Am29LV065MU

Data Sheet

RETIRED PRODUCT

This product has been retired and is not available for designs. For new and current designs, S29GL064A supersedes Am29LV065MU and is the factory-recommended migration path. Please refer to the S29GL064A datasheet for specifications and ordering information. Availability of this document is retained for reference and historical purposes only.

The following document contains information on Spansion memory products.

Continuity of Specifications

There is no change to this data sheet as a result of offering the device as a Spansion product. Any changes that have been made are the result of normal data sheet improvement and are noted in the document revision summary.

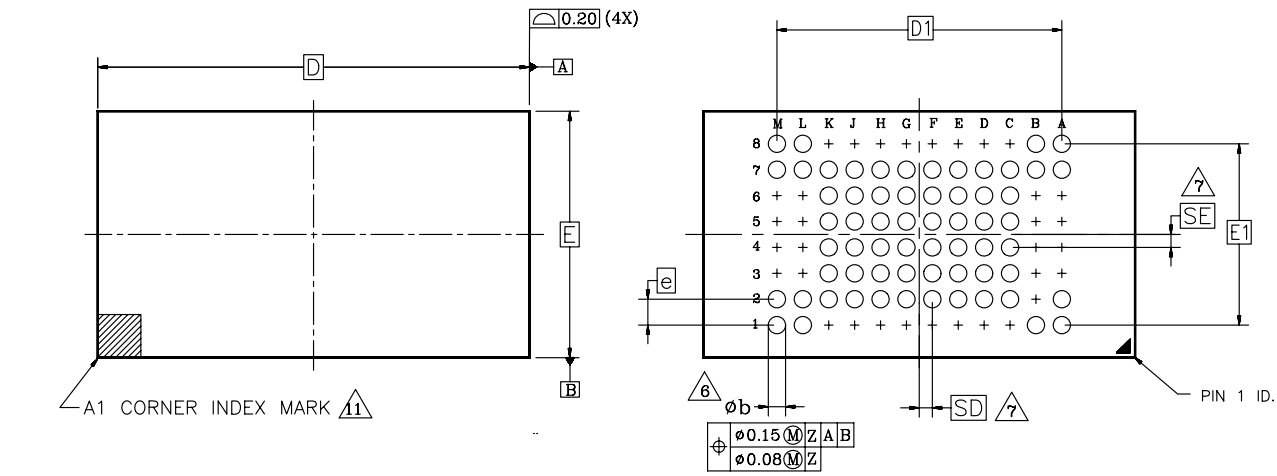
For More Information

Please contact your local sales office for additional information about Spansion memory solutions.

Publication Number 25262 **Revision** C **Amendment** 4 **Issue Date** September 12, 2006

PHYSICAL DIMENSIONS

FBE063—63-Ball Fine-Pitch Ball Grid Array, 12 x 11 mm Package



PACKAGE OUTLINE B

Dwg rev AF; 10/99

PACKAGE	xFBE 063			
JEDEC	N/A			
	12.00mmx11.00mm PACKAGE			
SYMBOL	MIN	NOM	MAX	NOTE
A	–	–	1.20	OVERALL THICKNESS
A1	0.20	–	–	BALL HEIGHT
A2	0.84	–	0.94	BODY THICKNESS
D	12.00 BSC			BODY SIZE
E	11.00 BSC			BODY SIZE
D1	8.80 BSC			BALL FOOTPRINT
E1	5.60 BSC			BALL FOOTPRINT
MD	12			ROW MATRIX SIZE D DIRECTION
ME	8			ROW MATRIX SIZE E DIRECTION
N	63			TOTAL BALL COUNT
b	0.25	0.30	0.35	BALL DIAMETER
e	0.80 BSC			BALL PITCH
SD / SE	0.40 BSC			SOLDER BALL PLACEMENT
	A3–A6,B2–B6 L3–L6, M3–M6 C1–K1,C8–K8			DEPOPULATED SOLDER BALLS

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M–1994.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. BALL POSITION DESIGNATION PER JESD 95–1, SPP–010.
4. e REPRESENTS THE SOLDER BALL GRID PITCH.
5. SYMBOL "MD" IS THE BALL ROW MATRIX SIZE IN THE "D" DIRECTION. SYMBOL "ME" IS THE BALL COLUMN MATRIX SIZE IN THE "E" DIRECTION. N IS THE MAXIMUM NUMBER OF SOLDER BALLS FOR MATRIX SIZE MD x ME.
6. DIMENSION "b" IS MEASURED AT THE MAXIMUM BALL DIAMETER IN A PLANE PARALLEL TO DATUM Z.
7. SD AND SE ARE MEASURED WITH RESPECT TO DATUMS A AND B AND DEFINE THE POSITION OF THE CENTER SOLDER BALL IN THE OUTER ROW. WHEN THERE IS AN ODD NUMBER OF SOLDER BALLS IN THE OUTER ROW PARALLEL TO THE D OR E DIMENSION, RESPECTIVELY, SD OR SE = 0.000 WHEN THERE IS AN EVEN NUMBER OF SOLDER BALLS IN THE OUTER ROW, SD OR SE = e/2
8. "X" IN THE PACKAGE VARIATIONS DENOTES PART IS UNDER QUALIFICATION.
9. "+" IN THE PACKAGE DRAWING INDICATE THE THEORETICAL CENTER OF DEPOPULATED BALLS.
10. FOR PACKAGE THICKNESS A IS THE CONTROLING DIMENSION.
11. A1 CORNER TO BE IDENTIFIED BY CHAMFER, INK MARK, METALLIZED MARKINGS INDENTION OR OTHER MEANS.

