# Test Data
# For PMP20808
# March 14, 2017

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## 1. Design Specifications

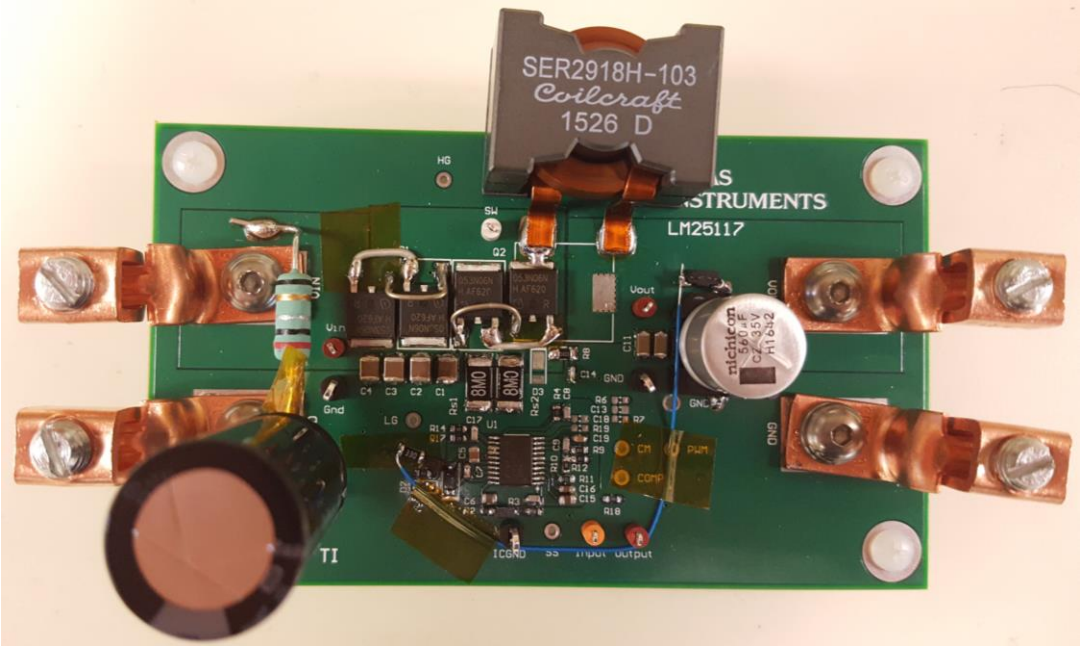
| | |
|---|---|
| **Vin Minimum** | **36VDC** |
| **Vin Nominal** | **38VDC** |
| **Vin Maximum** | **40VDC** |
| **Vout** | **25VDC** |
| **Iout** | **18A Max.** |
| **Switching Frequency** | **225KHz** |

