



# Modules

## product guide

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### DDR SDRAM modules

Density	Description	CS/ Rank <sup>1</sup>	DRAM Components		Base Module Part Number	Speed Mark	CAS Latency	PCB (Height)	Data Rate <sup>2</sup>	Sample	Production	
			Device #	Device								
<b>200-pin SODIMM</b>												
64MB	SS/SR 8 Meg x 64 2.5V Gold	1	4	8 Meg x 16	TSOP	MT4VDDT864HG	-265XX -26AXX	2.5 2	1.25"	2100 2100	Now Now	Now Now
64MB	DS/SR 8 Meg x 64 2.5V ECC Gold	1	5	8 Meg x 16	TSOP	MT5VDDT872HG	-265XX -26AXX	2.5 2	1.25"	2100 2100	Now Now	Now Now
128MB	SS/SR 16 Meg x 64 2.5V Gold	1	4	16 Meg x 16	TSOP	MT4VDDT1664HG	-265XX -26AXX	2.5 2	1.25"	2100 2100	Now Now	Now Now
256MB	DS/DR 32 Meg x 64 2.5V Gold	1	8	16 Meg x 16	TSOP	MT8VDDT3264HDG	-265XX -26AXX -335XX -40BXX	2.5 2 2.5 3	1.25"	2100 2100 2700 3200	Now Now Now Now	Now Now Now Now
256MB	SS/SR 32 Meg x 64 2.5V Gold	1	4	32 Meg x 16	TSOP	MT4VDDT3264HG	-265XX -335XX -40BXX	2.5 2.5 3	1.25"	2100 2700 3200	Now Now Now	Now Now Now
256MB	DS/SR 32 Meg x 72 2.5V Gold	1	9	32 Meg x 8	TSOP	MT9VDDT3272HG	-265XX -335XX -40BXX	2.5 2.5 3	1.25"	2100 2700 3200	Now Now Now	Now Now Now
512MB	DS/DR 64 Meg x 64 2.5V Gold	1	16	32 Meg x 8	FBGA	MT16VDDF6464HG	-265XX -26AXX -335XX -40BXX	2.5 2 2.5 3	1.25"	2100 2100 2700 3200	Now Now Now Now	Now Now Now Now
512MB	DS/DR 64 Meg x 64 2.5V Gold	1	8	32 Meg x 16	TSOP	MT8VDDT6464HDG	-265XX -335XX -40BXX	2.5 2.5 3	1.25"	2100 2700 3200	Now Now Now	Now Now Now
512MB	DS/SR 64 Meg x 72 2.5V Gold	1	9	64 Meg x 8	TSOP	MT9VDDT6472HG	-265XX -335XX -40BXX	2.5 2.5 3	1.25"	2100 2700 3200	Now Now Now	Now Now Now
1GB	DS/DR 128 Meg x 64 2.5V Gold	1	16	64 Meg x 8	FBGA	MT16VDDF12864HG	-265XX -335XX -40BXX	2.5 2.5 3	1.25"	2100 2700 3200	Now Now Now	Now Now Now
1GB	DS/DR 128 Meg x 72 2.5V Gold	1	18	64 Meg x 8	FBGA	MT18VDDF12872HG	-265XX	2.5	1.25"	2100	Now	Now
<b>184-pin DIMM Unbuffered</b>												
64MB	SS/SR 8 Meg x 64 2.5V Gold	1	4	8 Meg x 16	TSOP	MT4VDDT864AG	-265XX -26AXX	2.5 2	1.25"	2100 2100	Now Now	Now Now
64MB	SS/SR 8 Meg x 72 2.5V ECC Gold	1	5	8 Meg x 16	TSOP	MT5VDDT872AG	-265XX -26AXX	2.5 2	1.25"	2100 2100	Now Now	Now Now
128MB	SS/SR 16 Meg x 64 2.5V Gold	1	4	16 Meg x 16	TSOP	MT4VDDT1664AG	-265XX -26AXX -335XX -40BXX	2.5 2 2.5 3	1.25"	2100 2100 2700 3200	Now Now Now Now	Now Now Now Now
128MB	SS/SR 16 Meg x 72 2.5V ECC Gold	1	5	16 Meg x 16	TSOP	MT5VDDT1672AG	-265XX -26AXX -335XX -40BXX	2.5 2 2.5 3	1.25"	2100 2100 2700 3200	Now Now Now Now	Now Now Now Now

Note: <sup>1</sup>CS/Rank = number of chip selects per bank; <sup>2</sup>Data Rate = MB/s on 64-bit data bus  
 DS = Double-sided; SS = Single-sided; DR = Dual rank; SR = Single rank; XX = Die/PCB rev



