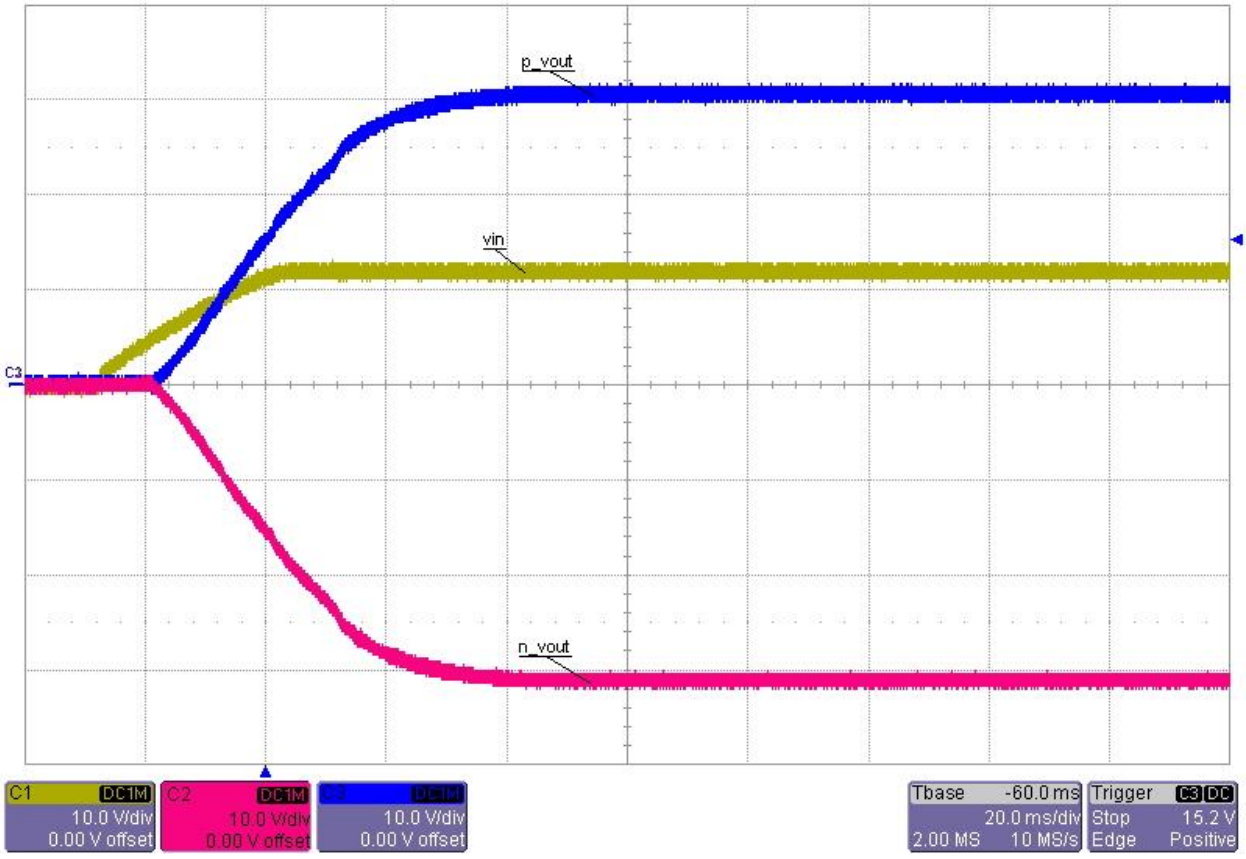
