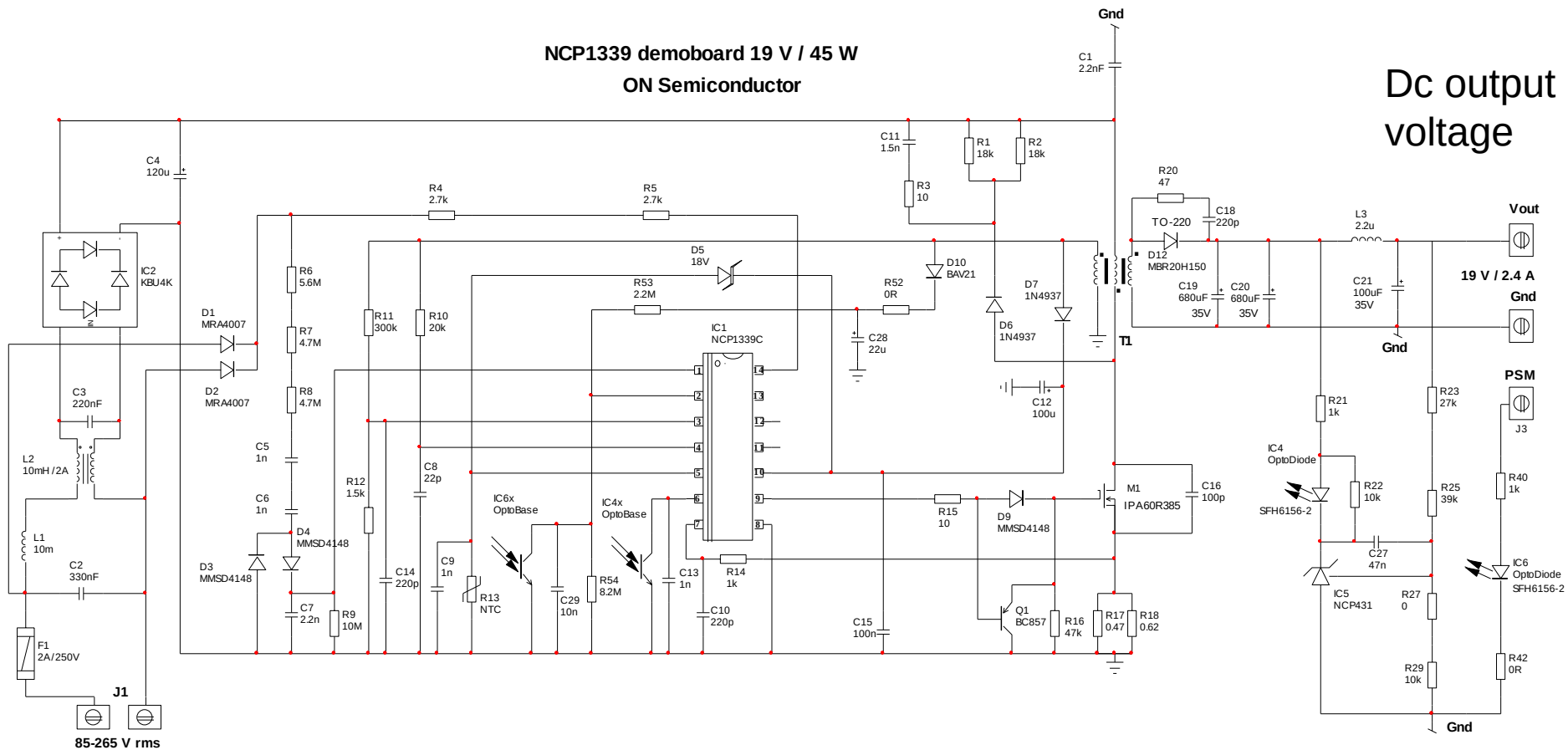




ON Semiconductor®

Test Procedure for the NCP1339C Evaluation Board

Board Electrical Schematic



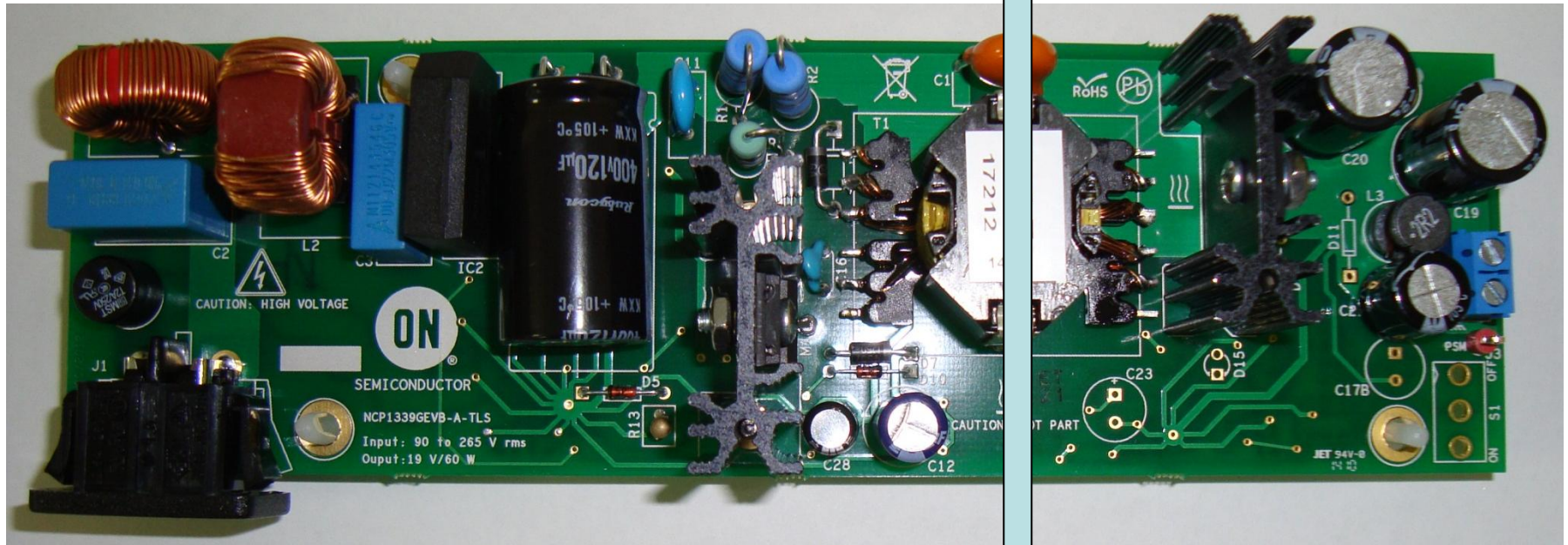
Ac input
voltage

Board Picture

Live parts, lethal voltages



Isolated output



Input voltage from 85 V rms to 265 V rms

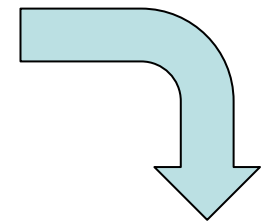
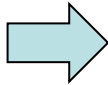
Output voltage is 19 V,
nominal current is 2.4 A

Needed Equipment

- The needed equipments are the following:
 - ✓ An ac source (85 to 265 V rms, 60 / 50 Hz), needed power is below 100 W
 - ✓ An input ac watt-meter, up to 100 W
 - ✓ A dc load absorbing up to 50 V, $V_{in(max)} < 30\text{ V}$, $I_{out(max)} < 5\text{ A}$
 - ✓ Usually, dc electronic load can display dc V and dc A. If not, an voltmeter and ampmeter will be needed
 - ✓ Dc voltage source for PSM mode
- *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.*

Connecting the Board for Testing

Watt-meter
Input power



19 V



Ac source
85 to 265 V rms



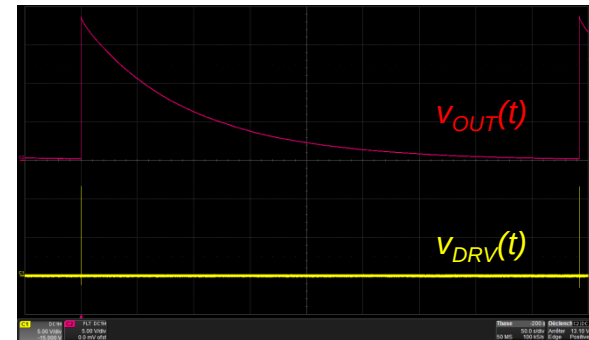
5 V voltage source (J3)
- 5 V → PSM disabled
- 0 V → PSM enabled



Electronic load

Test n°1: Power Savings Mode (PSM)

- Apply the input voltage 90 V rms to J1 connector
- 5 V voltage source on J3 connector is turned OFF
- Electronic load is disconnected or set to no load
 - ✓ *Check that output voltage is not regulated to 19 V*
 - ✓ *Verify that average input power is below 20 mW (integration during 2h at least)*
- Apply the input voltage to 230 V rms
- Repeat above steps



Test n°2: No-load Standby

- Apply the input voltage 90 V rms to J1 connector
