Low-Voltage 8-Bit I²C-Bus and SMBus Low Power I/O Port with Interrupt, Weak Pull-Up

PCA9554B_PCA9554C

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The PCA9554B and PCA9554C are low-voltage 8-bit General Purpose Input/Output (GPIO) expanders with interrupt for I²C-bus/SMBus applications. The only difference between the PCA9554B and PCA9554C is their I²C fixed address allowing a larger number of the same device on the I²C-bus with no chance of address conflict. NXP I/O expanders provide a simple solution when additional I/Os are needed while keeping interconnections to a minimum, for example, in ACPI power switches, sensors, push buttons, LEDs, fan control, etc.

In addition to providing a flexible set of GPIOs, the wide VDD range of 1.65 V to 5.5 V allow the PCA9554B/PCA9554C to interface with next-generation microprocessors and microcontrollers where supply levels are dropping down to conserve power.

The PCA9554B/PCA9554C contain a register set of 8-bit Configuration, Input, Output, and Polarity Inversion registers.

The PCA9554B is a pin-to-pin replacement for the PCA9554, while the PCA9554C replaces the PCA9554A. Both of these devices replace other industry-standard part numbers. More fully-featured parts PCAL9554B and PCAL9554C are also available with Agile I/O features. See the respective data sheet for more details.

The PCA9554B/PCA9554C open-drain interrupt (INT) output is activated when any input state differs from its corresponding Input Port register state and is used to indicate to the system controller that an input state has changed.

INT can be connected to the interrupt input of a microcontroller. By sending an interrupt signal on this line, the remote I/O can inform the microcontroller if there is incoming data on its ports

without having to communicate via the I²C-bus. Thus, the PCA9554B/PCA9554C can remain a simple target device.

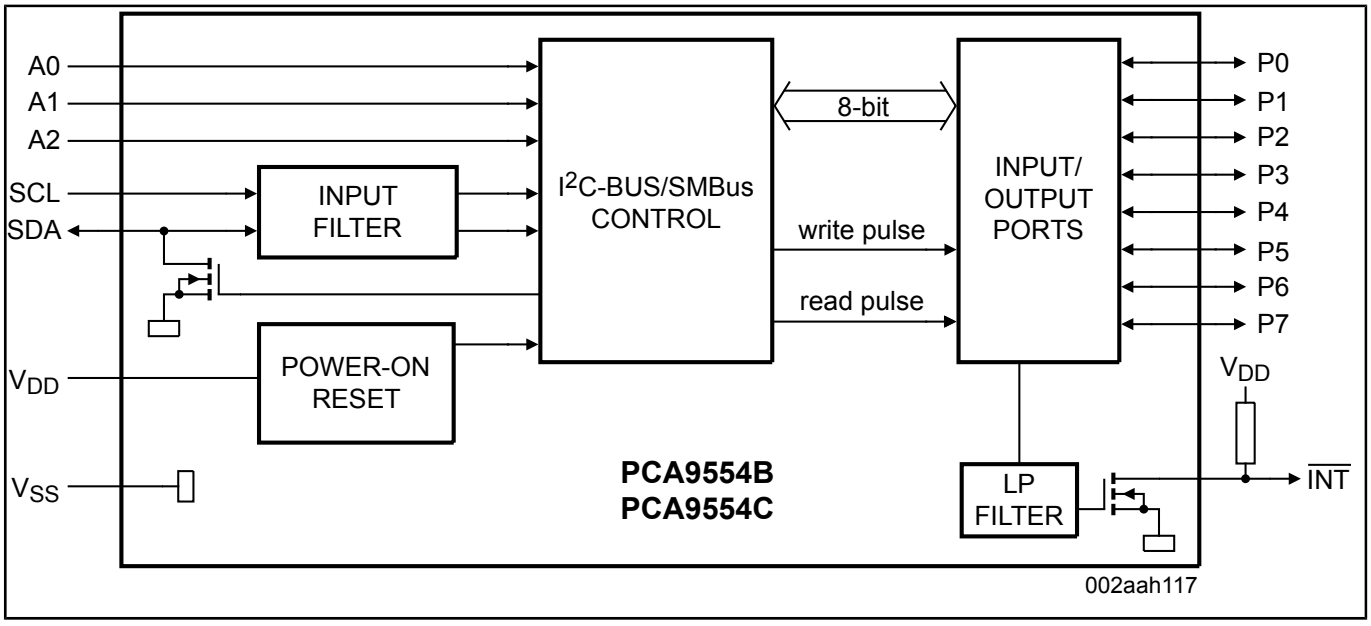
The device outputs have 25 mA sink capabilities for directly driving LEDs while consuming low device current.

The power-on reset sets the registers to their default values and initializes the device state machine.

All input/output pins have weak pull-up resistors connected to them to eliminate external components.

Three hardware pins (A0, A1, A2) select the fixed I²C-bus address and allow up to eight devices to share the same I²C-bus/SMBus. The PCA9554B and PCA9554C differ only in their base I²C-bus addresses permitting a total of 16 devices on the I²C-bus, minimizing the chance for address conflict, even in a complex system.

PCA9554B-PCA9554C Block Diagram



View additional information for Low-Voltage 8-Bit I²C-Bus and SMBus Low Power I/O Port with Interrupt, Weak Pull-Up.

Note: The information on this document is subject to change without notice.

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