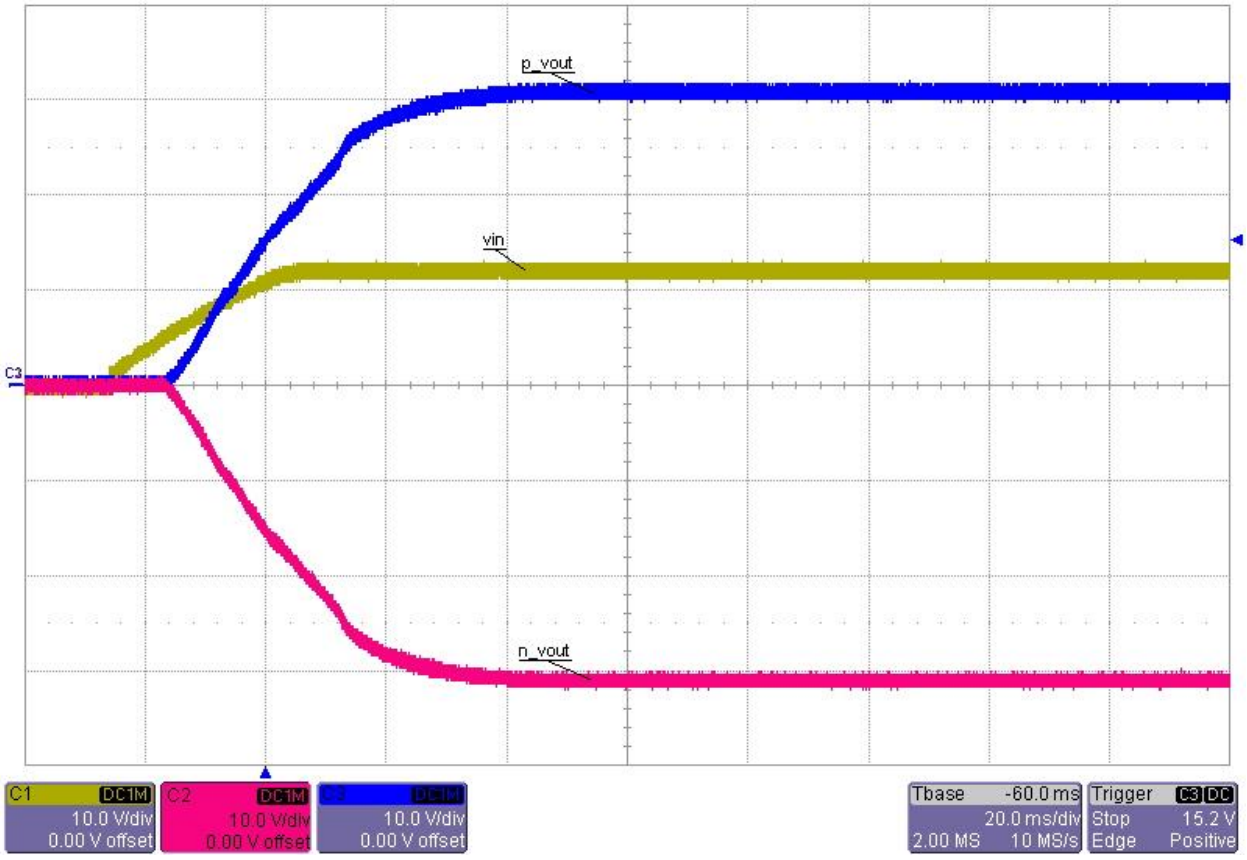
1 Startup

