

Test Procedure for the NCP1562 Evaluation Board



Figure 1 Test Setup

ON Semiconductor



Required Equipment

Power Supply: Maximum voltage rating of 85 V and maximum current rating of 4 A **3 Multimeters:** Maximum current rating of 10 A and maximum voltage rating of 100 V **Electronic Load:** with current display and maximum current capability of 35 A **Oscilloscope**

Test Procedure

- 1. Configure Multimeter 1 (MM1) for measuring current. Connect Power Supply (+) terminal to MM1 current measurement terminal.
- 2. Connect MM1 ground terminal to demo board (Vin+) terminal.
- 3. Connect Power Supply (-) terminal to demo board (Vin-) terminal.
- 4. Configure Multimeter 2 (MM2) for measuring voltage. Connect MM2 voltage measurement terminal to demo board (Vout+) terminal. Connect MM2 ground terminal to demo board (Vout-) terminal.
- 5. Verify MM2 terminals are connected to demo board terminals.
- 6. Connect electronic load (EL) to demo board output. Connect EL (+) terminal to demo board (Vout+) terminal. Connect EL (-) terminal to demo board (Vout-) terminal. Set load current (lout) to 0 A.
- 7. Configure Multimeter 3 (MM3) for measuring voltage. Connect MM3 voltage measurement terminal to demo board (Vout+) terminal. Connect MM3 ground terminal to demo board (Vout-) terminal.
- 8. Verify MM3 terminals are connected to the demo board terminals and not electronic load terminals. Otherwise, the voltage drop on the EL terminals will affect your measurements.
- 9. The complete test setup should be similar to Figure 1.
- 10. Slowly ramp the input voltage (Vin) to 10 V. If input current exceeds 30 mA, verify the setup. If connection is correct, stop testing. Board needs to be repaired.



- 11. Increase the input voltage to 25 V. The NCP1562 start-up circuit should be operating. Probe terminal 16 of U1. The waveform should look similar to Figure 2. If not, stop testing. Board needs to be repaired.
- 12. Increase the input voltage to 36 V. The demo board output should be between 3.135 V and 3.465 V. If not, stop testing. Board needs to be repaired.
- 13. Measure and collect input current (Iin) and voltage, as well as output current and voltage (Vout). Increase load current in steps of 10 A.
- 14. Calculate efficiency (η), load (REGload) and line regulation (REGline) using equations (1), (2) and (3).



$$\eta = \frac{V_{out} \times I_{out}}{V_{in} \times I_{in}} \times 100$$
⁽¹⁾

$$REG_{load} = \frac{V_{out}(@ noload) - V_{out}(@ loaded)}{V_{out}(@ noload)} \times 100$$

$$REG_{line} = \left| \frac{V_{out(@Vin1)} - V_{out(@Vin2)}}{V_{in1} - V_{in2}} \right| \times 100$$
(3)

- 15. Set load current to 0 A.
- 16. Repeat steps 13, 14 and 15 for input voltages of 48 V and 76 V.
- 17. Minimum Efficiency should not drop below 90 % under all load and line conditions.
- 18. Load Regulation should not exceed 1 % under all load and line conditions.
- 19. Line Regulation should not exceed 0.1 % under all load and line conditions.