Hot Swappable I²C-Bus and SMBus Bus Buffer

PCA9513A_PCA9514A

Last Updated: Dec 23, 2025

The PCA9513A and PCA9514A are hot swappable I²C-bus and SMBus buffers that allow I/O card insertion into a live backplane without corrupting the data and clock buses. Control circuitry prevents the backplane from being connected to the card until a stop command or bus idle occurs on the backplane without bus contention on the card. When the connection is made, the PCA9513A and PCA9514A provides bidirectional buffering, keeping the backplane and card capacitances isolated.

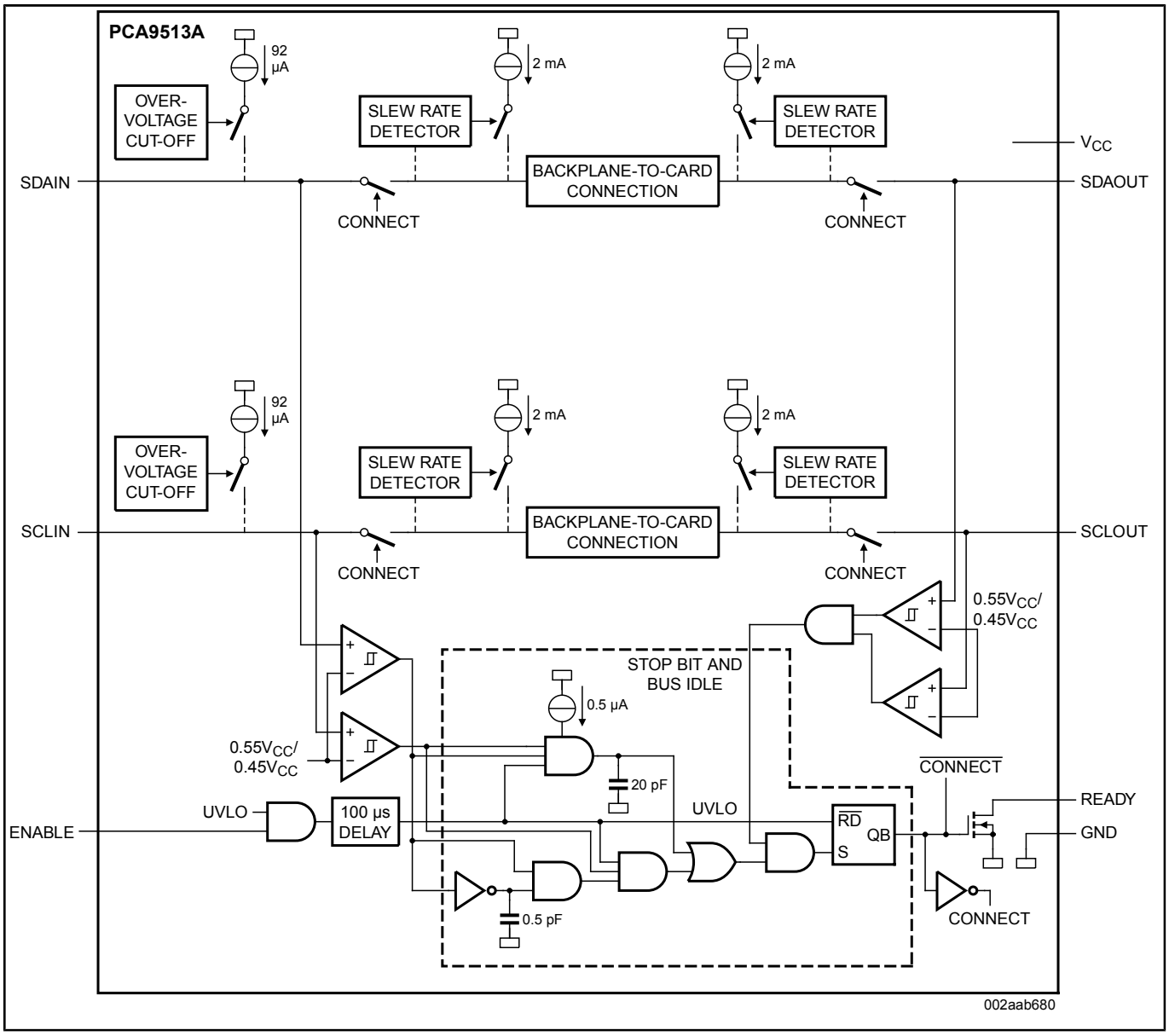
Rise time accelerator circuitry allows the use of weaker DC pull-up currents while still meeting rise time requirements. The PCA9513A and PCA9514A incorporates a digital ENABLE input pin, which enables the device when asserted HIGH and forces the device into a Low current mode when asserted LOW, and an open-drain READY output pin, which indicates that the backplane and card sides are connected together (HIGH) or not (LOW).

