

AD5228 Evaluation Kit for the 32-Position, Push Button, Up/Down Control Digital Potentiometer

by Alan Li

4 STEPS TO EVALUATION KIT SETUP

1. Apply 2.7 V to 5 V between VDD and AGND.
2. Leave jumper JPPRE open for midscale preset; connect JPPRE jumper for zero-scale preset.
3. Press push-button S1 for increment or S2 for decrement.
4. Measure the resistance across W2 and B2.

Note: A dual op amp (AD822B) and 2.5 V reference (ADR03) are provided and can be used with the AD5228 for many general-purpose building blocks circuits. See the Applications section. The evaluation board can also be used for the AD5227, a 64-step up/down control digital potentiometer.

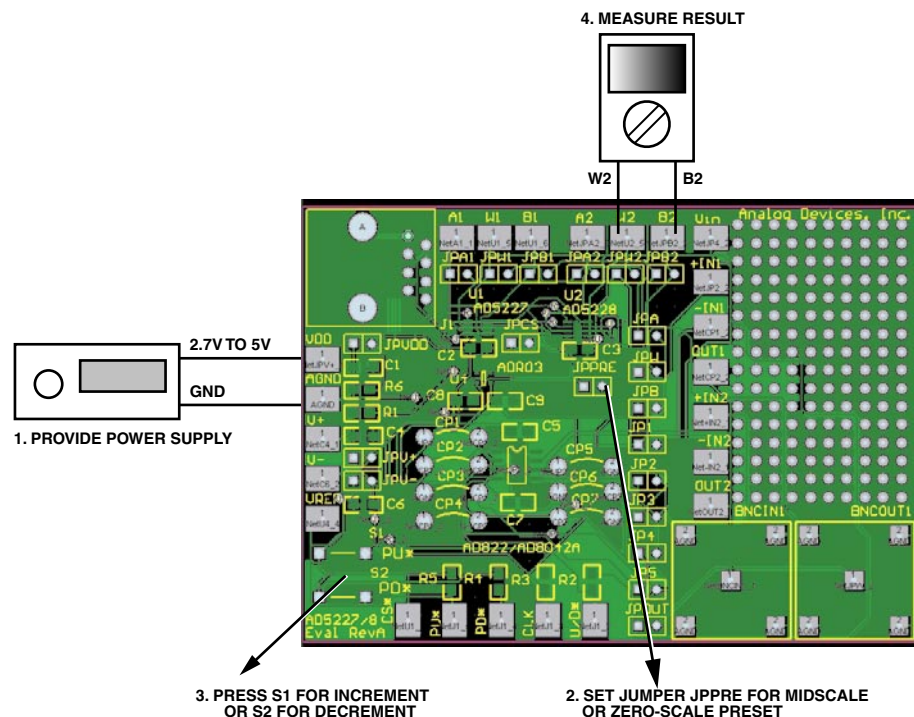


Figure 1. Evaluation Kit Setup

Applications

The AD5228 evaluation board comes with a dual op amp AD822 or AD8042, and a 2.5 V reference ADR03. Users can configure various building block circuits with minimum components. In the schematics, JP and CP stand for jumper and connection point, respectively.

