

# ***SENSYLINK Microelectronics***

***(CA9511)***

## ***Hot-swappable I<sup>2</sup>C Bus Buffer***

***CA9511 is a hot-swappable buffer. It provides I/O card insertion without corruption of the data and clock buses.***

***It is ideally used in Server and Telecom equipment.***

## 1. Description

The CA9511 is a hot swappable I<sup>2</sup>C bus buffer that supports I/O card insertion into a live backplane without corruption of the data and clock buses. Control circuitry prevents the backplane-side I<sup>2</sup>C lines (in) from being connected to the card-side I<sup>2</sup>C lines (out) until a stop command or bus idle condition occurs on the backplane without bus contention on the card. When the connection is made, this device provides bidirectional buffering, keeping the backplane and card capacitances separated. During insertion, the SDA and SCL lines are pre-charged to 1V to minimize the current required to charge the parasitic capacitance of the device.

When the I<sup>2</sup>C bus is idle, the CA9511 can be put into shutdown mode by setting the EN pin low, reducing power consumption. When EN is pulled high, the CA9511 resumes normal operation. It also includes an open drain READY output pin, which indicates that the backplane and card sides are connected together. When READY is high, the SDAIN and SCLIN are connected to SDAOUT and SCLOUT. When the two sides are disconnected, READY is low.

Available Package: SOP-8, MSOP-8 package.

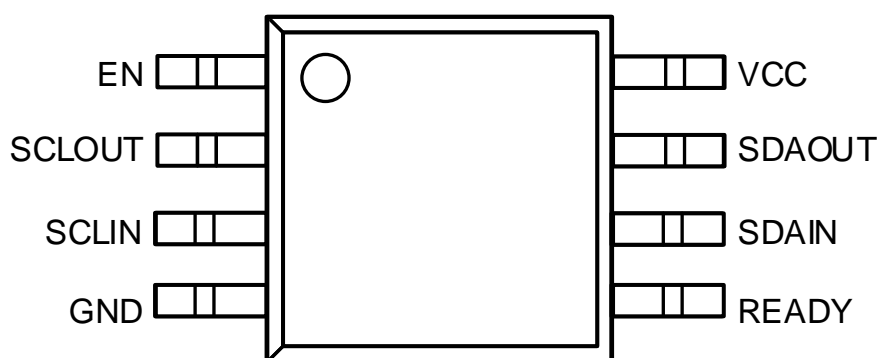
## 2. Features

- Bidirectional buffer for SDA and SCL lines increases fan-out and prevents SDA and SCL corruption during live board insertion and removal from multipoint backplane systems
- Compatible with I<sup>2</sup>C standard mode, I<sup>2</sup>C fast mode and SMBus standards
- Built-in  $\Delta V/\Delta t$  rise time accelerators on all SDA and SCL lines (0.6V threshold) requires the bus pull-up voltage and supply voltage ( $V_{CC}$ ) to be the same
- Active HIGH EN input
- Active HIGH READY open-drain output
- 1V precharge on all SDA and SCL lines
- Supporting clock stretching and multiple master arbitration/synchronization
- Operating power supply voltage range: 2.7V to 5.5V
- 0Hz to 400kHz clock frequency

## 3. Applications

- Server, Notebook PC
- Telecom equipment

## 4. PIN Configurations (Top View)



SOP-8/MSOP-8(Package Code MMM)

