

# 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  $\mu$ A. The output voltage is accurate within  $\pm 2.0\%$ , 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;  $C_{in} = 0.1 \mu$ F,  $C_{out} = 10 \mu$ F.

#### Features

- $\pm 2.0\%$  Output Accuracy, Over Full Temperature Range
- 30  $\mu$ A Maximum Quiescent Current at  $I_{out} = 100 \mu$ A
- 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.

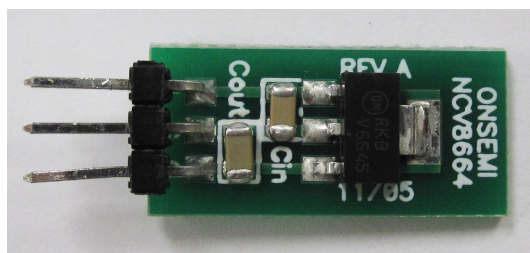


Figure 1. Evaluation Board Photo

# NV8664ST50T3GEVB

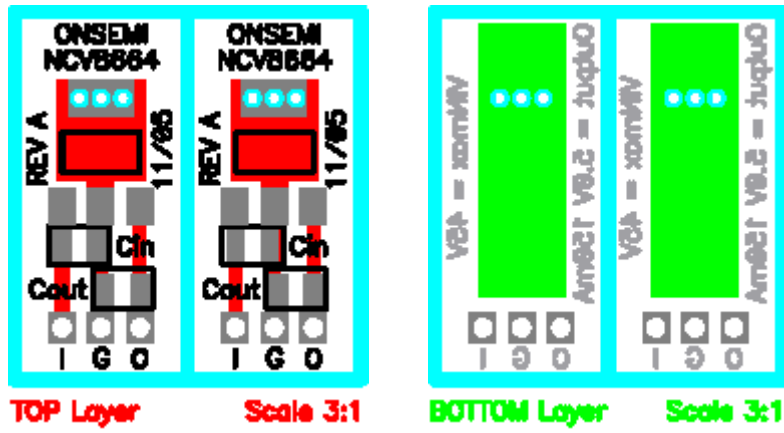


Figure 2. SOT-223 Evaluation Board

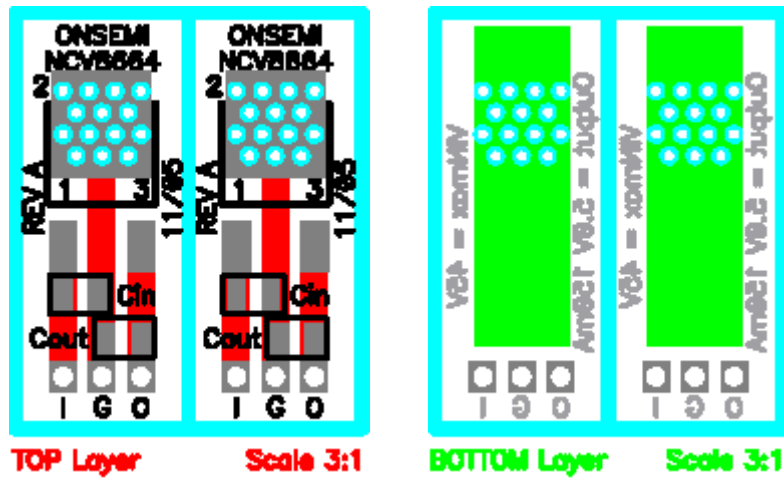


Figure 3. DPAK Evaluation Board

## SCHEMATIC FOR THE NCV8664 EVALUATION BOARD

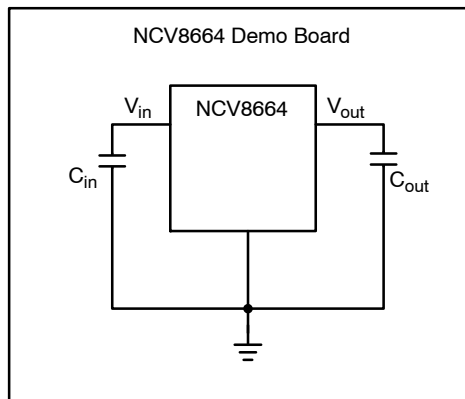


Figure 4. NCV8664 Evaluation Board Circuit

# NV8664ST50T3GEVB

**Table 1. BILL OF MATERIALS FOR THE NCV8664 EVALUATION BOARD**

Value	Tolerance	Footprint	Manufacturer	Part Number	Substitution Allowed	Lead Free
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**SOT223 BOM**

