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NV8664ST50T3GEVB

NCV8664 Evaluation Board User's Manual

ON Semiconductor®

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EVAL BOARD USER'S MANUAL

Description

The NCV8664 is a precision 3.3 V and 5.0 V fixed output, low dropout integrated voltage regulator with an output current capability of 150 mA. Careful management of light load current consumption, combined with a low leakage process, achieve a typical quiescent ground current of 22 μA. The output voltage is accurate within ±2.0%, and maximum dropout voltage is 600 mV at full rated load current. The following ceramic capacitors are the recommended values to be used with these devices; C_{in} = 0.1 μF, C_{out} = 10 μF.

Features

- ±2.0% Output Accuracy, Over Full Temperature Range
- 30 μA Maximum Quiescent Current at I_{out} = 100 μA
- 600 mV Maximum Dropout Voltage at 150 mA Load Current
- Wide Input Voltage Operating Range of 5.5 V to 45 V
- Internal Fault Protection
    - −42 V Reverse Voltage
    - Short Circuit/Overcurrent
    - Thermal Overload

Board Notes

Max voltage on V_{in} cap not to exceed 35 V.

Board Layouts

These boards are shown in sets of 2 due to the minimum board size requirement of most board fabrication houses. When sent out for fabrication, it must be indicated that the center line of the board set be V−scored to allow board separation.

