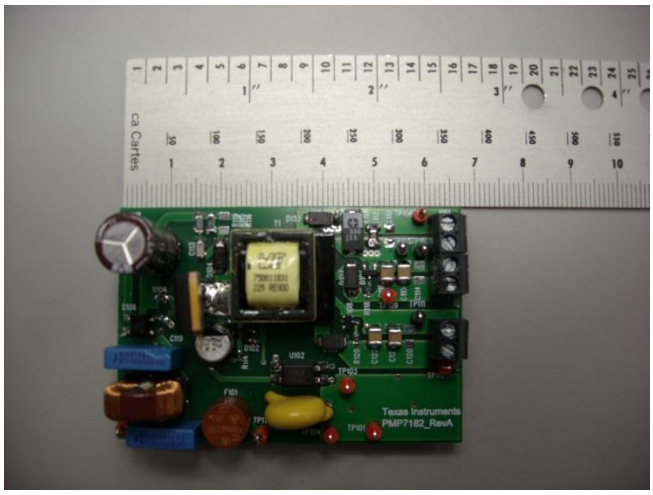
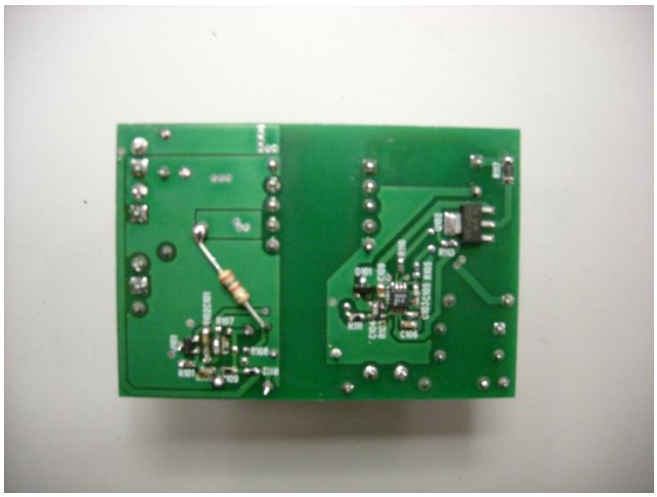
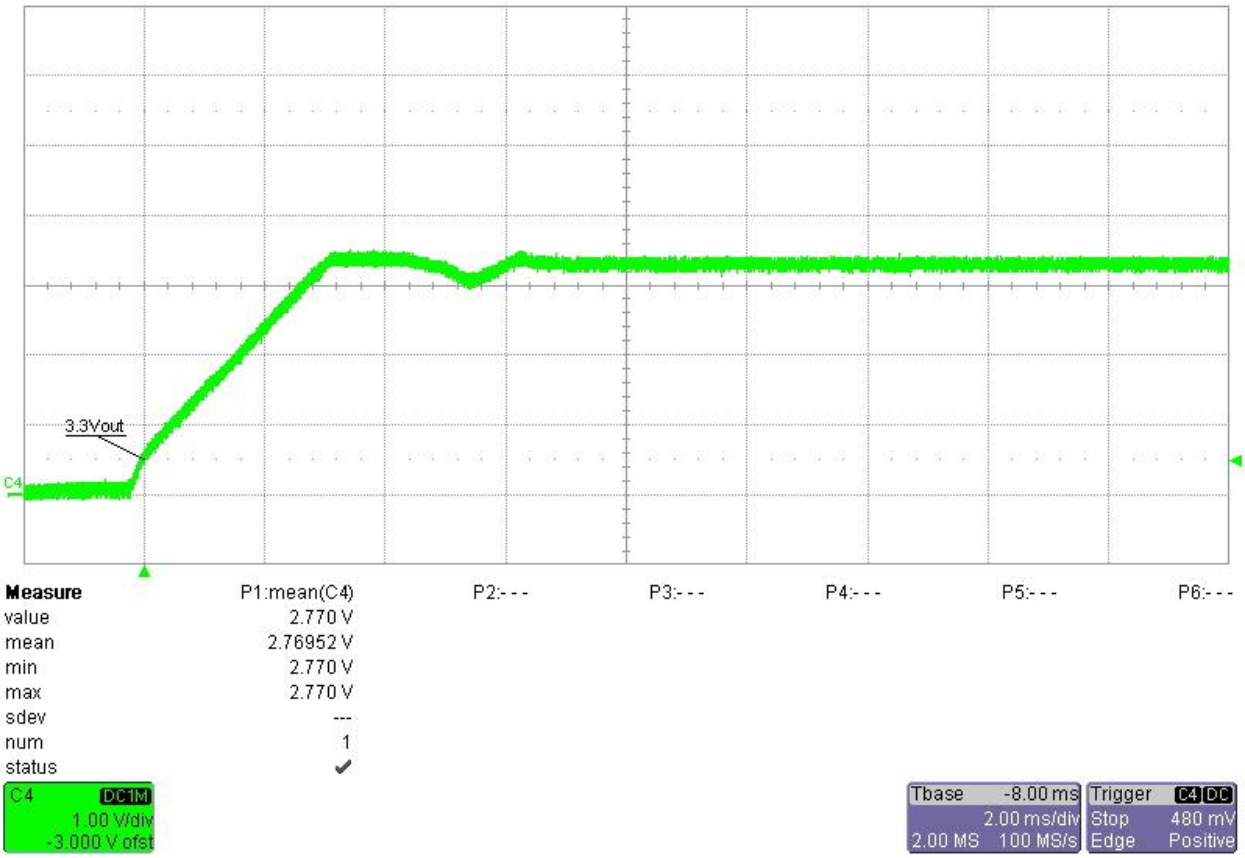