Input voltage = 12V
Load pos. output = 0.07A
Load neg. output = 0.07A

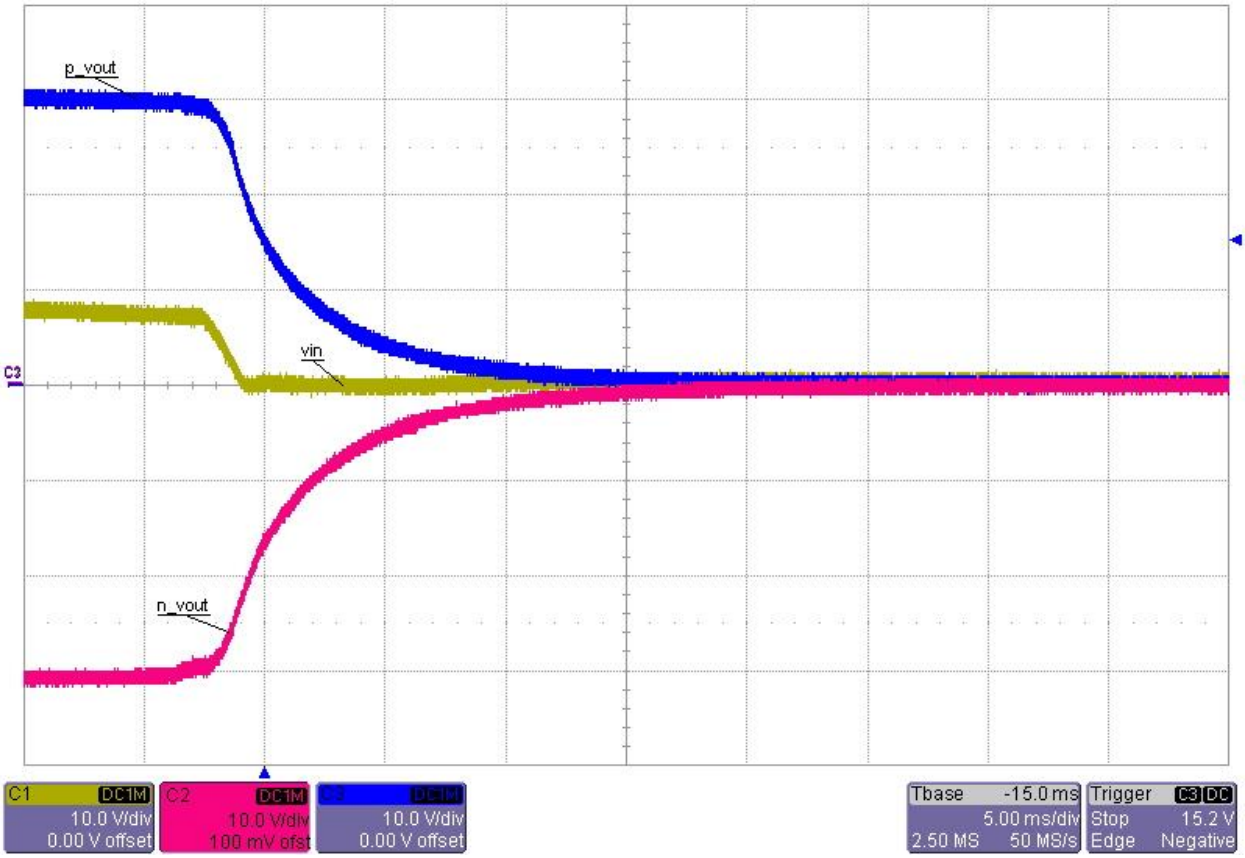


Input voltage = 12V
Load pos. output = no load
Load neg. output = no load



2 Shutdown

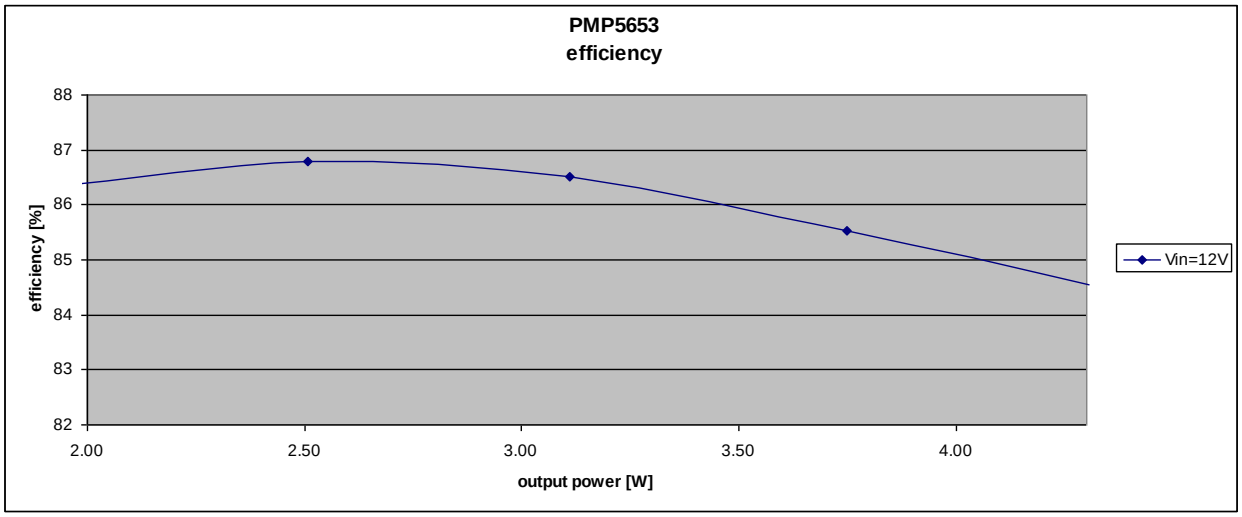
Input voltage = 12V
Load pos. output = 0.07A
Load neg. output = 0.07A



