

FLASH NOR HIGH DENSITY & CONSUMER

M29DWxxx FAMILY Multiple Bank

May, 2004

STMicroelectronics

**HD & Cons. Division -VA-
M29DW.ppt – ptf10402-504**

www.st.com/flash

Family Overview

➤ Densities from 32Mb to 64Mb

➤ Wide application area covered

➤ 0.15µm process technology

➤ **technology shrink on going**

➤ *higher densities*
➤ *improved performances*
➤ *Increased reliability*

Main Features

M29DW323

➤ 32Mb (4Mbx8 / 2Mbx16), Boot Block
➤ Access Time ➤ 70, 90ns
➤ Supply Voltage ➤ Vcc = 2.7V to 3.6V for Program, Erase and Read ➤ Vpp = 12V for fast Program (optional)
➤ Programming Time ➤ 10µs per Byte/Word typical ➤ Double Word / Quadruple Byte Program
➤ Low Power Consumption ➤ Standby and Automatic Standby
➤ Dual Operations: ➤ Read in one bank or group of banks while Program or Erase in the other

Bank Architecture

M29DW323

DUAL BANK Memory Array 8Mb + 24Mb

Bank	Bank Size	Parameter Blocks		Main Blocks	
		No. of Blocks	Block Size	No. of Blocks	Block Size
A	8 Mbit	8	8KByte/ 4 KWord	15	64KByte/ 32 KWord
B	24 Mbit	-		48	64KByte/ 32 KWord

*While Programming or Erasing in Bank A,
Read operations are possible in Bank B
and viceversa*

Main Features

M29DW324

➤ 32Mb (4Mbx8 / 2Mbx16), Boot Block
➤ Access Time ➤ 70, 90ns
➤ Supply Voltage ➤ Vcc = 2.7V to 3.6V for Program, Erase and Read ➤ Vpp = 12V for fast Program (optional)
➤ Programming Time ➤ 10µs per Byte/Word typical ➤ Double Word / Quadruple Byte Program
➤ Low Power Consumption ➤ Standby and Automatic Standby

Bank Architecture

M29DW324

DUAL BANK Memory Array 16Mb + 16Mb

Bank	Bank Size	Parameter Blocks		Main Blocks	
		No. of Blocks	Block Size	No. of Blocks	Block Size
A	16 Mbit	8	8KByte/ 4 KWord	31	64KByte/ 32 KWord
B	16 Mbit	—	—	32	64KByte/ 32 KWord

*While Programming or Erasing in Bank A,
Read operations are possible in Bank B
and viceversa*

Main Features

M29DW640

➤ 64Mb (8Mbx8 / 4Mbx16), Page, Boot Block
➤ Access Time ➤ 70, 90ns
➤ Supply Voltage ➤ Vcc = 2.7V to 3.6V for Program, Erase and Read ➤ Vpp = 12V for fast Program (optional)
➤ Programming Time ➤ 10µs per Byte/Word typical ➤ 4 word / 8Bytes at-a-time Program
➤ Asynchronous Page Read Mode ➤ Page Width 4 Words ➤ Page Access 25,30ns ➤ Random Access 70,90ns

Bank Architecture

M29DW640

QUADRUPLE BANK Memory Array
8Mb + 24Mb + 24Mb + 8Mb

Bank	Bank Size	Parameter Blocks		Main Blocks	
		No. of Blocks	Block Size	No. of Blocks	Block Size
A	8 Mbit	8	8KByte/ 4 KWord	15	64KByte/ 32 KWord
B	24 Mbit	—	—	48	64KByte/ 32 KWord
C	24 Mbit	—	—	48	64KByte/ 32 KWord
D	8 Mbit	8	8KByte/ 4 KWord	15	64KByte/ 32 KWord

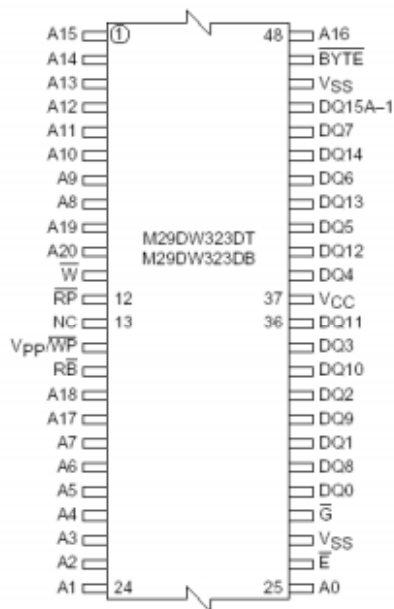
While Programming or Erasing in a group of Banks (from 1 to 3), Read operations are possible in any of the other banks

