



PCN / EOL Notification

PCN Number: CC135103B (Revised 3/17/16) Notification Date*: December 27, 2013
See Changes in Blue Text

Title: 2-Kbit Two-wire Interface Industrial Temperature Grade (-40C to 85C) Serial EEPROM (AT24C02C) Layout Optimization and Device Enhancement

Note: Continued Support of 5V 1-Kbit Two-Wire Interface Industrial Temperature Grade (-40 to 85C) EEPROM device (AT24C02C)

Product Identification:

AT24C02C (1.7 to 5.5V); AT24C02D (1.7 to 3.6V):

All Packages Industrial Temp. Grade (-40C to +85C)

Reason for Change:

- Material / Composition
- Processing / Manufacturing
- Design / Firmware
- Datasheet

- Manufacturing Location
- Quality / Reliability
- Logistics
- Other:

Change Description:

Atmel launched a new low voltage (1.7V- 3.6V) variant of the I2C 2-Kbit EEPROM Industrial Grade (-40C to +85C) device AT24C02D in 2014. The new, low voltage device has significant improvements and advantages over the existing wide voltage (1.7V – 5.5V) device AT24C02C with respect to power consumption, endurance, and noise suppression. With a growing number of MCUs, SoCs, and ASICs migrating to lower supply voltages as a result of process lithography reductions, and to reduce power consumption, Atmel developed the AT24C02D to specifically work with a 1.7V to 3.6V supply.

However Atmel recognizes that some applications might still require a 5V supply voltage, so this addendum to the PCN is to confirm that Atmel will continue to support and produce the wide voltage device AT24C02C.

Therefore, customers may continue with the AT24C02C in all applications that use 5V or 3.3V supply voltage. However, for applications tailored towards low voltage operation (e.g. 1.8V, 3.0V, etc.), Atmel recommends customers migrate to the enhanced performance of the AT24C02D. (See table below for details of AT24C02D's low voltage enhancements.)

Table 1

| Parameter/Feature | AT24C02C | AT24C02D |
|--------------------------------------|--|--|
| Operating Voltage | 1.7V to 5.5V | 1.7V to 3.6V |
| Operating Temperature | -40°C to +85°C | -40°C to +85°C |
| Endurance | 1,000,000 cycles (Page Mode, +25°C, 3.3V) | 1,000,000 cycles (Byte or Page Mode, +25°C, 1.7V to 3.6V) |
| Data Retention | 100 years | 100 years |
| Supply Current, Read | 0.4mA typ (5.0V, 400kHz) 1.0mA max (5.0V, 400kHz) | 0.08mA typ (1.8V, 400kHz) 0.3mA max (1.8V, 400kHz) 0.15mA typ (3.6V, 1MHz) 0.5mA max (3.6V, 1MHz) |
| Supply Current, Write | 2.0mA typ (5.0V, 400kHz) 3.0mA max (5.0V, 400kHz) | 0.2mA typ (3.6V, 1MHz) 1.0mA max (3.6V, 1MHz) |
| Standby Current | 1µA max (1.7V) 6µA max (5.5V) | 0.08µA typ (1.8V) 0.4µA max (1.8V) 0.1µA typ (3.6V) 0.8µA max (3.6V) |
| Maximum Clock Frequency | 1MHz (2.5V min.) 400kHz (1.7V min.) | 1MHz (2.5V min.) 400kHz (1.7V min.) |
| Clock Pulse Width Low | 1.2µs min (fSCL = 400kHz) 0.4µs min (fSCL = 1MHz) | 1.3µs min (fSCL = 400kHz) 0.5µs min (fSCL = 1MHz) |
| Clock Pulse Width High | 0.6µs min (fSCL = 400kHz) 0.4µs min (fSCL = 1MHz) | 0.6µs min (fSCL = 400kHz) 0.4µs min (fSCL = 1MHz) |
| Input Filter Noise Suppression | 100ns max (fSCL = 400kHz) 50ns max (fSCL = 1MHz) | 100ns max (fSCL = 400kHz) 100ns max (fSCL = 1MHz) |
| Clock Low to Data Out Valid | 900ns max (fSCL = 400kHz) 550ns max (fSCL = 1MHz) | 900ns max (fSCL = 400kHz) 450ns max (fSCL = 1MHz) |
| Bus Free Time Between Start and Stop | 1.2µs min (fSCL = 400kHz) 0.5µs min (fSCL = 1MHz) | 1.3µs min (fSCL = 400kHz) 0.5µs min (fSCL = 1MHz) |
| Input Rise Time | 300ns max (fSCL = 400kHz) 300ns max (fSCL = 1MHz) | 300ns max (fSCL = 400kHz) 100ns max (fSCL = 1MHz) |
| Input Fall Time | 300ns max (fSCL = 400kHz) 100ns max (fSCL = 1MHz) | 300ns max (fSCL = 400kHz) 100ns max (fSCL = 1MHz) |
| Write Cycle Time | 5ms max | 5ms max |
| Page Write Size | 8 bytes max | 8 bytes max |
| Full Array Hardware Write Protect | Yes | Yes |

Identification Method to Distinguish Change:

Different catalog part numbers for AT24C02C and AT24C02D exist. Please refer to the respective datasheets for part marking schemes for each package type.

Table 2

Below is a part number cross reference for the AT24C02C and AT24C02D families. Special CAN (customer specific) part numbers created for the AT24C02C that are not listed in the table below remain in production:

| 5.5V Part Number | 3.6V Part Number | Package | Carrier Type |
|------------------|------------------|-------------|-------------------|
| AT24C02C-PUM | AT24C02D-PUM | PDIP | Bulk |
| AT24C02C-SSHM-B | AT24C02D-SSHM-B | JEDEC SOIC | Bulk |
| AT24C02C-SSHM-T | AT24C02D-SSHM-T | JEDEC SOIC | T/R, 4K per reel |
| AT24C02C-XHM-B | AT24C02D-XHM-B | TSSOP | Bulk |
| AT24C02C-XHM-T | AT24C02D-XHM-T | TSSOP | T/R, 5K per reel |
| AT24C02C-MAHM-T | AT24C02D-MAHM-T | UDFN | T/R, 5K per reel |
| AT24C02C-MAHM-E | AT24C02D-MAHM-E | UDFN | T/R, 15K per reel |
| AT24C02C-STUM-T | AT24C02D-STUM-T | SOT23 | T/R, 5K per reel |
| AT24C02C-CUM-T | AT24C02D-CUM-T | VFBGA | T/R, 5K per reel |
| AT24C02C-WWU11M | AT24C02D-WWU11M | Wafer Sales | |
| AT24C02C-WWU27M | AT24C02D-WWU27M | Wafer Sales | |

| | | | |
|----------------------------|---|--|---|
| Qualification Data: | <input checked="" type="checkbox"/> Available | <input type="checkbox"/> Will be available: (mm/dd/yr): | <input type="checkbox"/> Not Applicable |
| Samples: | <input checked="" type="checkbox"/> Available | <input type="checkbox"/> Will be available (mm/dd/yr): | <input type="checkbox"/> Not Applicable |

Quantifiable Impact on Quality & Reliability:

No impact. AT24C02D is form, fit, and function of AT24C02C for 1.7 to 3.6V.

Forecasted Availability Date: AT24C02C – already available
AT24C02D – already available

Last Time Buy Date: ~~June 20, 2014~~

Last Ship Date: ~~December 20, 2014~~

**All orders placed after the notification date are non-cancellable and non-returnable (NCNR).*

Atmel Contact: Please contact your Atmel Sales Representative or Distributor for additional information (when replying via e-mail please include the PCN number in subject line).

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