Eight-Channel I²C-Bus Multiplexer with Reset
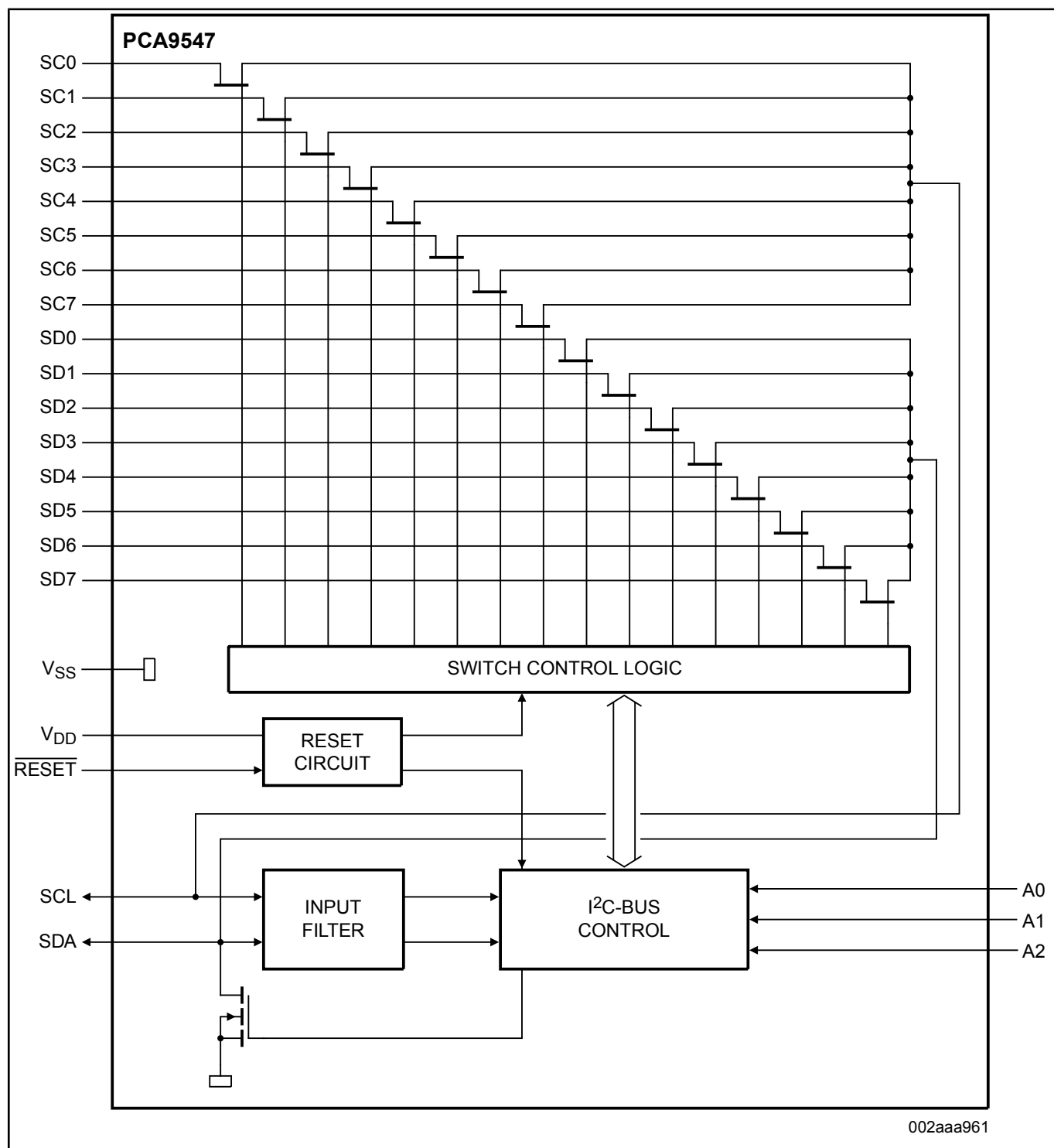
PCA9547

