



# 3 V, 200 mA anyCAP LDO Evaluation Board

## EVAL-ADP3330

### INTRODUCTION

The ADP3330 is a precision low dropout anyCAP™ voltage regulator. The ADP3330 has an input voltage range of 2.9 V to 12 V and delivers a load current of up to 200 mA. Its patented design requires only a 470 nF output capacitor for stability. This device is insensitive to output capacitor Equivalent Series Resistance (ESR), and is stable with any good quality capacitor, including ceramic (MLCC) types for space-restricted applications.

The output accuracy of the ADP3330 is  $\pm 0.7\%$  at room temperature and  $\pm 1.4\%$  over temperature, line and load. The dropout voltage of the ADP3330 is only 140 mV (typical) at 200 mA. This device also includes a safety current limit, thermal overload protection and a shutdown input. In shutdown mode, the ground current is reduced to less than 2  $\mu$ A. The ADP3330 has ultralow quiescent current (34  $\mu$ A typical) in light load situations. The SOT-23-6 package has been thermally enhanced using Analog Devices' proprietary Chip-on-Lead™ feature to maximize power dissipation.

This evaluation board is designed to provide a 200 mA output current with an output voltage of 3 V. The LDO evaluation board as assembled has the following characteristics:

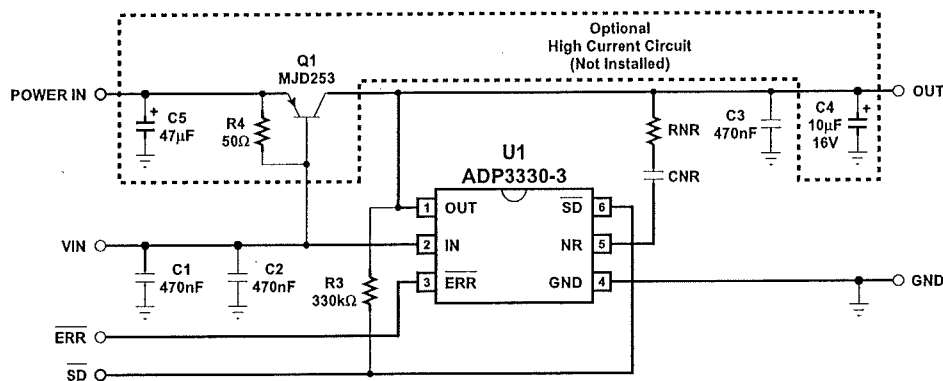
Input Voltage Range:	3.25 V to 12 V
Final Output Voltage	3.0 V $\pm 1.4\%$
Output Current:	200 mA, with short circuit protection

Thermal Shutdown Trip Point: IC T<sub>J</sub> @ 125°C

Installation of the optional high power components boosts the output current capability of the circuit to 1A, but effectively inhibits the thermal shutdown function.

For more information regarding the operation of the ADP3330, please refer to the product data sheet included with the evaluation board. The most current version of Analog Devices data sheets can also be downloaded at <http://www.analog.com>.

### SCHEMATIC DIAGRAM



anyCAP and Chip-on-Lead are trademarks of Analog Devices, Inc.

### CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although the ADP3401 features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.



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# EVAL-ADP3330

## PARTS LIST

Item	Description	Manufacturer/ Part Number	Designator	Qty
1	Capacitor, MLCC, 470nF, 16V 10%, X7R, 0805 SMD	Murata GRM40X7R474K016 AVX 0805YC474KAT	C1, C2, C3	3
2	Resistor, 330k $\Omega$ , 1/10W, 5% 0805 SMD	Various	R3	1
3	IC, Low Dropout Regulator, 3.0V output, SOT-23-6	Analog Devices ADP3330ART-3	U1	1
4	Header, Single Row, Straight 0.100" centers, 5 circuits	3M 2405-6112TB or equivalent	VIN, VOUT, $\overline{SD}$ , ERR, GND	1

## OPTIONAL PARTS LIST (Not Installed)

Item	Description	Manufacturer/ Part Number	Designator	Qty
1	Capacitor, tantalum, 47 $\mu$ F, 20V, 20% 7343 SMD	Kemet T491D476M020AS AVX TAJD476M020R	C4	1
2	Capacitor, tantalum, 10 $\mu$ F, 16V, 20% 3528 SMD	Kemet T491B106M016AS AVX TAJB106M016R	C5	1
3	Resistor, 50 $\Omega$ , 1/10W, 1% 0805 SMD	Various	R4	1
4	Transistor, PNP, 4 A, 100 V, 12.5 W, DPAK SMD	Motorola MJD253T4	Q1	1

## VENDOR LIST

Contact information for other manufacturers' components used on this evaluation board are given below.

