

Differences between the FM24C04A, FM24C04B, and FM24C04C

Compares 4Kb 5V I²C F-RAM Devices



DESCRIPTION

This document points out the differences between the FM24C04A, FM24C04B, and FM24C04C devices. The three devices are identical in terms of pinout, package dimensions and composition, read/write functionality, WP pin operation, and address pin functionality. However, the data retention time is different and additional timing constraints have been added to the “B” and “C” parts.

DROP-IN REPLACEMENT OR NOT

From a software point of view, the two devices are identical. The summary table below highlights the differences.

COMPATIBILITY CHART

FM24C04A Feature or Spec	... is FM24C04B compatible?	... is FM24C04C compatible?
Package	Yes	Yes
Pinout	Yes	Yes
Temperature Range	Yes	Yes
Operating Voltage	Yes	Yes
Operating Current	Yes	Yes
Standby Current	Yes	Yes
R/W Function	Yes	Yes
Timing/Freq	Yes	Yes
Data Retention	Yes*	Yes*
Endurance	Yes	Yes

* See table on next page.

DETAILED COMPARISON TABLE

Differences are highlighted in yellow.

	<u>FM24C04A</u>	<u>FM24C04B</u>	<u>FM24C04C</u>	<u>Comments</u>
Package Types	-	-	-	Same, “green” SOIC package
Package Outlines	SOIC-8	SOIC-8	SOIC-8	Same outline and board footprint
Pinout	-	-	-	Same
Temperature Range	-40C to +85C	-40C to +85C	-40C to +85C	Same
Operating Voltage Range	4.5 to 5.5V	4.5 to 5.5V	4.5 to 5.5V	Same
Active Supply Current	150µA @ 100kHz 1000µA @ 1MHz	100µA @ 100kHz 400µA @ 1MHz	100µA @ 100kHz 400µA @ 1MHz	The “B” and “C” parts offers lower active current at all clock rates.
Standby Current	10µA	10µA	10µA	Same
Read/Write Function	-	-	-	Same 1-byte addressing, same Slave IDs, same Device Select bits.
Clock Freq	1 MHz	1 MHz	1 MHz	Same
Data Retention *	45 yrs (+85°C)	38 yrs (+75°C)	36 yrs (+75°C)	Similar
Endurance	1E+12	1E+12	1E+12	All devices are virtually unlimited at 1MHz (1700 yrs for a 64-byte loop)

OTHER				
V_{DD} Rise/Fall Time	-	30µs/V, 100µs/V	30µs/V, 100µs/V	Added power ramp specs to “B” and “C” parts
t_{PU} Power Up Time	-	10 ms	1 ms	Added first access timing spec to “B” and “C” parts
V_{IH} (max)	V _{DD} +0.5V	V _{DD} +0.3V	V _{DD} +0.3V	