3 Efficiency

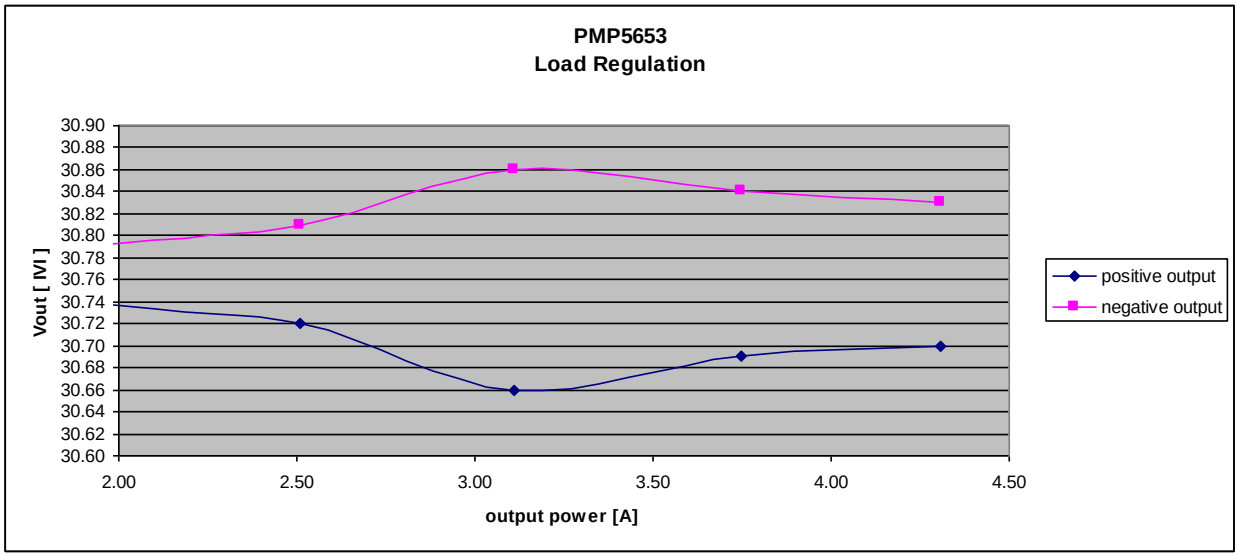
The efficiency of the system is shown in the graph below.

Input voltage = 12V



input		pos output		neg. output		efficiency
voltage [V]	current [A]	voltage [V]	current [A]	voltage [V]	current [A]	[%]
11.966	0.183	30.740	0.030	-30.790	-0.031	86.310
11.953	0.242	30.720	0.041	-30.810	-0.041	86.788
11.973	0.300	30.660	0.051	-30.860	-0.051	86.522
11.971	0.366	30.690	0.061	-30.840	-0.061	85.525
11.957	0.426	30.700	0.070	-30.830	-0.070	84.538

