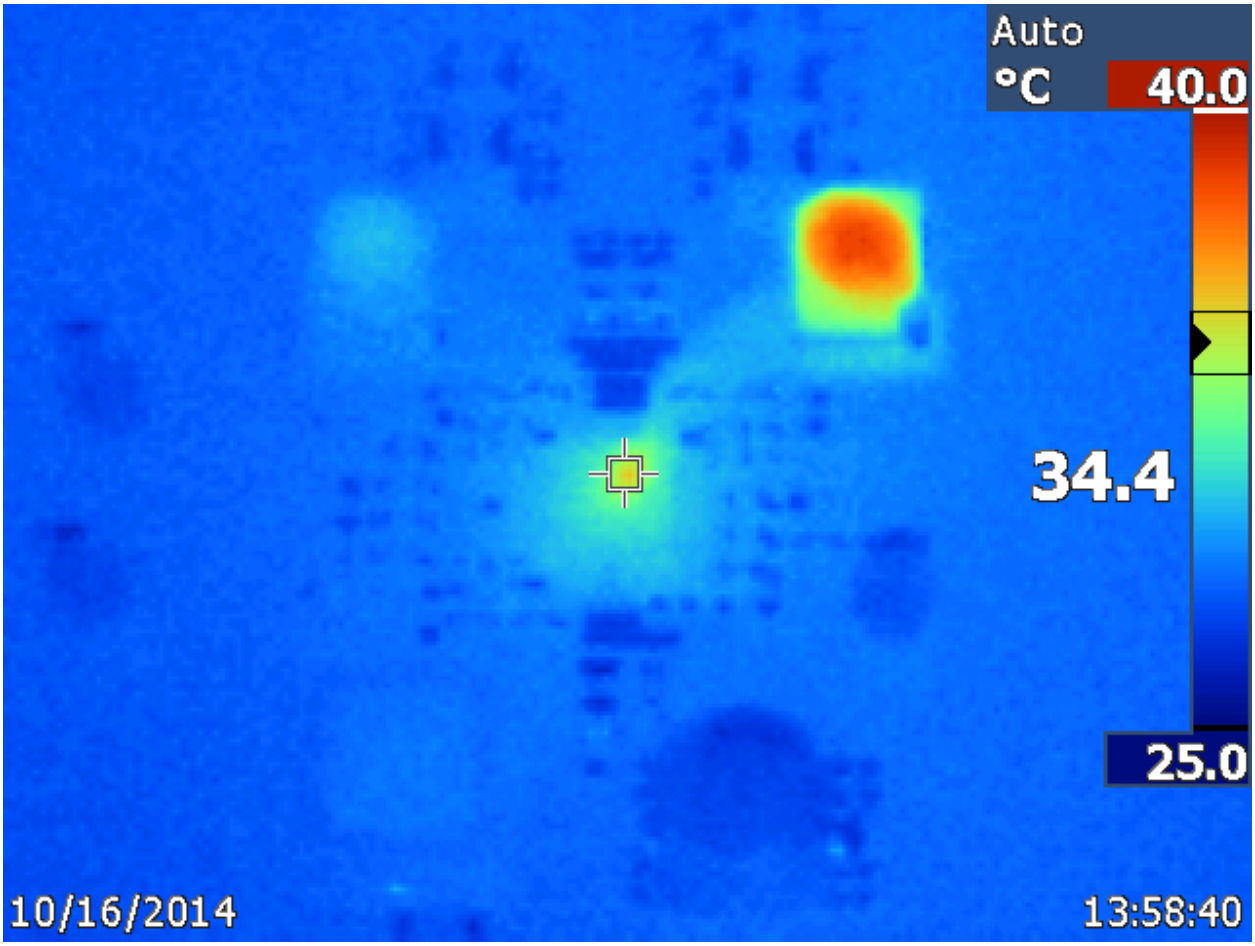


Figure 36. VIN = 12V, MGTAVCC Thermal Image @ Full Load

