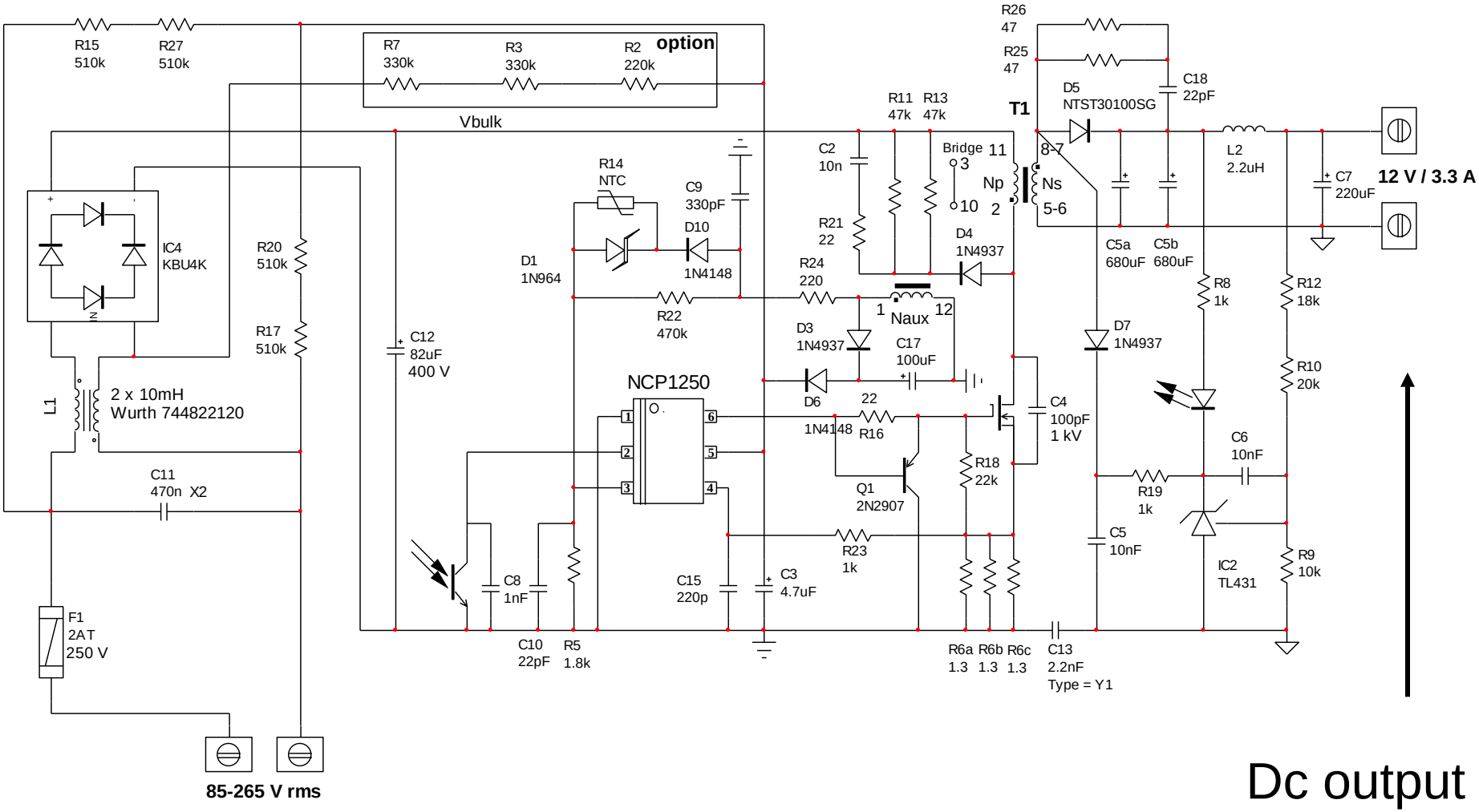
ON Semiconductor®

Test Procedure for the

NCP1250 40-W Demonstrator

Board Electrical Schematic

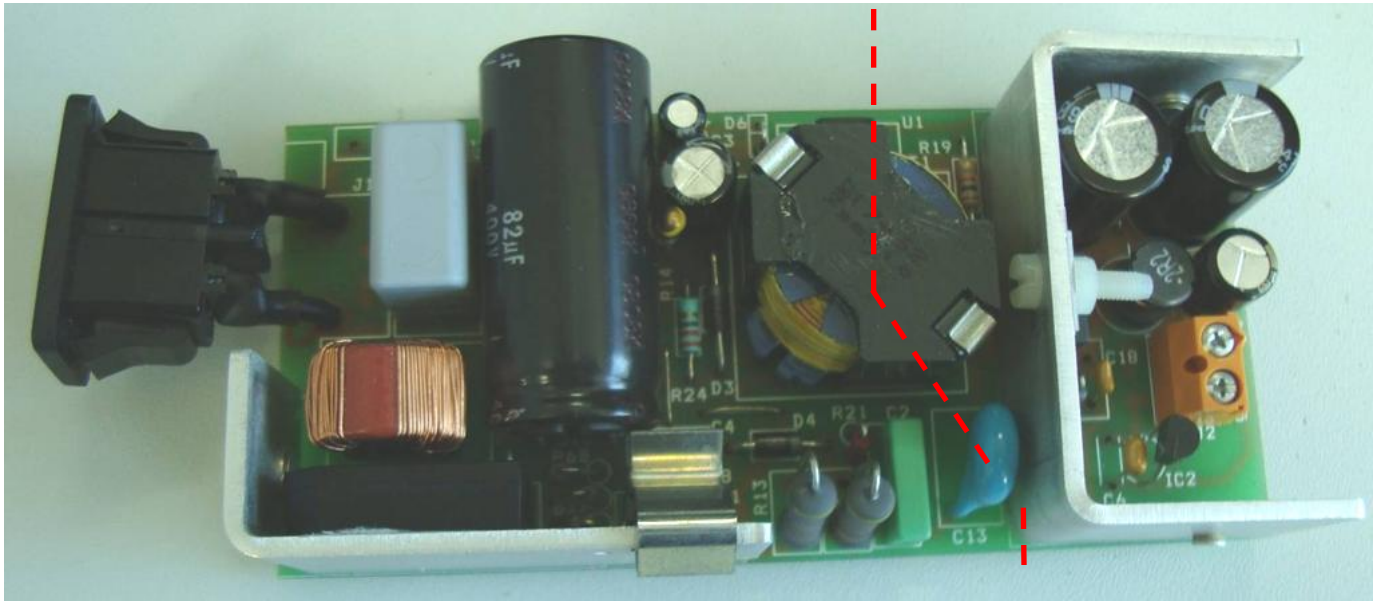


Ac input voltage

Dc output voltage

Board Picture

Live parts, lethal voltages ⟵ | ⟶ Isolated output



Input voltage from 85 V rms to 265 V rms. Nominal range 100-240 V rms

Output voltage is 12 V, nominal current is 3.3 A

Needed Equipment

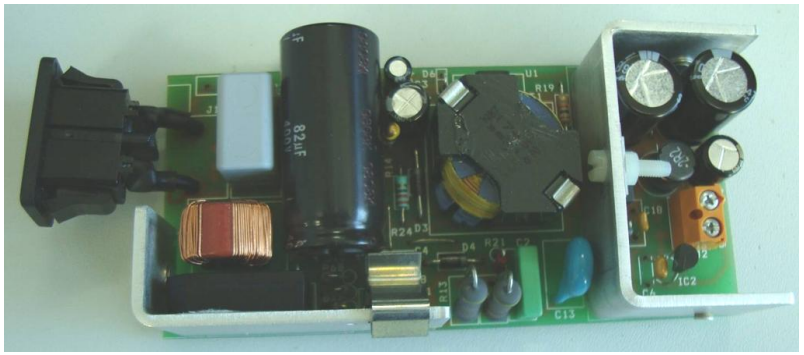
The needed equipments are the following:

- ❑ an ac source, delivering 80 V ac to 265 V ac, needed power is below 100 W. An electronic source or a simple variac can do.
- ❑ an input ac watt-meter, up to 100 W
- ❑ a dc load absorbing up to 100 W, $V_{in,max}$ < 20 V, $I_{out,max}$ < 5 A
- ❑ either the above load can display dc V and dc A or separated V and A-meters are necessary

➢ *If the load does not use local Kelvin sensors, then the output voltage must be measured at the board level, not at the cable ends.*

Board Test Fixture

W-meter
P_{in}



Ac-source
85 V to 265 V

Test n°1:

-Apply 90 V rms

-No output current

-Read output voltage:

❖ $11.5 < V_{out} < 12.5$

-Apply 230 V rms

-Repeat the above

-Let the board warm up for 10 mn

-Read input power

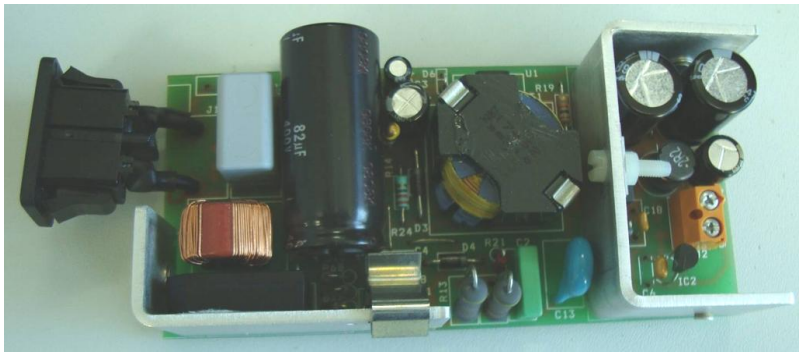
❖ $70\ mW < P_{in} < 100\ mW$

Electronic load

No-load standby

Board Test Fixture

W-meter
P_{in}



Ac-source
85 V to 265 V

Test n°2:

-Apply 90 V rms

-Load with 3.3 A

-Read output voltage and Pin:

- ❖ $11.5 < V_{out} < 12.5$
- ❖ $38\ W < P_{in} < 47\ W$

-Apply 265 V rms

-Load with 3.3A

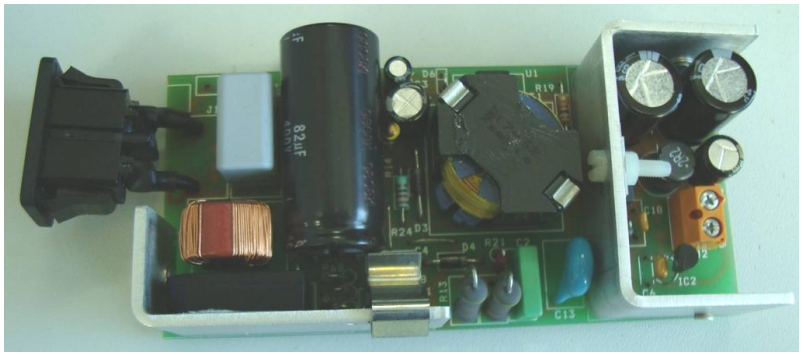
-Repeat the above

Electronic load

Nominal Power

Board Test Fixture

W-meter
P_{in}



Ac-source
85 V to 265 V

Test n°3:

-Apply 90 V rms

-Increase I_{out} while reading output voltage

-At a certain point, $I_{out,max}$, V_{out} collapses, the converter hiccups (typical is 4.2 A)

❖ 3.6 A < $I_{out,max}$ < 5 A

-Apply 265 V rms

-Repeat the above steps

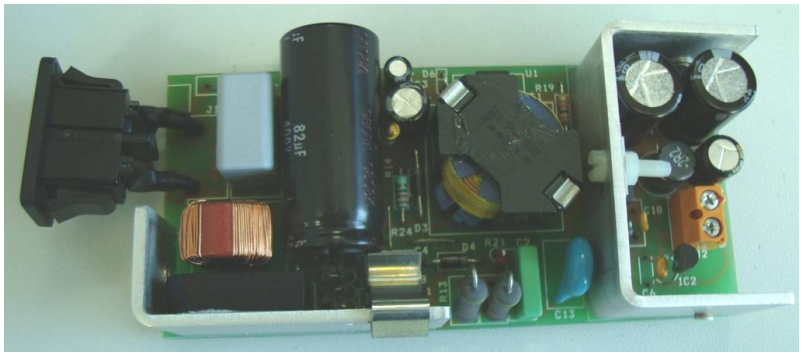
-The $I_{out,max}$ points slightly increases

Electronic load

Maximum Power

Board Test Fixture

W-meter
P_{in}



Ac-source
85 V to 265 V

Test n°4:

-Apply 90 V rms

-Apply a short-circuit at the output, usually via the dc load

-V_{out} must collapse, the converter tries to re-start (hiccup mode). Read the input power (watt-meter in average mode)

- 5 W < P_{in} < 15 W

-Apply 265 V rms

-Repeat the above steps

Electronic load

Short-Circuit