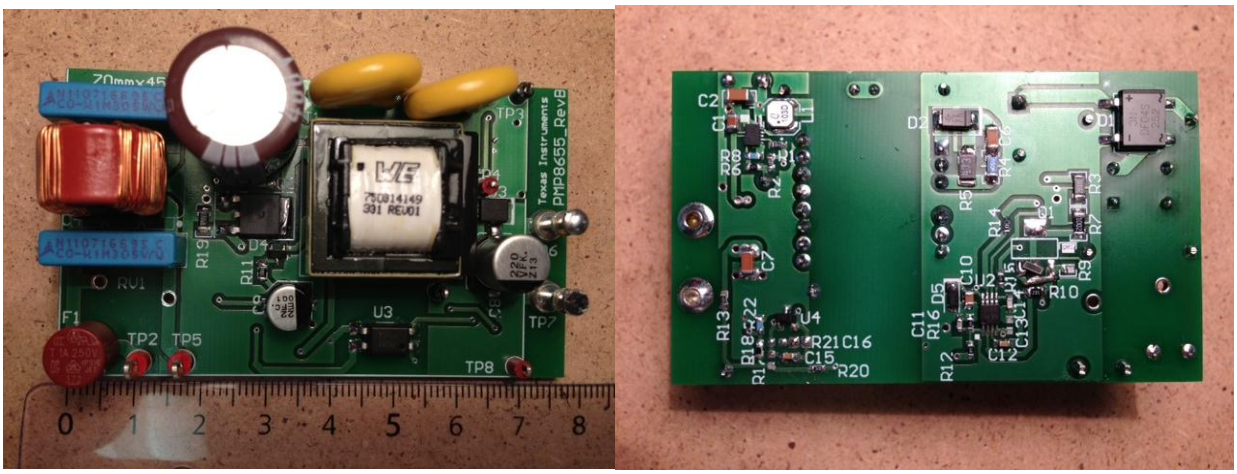
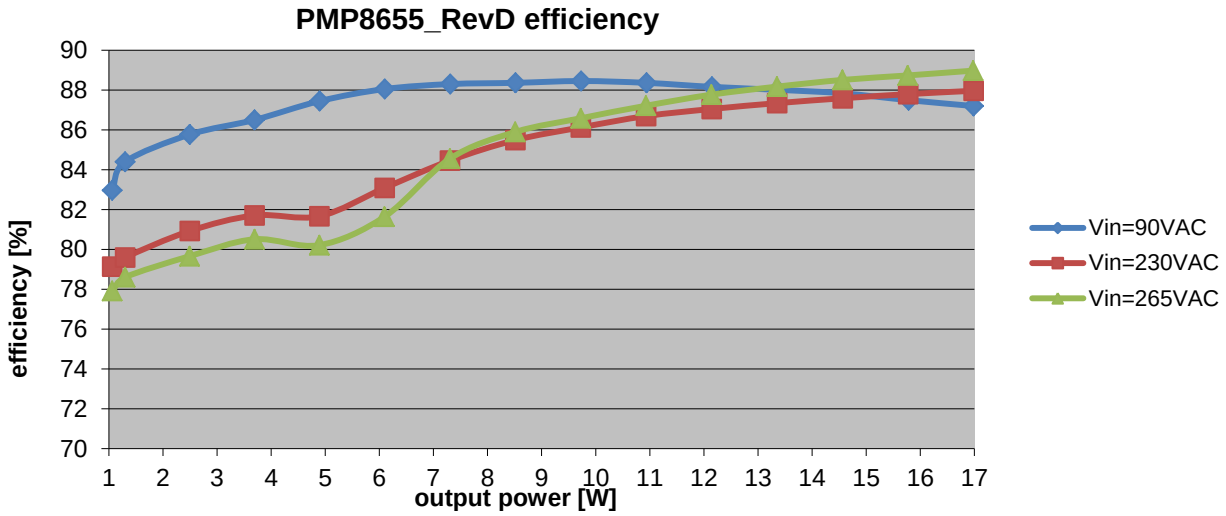
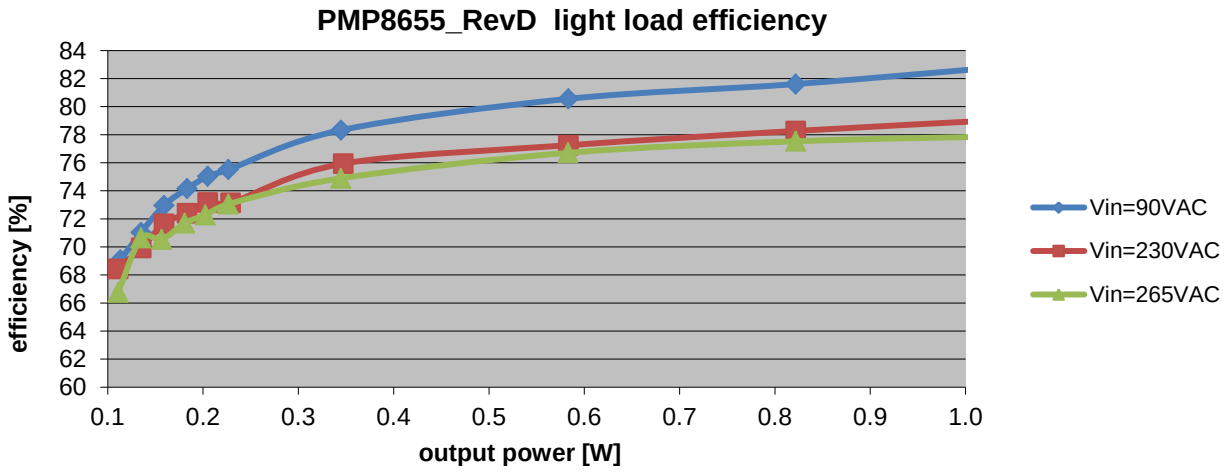
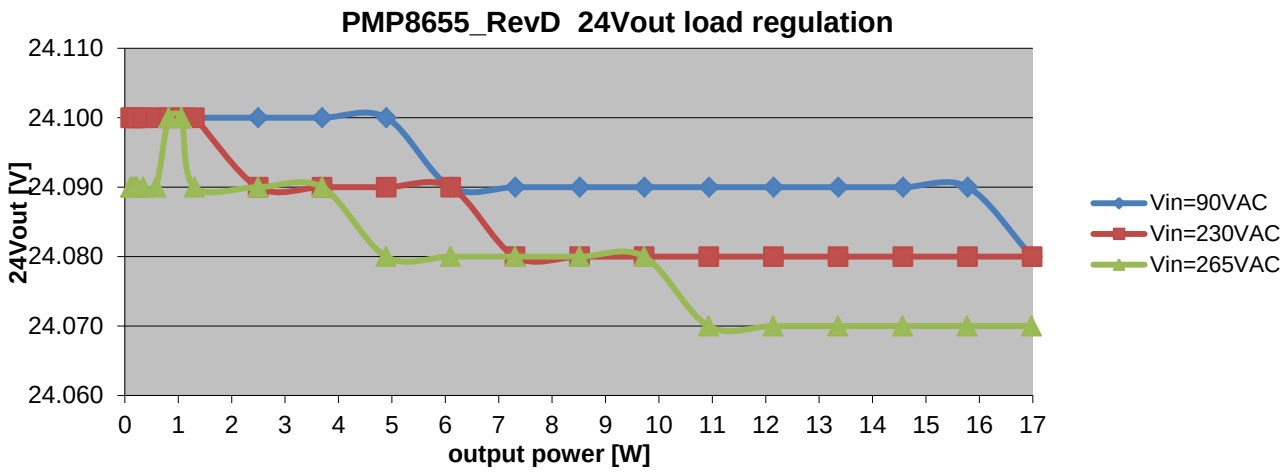


