

# ***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

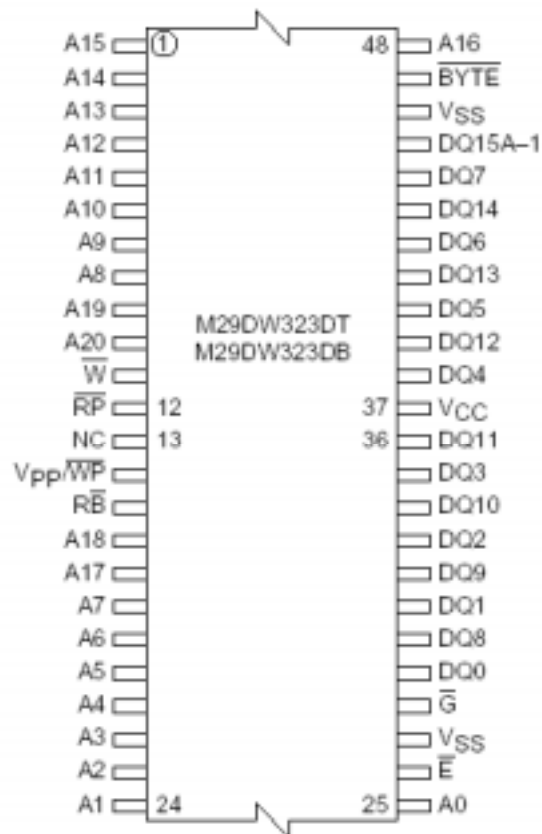
➤ M29DW323/324: Erase suspend and resume modes  
➤ Read and program another block during erase suspend