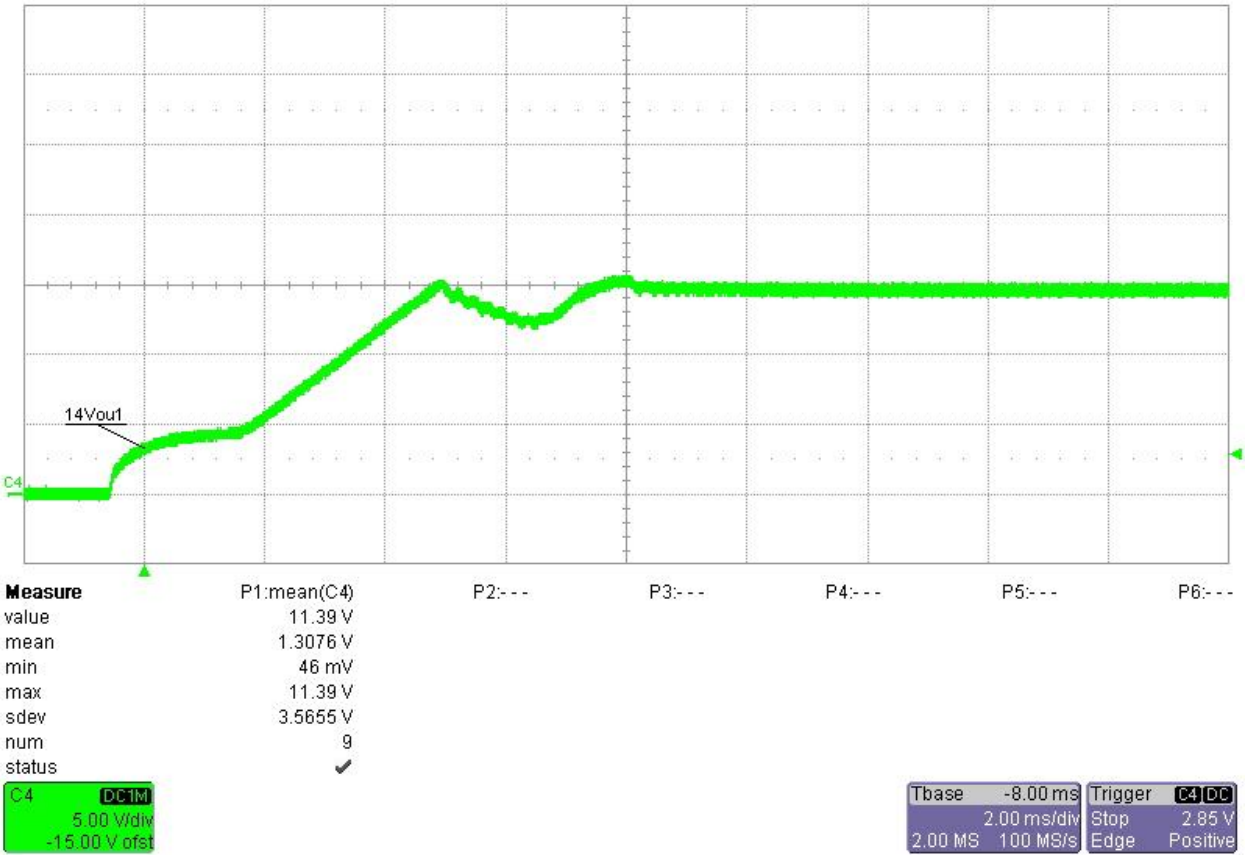


1 Startup

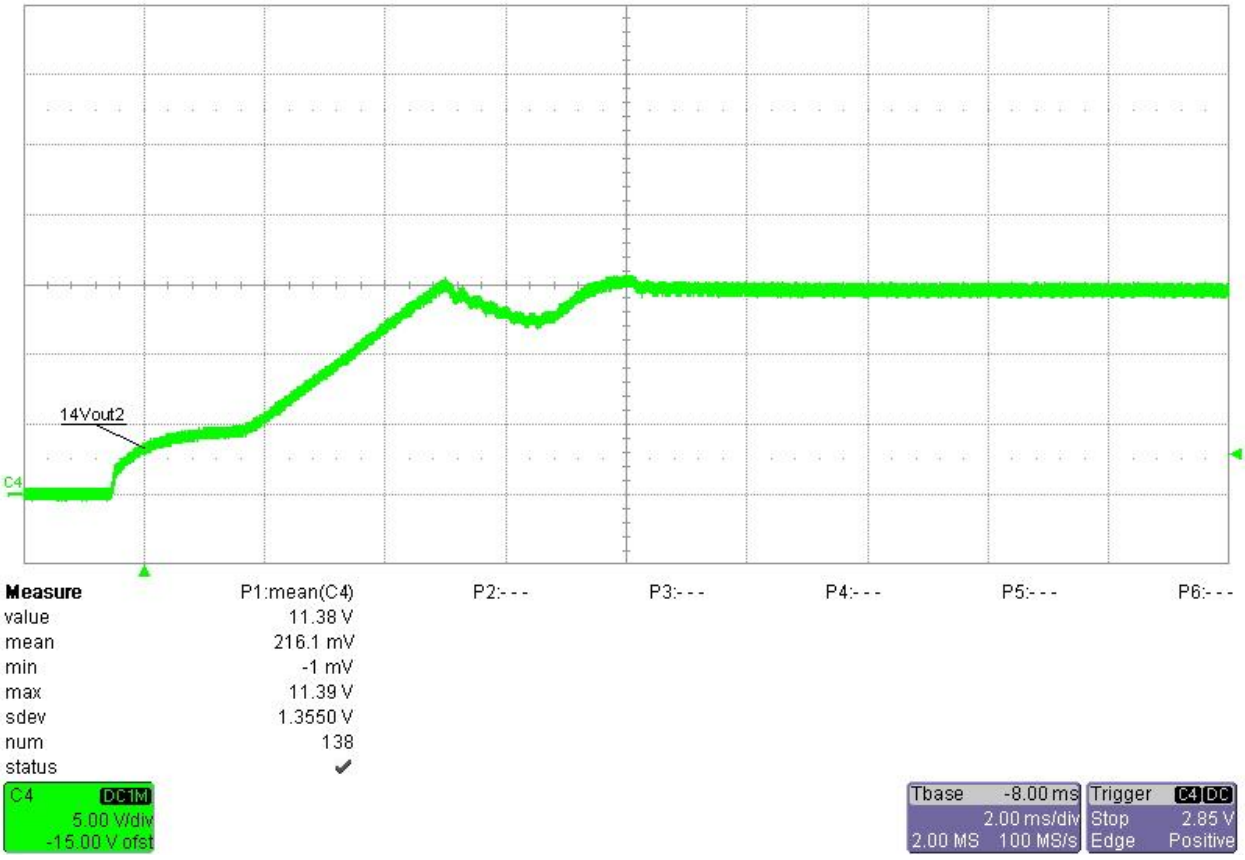
3.3V output
Input voltage = 325VDC
Load current = 0.2A



