

AN316

Migrating from FM25640 to FM25640B

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Associated Project: No

Associated Part Family: FM25640, FM25640B

Software Version: None

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

AN316 discusses the key differences that need to be considered when migrating from FM25640 to FM25640B. FM25640 is now obsolete and this application note explains how FM25640B is a replacement for FM25640.

Introduction

FM25640B, a 64-Kbit SPI F-RAM™, is a replacement device for FM25640, which is now obsolete. The two devices are identical in terms of pinouts and read/write functionality. In terms of speed, the FM25640 operates up to 5 MHz while the FM25640B operates up to 20 MHz. This application note discusses the key differences between the two devices that need to be considered when migrating from FM25640 to FM25640B.

Drop-In Replacement or Not?

For most designs, FM25640B is a drop-in replacement for FM25640. From a software point of view, the two devices are identical. From a hardware point of view the key differences are the high frequency support and lower active current in FM25640B. Additionally, FM25640B datasheet adds a power-up and power-down ramp rate specification of 30 μ s / V and a power-up to first-access specification of 1 ms.

Table 1 shows the compatibility chart of FM25640 and FM25640B. For a detailed comparison, see Table 3.

Table 1. Compatibility Chart

FM25640 Feature or Spec	Is FM25640B compatible?
Package	Yes
Pinout	Yes
Temperature Range	Yes
Operating Voltage	Yes
Operating Current	Yes
Standby Current	Yes
Read / Write Function	Yes
Timing / Frequency	Yes
Data Retention	Refer to Table 3
Endurance	Yes

Ordering Part Numbers

Table 2 gives the recommended FM25640B ordering part numbers that correspond to the now obsolete FM25640 ordering part numbers.

Table 2. Recommended Ordering Part Numbers for Migration

FM25640		FM25640B		Comments
Ordering Part Number	Status	Ordering Part Number	Status	
FM25640-G	Obsolete	FM25640B-G	In production	No hardware or software change is required
FM25640-GTR		FM25640B-GTR		

Comparison of FM25640 and FM25640B

Table 3 gives a detailed comparison of the two devices.

Table 3. Detailed Comparison

	FM25640	FM25640B	Comments
Package Types	-G	-G	Identical "green" SOIC package
Package Outlines	SOIC-8	SOIC-8	Identical outline and board footprint
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	600 μ A @ 1 MHz 3.0 mA @ 5 MHz	250 μ A @ 1 MHz 4.0 mA @ 20 MHz	FM25640B offers lower active current
Standby Current	10 μ A	10 μ A	Identical
Read / Write Function	-	-	Identical 2-byte addressing, Identical op-codes
Clock Frequency	5 MHz	20 MHz	Improved speed in FM25640B
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	FM25640B offers 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 in FM25640B
V _{DD} Power-Down Ramp Rate (t _{VF})	-	30 μ s / V	Power-down ramp rate should be slower than 30 μ s / V in FM25640B
Power-Up to First Access (t _{PU})	-	1 ms	After power-up, the first access of FM25640B should be after 1 ms

Critical Considerations

You should consider all the parameter differences mentioned in Table 3 during the migration to FM25640B. 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 FM25640B 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 added in FM25640B device. Ensure that the FM25640B device is accessed only after 1 ms from power-up.

Summary

AN316 discussed the differences between FM25640 and FM25640B that need to be considered during migration to the FM25640B.

Related Documents

Datasheet

[FM25640B: 64-Kbit \(8 K × 8\) Serial \(SPI\) F-RAM datasheet](#)

Application Note

[AN304 – SPI GUIDE FOR F-RAM](#)

Document History

Document Title: Migrating from FM25640 to FM25640B - AN316

Document Number: 001-86839

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	3944550	GVCH	03/26/2013	New Spec.
*A	4279018	MEDU	03/05/2014	Updated to Cypress Template. Updated Endurance for FM25640B from E+12 to E+14. Updated "V _{DD} Power-Down Ramp Rate" for FM25640B from 100 μ s / V to 30 μ s / V. Updated "Power-Up to First Access" for FM25640B from 10 ms to 1 ms.
*B	4498652	GVCH	09/22/2014	Changed title from "Differences between FM25640 and FM25640B" to "Migrating from FM25640 to FM25640B." Updated abstract. Added " Ordering Part Numbers " section. Added title for Table 3 . Added " Related Documents " section.

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