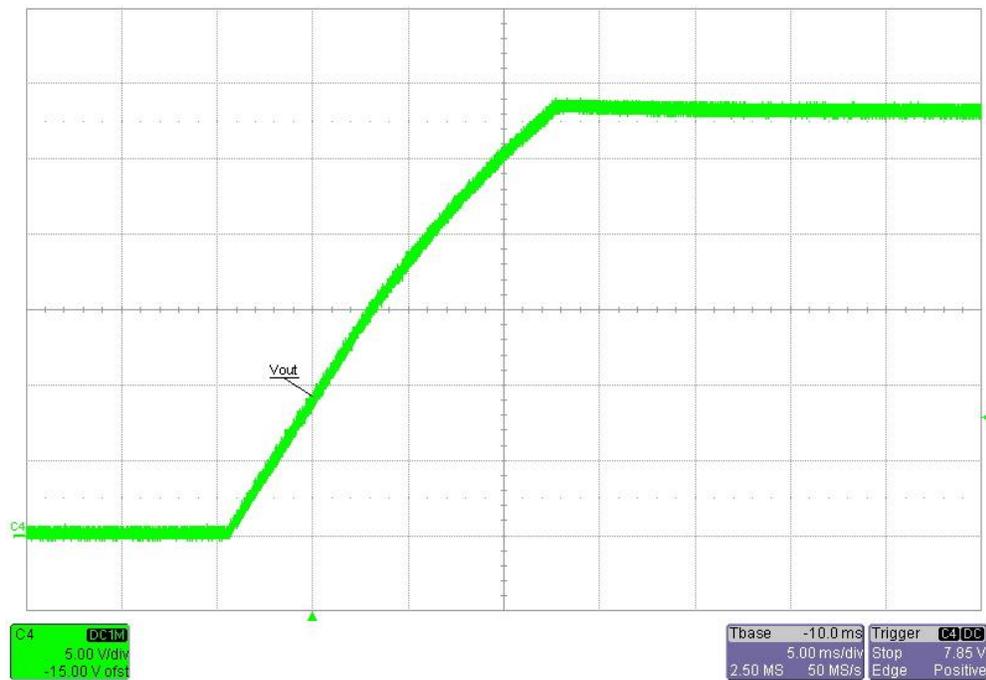
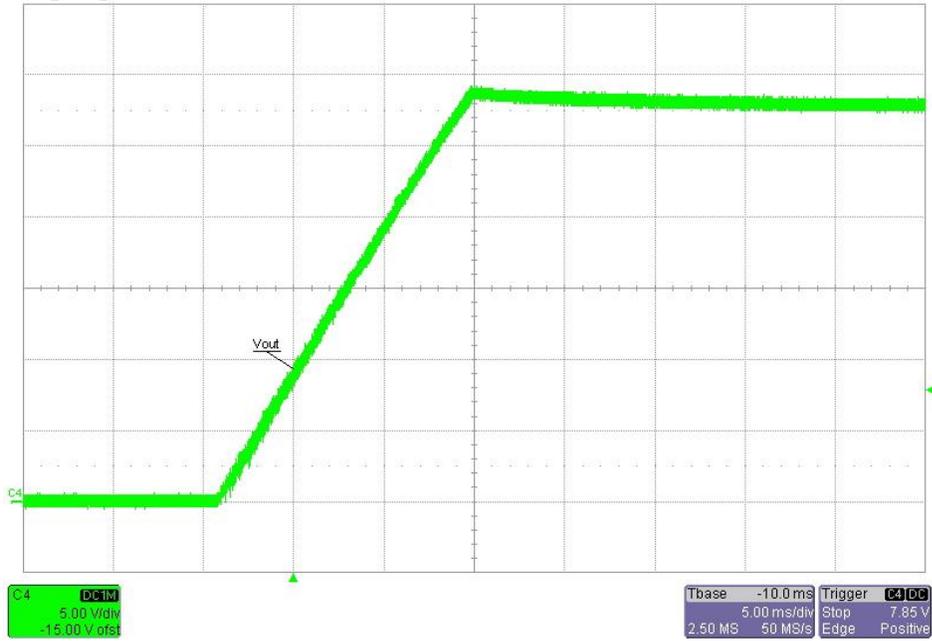


1 Startup

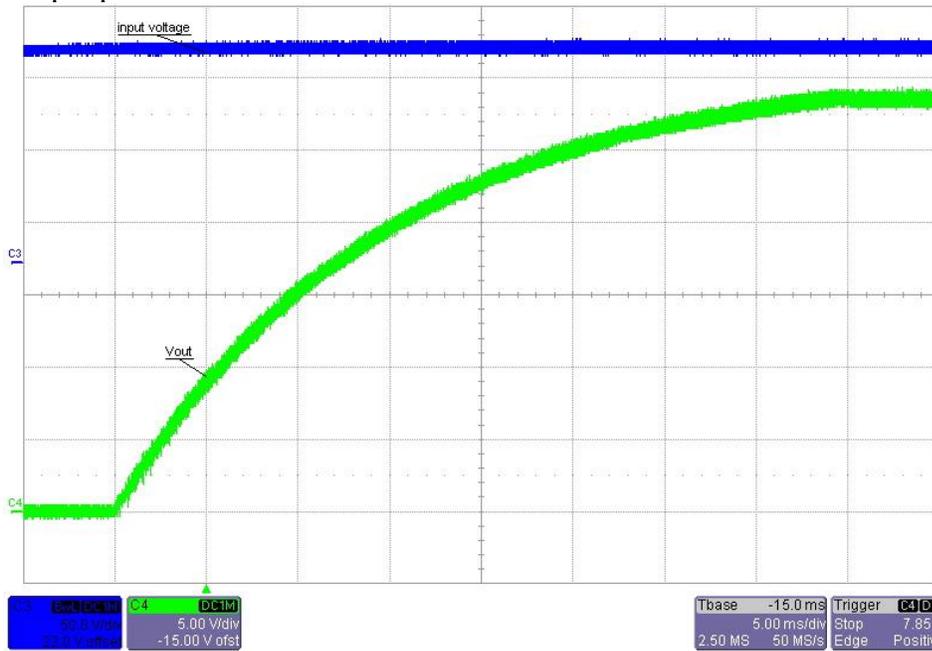
Input voltage = 25.5VDC
Output power = 0W