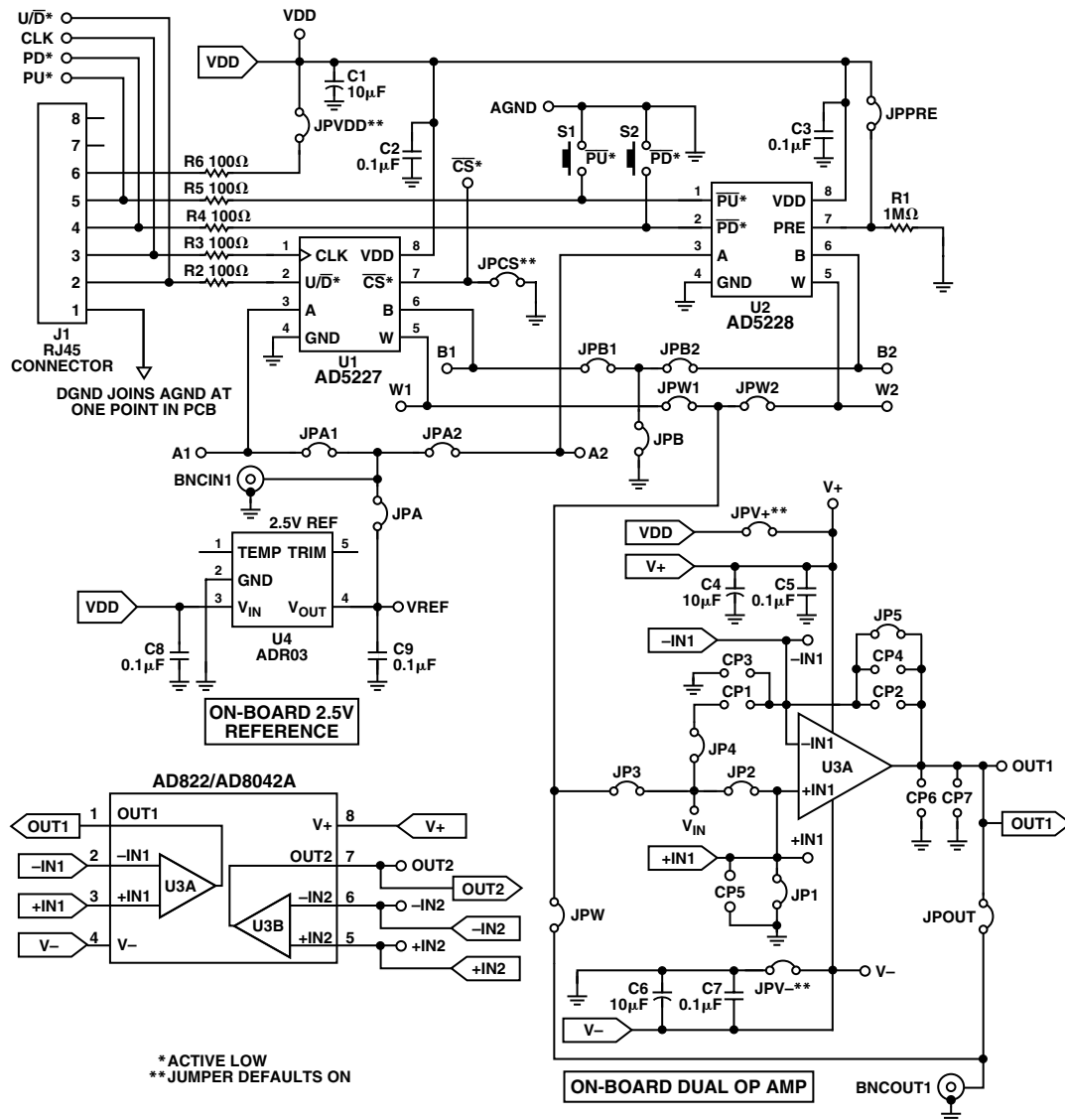


Figure 2. Evaluation Board Schematic

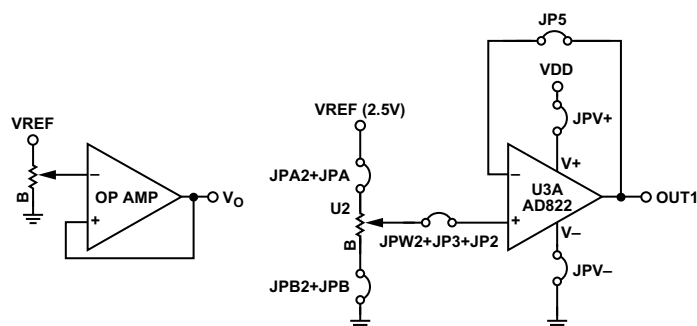


Figure 3. 5-Bit DAC

$$V_O = 2.5 \text{ V} \times \frac{\text{Step}^*}{32}$$

* Assume zero-scale preset

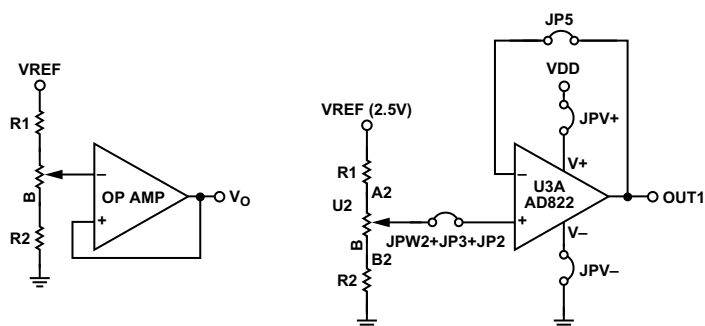


Figure 4. 5-Bit DAC with Floating References for Fine Adjustment