14V output 1
Input voltage = 325VDC
Load current = 0.1A

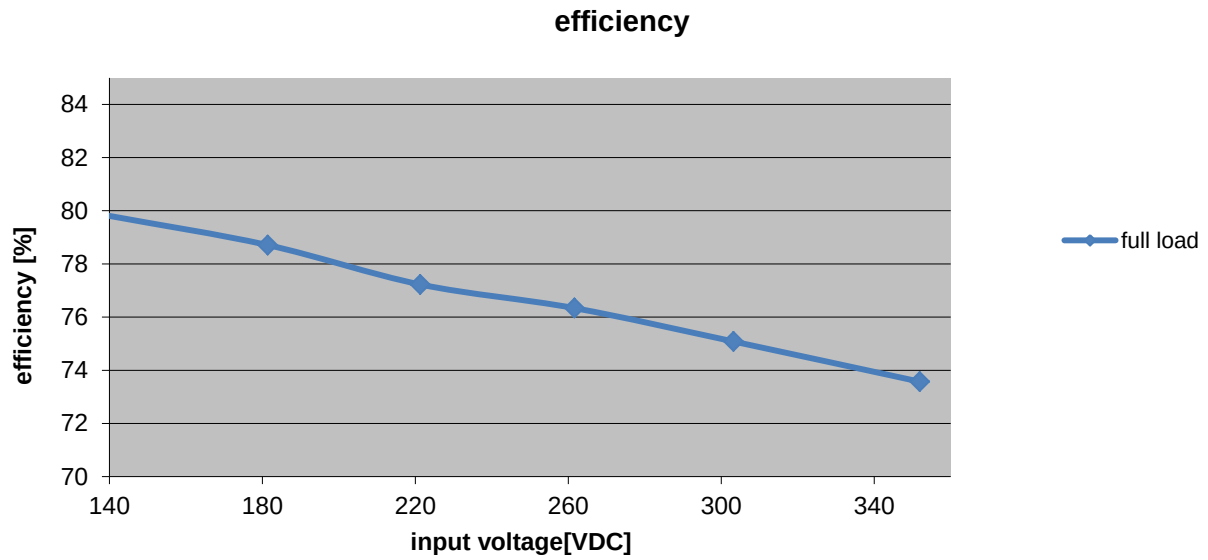


14V output 2
Input voltage = 325VDC
Load current = 0.1A



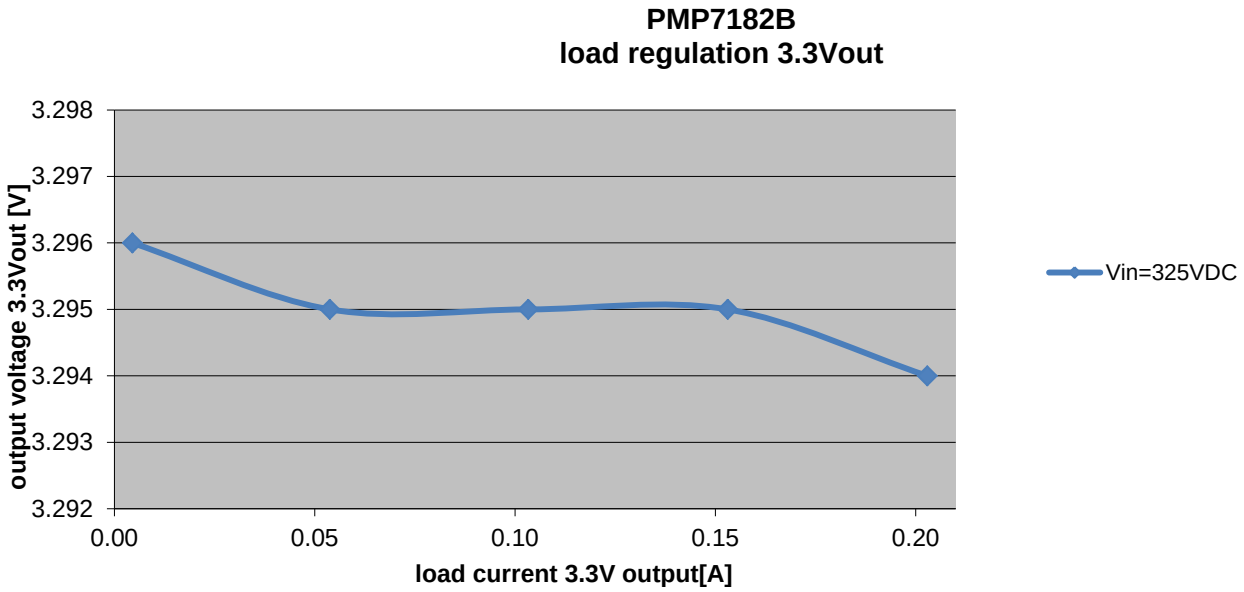
2 Efficiency

Efficiency for DC input voltage

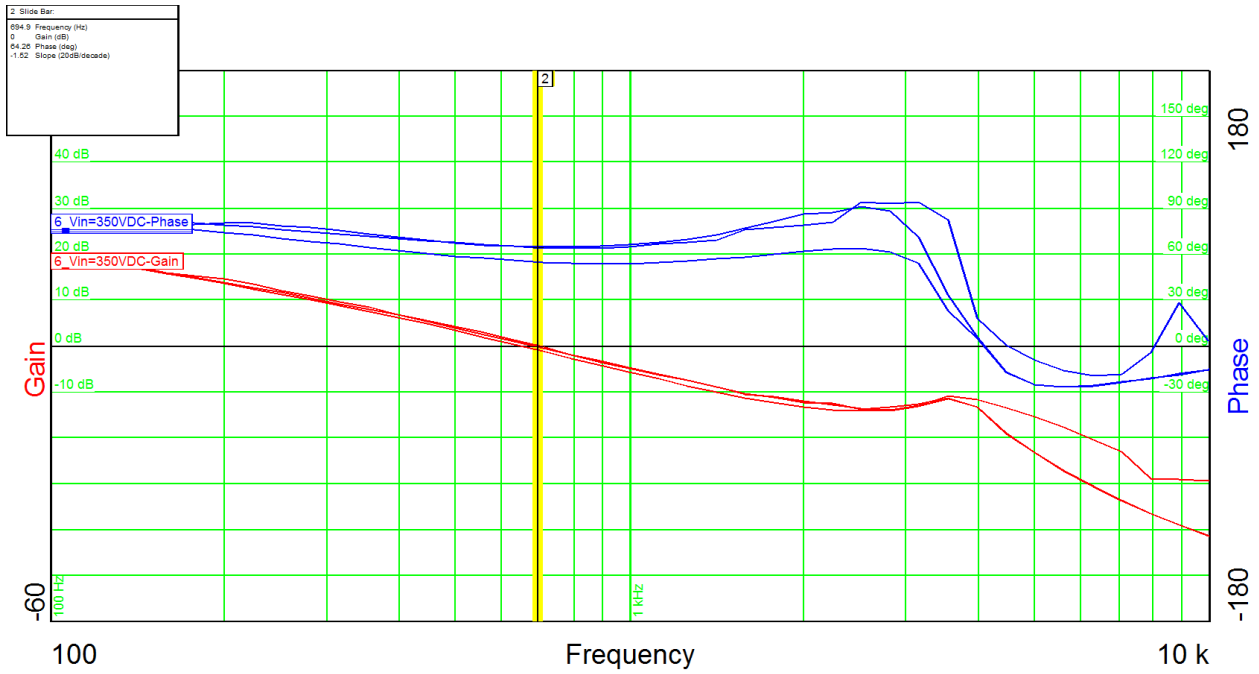


3 Load regulation 3.3V output

Load current 14Vout1 = 0.1A
Load current 14Vout2 = 0.1A



4 Control Loop Frequency Response



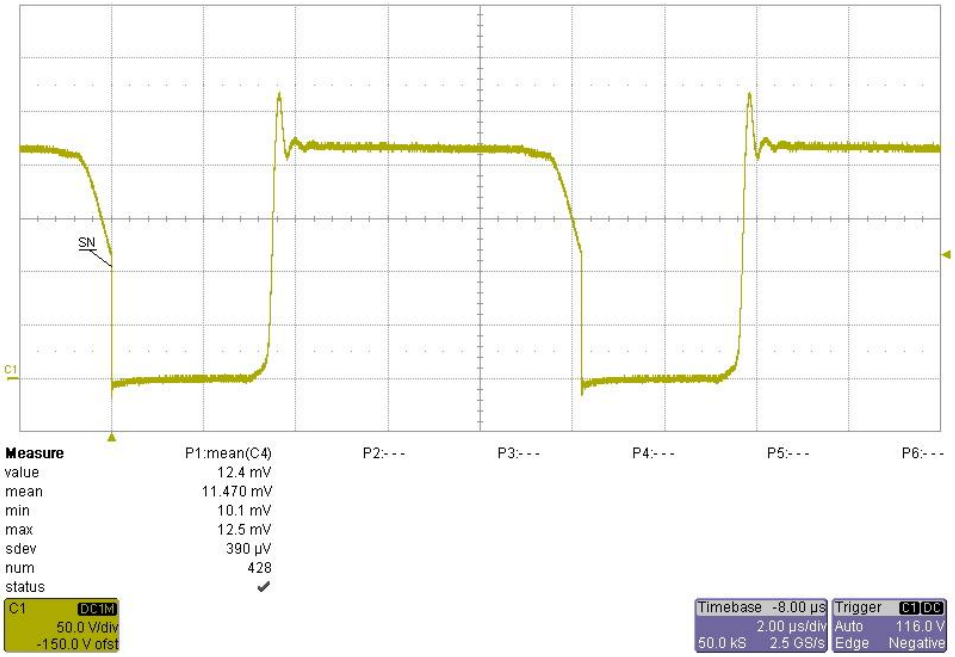
Input voltage = 140VDC
Phase margin = 56°
Bandwidth = 0.65 kHz