Input voltage = 150VDC
Output power = 0W

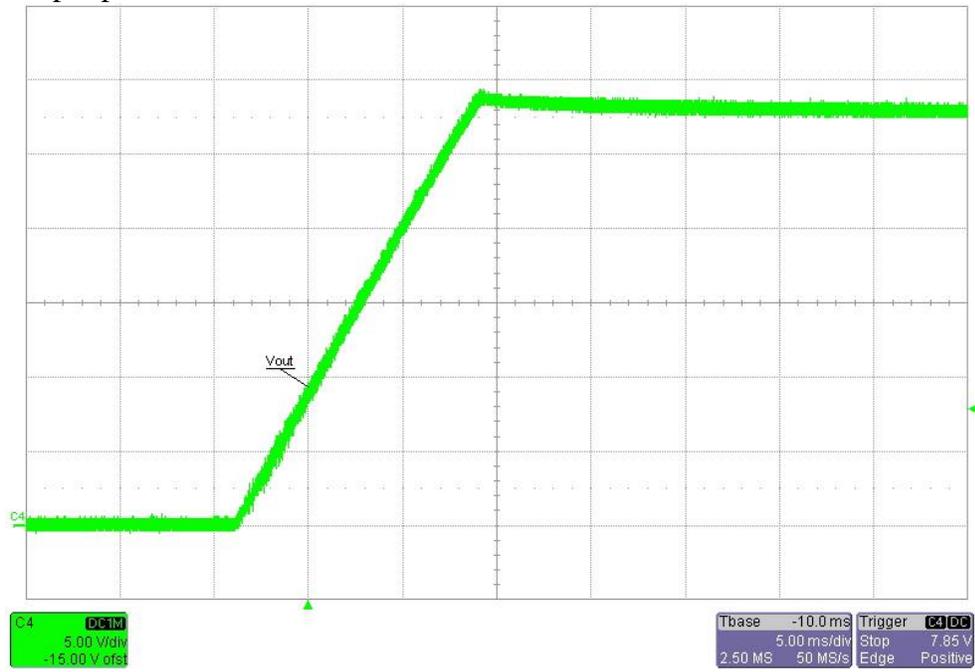


Input voltage = 150VDC
Output power = 20W



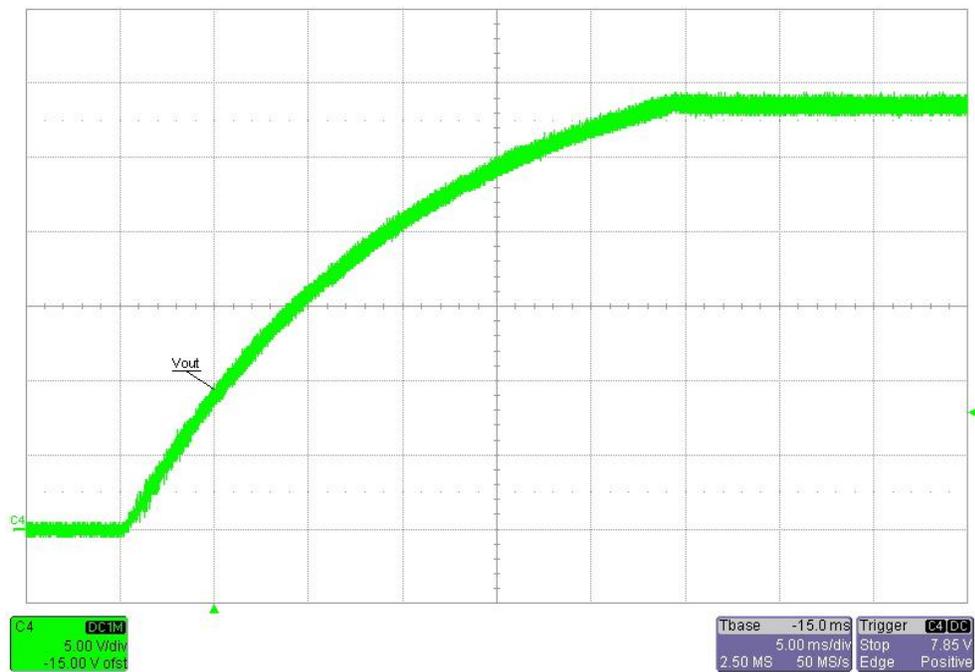
Input voltage = 520VDC

Output power = 0W



Input voltage = 520VDC