Last Updated: Dec 23, 2025

The PCA9547 is an octal bidirectional translating multiplexer controlled by the I²C-bus. The SCL/SDA upstream pair fans out to eight downstream pairs, or channels. Only one SCx/SDx channel can be selected at a time, determined by the contents of the programmable control register. The device powers up with Channel 0 connected, allowing immediate communication between the controller and downstream devices on that channel.
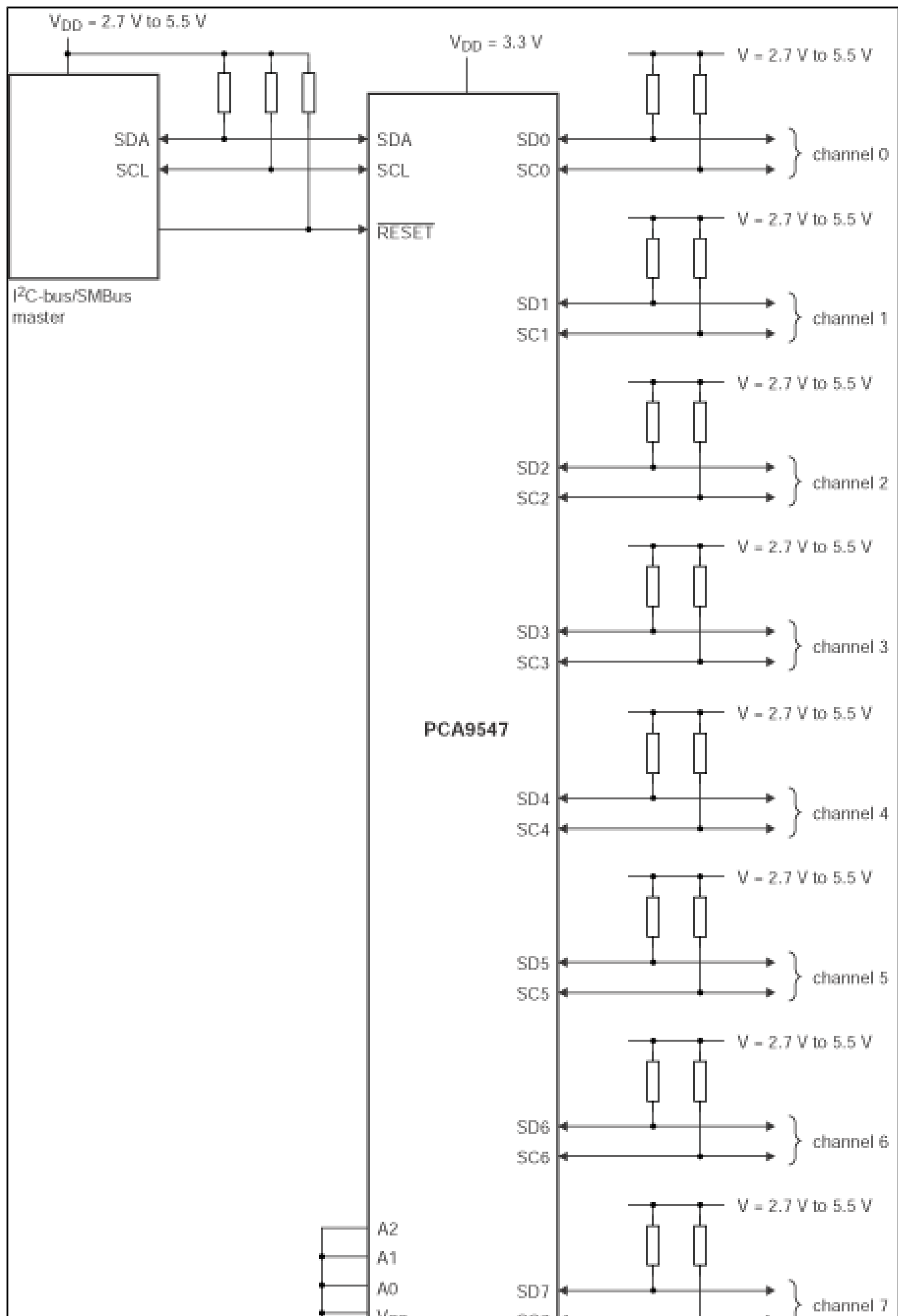
An active LOW reset input allows the PCA9547 to recover from a situation where one of the downstream I²C-buses is stuck in a LOW state. Pulling the RESET pin LOW resets the I²C-bus state machine causing all the channels to be deselected, except Channel 0 so that the controller can regain control of the bus.