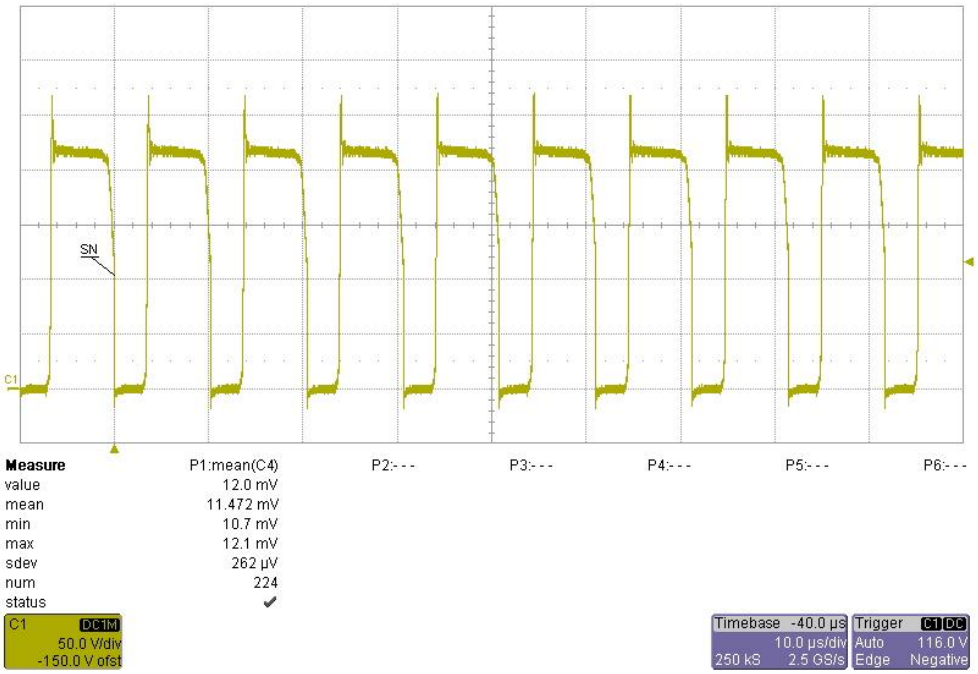
Input voltage = 240VDC
Phase margin = 64°
Bandwidth = 0.7 kHz

Input voltage = 350VDC
Phase margin = 65°
Bandwidth = 0.68 kHz

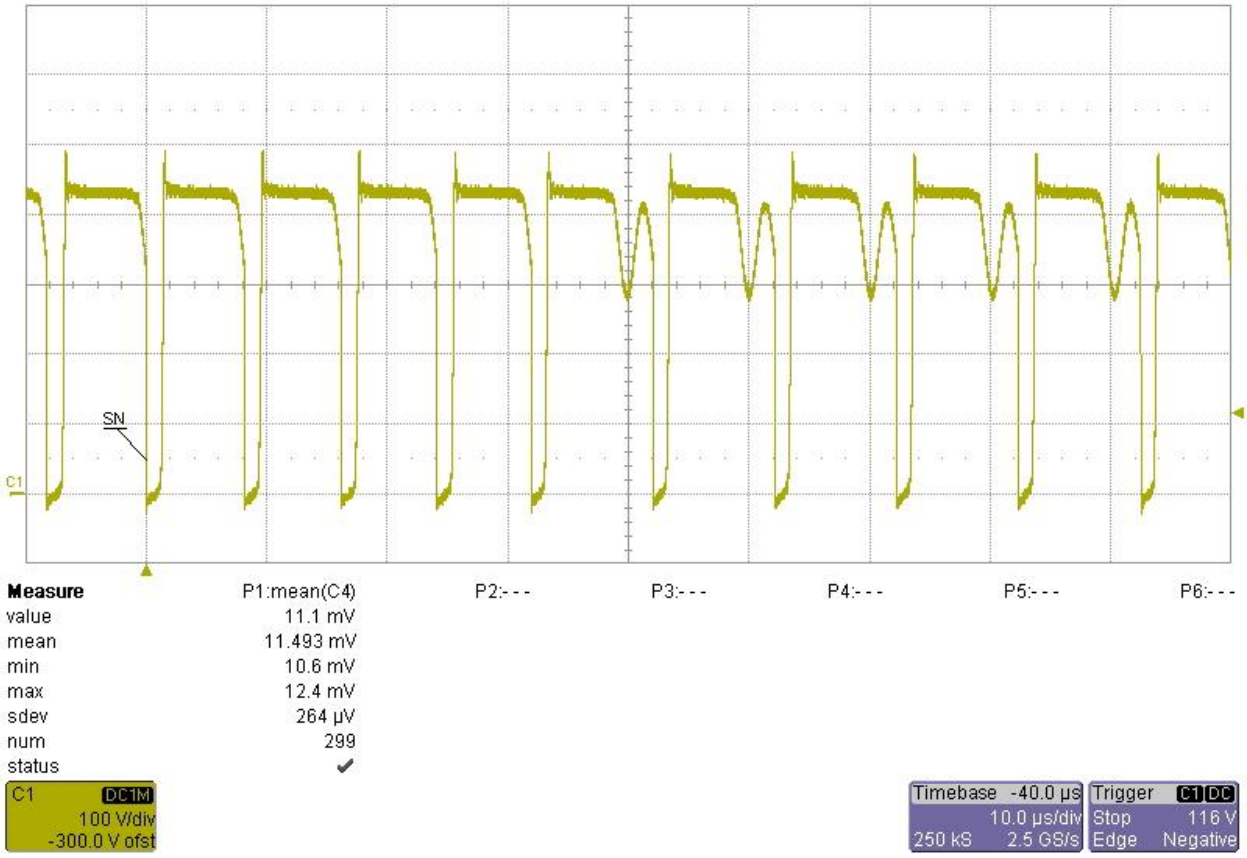
5 Switch node Waveform

Input voltage = 140VDC
Load current = full load





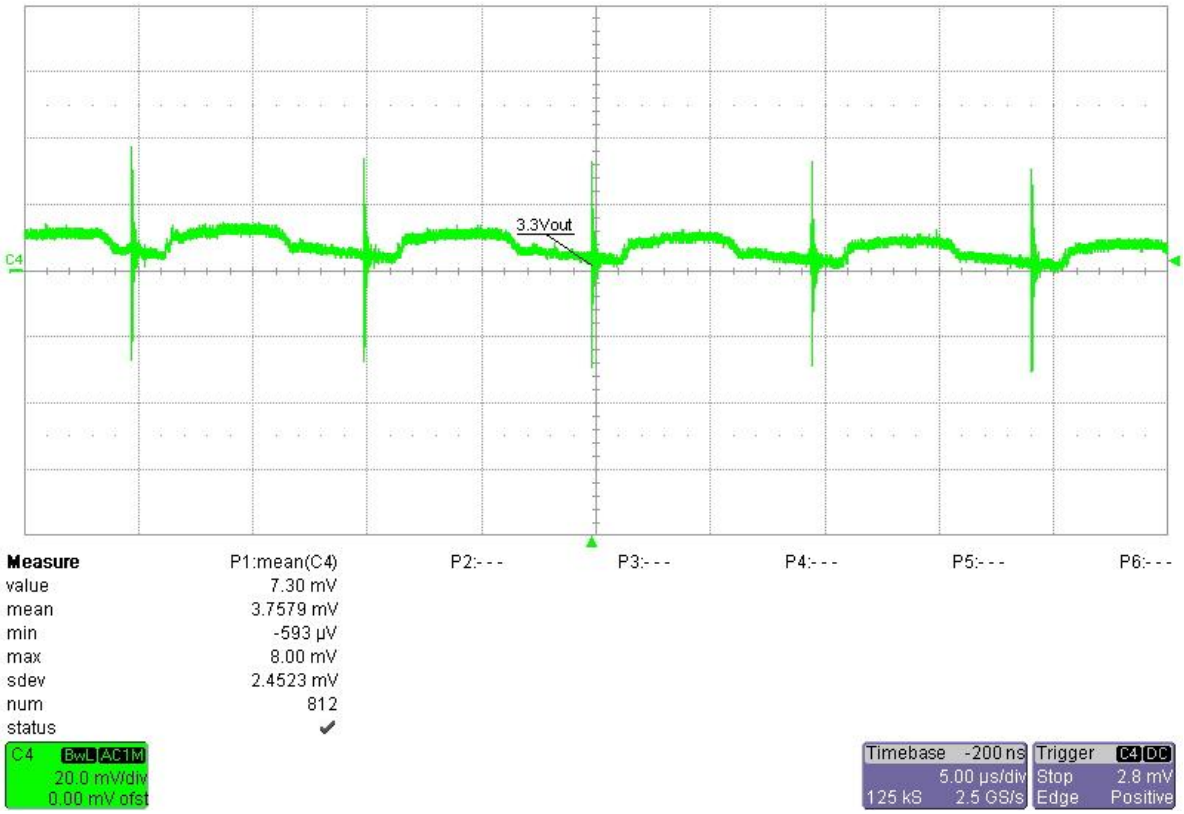
Input voltage = 350VDC
Load current = full load