$$V_O = \frac{R_{WB} + R2}{R1 + R2 + R_{AB}} \times 2.5 \text{ V}$$

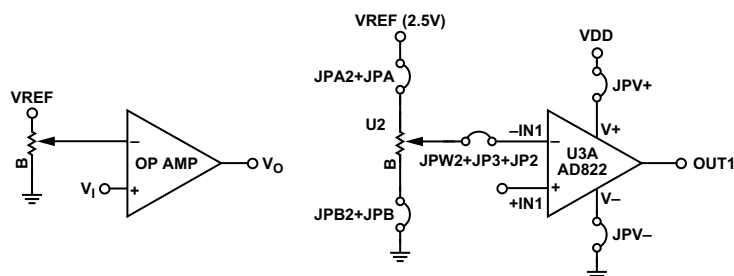


Figure 5. Level Detector

IF $V_{IN} > V_W$, $V_O = VDD$, 0
OTHERWISE,

$$V_W = 2.5 \text{ V} \times \frac{\text{Step}^*}{32}$$

* Assume zero-scale preset

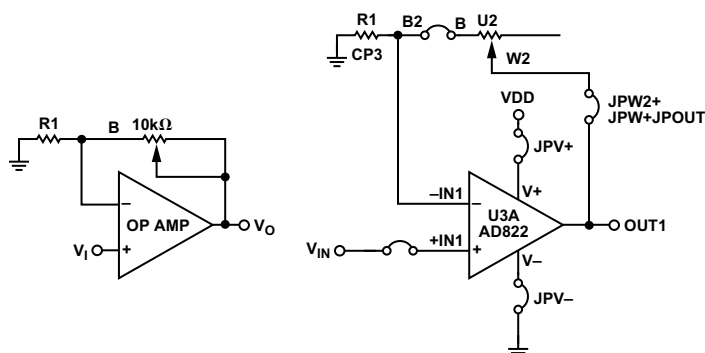


