

FLASH NOR HIGH DENSITY & CONSUMER

M29DWxxx FAMILY Multiple Bank

May, 2004

STMicroelectronics

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 |

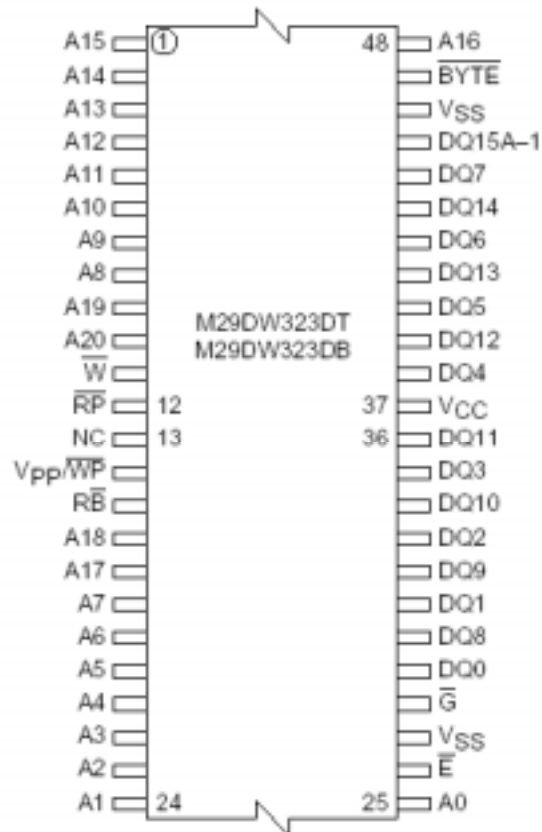
While Programming or Erasing in a group of Banks (from 1 to 3), Read operations are possible in any of the other banks