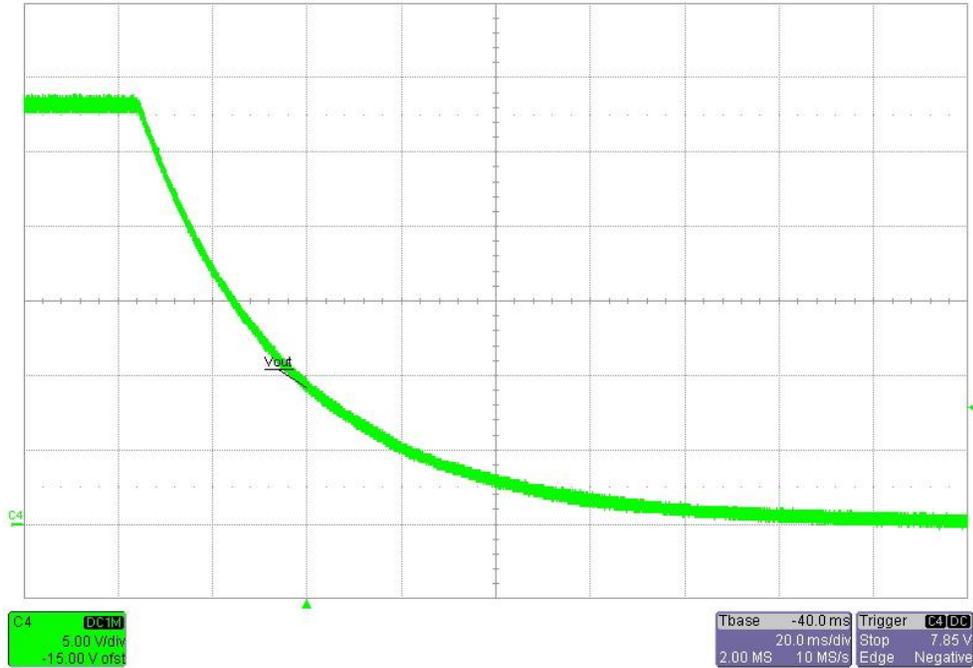
Output power = 20W



2 Shutdown

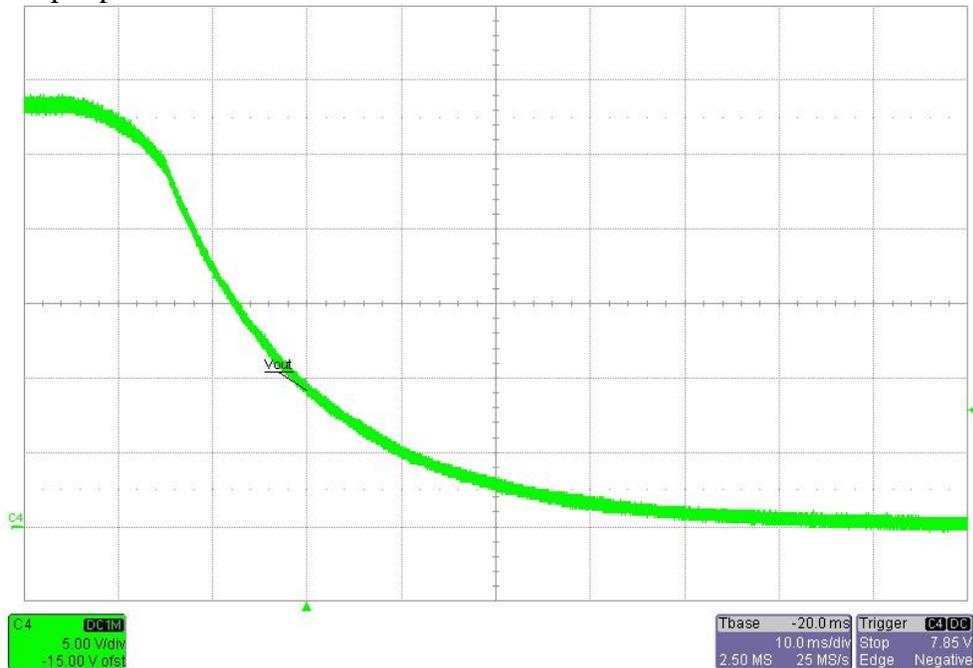
Input voltage = 25VDC

Output power = 10W



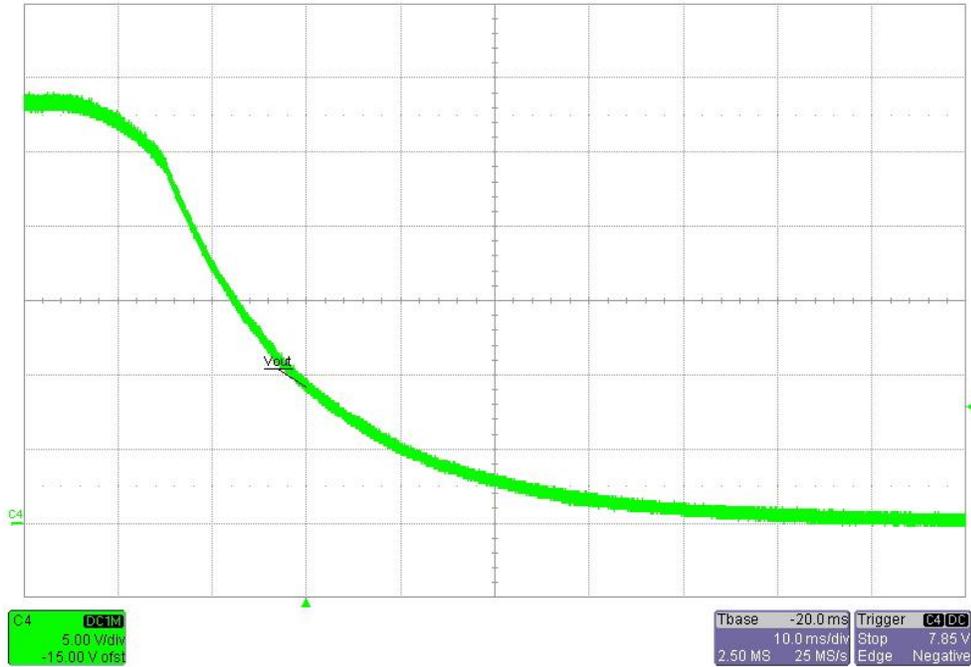
Input voltage = 150VDC

Output power = 20W

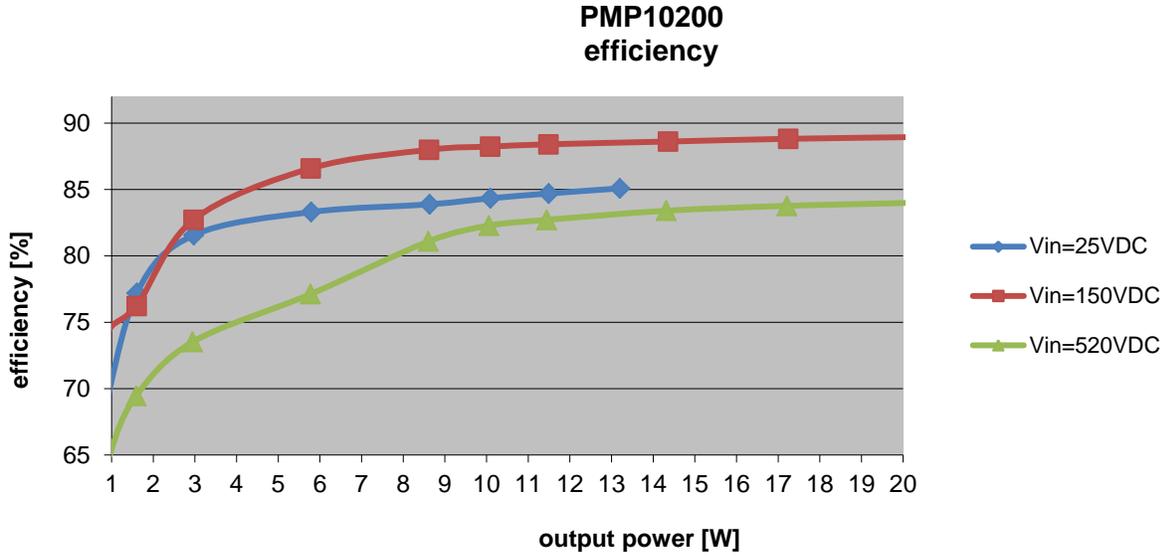