The PCA9513A supplies a 92 uA current source to SCLIN and SDAIN pins in lieu of using pull-up resistors which is ideal for multidrop bus applications. Including the current source in the device provides for a consistent RC time constant as cards are removed and inserted into the backplane. The current source is high-impedance whenever the pin voltage is greater than the part VCC.

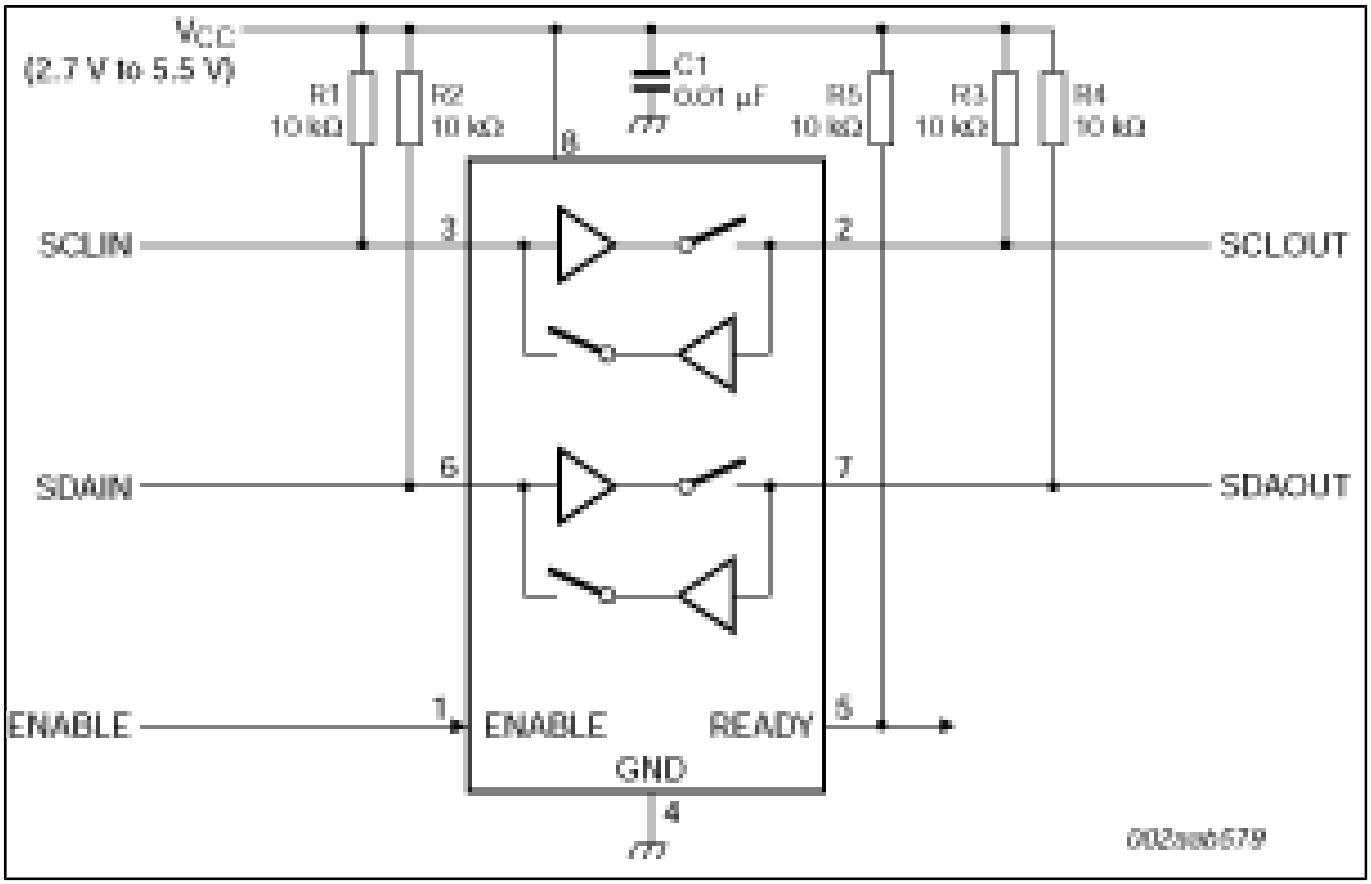
The PCA9513A and PCA9514A rise time accelerator threshold is 0.8 V to provide better noise margin over the PCA9511A which is set to 0.6 V.

