



# 8-Bit I<sup>2</sup>C-Bus LED Driver with Programmable Blink Rates

## PCA9551

Last Updated: Aug 22, 2022

The PCA9551 LED blinker blinks LEDs in I<sup>2</sup>C-bus and SMBus applications where it is necessary to limit bus traffic or free up the I<sup>2</sup>C-bus controller's (MCU, MPU, DSP, chipset, etc.) timer. The uniqueness of this device is the internal oscillator with two programmable blink rates. To blink LEDs using normal I/O expanders like the PCF8574 or PCA9554, the bus controller must send repeated commands to turn the LED on and off. This greatly increases the amount of traffic on the I<sup>2</sup>C-bus and uses up one of the controller's timers. The PCA9551 LED blinker instead requires only the initial set-up command to program BLINK RATE 1 and BLINK RATE 2 (i.e., the frequency and duty cycle) for each individual output. From then on, only one command from the bus controller is required to turn each individual open-drain output on, off, or to cycle at BLINK RATE 1 or BLINK RATE 2. Maximum output sinks current is 25 mA per bit and 100 mA per package.

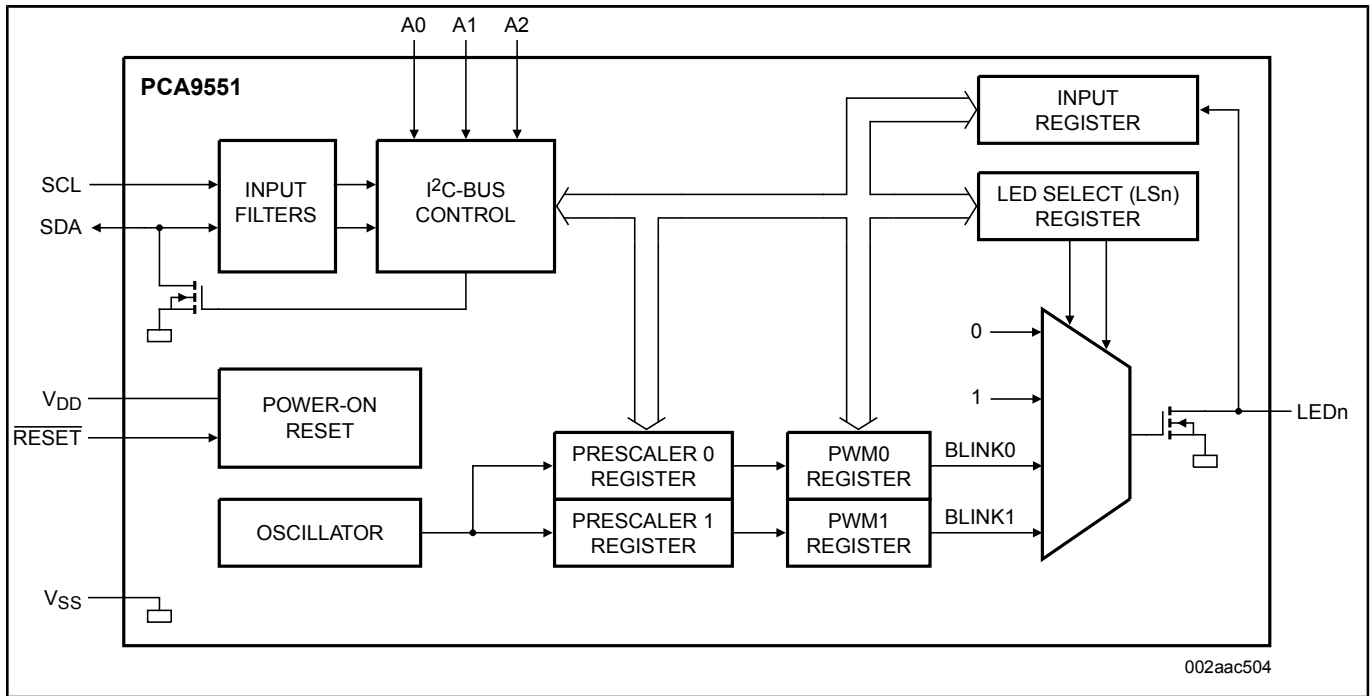
Any bits not used for controlling the LEDs can be used for General Purpose parallel Input/Output (GPIO) expansion.