Figure 6. Noninverting Linear Gain

$$V_O = \left(1 + \frac{\text{Step}^* \times R_{AB}}{32 \times R1} \right) V_I$$

* Assume zero-scale preset

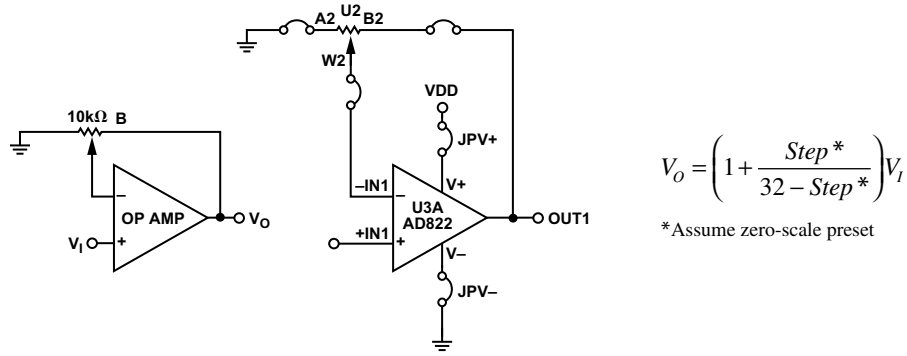


Figure 7. Pseudo Log Noninverting Gain

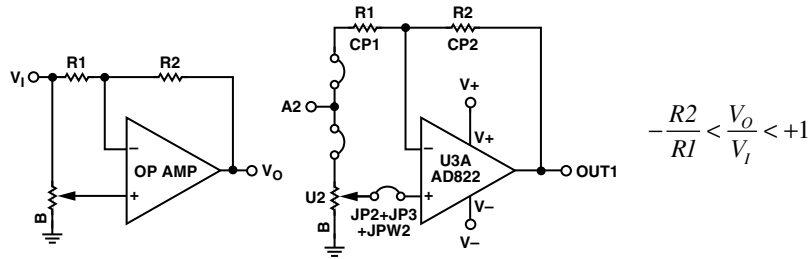


Figure 8. Bipolar Linear Gain

