

## Using the PRUP Pin on the AD607 and AD61009

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### INTRODUCTION

This application note describes the operation of the AD607 and AD61009 with respect to the application circuit required on the PRUP pin. The recommended circuit configurations for different rise times of the control signal applied to the PRUP pin are outlined, as well as the operating conditions for fast rise time and slow rise time.

### APPLICATION CIRCUIT FOR PRUP PIN

The application circuit for the PRUP pin is shown in Figure 1. This circuit is used to condition the control signal for PRUP such that the device starts in the correct state. As described in the AD607 and AD61009 data sheets, there are instances when an improperly conditioned signal can cause the device to oscillate upon power up. This most often occurs when the PRUP pin is enabled with a rise time of faster than 35  $\mu\text{s}$ , though it can also occur when the PRUP pin rises much slower than 35  $\mu\text{s}$ , such as greater than 1 ms. In either case, the application circuit in Figure 1 can be used to correct the anomalous behavior.

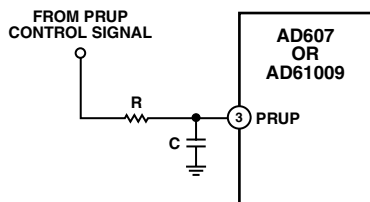


Figure 1. Application Circuit for the PRUP Pin

The RC circuit added to the PRUP pin gives a controlled time constant for the PRUP signal, enabling the internal bias circuit to properly reach its operating point. In the case of a fast PRUP pin rise time (<35  $\mu\text{s}$ ), it is necessary to slow down the rise time for PRUP using a 4.7 k $\Omega$  resistor and a 1.5 nF capacitor. Note that this is a minimum condition and higher capacitor values can be used. In the case of the PRUP signal rising rather slowly (>1 ms), it is important to allow slightly more current to flow to the PRUP pin, and thus a reduced resistor value (and corresponding higher capacitor value) is suggested for the RC. These recommendations are summarized in Table I. Note that in all cases, power supply must be applied to the pins prior to asserting the PRUP signal.

Use of the circuit in Figure 1 and corresponding values for the proper rise times in Table I will prevent the anomalous behavior from occurring that is described in the "Using the AD607 with a Fast PRUP Control Signal" section of the AD607 (AD61009) data sheet.

Table I. RC Time Constant Values

PRUP Rise Time	R	C	Power Supply State
<35 $\mu\text{s}$	4.7 k $\Omega$	>1.5 nF	Enabled
>1 ms	100 $\Omega$	82 nF	Enabled

