

Description

The 4DB0232KD1 is a JEDEC compliant DDR4 Data Buffer with dual 4-bit bidirectional “DQ” data registers and “DQS” differential strobes. It is designed for 1.2 VDD operation in DDR4 LRDIMM applications. The DQ host interface side of each 4-bit bidirectional data register is connected to a memory controller while the MDQ interface side is connected to two x4 DRAMs.

All DQ and MDQ inputs are pseudo-differential with an internal voltage reference. All DQ and MDQ output drivers use external VDD termination and are optimized to drive single or dual terminated traces in DDR4 LRDIMM and NVDIMM-P applications. The differential DQS and MDQS strobes are used to synchronously sample the DQ and MDQ 4-bit data at the receiving end and are regenerated and driven by the DDR4 Data Buffer alongside the DQ and MDQ outputs on the opposite side of the device.

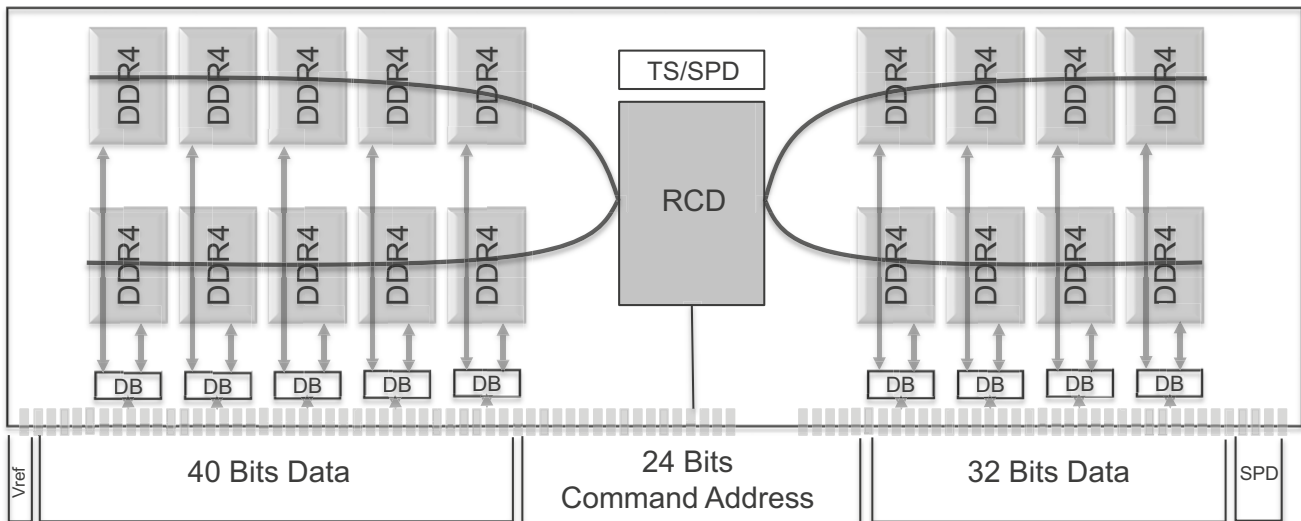
The 4DB0232KD1 also has a control bus interface that is used to synchronously receive control commands from Renesas’ DDR4 Register at data rate speeds (e.g., in LRDIMM applications). This interface is commonly referred to as the BCOM bus. It consists of a 4-bit control bus BCOM[3:0], two dedicated control signals BCKE and BODT, a voltage reference input, and a differential clock input BCK_t/BCK_n.

The 4DB0232KD1 supports dedicated pins for ZQ calibration and for parity error alerts.

Features

- All DDR4 data rates from 1600MT/s to 3200MT/s
- *DDR4DB02 JEDEC Specification r1.0* compliant
- Supports all JEDEC LRDIMM raw card types
- Lower power dissipation reduces dependency on heat sinks in standard server configurations
- 3.0 × 7.5 mm body, 0.5 × 0.5 mm ball pitch, 14 × 5 grid, 53-CVBGA, optimized for DDR4 LRDIMM PCB layout
- Guaranteed operation at commercial grade temperatures

Block Diagram



IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES (“RENESAS”) PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01 Jan 2024)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit www.renesas.com/contact-us/.