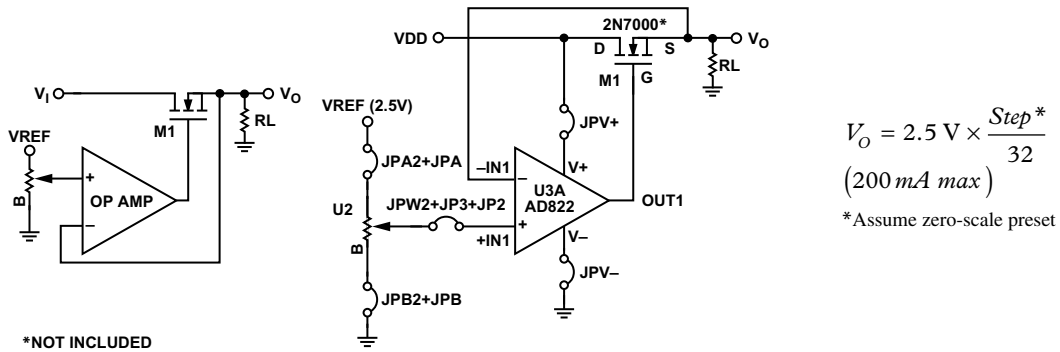


Figure 9. Programmable 2.5 V Power Supply

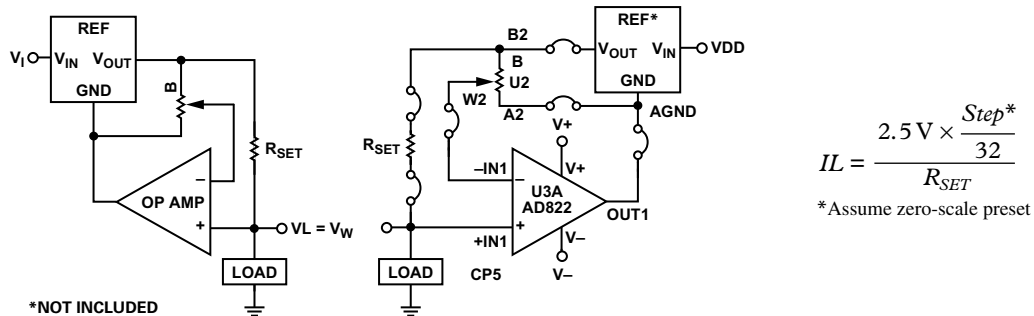


Figure 10. Programmable Current Source

PCB Layout

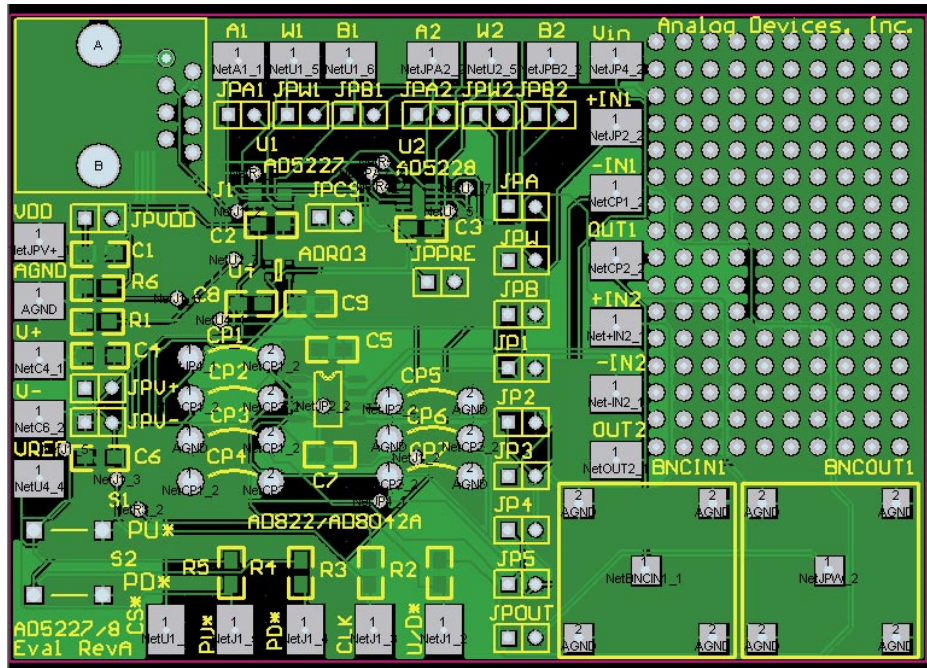


Figure 11. Evaluation Board

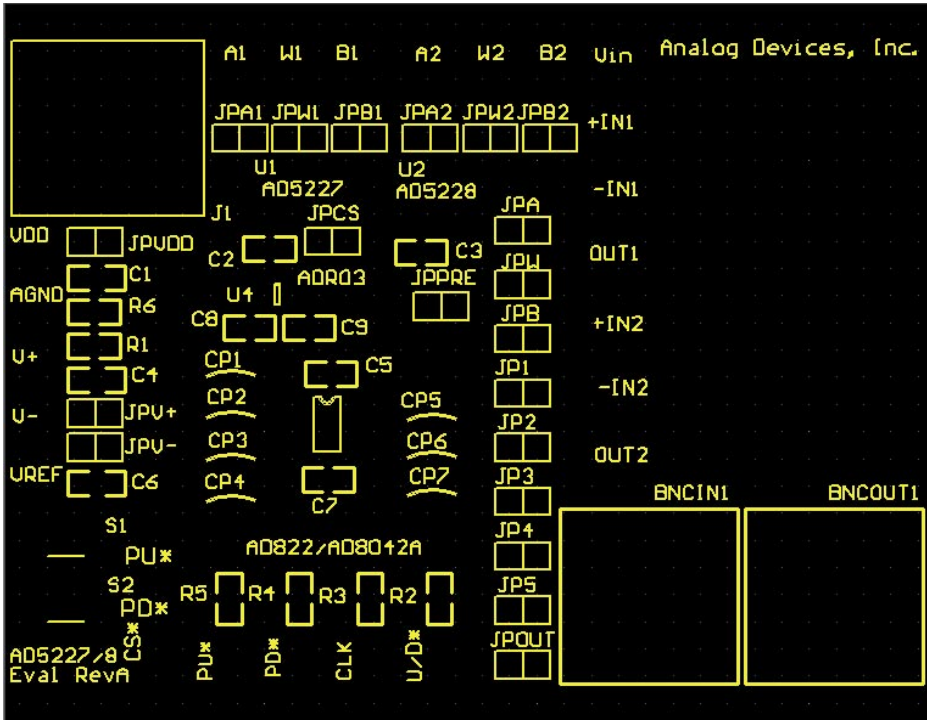


Figure 12. Top Overlay