Remark: The dynamic offset design of the PCA9510A/11A/12A/13A/14A I/O drivers allow them to be connected to another PCA9510A/11A/12A/13A/14A device in series or in parallel and to the A side of the PCA9517. The PCA9510A/11A/12A/13A/14A cannotconnect to the static offset I/Os used on the PCA9515/15A/16/16A/18 or PCA9517 B side or P82B96 Sx/y side.

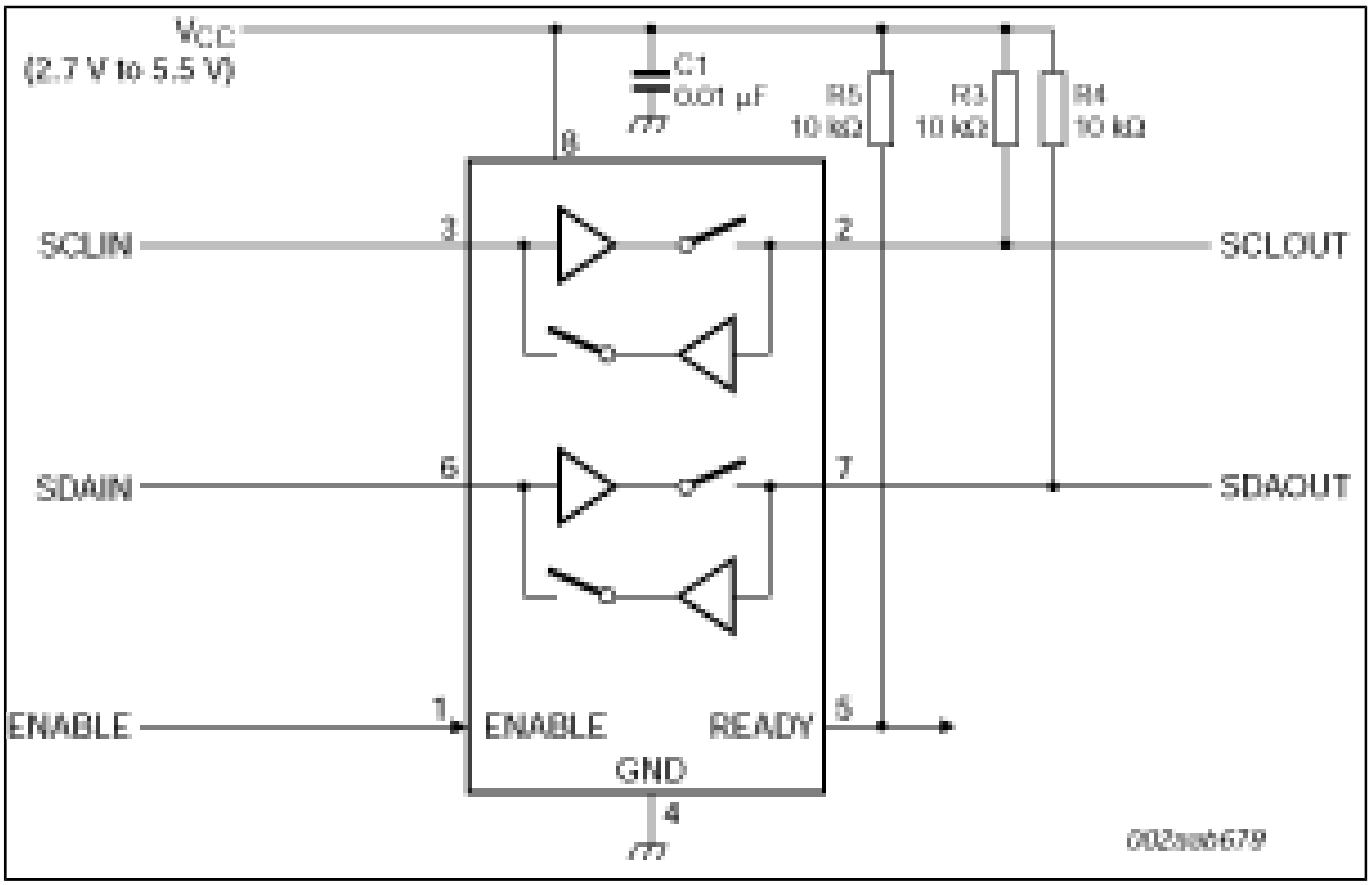
PCA9513A-PCA9514A Block Diagram Block Diagram