- 5 V voltage source on J3 connector is turned ON
- Electronic load is disconnected or set to no load
 - ✓ *Check that output voltage is 19 V ($\pm 5\%$)*
 - ✓ *Verify that input power is below 45 mW*
- Apply the input voltage to 230 V rms
- Repeat above steps
 - ✓ *Input power must be below 55 mW*



Test n°3: Nominal Power

- Apply the input voltage 90 V rms to J1 connector
 - 5 V voltage source on J3 connector is turned ON
 - Connect electronic load to J2 connector
 - Load is set to 2.4 A
- ✓ Check that output voltage is 19 V ($\pm 5\%$)*
- ✓ Verify that input power is: $45\text{ W} < P_{in} < 60\text{ W}$*
- Apply the input voltage to 265 V rms
 - Repeat above steps

Test n°4: Maximum Power

- Apply the input voltage 90 V rms to J1 connector
- 5 V voltage source on J3 connector is turned ON
- Connect electronic load to J2 connector
- Load is increased over nominal current (2.4 A)
- At a certain point, $I_{out(max)}$, V_{out} collapses and the converter enters in auto-recovery mode (typical is 2.8 A)

✓ *Maximum output current is: $2.6\text{ A} < I_{out(max)} < 3.5\text{ A}$*

- Apply the input voltage to 265 V rms
- Repeat above steps
- $I_{out(max)}$ is now typically 3.3 A



Test n°5: Short-circuit

- Apply the input voltage 90 V rms to J1 connector
- 5 V voltage source on J3 connector is turned ON
- Short-circuit is applied at the output via the electronic load for instance
- Load is increased over nominal current (2.4 A)
 - ✓ V_{out} must collapse and the converter enters in auto-recovery mode
 - ✓ *Verify that average input power is below 5 W*
- Apply the input voltage to 265 V rms
- Repeat above steps

