MOS Memories

Dynamic RAMs

Memory Size (bit)	Type No.	Memory Composition (Word × bit)	Access Time max. (ns)	Cycle Time min. (ns)	Refresh Cycle (cycle/ms)	Supply Voltage (V)	Power Consumption max. (mW) Operating	Power Consumption max. (mW) Stand-by	Package	Package No.	Process	Remarks
256K	MN41256A-08	262,144 × 1	80	160	256/4ms	4.5 ~ 5.5	440	16.5	DIP016-P-0300A	M8	NMOS	● Page mode
	MN41256AJ-08								QFJ018-P-R290	M32		
	MN41256AL-08								ZIP016-P-0300	M2		
	MN41257A-08	262,144 × 1	80	160	256/4ms	4.5 ~ 5.5	440	16.5	DIP016-P-0300A	M8	NMOS	● Nibble mode
	MN41257AJ-08								QFJ018-P-R290	M32		
	MN41257AL-08								ZIP016-P-0300	M2		
	MN41464A-08	65,536 × 4	80	160	256/4ms	4.5 ~ 5.5	440	16.5	DIP018-P-0300A	M8	NMOS	● Page mode
	MN41464AJ-08								QFJ018-P-R290	M32		
	MN41464AL-08								ZIP018-P-0350	M3		
	MN41464AZ-08								ZIP020-P-0400	M4		
	MN41464AS-08								SOP024-P-0425	M24		
1M	MN41C1000A-06	1,048,576 × 1	60	110	512/8ms	4.5 ~ 5.5	468	0.275 (CMOS level) / 5.5 (TTL level)	DIP018-P-0300C	M10	CMOS	● High-speed page mode
	MN41C1000A-07		70	130			440					
	MN41C1000A-08		80	150			413					
	MN41C1000AL-06		60	110			468		ZIP020-P-0400	M4		
	MN41C1000AL-07		70	130			440					
	MN41C1000AL-08		80	150			413					
	MN41C1000ASJ-06		60	110			468		SOJ026-P-0300A	M20		
	MN41C1000ASJ-07		70	130			440					
	MN41C1000ASJ-08		80	150			413					
	MN41C1000AT-06		60	110			468		TSOP020-P-0616	M33		
	MN41C1000AT-07		70	130			440					
	MN41C1000AT-08		80	150			413					
	MN41C1000ATR-06		60	110			468		TSOP020-P-0616R	M34		
	MN41C1000ATR-07		70	130			440					
	MN41C1000ATR-08		80	150			413					
	MN41C1002A-06	1,048,576 × 1	60	110	512/8ms	4.5 ~ 5.5	468	0.275 (CMOS level) / 5.5 (TTL level)	DIP018-P-0300C	M10	CMOS	● Static column mode
	MN41C1002A-07		70	130			440					
	MN41C1002A-08		80	150			413					
	MN41C1002AL-06		60	110			468		ZIP020-P-0400	M4		
	MN41C1002AL-07		70	130			440					
	MN41C1002AL-08		80	150			413					
	MN41C1002ASJ-06		60	110			468		SOJ026-P-0300A	M20		
	MN41C1002ASJ-07		70	130			440					
	MN41C1002ASJ-08		80	150			413					
	MN41C1002AT-06		60	110			468		TSOP020-P-0616	M33		
	MN41C1002AT-07		70	130			440					
	MN41C1002AT-08		80	150			413					
	MN41C1002ATR-06		60	110			468		TSOP020-P-0616R	M34		
	MN41C1002ATR-07		70	130			440					
	MN41C1002ATR-08		80	150			413					
	MN41C4256A-06	262,144 × 4	60	110	512/8ms	4.5 ~ 5.5	468	0.275 (CMOS level) / 5.5 (TTL level)	DIP018-P-0300C	M10	CMOS	● High-speed page mode
	MN41C4256A-07		70	130			440					
	MN41C4256A-08		80	150			413					
	MN41C4256AL-06		60	110			468		ZIP020-P-0400	M4		
	MN41C4256AL-07		70	130			440					
	MN41C4256AL-08		80	150			413					
	MN41C4256ASJ-06		60	110			468		SOJ026-P-0300A	M20		
	MN41C4256ASJ-07		70	130			440					
	MN41C4256ASJ-08		80	150			413					
	MN41C4256AT-06		60	110			468		TSOP020-P-0616	M33		
	MN41C4256AT-07		70	130			440					
	MN41C4256AT-08		80	150			413					
	MN41C4256ATR-06		60	110			468		TSOP020-P-0616R	M34		
	MN41C4256ATR-07		70	130			440					
	MN41C4256ATR-08		80	150			413					

■ Dynamic RAMs (continued)

