

# ***FLASH NOR HIGH DENSITY & CONSUMER***

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## ***M29DWxxx FAMILY Multiple Bank***

***May, 2004***

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STMicroelectronics

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# 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

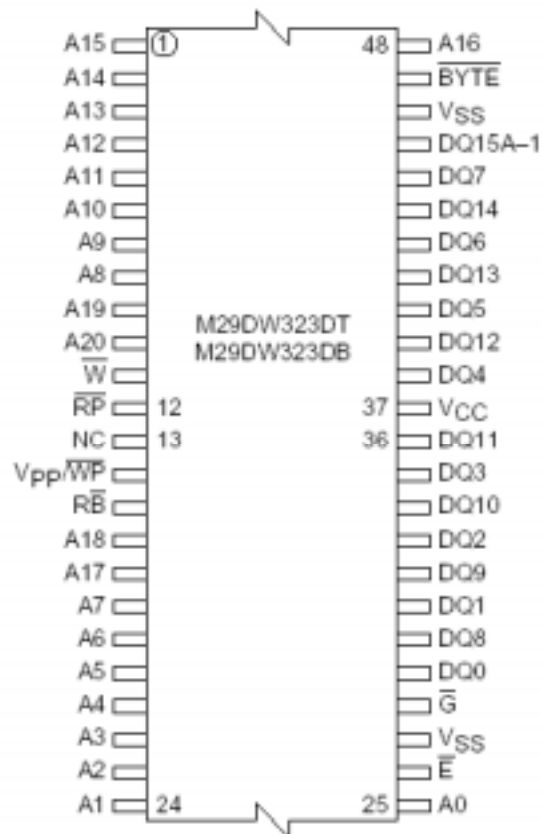
➤ M29DW323/324: Erase suspend and resume modes  
➤ Read and program another block during erase suspend