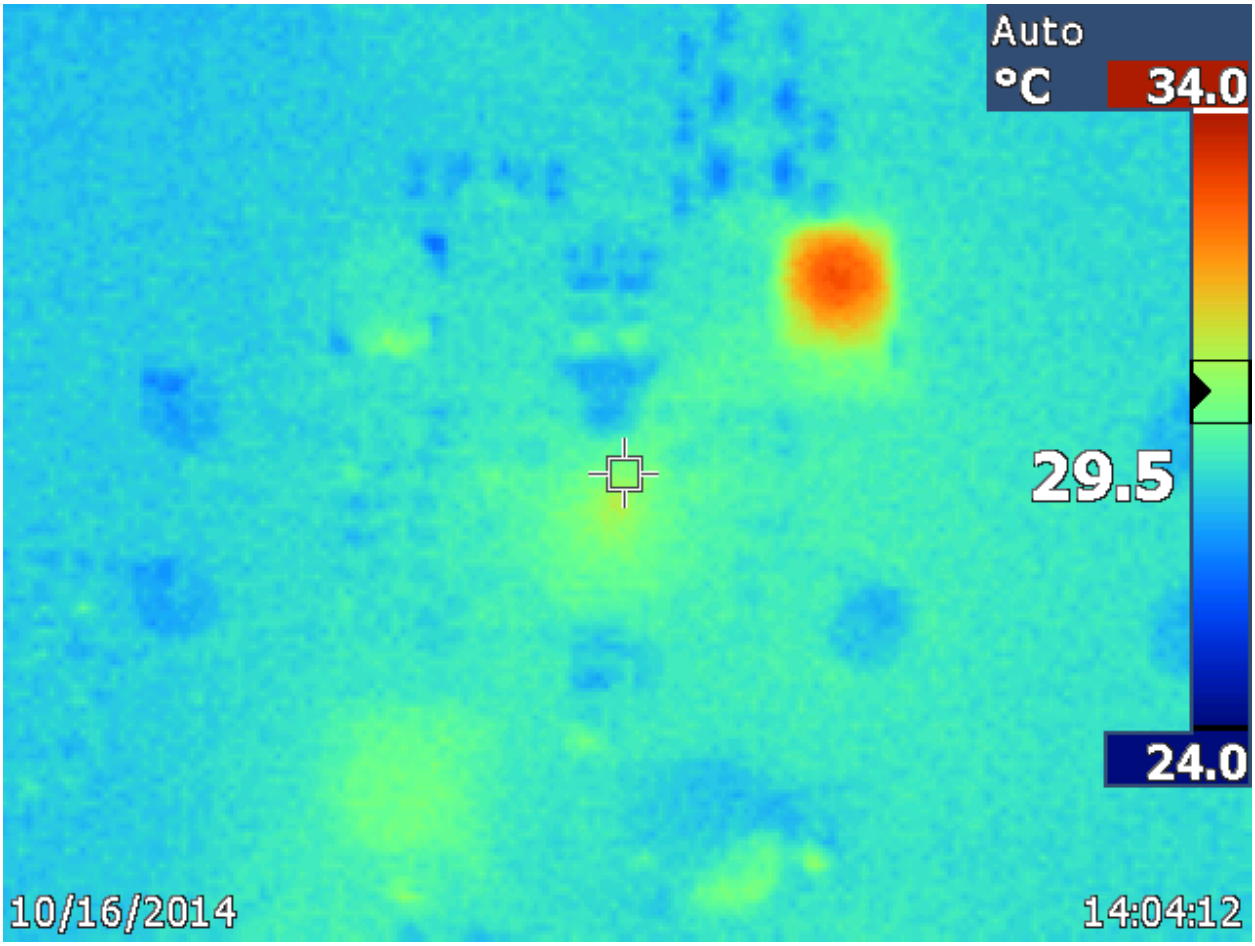


Figure 37. VIN = 12V, MGTAVTT Thermal Image @ Full Load

