

SENSYLINK Microelectronics

(CA9557)

***8-bit I²C and SMBus I/O Expander with
Reset***

CA9557 is an 8-bit I/O expander. It provides I/O expansion for most MCU families via the I²C or SMBus interface. It is ideally used in Server and Telecom equipment.

8-bit I²C and SMBus I/O Expander with Reset

1 Description

The chip is an 8-bit I/O expander. It provides remote I/O expansion for most MCU families via the I²C or SMBus interface. The CA9557 has an 8-bit Input Port register, Output Port register, Configuration register (setup as input or output), and Polarity Inversion register (active high or active low). It has low current consumption and a high-impedance open-drain output, P0. After power on, the 8 I/O pins are configured as inputs. However, the master can enable the I/O pins as either inputs or outputs individually by setup the configuration register bits. The data for each input or output is stored in the corresponding input or output port register. The polarity of the Input Port register can be inverted with the Polarity Inversion register. The system master can reset the CA9557 in the event of a time-out by asserting a LOW in the reset input.

The power-on reset puts the registers in their default state and initializes the I²C/SMBus state machine. The $\overline{\text{RESET}}$ pin causes the same reset/initialization to occur without de-powering the part.

Available Package: SOP-16, TSSOP-16, QFN4X4-16 package.

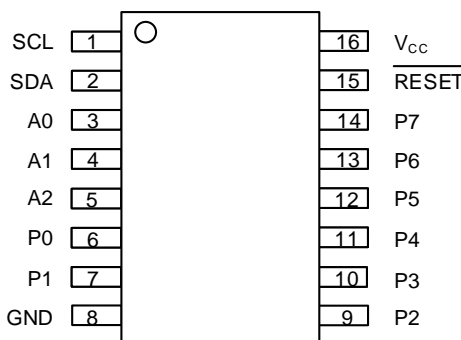
- Operation Voltage: 2.3V to 5.5V
- Low standby current
- 5V Tolerance I/O Port
- 8-bit I/O expander
- Compatible with SMBus and I²C interface
- I²C Speed up to 400kHz (Fast-mode)
- Up to 8 slave addresses
- Active LOW reset input
- Input, Output, and Configuration Register
- Active HIGH polarity Inversion Register
- Built-in Power-on Reset
- No Glitch during Power-up
- Noise Filter on SCL/SDA inputs
- Power-on with all I/Os configured as inputs
- High-impedance open-drain on P0
- Operation temperature Range: -40°C to 85°C

3 Applications

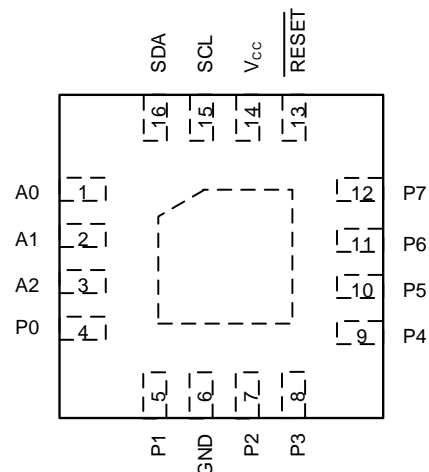
- Server, Notebook PC
- Telecom equipment

2 Features

4 PIN Configurations



SOP-16/TSSOP-16(Package Code M/MT)



QFN4X4-16(Package Code QN)

