

# Differences between Grade 1 Versions of the FM25C160 and the FM25C160B

*Applies to 5V Grade 1 16Kb SPI F-RAM Devices*



## DESCRIPTION

This document points out the differences between the Grade 1 versions of the FM25C160 and the FM25C160B devices. The two devices are identical in terms of package/pinout, DC/AC parameters, and read/write functionality. The endurance is improved on the FM25C160B-GA. The data retention is different.

## 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 two-byte address. From a hardware point of view, the key difference between the two devices is the FM25C160B-GA's lower operating current. The summary table below highlights the differences.

## COMPATIBILITY CHART

FM25C160-GA Feature or Spec	... is FM25C160B-GA compatible?
Packages	Yes
Pinout	Yes
Temperature Range	Yes
Operating Voltage	Yes
Operating Current	Yes
Standby Current	Yes
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>FM25C160-GA</u>	<u>FM25C160B-GA</u>	<u>Comments</u>
<b>Package Types</b>	SOIC-8	SOIC-8	Same "green" SOIC package
<b>Package Outlines</b>	SOIC-8	SOIC-8	Same outline and board footprint
<b>Pinout</b>	-	-	Same
<b>Temperature Range</b>	-40C to +125C	-40C to +125C	Same
<b>Operating Voltage Range</b>	4.5 to 5.5V	4.5 to 5.5V	Same
<b>Active Supply Current</b>	500 $\mu$ A @ 1MHz 6.0mA @ 14MHz	300 $\mu$ A @ 1MHz 3.0mA @ 14MHz	The 25C160B offers lower active current.
<b>Standby Current</b>	10 $\mu$ A (+85C) 30 $\mu$ A (+125C)	10 $\mu$ A (+85C) 30 $\mu$ A (+125C)	Same
<b>Read/Write Function</b>	-	-	Same 2-byte addressing, same op-codes
<b>Clock Freq</b>	14 MHz	14 MHz	Same
<b>AC Timing Parameters</b>	-	-	All spec limits are the same
<b>Data Retention</b>	9000 hrs (+125C) 17 yrs (+55°C)	1000 hrs (+125C) 10000 hrs (+105C) 17 yrs (+55°C)	Nearly the same
<b>Endurance</b>	1E+12	1E+13	The 25C160B offers improved endurance

<b>OTHER</b>			
<b>V<sub>DD</sub> Rise/Fall Time</b>	-	30 $\mu$ s/V, 100 $\mu$ s/V	Added power ramp specs
<b>t<sub>PU</sub> Power Up Time</b>	-	10 ms	Added first access timing spec