Input voltage = 520VDC

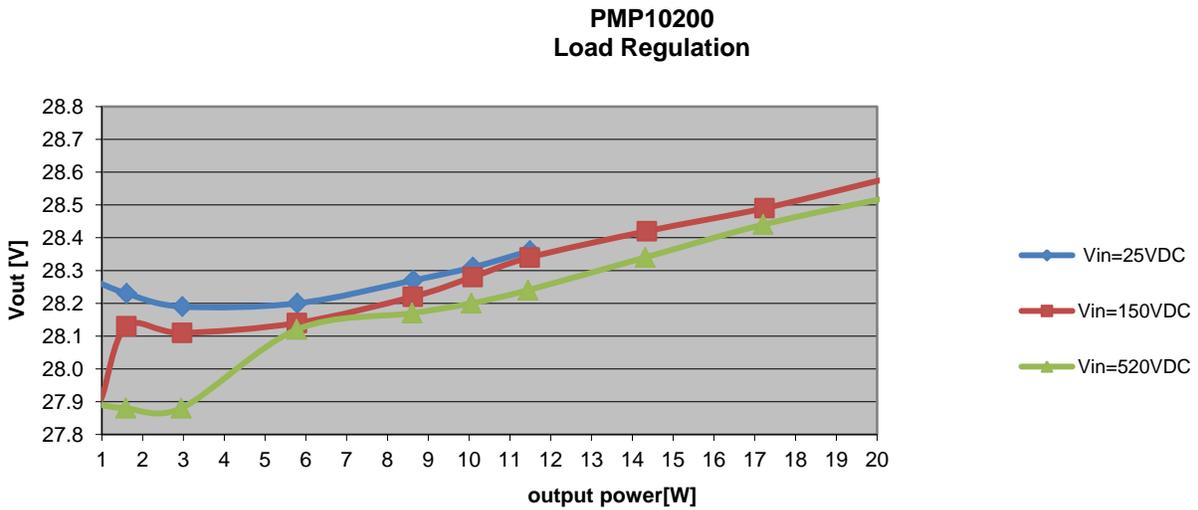
Output power = 20W



3 Efficiency



4 Load regulation

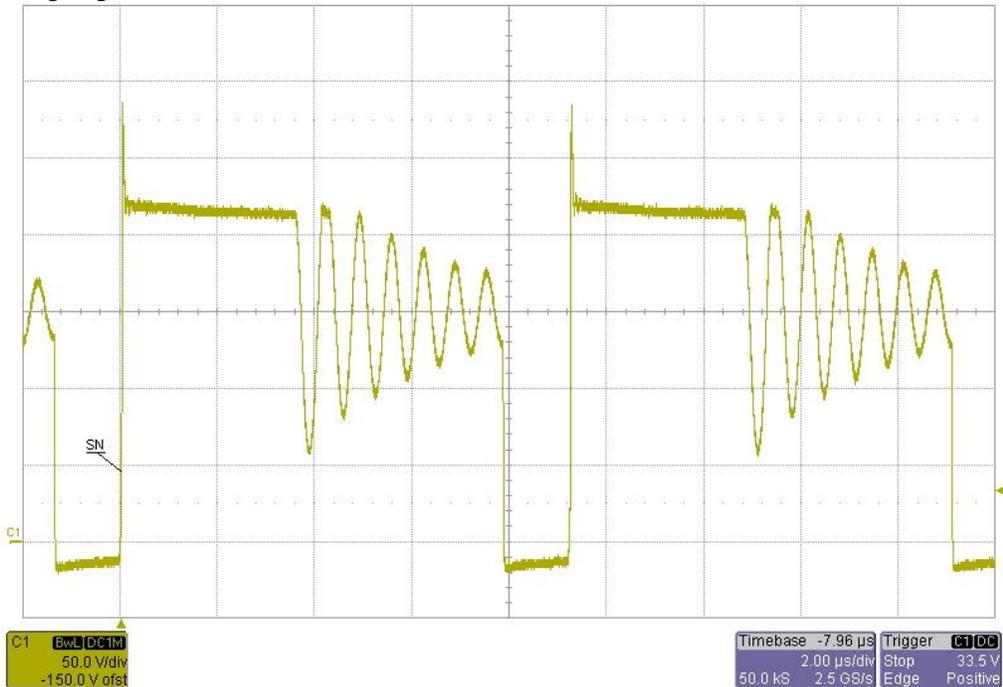


5 Switch Node

Input voltage = 25VDC
Output power = 10W

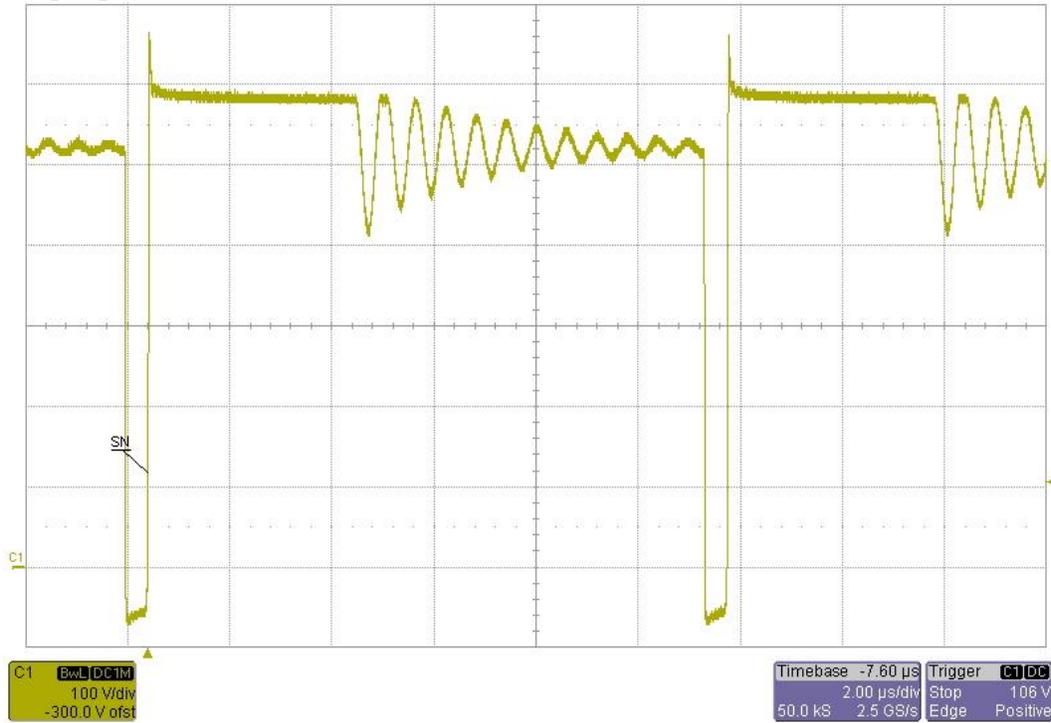