5 Typical Application

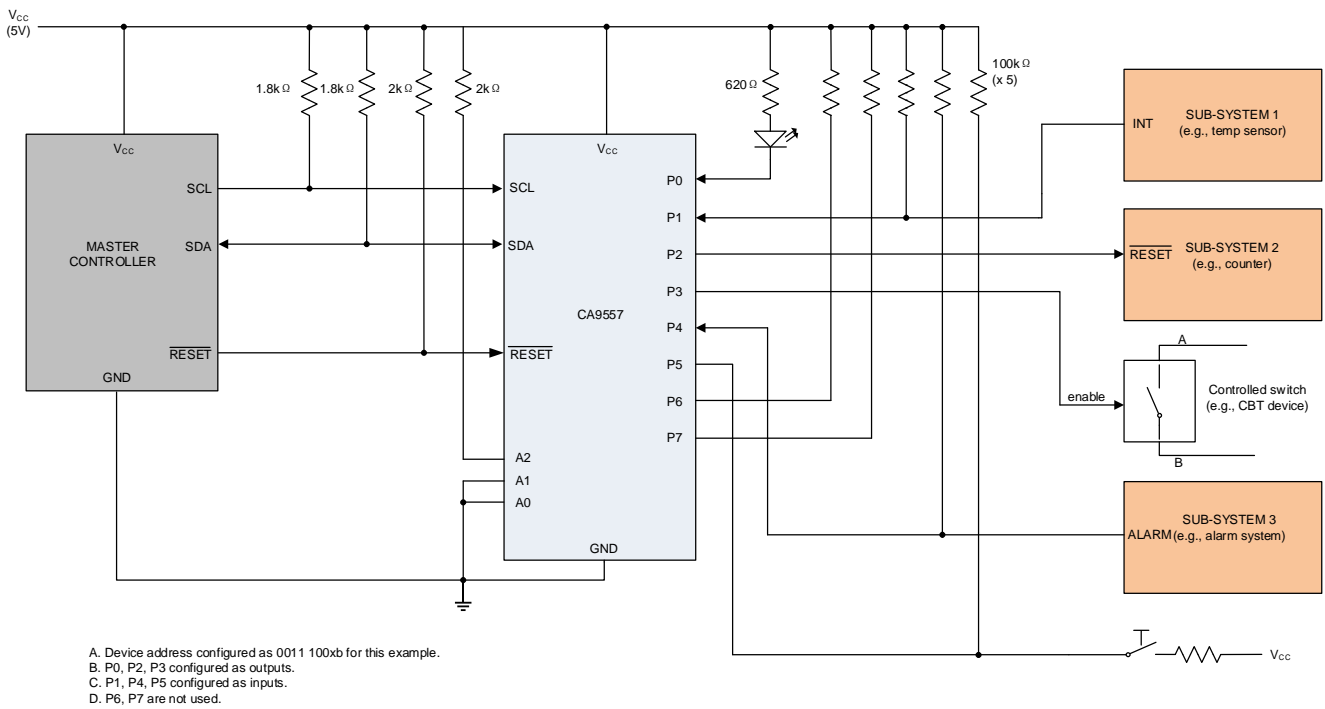


Figure 1 Typical Application of CA9557

6 Pin Description

Table 1 Pin Description

PIN Name	PIN No.		Description
	SOP-16 TSSOP-16	QFN4X4-16	
SCL	1	15	Digital interface clock input pin, need a pull-up resistor to V _{CC} .
SDA	2	16	Digital interface data input or output pin, need a pull-up resistor to V _{CC} .
A0	3	1	Slave addresses setup pin0, combined with A1, A2, which can generate slave addresses by connecting these pins to V _{CC} or GND respectively.
A1	4	2	Slave addresses setup pin1, combined with A0, A2, which can generate slave addresses by connecting these pins to V _{CC} or GND respectively.
A2	5	3	Slave addresses setup pin2, combined with A0, A1, which can generate slave addresses by connecting these pins to V _{CC} or GND respectively.
P0	6	4	Input/output 0(open-drain).
P1	7	5	Input/output 1.
GND	8	6	Supply ground.
P2	9	7	Input/output 2.
P3	10	8	Input/output 3.
P4	11	9	Input/output 4.
P5	12	10	Input/output 5.
P6	13	11	Input/output 6.
P7	14	12	Input/output 7.
$\overline{\text{RESET}}$	15	13	Active LOW reset input.
V _{CC}	16	14	Power supply input pin, using 0.1uF low ESR ceramic capacitor to ground.