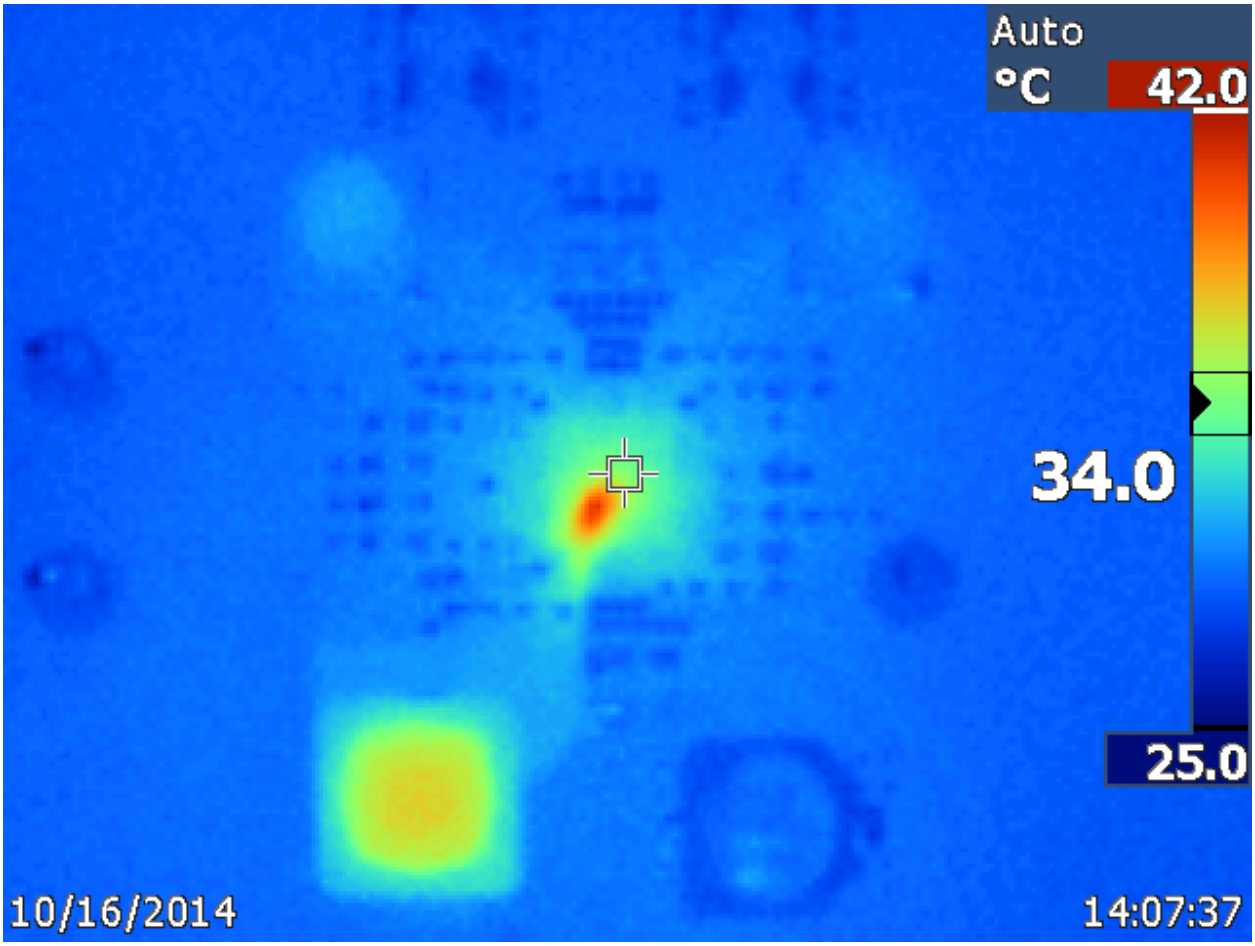


Figure 38. VIN = 12V, VCCAUX Thermal Image @ Full Load

