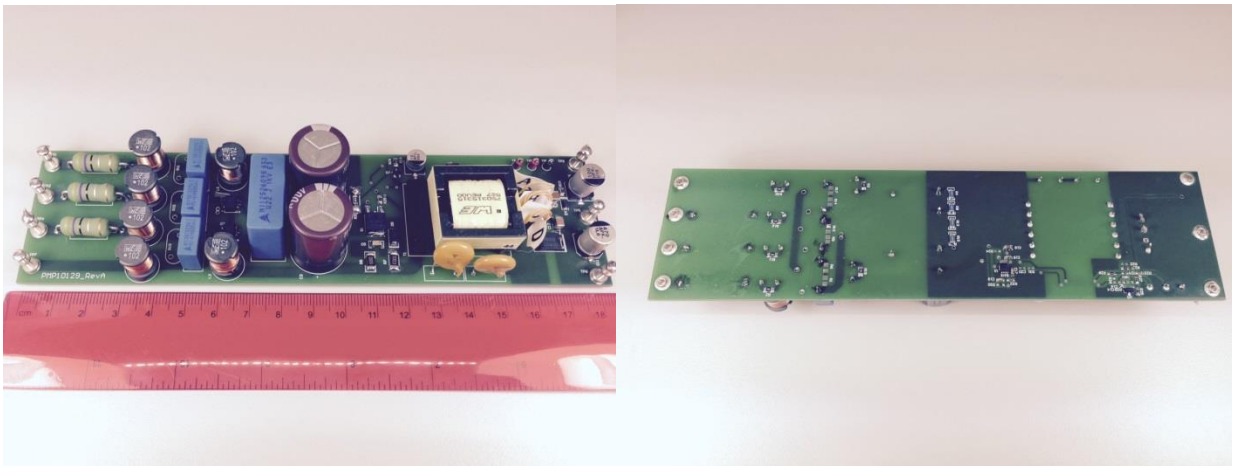
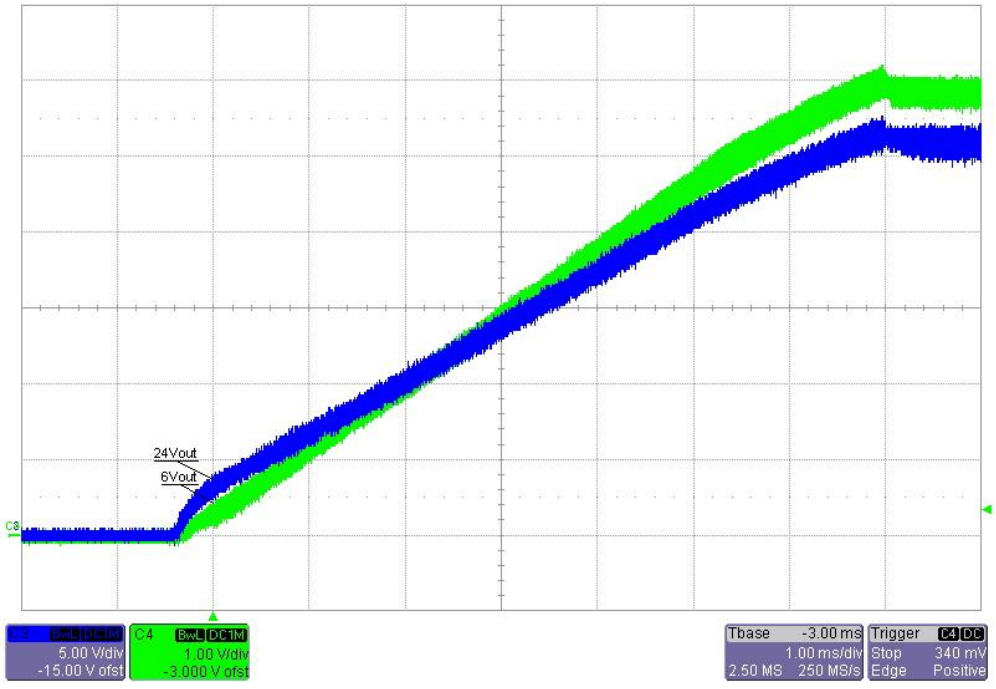


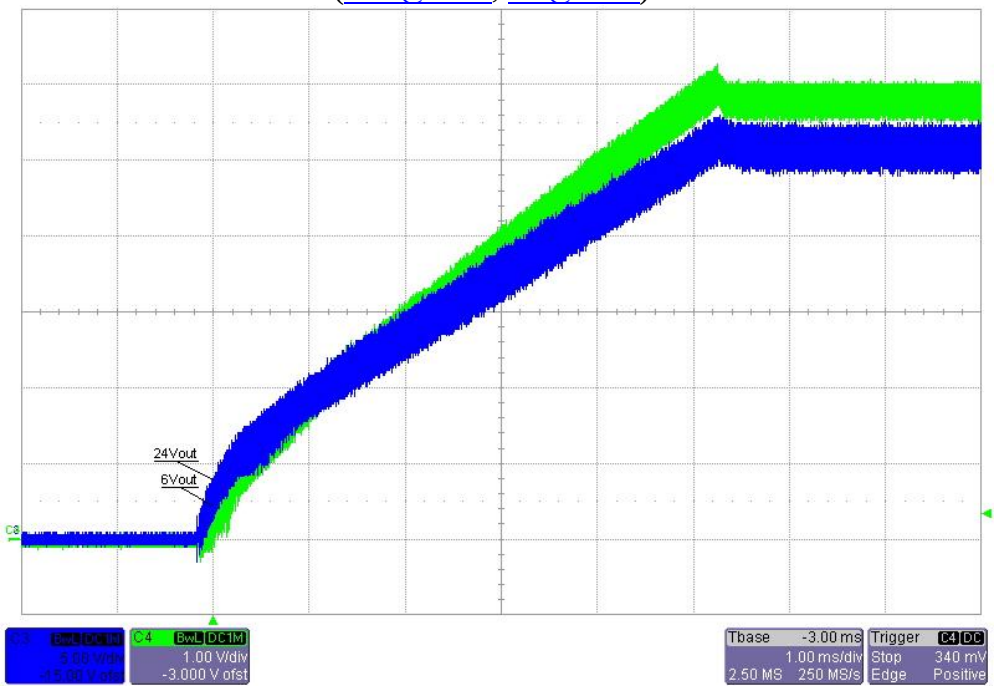
All Measurements are done for 1phase input operation