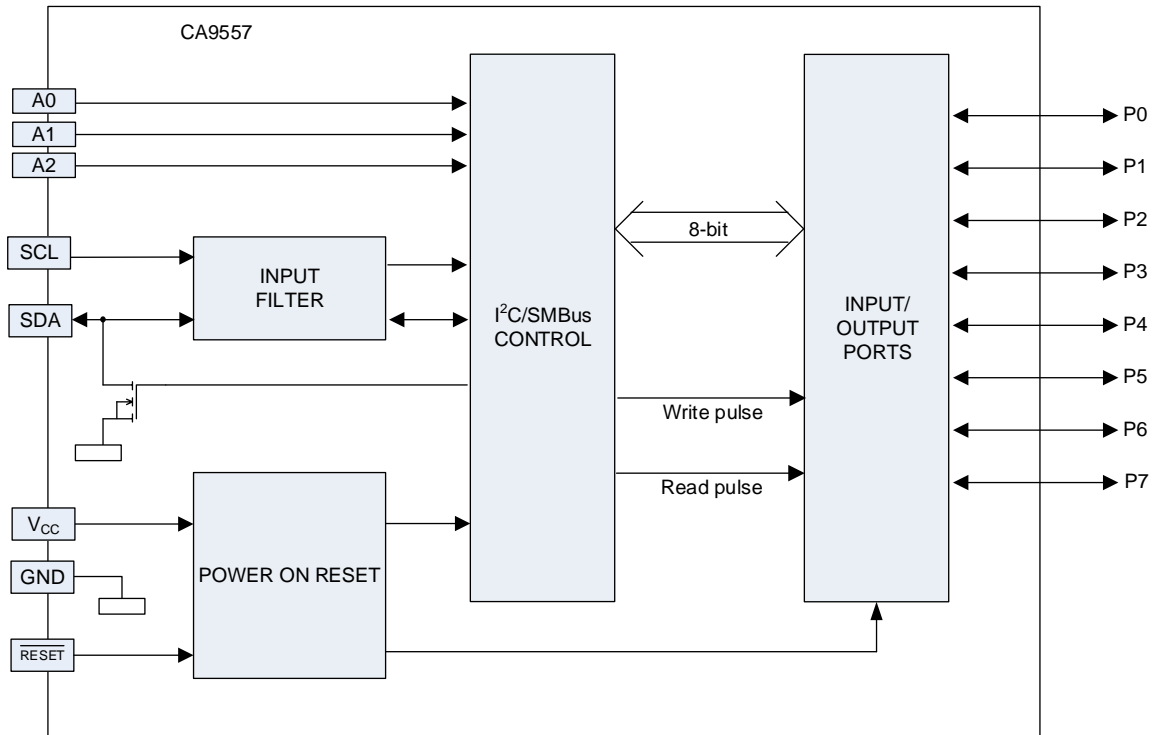
7 Block Diagram


Figure 2 CA9557 Function Block

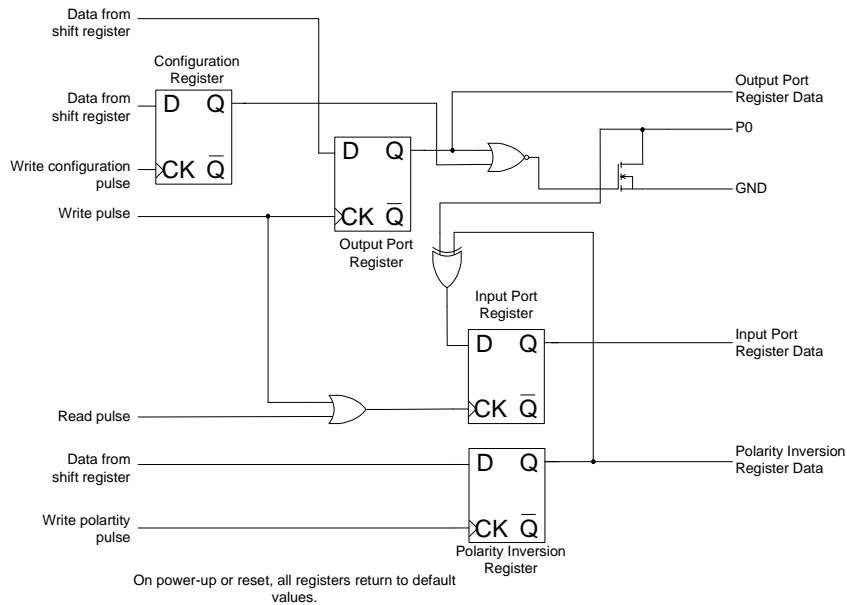


Figure 3 Simplified Schematic of P0

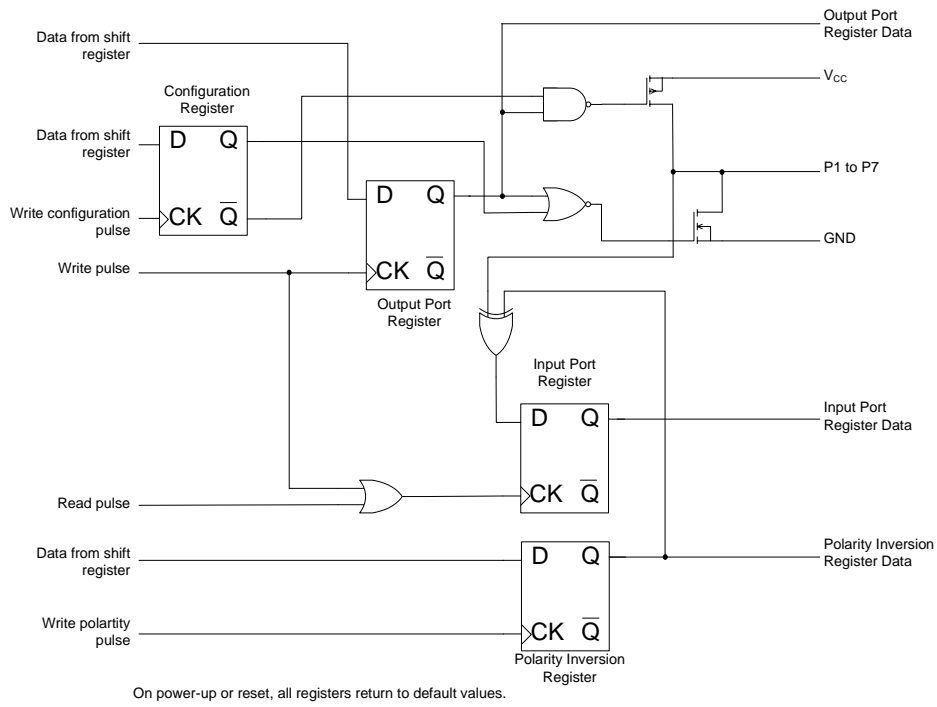
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Figure 4 Simplified Schematic of P1 to P7

