

AN112

Migrating from FM1808 to FM1808B

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Associated Project: No

Associated Part Family: FM1808, FM1808B

Software Version: None

Related Documents: For a complete list, [click here](#)

AN112 discusses the key differences that need to be considered when migrating from FM1808 to FM1808B. FM1808 is now obsolete and this application note explains how FM1808B is a replacement for FM1808.

Introduction

FM1808B, a 256-Kbit parallel F-RAM™, is a replacement device for FM1808, which is now obsolete. The two devices are identical in terms of package composition and dimensions, read/write functionality, and address pin functionality. This application note discusses the key differences between the two devices that need to be considered when migrating from FM1808 to FM1808B.

Drop-In Replacement or Not?

From a software point of view, the two devices are identical. From a hardware point of view, the differences between the two devices include standby current and some timing parameters. Otherwise FM1808B is a drop-in replacement for FM1808.

[Table 1](#) shows the compatibility chart of FM1808 and FM1808B. For a detailed comparison, see [Table 3](#).

Table 1. Compatibility Chart

FM1808 Feature or Spec	Is FM1808B compatible?
Package	Yes
Pinout	Yes
Temperature Range	Yes
Operating Voltage	Yes
Operating Current	Yes
Standby Current	No
Read / Write Function	Yes
Timing / Frequency	Yes
Data Retention	Refer to Table 3
Endurance	Yes

Ordering Part Numbers

[Table 2](#) gives the recommended FM1808B ordering part numbers that correspond to the now obsolete FM1808 ordering part numbers.

Table 2. Recommended Ordering Part Numbers for Migration

FM1808		FM1808B	
Ordering Part Number	Status	Ordering Part Number	Status
FM1808-SG	Obsolete	FM1808B-SG	In production
FM1808-SGTR		FM1808B-SGTR	

Comparison of FM1808 and FM1808B

Table 3 gives a detailed comparison of the two devices.

Table 3. Detailed Comparison

	FM1808	FM1808B	Comment
Package Types	-SG, -PG	-SG	Identical "Green" SOIC package. FM1808B is not offered in DIP package.
Package Outlines	SOIC-28, DIP-28	SOIC-28	Identical SOIC package. FM1808B is not offered in DIP package.
Pinout	-	-	Identical
Temperature Range	-40 °C to +85 °C	-40 °C to +85 °C	Identical
Operating Voltage Range	4.5 V to 5.5 V	4.5 V to 5.5 V	Identical
Active Supply Current	25 mA	15 mA	Lower operating current at 130 ns cycle on FM1808B
Standby Current (CMOS) Standby Current (TTL)	20 μ A 0.4 mA	50 μ A 1.8 mA	FM1808B has higher standby currents
Input Levels	TTL	TTL	Identical
Access Time	70 ns	70 ns	Identical
Pre-Charge Time	60 ns	60 ns	Identical
Cycle Time	130 ns	130 ns	Identical
Read / Write Function	-	-	Identical number of address pins, Identical control pins
Address Setup Time (t_{AS})	4 ns	0 ns	Improved timing on FM1808B
Address Hold Time (t_{AH})	10 ns	15 ns	Slower timing on FM1808B, however address is typically held throughout entire cycle
Output Enable Access Time (t_{OE})	10 ns	12 ns	Slightly slower on FM1808B
Data Hold (t_{DH})	5 ns	0 ns	Improved data hold for writes on FM1808B
Data Retention	45 years (+85 °C)	10 years (85 °C) 38 years (+75 °C) 151 years (+65 °C)	Data retention is lower
Endurance (Write/Read Cycles)	1E+12	1E+14	FM1808B has better endurance
V _{DD} Power-Up Ramp Rate (t_{VR})	-	30 μ s / V	Power-up ramp rate should be slower than 30 μ s / V for FM1808B
V _{DD} Power-Down Ramp Rate (t_{VF})	-	30 μ s / V	Power-down ramp rate should be slower than 30 μ s / V for FM1808B
Power-Up to First Access (t_{PU})	1 μ s	10 ms	Longer first access time on FM1808B

Critical Considerations

You should consider all the parameter differences mentioned in Table 3 during the migration to FM1808B. This section discusses the critical differences. System designers should also review the [datasheet](#) when migrating to the new part.

V_{DD} Ramp Rate

V_{DD} power-up and power-down ramp rate specifications are added in FM1808B device. Ensure that the power-up and power-down ramp rates are slower than 30 μ s / V in your system.

Power-Up to First Access

Power-up to first access specification is slower in FM1808B device. Ensure that the FM1808B device is accessed only after 10 ms from power-up.

Summary

This application note discussed the differences between FM1808 and FM1808B that need to be considered during migration to the FM1808B.

Related Documents

Datasheet

[FM1808B: 256-Kbit \(32 K × 8\) Byte-wide F-RAM Memory datasheet](#)

Document History

Document Title: Migrating from FM1808 to FM1808B - AN112

Document Number: 001-86812

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	3944550	GVCH	03/26/2013	New Spec
*A	4280097	MEDU	03/05/2014	Updated to Cypress Template. Updated "Standby Current (CMOS)" spec value for FM1808 from 1 μ A to 20 μ A. Updated "Standby Current (CMOS)" spec value for FM1808B from 6 μ A to 50 μ A. Added data retention spec at 85 °C. Updated "Power-up to First Access" spec value for FM1808B from 500 μ s to 10 ms.
*B	4498657	GVCH	09/25/2014	Changed title from "Differences between FM1808 and FM1808B" to "Migrating from FM1808 to FM1808B." Updated abstract. Added " Ordering Part Numbers " section. Added title for Table 3 Added " Related Documents " section.

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