Atmel®

PCN / EOL Notification

PCN Number: CC141705A (Revised 3/17/16)   **Notification Date*:** May 28, 2014
See Changes in Blue Text

Title: AT24C04C to AT24C04D — 4-Kbit I2C-Compatible (Two Wire Interface) Industrial Temperature Grade (-40°C to 85°C) Serial EEPROM Process Optimization and Device Enhancement Note: Continued Support of 5V 4-Kbit Two-Wire Interface Industrial Temperature Grade (-40 to 85C) EEPROM Device (AT24C04C)	
Product Identification: AT24C04C (1.7 to 5.5V); AT24C04D (1.7 to 3.6V): All Packages Industrial Temp. Grade (-40C to +85C)	

Reason for Change:

☒ Material / Composition	☐ Manufacturing Location
☐ Processing / Manufacturing	☐ Quality / Reliability
☒ Design / Firmware	☐ Logistics
☒ Datasheet	☐ 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 AT24C04D in 2014. The new, low voltage device has significant improvements and advantages over the existing wide voltage (1.7V – 5.5V) device AT24C04C 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 AT24C04D 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 AT24C04C.

Therefore, **customers may continue with the AT24C04C 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 AT24C04D. (See table below for details of AT24C04D's low voltage enhancements.)

Table 1

Parameter/Feature	AT24C04C	AT24C04D
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, 100kHz) 1.0mA max (5.0V, 100kHz)	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, 100kHz) 3.0mA max (5.0V, 100kHz)	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 (f_{SCL} = 400kHz) 0.4µs min (f_{SCL} = 1MHz)	1.3µs min (f_{SCL} = 400kHz) 0.5µs min (f_{SCL} = 1MHz)
Clock Pulse Width High	0.6µs min (f_{SCL} = 400kHz) 0.4µs min (f_{SCL} = 1MHz)	0.6µs min (f_{SCL} = 400kHz) 0.4µs min (f_{SCL} = 1MHz)
Input Filter Noise Suppression	100ns max (f_{SCL} = 400kHz) 50ns max (f_{SCL} = 1MHz)	100ns max (f_{SCL} = 400kHz) 100ns max (f_{SCL} = 1MHz)
Clock Low to Data Out Valid	900ns max (f_{SCL} = 400kHz) 550ns max (f_{SCL} = 1MHz)	900ns max (f_{SCL} = 400kHz) 450ns max (f_{SCL} = 1MHz)
Bus Free Time Between Start and Stop	1.2µs min (f_{SCL} = 400kHz) 0.5µs min (f_{SCL} = 1MHz)	1.3µs min (f_{SCL} = 400kHz) 0.5µs min (f_{SCL} = 1MHz)
Input Rise Time	300ns max (f_{SCL} = 400kHz) 300ns max (f_{SCL} = 1MHz)	300ns max (f_{SCL} = 400kHz) 100ns max (f_{SCL} = 1MHz)
Input Fall Time	300ns max (f_{SCL} = 400kHz) 100ns max (f_{SCL} = 1MHz)	300ns max (f_{SCL} = 400kHz) 100ns max (f_{SCL} = 1MHz)
Write Cycle Time	5ms max	5ms max
Page Write Size	16 bytes max	16 bytes max
Full Array Hardware Write Protect	Yes	Yes

Identification Method to Distinguish Change:

Different catalog part numbers for AT24C04C and AT24C04D 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 AT24C04C and AT24C04D families. Special CAN (customer specific) part numbers created for the AT24C04C that are not listed in the table below remain in production:

5.5V Part Number	3.6V Part Number	Package	Carrier Type
AT24C04C-PUM	AT24C04D-PUM	PDIP	Bulk
AT24C04C-SSHM-B	AT24C04D-SSHM-B	JEDEC SOIC	Bulk
AT24C04C-SSHM-T	AT24C04D-SSHM-T	JEDEC SOIC	T/R, 4K per reel
AT24C04C-XHM-B	AT24C04D-XHM-B	TSSOP	Bulk
AT24C04C-XHM-T	AT24C04D-XHM-T	TSSOP	T/R, 5K per reel
AT24C04C-MAHM-T	AT24C04D-MAHM-T	UDFN	T/R, 5K per reel
AT24C04C-MAHM-E	AT24C04D-MAHM-E	UDFN	T/R, 15K per reel
AT24C04C-STUM-T	AT24C04D-STUM-T	SOT23	T/R, 5K per reel
AT24C04C-CUM-T	AT24C04D-CUM-T	VFBGA	T/R, 5K per reel
AT24C04C-WWU11M	AT24C04D-WWU11M	Wafer Sales	
AT24C04C-WWU27M	AT24C04D-WWU27M	Wafer Sales	

Qualification Data:	☒ Available	☐ Will be available:	☐ N/A
Samples:	☒ Available now. Please contact Atmel Sales to submit Sample Request Form (samples in tape format only)	☐ Will be available	☐ N/A

Quantifiable Impact on Quality & Reliability:

No impact. AT24C04D is form, fit, and function of AT24C04C for 1.7 to 3.6V.

Forecasted Availability Date: AT24C04C – already available

AT24C04D – already available

Last Time Buy Date: ~~November 26, 2014~~

Last Ship Date: ~~May 26, 2015~~

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).

Information provided herein is in connection with Atmel products and this information is provided "AS IS". Atmel assumes no responsibility for any errors that may appear in this document. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Atmel's Terms and Conditions of Sale for such products, Atmel assumes no liability whatsoever, and Atmel disclaims any express or implied warranty, including liability or warranties relating to fitness for a particular purpose, merchantability, or non-infringement of any patent, copyright or other intellectual property right. Atmel products are not intended for use in a product or system intended to support or sustain life which, if it fails, can be reasonably expected to result in significant personal injury. Atmel may make changes to specifications and product descriptions at any time, without notice.

Attention Distributors: Product(s) identified in this notification will become obsolete and as such this EOL notification will act as the official written notification. All obsolete products will be listed in the next published quarterly distributor price book, following a PCN/EOL change, and listed on the obsolescence form which accompanies said price book. Within thirty (30) days from the published date of the price book, Distributor shall notify Atmel in writing of Distributor's then current inventory of the obsolete product

CUSTOMER ACKNOWLEDGEMENT OF RECEIPT: Atmel requests you acknowledge receipt of this PCN / EOL. Please complete and email to pcnadm@atmel.com and the Atmel Contact listed above. In your acknowledgement, you can grant approval or request additional information. **Atmel will deem this change accepted unless specific conditions of acceptance are provided in writing within 30 days from the date of this notice.**

To be completed by customer:

☐ Approved

☐ Rejected (Please state reason for rejection): _____

Company:	
Name:	
Title:	
Date:	
Email Address:	
Location:	
Comments:	