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DDR SDRAM modules *continued*

Density	Description	CS/ Rank <sup>1</sup>	DRAM Components		Base Module Part Number	Speed Mark	CAS Latency	PCB (Height)	Data Rate <sup>2</sup>	Sample	Production	
			Device #	Device								
<b>184-pin DIMM Unbuffered <i>continued</i></b>												
256MB	SS/SR 32 Meg x 64 2.5V Gold	1	8	32 Meg x 8	TSOP	MT8VDDT3264AG	-265XX -26AXX	2.5 2	1.25"	2100 2100	Now Now	Now Now
256MB	SS/SR 32 Meg x 64 2.5V Gold 2.6V Gold	1	4	32 Meg x 16	TSOP	MT4VDDT3264AG	-335XX -40BXX	2.5 3	1.25"	2700 3200	Now Now	Now Now
256MB	SS/SR 32 Meg x 72 2.5V ECC Gold	1	9	32 Meg x 8	TSOP	MT9VDDT3272AG	-265XX -26AXX -335XX	2.5 2 2.5	1.25"	2100 2100 2700	Now Now Now	Now Now Now
512MB	DS/DR 64 Meg x 64 2.5V Gold 2.6V ECC Gold	1	16	32 Meg x 8	TSOP	MT16VDDT6464AG	-40BXX -265XX -26AXX -335XX	3 2.5 2 2.5	1.25"	3200 2100 2100 2700	Now Now Now Now	Now Now Now Now
512MB	SS/SR 64 Meg x 64 2.5V Gold 2.6V Gold	1	8	64 Meg x 8	TSOP	MT8VDDT6464AG	-40BXX -265XX -335XX	3 2.5 2.5	1.25"	3200 2100 2700	Now Now Now	Now Now Now
512MB	DS/DR 64 Meg x 72 2.5V ECC Gold	1	18	32 Meg x 8	TSOP	MT18VDDT6472AG	-40BXX -265XX -26AXX -335XX	3 2.5 2 2.5	1.25"	3200 2100 2100 2700	Now Now Now Now	Now Now Now Now
512MB	SS/SR 64 Meg x 72 2.5V ECC Gold 2.6V ECC Gold	1	9	64 Meg x 8	TSOP	MT9VDDT6472AG	-40BXX -265XX -335XX	3 2.5 2.5	1.25"	3200 2100 2700	Now Now Now	Now Now Now
1GB	DS/DR 128 Meg x 64 2.5V Gold	1	16	64 Meg x 8	TSOP	MT16VDDT12864AG	-40BXX -265XX -26AXX -335XX	3 2.5 2 2.5	1.25"	3200 2100 2100 2700	Now Now Now Now	Now Now Now Now
1GB	DS/DR 128 Meg x 72 2.5V ECC Gold 2.6V Gold	1	18	64 Meg x 8	TSOP	MT18VDDT12872AG	-40BXX -265XX -26AXX -335XX	3 2.5 2 2.5	1.25"	3200 2100 2100 2700	Now Now Now Now	Now Now Now Now
	2.6V ECC Gold						-40BXX	3		3200	Now	Now
<b>184-pin DIMM Registered</b>												
128MB	SS/SR 16 Meg x 72 2.5V ECC Gold	1	9	16 Meg x 8	TSOP	MT9VDDT1672G	-202XX -265XX	2 2.5	1.70" 1.20"	1600 2100	Now Now	Now Now
256MB	DS/DR 32 Meg x 72 2.5V ECC Gold	1	18	16 Meg x 8	TSOP	MT18VDDT3272DG	-26AXX -202XX -265XX -26AXX	2 2 2.5 2	1.70" 1.20"	2100 1600 2100 2100	Now Now Now Now	Now Now Now Now
256MB	SS/SR 32 Meg x 72 2.5V ECC Gold	1	9	32 Meg x 8	TSOP	MT9VDDT3272G	-265XX -26AXX	2.5 2	1.20"	2100 2100	Now Now	Now Now
256MB	SS/SR 32 Meg x 72 2.5V ECC Gold 2.6V ECC Gold	1	9	32 Meg x 8	FBGA	MT9VDDF3272G	-40BXX -335XX	3 2.5	1.125"	3200 2700	Now Now	Now Now
256MB	DS/DR 32 Meg x 72 2.5V ECC Gold	1	18	32 Meg x 4	TSOP	MT18VDDT3272G	-40BXX -202XX -265XX -26AXX	3 2 2.5 2	1.70" 1.20"	3200 1600 2100 2100	Now Now Now Now	Now Now Now Now
512MB	DS/DR 64 Meg x 72 2.5V ECC Gold	1	18	32 Meg x 8	TSOP	MT18VDDT6472DG	-262XX -265XX -26AXX	2 2.5 2	1.20"	2100 2100 2100	Now Now Now	Now Now Now
512MB	DS/SR 64 Meg x 72 2.5V ECC Gold 2.6V ECC Gold	1	18	64 Meg x 4	FBGA	MT18VDDF6472G	-40BXX -335XX	3 2.5	1.125"	3200 2700	Now Now	Now Now
1GB	DS/DR 128 Meg x 72 2.5V ECC Gold	1	36	64 Meg x 4	FBGA	MT36VDDF12872G	-40BXX -265XX -26AXX -262XX	3 2.5 2 2	1.20"	3200 2100 2100 2100	Now Now Now Now	Now Now Now Now
1GB	DS/SR 128 Meg x 72 2.5V ECC Gold 2.6V ECC Gold	1	18	128 Meg x 4	TSOP	MT18VDDT12872G	-335XX -202XX -265XX	2.5 2 2.5	1.20"	2700 1600 2100	Now Now Now	Now Now Now
	2.6V ECC Gold						-40BXX	3		3200	Now	Now