1 Startup

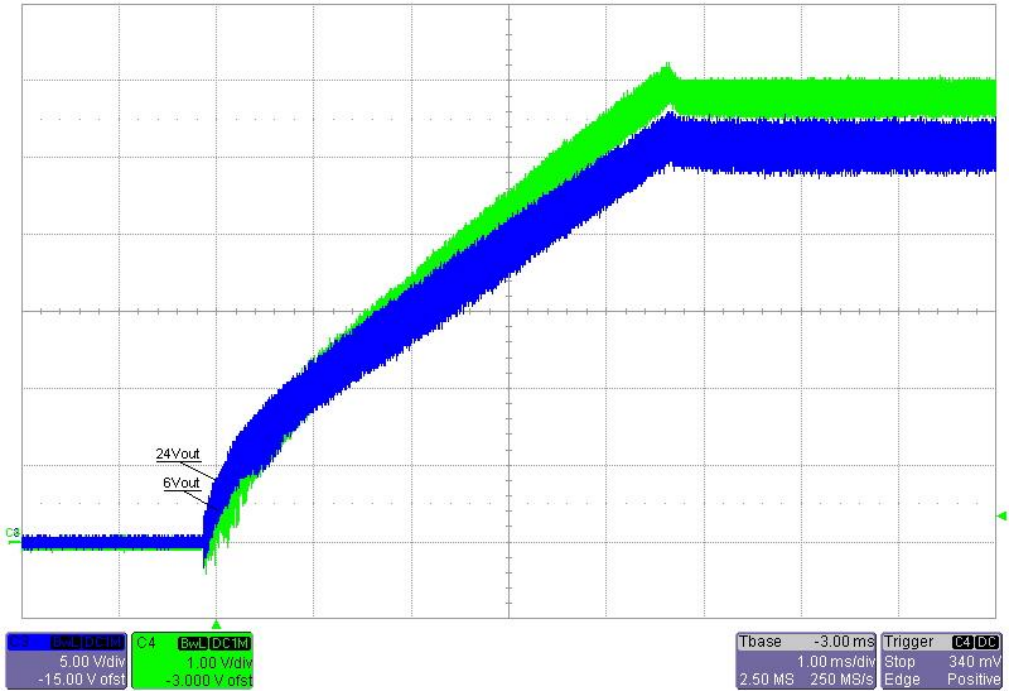
Input voltage = 90VAC
Load current = full load (24V@0.5A, 6V@1.5A)



Input voltage = 230VAC
Load current = full load (24V@0.5A, 6V@1.5A)

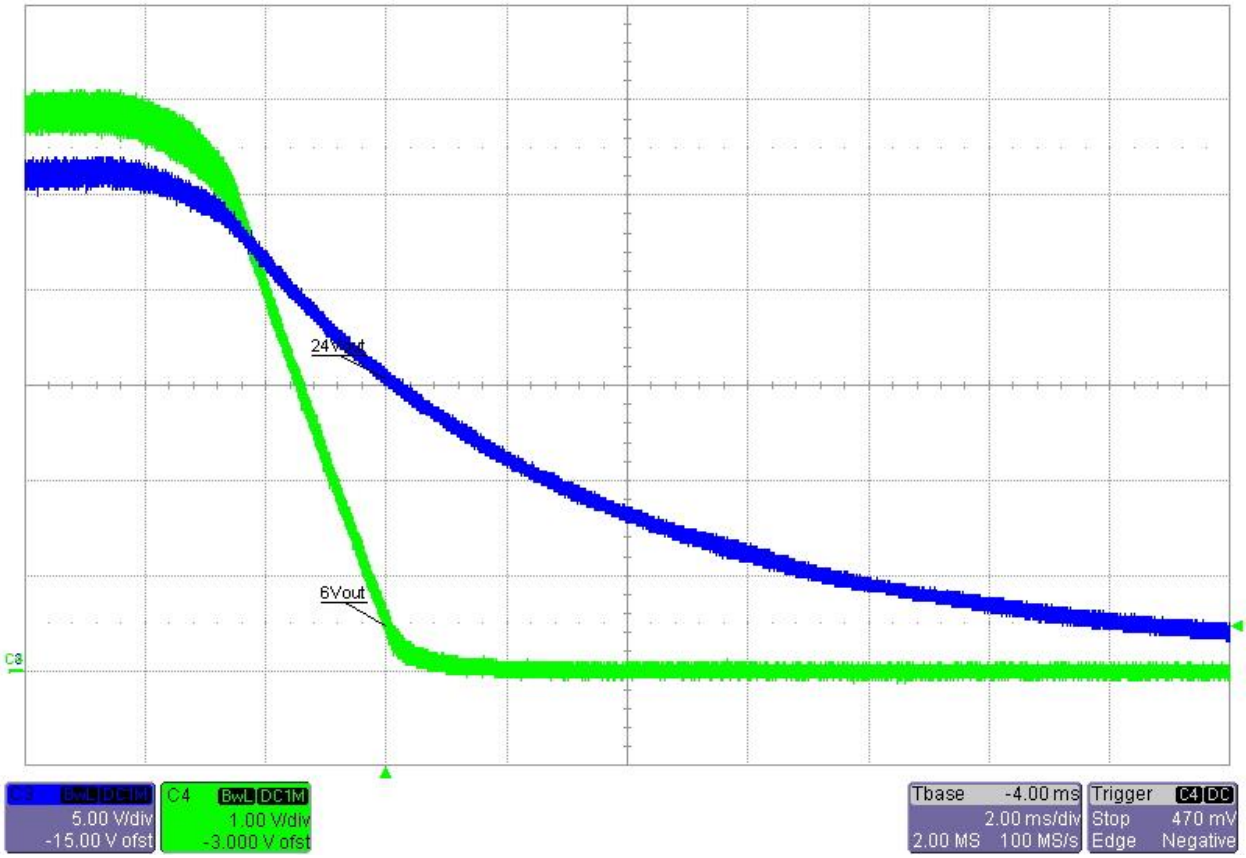


Input voltage = 273VAC
Load current = full load (24V@0.5A, 6V@1.5A)