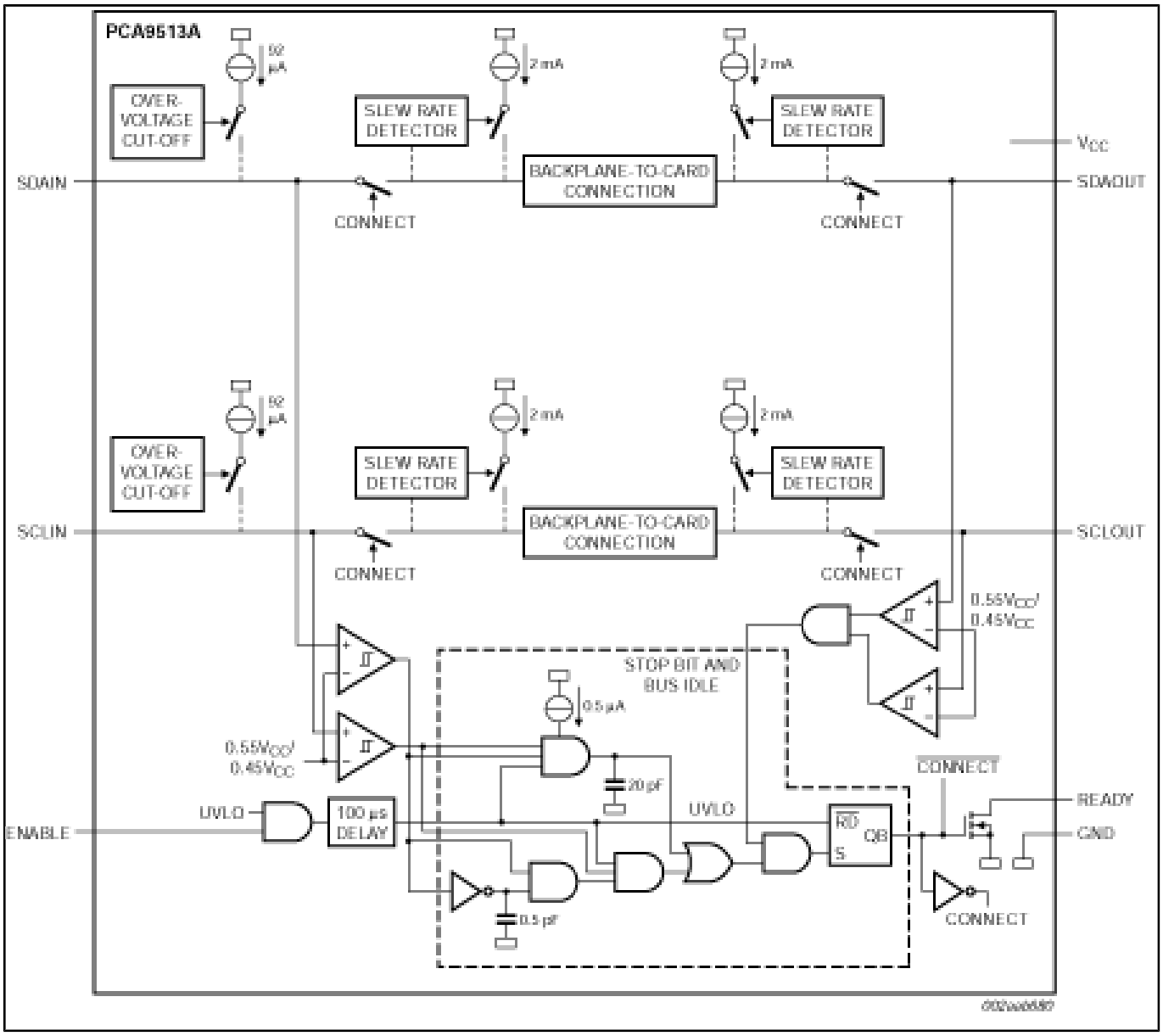
Block diagram: PCA9511AD, PCA9511ADP, PCA9513AD, PCA9513ADP, PCA9514AD, PCA9514ADP Block Diagram