Note: <sup>1</sup>CS/Rank = number of chip selects per bank; <sup>2</sup>Data Rate = MB/s on 64-bit data bus  
 DS = Double-sided; SS = Single-sided; DR = Dual rank; SR = Single rank; XX = Die/PCB rev



■ **DDR SDRAM modules** *continued*

Density	Description	CS/ Rank <sup>1</sup>	DRAM Components		Base Module Part Number	Speed Mark	CAS Latency	PCB (Height)	Data Rate <sup>2</sup>	Sample	Production	
			Device #	Device								
<b>184-pin DIMM Registered</b> <i>continued</i>												
2GB	DS/DR 256 Meg x 72 2.5V ECC Gold 2.6V ECC Gold	1	36	128 Meg x 4	FBGA	MT36VDDF25672G	-265XX	2.5	1.20"	2100	Now	Now
							-335XX	2.5		2700	Now	Now
							-40BXX	3		3200	Now	Now
4GB	DS/DR 512 Meg x 72 2.5V ECC Gold	1	36	256 Meg x 4	TSOP	MT36VDDT51272G	-265XX	2.5	1.20"	2100	Now	Now

Note: <sup>1</sup>CS/Rank = number of chip selects per bank; <sup>2</sup>Data Rate = MB/s on 64-bit data bus  
DS = Double-sided; SS = Single-sided; DR = Dual rank; SR = Single rank; XX = Die/PCB rev

■ **DDR2 SDRAM modules**

Density	Description	CS/ Rank	DRAM Components		Base Module Part Number	Speed Mark	CAS Latency	PCB (Height)	Data Rate	Sample	Production	
			Device #	Device								
<b>200-pin SODIMM</b>												
256MB	DS/DR 32 Meg x 64 1.8V Gold	1	8	16 Meg x 16	FBGA	MT8HTF3264HDY	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
							-667XX	5	1.18"	5300	Now	Now
	SS/SR 32 Meg x 64 1.8V Gold	1	4	32 Meg x 16	FBGA	MT4HFT3264HY	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
							-667XX	5	1.18"	5300	Now	Now
512MB	DS/DR 64 Meg x 64 1.8V Gold	1	8	32 Meg x 16	FBGA	MT8HTF6464HDY	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
							-667XX	5	1.18"	5300	Now	Now
	SS/SR 64 Meg x 64 1.8V Gold	1	4	64 Meg x 16	FBGA	MT4HFT6464HY	-40EXX	3	1.18"	3200	Now	1Q05
							-53EXX	4	1.18"	4200	Now	1Q05
							-667XX	5	1.18"	5300	Now	1Q05
1GB	DS/DR 128 Meg x 64 1.8V Gold	1	8	64 Meg x 16	FBGA	MT8HTF12864HDY	-40EXX	3	1.18"	3200	Now	1Q05
							-53EXX	4	1.18"	4200	Now	1Q05