1 Efficiency and load regulation

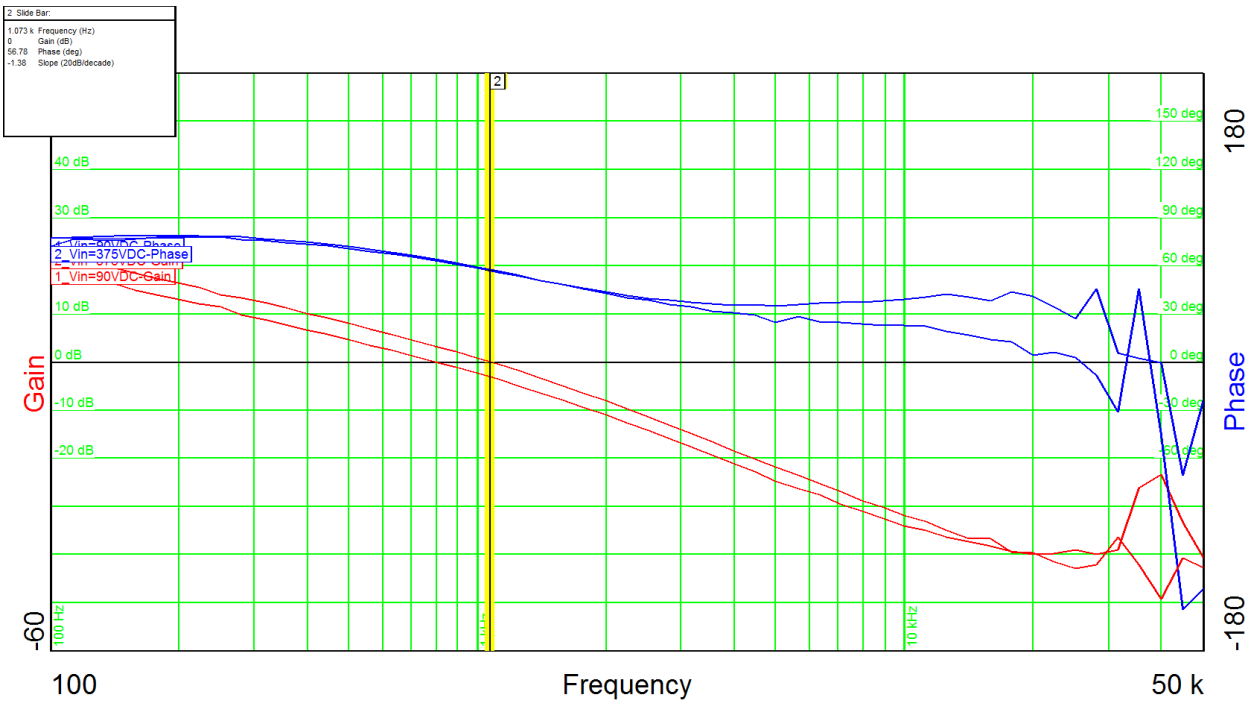





PMP8655_RevD 24Vout load regulation
24.110
24.100
24.090
24.080
24.070
24.060
24Vout [V]
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
output power [W]
Vin=90VAC
Vin=230VAC
Vin=265VAC