➤ 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

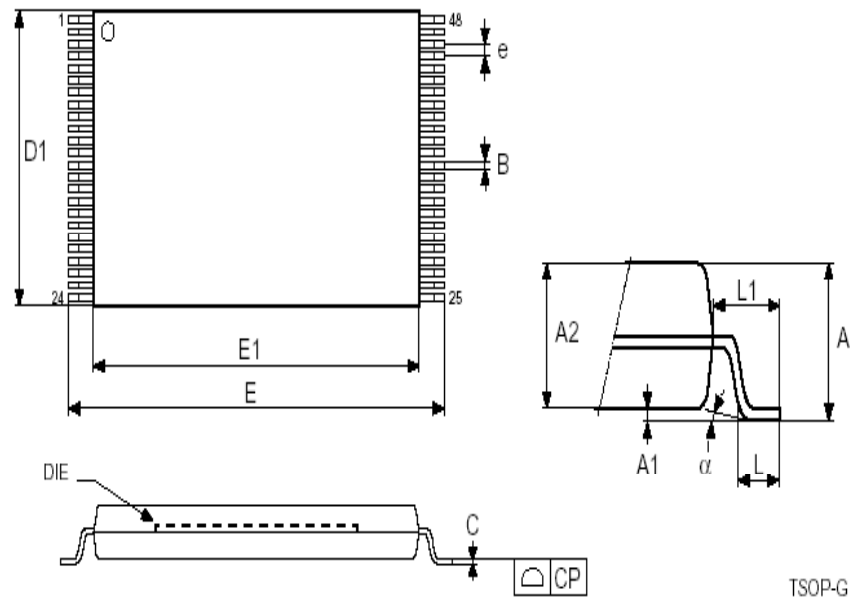
# TSOP48 Package

## Package connections



## Package Mechanical

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



➤ M29DW323

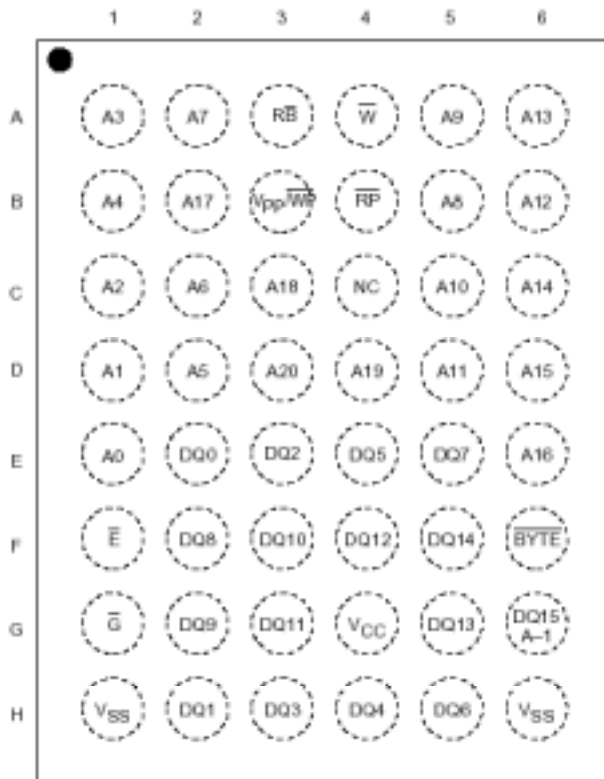
➤ M29DW324

➤ M29DW640

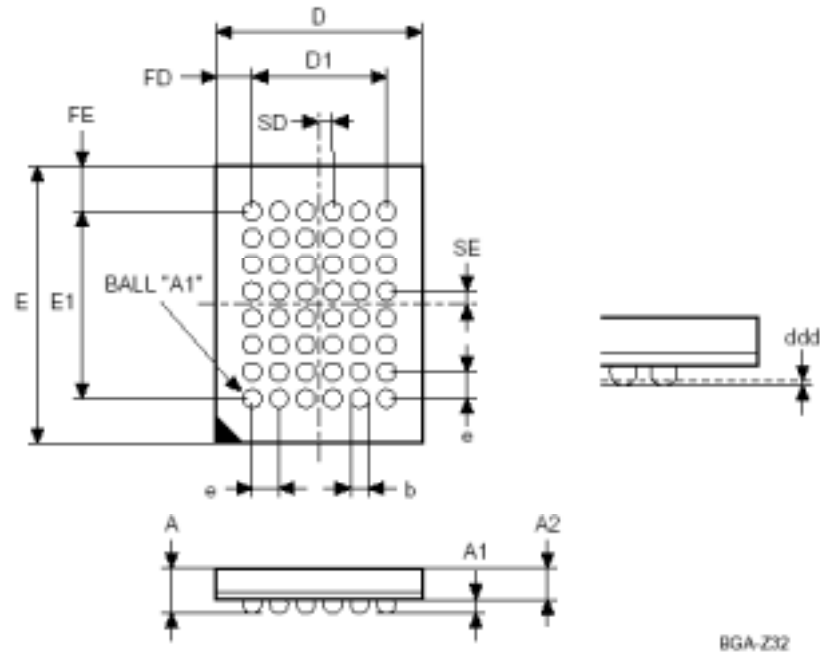


# TFBGA48 Package

Package connections  
Top view through package



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

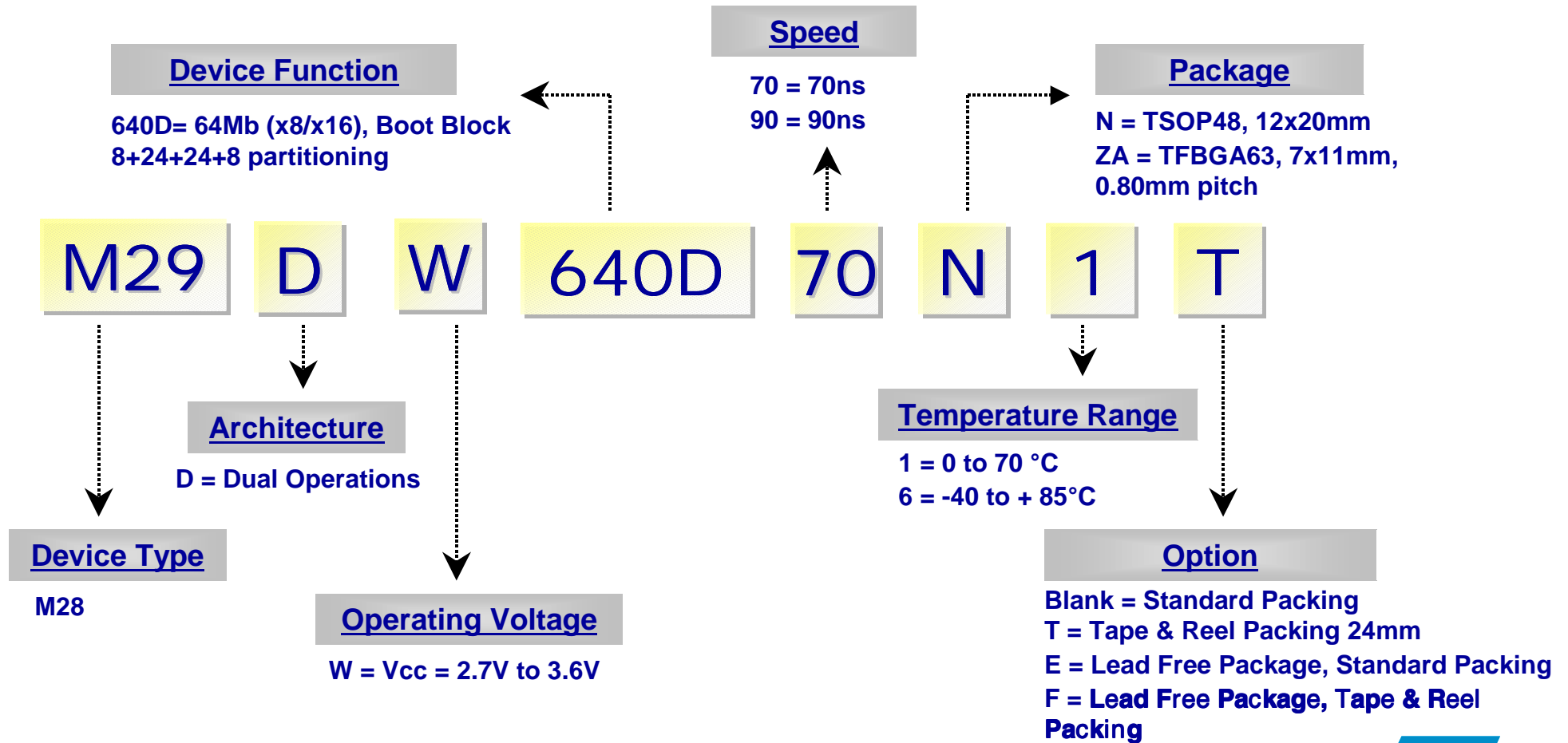


➤ M29DW323

➤ 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](http://www.st.com/flash)

➤ Datasheets

➤ Application Notes

➤ Software Drivers

➤ Presentations

➤ Technical Articles

➤ ...and more...

[ask.memory@st.com](mailto:ask.memory@st.com)

## Flash Memory, NOR

The screenshot shows the ST Flash Memory website interface. At the top, it says "ST Flash Memory for your Application" with a navigation bar. Below this, there are four images showing various applications: a PDA, a mobile phone, a laptop, and a car. The main content area is divided into several sections:

- Flash NOR News:** A press announcement titled "STMicroelectronics Introduces First PC BIOS Flash Chip Combining Firmware Hub and Low Pin Count Architecture" with links for "2002" and "2003".
- Promotional Material:** Links for "Promotional Literature", "Exhibition Panels", and "Photo Resource".
- Flash NOR Applications:** A section titled "Flash Memories for mobile communications" with a mobile phone icon, describing advanced architectures for standard and multiple memory solutions.
- For Consumer Applications:** A section with a hard drive icon, stating that ST Flash Memories provide high performance solutions for Set-top Box and DVD Players.
- Firmware Hub and Low Pin Count Flash Families:** A section with a laptop icon, providing solutions for PC BIOS storage.
- For Automotive Applications:** A section with a car icon, directing users to find information about the M29DW016B x32 Flash memory.

On the right side of the page, there is a "Choose Memory Family:" dropdown menu set to "Flash, NOR". Below this are several "Quick Links" and "Select one" dropdown menus for "Flash NOR Applications", "Flash Memory Products", "Product Support", "Technical Documents", and "Promotional Material".