

Differences between Grade 1 Versions of the FM25L04 and the FM25L04B

Applies to 3V Grade 1 4Kb SPI F-RAM Devices



DESCRIPTION

This document points out the differences between the Grade 1 versions of the FM25L04 and the FM25L04B devices. The two devices are identical in terms of package/pinout, DC/AC parameters (except standby current), and read/write functionality. The endurance and data retention specifications are different on the FM25L04B-GA.

DROP-IN REPLACEMENT OR NOT

From a software point of view, the two devices are identical. The two devices are read/write compatible. Both devices use the same one-byte address. From a hardware point of view, the key difference between the two devices is the FM25L04B-GA's lower operating current. The summary table below highlights the differences.

COMPATIBILITY CHART

FM25L04-GA Feature or Spec	... is FM25L04B-GA compatible?
Packages	Yes
Pinout	Yes
Temperature Range	Yes
Operating Voltage	Yes
Operating Current	Yes
Standby Current	No
R/W Function	Yes
Timing/Freq	Yes
Data Retention	No*
Endurance	Yes*

* See table on next page.

DETAILED COMPARISON TABLE

Differences are highlighted in yellow.

	<u>FM25L04-GA</u>	<u>FM25L04B-GA</u>	<u>Comments</u>
Package Types	SOIC-8	SOIC-8	Same "green" SOIC package
Package Outlines	SOIC-8	SOIC-8	Same outline and board footprint
Pinout	-	-	Same
Temperature Range	-40C to +125C	-40C to +125C	Same
Operating Voltage Range	3.0 to 3.6V	3.0 to 3.6V	Same
Active Supply Current	250 μ A @ 1MHz 2.2mA @ 14MHz	200 μ A @ 1MHz 2.0mA @ 14MHz	The 25L04B offers lower active current.
Standby Current	1 μ A (+85C) 15 μ A (+125C)	6 μ A (+85C) 20 μ A (+125C)	The FM25L04B has higher standby current
Read/Write Function	-	-	Same one-byte addressing, same op-codes
Clock Freq	10 MHz	10 MHz	Same
AC Timing Parameters	-	-	All spec limits are the same
Data Retention	9000 hrs (+125C) 17 yrs (+55°C)	1000 hrs (+125C) 10000 hrs (+105C) 17 yrs (+55°C)	Nearly the same
Endurance	Unlimited	1E+13	The "B" device is virtually unlimited (17 yrs) even for a continuous 64-byte loop at 10MHz.
OTHER			
V_{DD} Rise/Fall Time	50 μ s/V, 100 μ s/V	30 μ s/V, 100 μ s/V	"B" device is more forgiving power ramp spec
t_{PU} Power Up Time	-	10 ms	Added first access timing spec