## 2. Circuit Description

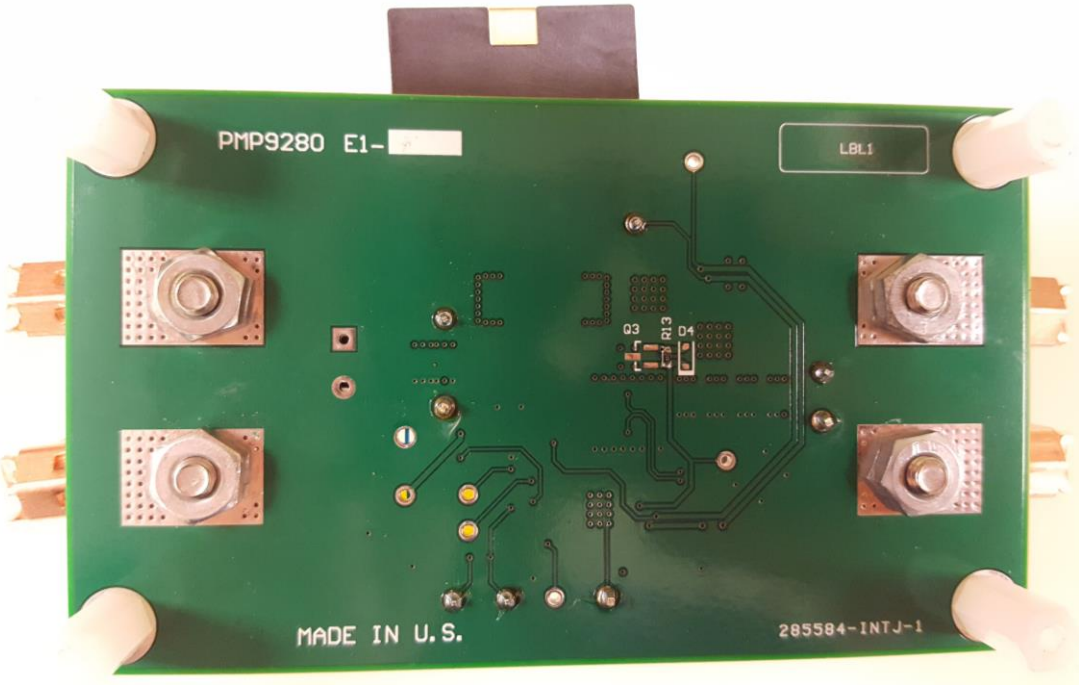
PMP20808 is a Single-Phase Synchronous Buck Converter using the LM5117 controller IC. The design accepts an input voltage of 36Vin to 40Vin (38Vin Nominal) and provides an output of 25Vout capable of supplying 18A of continuous current to the load. The design was built on the PMP9280 PCB, which was modified to the PMP20808 design configuration and requirements. The PCB is a 4-layer board with 1oz Copper on all layers.