Memory Size (bit)	Type No.	Memory Composition (Word × bit)	Access Time max. (ns)	Cycle Time min. (ns)	Refresh Cycle (cycle/ms)	Supply Voltage (V)	Power Consumption max. (mW) Operating	Power Consumption max. (mW) Stand-by	Package	Package No.	Process	Remarks
1M	MN41C4258A-06	262,144 × 4	60	110	512/8ms	4.5 ~ 5.5	468	0.275 (CMOS level) / 5.5 (TTL level)	DIP018-P-0300C	M10	CMOS	● Static column mode
	MN41C4258A-07		70	130			440					
	MN41C4258A-08		80	150			413					
	MN41C4258AL-06		60	110			468		ZIP020-P-0400	M4		
	MN41C4258AL-07		70	130			440					
	MN41C4258AL-08		80	150			413					
	MN41C4258ASJ-06		60	110			468		SOJ026-P-0300A	M20		
	MN41C4258ASJ-07		70	130			440					
	MN41C4258ASJ-08		80	150			413					
	MN41C4258AT-06		60	110			468		TSOP020-P-0616	M33		
	MN41C4258AT-07		70	130			440					
	MN41C4258AT-08		80	150			413					
	MN41C4258ATR-06		60	110			468		TSOP020-P-0616R	M34		
	MN41C4258ATR-07		70	130			440					
	MN41C4258ATR-08		80	150			413					
	MN42C1000A-06	1,048,576 × 1	60	110	512/64ms	4.5 ~ 5.5	468	0.275 (CMOS level) / 5.5 (TTL level)	DIP018-P-0300C	M10	CMOS	● High-speed page mode ● $\overline{CBR}$-self-refresh
	MN42C1000A-07		70	130			440					
	MN42C1000A-08		80	150			413					
	MN42C1000AL-06		60	110			468		ZIP020-P-0400	M4		
	MN42C1000AL-07		70	130			440					
	MN42C1000AL-08		80	150			413					
	MN42C1000ASJ-06		60	110			468		SOJ026-P-0300A	M20		
	MN42C1000ASJ-07		70	130			440					
	MN42C1000ASJ-08		80	150			413					
	MN42C1000AT-06		60	110			468		TSOP020-P-0616	M33		
	MN42C1000AT-07		70	130			440					
	MN42C1000AT-08		80	150			413					
	MN42C1000ATR-06		60	110			468		TSOP020-P-0616R	M34		
	MN42C1000ATR-07		70	130			440					
	MN42C1000ATR-08		80	150			413					
	MN42C4256A-06	262,144 × 4	60	110	512/64ms	4.5 ~ 5.5	468	0.275 (CMOS level) / 5.5 (TTL level)	DIP018-P-0300C	M10	CMOS	● High-speed page mode ● $\overline{CBR}$-self-refresh
	MN42C4256A-07		70	130			440					
	MN42C4256A-08		80	150			413					
	MN42C4256AL-06		60	110			468		ZIP020-P-0400	M4		
	MN42C4256AL-07		70	130			440					
	MN42C4256AL-08		80	150			413					
	MN42C4256ASJ-06		60	110			468		SOJ026-P-0300A	M20		
	MN42C4256ASJ-07		70	130			440					
	MN42C4256ASJ-08		80	150			413					
	MN42C4256AT-06		60	110			468		TSOP020-P-0616	M33		
	MN42C4256AT-07		70	130			440					
	MN42C4256AT-08		80	150			413					
	MN42C4256ATR-06		60	110			468		TSOP020-P-0616R	M34		
	MN42C4256ATR-07		70	130			440					
	MN42C4256ATR-08		80	150			413					
4M	MN414100AL-07	4,194,304 × 1	70	130	1024/16ms	4.5 ~ 5.5	550	0.275 (CMOS level) / 5.5 (TTL level)	ZIP020-P-0400	M4	CMOS	● High-speed page mode
	MN414100AL-08		80	150			495					
	MN414100ASJ-07		70	130			550		SOJ026-P-0300A	M20		
	MN414100ASJ-08		80	150			495					
	MN414100ATT-07		70	130			550		TSOP026-P-0300A	M35		
	MN414100ATT-08		80	150			495					
	MN414100ATTR-07		70	130			550		TSOP026-P-0300AR	M36		
	MN414100ATTR-08		80	150			495					
	MN414400AL-07	1,048,576 × 4	70	130	1024/16ms	4.5 ~ 5.5	550	0.275 (CMOS level) / 5.5 (TTL level)	ZIP020-P-0400	M4	CMOS	● High-speed page mode
	MN414400AL-08		80	150			495					
	MN414400ASJ-07		70	130			550		SOJ026-P-0300A	M20		
	MN414400ASJ-08		80	150			495					
	MN414400ATT-07		70	130			550		TSOP026-P-0300A	M35		
	MN414400ATT-08		80	150			495					
	MN414400ATTR-07		70	130			550		TSOP026-P-0300AR	M36		
	MN414400ATTR-08		80	150			495					