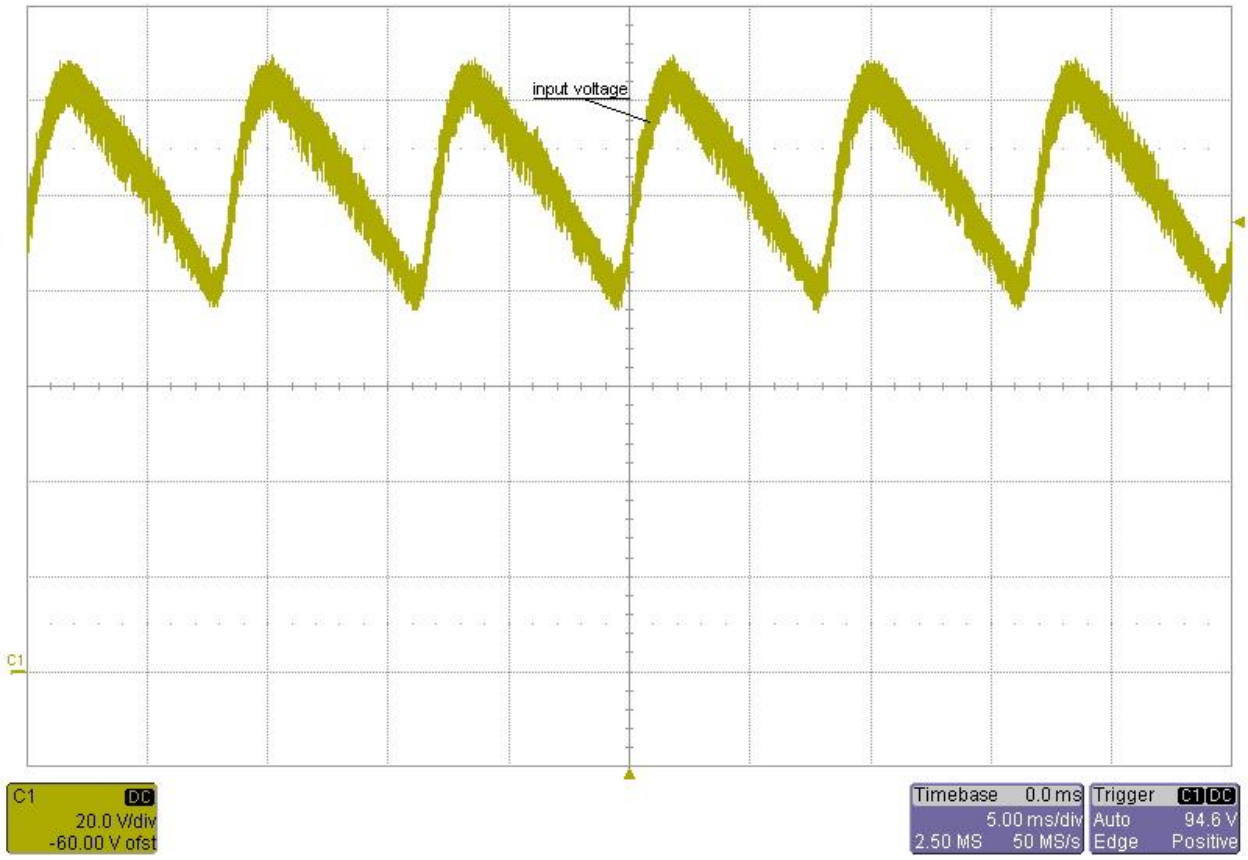
2 Shutdown

Input voltage = 230VAC
Load current = full load (24V@0.5A, 6V@1.5A)

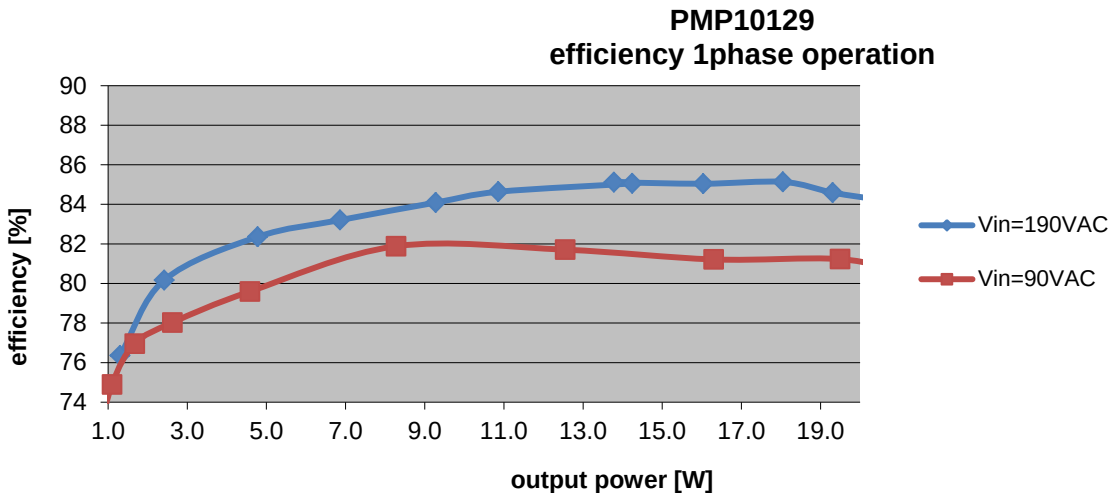


3 Input ripple

Input voltage = 90VAC/60Hz
Load current = full load (24V@0.5A, 6V@1.5A)



