

Migrating from FM25V20 to FM25V20A

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Associated Project: No

Associated Part Family: FM25V20, FM25V20A

Software Version: None

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

AN97044 discusses the key differences that need to be considered when migrating from FM25V20 to FM25V20A. FM25V20 is now “Not Recommended for New Designs”; this application note explains how FM25V20A is a drop-in replacement for FM25V20.

1 Introduction

FM25V20A, a 2-Mbit Serial (SPI) F-RAM, is a drop-in replacement device for FM25V20, which is now “Not recommended for new designs”. For all designs, the FM25V20A device can be considered as a superset of the FM25V20. The two devices are identical in terms of pinout, package composition and dimensions, and read/write functionality. This application note discusses the key differences between the two devices that need to be considered when migrating from FM25V20 to FM25V20A.

2 Drop-In Replacement or Not?

From a hardware point of view, the two devices are identical. From a software point of view, they are identical except for the Device ID. Thus, FM25V20A is a drop-in replacement part for the FM25V20.

Refer to the “[Software Considerations](#)” section for more details.

[Table 1](#) shows the compatibility chart of FM25V20 and FM25V20A. For a detailed comparison of the devices, see [Table 3](#).

Table 1. Compatibility Chart

FM25V20 Feature or Spec	Is FM25V20A 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	Yes
Endurance	Yes

3 Ordering Part Numbers

Table 2 gives the recommended FM25V20A ordering part numbers that correspond to the FM25V20 (Not Recommended for New Designs) ordering part numbers.

Table 2. Recommended Ordering Part Numbers for Migration

FM25V20		FM25V20A		Comments
Ordering Part Number	Status	Ordering Part Number	Status	
FM25V20-G	Not Recommended for New Designs	FM25V20A-G	In Production	No hardware change required Software change required for Device ID update only
FM25V20-GTR		FM25V20A-GTR		
FM25V20-DG		FM25V20A-DG		
FM25V20-DGTR		FM25V20A-DGTR		

4 Detailed Comparison of FM25V20 and FM25V20A

Table 3 gives a detailed comparison of the two devices.

Table 3. Detailed Comparison Table

	FM25V20	FM25V20A	Comments
Package type	-G, -DG	-G, -DG	Identical "green (RoHS)" packages.
Pinout/package Outline	SOIC-8, TDFN-8	SOIC-8, TDFN-8	Identical pinout, outline and board footprint.
Temperature Range	–40 °C to +85 °C	–40 °C to +85 °C	Identical
Operating Voltage Range	2.0 V to 3.6 V	2.0 V to 3.6 V	Identical
Active Supply Current	300 µA @ 1 MHz 3.0 mA @ 40 MHz	300 µA @ 1 MHz 3.0 mA @ 40 MHz	Identical
Standby Current	250 µA @ 85 °C	250 µA @ 85 °C	Identical
Sleep Mode Current	8 µA	8 µA	Identical
Read / Write Function	2-byte addressing, op-codes	2-byte addressing, op-codes	Identical
Clock Frequency	40 MHz	40 MHz	Identical
Data Retention	10 years (+85 °C)	10 years (+85 °C)	Identical
Endurance (Write/Read Cycles)	1E+14	1E+14	Identical
V _{DD} Power-Up Ramp Rate (t _{VR})	50 µs / V	50 µs / V	Identical
V _{DD} Power-Down Ramp Rate (t _{VF})	100 µs / V	100 µs / V	Identical
Power-Up to First Access (t _{PU})	1 ms	1 ms	Identical
Device ID	7F7F7F7F7FC22500h	7F7F7F7F7FC22508h	Different. Refer to Device ID section in "Software Considerations" for more details.

5 Software Considerations

This section discusses the Device ID difference between FM25V20 and FM25V20A. A system software update is required if the existing application uses the Device ID feature of FM25V20.

5.1 Device ID

The FM25V20 and FM25V20A incorporate a 9-byte read-only Device ID to identify the product uniquely. The Device ID allows the host to determine the manufacturer, product density, and product revision. [Table 4](#) gives the Device IDs of FM25V20 and FM25V20A, where the difference is highlighted in red.

Table 4. Device ID

Device ID	
FM25V20	FM25V20A
7F7F7F7F7FC22500h	7F7F7F7F7FC22508h

6 Summary

AN97044 discussed the differences between FM25V20 and FM25V20A that need to be considered during migration to the FM25V20A.

7 Related Documents

Datasheets

- [FM25V20: 2-Mbit \(256 K × 8\) Serial \(SPI\) F-RAM datasheet](#)
- [FM25V20A: 2-Mbit \(256 K × 8\) Serial \(SPI\) F-RAM datasheet](#)

Application Note

- [AN304 – SPI Guide for F-RAM](#)

Document History

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Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	4737610	GVCH	04/28/2015	New Application Note
*A	4771733	GVCH	05/20/2015	Corrected a typo in the part number

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