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

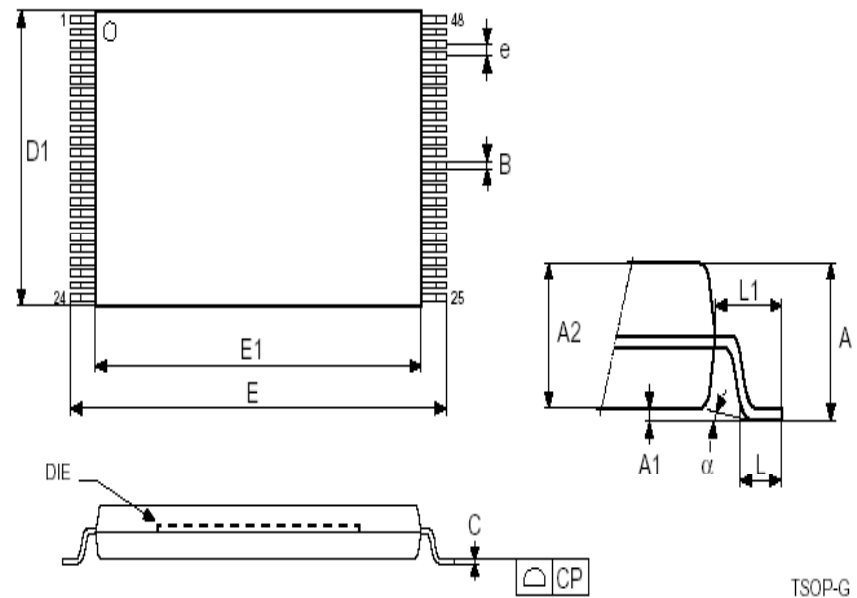
TSOP48 Package

Package connections



Package Mechanical

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



➤ M29DW323

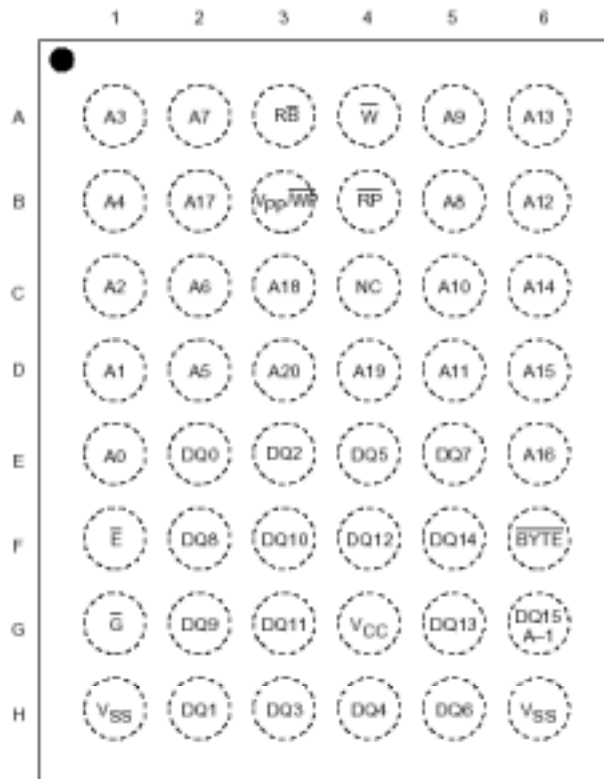
➤ M29DW324

➤ M29DW640

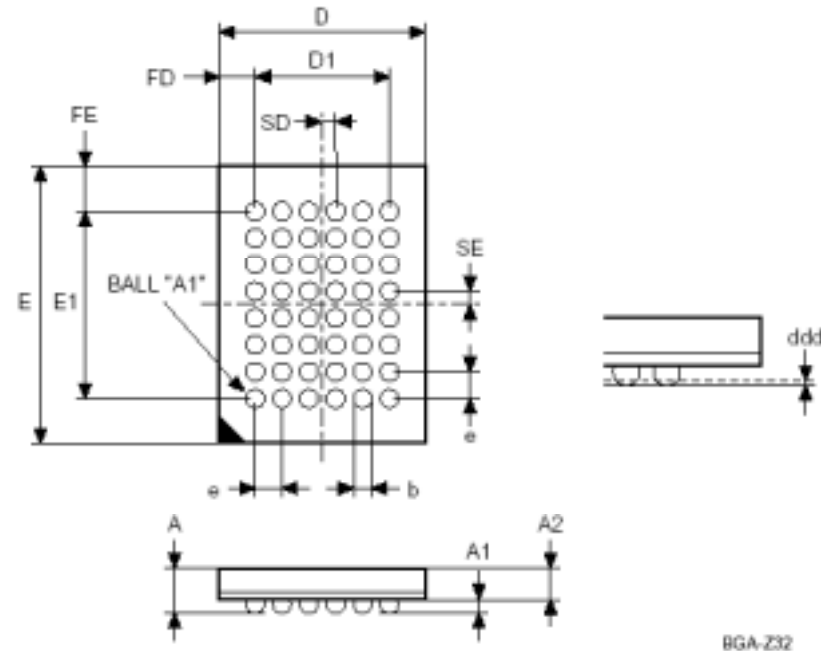


TFBGA48 Package

Package connections
Top view through package



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

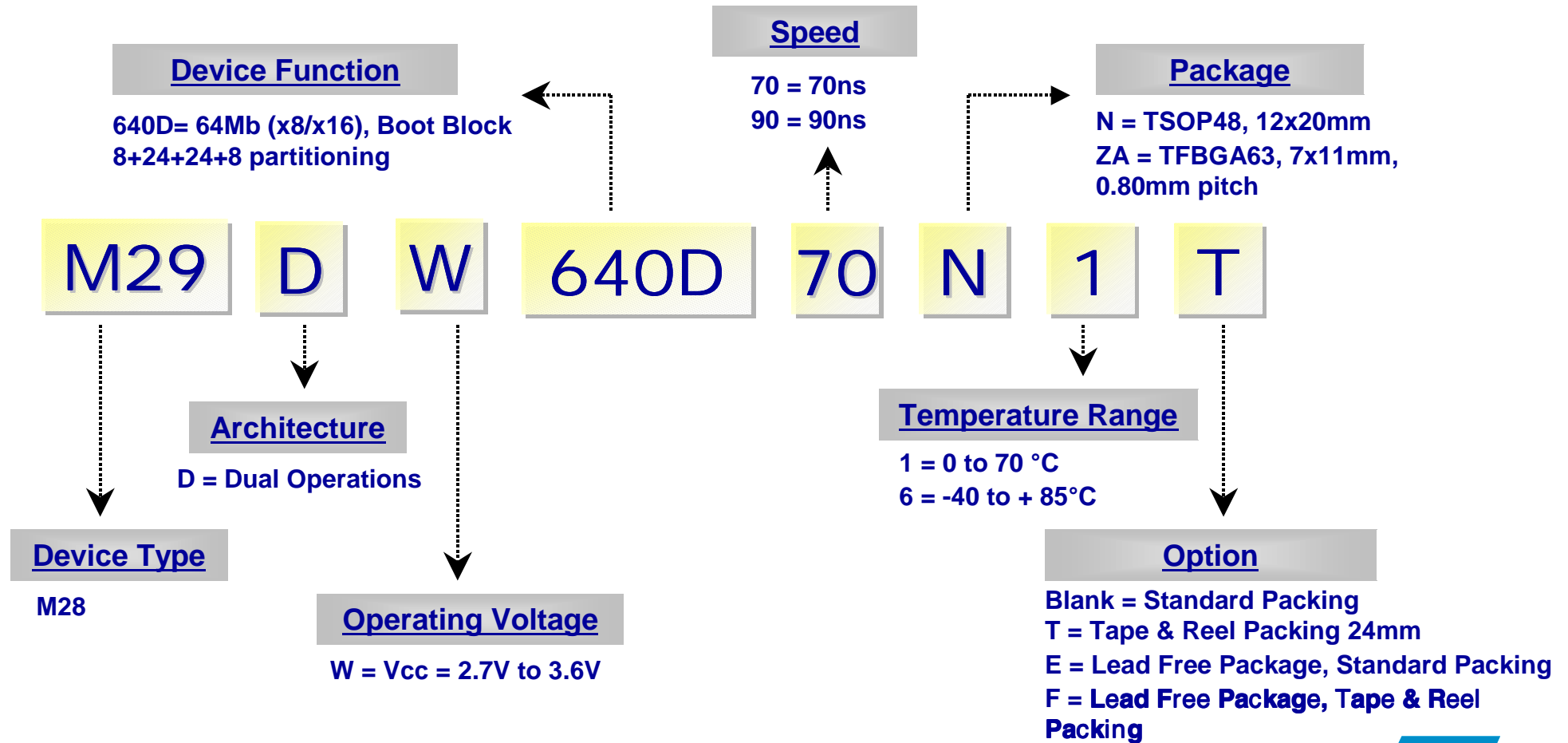


➤ M29DW323

➤ 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

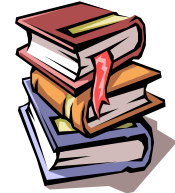
➤ Game

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 [M28W016B](#) x32 Flash memory.

FlashPAK Click here
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