REVISION SUMMARY

Revision A (August 3, 2001)

Initial release as abbreviated Advance Information data sheet.

Revision A+1 (October 3, 2001)

Global

Added 120 ns device, changed 100 ns, V_{IO} = 1.65–2.7 V device to 110 ns, changed 90 ns operating range to 3.0–3.6 V.

Physical Dimensions

Added section.

Revision B (April 26, 2002)

Expanded data sheet to full specification version.

Revision B+1 (August 9, 2002)

MIRRORBIT 64 MBIT Device Family

Added 64 Fortified BGA to LV640MU device.

Alternate CE# Controlled Erase and Program Operations

Added t_{RH} parameter to table.

Erase and Program Operations

Added t_{BUSY} parameter to table.

Figure 16. Program Operation Timings

Added RY/BY# to waveform.

TSOP and BGA PIN Capacitance

Added the FBGA package.

Program Suspend/Program Resume Command Sequence

Changed 15 µs typical to maximum and added 5 µs typical.

Erase Suspend/Erase Resume Commands

Changed typical from 20 µs to 5 µs and added a maximum of 20 µs.

Special package handling instructions

Modified the special handling wording.

DC Characteristics table

Deleted the I_{ACC} specification row.

CFI

Changed text in the third paragraph of CFI to read “reading array data.”

Revision B+2 (September 10, 2002)

Product Selector Guide

Added Note 2.

Ordering Information

Added Note 1.

Sector Erase Command Sequence

Deleted statement that describes the outcome of when the Embedded Erase operation is in progress.

Revision B+3 (November 7, 2002)

Product Selector Guide and Read Only Operations

Changed the page access times and T_{OE}

Customer Lockable: SecSi Sector NOT Programmed or Protected at the factory.

Added second bullet, SecSi sector-protect verify text and figure 3.

SecSi Sector Flash Memory Region, and Enter SecSi Sector/Exit SecSi Sector Command Sequence

Noted that the ACC function and unlock bypass modes are not available when the SecSi sector is enabled.

Byte/Word Program Command Sequence, Sector Erase Command Sequence, and Chip Erase Command Sequence

Noted that the SecSi Sector, autoselect, and CFI functions are unavailable when a program or erase operation is in progress.”

Common Flash Memory Interface (CFI)

Changed wording in last sentence of third paragraph from, “...the autoselect mode.” to “...reading array data.”

Changed CFI website address.

Revision B+4 (February 17, 2003)

Distinctive Characteristics

Corrected performance characteristics.

Product Selector Guide

Removed 90R speed option.

Added note 2.

Ordering Information

Corrected Valid Combination to reflect speed option changes.

Added Note.

AC Characteristics

Added Note

Input values in the $t_{WHWH}1$ and $t_{WHWH}2$ parameters in the Erase and Program Options table that were previously TBD. Also added notes 5 and 6.

Input values in the $t_{WHWH}1$ and $t_{WHWH}2$ parameters in the Alternate CE# Controlled Erase and Program Options table that were previously TBD. Also added notes 5.

Erase and Programming Performance

Input values into table that were previously TBD.

Added note 4.

SecSi (Secured Silicon) Sector Flash Memory Region

Corrected SecSi Sector address range in table.

Corrected the address to find the 16–byte random ESN.

Revision C (February 17, 2004)

Table 1 Device Bus Operations

Modified ACC column to replace instances of X to L/H.

Table 10: Command Definitions

Replaced the Addr information for both Program/Erase Suspend and Program/Erase Resume from BA to XXX.

DC Characteristics - CMOS Compatible

Removed additional sentence from note 4.

Erase Suspend/Erase Resume Commands

Added note on flash device performance during suspend/erase mode.

AC Characteristics - Erase and Program Operations

Added t_{POLL} information.

Added note.

Trademarks

Updated.

ESN.

Revision C + 1 (August 23, 2004)

Added Max programming specifications.

Added notation referencing superseding documentation.

Revision C + 2 (November 9, 2004)

Added Pb-free options.

Revision C + 3 (December 13, 2005)

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Trademark updated.

Revision C4 (September 12, 2006)

Erase and Program Operations table

Changed t_{BUSY} to a maximum specification.

Colophon

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