Input voltage = 150VDC
Output power = 20W



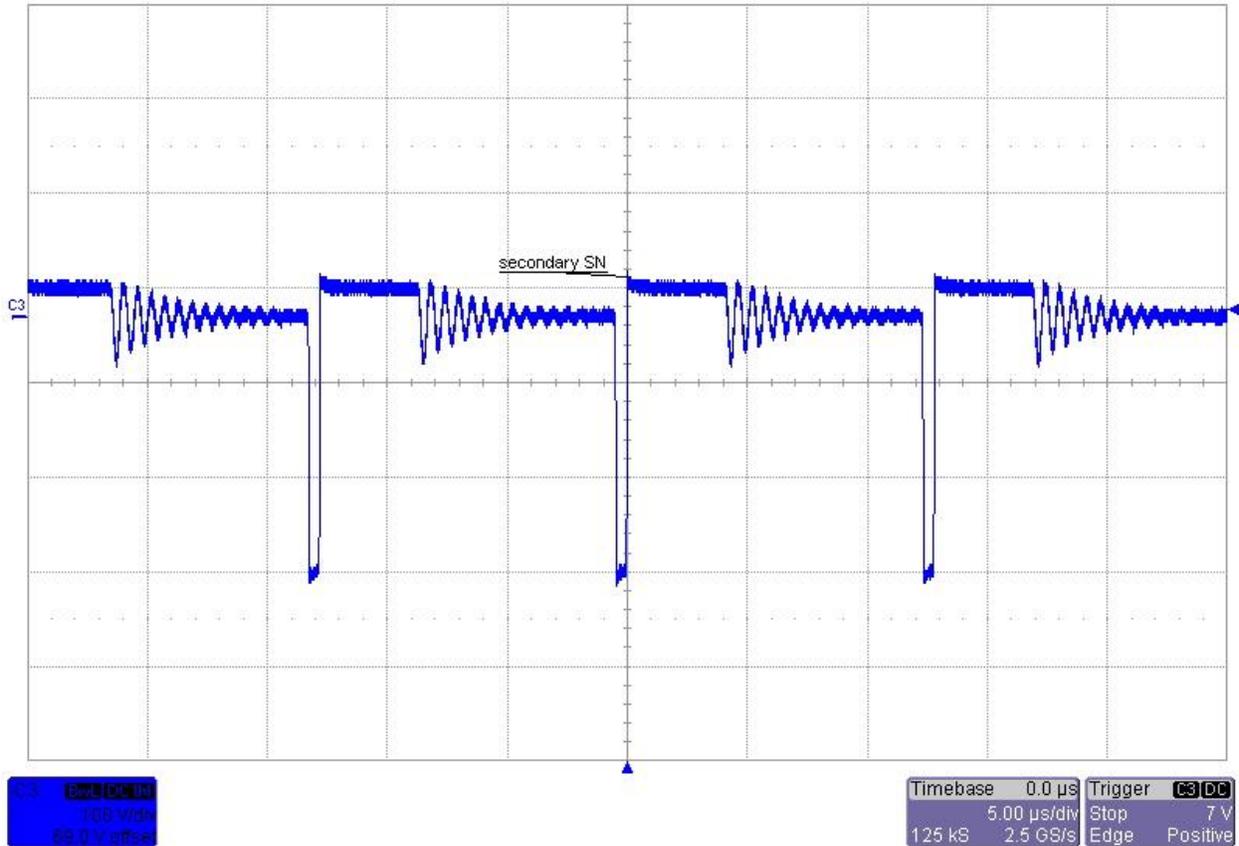
Input voltage = 520VDC

Output power = 20W



6 Switch Node secondary side

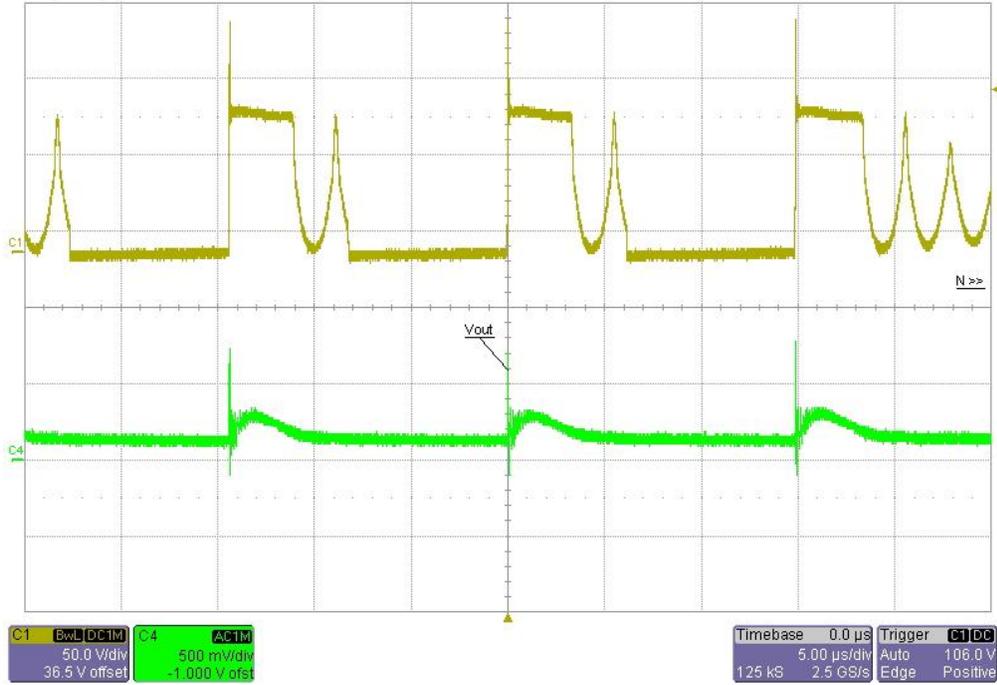
Input voltage = 520VDC
Output power = 20W