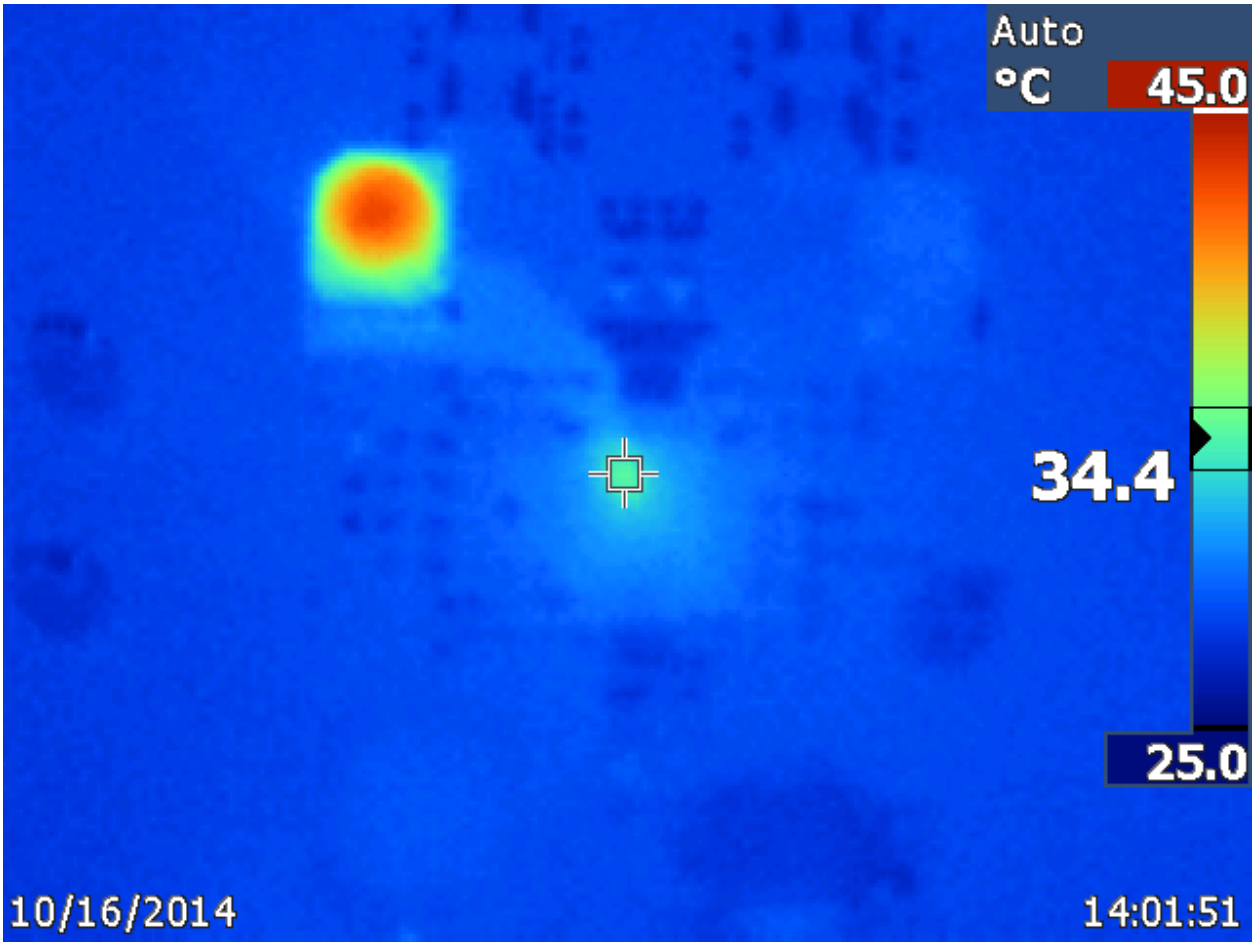


Figure 39. VIN = 12V, VCCO_PSDDR Thermal Image @ Full Load

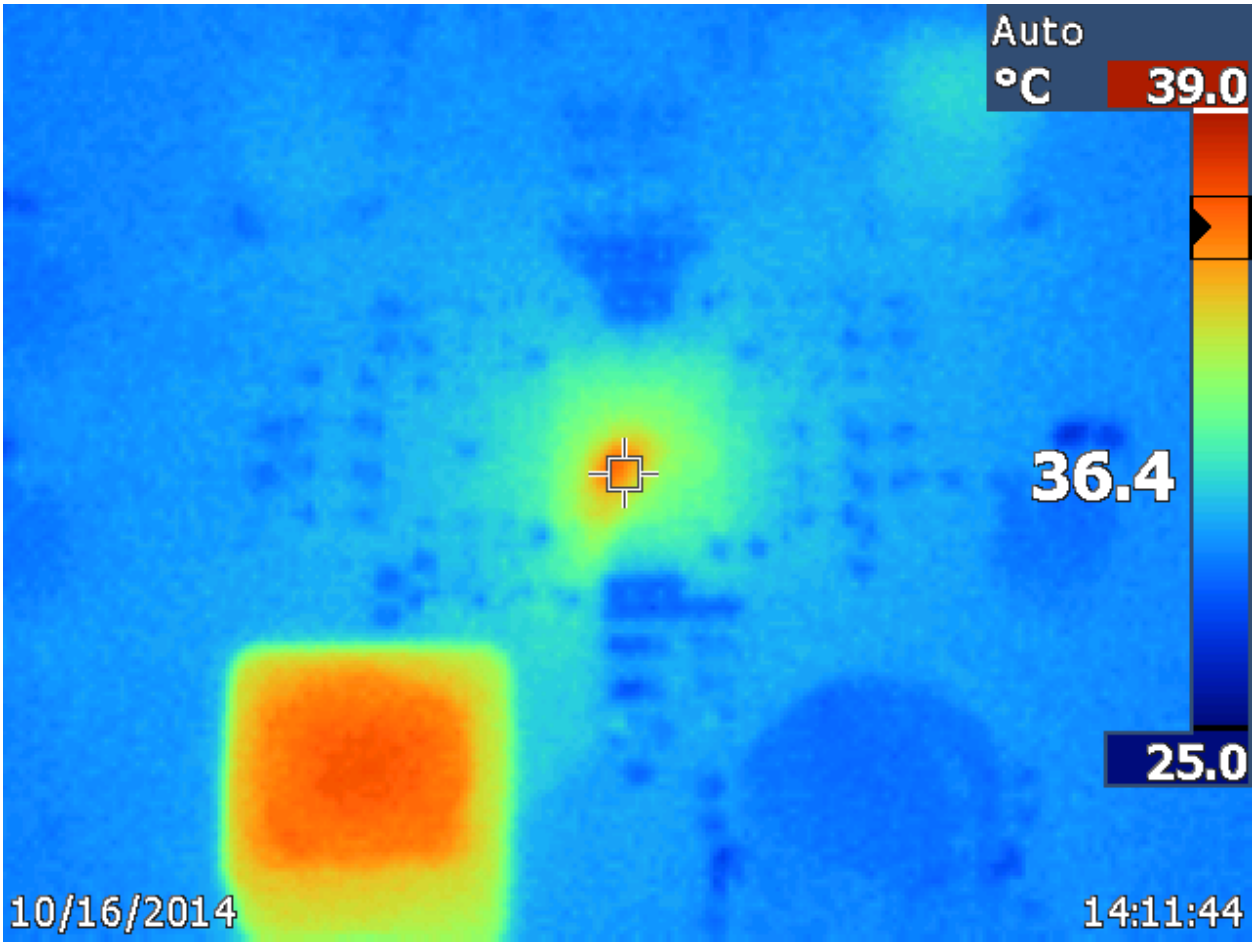


