



HIGH PERFORMANCE, HIGH BANDWIDTH GDDR5 for Networking

Micron® GDDR5 for Networking

Networking customers are demanding higher-performing solutions to keep pace with their ever-increasing bandwidth requirements. GDDR5 addresses this need by providing an alternative to DDR4 and an evolutionary stepping stone to the extreme bandwidth of Micron's Hybrid Memory Cube.

GDDR5 is a high-performance memory solution that delivers faster data packet processing and buffering with a wide 32-bit bus and data rates up to 5.0 Gb/s. That's 3X the effective bandwidth compared to a DDR4-3200 device.

GDDR5 also goes a long way in simplifying board designs, which enables you to lower your total cost of ownership (TCO) by reducing the total BOM and enables you to improve your time to market thanks to a simpler PCB design and fewer PCB layers. You also double the usable space on your PCB compared to DDR4.

With the long-term reliability and long-term product support offered by Micron, you can design in GDDR5 with confidence and give your networking application a performance boost.

3 Reasons to Choose GDDR5 for Networking

1. High Bandwidth

Delivers faster data packet processing and buffering with wide 32-bit bus and data rates up to 5.0 Gb/s—3X the effective bandwidth of DDR4-3200.

2. Simplified Board Design

Improves time to market with simplified PCB design and fewer PCB layers; doubles the usable space on the PCB compared to DDR4; lowers TCO by reducing the BOM.

3. Design Ease

Leverages a familiar parallel memory implementation scheme.



DDR3 vs. DDR4 vs. GDDR5 Feature Comparison

Feature	DDR3	DDR4	GDDR5 for Networking
Standard V_{DD}/V_{DDQ}	1.5V \pm 5%	1.2V \pm 5%	1.35V \pm 3%
V_{PP}	N/A	2.5V	N/A
Low-Voltage Standard	1.35V	1.1V	1.35V
V_{REF} Input(s)	(2) DQ & CMD/ADDR	(1) CMD/ADDR	(2) DQ & CMD/ADDR
Data Rate (Mb/s)	(800) 1066, 1333 1600, 1866, 2133	(1600, 1866,) 2133, 2400, 2667, 3200	5000 (Single rank, P2P data only)
Densities	(512Mb) 1Gb–8Gb	(2Gb) 4Gb–16Gb	4Gb, 8Gb
I/O Width	x4, x8, x16	x4, x8, x16	x16, x32
Internal Banks	8	16 for x4/x8, 8 for x16	16
Bank Groups (BG)	N/A	4 for x4/x8, 2 for x16	N/A
Burst Length	BC4, BL8	BC4, BL8 (64B access per DIMM)	BL8 (32B access per x32 DRAM)
Row Cycle Time (t^{RC})	46–52ns	44–50ns	40–44ns
Bank Access Delays (t^{RRD}/t^{FAW})	4–7 clocks/ 20–38 clocks	4–7 clocks/ 23–33 clocks	5–9 clocks/ 20–36 clocks
Bus Turnaround Delay (t^{WTR})	4–10 clocks	6–10 clocks	7–10 clocks
Refresh Penalty (t^{RFC})	110–260ns	160–350ns	65–90ns
f_{CK}	300–800 MHz (DLL-on), 10–125 MHz optional (DLL-off)	667 MHz – 1.6 GHz (DLL-on), \leq 125 MHz (DLL-off)	50–1250 MHz (PLL-off)

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