7 Output ripple voltage

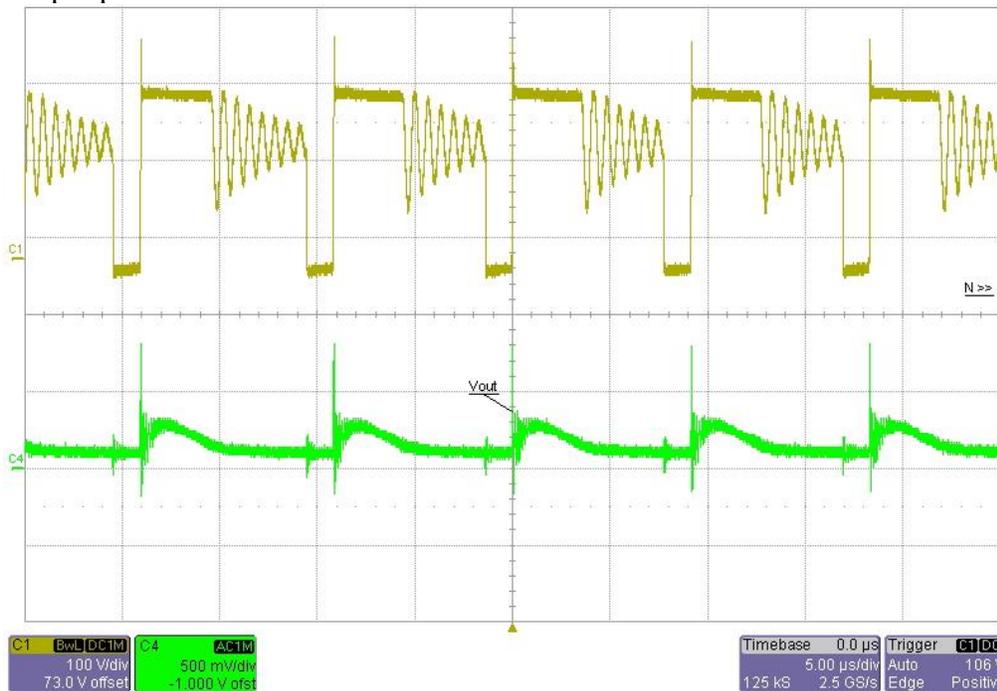
Input voltage = 25VDC

Output power = 10W



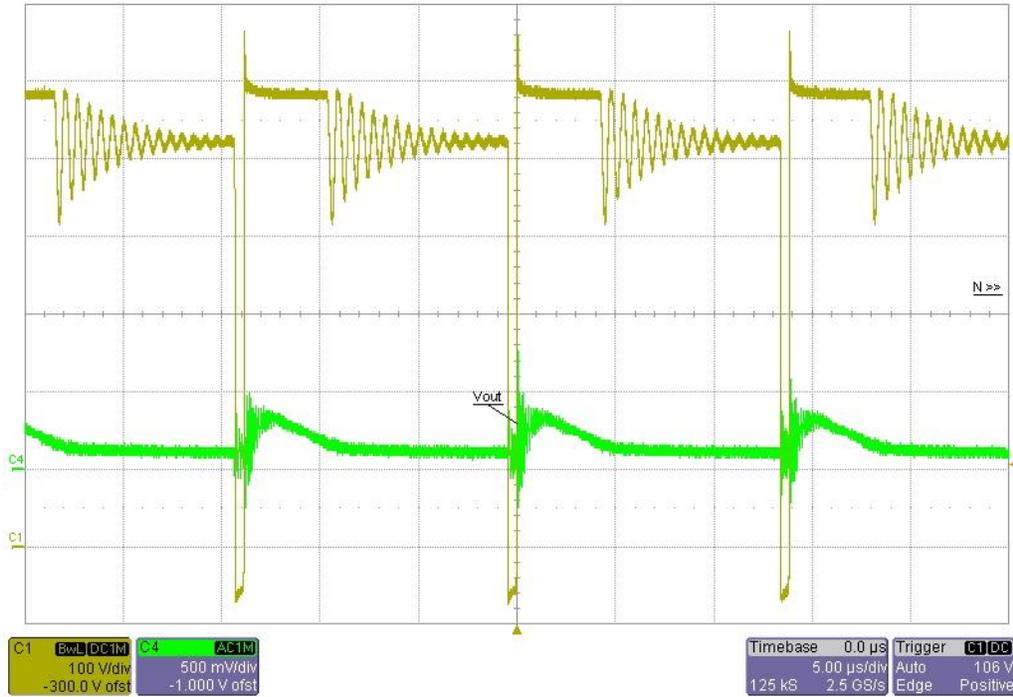
Input voltage = 150VDC

Output power = 20W



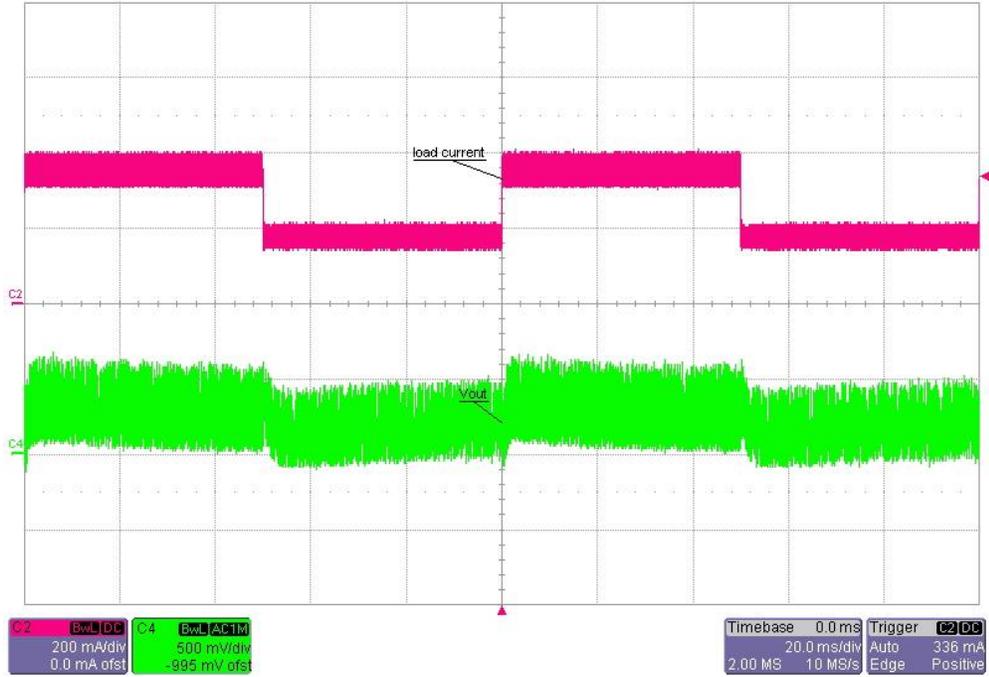
Input voltage = 520VDC

Output power = 20W

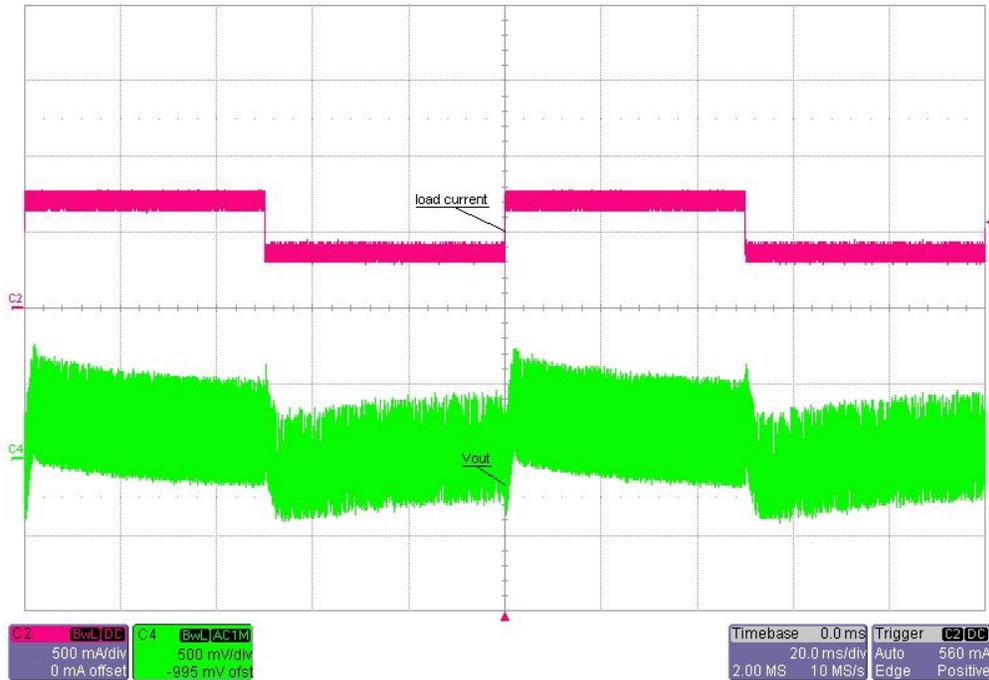


8 Load Transients

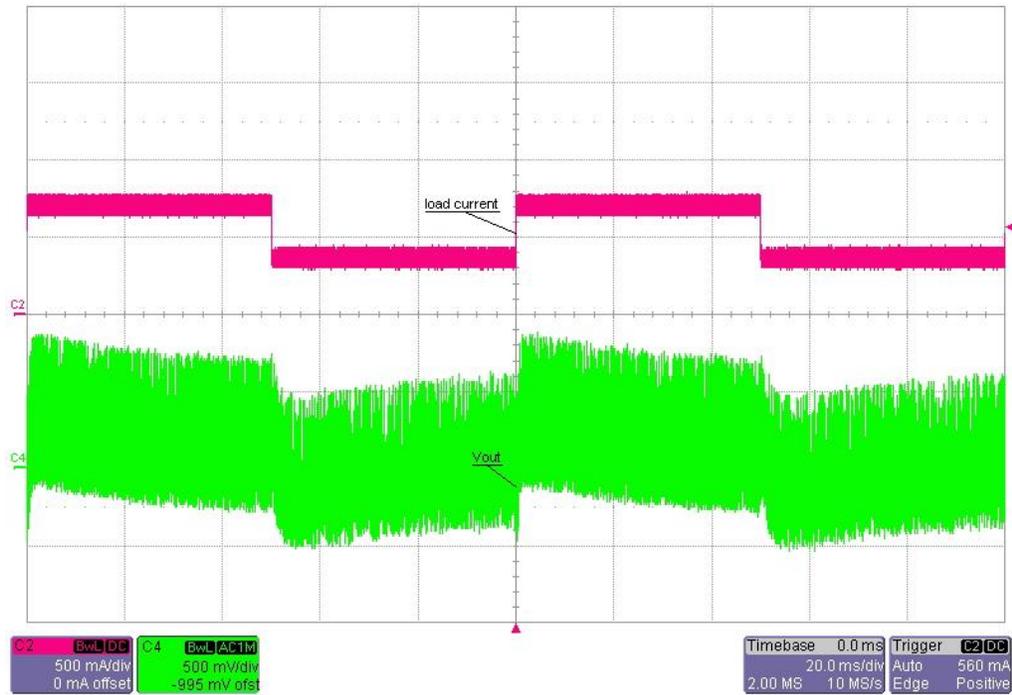
Input voltage = 25VDC
Load current = 0.17A to 0.35A



Input voltage = 150VDC
Load current = 0.35A to 0.7A