➤ 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

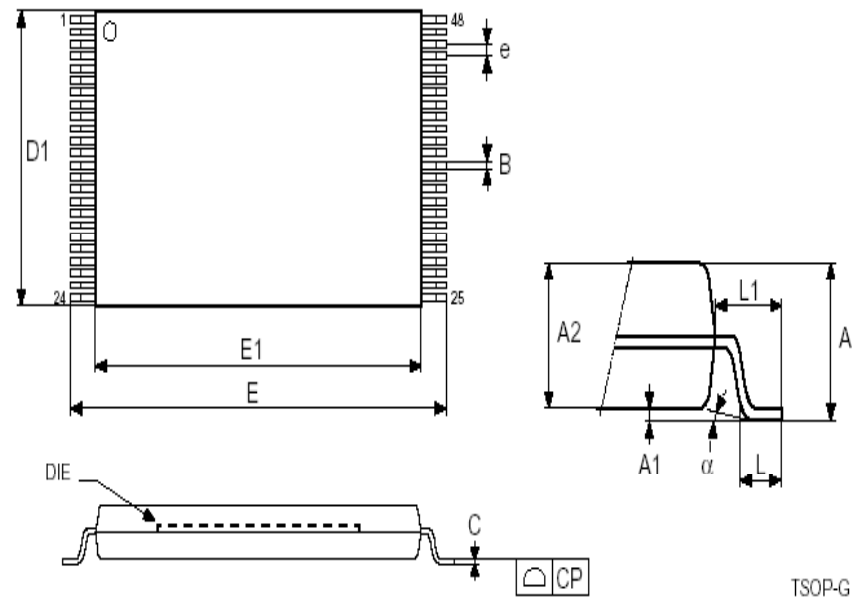
# TSOP48 Package

## Package connections



## Package Mechanical

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



➤ M29DW323

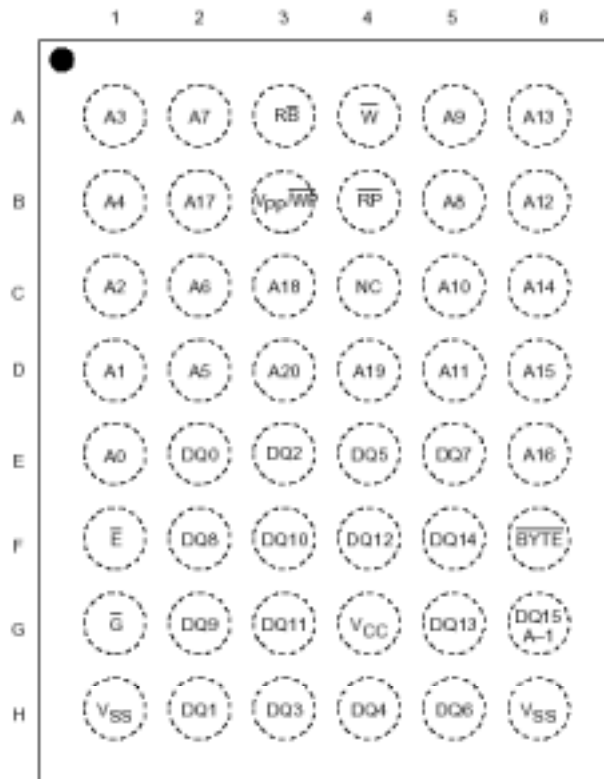
➤ M29DW324

➤ M29DW640

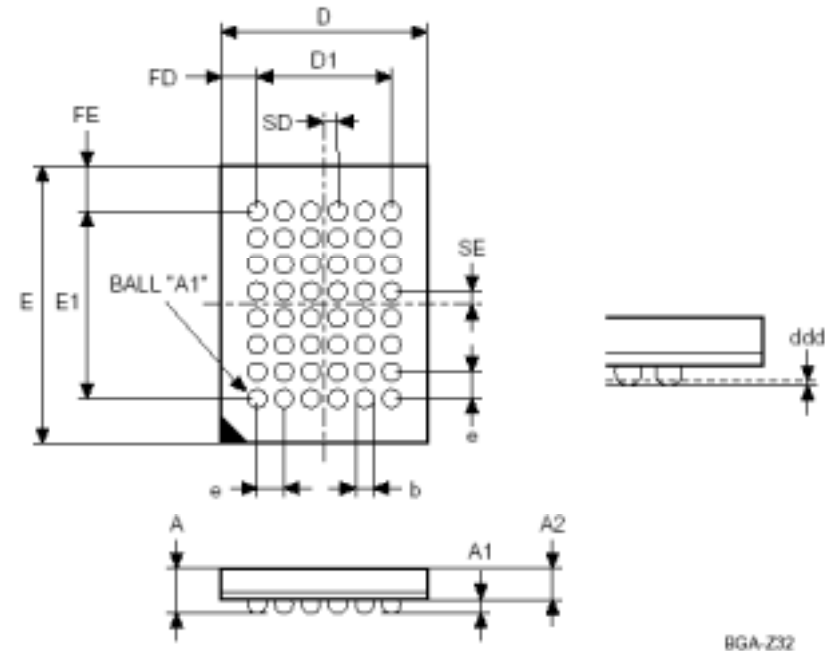


# TFBGA48 Package

Package connections  
Top view through package



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

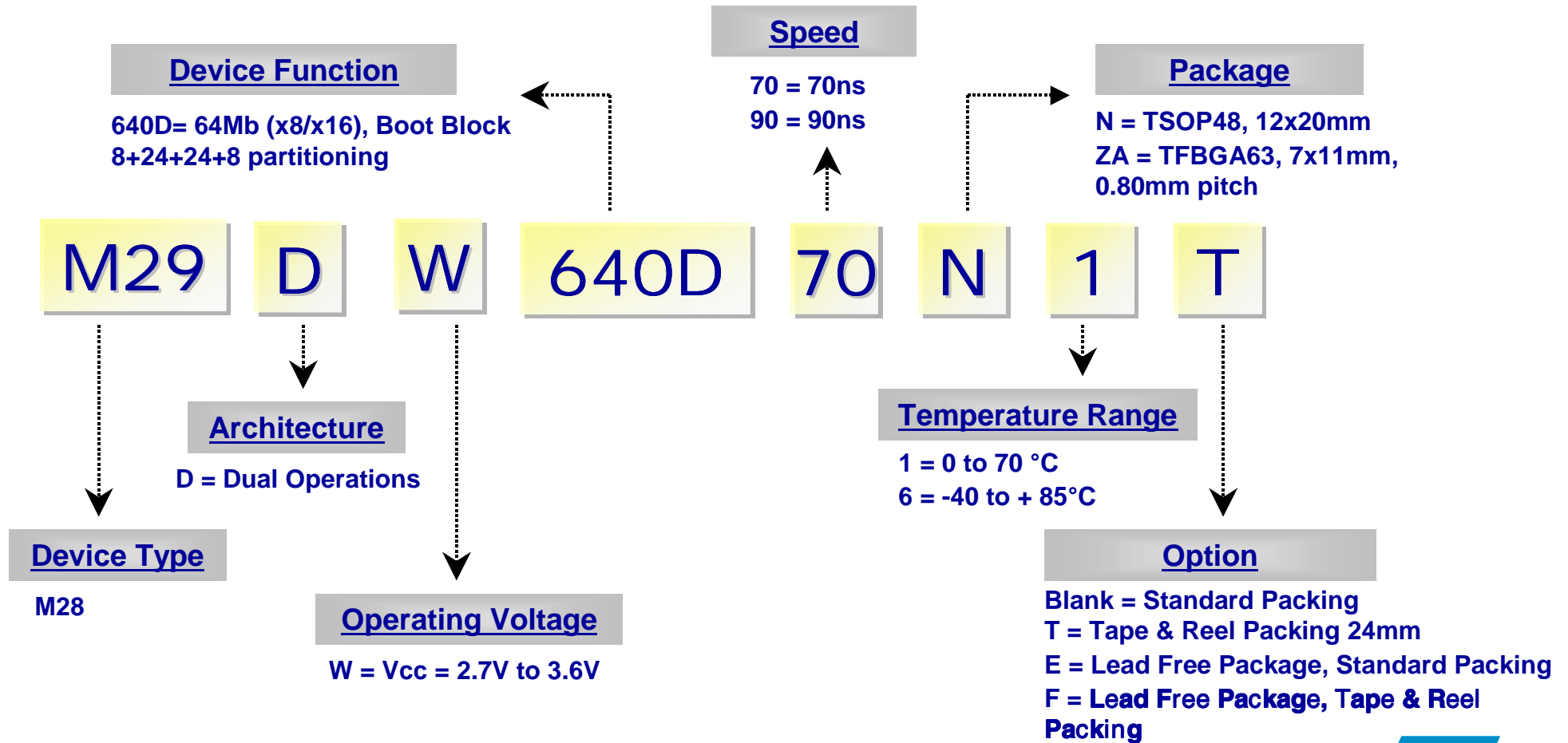


➤ M29DW323

➤ 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 for NOR flash. At the top, it says "ST Flash Memory for your Application" with a navigation menu. 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" that includes advanced architecture, industry standard, and multiple memory solutions. It features a mobile phone icon.
- For Consumer Applications:** A section stating that ST Flash Memories provide high performance solutions for Set-top Box and DVD Players, featuring a Set-top Box icon.
- Firmware Hub and Low Pin Count Flash Families:** A section providing solutions for PC BIOS storage, featuring a laptop icon.
- For Automotive Applications:** A section for finding information about the M29DW016B x32 Flash memory, featuring a car icon.

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 "Product Support" sections, each with a "Select one" dropdown menu.