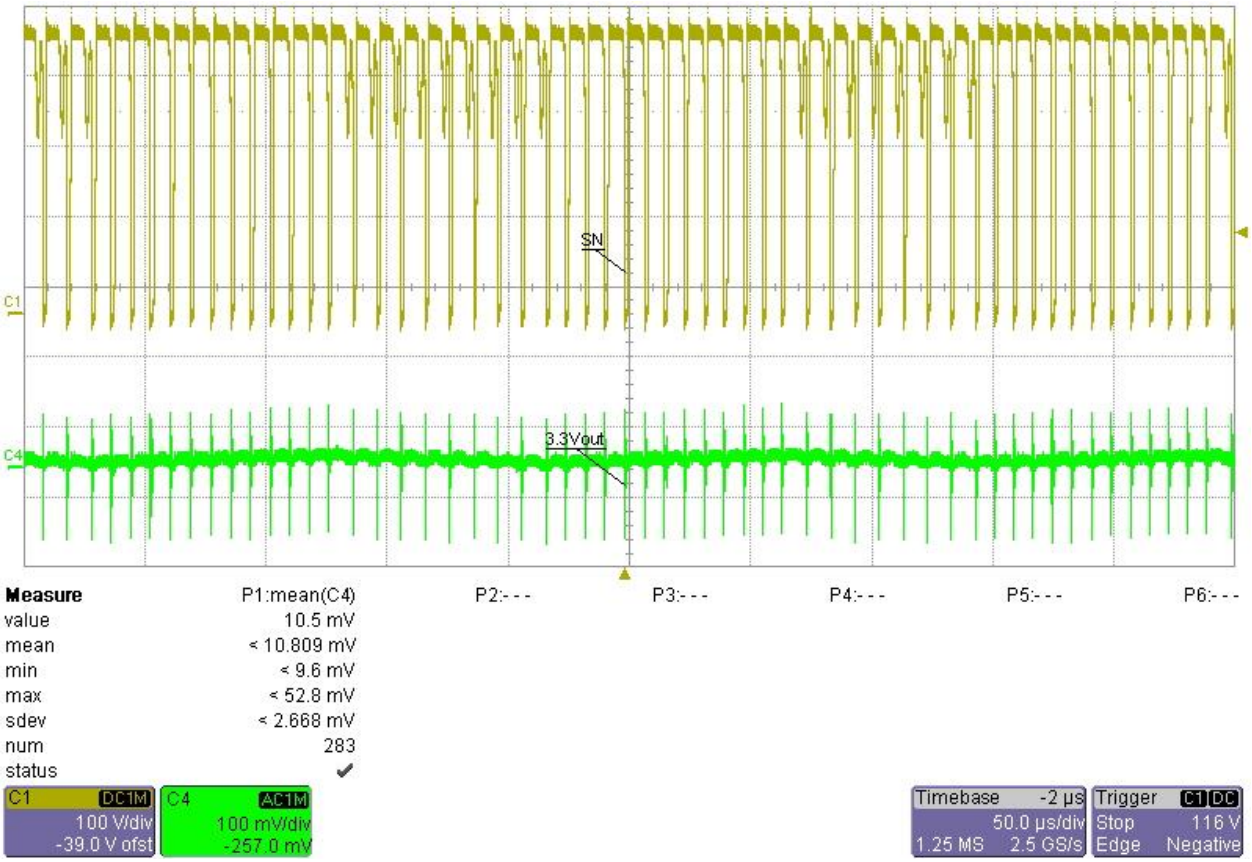


6 Output ripple voltage

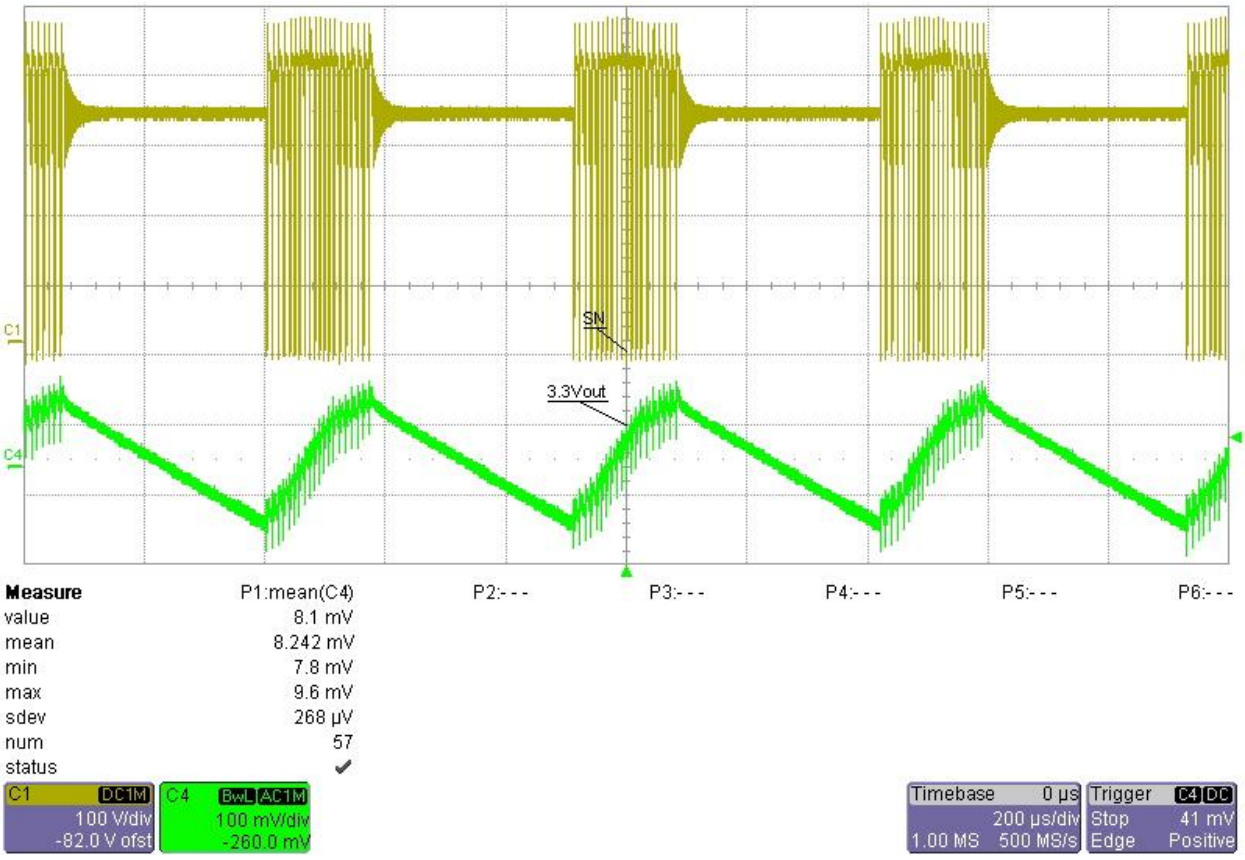
6.1 3.3V output

Input voltage = 325VDC
Load current 3.3Vout = 0.2A
Load current 14Vout1 = 0.1A
Load current 14Vout2 = 0.1A