Other Family Features

- Temporary block unprotection mode
- Unlock bypass Program Command
 - faster production/batch programming
- Extended memory block
 - Extra block used as security block or to store additional information
- Common Flash Interface
 - 64 bit security code
- M29DW323/324: Erase suspend and resume modes
 - Read and program another block during erase suspend
- M29DW640: Program /Erase suspend and resume modes
 - Read from any block during program suspend
 - Read and program another block during erase suspend
- 100,000 program / erase cycles per block

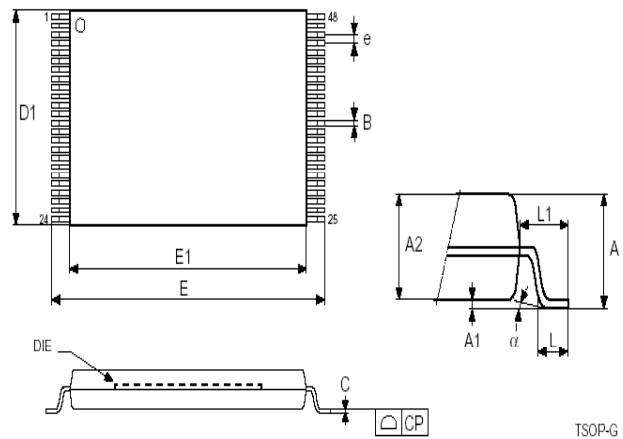
TSOP48 Package

Package connections



Package Mechanical

TSOP48 Lead Plastic Thin Small Outline
12x20mm Bottom View Package Outline



➤ M29DW323

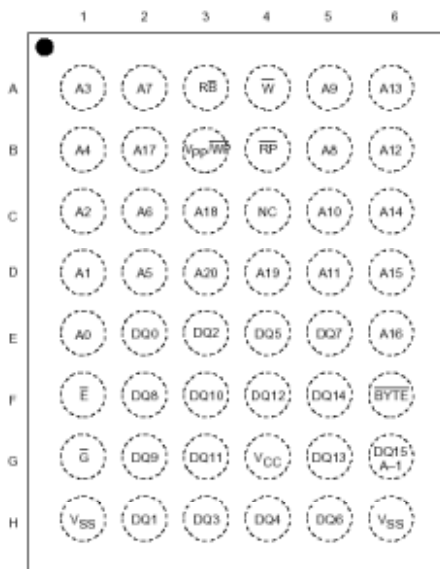
➤ M29DW324

➤ M29DW640

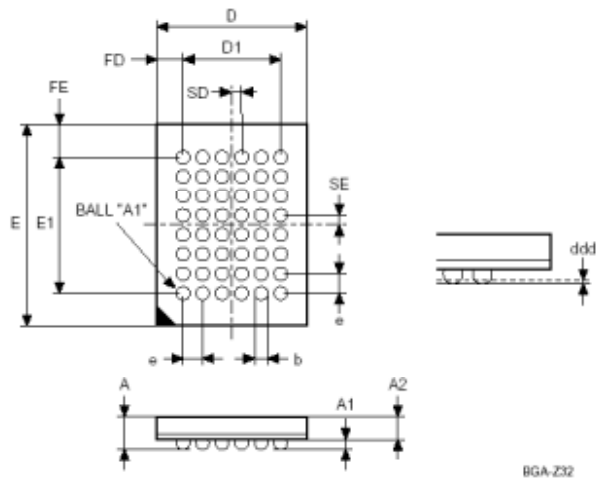


TFBGA48 Package

Package connections
Top view through package



Package Mechanical
6x8mm -6x8 Ball Array, 0.8mm pitch
Bottom View Package Outline