## 3. PMP20808 Board Photos

**Board Dimensions: 2.36” x 4.05”**

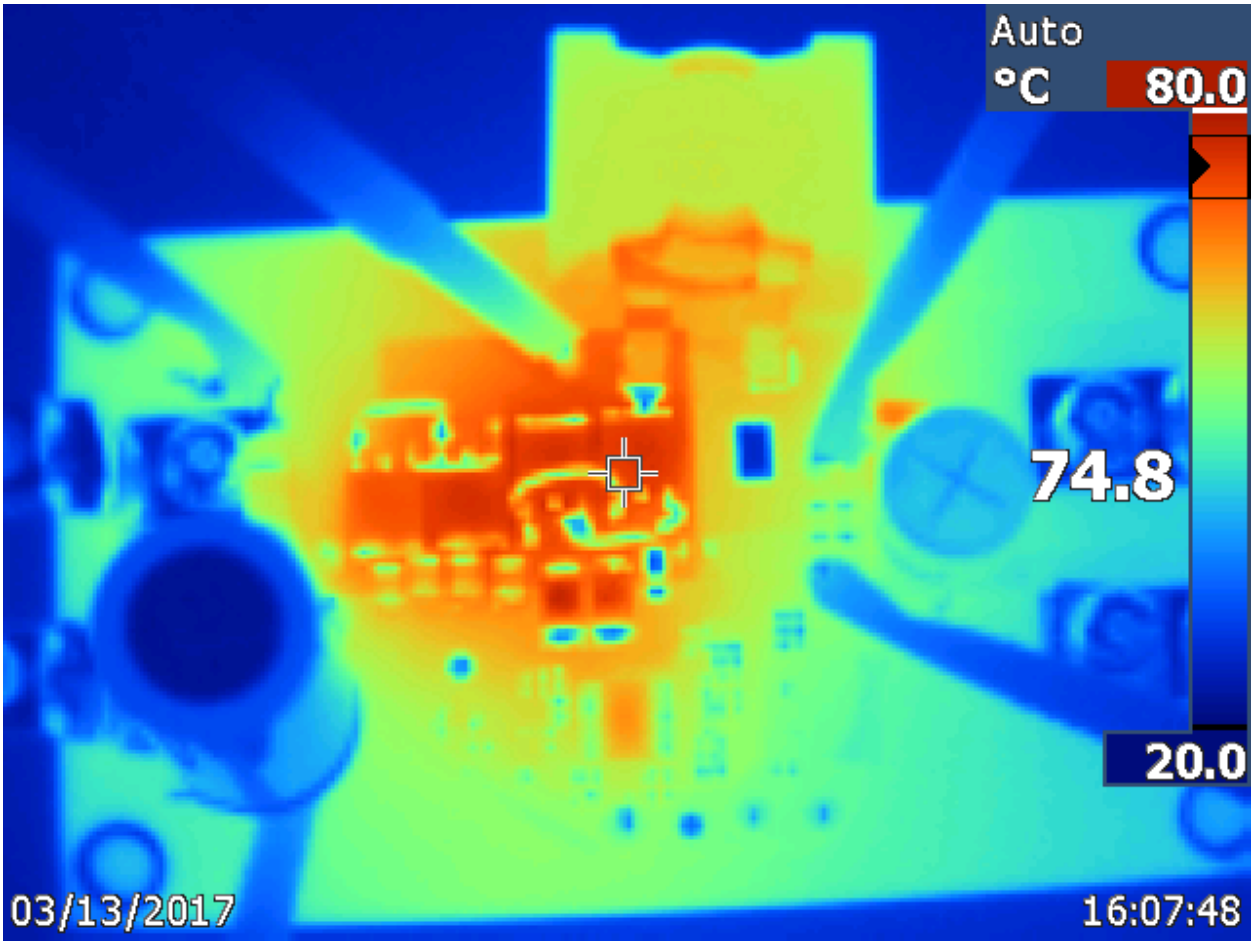



**Board Photo (Top)**




**Board Photo (Bottom)**

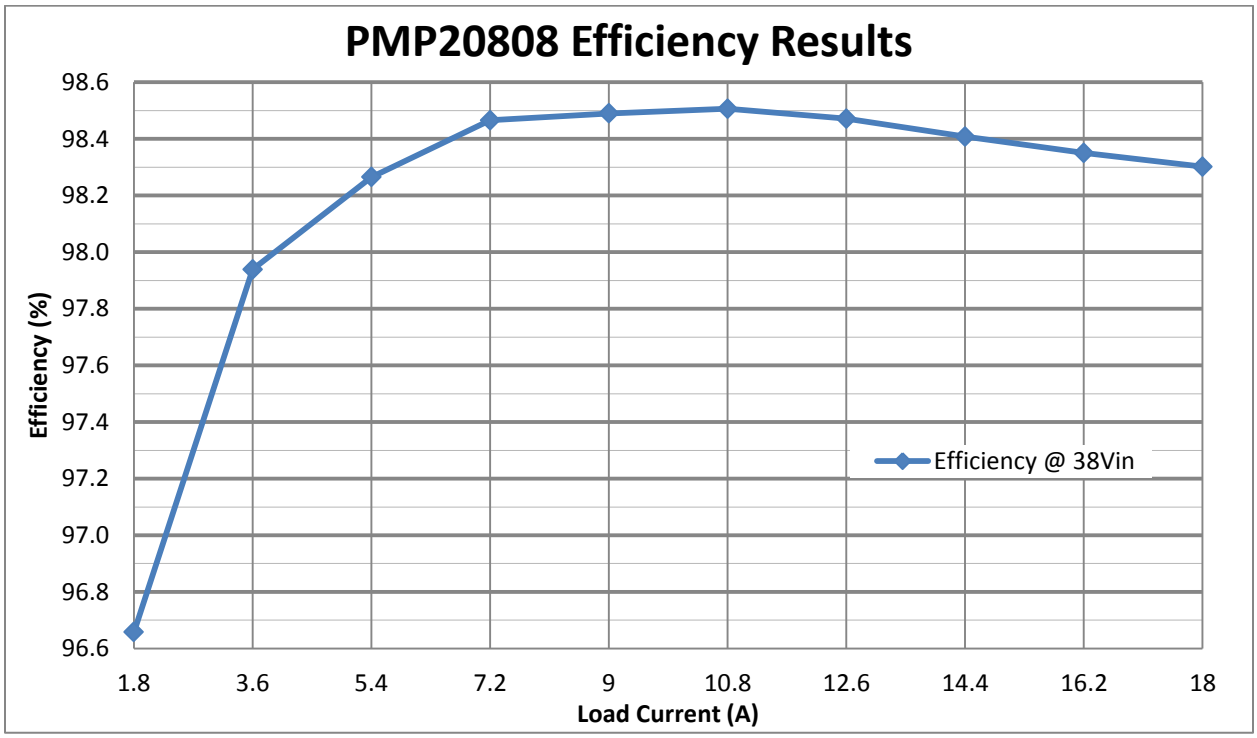
## 4. Thermal Data




**IR thermal image taken at steady state with 38Vin and 18A load (no airflow; ambient at room temp.)**

# 5. Efficiency

## 5.1 Efficiency Chart

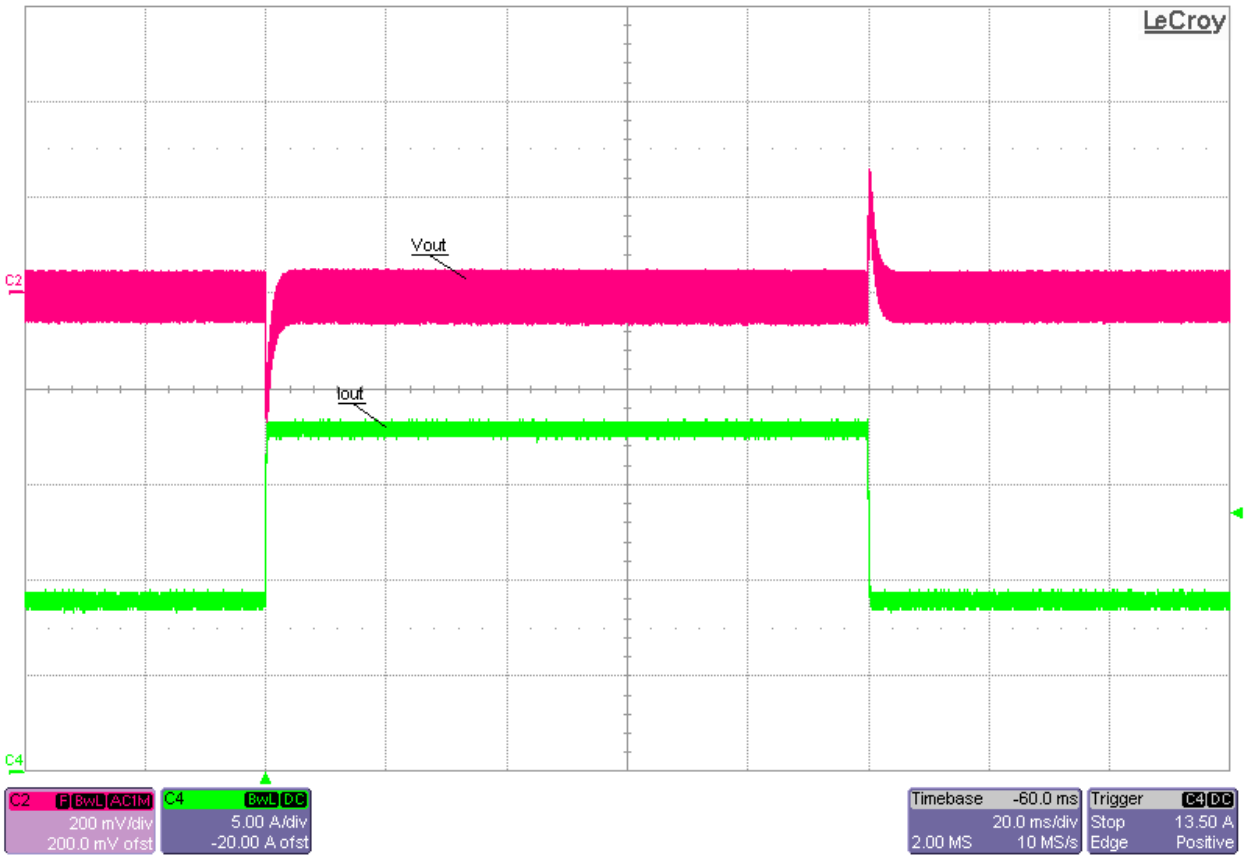