2 Control Loop Frequency Response

2.1 24Vout

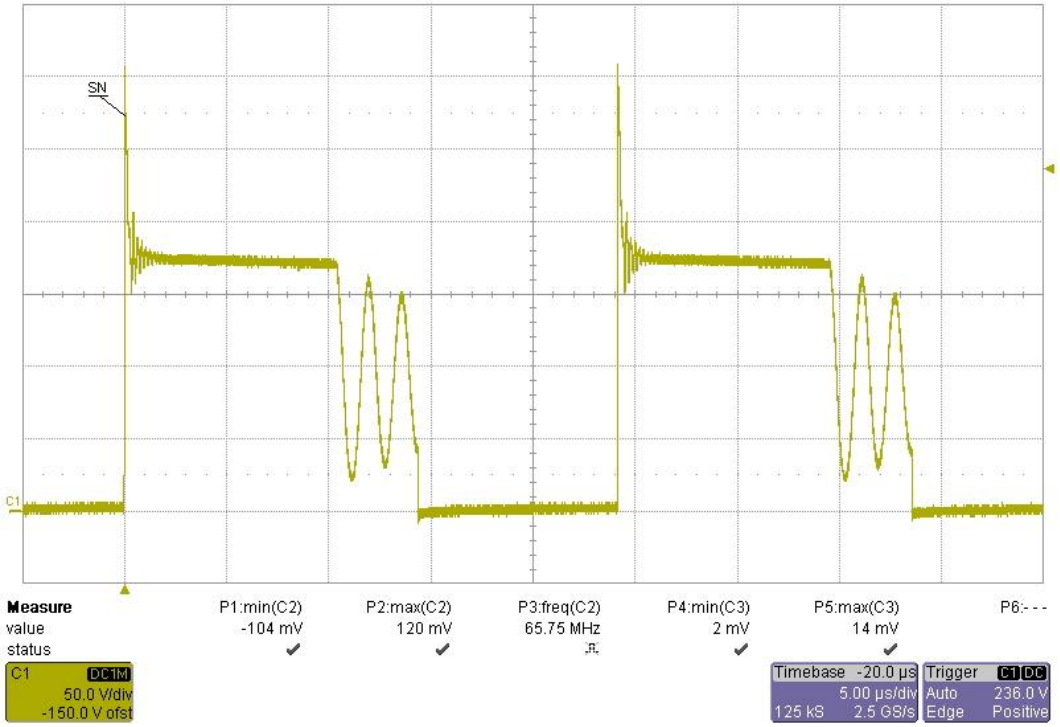


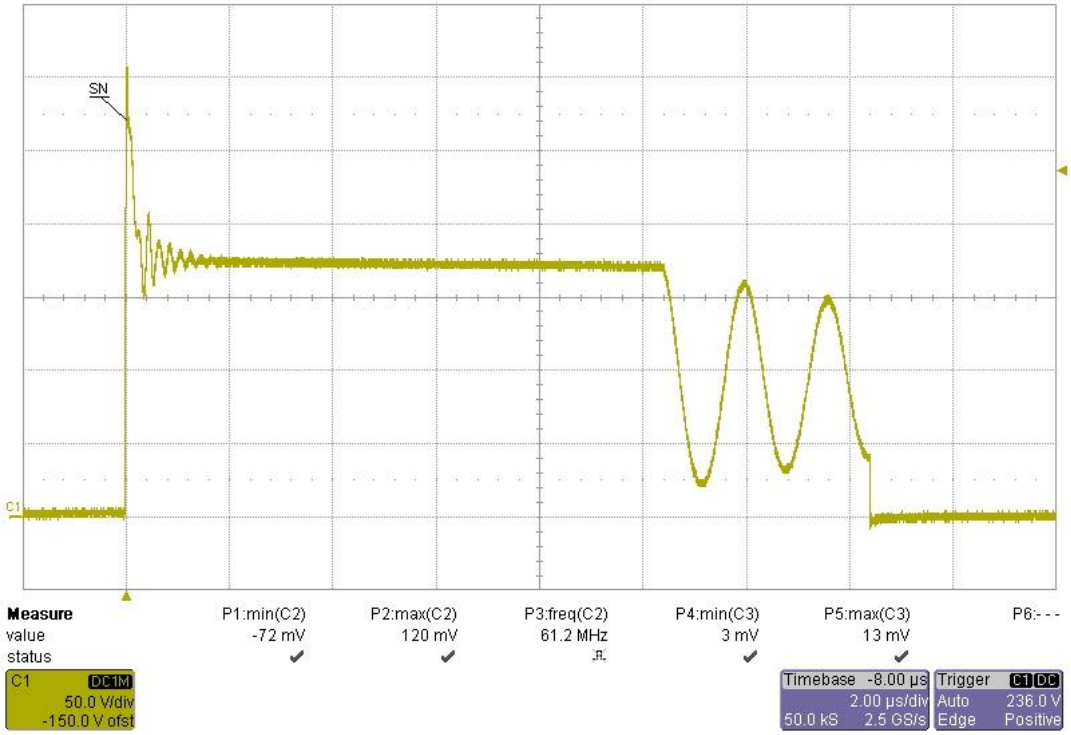
Output power = 24V@0.7A
Input voltage = 90VDC
Phase margin = 64°
Bandwidth = 0.80kHz

Output power = 24V@0.7A
Input voltage = 375VDC
Phase margin = 57°
Bandwidth = 1.07kHz