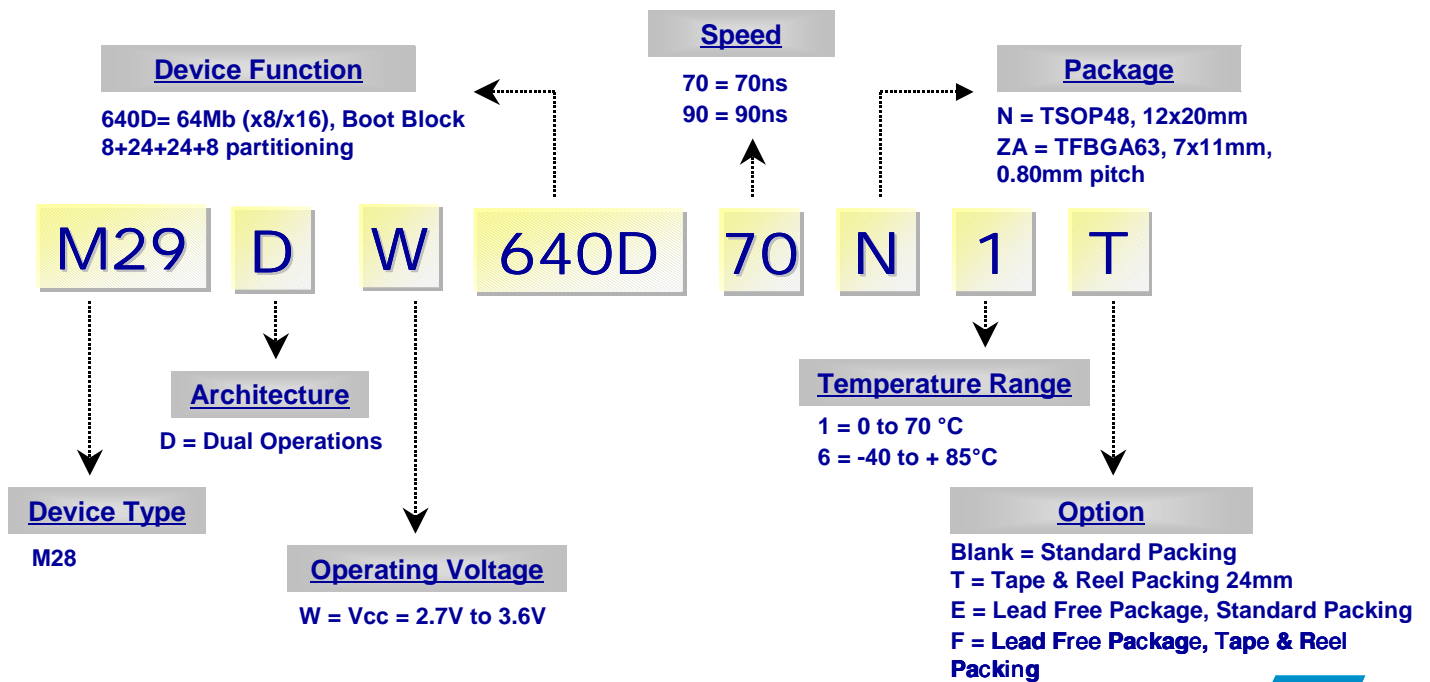
➤ M29DW323

➤ M29DW324



Part Numbering Scheme

ex. M29DW640D



Main Applications

- Mobile Phone
- Digital Video Disk
- Personal Digital Assistant
- Set-Top Box
- Digital Still Camera
- High Definition TV
- Personal Computer
- Game

Future Developments

➤ New State of the Art technology shrink on going

➤ Higher densities soon available

➤ Improved performances

➤ Stand Alone and Stacked solutions



Additional Information



➤ www.st.com/flash

➤ Datasheets

➤ Application Notes

➤ Software Drivers

➤ Presentations

➤ Technical Articles

➤ ...and more...

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Flash NOR Applications

Flash Memories for **mobile communications** include Advanced Architecture, Industry Standard and Multiple Memory Solutions.

For **Consumer Applications** ST Flash Memories provide high performance solutions including storage for Set-top Box and DVD Players.

Firmware Hub and Low Pin Count Flash Families provide solutions for **PC BIOS** storage.

For **Automotive Applications**, find out about the **M29W016** x32 Flash memory.

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