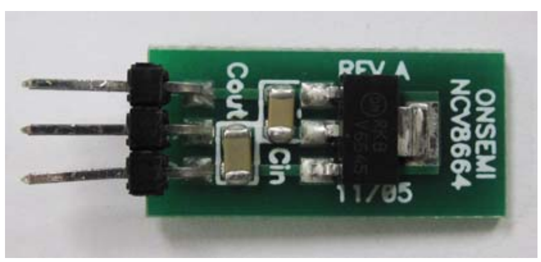

Figure 1. Evaluation Board Photo

May, 2012 − Rev. 1

Publication Order Number:
EVBUM2117/D

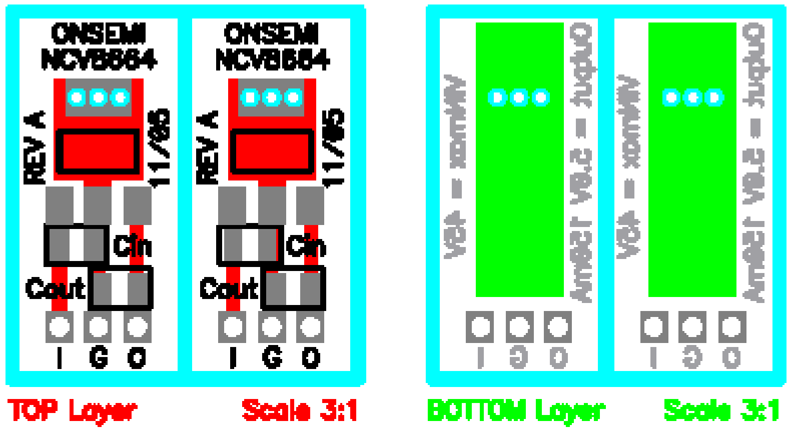

Figure 2. SOT−223 Evaluation Board

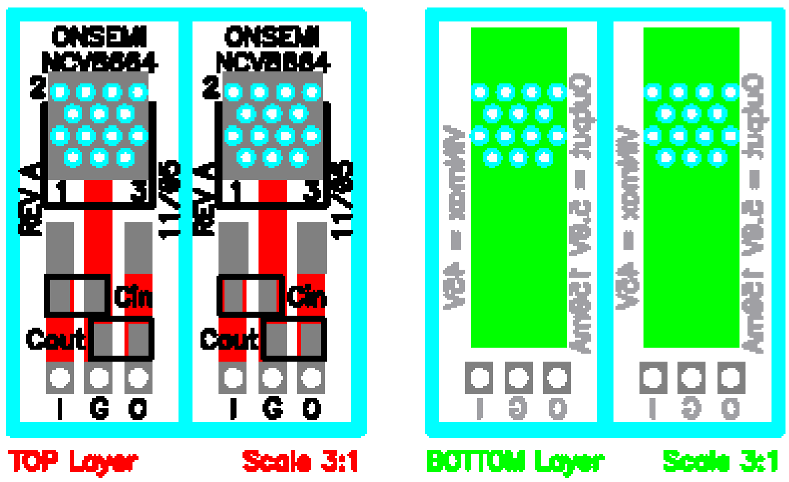

Figure 3. DPAK Evaluation Board

SCHEMATIC FOR THE NCV8664 EVALUATION BOARD

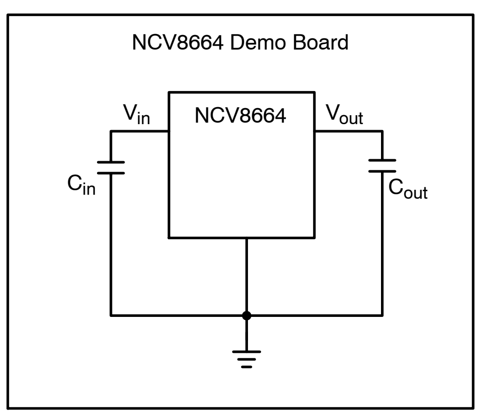

Figure 4. NCV8664 Evaluation Board Circuit

Table 1. BILL OF MATERIALS FOR THE NCV8664 EVALUATION BOARD

Value	Tolerance	Footprint	Manufacturer	Part Number	Substitution Allowed	Lead Free
SOT223 BOM						
–	–	–	Advanced Circuits	NCV8664DPAK3DemoBoard	No	Yes
–	–	SOT223	On Semiconductor	NCV8664ST50R3G	No	Yes
–	–	–	Molex/Waldom Electronics Corporation	22−28−8030	Yes	Yes
0.1 μF	10%	1206	Murata Electronics North America	GRM319R71H104KA01D	Yes	Yes
10 μF	10%	1206	Murata Electronics North America	GRM31CR71C106KAC7L	Yes	Yes
DPAK BOM						
–	–	–	Advanced Circuits	NCV8664DPAK3DemoBoard	No	Yes
–	–	DPAK	On Semiconductor	NCV8664DT50RKG	No	Yes
–	–	–	Molex/Waldom Electronics Corporation	22−28−8030	Yes	Yes
0.1 μF	10%	1206	Murata Electronics North America	GRM319R71H104KA01D	Yes	Yes
10 μF	10%	1206	Murata Electronics North America	GRM31CR71C106KAC7L	Yes	Yes

Test Procedure

Required Equipment:

- Resistive Load
- 2 Multimeters
- One NCV8664 Evaluation Board
- DC Power Supply