Figure 40. VIN = 12V, MGTVCCAUX Thermal Image @ Full Load

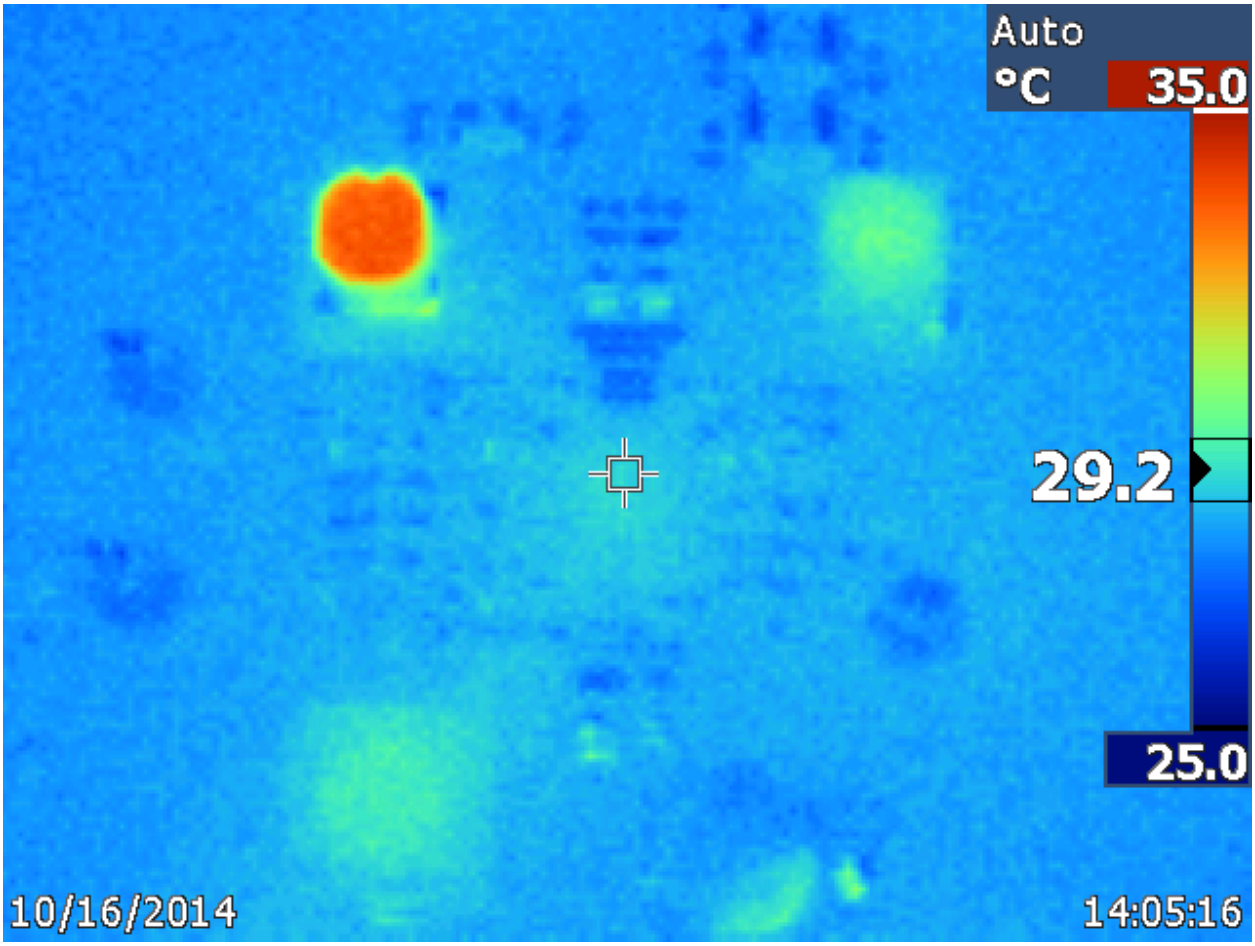