-	-	-	Advanced Circuits	NCV8664DPAK3DemoBoard	No	Yes
-	-	SOT223	On Semiconductor	NCV8664ST50R3G	No	Yes
-	-	-	Molex/Waldom Electronics Corporation	22-28-8030	Yes	Yes
0.1 $\mu$ F	10%	1206	Murata Electronics North America	GRM319R71H104KA01D	Yes	Yes
10 $\mu$ F	10%	1206	Murata Electronics North America	GRM31CR71C106KAC7L	Yes	Yes

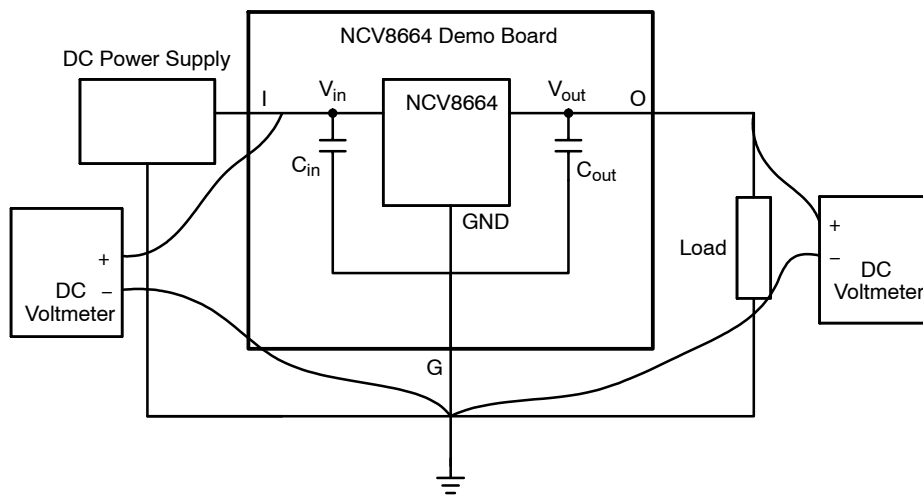
**DPAK BOM**

-	-	-	Advanced Circuits	NCV8664DPAK3DemoBoard	No	Yes
-	-	DPAK	On Semiconductor	NCV8664DT50RKG	No	Yes
-	-	-	Molex/Waldom Electronics Corporation	22-28-8030	Yes	Yes
0.1 $\mu$ F	10%	1206	Murata Electronics North America	GRM319R71H104KA01D	Yes	Yes
10 $\mu$ F	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.