## 5. Typical Application

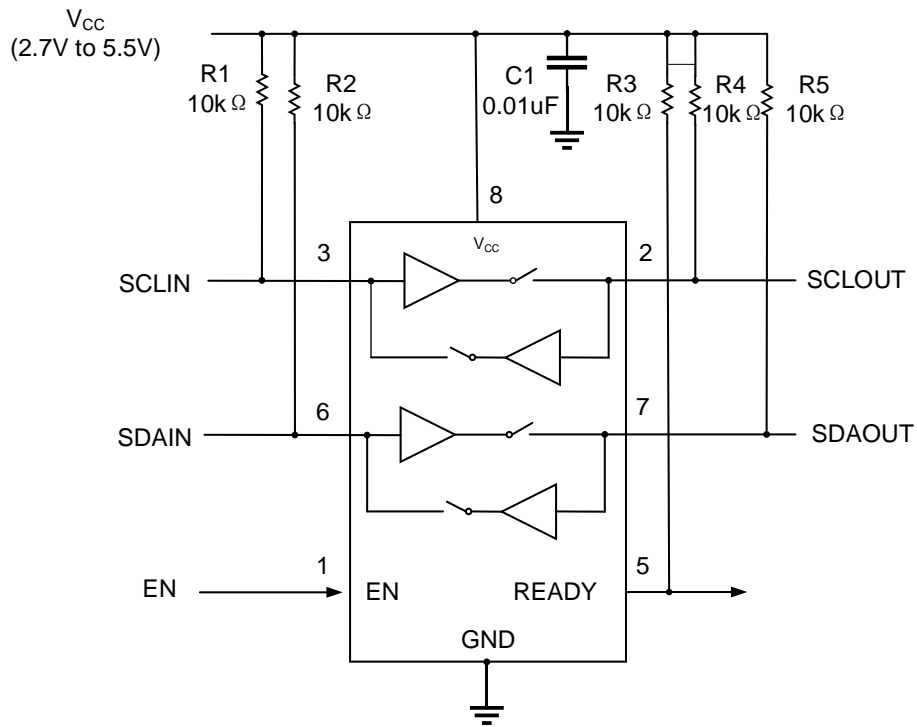


Figure 1 Typical Application of CA9511

## 6. Pin Description

PIN Name	PIN No.	Description
EN	1	Active high chip enable pin. If this pin is low, the chip is in a standby mode. It also disables the rise-time accelerators, disables the bus precharge circuitry, drives READY low, isolates SDAIN from SDAOUT and isolates SCLIN from SCLOUT. This pin should be high (at V <sub>CC</sub> ) for normal operation. Connect this pin to V <sub>CC</sub> if this feature is not being used.
SCLOUT	2	Digital interface clock output pin, need a pull-up resistor to V <sub>CC</sub> . Connect this pin to SCL bus on the card side.
SCLIN	3	Digital interface clock input pin, need a pull-up resistor to V <sub>CC</sub> . Connect this pin to SCL bus on the backplane side.
GND	4	Ground pin.
READY	5	Connection flag/rise-time accelerator control. Open drain output with active high. This pin is low when either EN is low or the startup sequence has not been completed. This pin goes high when EN is high and start-up is complete. Connect a 10kΩ resistor from this pin to V <sub>CC</sub> to provide the pull-up current.
SDAIN	6	Digital interface data input, need a pull-up resistor to V <sub>CC</sub> . Connect this pin to SDA bus on the backplane side.
SDAOUT	7	Digital interface data output, need a pull-up resistor to V <sub>CC</sub> . Connect this pin to SDA bus on the card side.
V <sub>CC</sub>	8	Power supply input pin, using 0.1uF low ESR ceramic capacitor to ground. Main input power supply from backplane. This is the supply voltage for the devices on the backplane I <sup>2</sup> C buses. Connect pull-up resistors from SDAIN and SCLIN (and also from SDAOUT and SCLOUT) to this supply.