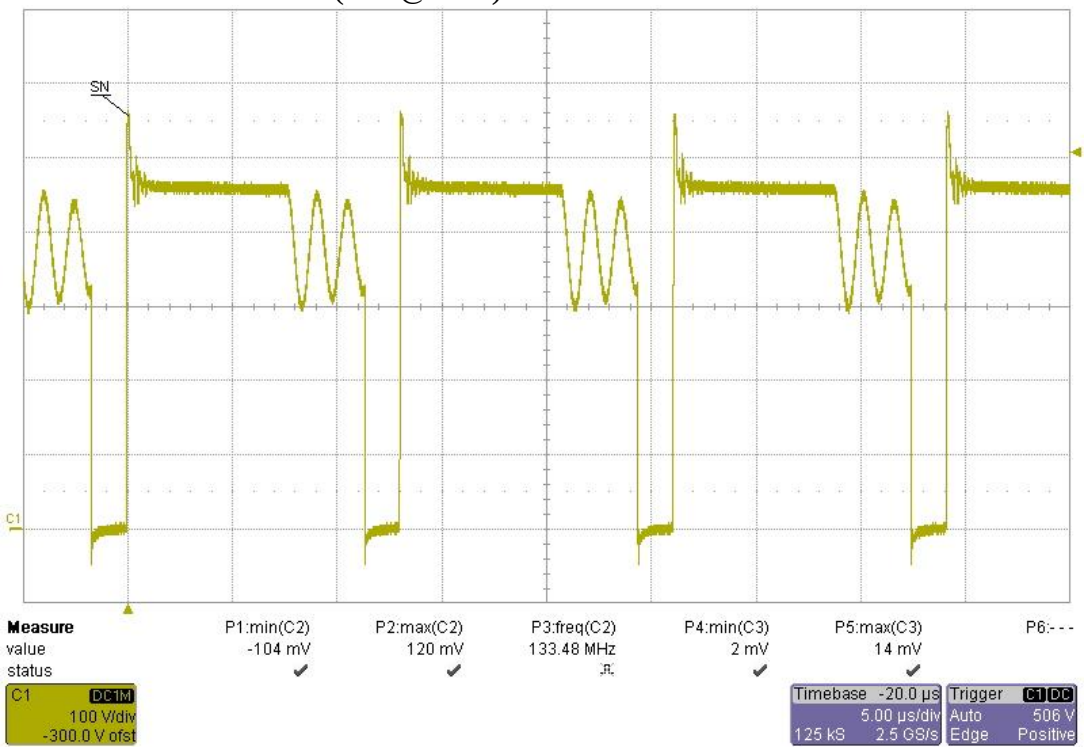
3 Switch Node

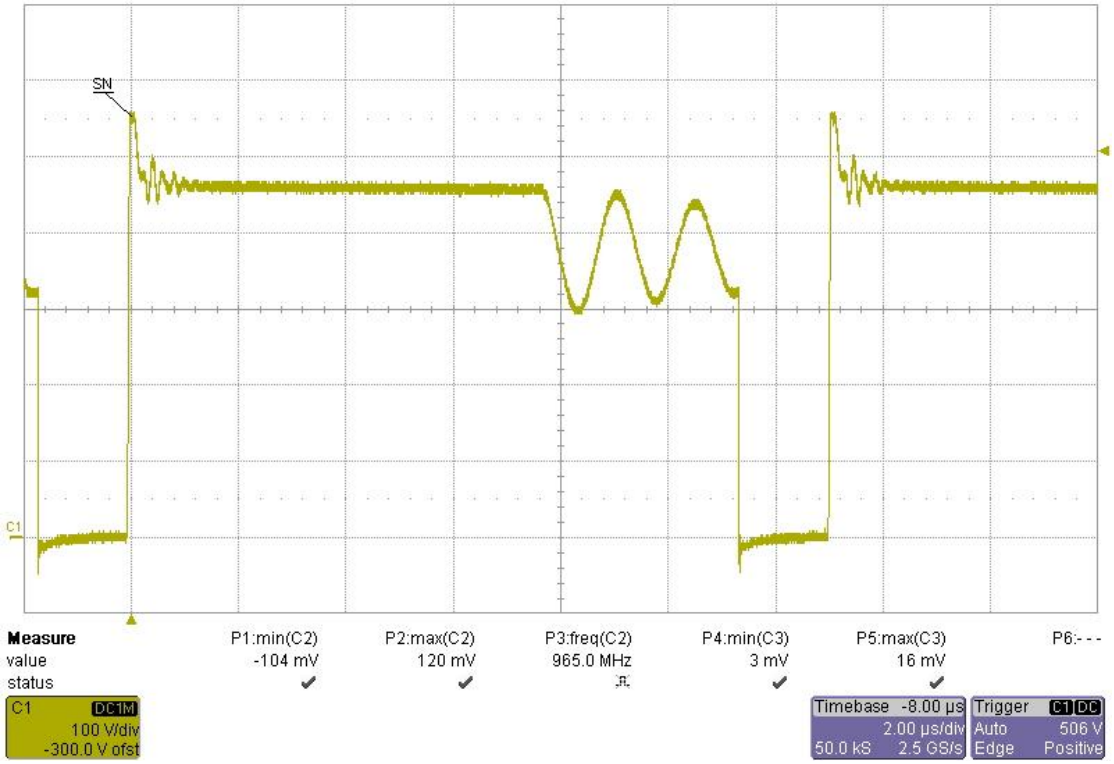
Input voltage = 90VDC
Load current = full load (24V@0.7A)





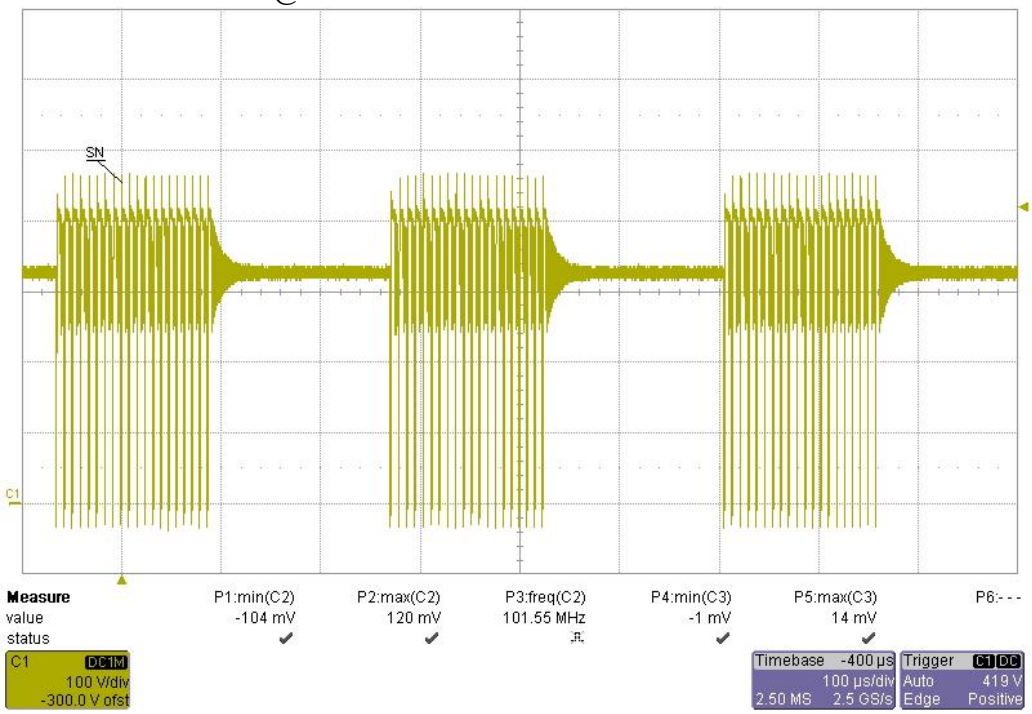
Input voltage = 375VDC
Load current = full load (24V@0.7A)