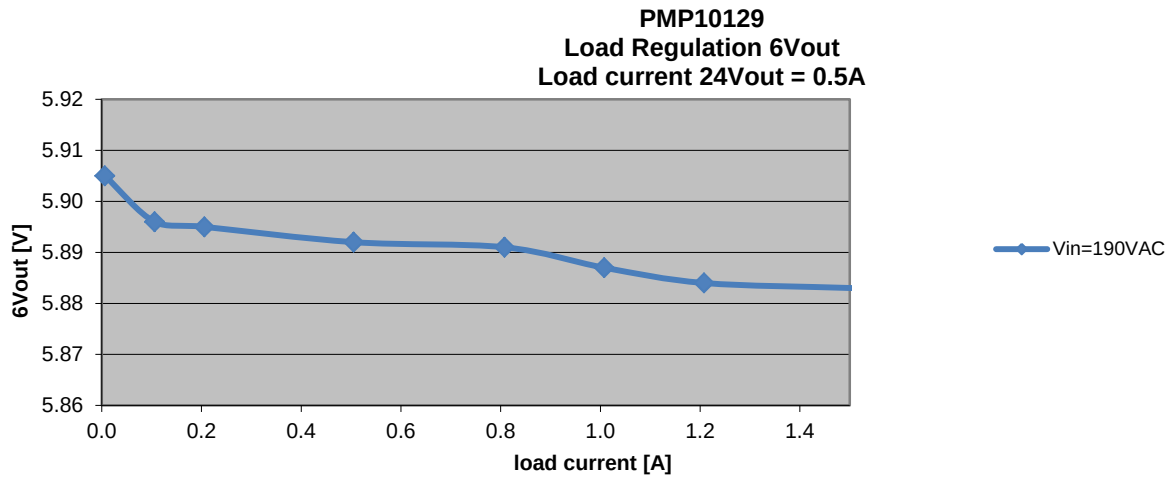
4 Efficiency



5 Load regulation

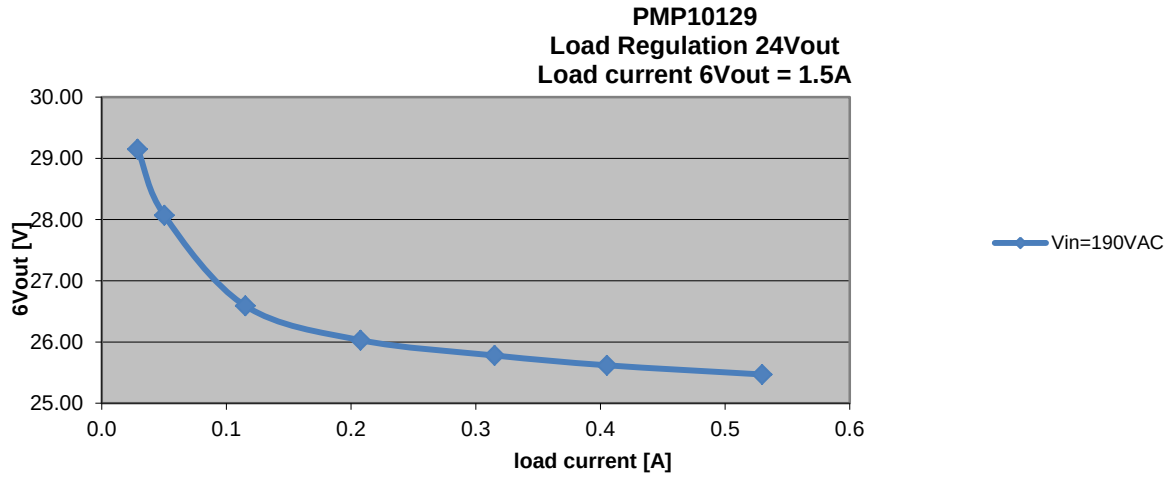
5.1 6Vout:

Input voltage = 190VAC
Load current 24V output = constant = 0.5A

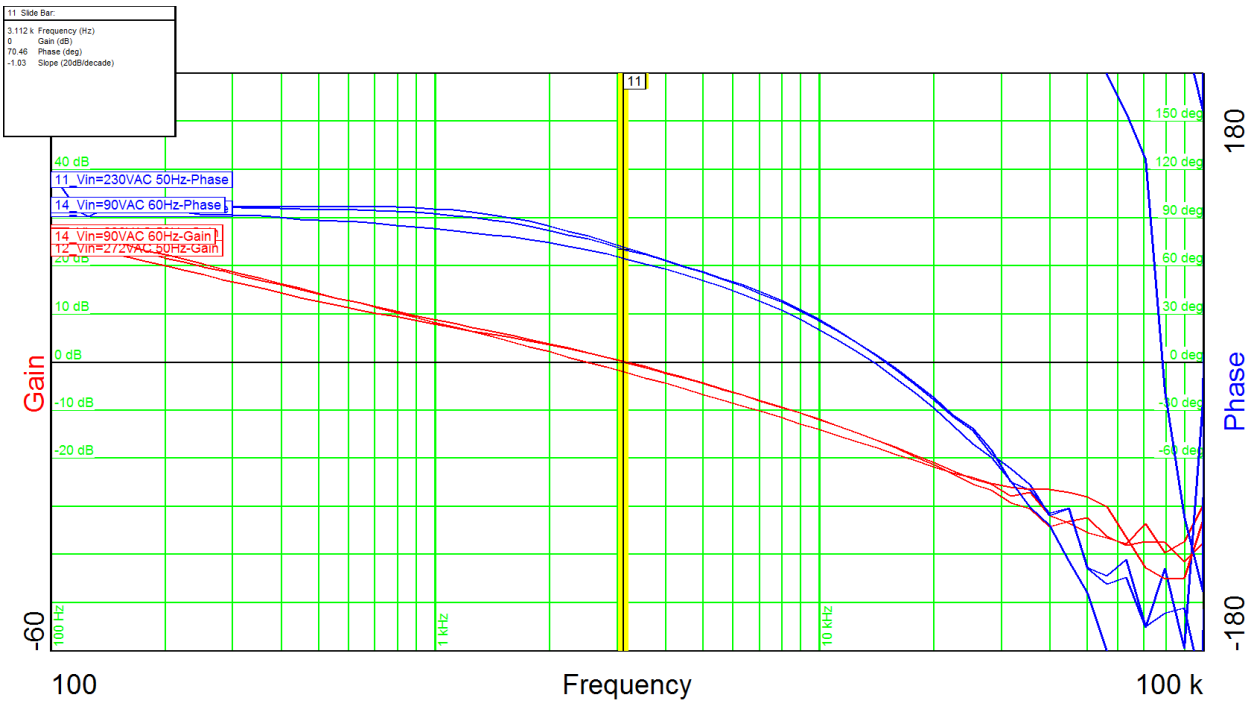


5.2 24Vout:

Input voltage = 190VAC
Load current 6V output = constant = 1.5A



Control Loop Frequency Response



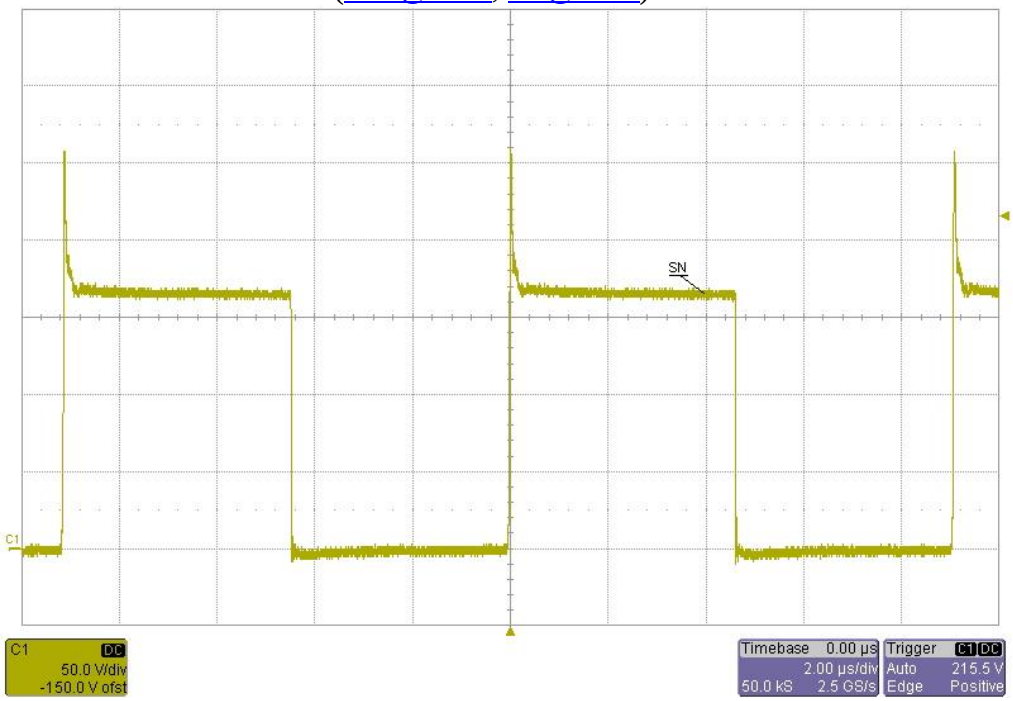
Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 90VAC
Phase margin = 70°
Bandwidth = 2.5kHz

Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 230VAC
Phase margin = 70°
Bandwidth = 3.1kHz

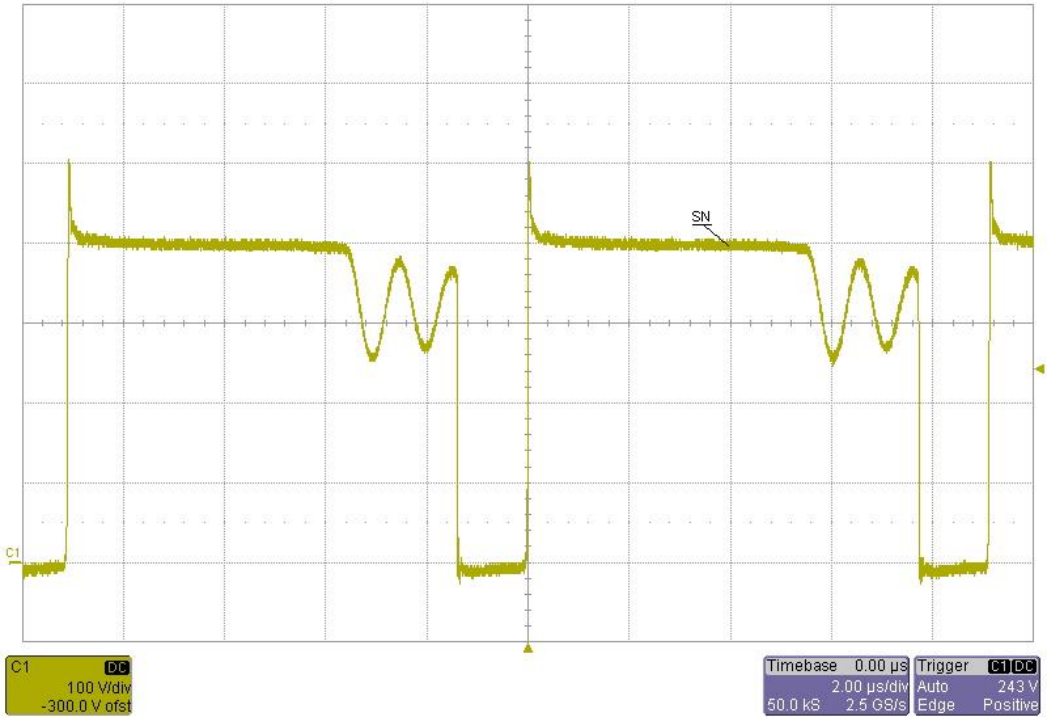
Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 273VAC
Phase margin = 71°
Bandwidth = 3.2kHz

6 Switch Node

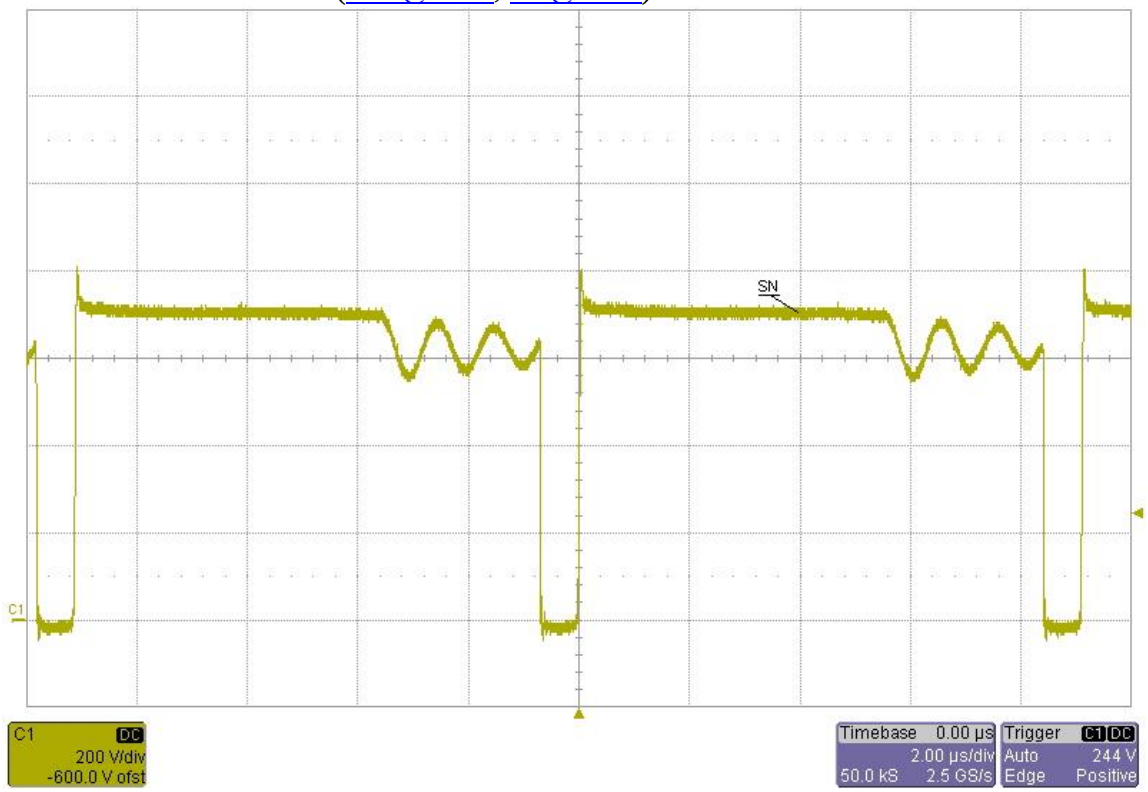
Input voltage = 90VDC
Load current = full load (24V@0.5A, 6V@1.5A)