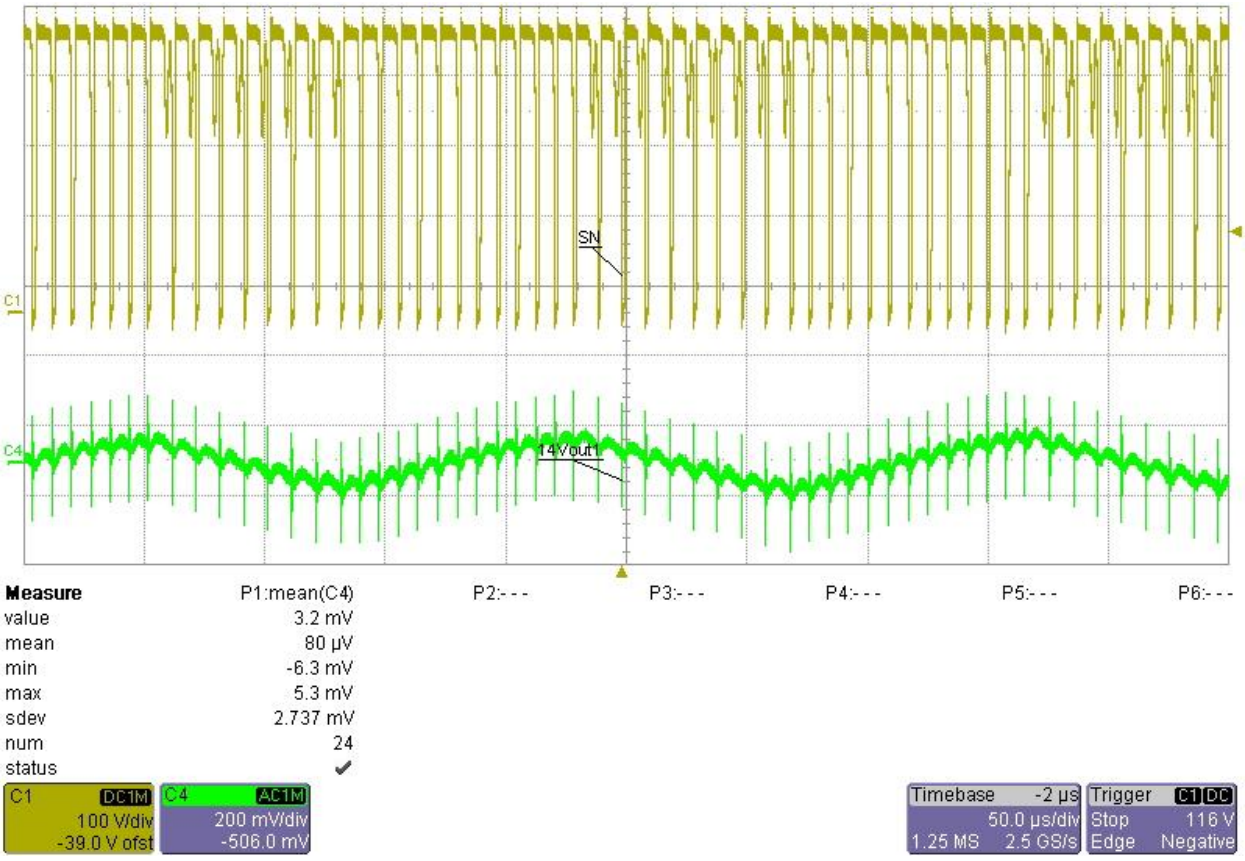

SN
C1
3.3Vout
C4
Measure
P1:mean(C4)
P2:- - -
P3:- - -
P4:- - -
P5:- - -
P6:- - -
value
10.5 mV
mean
< 10.809 mV
min
< 9.6 mV
max
< 52.8 mV
sdev
< 2.668 mV
num
283
status
C1 DC1M
100 V/div
-39.0 V ofst
C4 AC1M
100 mV/div
-257.0 mV
Timebase -2 µs
50.0 µs/div
1.25 MS 2.5 GS/s
Trigger C1 DC
Stop 116 V
Edge Negative

Input voltage = 325VDC
Load current 3.3Vout = 0.2A
Load current 14Vout1 = 0A
Load current 14Vout2 = 0A

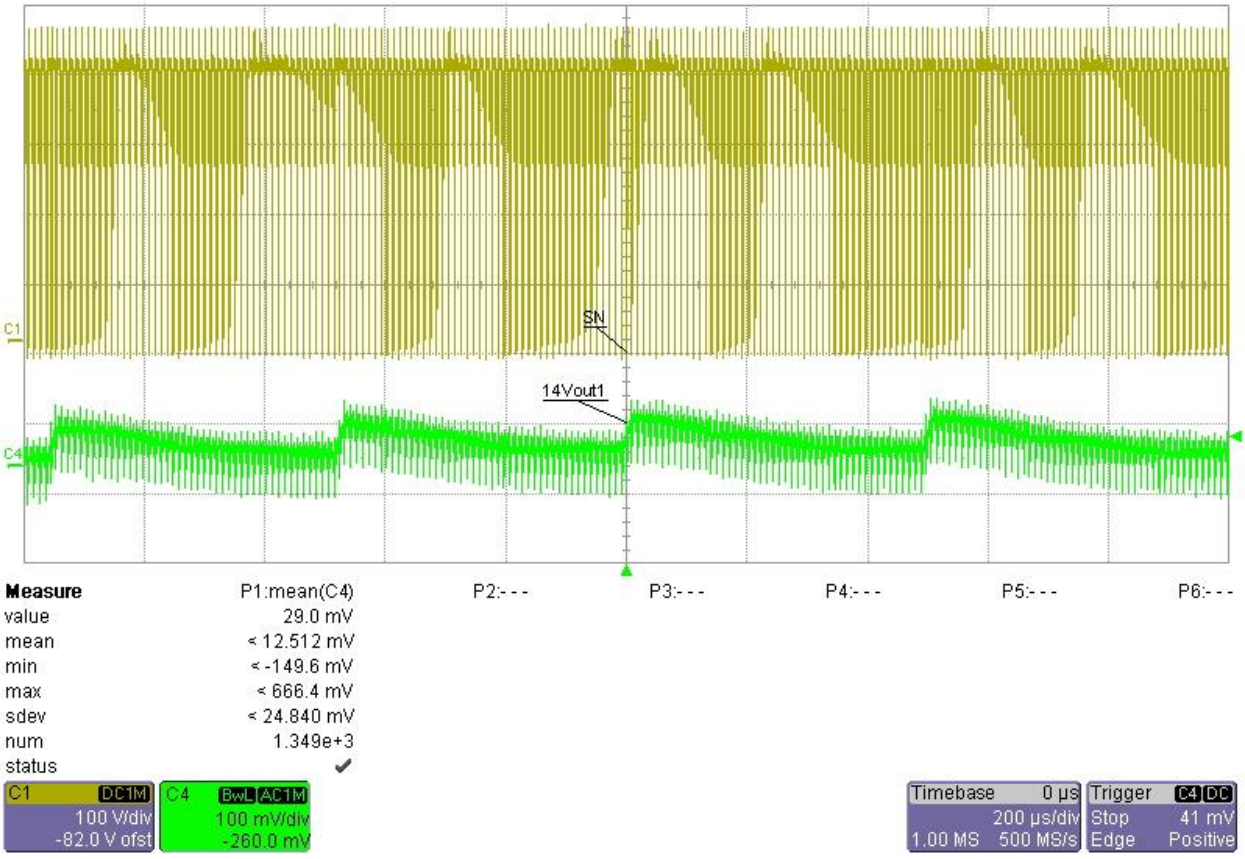


6.2 14V output1

Input voltage = 325VDC
Load current 3.3Vout = 0.2A
Load current 14Vout1 = 0.1A
Load current 14Vout2 = 0.1A