**240-pin DIMM Unbuffered**

128MB	SS/SR 16 Meg x 64 1.8V Gold	1	4	16 Meg x 16	FBGA	MT4HTF1664AY	-40EXX	3	1.18"	3200	Now	Now	
							-53EXX	4	1.18"	4200	Now	Now	
							-667XX	5	1.18"	5300	Now	Now	
	256MB	SS/SR 32 Meg x 64 1.8V Gold	1	8	32 Meg x 8	FBGA	MT8HTF3264AY	-40EXX	3	1.18"	3200	Now	Now
								-53EXX	4	1.18"	4200	Now	Now
								-667XX	5	1.18"	5300	Now	Now
SS/SR 32 Meg x 72 1.8V ECC Gold		1	9	32 Meg x 8	FBGA	MT9HTF3272AY	-40EXX	3	1.18"	3200	Now	Now	
							-53EXX	4	1.18"	4200	Now	Now	
							-667XX	5	1.18"	5300	Now	Now	
512MB	SS/SR 32 Meg x 64 1.8V Gold	1	4	32 Meg x 16	FBGA	MT4HTF3264AY	-40EXX	3	1.18"	3200	Now	Now	
							-53EXX	4	1.18"	4200	Now	Now	
							-667XX	5	1.18"	5300	Now	Now	
	DS/DR 64 Meg x 64 1.8V Gold	1	16	32 Meg x 8	FBGA	MT16HTF6464AY	-40EXX	3	1.18"	3200	Now	Now	
							-53EXX	4	1.18"	4200	Now	Now	
							-667XX	5	1.18"	5300	Now	Now	
DS/DR 64 Meg x 72 1.8V ECC Gold	1	18	32 Meg x 8	FBGA	MT18HTF6472AY	-40EXX	3	1.18"	3200	Now	Now		
						-53EXX	4	1.18"	4200	Now	Now		
						-667XX	5	1.18"	5300	Now	Now		
	SS/SR 64 Meg x 64 1.8V Gold	1	8	64 Meg x 8	FBGA	MT8HTF6464AY	-40EXX	3	1.18"	3200	Now	Now	
							-53EXX	4	1.18"	4200	Now	Now	
							-667XX	5	1.18"	5300	Now	Now	
SS/SR 64 Meg x 72 1.8V ECC Gold	1	9	64 Meg x 8	FBGA	MT9HTF6472AY	-40EXX	3	1.18"	3200	Now	Now		
						-53EXX	4	1.18"	4200	Now	Now		
						-667XX	5	1.18"	5300	Now	Now		
	1GB	DS/DR 128 Meg x 64 1.8V Gold	1	16	64 Meg x 8	FBGA	MT16HTF12864AY	-40EXX	3	1.18"	3200	Now	Now
								-53EXX	4	1.18"	4200	Now	Now
								-667XX	5	1.18"	5300	Now	Now
DS/DR 128 Meg x 72 1.8V ECC Gold		1	18	64 Meg x 8	FBGA	MT18HTF12872AY	-40EXX	3	1.18"	3200	Now	Now	
							-53EXX	4	1.18"	4200	Now	Now	
							-667XX	5	1.18"	5300	Now	Now	
2GB	SS/SR 128 Meg x 64 1.8V Gold	1	8	128 Meg x 8	FBGA	MT8HTF12864AY	-40EXX	3	1.18"	3200	Now	4Q04	
							-53EXX	4	1.18"	4200	Now	4Q04	
							-667XX	5	1.18"	5300	Now	4Q04	
	SS/SR 128 Meg x 72 1.8V ECC Gold	1	9	128 Meg x 8	FBGA	MT9HTF12872AY	-40EXX	3	1.18"	3200	Now	4Q04	
							-53EXX	4	1.18"	4200	Now	4Q04	
							-667XX	5	1.18"	5300	Now	4Q04	
DS/DR 256 Meg x 64 1.8V Gold	1	16	128 Meg x 8	FBGA	MT16HTF25664AY	-40EXX	3	1.18"	3200	Now	4Q04		
						-53EXX	4	1.18"	4200	Now	4Q04		
						-667XX	5	1.18"	5300	Now	4Q04		
DS/DR 256 Meg x 72 1.8V ECC Gold	1	18	128 Meg x 8	FBGA	MT18HTF25672AY	-40EXX	3	1.18"	3200	Now	4Q04		
						-53EXX	4	1.18"	4200	Now	4Q04		
						-667XX	5	1.18"	5300	Now	4Q04		