## 5.2 Efficiency Data

| Vin (V) | Iin (A) | Vout (V) | Iout (A) | Pin (W) | Pout (W) | Ploss (W) | Efficiency (%) |
|---|---|---|---|---|---|---|---|
| 38 | 1.223 | 24.956 | 1.8 | 46.47 | 44.92 | 1.55 | 96.7 |
| 38 | 2.414 | 24.956 | 3.6 | 91.73 | 89.84 | 1.89 | 97.9 |
| 38 | 3.609 | 24.956 | 5.4 | 137.14 | 134.76 | 2.38 | 98.3 |
| 38 | 4.802 | 24.955 | 7.2 | 182.48 | 179.68 | 2.80 | 98.5 |
| 38 | 6.001 | 24.955 | 9 | 228.04 | 224.60 | 3.44 | 98.5 |
| 38 | 7.2 | 24.955 | 10.8 | 273.60 | 269.51 | 4.09 | 98.5 |
| 38 | 8.403 | 24.955 | 12.6 | 319.31 | 314.43 | 4.88 | 98.5 |
| 38 | 9.61 | 24.956 | 14.4 | 365.18 | 359.37 | 5.81 | 98.4 |
| 38 | 10.818 | 24.957 | 16.2 | 411.08 | 404.30 | 6.78 | 98.4 |
| 38 | 12.026 | 24.957 | 18 | 456.99 | 449.23 | 7.76 | 98.3 |