Input voltage = 325VDC
Load current = full load (24V@0.5A, 6V@1.5A)

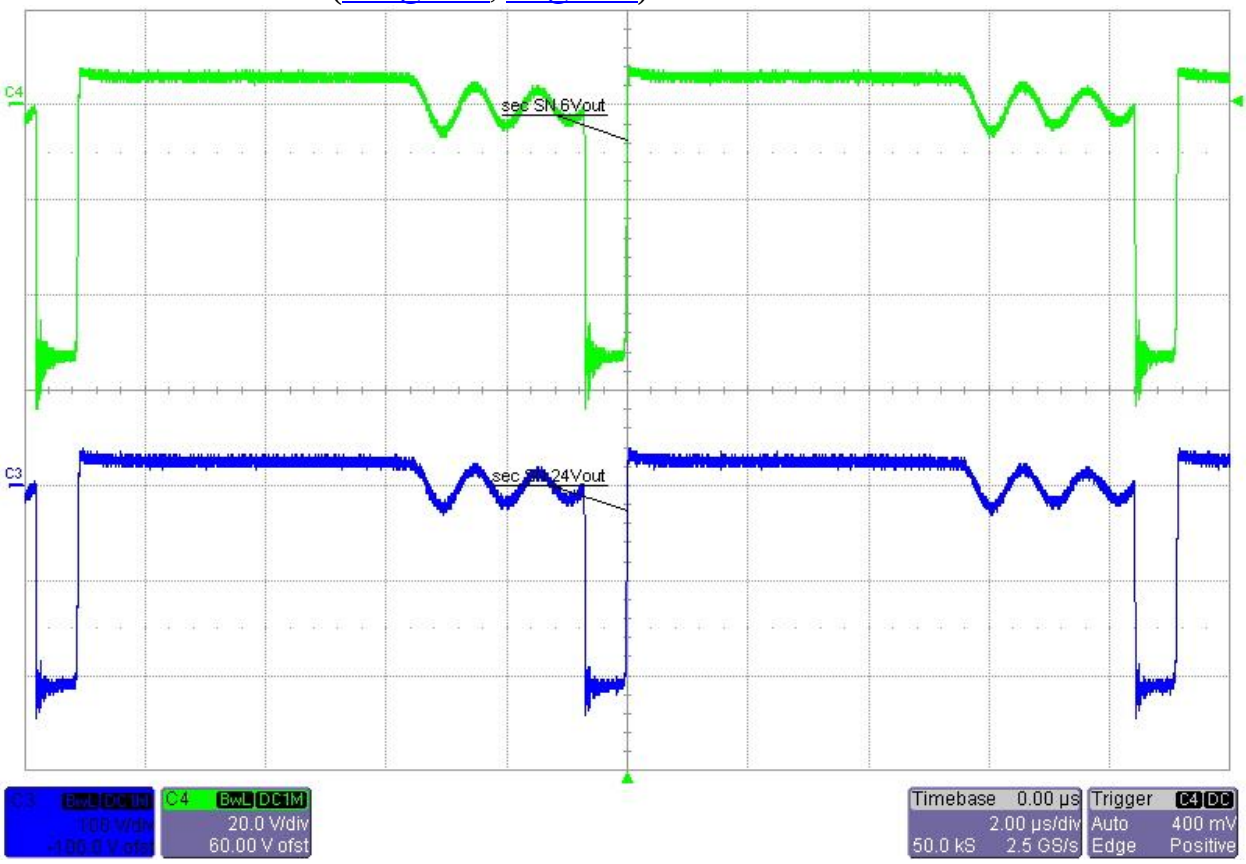


Input voltage = 630VDC
Load current = full load (24V@0.5A, 6V@1.5A)



7 Switch Nodes secondary side

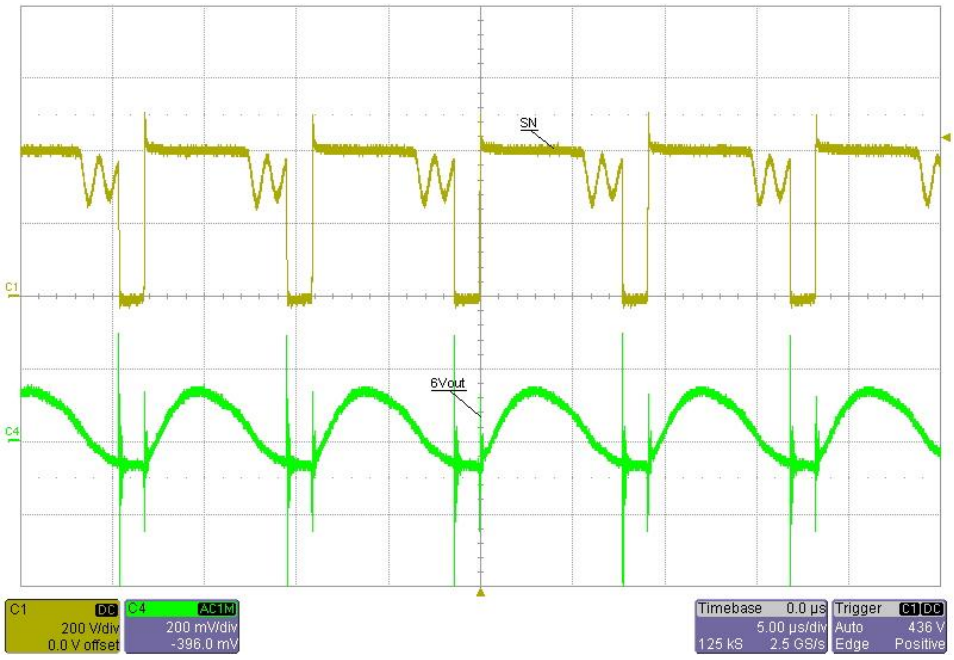
Input voltage = 630VDC
Load current = full load (24V@0.5A, 6V@1.5A)