DDR2 SDRAM modules *continued*

Density	Description	CS/ Rank	DRAM Components		Base Module Part Number	Speed Mark	CAS Latency	PCB (Height)	Data Rate	Sample	Production	
			Device #	Device								
<b>240-pin DIMM Registered</b>												
256MB	SS/SR 32 Meg x 72 1.8V ECC Gold	1	9	32 Meg x 8	FBGA	MT9HTF3272Y	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
512MB	DS/DR 64 Meg x 72 1.8V ECC Gold	1	18	32 Meg x 8	FBGA	MT18HTF6472DY	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
	DS/SR 64 Meg x 72 1.8V ECC Gold	1	18	64 Meg x 4	FBGA	MT18HTF6472Y	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
	SS/SR 64 Meg x 72 1.8V ECC Gold	1	9	64 Meg x 8	FBGA	MT9HTF6472Y	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
1GB	DS/DR 128 Meg x 72 1.8V ECC Gold	1	18	64 Meg x 8	FBGA	MT18HTF12872DY	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
	DS/SR 128 Meg x 72 1.8V ECC Gold	1	18	128 Meg x 4	FBGA	MT18HTF12872Y	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now
	SS/SR 128 Meg x 72 1.8V ECC Gold	1	9	128 Meg x 8	FBGA	MT9HTF12872Y	-40EXX	3	1.18"	3200	Now	4Q04
							-53EXX	4	1.18"	4200	Now	4Q04
2GB	DS/DR 256 Meg x 72 1.8V ECC Gold	1	18	128 Meg x 8	FBGA	MT18HTF25672DY	-40EXX	3	1.18"	3200	Now	4Q04
							-53EXX	4	1.18"	4200	Now	4Q04
	DS/SR 256 Meg x 72 1.8V ECC Gold	1	18	256 Meg x 4	FBGA	MT18HTF25672Y	-40EXX	3	1.18"	3200	Now	Now
							-53EXX	4	1.18"	4200	Now	Now

## SDRAM modules

Density	Description	CS/ Rank <sup>3</sup>	DRAM Components		Base Module Part Number	Speed Mark	CAS Latency	PCB (Height)	Clock Speed <sup>4</sup>	Sample	Production	
			Device #	Device								
<b>100-pin DIMM</b>												
16MB	SS/DR 4 Meg x 32 3.3V Gold	1	2	4 Meg x 16	TSOP	MT2LSDT432UG	-10XX	-	1.0"	100	Now	Now
							-8XX	-		125	Now	Now
32MB	DS/DR 8 Meg x 32 3.3V Gold	1	4	4 Meg x 16	TSOP	MT4LSDT832UDG	-10XX	-	1.0"	100	Now	Now
							-8XX	-		125	Now	Now
64MB	DS/DR 16 Meg x 32 3.3V Gold	1	4	16 Meg x 8	TSOP	MT4LSDT1632UG	-10XX	-	1.15"	100	Now	Now
							-8XX	-		125	Now	Now
128MB	DS/DR 32 Meg x 32 3.3V Gold	1	8	16 Meg x 8	TSOP	MT8LSDT3232UG	-10XX	-	1.15"	100	Now	Now
							-8XX	-		125	Now	Now
256MB	DS/DR 64 Meg x 32 3.3V Gold	1	8	32 Meg x 8	TSOP	MT8LSDT6432UG	-8XX	-	1.15"	125	Now	Now
<b>144-pin SODIMM</b>												
32MB	DS/SR 4 Meg x 64 3.3V Gold	2	4	4 Meg x 16	TSOP	MT4LSDT464HG	-10EXX	2	1.0"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
64MB	DS/SR 8 Meg x 64 3.3V Gold	2	4	8 Meg x 16	TSOP	MT4LSDT864HG	-10EXX	2	1.0"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	DS/DR 16 Meg x 64 3.3V Gold	2	8	8 Meg x 16	TSOP	MT8LSDT1664HG	-10EXX	2	1.25"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	DS/SR 16 Meg x 64 3.3V Gold	2	4	16 Meg x 16	TSOP	MT4LSDT1664HG	-133XX	3	1.0"	133	Now	Now
							-13EXX	2		133	Now	Now
256MB	DS/DR 32 Meg x 64 3.3V Gold	2	8	16 Meg x 16	TSOP	MT8LSDT3264HG	-133XX	3	1.25"	133	Now	Now
							-13EXX	2		133	Now	Now
512MB	DS/DR 64 Meg x 64 3.3V Gold	2	16	32 Meg x 8	FBGA	MT16LSDF6464HG	-133XX	3	1.25"	133	Now	Now
							-13EXX	2		133	Now	Now
<b>168-pin DIMM Unbuffered</b>												
32MB	SS/SR 4 Meg x 64 3.3V Gold	2	4	4 Meg x 16	TSOP	MT4LSDT464AG	-10EXX	2	1.0"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
64MB	SS/SR 8 Meg x 64 3.3V Gold	2	8	8 Meg x 8	TSOP	MT8LSDT864AG	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now