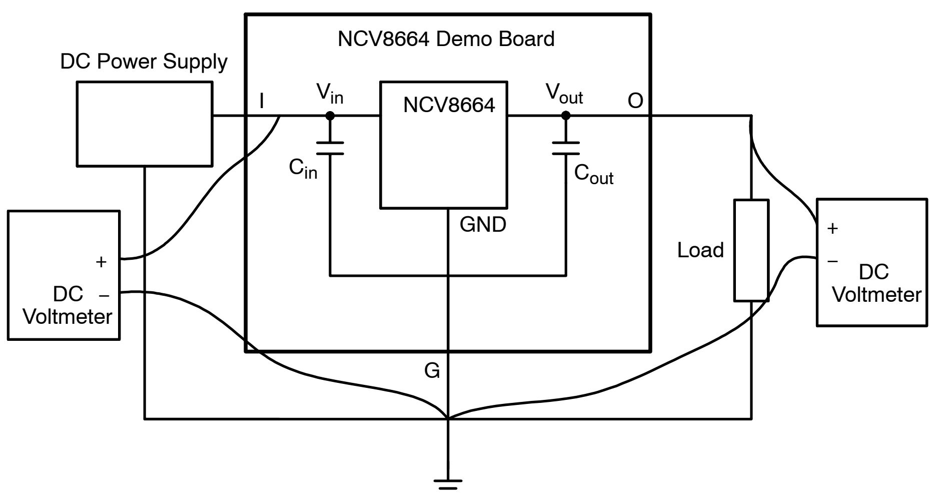

Figure 5. Dropout Voltage Test Setup

Dropout Voltage Verification Steps

1. Connect circuit as shown in Figure 5.
2. Set V_{in} = 13.5 V, Record V_{out}.
3. Reduce V_{in} until V_{out} has dropped by 100 mV.
4. Subtract V_{out} from V_{in}. Resulting Voltage is Dropout Voltage.