8 Output ripple voltage

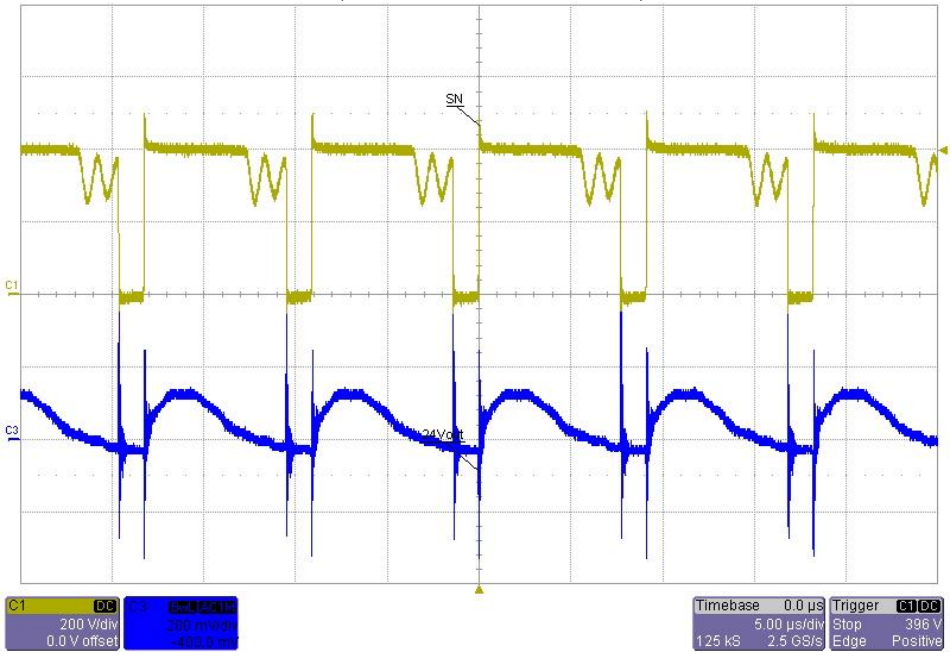
8.1 6Vout:

Input voltage = 230VAC
Load current = full load (24V@0.5A, 6V@1.5A)



8.2 24Vout:

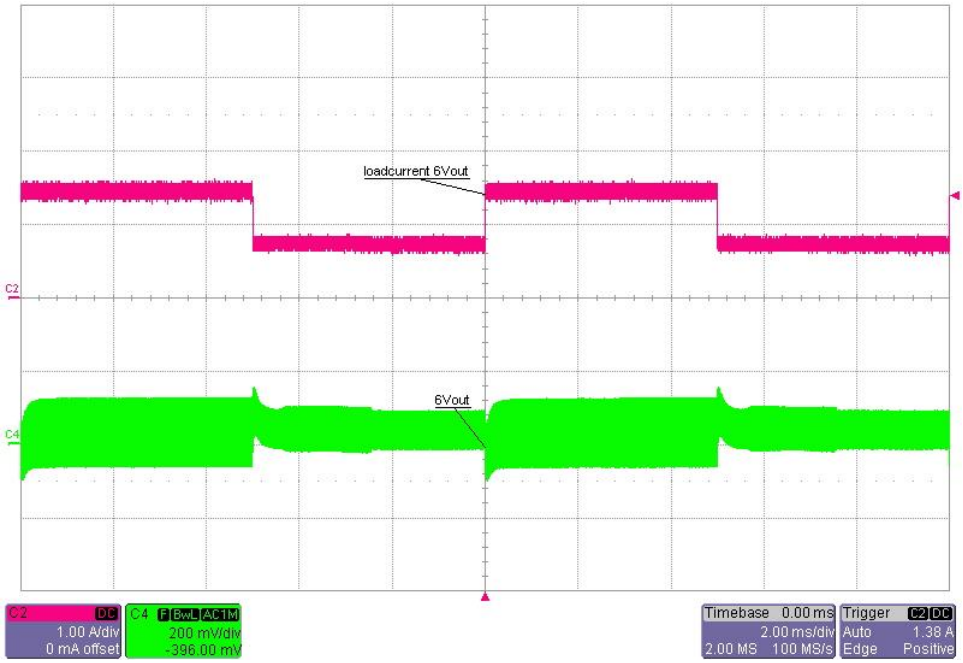
Input voltage = 230VAC
Load current = full load (24V@0.5A, 6V@1.5A)



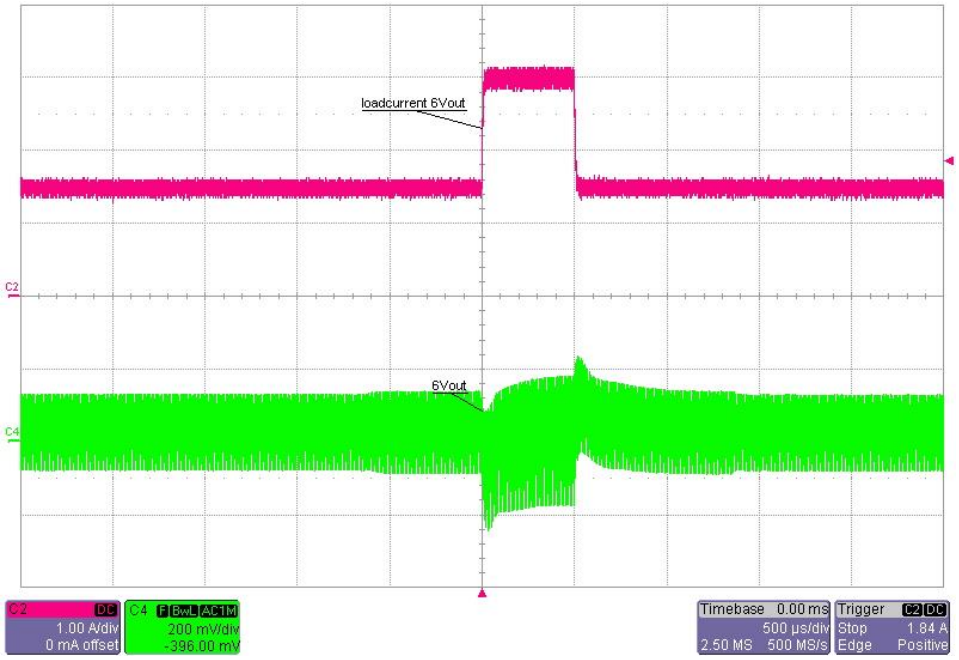
9 Load Transients

9.1 6Vout:

Input voltage = 230VAC
Load current 24Vout = 0.5A
Load current 6Vout = 0.75A to 1.5A