Note: <sup>3</sup>CS/Rank = number of chip selects per bank; <sup>4</sup>Clock Speed = MHz  
**DS** = Double-sided; **SS** = Single-sided; **DR** = Dual rank; **SR** = Single rank; **(A)** = SPD version, unbuffered; **noA** = Registered version for x72 DIMMs. 144- and 168-pin DIMMs (66 MHz/100 MHz) adhere to Intel's 4-clock SDRAM module specs (66 MHz uses -10 components, 100 MHz uses -8, 133 MHz uses -75). For 100-pin DIMMs, 100 MHz uses -10 components; adheres to JEDEC standard. **Highlighted parts are not recommended for new designs.**



SDRAM modules continued

Density	Description	CS/ Rank <sup>3</sup>	DRAM Components		Base Module Part Number	Speed Mark	CAS Latency	PCB (Height)	Clock Speed <sup>4</sup>	Sample	Production	
			Device #	Device								
<b>168-pin DIMM Unbuffered continued</b>												
64MB	SS/SR 8 Meg x 64 3.3V Gold	2	4	8 Meg x 16	TSOP	MT4LSDT864AG	-10EXX	2	1.0"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	SS/SR 8 Meg x 72 3.3V ECC Gold	2	9	8 Meg x 8	TSOP	MT9LSDT872AG	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	DS/DR 16 Meg x 64 3.3V Gold	2	16	8 Meg x 8	TSOP	MT16LSDT1664AG	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	SS/SR 16 Meg x 64 3.3V Gold	2	8	16 Meg x 8	TSOP	MT8LSDT1664AG	-10EXX	2	1.375"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	DS/DR 16 Meg x 72 3.3V ECC Gold	2	18	8 Meg x 8	TSOP	MT18LSDT1672AG	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	SS/SR 16 Meg x 72 3.3V ECC Gold	2	9	16 Meg x 8	TSOP	MT9LSDT1672AG	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	SS/SR 16 Meg x 72 3.3V ECC Gold	2	5	16 Meg x 16	TSOP	MT5LSDT1672AG	-133XX	3	1.0"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	3		133	Now	Now
256MB	DS/DR 32 Meg x 64 3.3V Gold	2	16	16 Meg x 8	TSOP	MT16LSDT3264AG	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
256MB	DS/DR 32 Meg x 72 3.3V ECC Gold	2	18	16 Meg x 8	TSOP	MT18LSDT3272AG	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
256MB	DS/DR 32 Meg x 64 3.3V Gold	2	8	32 Meg x 8	TSOP	MT8LSDT3264AG	-133XX	3	1.125"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	3		133	Now	Now
512MB	DS/DR 64 Meg x 72 3.3V ECC Gold	2	9	32 Meg x 8	TSOP	MT9LSDT3272AG	-133XX	3	1.125"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	3		133	Now	Now
512MB	DS/DR 64 Meg x 64 3.3V Gold	2	16	32 Meg x 8	TSOP	MT16LSDT6464AG	-133XX	3	1.125"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	3		133	Now	Now
1GB	DS/DR 64 Meg x 72 3.3V ECC Gold	2	18	32 Meg x 8	TSOP	MT18LSDT6472AG	-133XX	3	1.125"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	3		133	Now	Now
1GB	SS/SR 128 Meg x 64 3.3V Gold	2	16	64 Meg x 8	TSOP	MT16LSDT12864AG	-133XX	3	1.375"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	2		133	Now	Now
1GB	SS/SR 128 Meg x 72 3.3V ECC Gold	2	18	64 Meg x 8	TSOP	MT18LSDT12872AG	-133XX	2	1.375"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	2		133	Now	Now
<b>168-pin DIMM Registered</b>												
64MB	SS/SR 8 Meg x 72 3.3V ECC Gold	2	9	8 Meg x 8	TSOP	MT9LSDT872G	-10EXX	2	1.125"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	DS/DR 16 Meg x 72 3.3V ECC Gold	2	18	16 Meg x 4	TSOP	MT18LSDT1672G	-10EXX	2	1.20"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
128MB	SS/SR 16 Meg x 72 3.3V ECC Gold	2	9	16 Meg x 8	TSOP	MT9LSDT1672G	-10EXX	2	1.50"	100	Now	Now
							-133XX	3		133	Now	Now
							-13EXX	2		133	Now	Now
256MB	DS/DR 32 Meg x 72 3.3V ECC Gold	2	9	32 Meg x 8	TSOP	MT9LSDT3272G	-133XX	3	1.70"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	2		133	Now	Now
512MB	DS/DR 64 Meg x 72 3.3V ECC Gold	2	18	64 Meg x 4	TSOP	MT18LSD(F)T6472G	-133XX	3	1.70" / 1.20"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	2		133	Now	Now
1GB	DS/DR 128 Meg x 72 3.3V ECC Gold	2	18	128 Meg x 4	TSOP	MT18LSDT12872G	-133XX	3	1.70"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	2		133	Now	Now
1GB	DS/DR 128 Meg x 72 3.3V ECC Gold	2	36	64 Meg x 4	FBGA	MT36LSD(F)T12872G	-133XX	3	1.70"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	2		133	Now	Now
2GB	SS/SR 256 Meg x 72 3.3V ECC Gold	2	36	128 Meg x 4	TSOP	MT36LSDT25672G	-133XX	3	1.375"	133	Now	Now
							-13EXX	2		133	Now	Now
							-13EXX	2		133	Now	Now