■ Dynamic RAMs (continued)

Memory Size (bit)	Type No.	Memory Composition (Word × bit)	Access Time max. (ns)	Cycle Time min. (ns)	Refresh Cycle (cycle/ms)	Supply Voltage (V)	Power Consumption max. (mW) Operating	Power Consumption max. (mW) Stand-by	Package	Package No.	Process	Remarks
4M	MN424100AL-07 MN424100AL-08	4,194,304 × 1	70 80	130 150	1024/128ms	4.5 ~ 5.5	550 495	0.275 (CMOS level)	ZIP020-P-0400	M4	CMOS	● High-speed page mode ● $\overline{CBR}$-self-refresh
	MN424100ASJ-07 MN424100ASJ-08		70 80	130 150			550 495		SOJ026-P-0300A	M20		
	MN424100ATT-07 MN424100ATT-08		70 80	130 150			550 495	5.5 (TTL level)	TSOP026-P-0300A	M35		
	MN424100ATTR-07 MN424100ATTR-08		70 80	130 150			550 495		TSOP026-P-0300AR	M36		
	MN424400AL-07 MN424400AL-08	1,048,576 × 4	70 80	130 150	1024/128ms	4.5 ~ 5.5	550 495	0.275 (CMOS level)	ZIP020-P-0400	M4	CMOS	● High-speed page mode ● $\overline{CBR}$-self-refresh
	MN424400ASJ-07 MN424400ASJ-08		70 80	130 150			550 495		SOJ026-P-0300A	M20		
	MN424400ATT-07 MN424400ATT-08		70 80	130 150			550 495	5.5 (TTL level)	TSOP026-P-0300A	M35		
	MN424400ATTR-07 MN424400ATTR-08		70 80	130 150			550 495		TSOP026-P-0300AR	M36		
	MN414170SJ-08	262,144 × 16	80	150	1024/16ms	4.5 ~ 5.5	605	2.75 (CMOS level)	SOJ040-P-0400	M23	CMOS	● 1$\overline{CAS}$/2$\overline{WE}$ ● High-speed page mode
	▲MN414170TT-08								TSOP044-P-0400A	M44		
	▲MN414170TTR-08								TSOP044-P-0400AR	M45		
	MN414260SJ-08	262,144 × 16	80	150	512/8ms	4.5 ~ 5.5	880	5.5 (TTL level)	SOJ040-P-0400	M23		● 2$\overline{CAS}$/1$\overline{WE}$ ● High-speed page mode
	▲MN414260TT-08								TSOP044-P-0400A	M44		
	▲MN414260TTR-08								TSOP044-P-0400AR	M45		
	MN414270SJ-08	262,144 × 16	80	150	512/8ms	4.5 ~ 5.5	880		SOJ040-P-0400	M23		● 1$\overline{CAS}$/2$\overline{WE}$ ● High-speed page mode
	▲MN414270TT-08								TSOP044-P-0400A	M44		
	▲MN414270TTR-08								TSOP044-P-0400AR	M45		
	MN424170SJ-08	262,144 × 16	80	150	1024/128ms	4.5 ~ 5.5	605	0.275 (CMOS level)	SOJ040-P-0400	M23	CMOS	● 1$\overline{CAS}$/2$\overline{WE}$ ● High-speed page mode ● $\overline{CBR}$-self-refresh
	▲MN424170TT-08								TSOP044-P-0400A	M44		
	▲MN424170TTR-08								TSOP044-P-0400AR	M45		
	MN424260SJ-08	262,144 × 16	80	150	512/64ms	4.5 ~ 5.5	880	5.5 (TTL level)	SOJ040-P-0400	M23		● 2$\overline{CAS}$/1$\overline{WE}$ ● High-speed page mode
	▲MN424260TT-08								TSOP044-P-0400A	M44		
	▲MN424260TTR-08								TSOP044-P-0400AR	M45		● $\overline{CBR}$-self-refresh
	MN424270SJ-08	262,144 × 16	80	150	512/64ms	4.5 ~ 5.5	880		SOJ040-P-0400	M23		● 1$\overline{CAS}$/2$\overline{WE}$ ● High-speed page mode
	▲MN424270TT-08								TSOP044-P-0400A	M44		
	▲MN424270TTR-08								TSOP044-P-0400AR	M45		● $\overline{CBR}$-self-refresh
	▲MN41V4400SJ-06 ▲MN41V4400SJ-07 ▲MN41V4400SJ-08	1,048,576 × 4	60 70 80	110 130 150	1024/16ms	3.0 ~ 3.6	288 252 216	0.18 (CMOS level)	SOJ026-P-0300A	M20	CMOS	● High-speed page mode
	▲MN41V4400TT-06 ▲MN41V4400TT-07 ▲MN41V4400TT-08		60 70 80	110 130 150			288 252 216		TSOP026-P-0300A	M35		
	▲MN41V4400TTR-06 ▲MN41V4400TTR-07 ▲MN41V4400TTR-08		60 70 80	110 130 150			288 252 216		TSOP026-P-0300AR	M36		
	▲MN41V4800SJ-06 ▲MN41V4800SJ-07 ▲MN41V4800SJ-08	524,288 × 8	60 70 80	110 130 150	1024/16ms	3.0 ~ 3.6	288 252 216	0.18 (CMOS level)	SOJ028-P-0400	M21	CMOS	● High-speed page mode ● $\overline{CAS}$ before $\overline{RAS}$-self-refresh
	▲MN41V4800TT-06 ▲MN41V4800TT-07 ▲MN41V4800TT-08		60 70 80	110 130 150			288 252 216		TSOP028-P-0400	M37		
	▲MN41V4800TTR-06 ▲MN41V4800TTR-07 ▲MN41V4800TTR-08		60 70 80	110 130 150			288 252 216		TSOP028-P-0400R	M38		