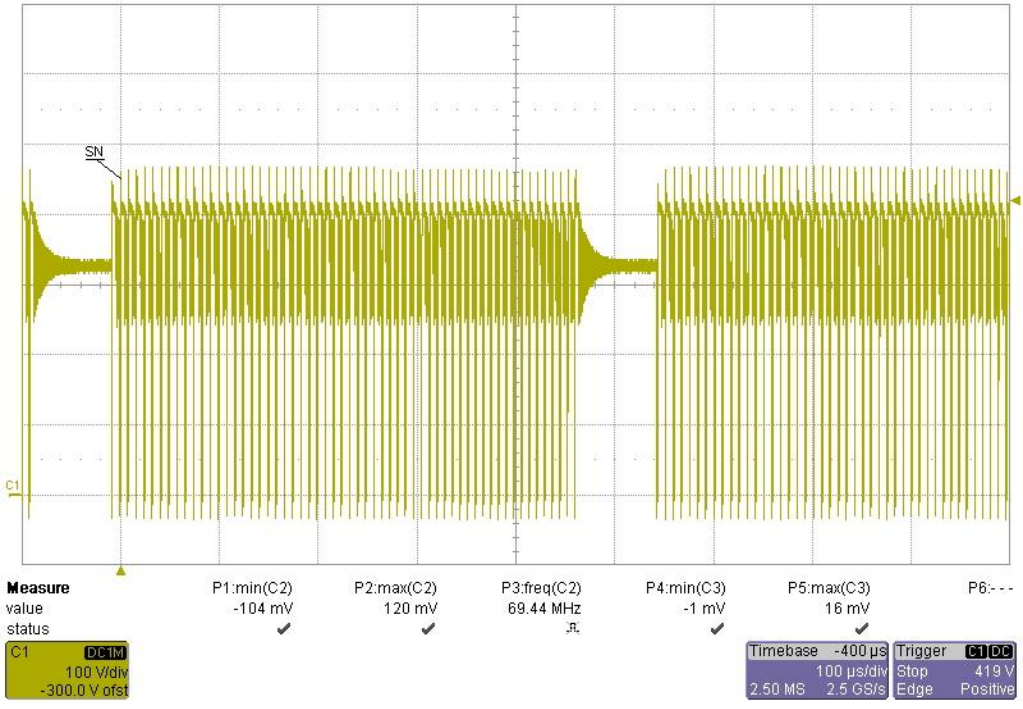


4 Switch Node skip cycle mode

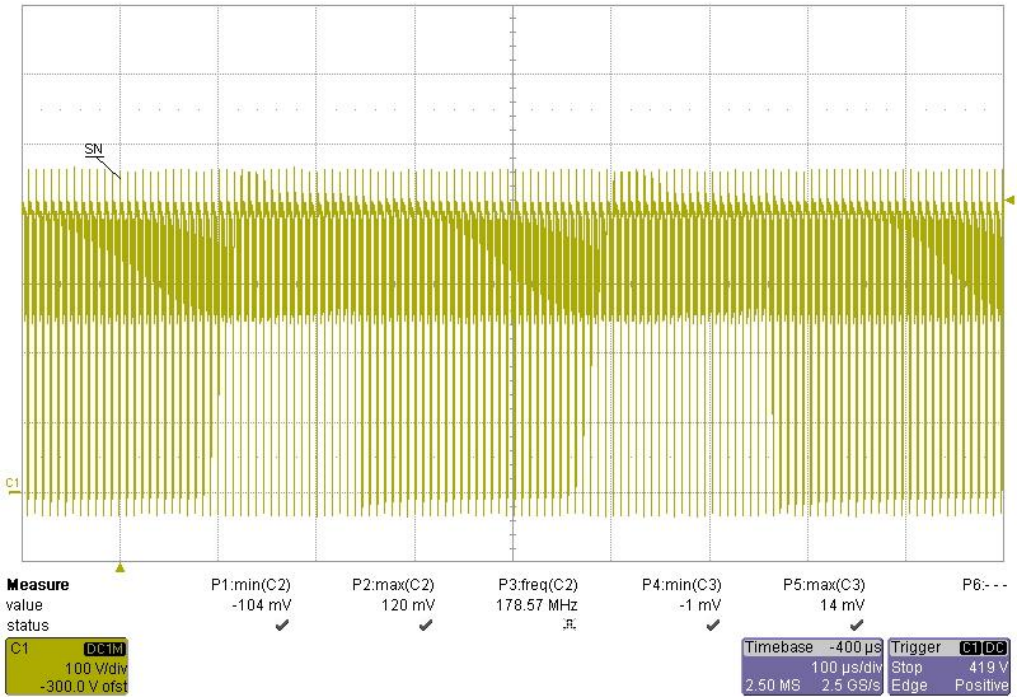
Input voltage = 375VDC
Load current = 24V@0.1A



Input voltage = 375VDC
Load current = 24V@0.2A



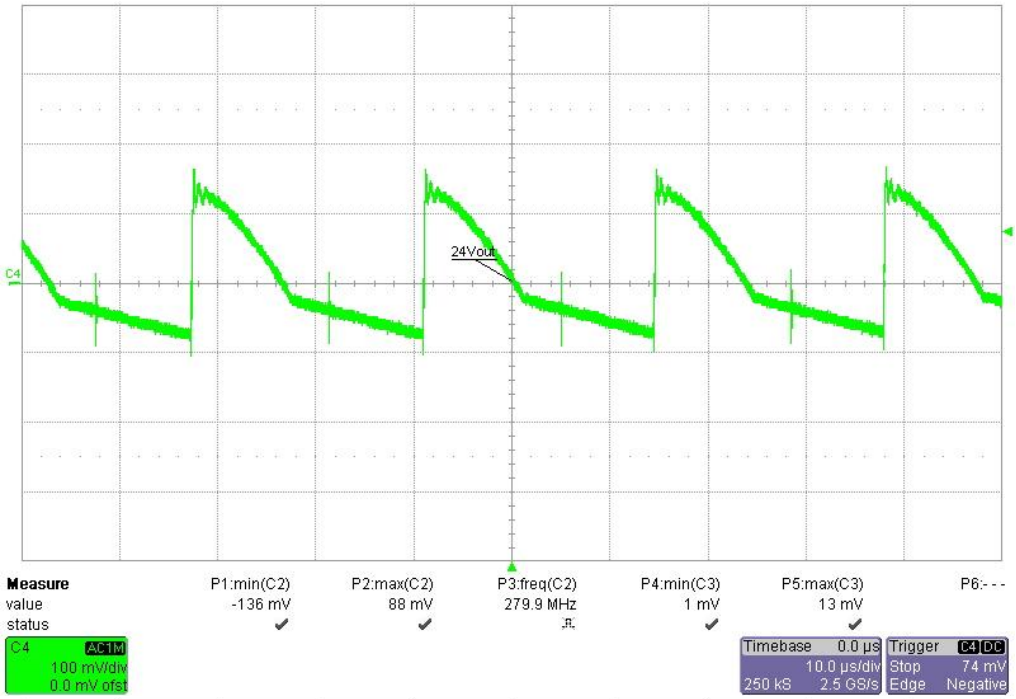
Input voltage = 375VDC
Load current = 24V@0.21A