Note: <sup>3</sup>CS/Rank = number of chip selects per bank; <sup>4</sup>Clock Speed = MHz  
**DS** = Double-sided; **SS** = Single-sided; **DR** = Dual rank; **SR** = Single rank; **(A)** = SPD version, unbuffered; **noA** = Registered version for x72 DIMMs, 144- and 168-pin DIMMs (66 MHz/100 MHz) adhere to Intel's 4-clock SDRAM module specs (66 MHz uses -10 components, 100 MHz uses -8, 133 MHz uses -75). For 100-pin DIMMs, 100 MHz uses -10 components; adheres to JEDEC standard. **Highlighted parts are not recommended for new designs.**

For more information about nonstandard products contact Micron's Crucial

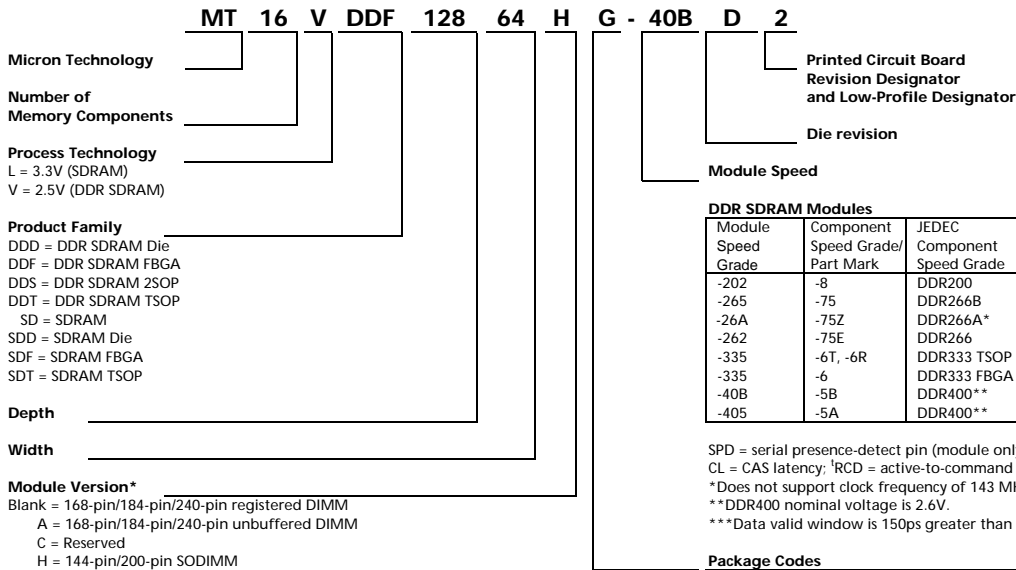




# Module Part Numbering System

The part numbering system is available at [www.micron.com/numberguide](http://www.micron.com/numberguide)

## SDR/DDR SDRAM modules



**Micron Technology**

**Number of Memory Components**

**Process Technology**  
L = 3.3V (SDRAM)  
V = 2.5V (DDR SDRAM)

**Product Family**  
DDD = DDR SDRAM Die  
DDF = DDR SDRAM FBGA  
DDS = DDR SDRAM 2SOP  
DDT = DDR SDRAM TSOP  
SD = SDRAM  
SDD = SDRAM Die  
SDF = SDRAM FBGA  
SDT = SDRAM TSOP

**Depth**

**Width**

**Module Version\***

- Blank = 168-pin/184-pin/240-pin registered DIMM
- A = 168-pin/184-pin/240-pin unbuffered DIMM
- C = Reserved
- H = 144-pin/200-pin SODIMM
- J = 200-pin registered DIMM
- LA = Low-voltage, 168-pin/184-pin unbuffered DIMM
- LH = Low-voltage, 144-pin SODIMM
- M = 208-pin registered DIMM, SPD1
- M2 = 208-pin registered DIMM, SPD2
- N = 208-pin registered PDIMM, SPD1
- N2 = 208-pin registered PDIMM, SPD2
- PH = 144-pin/200-pin unbuffered SODIMM with PLLs
- RH = 144-pin/200-pin registered SODIMM
- U = 100-pin unbuffered DIMM
- W = MicroDIMM 144-pin SDR/172-pin DDR

\*All SDRAM and DDR SDRAM DIMMs have serial-presence detect.