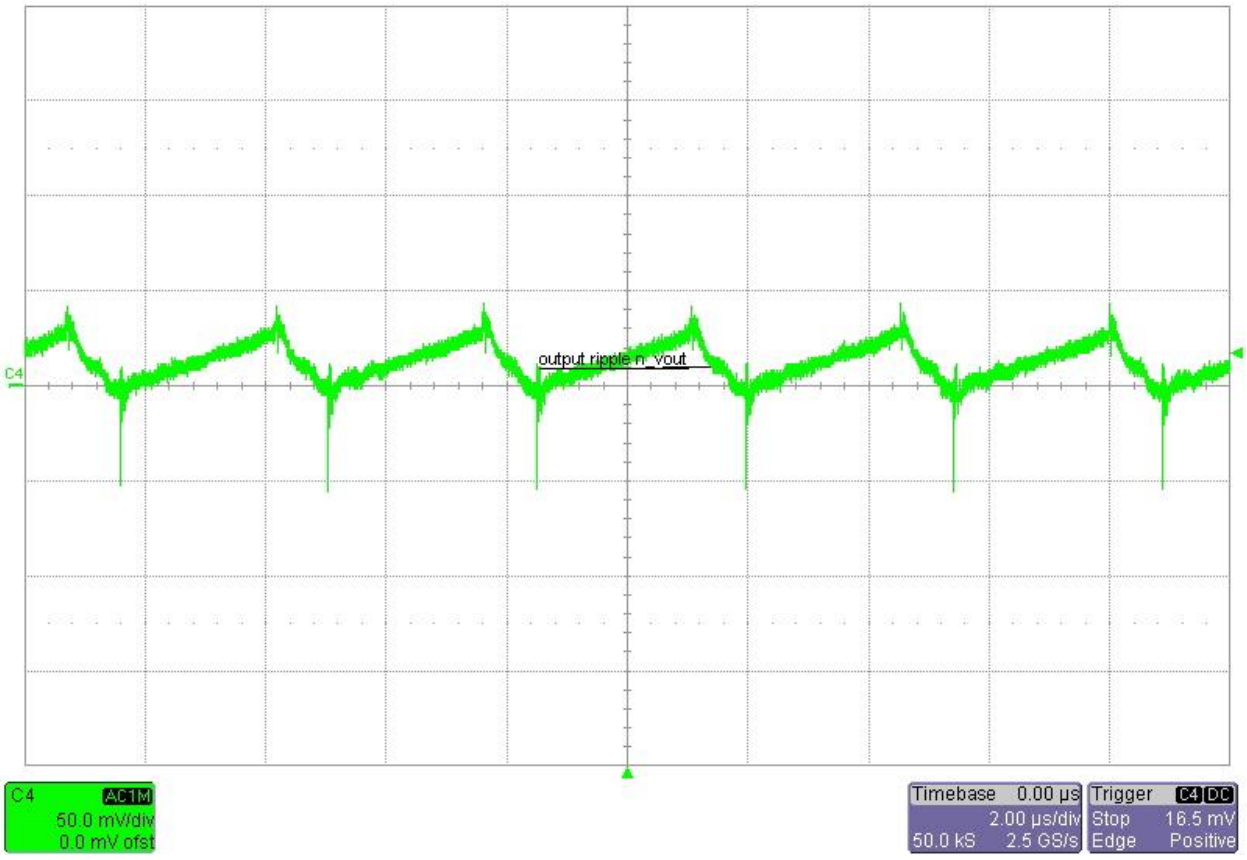
4 Load regulation



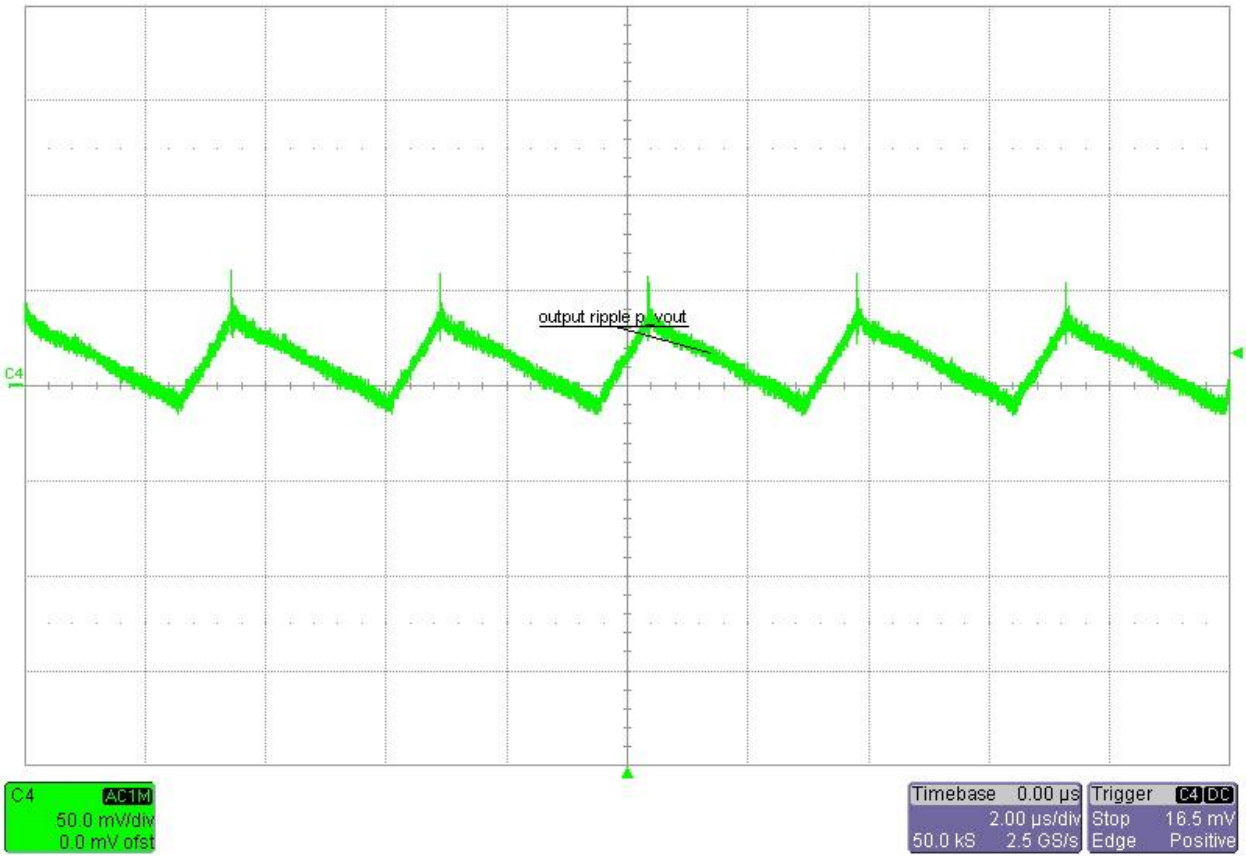
input		pos output		neg. output [absolute value]		output power
voltage [V]	current [A]	voltage [V]	current [A]	voltage [V]	current [A]	[W]
11.965	0.013	30.810	0.000	30.730	0.000	0
11.966	0.183	30.740	0.030	30.790	0.031	1.892
11.953	0.242	30.720	0.041	30.810	0.041	2.507
11.973	0.300	30.660	0.051	30.860	0.051	3.110
11.971	0.366	30.690	0.061	30.840	0.061	3.747
11.957	0.426	30.700	0.070	30.830	0.070	4.307

5 Output Ripple Voltage

Input voltage = 12V
Load pos. output = 0.07A
Load neg. output = 0.07A
CH4: output ripple voltage negative output