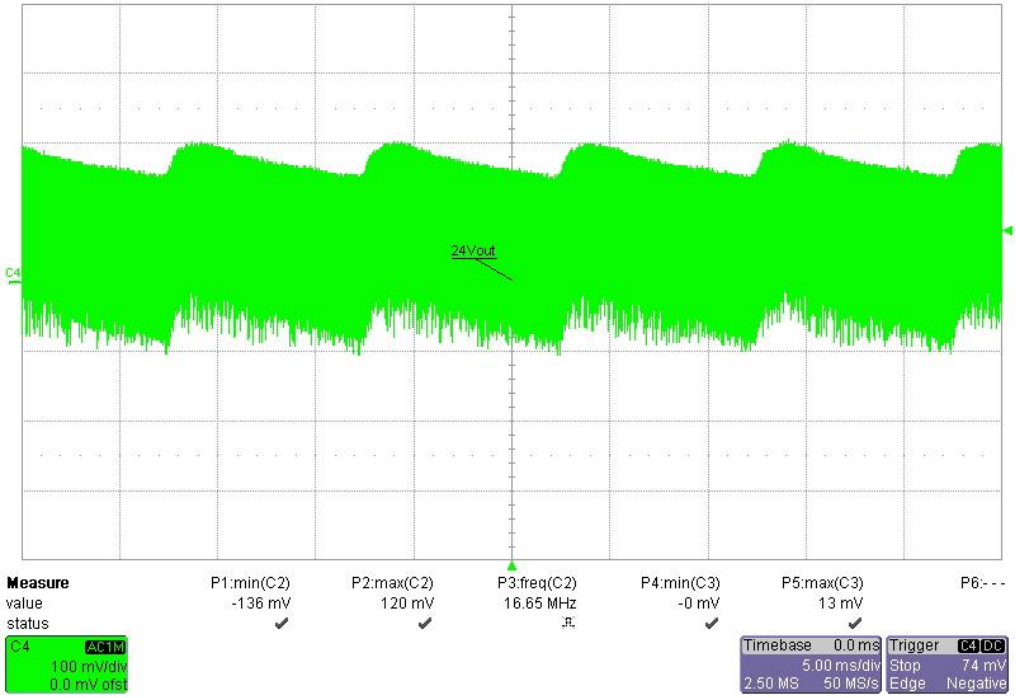


5 Output ripple voltage

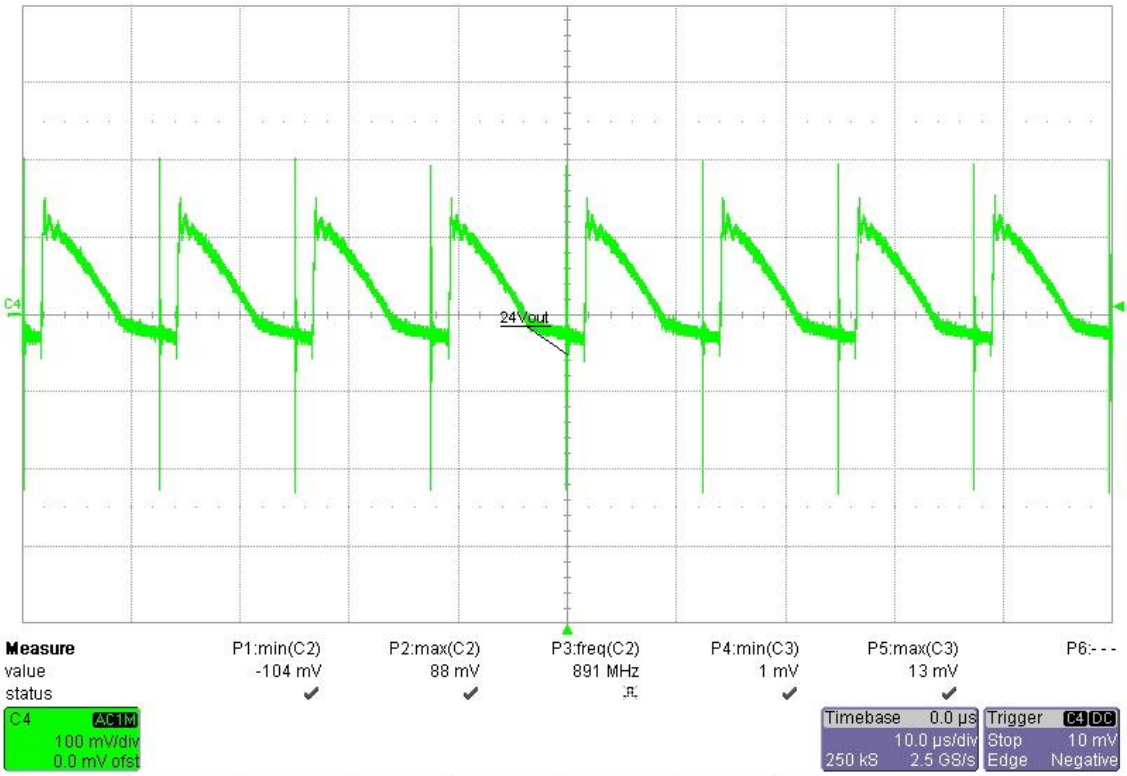
5.1 24Vout

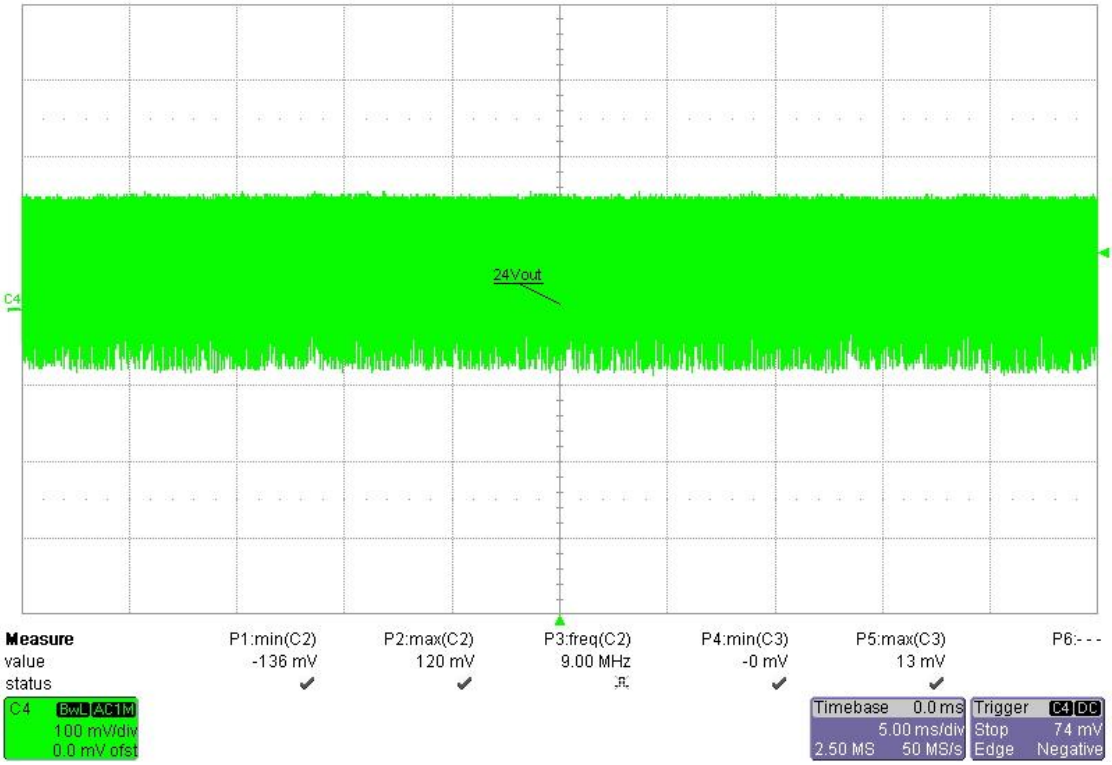
Input voltage = 90VAC
Load current = 24V@0.7A