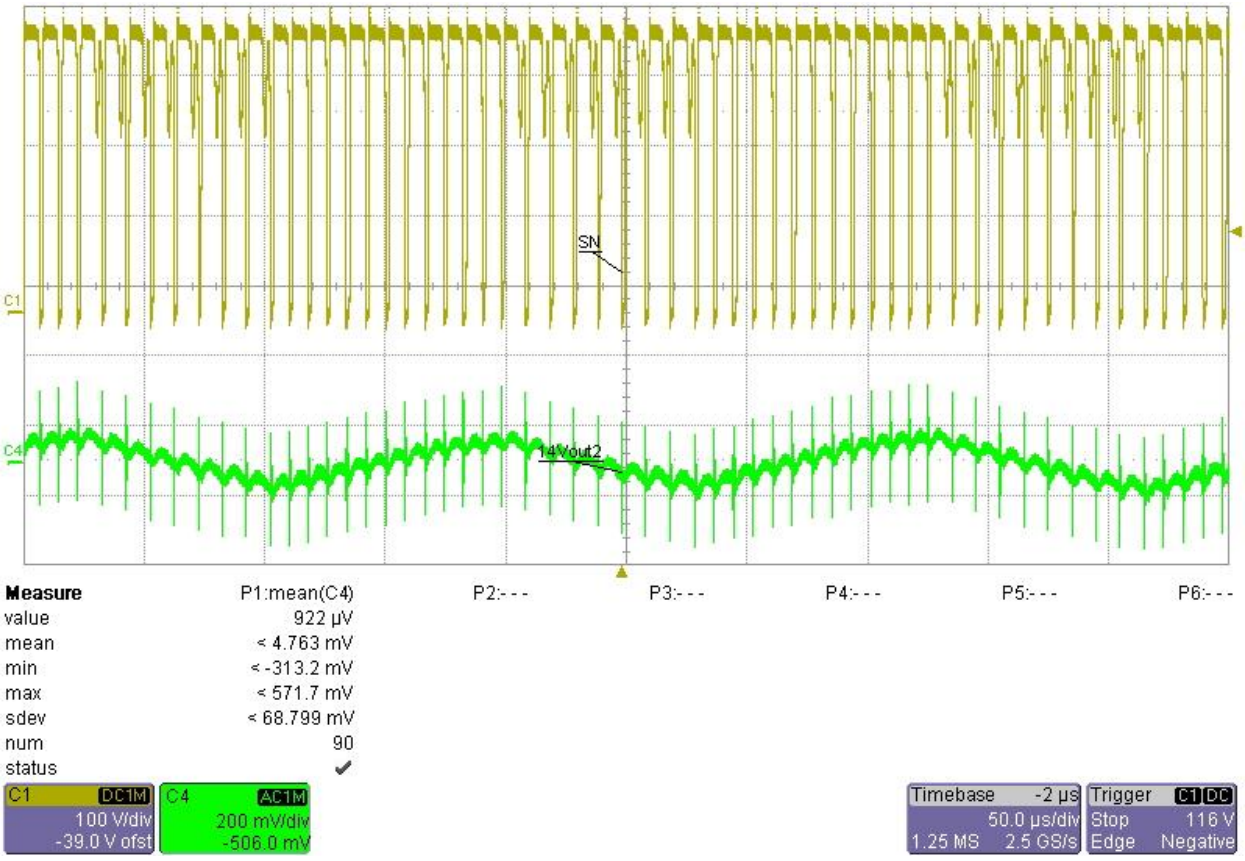


Input voltage = 325VDC
Load current 3.3Vout = 0A
Load current 14Vout1 = 0.1A
Load current 14Vout2 = 0.1A

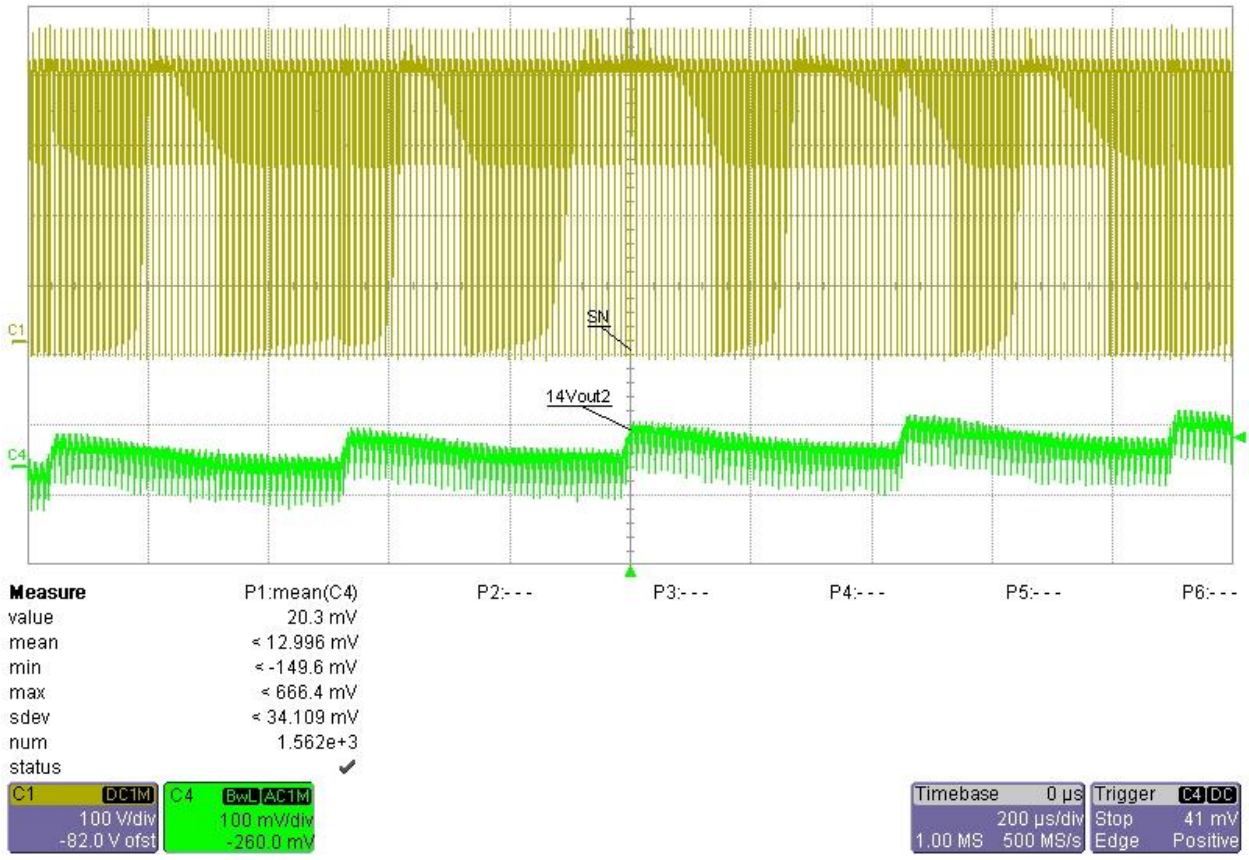


6.3 14V output2

Input voltage = 325VDC
Load current 3.3Vout = 0.2A
Load current 14Vout1 = 0.1A
Load current 14Vout2 = 0.1A

