NXP I²C-bus EEPROMs and RAMs

Non-volatile I²C-bus memories from 128 x 8-bit to 2048 x 8-bit

These EEPROMs and RAMs use the I²C-bus to read and write information. A wide voltage range minimizes the number of EEPROMs that need to be stocked, and pin-to-pin compatibility makes them easy to interchange.

Key features

- Wide voltage range (2.5 to 5.5 V)
- Internal non-volatile registers (except PCF8570) with a minimum of 1,000,000 write cycles at Tambient = 22 °C
- Infinite number of read cycles
- 10-year data retention (minimum)
- Low-power CMOS devices
- Non-volatile storage from 128 x 8-bit to 2048 x 8-bit
- Write operation per byte or per 8-byte page
- Read operation can be sequential or random
- Internal timer for writing operation (no external components required)
- Internal Power On Reset
- High reliability by using redundant EEPROM cells
- Available in 8-pin DIP (N) and SO (D) packages

Applications

- Meter readers
- Electronic keys
- Product identification numbers
- Serial presence detect (SPD) in DIMMs

These non-volatile EEPROM and RAM memories use the I²C-bus for serial transfer of address and data. The EEPROMs can change values up to 1,000,000 times and have an infinite number of read cycles. They consume only 10 µA of current and offer a guaranteed minimum storage time of ten years in the absence of power.

The built-in word address register is incremented automatically after each data byte is written or read, and all bytes can be read in a single operation. Up to eight bytes can be written in one operation, reducing the total write time per byte.

The 512-, 1024-, and 2048-byte EEPROMs use the programmable address (Ax or Block#) to select the slave address or one of the 256-word pages. For example, the PCF8594C-2 has two addressable pages with up to four devices allowed on the same I²C-bus, while the PCF85116-3 has eight addressable pages but only one device allowed per I²C-bus.

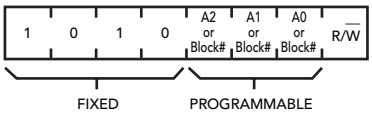
The PCF8582C-2 is pin- and address-compatible with the PCF8570 and the PCA8581.

NXP founded by Philips

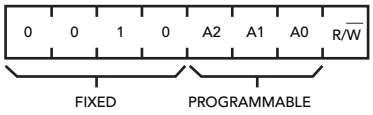
The PCF85102C-2 is the same as the PCF8582C-2, but with pin 7 (Programming Time Control output) as a no connect, so it can be used in sockets that need the PTC to be left floating or held at V_{CC} and to support alternate sourcing of other manufacturer's devices.

The PCF85103C-2 is the same as the PCF8582C-2, but with a different fixed I²C-bus address, so up to eight of each device can be used on the same I²C-bus.

I²C-bus slave address



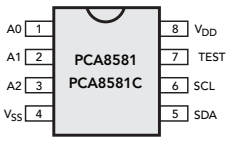
PCA8581/8581(C)
PCF8570/82/94/98/102/116



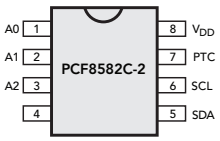
PC85103

EEPROM/RAM operating characteristics

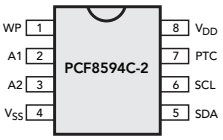
Power supply	PCA8581 PCA8581C	PCF8582C-2 PCF85102C-2 PCF85103C-2	PCF8594C	PCF8598C-2	PCF85116-3	PCF8570
	4.5 to 5.5 V 2.5 to 6 V	2.5 to 6 V	2.5 to 6 V	2.5 to 6 V	2.5 to 6 V	2.5 to 6 V
Address pins	3	3	2	1	0	3
Number of block (256 bytes)	0.5	1	2	4	8	1
Data retention time	10 years	10 years	10 years	10 years	20 years	N/A
Temperature range	25 to 85 °C	40 to 85 °C	40 to 85 °C	40 to 85 °C	40 to 85 °C	40 to 85 °C
Clock frequency	100 kHz	100 kHz	100 kHz	100 kHz	400 kHz	100 kHz



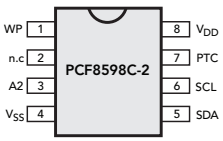
128 x 8-bit (1K) EEPROM



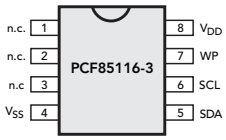
256 x 8-bit (2K) EEPROM



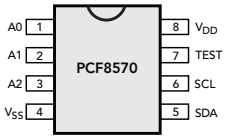
512 x 8-bit (4K) EEPROM



1024 x 8-bit (8K) EEPROM



2048 x 8-bit (16K) EEPROM



256 x 8-bit (2K) RAM

Order information

Package	Container	PCA8581(C)	PCF8582C-2	PCF8594C-2	PCF8598C-2	PCF85102C-2	PCF85103C-2	PCF85116-3	PCF8570
DIP	Tube	PCA8581PN	PCF8582C2N	PCF8594C2N	PCF8598C2N	PCF85102C2N	PCF85103C2N	PCF85116-3N	PCF8570PN
SO	Tube	PCA8581(C)TD	PCF8582C2D	PCF8594C2D	PCF8598C2D	PCF85102C2D	PCF85103C2D	PCF85116-3D	PCF8570TD
SO	T&R	PCA8581(C)TD-T	PCF8582C2D-T	PCF8594C2D-T	PCF8598C2D-T	PCF85102C2D-T	PCF85103C2D-T	PCF85116-3D-T	PCF8570TD-T

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