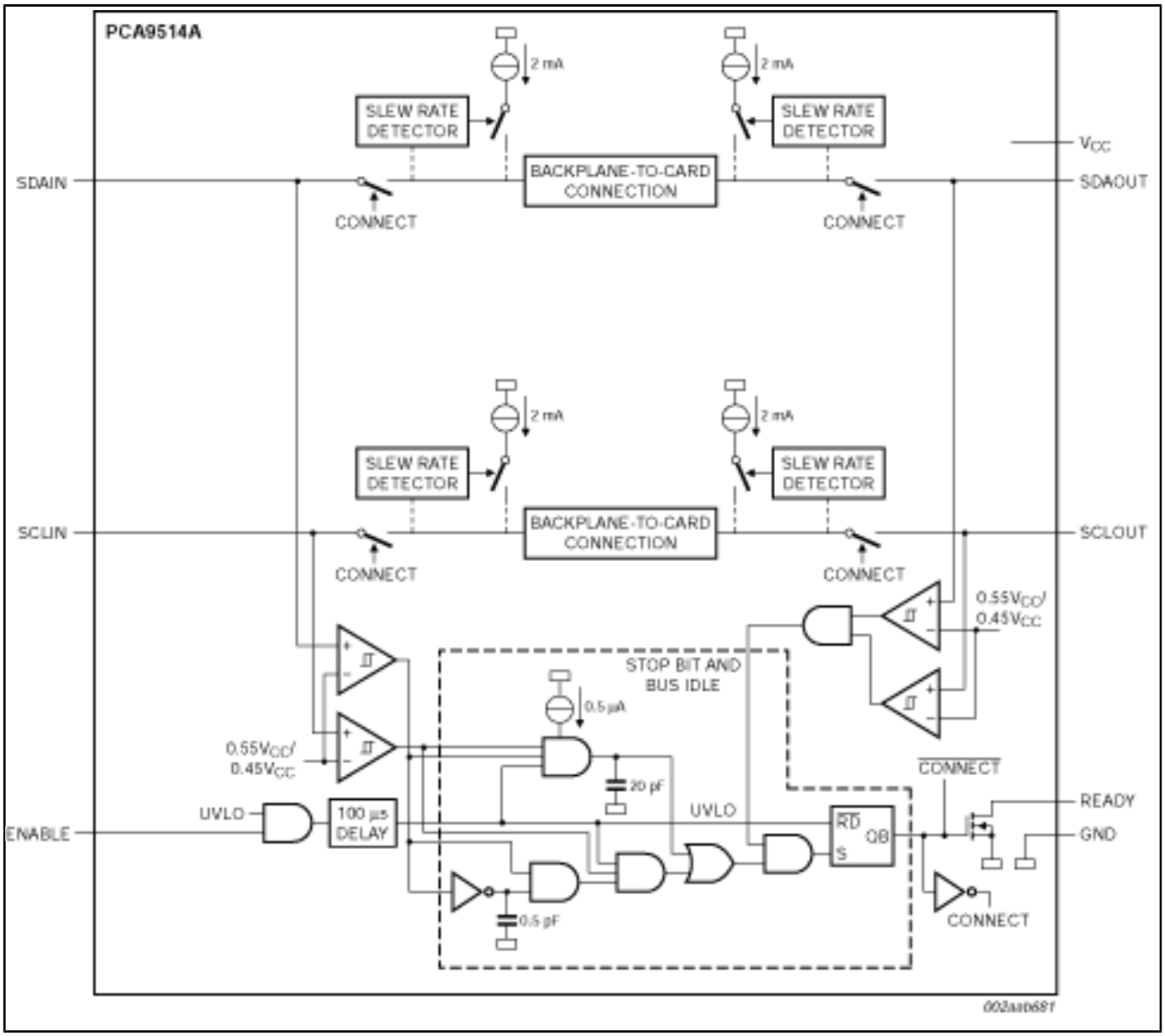
Block diagram: PCA9513AD, PCA9513ADP, PCA9514AD, PCA9514ADP Block Diagram



Block diagram: PCA9513AD, PCA9513ADP, PCA9514AD, PCA9514ADP Block Diagram



Block diagram: PCA9513AD, PCA9513ADP, PCA9514AD, PCA9514ADP Block Diagram



View additional information for Hot Swappable I²C-Bus and SMBus Bus Buffer.

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