The active LOW hardware reset pin (RESET) and Power-On Reset (POR) initializes the registers to their default state, all zeroes, causing the bits to be set HIGH (LED off).

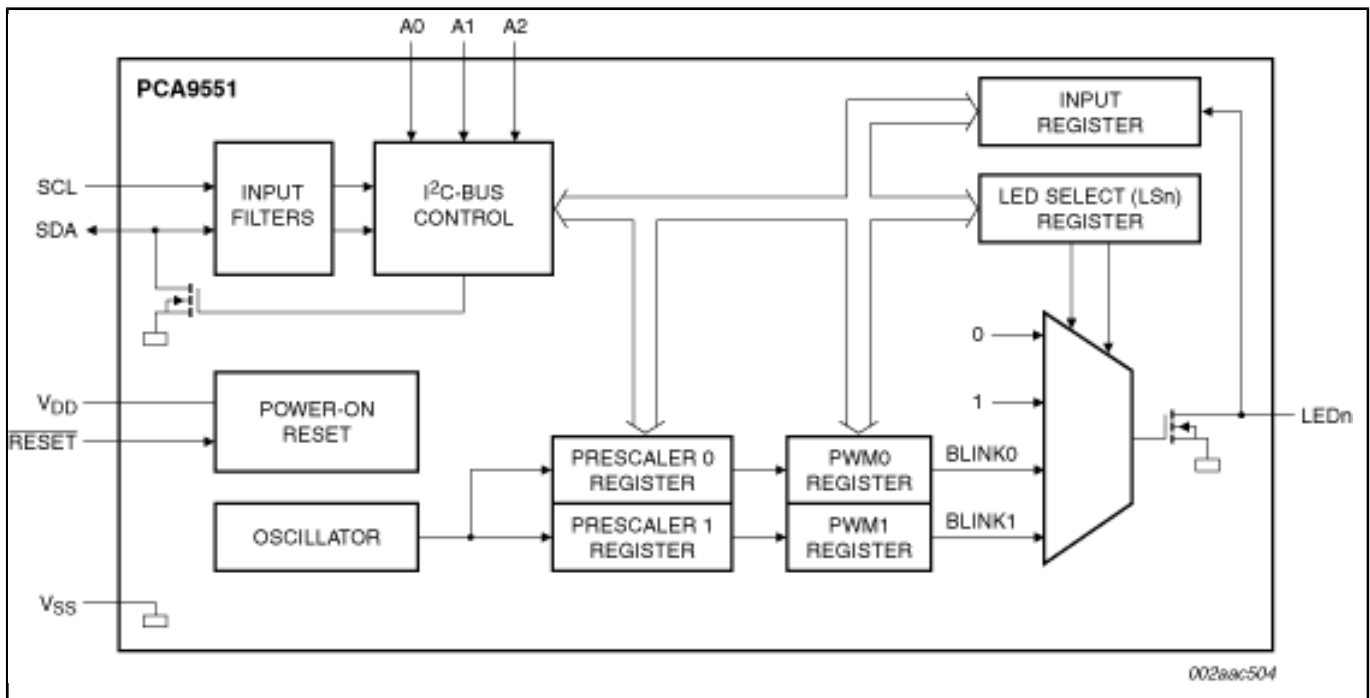
Three hardware address pins on the PCA9551 allow eight devices to operate on the same bus.

The newer Fast-mode Plus PCA9634 8-bit LED controller offers an individual PWM dimming control for each channel for better color mixing capabilities with a global PWM for dimming or blinking all channels at the same time. There are 126 possible address combinations and the maximum output sink current is 25 mA per bit and 200 mA per package.

**PCA95 Block Diagram Block Diagram**



**Block diagram: PCA9551BS, PCA9551D, PCA9551PW Block Diagram**



View additional information for [8-Bit I²C-Bus LED Driver with Programmable Blink Rates](#).

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