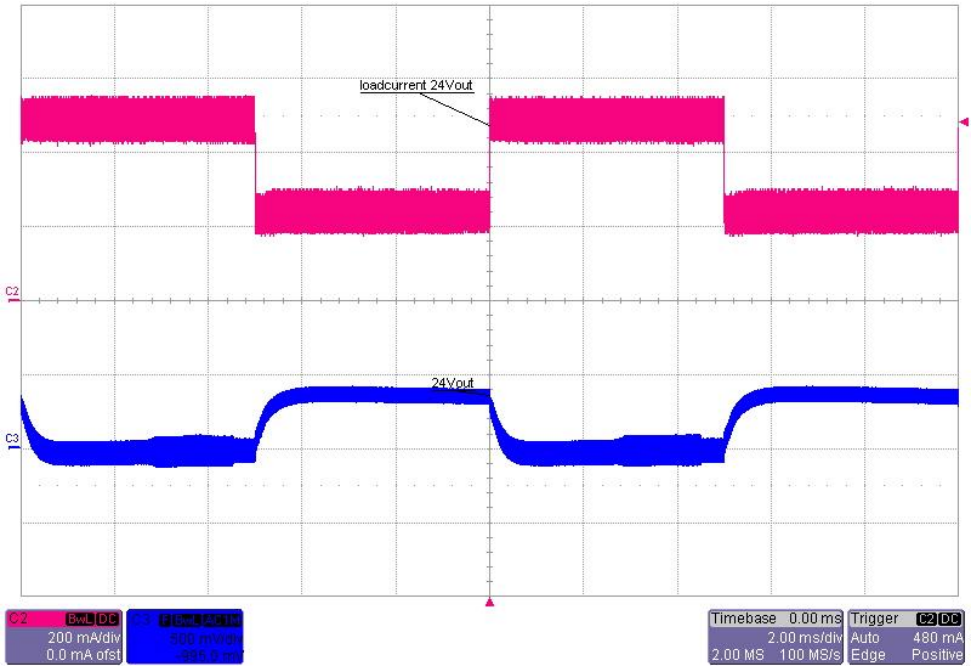


Input voltage = 230VAC
Load current 24Vout = 0.5A
Load current 6Vout = 1.5A to 3A

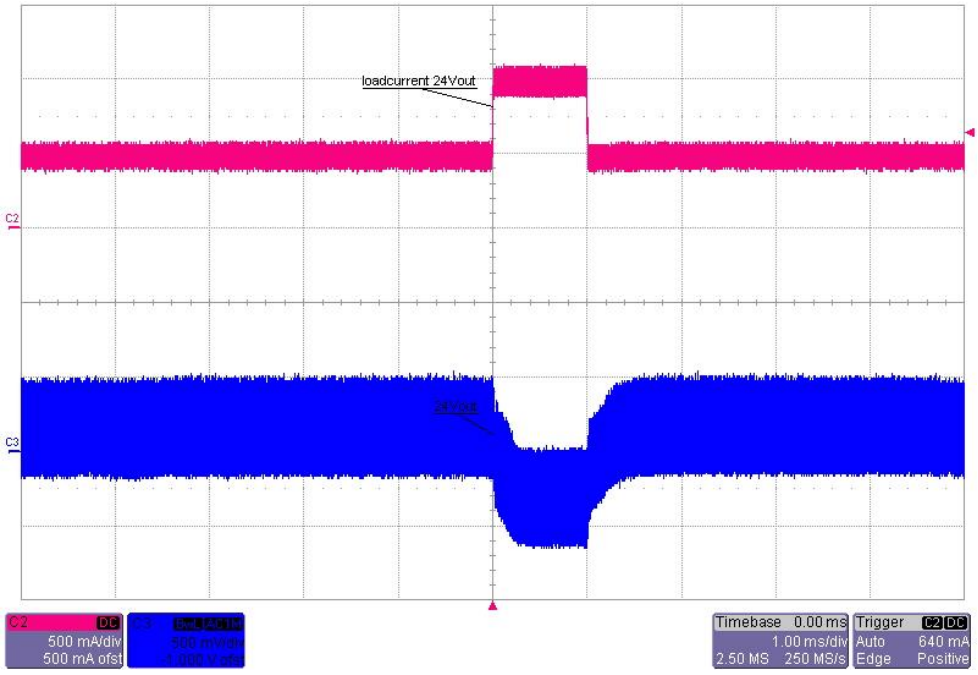


9.2 24Vout:

Input voltage = 230VAC
Load current 6Vout = 1.5A
Load current 24Vout = 0.25A to 0.5A



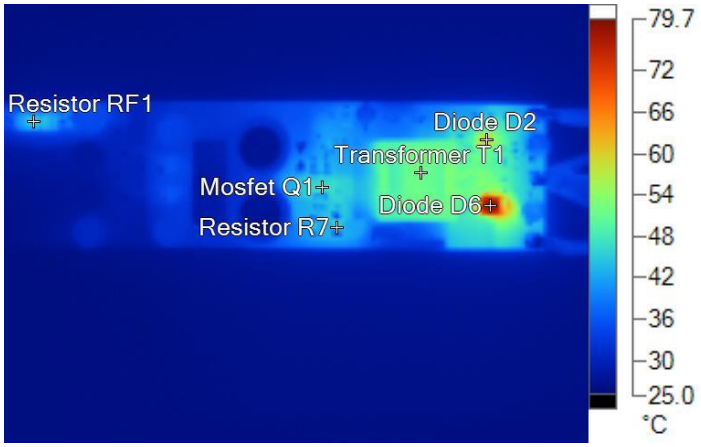
Input voltage = 230VAC
Load current 6Vout = 1.5A
Load current 24Vout = 0.5A to 1A



10 Thermal Analysis

The images below show the infrared images taken from the FlexCam after 15min at 20W output power.

Input voltage = 190VAC
Load current = full load (24V@0.5A, 6V@1.5A)
Ambient temperature = 25°C
No heatsink, no airflow



IR20150910_0639 full load Vin=190VAC.is2

Name	Temperature	
Resistor RF1	44.7°C	
Mosfet Q1	46.6°C	
Resistor R7	45.6°C	
Diode D6	79.7°C	
Diode D2	60.9°C	
Transformer T1	51.5°C	

Worst Case Measurement:

Minimum Input Voltage and just 1 phase is working:
Input voltage = 90VAC
Load current = full load (24V@0.5A, 6V@1.5A)
Ambient temperature = 25°C
No heatsink, no airflow

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