Figure 41. VIN = 12V, VCCO_PSIO Thermal Image @ Full Load

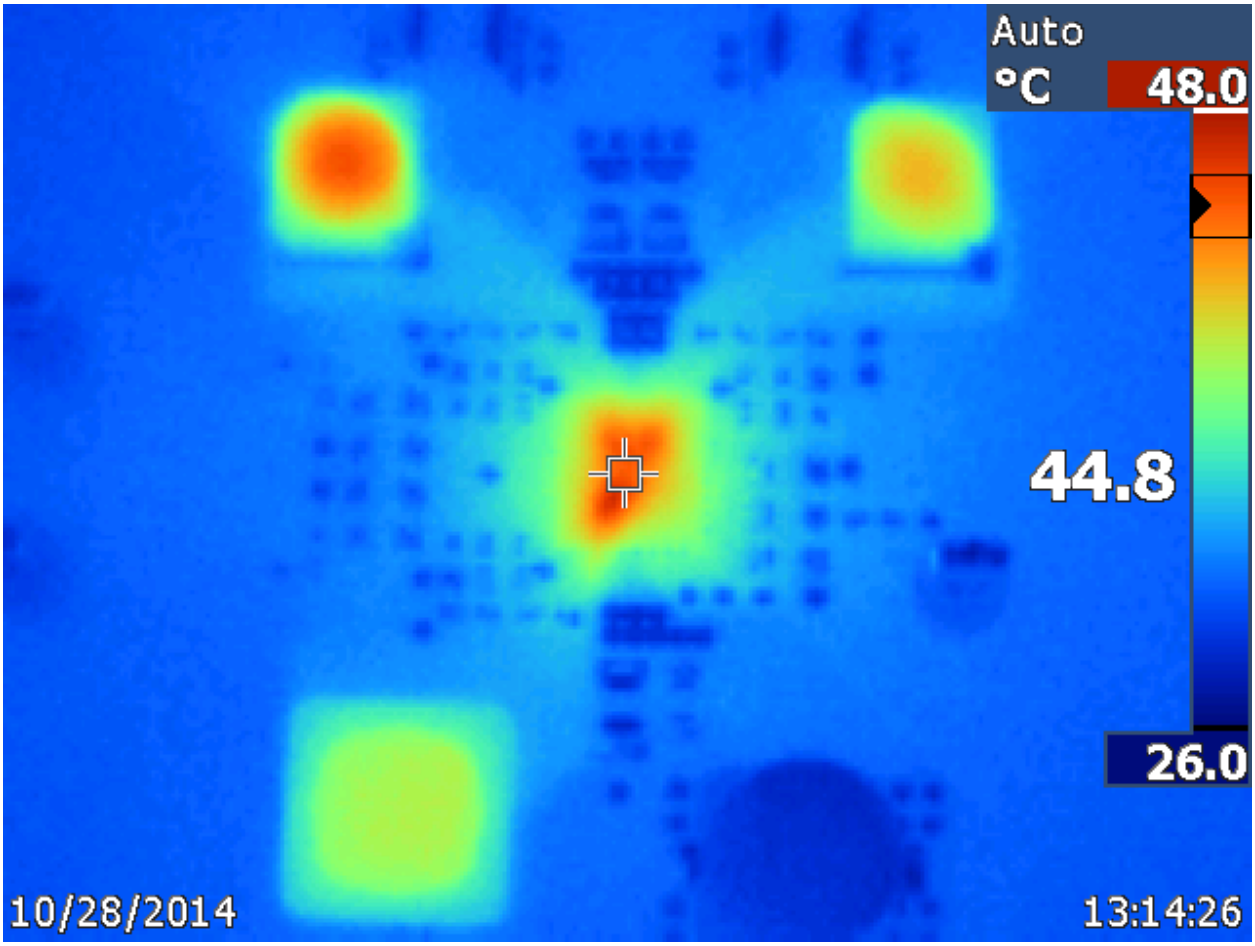


Figure 42. VIN = 12V,
VCCAUX (3A), MGTAVCC (2A), VCCO_PSDDR (2A) Thermal Image @ Full Load