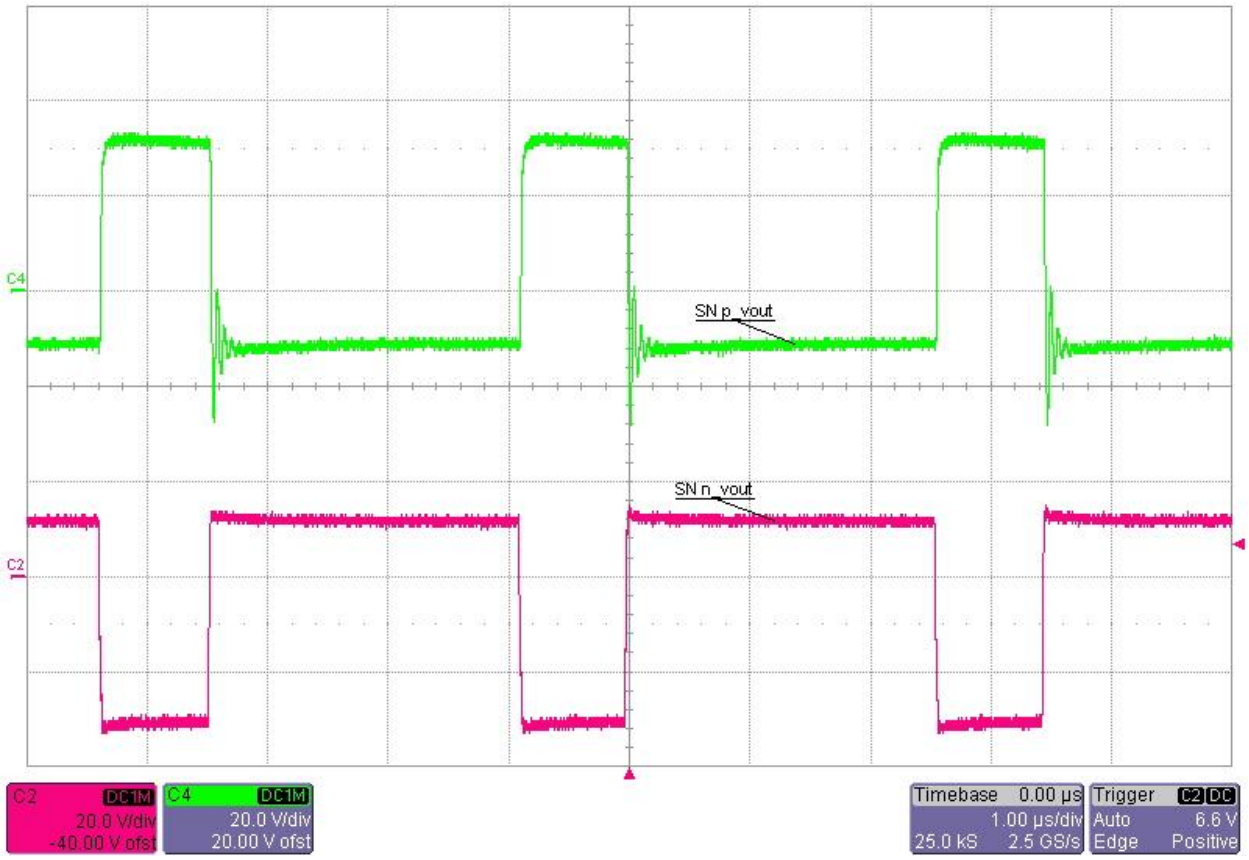


Input voltage = 12V
Load pos. output = 0.07A
Load neg. output = 0.07A
CH4: output ripple voltage positive output