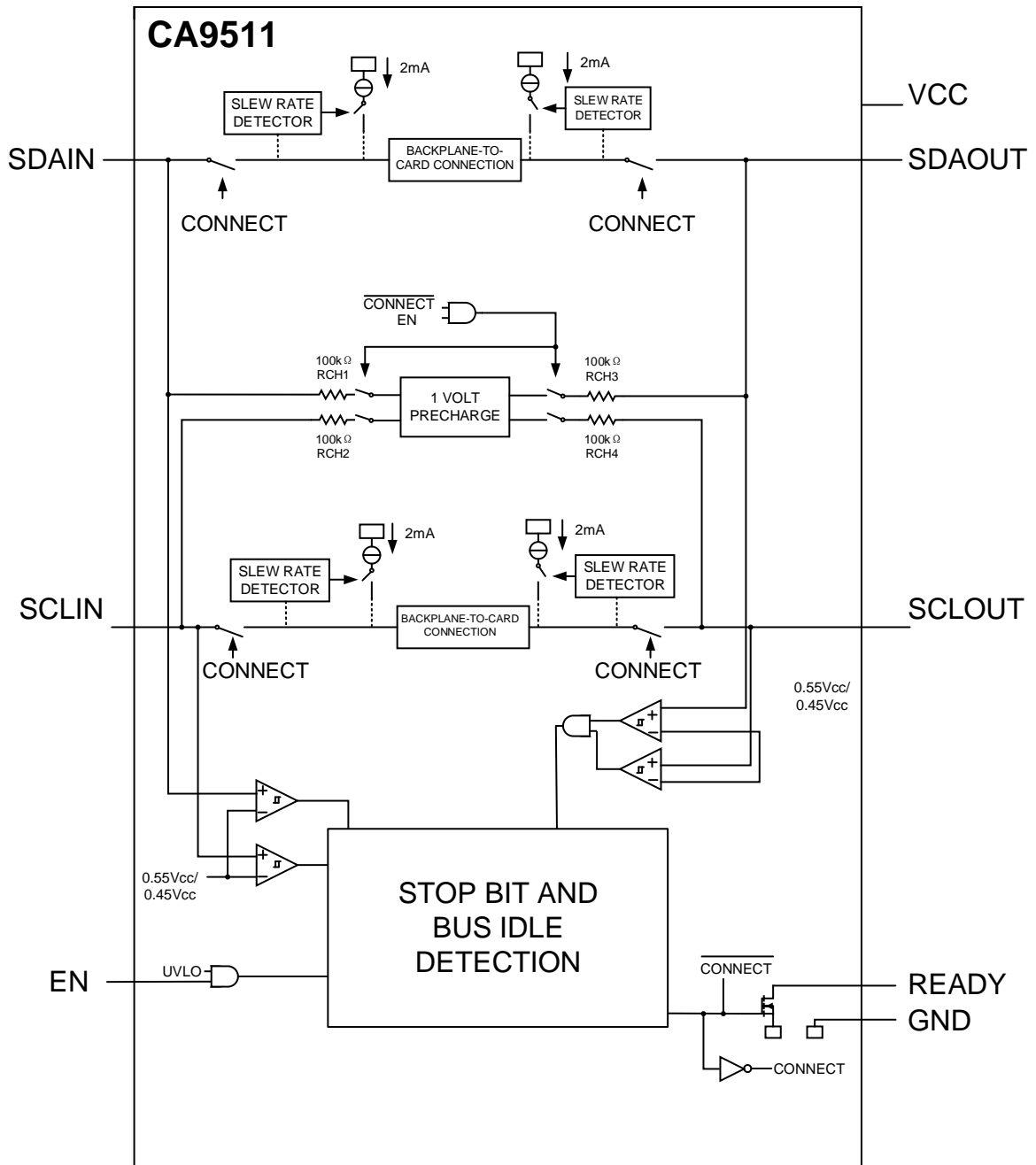
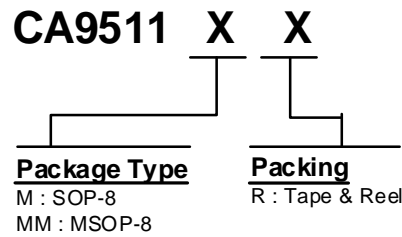
**7. Function Block**


Figure 2 CA9511 Function Block

**Hot-swappable I<sup>2</sup>C Bus Buffer**

## 8. Ordering Information



Order PN	Green <sup>1</sup>	Package	Marking ID <sup>2</sup>	Packing	MPQ	Operation Temperature
CA9511MR	Halogen free	SOP-8	9511 YWWAXX	Tape & Reel	4,000	-40°C~+85°C
CA9511MMR	Halogen free	MSOP-8	9511 YWWAXX	Tape & Reel	3,000	-40°C~+85°C

**Notes:**

1. Sensylink can meet RoHS2.0/REACH requirement. Most package types Sensylink offers only states halogen free, instead of lead free.
2. Marking ID includes 2 rows of characters. In general, the 1<sup>st</sup> row of characters are part number, and the 2<sup>nd</sup> row of characters are date code plus production information.



## ***SENSYLINK Microelectronics Inc.***

***[www.sensylink.com](http://www.sensylink.com)***

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