



NXP dual 5-bit and quad 6-bit multiplexed I²C-bus/SMBus EEPROMs PCA9560/61

Highly accurate system tuning with flexible, easy-to-program EEPROMs

Designed for DIP-switch-free and jumper-less configuration, these multiplexed EEPROMs support CPU VID in mobile and desktop computers. Equipped with the familiar I²C-bus/SMBus, they are also ideally suited to server, telecom, and networking applications.

PCA9560 features

- ▶ Two 6-bit, non-volatile EEPROM registers
- ▶ Five hardware-pin inputs
- ▶ One 5-bit multiplexed output
- ▶ One latched EEPROM output
- ▶ Three preset values for performance, deep sleep, and deeper sleep
- ▶ Recommended replacement for PCA8550 and PCA9559
- ▶ 20-pin SO or TSSOP package options

PCA9561 features

- ▶ Four 6-bit, non-volatile EEPROM registers
- ▶ Six hardware-pin inputs
- ▶ One 6-bit multiplexed output
- ▶ Five preset values for performance, deep sleep, and deeper sleep
- ▶ 20-pin SO or TSSOP package options

Applications

- ▶ CPUVID in mobile and desktop computers
- ▶ System configuration in servers and telecom/networking equipment
- ▶ PAL/NTSC settings in LCD TV

In CPU Vendor Identification (VID) applications, the NXP PCA9560/61 typically resides between the CPU and the voltage regulator module (VRM). To change CPU voltage, the PCA9560/61 bypasses the CPU-defined VID values and provides a new set of values to the VRM. An increase in CPU voltage, combined with an increase in CPU frequency, can lead to a performance boost of up to 7.5 percent. Conversely, a lower CPU voltage can reduce power consumption.

In server, telecom, and networking applications, the I²C-bus/SMBus of the PCA9560/61 can be used to change settings without powering down the equipment or opening the cabinet.

PCA9560

The PCA9560 has two 6-bit, non-volatile EEPROM registers, five hardware-pin inputs, a 5-bit multiplexed output, and a latched EEPROM bit. To set the processor voltage for operation in performance, deep-sleep, or deeper-sleep modes, there are three preset values (two sets of internal non-volatile registers and one set of external hardware pins). Open-drain buffers let the PCA9560 work with a range of CPUs, including 2.5- and 5.0-V processors.

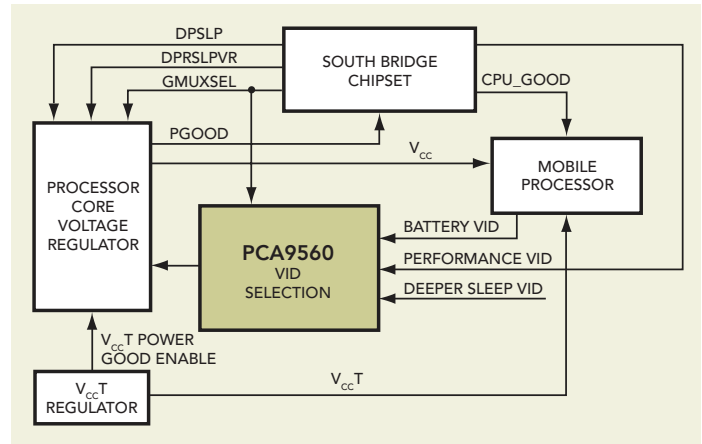
The PCA9560 is a drop-in replacement for the PCA9559. It can be used, without any software modifications, to add a second, internal EEPROM register to existing PCA9559 designs.

PCA9561

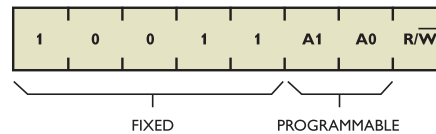
The PCA9561 has four 6-bit, non-volatile EEPROM registers, six hardware-pin inputs, and a 6-bit multiplexed output. For setting processor voltage for various performance and battery-conserving sleep modes, it has five preset values (four sets of internal non-volatile registers and one set of external hardware pins). It provides very precise CPU voltage tuning and is especially suited to processor-selection applications, where multiple 6-bit values need to be available independently.

The PCA9560/61 inputs are tolerant to 2.5 and 5.5 V, and can be read via the I²C-bus/SMBus. The outputs are open drains tolerant to 5.5 V. Two address pins support up to four devices on the same I²C-bus/SMBus. The operating range is 3.0 to 3.6 V, the operating temperature range is -40 to +85 °C, and the operating frequency is up to 400 kHz.

If the power is turned off, the non-volatile memory in the PCA9560/61 retains the most current setting selected. The internal non-volatile EEPROM registers are designed for durability, with a minimum of 100,000 write cycles and a minimum 10-year retention of memory-cell data.



PCA9560 shown in a VID-selection application

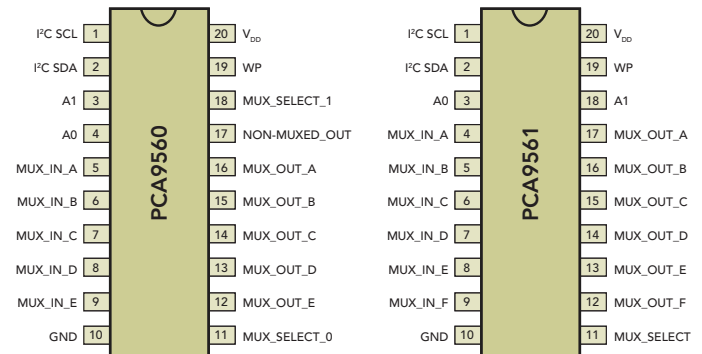


I²C-bus slave address for PCA9560 and PCA9561

Ordering information

Package type	Container	Part number
SO	Tube	PCA9560D PCA9561D
SO	Tape and reel	PCA9560D-T PCA9561D-T
TSSOP	Tube	PCA9560PW PCA9561PW
TSSOP	Tape and reel	PCA9560PW-T PCA9561PW-T

Note: In Europe and Asia, tape and reel is designated by ,118 instead of -T



Pinout diagram for PCA9560 and PCA9561

Selection guide

Type no.	Non-volatile registers	Register bits	Hardware-pin inputs	Muxed outputs	Non-muxed outputs
PCA8550	1	5	4	4	•
PCA9559	1	6	5	5	•
PCA9560	2	6	5	5	•
PCA9561	4	6	6	6	•

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