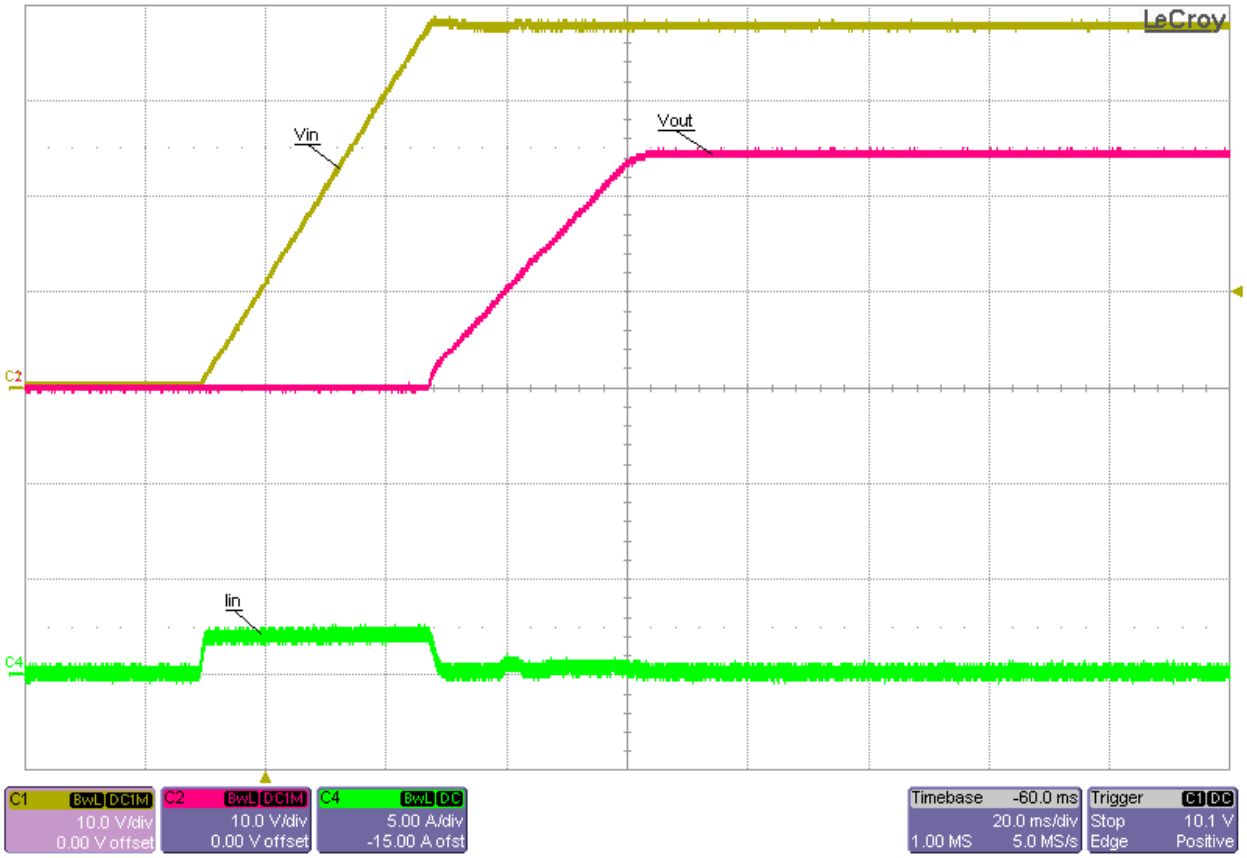
# 6 Waveforms

## 6.1 Load Transient Response

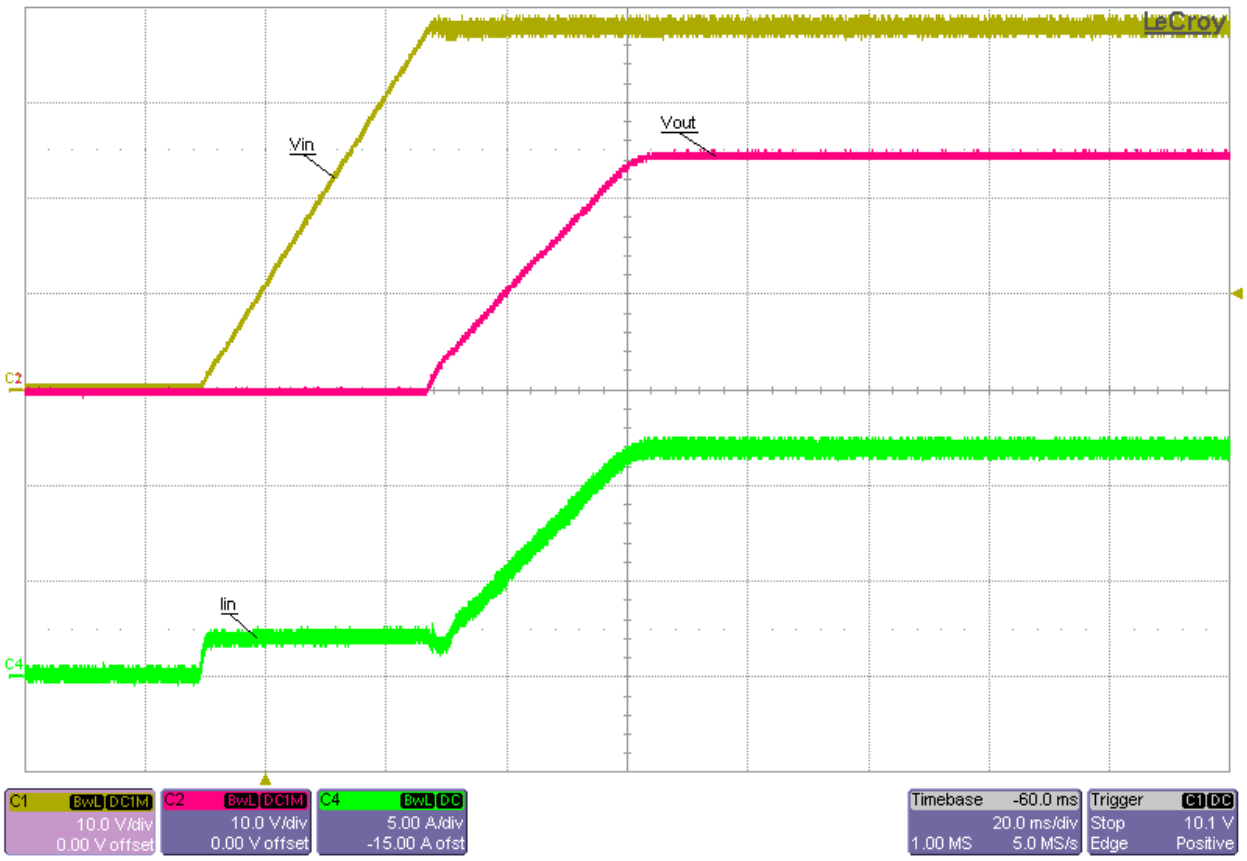



**Load Transient Response at 38Vin and 9A-to-18A (50%-to-100%) Load Step**

## 6.2 Startup

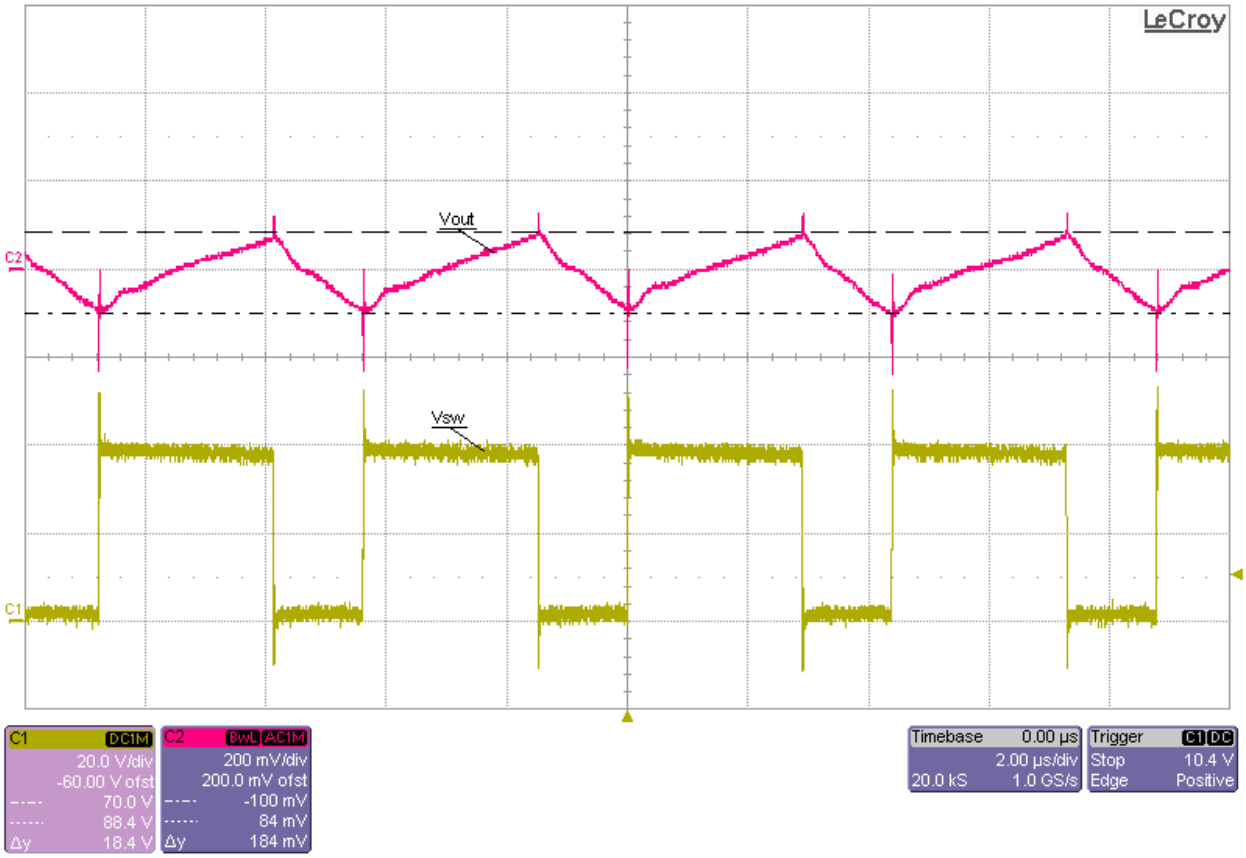