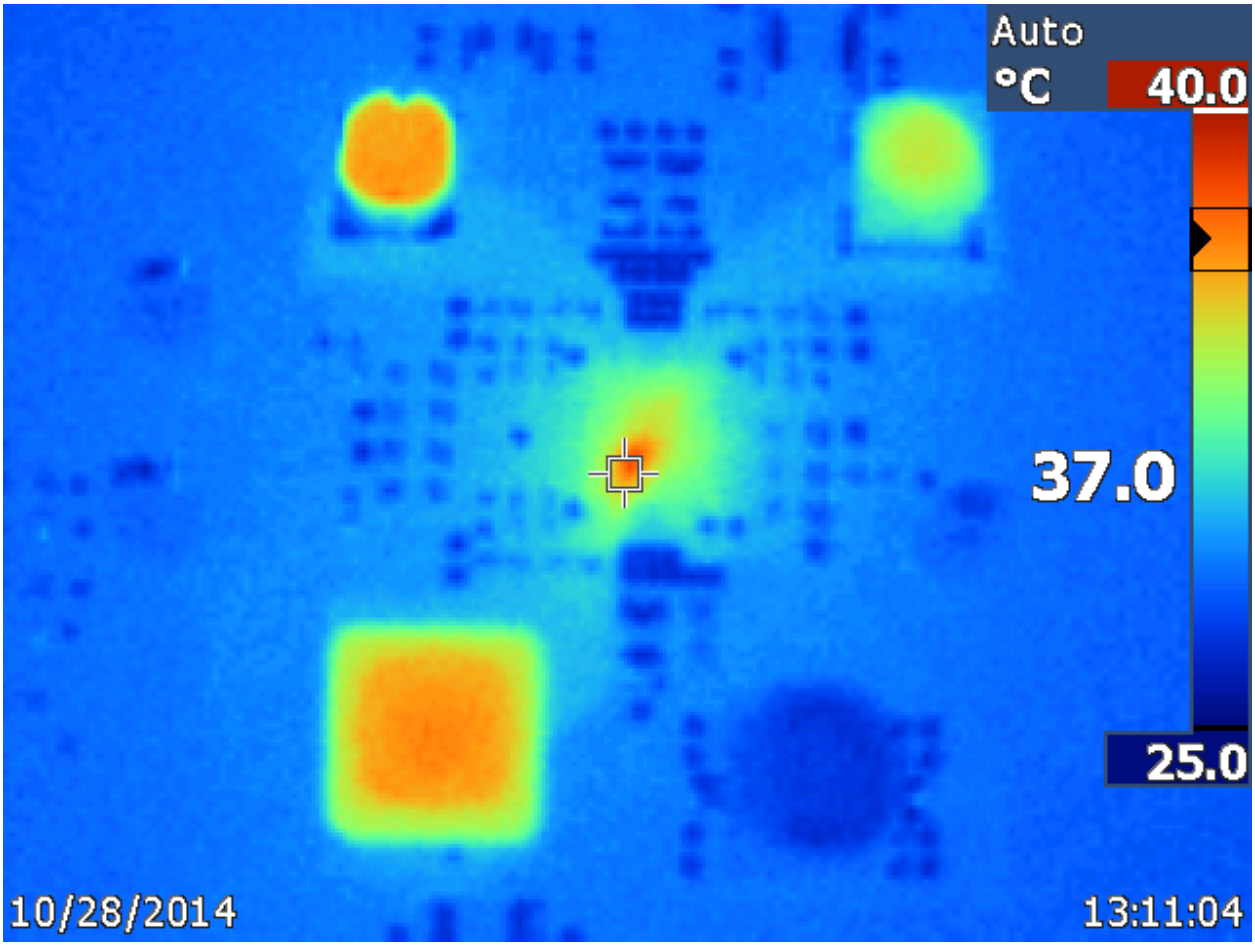


Figure 43. VIN = 12V,
MGTVCCAUX (2.5A), MGTAVTT (1A), VCCO_PSIO (0.5A) Thermal Image @ Full Load

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