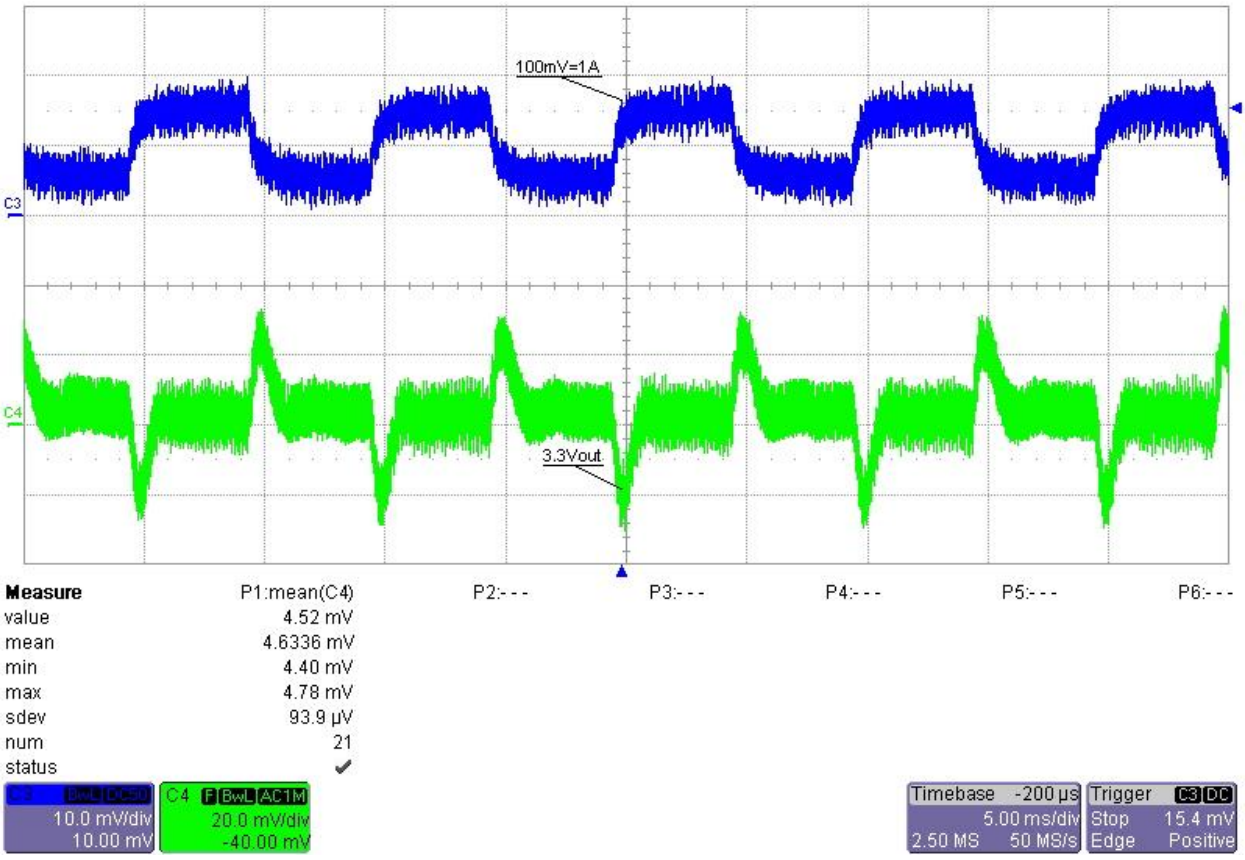


Input voltage = 325VDC
Load current 3.3Vout = 0A
Load current 14Vout1 = 0.1A
Load current 14Vout2 = 0.1A



7 Load Transients

3.3V output
Input voltage = 325VDC
Load current = 0.05A to 0.2A

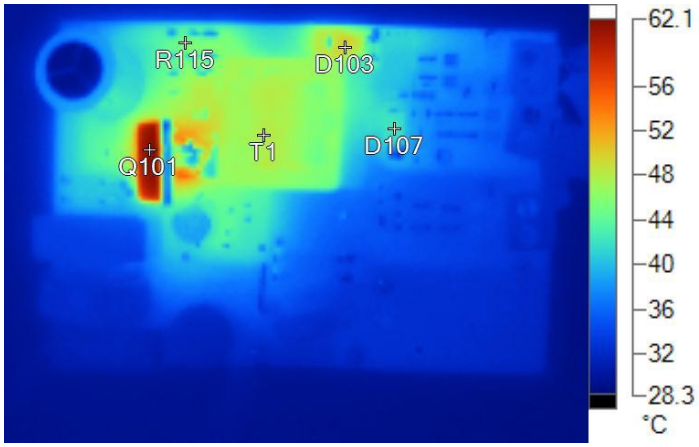


8 Thermal Analysis

The images below show the infrared images taken from the FlexCam after 15min and 3.7W output power.

Input voltage: 265VAC
3.3Vout: 3.16V@0.62A
14Vout1: 13V@0.135A
14Vout2: 13V@0A

Ambient temperature = 25°C



Name	Temperature	
Q101	61.9°C	
R115	45.4°C	
T1	48.3°C	
D103	49.6°C	
D107	42.2°C	

full load Vin=265VAC_0316.is2

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1. You have unique knowledge concerning Federal, State and local regulatory requirements (including but not limited to Food and Drug Administration regulations, if applicable) which relate to your products and which relate to your use (and/or that of your employees, affiliates, contractors or designees) of the EVM for evaluation, testing and other purposes.
2. You have full and exclusive responsibility to assure the safety and compliance of your products with all such laws and other applicable regulatory requirements, and also to assure the safety of any activities to be conducted by you and/or your employees, affiliates, contractors or designees, using the EVM. Further, you are responsible to assure that any interfaces (electronic and/or mechanical) between the EVM and any human body are designed with suitable isolation and means to safely limit accessible leakage currents to minimize the risk of electrical shock hazard.
3. Since the EVM is not a completed product, it may not meet all applicable regulatory and safety compliance standards (such as UL, CSA, VDE, CE, RoHS and WEEE) which may normally be associated with similar items. You assume full responsibility to determine and/or assure compliance with any such standards and related certifications as may be applicable. You will employ reasonable safeguards to ensure that your use of the EVM will not result in any property damage, injury or death, even if the EVM should fail to perform as described or expected.

Certain Instructions. Exceeding the specified EVM ratings (including but not limited to input and output voltage, current, power, and environmental ranges) may cause property damage, personal injury or death. If there are questions concerning these ratings please contact a TI field representative prior to connecting interface electronics including input power and intended loads. Any loads applied outside of the specified output range may result in unintended and/or inaccurate operation and/or possible permanent damage to the EVM and/or interface electronics. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative. During normal operation, some circuit components may have case temperatures greater than 60°C as long as the input and output ranges are maintained at nominal ambient operating temperature. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors which can be indentified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during normal operation, please be aware that these devices may be very warm to the touch.

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