Input voltage = 520VDC
Load current = 0.35A to 0.7A



9 Thermal Analysis

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

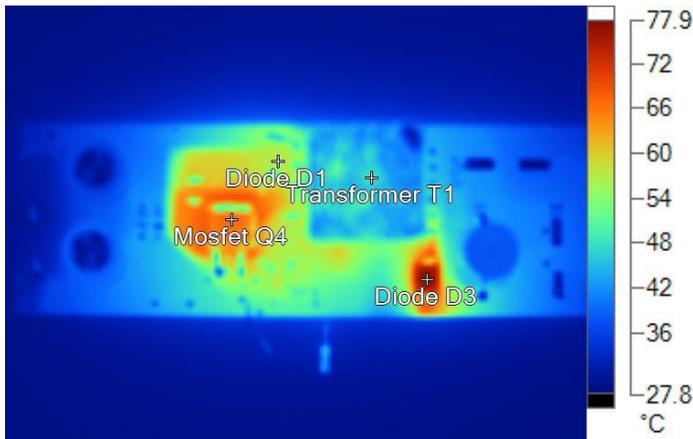
Top View

Input voltage = 520VDC

Output power = 20W

Ambient temperature = 25°C

No heatsink, no airflow



| Name | Temperature |
|----------------|-------------|
| Mosfet Q4 | 66.8°C |
| Diode D3 | 77.9°C |
| Transformer T1 | 47.7°C |
| Diode D1 | 57.3°C |

Vin=520VDC Pout=20W Top

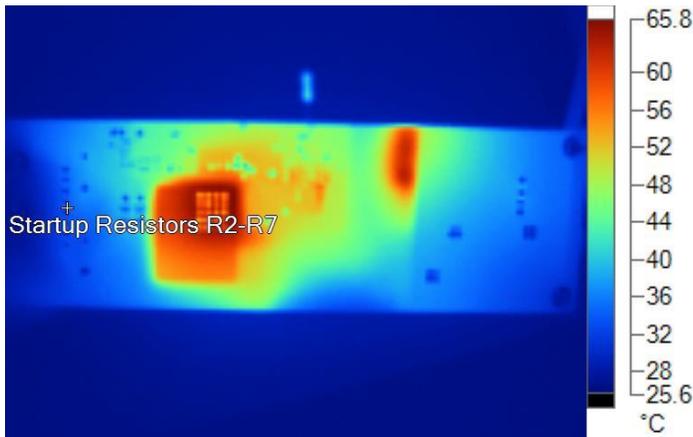
Bottom View

Input voltage = 520VDC

Output power = 20W

Ambient temperature = 25°C

No heatsink, no airflow



| Name | Temperature |
|-------------------------|-------------|
| Startup Resistors R2-R7 | 33.5°C |

Vin=520VDC Pout=20W Bottom

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (<https://www.ti.com/legal/termsofsale.html>) or other applicable terms available either on [ti.com](https://www.ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2021, Texas Instruments Incorporated