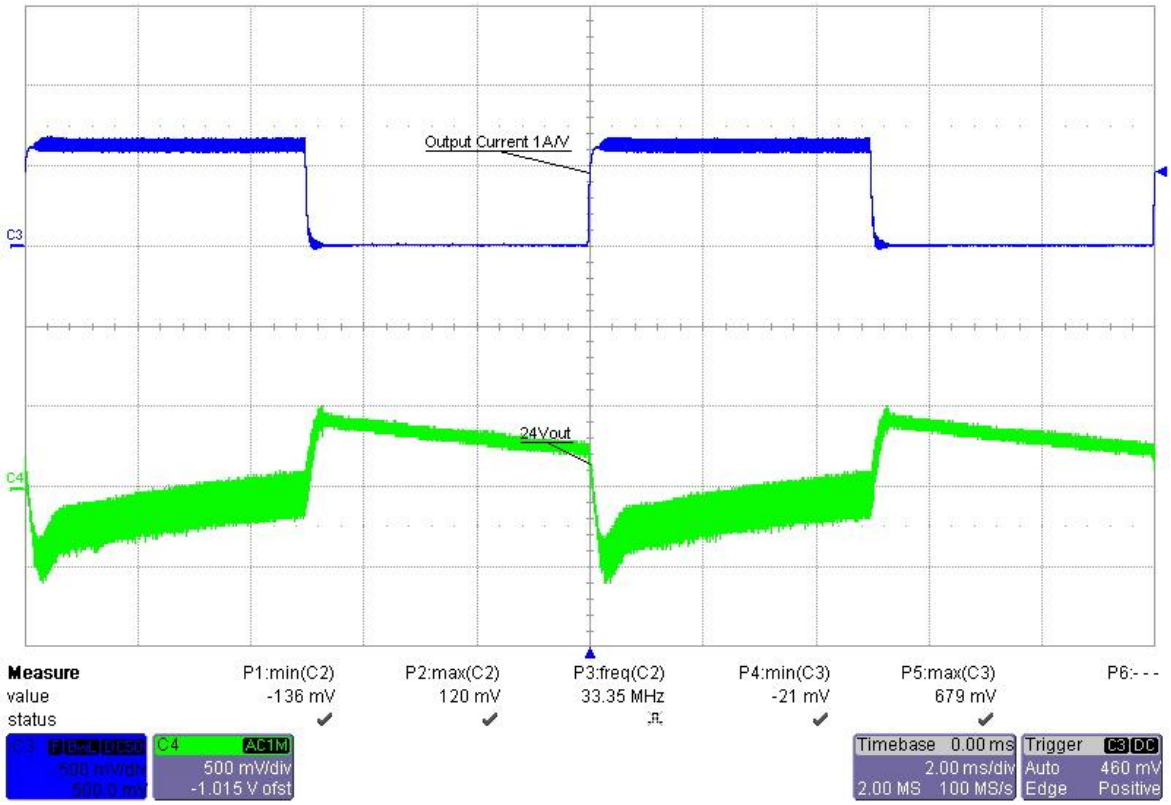
Input voltage = 265VAC
Load current = 24V@0.7A