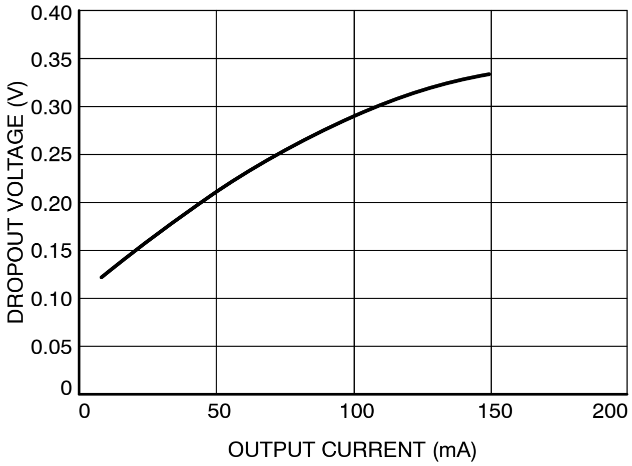

Figure 6. Dropout Voltage vs. Output Current

Quiescent Current Verification Steps

1. Connect circuit as shown in Figure 7.
2. Set V_{in} = 13.5 V.
3. Subtract Output Current from Input Current.

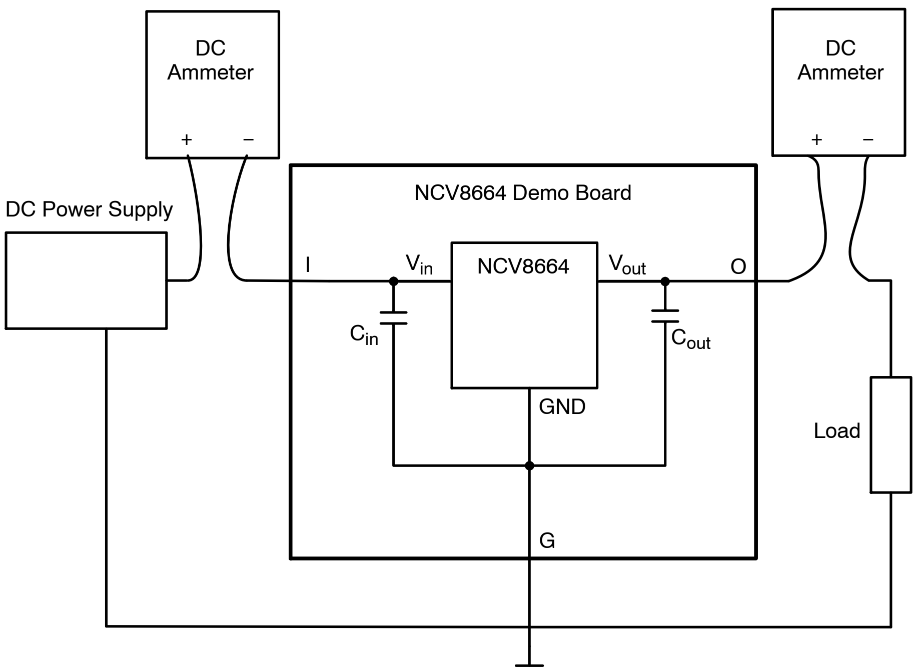

Figure 7. Quiescent Current Verification Setup

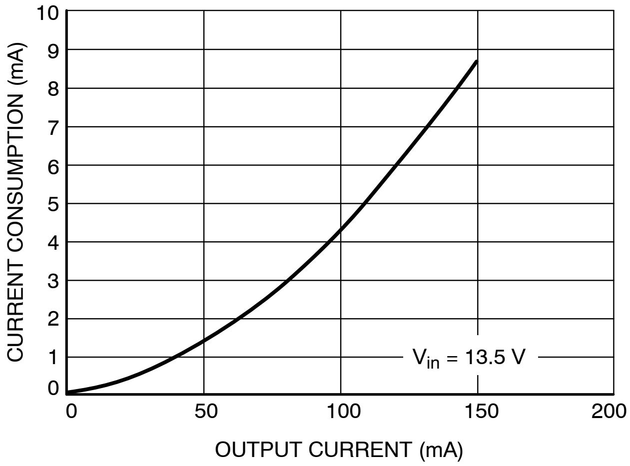

Figure 8. Current Consumption vs. Output Current

Output Voltage Verification Steps

1. Connect circuit as shown in Figure 9.
2. Set output load to 100 Ω, Set V_{in} = 0 V, Record V_{out}.
3. Increase V_{in}, measure V_{out}.

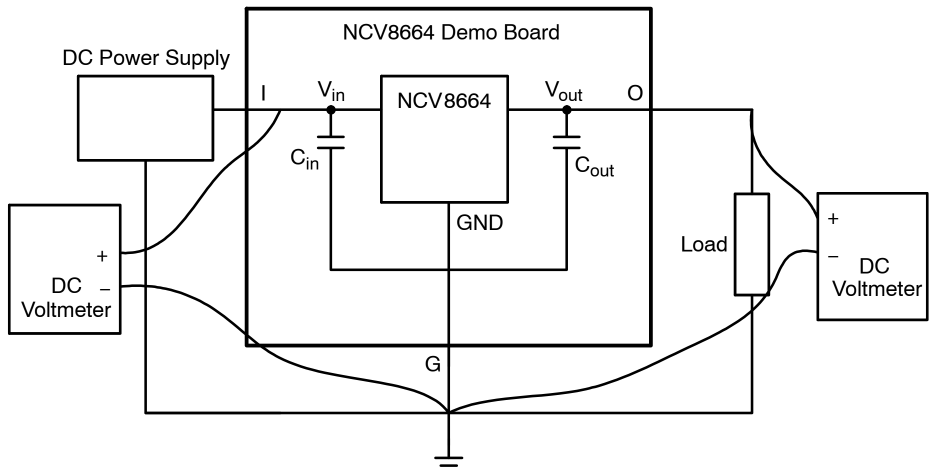

Figure 9. Quiescent Current Verification Setup

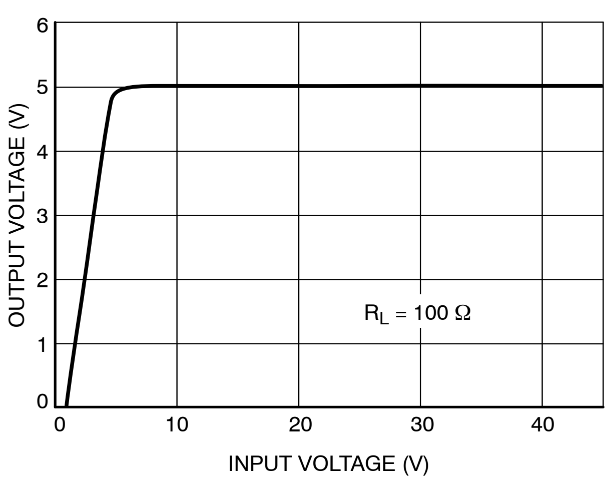

Figure 10. Input Voltage vs. Output Voltage

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