The pass gates of the multiplexers are constructed such that the VDD pin can be used to limit the maximum high voltage which will be passed by the PCA9547. This allows the use of different bus voltages on each pair, so that 1.8 V, 2.5 V, or 3.3 V parts can communicate with 5 V parts without any additional protection. External pull-up resistors pull the bus up to the desired voltage level for each channel. All I/O pins are 5 V tolerant.
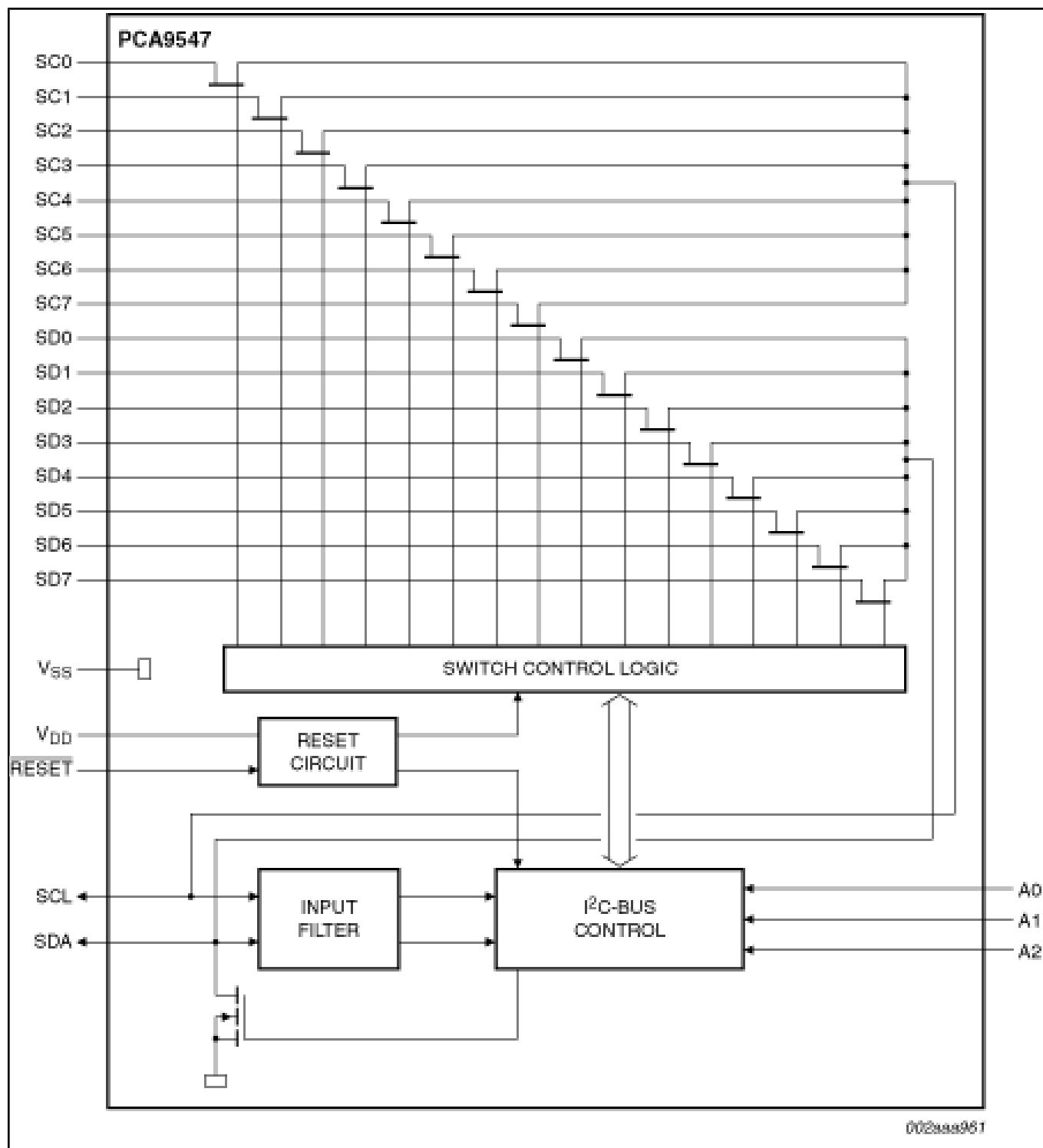
PCA9547 Block Diagram

PCA9547BS, PCA9547D, PCA9547PW Block Diagram

V_{DD} = 2.7 V to 5.5 V

V_{DD} = 3.3 V

I²C-bus/SMBus master

SDA
SCL

SDA
SCL
RESET

PCA9547

A2
A1
A0

SD0
SC0

SD1
SC1

SD2
SC2

SD3
SC3

SD4
SC4

SD5
SC5

SD6
SC6

SD7

V = 2.7 V to 5.5 V
} channel 0

V = 2.7 V to 5.5 V
} channel 1

V = 2.7 V to 5.5 V
} channel 2

V = 2.7 V to 5.5 V
} channel 3

V = 2.7 V to 5.5 V
} channel 4

V = 2.7 V to 5.5 V
} channel 5

V = 2.7 V to 5.5 V
} channel 6

V = 2.7 V to 5.5 V
} channel 7

PCA9547BS, PCA9547D, PCA9547PW Block Diagram

View additional information for Eight-Channel I²C-Bus Multiplexer with Reset.

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

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