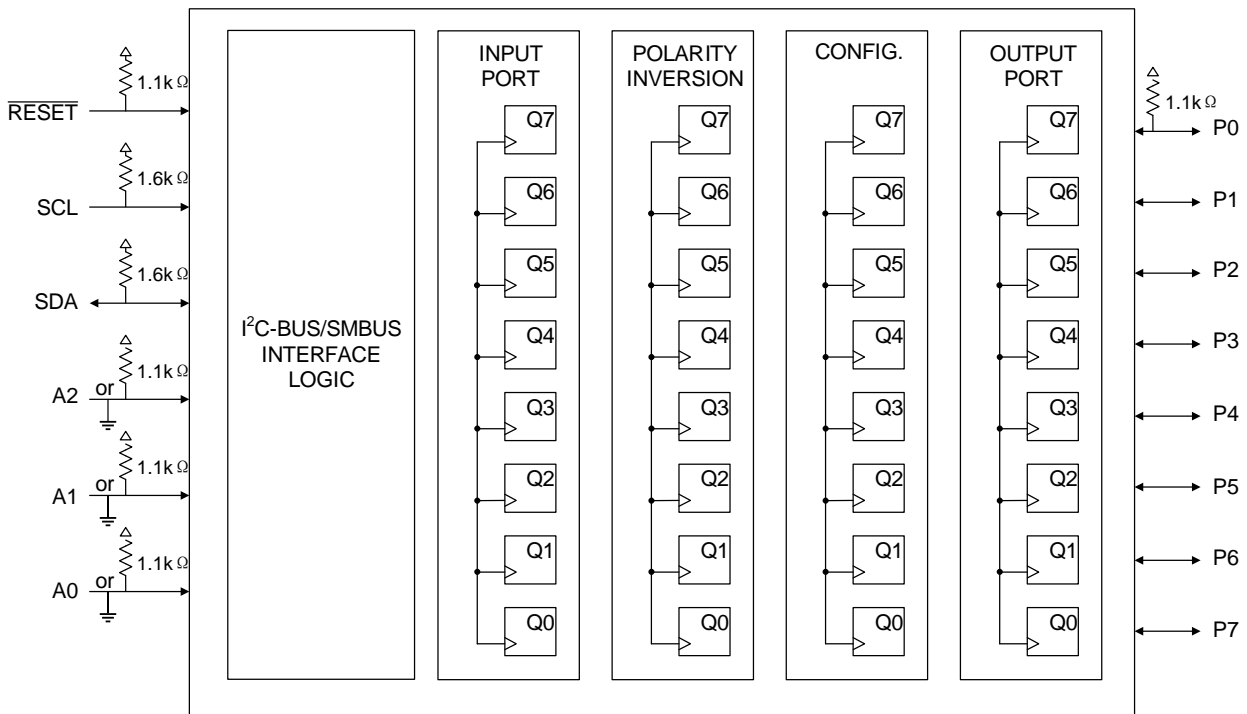
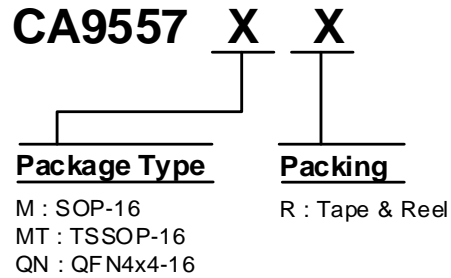
System diagram


Figure 5 System Diagram

8 Ordering Information



Order PN	Green ¹	Package	Marking ID ²	Packing	MPQ	Operation Temperature
CA9557MR	Halogen free	SOP-16	9557 YWWAXX	Tape & Reel	4,000	-40°C ~ +85°C
CA9557MTR	Halogen free	TSSOP-16	9557 YWWAXX	Tape & Reel	4,000	-40°C ~ +85°C
CA9557QNR	Halogen free	QFN4x4-16	9557 YWWAXX	Tape & Reel	5,000	-40°C ~ +85°C

Notes

1. Based on ROHS Y2012 spec, Halogen free covers lead free. So most package types Sensylink offers only states halogen free, instead of lead free.

2. Marking ID includes 2 rows of characters. In general, the 1st row of characters are part number, and the 2nd row of characters are date code plus production information.