AVX  
(843) 448-9411  
<http://www.avxcorp.com>

Kemet  
(864) 963-6300  
<http://www.kemet.com>

Motorola  
(800) 521-6274  
<http://www.motorola.com/sps>

Murata  
(949) 852-2001  
<http://www.murata.com>  
3M  
(800) 225-5373  
[www.mmm.com/interconnects/](http://www.mmm.com/interconnects/)

**COMMENTS**

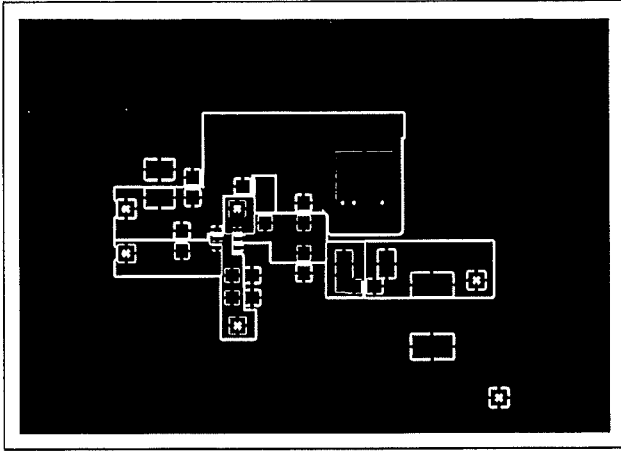
1. C1 and C2 are used to reduce the input impedance of the ADP3330 evaluation board. Long test leads can cause the device to oscillate. In the actual application, the value of the input capacitor can be reduced depending on the input source impedance.
2. R1 and R2 are used for setting the output voltage of the ADP3331. They are not required for the ADP3330.
3. CNR and RNR are included on the layout and can be used to optimize noise, overshoot and transient response of the ADP3330. See the data sheet for more details. Note the close proximity of these components to the NR pin of the ADP3330. See the data sheet for more layout details.
4. To turn on the regulator, connect the  $\overline{SD}$  pin to VIN. To turn off the regulator, connect the  $\overline{SD}$  pin to GND.
5. The output voltage of the circuit is determined by the resistor divider inside the ADP3330. To evaluate other output voltage options, replace the ADP3330ART-3 with the appropriate voltage option device.
6. To configure the evaluation board for high current applications, remove C1, C2, C3, and install the optional high power components listed in the optional parts list.
7. The printed circuit board was constructed using 2-ounce copper for optimal heat transfer.

**PRINTED CIRCUIT BOARD**

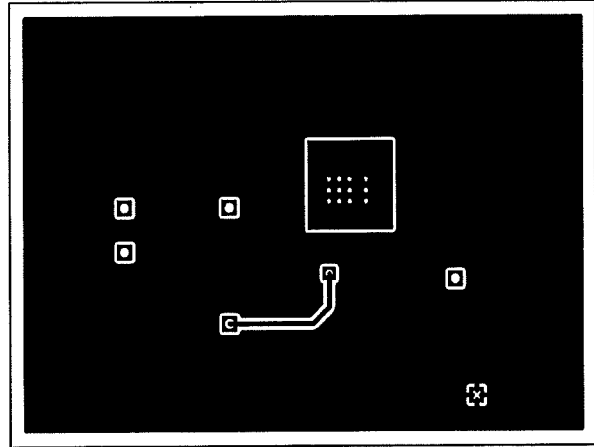
The PCB layout for the EVAL-ADP3330 is given on the following page. These images are not to scale, and are for general reference only. Gerber files for the EVAL-ADP3330 evaluation board are available on request. To receive the Gerber files, contact [pmt.info@analog.com](mailto:pmt.info@analog.com), and reference the evaluation board part number.

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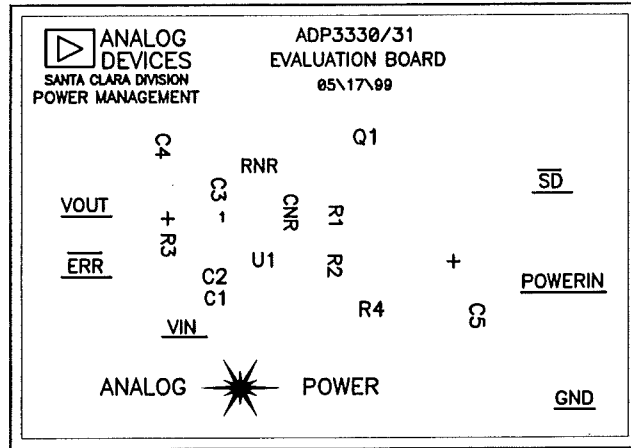
## PC BOARD LAYOUT



TOP LAYER



BOTTOM LAYER  
(TOP VIEW)



SILKSCREEN

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