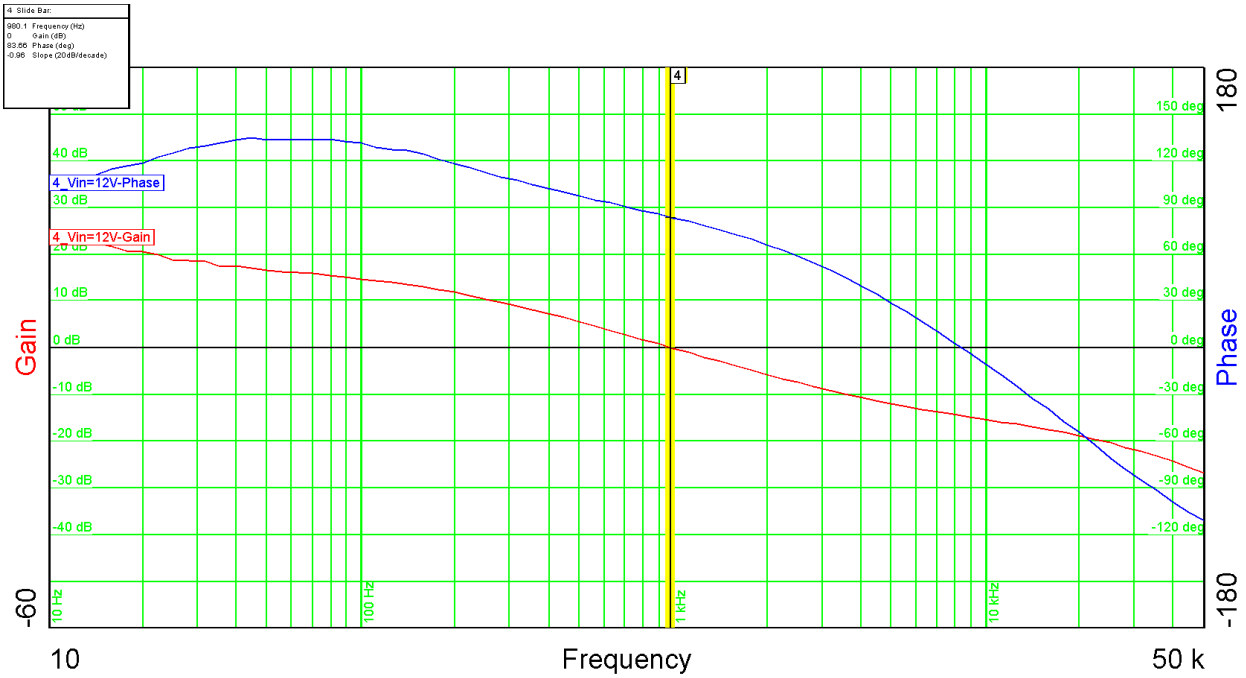
6 Switch-node

Input voltage = 12V
Load pos. output = 0.07A
Load neg. output = 0.07A
CH3: switch node negative output
CH4: switch node positive output



7 Loop Response

The image below shows the loop response of the converter measured with 12V at the input and full load (0.07A) at both outputs.

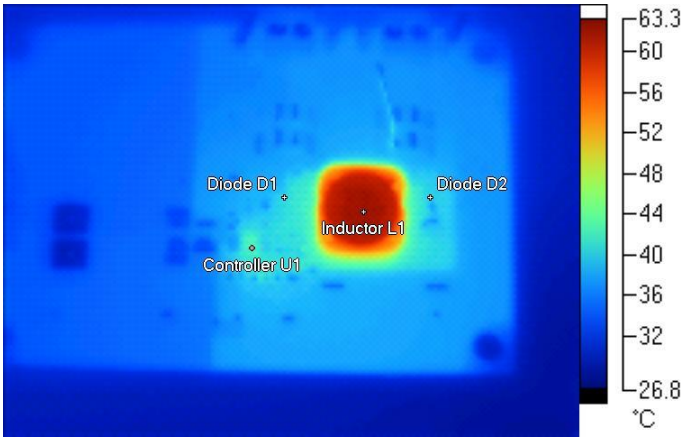


Input voltage = 12V
Phase margin = 83 deg
Bandwidth = 0.98 kHz

8 Thermal Analysis

The images below show the infrared images taken from the FlexCam after 15min at full load (0.07A) at both outputs.

Input voltage = 12V
Ambient temperature = 25°C



Name	Temperature
Inductor L1	62.3°C
Diode D1	40.2°C
Diode D2	40.4°C
Controller U1	42.4°C

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 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