



PCN / EOL Notification

PCN Number: CC135103A (Revised 2/13/14) 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		
Product Identification: All Packages of the Industrial Temperature Grade (-40C to +85C) AT24C02C		
Reason for Change:	☒ Material / Composition ☐ Processing / Manufacturing ☒ Design / Firmware ☐ Datasheet	☐ Manufacturing Location ☐ Quality / Reliability ☐ Logistics ☐ Other:
Change Description: Atmel has optimized the layout of the Serial EEPROM Industrial Temperature Grade (-40C to +85C) AT24C02C device (Two-wire interface, 2-Kbit density). The catalog part number AT24C02C will be replaced by AT 24C02D (see Table 2). The new devices are pin-to-pin and functionally backward compatible with the current AT24C02C devices with the following exceptions and enhancements. <u>Supply Voltage (V_{CC}) Range</u> With a growing number of MCUs, SoCs, and ASICs migrating to lower supply voltages as a result of process lithography reductions, and as the electronics industry in general also moves to lower supply voltages to reduce power consumption, Atmel developed the next-generation AT24C02 D to enhance performance for these lower voltage requirements. Unlike the AT24C02C devices that operate over a 1.7V to 5.5V voltage range, the AT24C02 D devices have been designed to operate from a 1.7V to 3.6V supply. As a result, the AT24C02 D has significant improvements and advantages over the AT24C02C devices with respect to power consumption, endurance, and noise suppression (see Table 1 for all differences). <i>Please contact Atmel (MemoryPCN@atmel.com) for details regarding continued availability of AT24C02C devices for applications operating at voltage levels above 3.6V.</i> <u>Copper (Cu) bond wire usage</u> In order to increase manufacturing flexibility and to ensure a long-term continuity of supply, Atmel will manufacture (SOIC, TSSOP, SOT23 and UDFN) packages using copper bond (Cu) wire.		

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:

NEW catalog part numbers of AT24C02C changes to AT**24C02D**. Please refer to [datasheet for part marking schemes for each package type](#).

Table 2

This is the listing for standard datasheet offering, PCN also applies to all (customer specific) special CAN part numbers that are not listed in the table below:

EOL Part Number	Replace 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-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:☒ Available☐ Will be available:
(mm/dd/yr):☐ Not Applicable**Samples:**☒ Available☐ Will be available
(mm/dd/yr):☐ Not Applicable**Quantifiable Impact on Quality & Reliability:**

No impact. Form, fit, and function [over the 1.7V to 3.6V range](#) remains unchanged.

Forecasted Availability Date: December 2013

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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