### SDR SDRAM Modules

Module Speed	Allowable Component Speed
-662	-8E, -75, -7E
-10C	-8E, -75, -7E
-10E	-8E, -75, -7E
-133	-75, -7E
-13E	-7E

### DDR SDRAM Modules

Module Speed	Allowable Component Speed
-202	-75, -75Z, -6T
-265	-75, -75Z, -6T
-26A	-75Z, -6T
-262	-75E
-335	-6, -6T
-40B	-5B
-405	-5A

**Printed Circuit Board Revision Designator and Low-Profile Designator**

**Die revision**

**Module Speed**

### DDR SDRAM Modules

Module Speed Grade	Component Speed Grade/Part Mark	JEDEC Component Speed Grade	Clock Frequency (MHz)	Data Rate (MT/s)	Module Bandwidth	Module Configuration SPD (CL <sup>1</sup> -RCD <sup>1</sup> -RP)
-202	-8	DDR200	100	200	PC1600	2-2-2
-265	-75	DDR266B	133	266	PC2100	2.5-3-3
-26A	-75Z	DDR266A*	133	266	PC2100	2-3-3
-262	-75E	DDR266	133	266	PC2100	2-2-2
-335	-6T, -6R	DDR333 TSOP	167	333	PC2700	2.5-3-3
-335	-6	DDR333 FBGA	167	333	PC2700	2.5-3-3***
-40B	-5B	DDR400**	200	400	PC3200	3-3-3
-405	-5A	DDR400**	200	400	PC3200	2.5-3-3

SPD = serial presence-detect pin (module only)  
CL = CAS latency; RCD = active-to-command time; RP = precharge time  
\*Does not support clock frequency of 143 MHz.  
\*\*DDR400 nominal voltage is 2.6V.  
\*\*\*Data valid window is 150ps greater than -6T.

### Package Codes

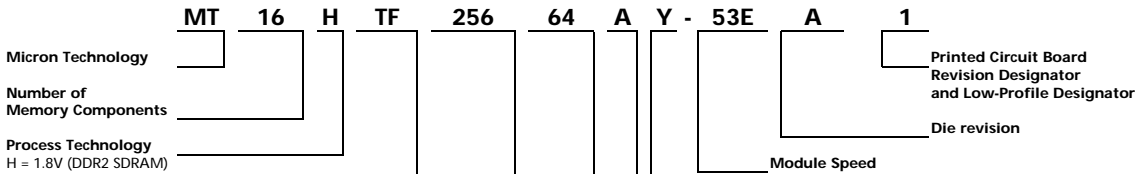
Lead-Plated Devices	Lead-Free Devices	Green	Package Descriptions
G	Y	Z	Single- or dual-rank DIMM
DG	DY	DZ	Select dual-rank DIMM
I	IY	IZ	Industrial temp (IT) DIMM
T	TY	TZ	Select dual-rank, IT DIMM



# DDR2 Module Part Numbering System

The part numbering system is available at [www.micron.com/numberguide](http://www.micron.com/numberguide)

## DDR2 SDRAM modules



### DDR2 SDRAM Modules

Module Speed Grade	Component Speed Grade/Part Mark	JEDEC Component Speed Grade	Clock Frequency (MHz)	Data Rate (MT/s)	Module Bandwidth	Module Configuration SPD (CL-'RCD-'RP)
-40E	-5E, -37E	DDR2-400	200	400	PC2-3200	3-3-3
-53E	-37E	DDR2-533	267	533	PC2-4300	4-4-4
-667	-3	DDR2-677	333	667	PC2-5300	5-5-5

SPD = serial presence-detect pin (module only)

CL = CAS latency; 'RCD = active-to-command time; 'RP = precharge time

### Package Codes

Lead-Plated Devices	Lead-Free Devices	Green Devices	Package Descriptions
G	Y	Z	Single- or dual-rank DIMM
DG	DY	DZ	Select dual-rank DIMM
I	IY	IZ	Industrial temp (IT) DIMM
T	TY	TZ	Select dual-rank, IT DIMM

