SPANSION™

AL032D70BAI03
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S29AL032D Floating Gate Flash Memory
32 Megabit (2 M x 16-Bit / 4 M x 8-Bit)

Spansion™ Overview

Spansion™, the Flash memory subsidiary of AMD and Fujitsu, is the world's leading manufacturer of NOR Flash Memory. Spansion is committed to delivering outstanding customer service and expert technical support, as well as providing the highest level of quality and reliability in its products. All Spansion production fabs are certified to the demanding ISO/TS16949:2002 global technical specification, ISO9001:2000 quality standards, and the ISO14001 environmental standard.

General Description

Spansion S29AL032D devices, manufactured using 200-nanometer, high-volume production technology, are standard interface devices offering high reliability and performance. Several packages are available, offering the widest variety for all applications.

Target Applications

- Printers
- MP3 Players
- Network Switches
  (router, hub, base station)
- Modems
- Telecom Equipment
- Automotive

PERFORMANCE CHARACTERISTICS

ACCESS SPEED		
Max. Access Time (ns)	70	90
Max. CE# Access Time (ns)	70	90
Max. OE# Access Time (ns)	30	35

CURRENT CONSUMPTION	
Active Read (@ 10 MHz) (mA)	15
Program (mA)	20
Erase (mA)	20
Standby Mode (µA)	0.2

Note: Typical values shown.

PROGRAM & ERASE PERFORMANCE	
Accelerated Byte or Word Program Time (µs)	7
Byte Program Time (µs)	9
Word Program Time (µs)	11
Sector Erase Time (sec)	0.7

Note: Typical values shown.

FEATURES AND BENEFITS

- **Based on Proven, High-Volume Production Floating Gate Technology**
- **High Quality and Reliability**
- **High Performance**

DISTINCTIVE CHARACTERISTICS

ARCHITECTURAL

- Established 200nm Floating Gate technology
- Single 3.0V power supply
- Flexible uniform or boot sector architecture
- Industrial operating temperature range -40 °C to +85 °C
- JEDEC pinout and software standards compliant

SOFTWARE AND HARDWARE

- Program and Erase Suspend and Resume
- CFI (Common Flash Interface) compliant
- ACC pin accelerates factory programming

SECURITY

- Sector Protection/Unprotection
- WP# protects top and bottom sectors (boot sector models)
- 128-word/256-byte one-time programmable Secured Silicon Sector

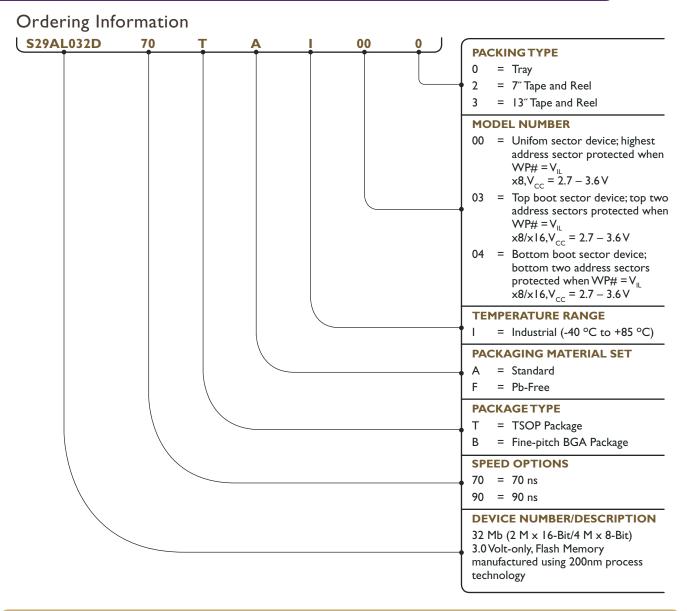**QUALITY AND RELIABILITY**

- Cycling endurance: 1,000,000 cycles per sector typical
- Data retention: 20 years typical

PACKAGING

- 40-pin TSOP Package
- 48-pin TSOP Package
- 48-ball Fine-pitch BGA Package
- Standard and Pb-Free packages available

For more information about Spansion Flash memory solutions, please visit www.spansion.com.

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Ordering Information

S29AL032D	70	T	A	I	00	0

PACKING TYPE

0 = Tray
2 = 7″ Tape and Reel
3 = 13″ Tape and Reel

MODEL NUMBER

00 = Unifom sector device; highest address sector protected when WP# = V_{IL} x8, V_{CC} = 2.7 – 3.6 V

03 = Top boot sector device; top two address sectors protected when WP# = V_{IL} x8/x16, V_{CC} = 2.7 – 3.6 V

04 = Bottom boot sector device; bottom two address sectors protected when WP# = V_{IL} x8/x16, V_{CC} = 2.7 – 3.6 V

TEMPERATURE RANGE

I = Industrial (-40 °C to +85 °C)

PACKAGING MATERIAL SET

A = Standard
F = Pb-Free

PACKAGE TYPE

T = TSOP Package
B = Fine-pitch BGA Package

SPEED OPTIONS

70 = 70 ns
90 = 90 ns

DEVICE NUMBER/DESCRIPTION

32 Mb (2 M x 16-Bit/4 M x 8-Bit) 3.0 Volt-only, Flash Memory manufactured using 200nm process technology

AVAILABLE ORDERING PART NUMBERS FOR S29AL032D FLASH MEMORY

Device Number	Speed Option	Package & Material Temperature	Model Number	Packing Type	Package Description
S29AL032D	70, 90	TAI, TFI	00	0, 2, 3[1]	TS040 (TSOP)[2]
			03, 04		TS048 (TSOP)[2]
		BAI, BFI	00, 03, 04		VBN048 (Fine-pitch BGA)[3]

PRODUCT SELECTION GUIDE[4]

Part Number for New Designs	Legacy Part Numbers
S29AL032D	Am29LV320D
	Am29LV033C
	MBM29LV320E

Notes:
1. Type 0 is standard. Specify others as required: TSOPs can be packed in Types 0 and 3; BGAs can be packed in Types 0, 2, or 3.
2. TSOP package marking omits packing type designator from ordering part numbers
3. BGA package marking omits leading "S29" and packing type designator from ordering number. For example, the package marking for Part Number S29AL032D10FAI010 is AL032D10FAI01.
4. Refer to related Spansion OPN map for feature mapping.

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