



DDR2 SDRAM

ELPIDA

Feature Comparison of DDR2 SDRAM, DDR SDRAM and SDRAM

Items	DDR2 SDRAM	DDR SDRAM	SDRAM
Clock frequency	200/266/333/400/533MHz	100/133/166/200/250MHz	100/133/166MHz
Transfer data rate	400/533/667/800/1066Mbps	200/266/333/400/500Mbps	100/133/166MHz
I/O width	x4/x8/x16/x32	x4/x8/x16/x32	x16/x32
Prefetch bit width	4-bits	2-bits	1-bit
Clock input	Differential clock	Differential clock	Single clock
Burst length	4, 8	2, 4, 8	1, 2, 4, 8, full page
Data strobe	Differential data strobe	Single data strobe	Unsupported
Supply voltage	1.8V	2.5V	3.3V/2.5V
Interface	SSTL_18	SSTL_2	LVTTL
/CAS latency (CL)	3, 4, 5 clock	2, 2.5, 3 clock	2, 3 clock
Read latency	AL+CL	CL	CL
Write latency	(AL+CL)-1	1	0
Additive latency (AL)	0, 1, 2, 3, 4 clock	Unsupported	Unsupported
Off-chip driver (OCD)	Support	Unsupported	Unsupported
On die termination (ODT)	Support	Unsupported	Unsupported
Component package	FBGA	TSOP(II)/FBGA/LQFP	TSOP(II)/FBGA
Lead-free	Support	Support	Support

x32-bit I/O 512Mb DDR2 SDRAM

Elpida Memory has delivered the 512Mb DDR2 SDRAM with x32-bit I/O configuration samples.

In the past a DDR2 controller with x32-bit wide interface required two x16-bit I/O DRAMs. Now, Elpida offers a 512Mb DDR2 SDRAM with x32-bit I/O configuration as a one-chip solution. The advantages of this x32-bit solution over a two 256-megabit DDR2 (with x16-bit configuration) solution are as follows:

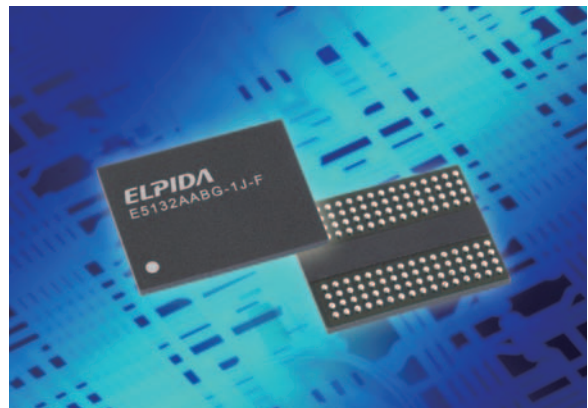
- Approximately 25% memory area reduction on the board
- Fewer package balls (40 balls)
- Approximately 20% less power consumption
- A one-chip solution delivers low EMI and better signal quality

Elpida's new x32-bit DDR2 product realizes a simpler board layout and it can support a four-layer board. Our one chip solution based on the new product is expected to reduce customer's total system costs.

Mass production of the new x32-bit DDR2 SDRAM is scheduled to begin in September 2008.

Product Features:

- Data transfer rate: 250Mbps to 1066Mbps (1GBytes/sec to 4.2GBytes/sec per DRAM device)
- ODT (On-Die-Termination): 50/75/150/225ohm
- Driver strength: normal/weak/quarter





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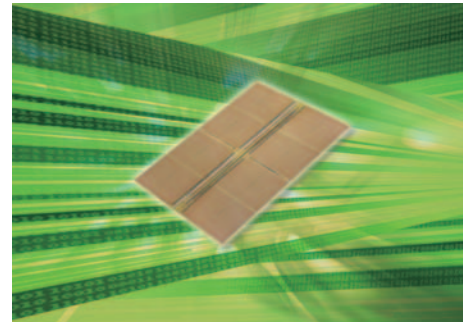
DDR2 SDRAM Product Lineup

Elpida's DDR2 SDRAM achieves a data transfer rate of up to 1066Mbps, more than twice the data transfer rate of DDR400, with lower power consumption than DDR.

This device is available in an FBGA (Fine-pitch Ball Grid Array) package that saves space in the system and that enables the fine signal integrity.

DDR2 SDRAM realizes high speed, high density and low power for a high-performance system.

Density	I/O Configuration	Grade	Supply Voltage	Package
2Gb	x 4	DDR2-1066	1.8±0.1V	60-ball FBGA
1Gb	x 8	DDR2-800		68-ball FBGA
512Mb	x 16	DDR2-667		84-ball FBGA
256Mb	x 32	DDR2-533		92-ball FBGA
				128-ball FBGA



65nm process 1Gb DDR2 SDRAM

DDR2 SDRAM DIMM Product Lineup

	512MB	1GB	2GB	4GB	8GB
Fully Buffered DIMM	1rank FBGA (x8)	2ranks FBGA (x8)	2ranks FBGA (x4)	2ranks FBGA (x4)	2ranks stacked FBGA (x4)
					4ranks FBGA (DDP, x4)
Registered DIMM	1rank FBGA (x8)	1rank FBGA (x8)	1rank FBGA (x4)	2ranks FBGA (x4)	2ranks stacked FBGA (x4)
		1rank FBGA (x4)	2ranks FBGA (x4)		4ranks FBGA (DDP, x4)
Unbuffered DIMM	1rank FBGA (x8)	1rank FBGA (x8)	2ranks FBGA (x8)	2ranks FBGA (x8)	
		2ranks FBGA (x8)			
Small Outline DIMM	2ranks FBGA (x16)	2ranks FBGA (x16)	2ranks FBGA (x8)	2ranks stacked FBGA (x8)	
		2ranks FBGA (x8)			

2Gb based 1Gb based 512Mb based