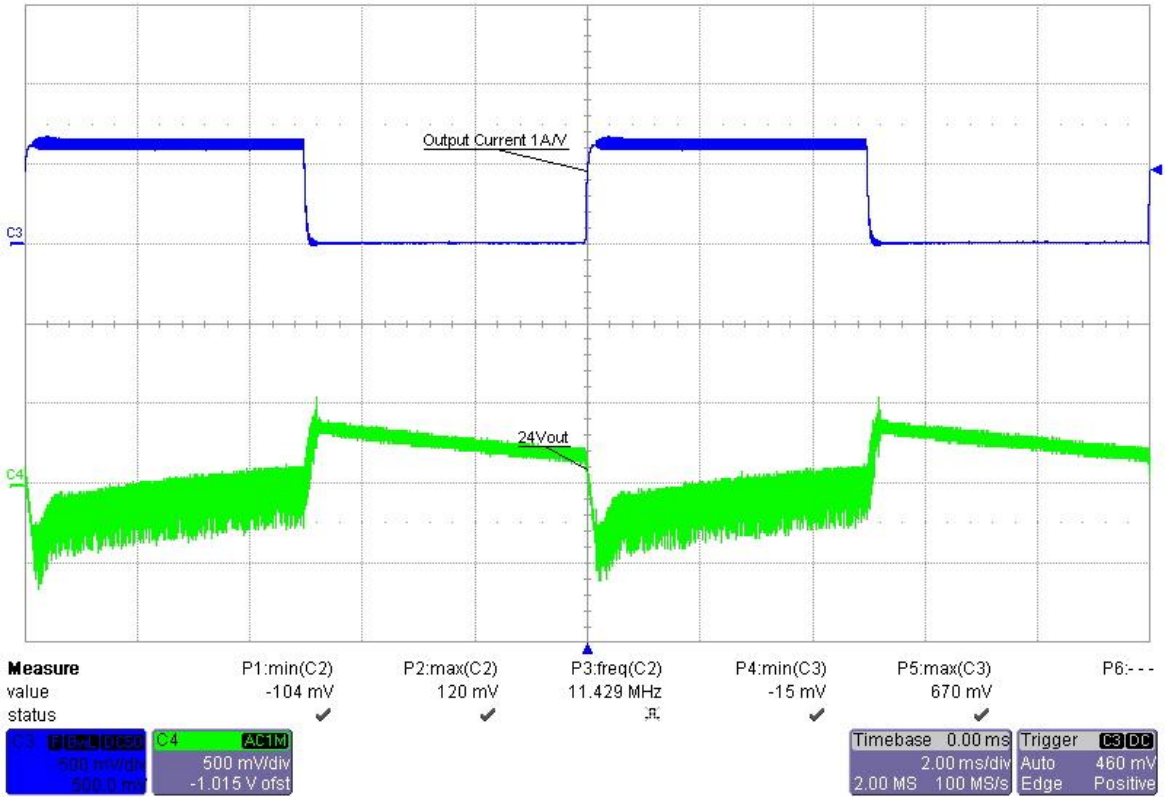


6 Load Transients

Input voltage = 90VAC
Load current = 0 to 0.7A



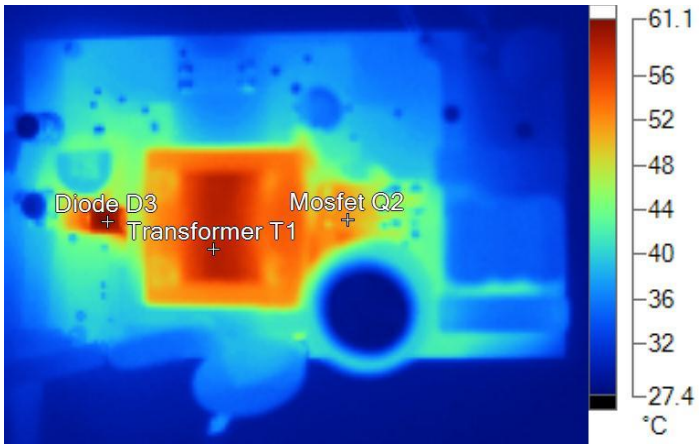
Input voltage = 265VAC
Load current = 0 to 0.7A



7 Thermal Analysis

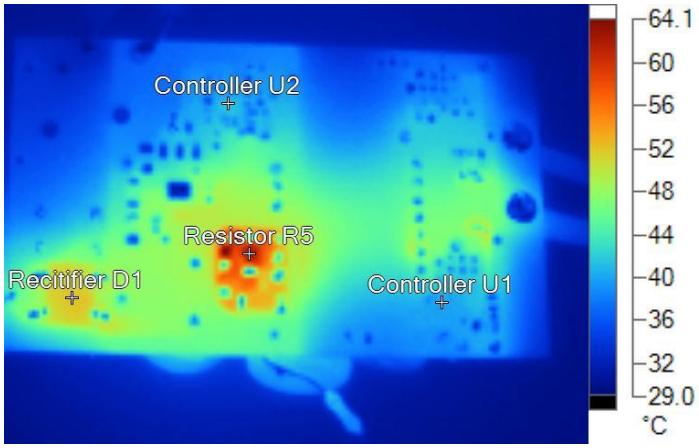
The images below show the infrared images taken from the FlexCam after 15min at full load (24V@0.7A). The ambient temperature was 25°C.

Input voltage = 90VAC



0352_VIN=90VAC TOP.is2

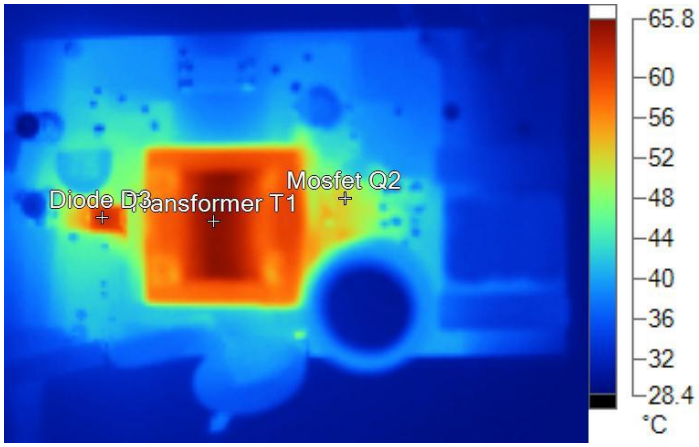
Name	Temperature	
Transformer T1	58.7°C	
Mosfet Q2	51.5°C	
Diode D3	61.0°C	



0355_VIN=90VAC BOTTOM.is2

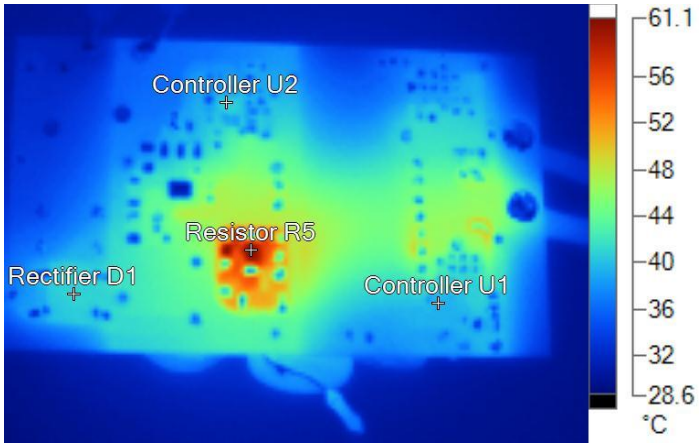
Name	Temperature	
Controller U2	41.2°C	
Resistor R5	62.4°C	
Recitifier D1	52.1°C	
Controller U1	40.0°C	

Input voltage = 265VAC



Name	Temperature	
Transformer T1	65.3°C	
Mosfet Q2	52.1°C	
Diode D3	62.0°C	

0353_VIN=265VAC TOP.is2



Name	Temperature	
Resistor R5	61.0°C	
Rectifier D1	40.9°C	
Controller U1	39.3°C	
Controller U2	40.5°C	

0354_VIN=265VAC BOTTOM.is2

8 Current limit

- Input voltage = 90VAC:
  - Overcurrent limit = 0.87A

- Input voltage = 265VAC:
  - Overcurrent limit = 1.23A

For Feasibility Evaluation Only, in Laboratory/Development Environments. The EVM is not a complete product. It is intended solely for use for preliminary feasibility evaluation in laboratory / development environments by technically qualified electronics experts who are familiar with the dangers and application risks associated with handling electrical / mechanical components, systems and subsystems. It should not be used as all or part of a production unit.

Your Sole Responsibility and Risk. You acknowledge, represent and agree that:

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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