## NV8664ST50T3GEVB

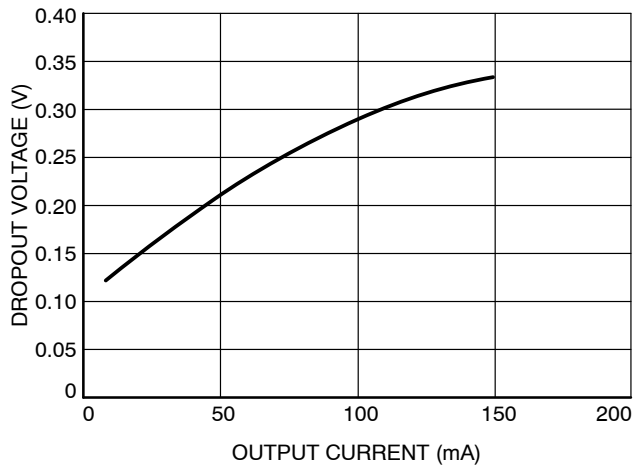


Figure 6. Dropout Voltage vs. Output Current

### 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.

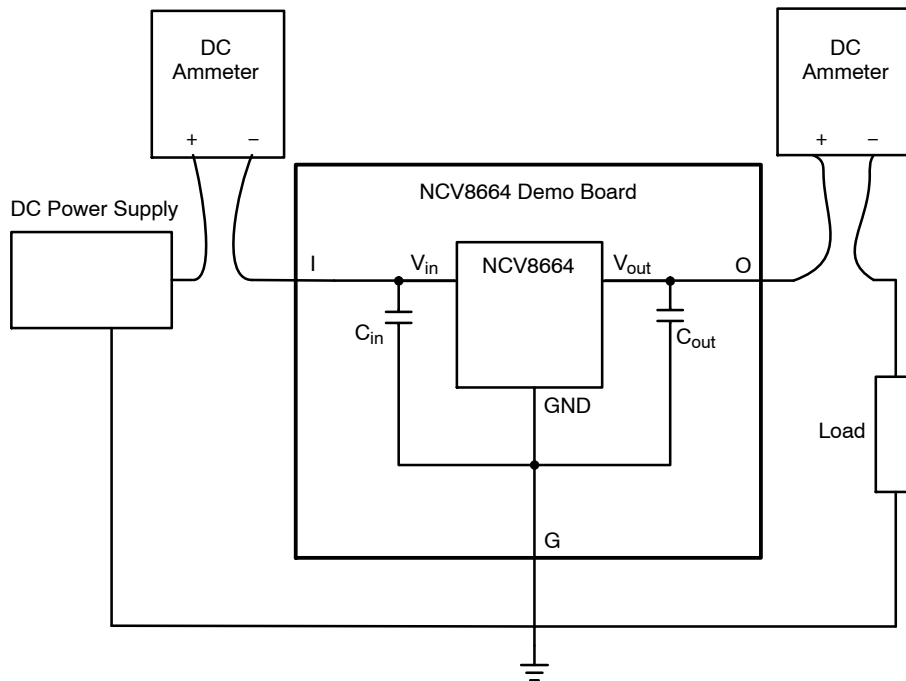
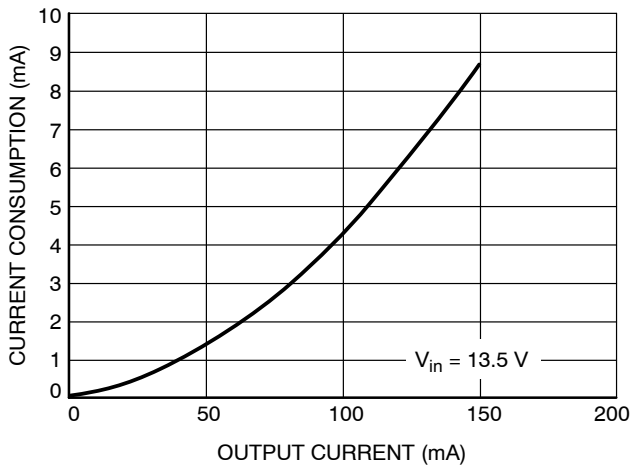


Figure 7. Quiescent Current Verification Setup

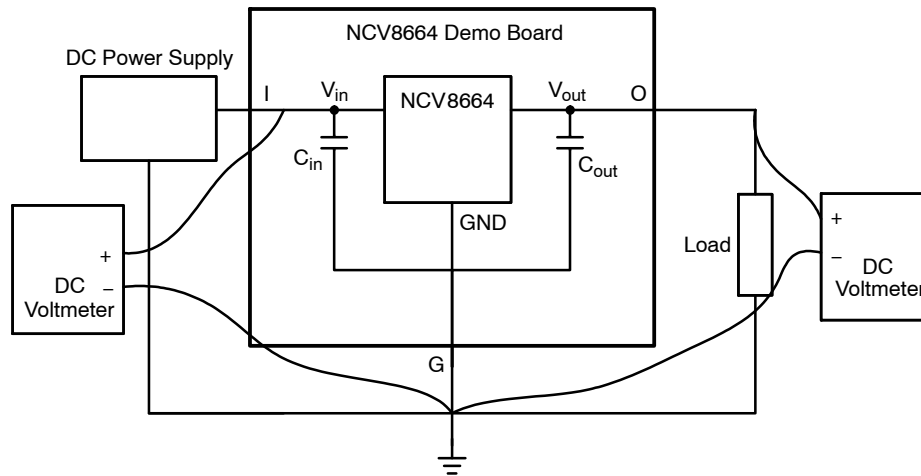
# NV8664ST50T3GEVB



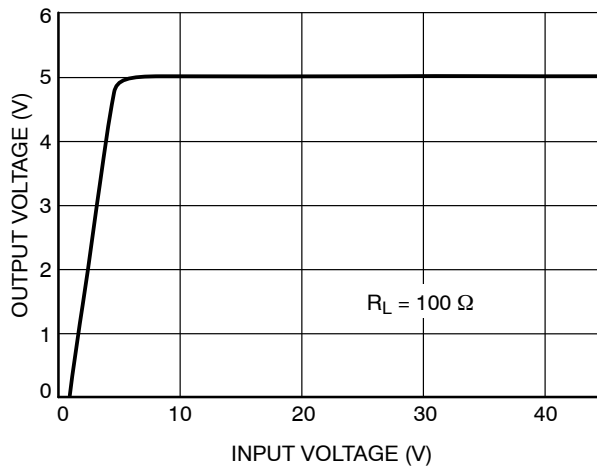
**Figure 8. Current Consumption vs. Output Current**

## Output Voltage Verification Steps

1. Connect circuit as shown in Figure 9.
2. Set output load to  $100\ \Omega$ , Set  $V_{in} = 0\ \text{V}$ , 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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