TS3DDR4000 12-bits 1:2 High Speed DDR2/DDR3/DDR4 Switch/Multiplexer

1 Features

- Wide VCC Range: 2.375 V – 3.6 V
- High Bandwidth: 5.6 GHz Typical (single-ended)
- Low Switch On-Resistance (R_{ON}): 8 Ω Typical
- Low Insertion Loss: ≤ 0.5 dB Typical (up to 1 GHz)
- Low Crosstalk: –40 dB Typical at 1066 MHz
- Low Operating Current: 45 µA Typical
- IOFF Protection Prevents Current Leakage in Powered Down State (V_{CC} = 0 V)
- Supports POD_12, SSTL_12, SSTL_15 and SSTL_18 Signaling
- ESD Performance:
  - 2 kV Human Body Model (A114B, Class II)
  - 500 V Charged Device Model (C101)
- 8 mm x 3 mm 48-balls 0.65-mm Pitch ZBA Package

2 Applications

- NVDIMM Modules
- Enterprise Data Systems and Servers
- Notebook/Desktop PCs
- General DDR3/DDR4 Signal Switching
- General High-Speed Signal Switching

3 Description

The TS3DDR4000 is 1:2 or 2:1 high speed DDR2/DDR3/DDR4 switch that offers 12-bit wide bus switching. The A port can be switched to the B or C port for all bits simultaneously. Designed for operation in DDR2, DDR3 and DDR4 memory bus systems, the TS3DDR4000 uses a proprietary architecture that delivers high bandwidth (single-ended –3dB bandwidth at 5.6 GHz), low insertion loss at low frequency, and very low propagation delay. The TS3DDR4000 is 1.8 V logic compatible, and all switches are bi-directional for added design flexibility. The TS3DDR4000 also offers a power-down mode, in which all channels become high-Z and the device operates with minimal power.

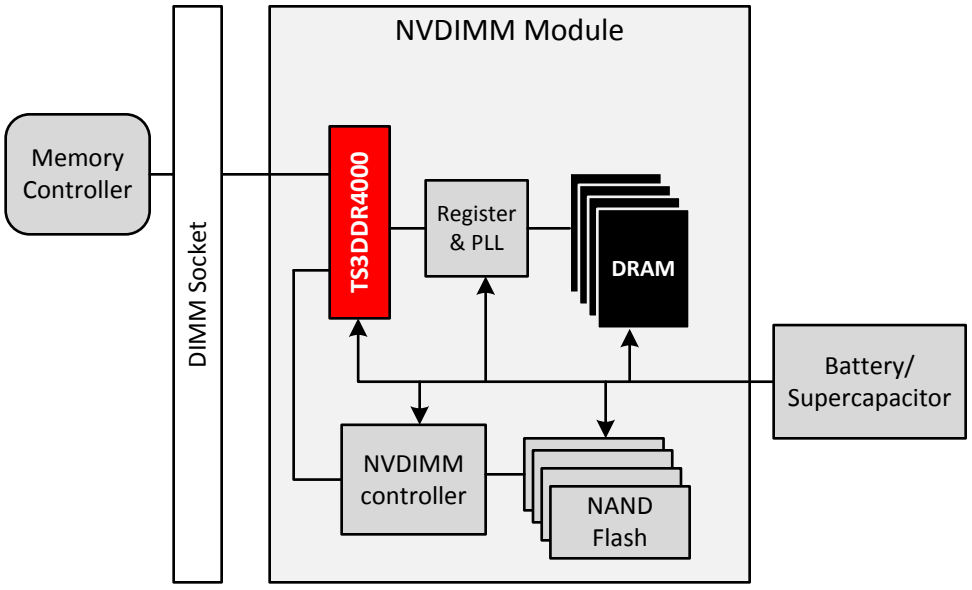
Device Information[1]

PART NUMBER	PACKAGE	BODY SIZE (NOM)
TS3DDR4000ZBAR	NFBGA (48)	8.00 mm x 3.00 mm

(1) For all available packages, see the orderable addendum at the end of the datasheet.

PRODUCT PREVIEW

4 Application Diagram



5 Device and Documentation Support

5.1 Trademarks

All trademarks are the property of their respective owners.

5.2 Electrostatic Discharge Caution

These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

5.3 Glossary

SLYZ022 — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PRODUCT PREVIEW

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TS3DDR4000ZBAR	PREVIEW	NFBGA	ZBA	48	3000	TBD	Call TI	Call TI	-40 to 85	DDR4000	

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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