**Startup into No Load at 38Vin**



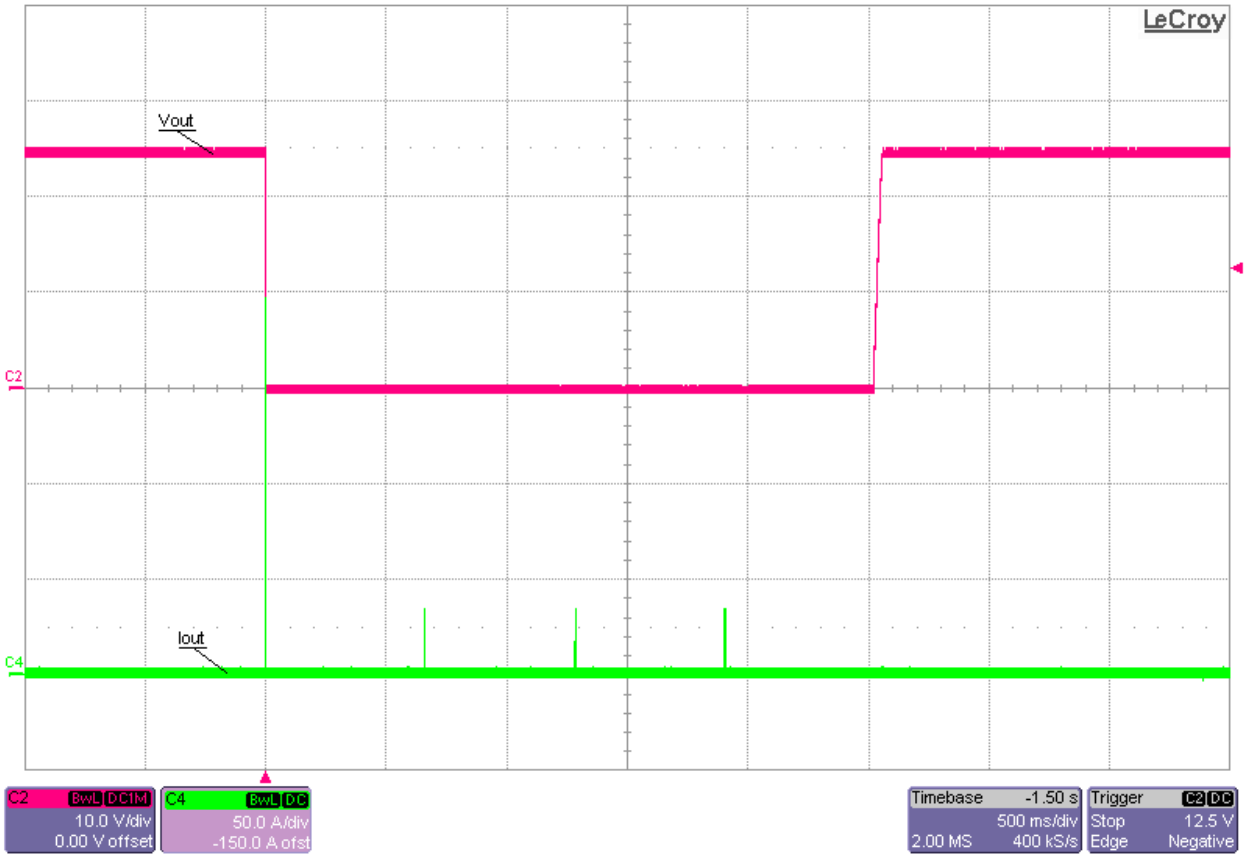

**Startup into 18A Constant-Current Load at 38Vin**

## 6.3 Output Voltage Ripple and Switch Node Voltage




**Switch Node Voltage and Output Voltage Ripple at 38Vin and 18A Load (Vripple ≈ 185mVp-p)**

## 6.4 Short Circuit




**Short Circuit Application and Recovery at 38Vin from/into No Load**

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