▲ Under development

(Package Symbol) DIP = Dual-In-Line Plastic Package, ZIP = Zigzag-In-Line Plastic Package
SOJ = Small-Outline J-Bend Package, TSOP = Thin Small Outline Package, SOW = Small Outline Package (Wide-type), VSOP = Very Short Pitch Small Outline Package, QFP = Quad Flat Package

MOS Memories

■ Dynamic RAMs (continued)

Memory Size (bit)	Type No.	Memory Composition (Word × bit)	Access Time max. (ns)	Cycle Time min. (ns)	Refresh Cycle (cycle/ms)	Supply Voltage (V)	Power Consumption max. (mW)		Package		Process	Remarks
							Operating	Stand-by		No.		
4M	▲MN42V4400SJ-06	1,048,576 × 4	60	110	1024/16ms	3.0 ~ 3.6	288	0.18 (CMOS level)	SOJ026-P-0300A	M20	CMOS	● High-speed page mode ● $\overline{CBR}$-self-refresh
	▲MN42V4400SJ-07		70	130			252					
	▲MN42V4400SJ-08		80	150			216					
	▲MN42V4400TT-06		60	110			288		TSOP026-P-0300A	M35		
	▲MN42V4400TT-07		70	130			252					
	▲MN42V4400TT-08		80	150			216					
	▲MN42V4400TTR-06		60	110			288		TSOP026-P-0300AR	M36		
	▲MN42V4400TTR-07		70	130			252					
	▲MN42V4400TTR-08		80	150			216					
	▲MN42V4800SJ-06	524,288 × 8	60	110	1024/16ms	3.0 ~ 3.6	288	0.18 (CMOS level)	SOJ028-P-0400	M21	CMOS	● High-speed page mode ● $\overline{CBR}$-self-refresh
	▲MN42V4800SJ-07		70	130			252					
	▲MN42V4800SJ-08		80	150			216					
	▲MN42V4800TT-06		60	110			288		TSOP028-P-0400	M37		
	▲MN42V4800TT-07		70	130			252					
	▲MN42V4800TT-08		80	150			216					
	▲MN42V4800TTR-06		60	110			288		TSOP028-P-0400R	M38		
	▲MN42V4800TTR-07		70	130			252					
	▲MN42V4800TTR-08		80	150			216					
16M	MN4116100SJ-08	16,777,216 × 1	80	150	4096/64ms	4.5 ~ 5.5	522.5	11 (TTL level)	SOJ028-P-0400A	M22	CMOS	● High-speed page mode
	MN4116100TT-08								TSOP028-P-0400A	M39		
	MN4116100TTR-08								TSOP028-P-0400AR	M40		
	MN4116400SJ-08	4,194,304 × 4	80	150	4096/64ms	4.5 ~ 5.5	522.5	1.1 (CMOS level)	SOJ028-P-0400A	M22	CMOS	● High-speed page mode
	MN4116400TT-08								TSOP028-P-0400A	M39		
	MN4116400TTR-08								TSOP028-P-0400AR	M40		
	MN4117100SJ-08	16,777,216 × 1	80	150	2048/32ms	4.5 ~ 5.5	687.5	11 (TTL level)	SOJ028-P-0400A	M22	CMOS	● High-speed page mode
	MN4117100TT-08								TSOP028-P-0400A	M39		
	MN4117100TTR-08								TSOP028-P-0400AR	M40		
	MN4117400SJ-08	4,194,304 × 4	80	150	2048/32ms	4.5 ~ 5.5	687.5	1.1 (CMOS level)	SOJ028-P-0400A	M22	CMOS	● High-speed page mode
	MN4117400TT-08								TSOP028-P-0400A	M39		
	▲MN4117400TTR-08								TSOP028-P-0400AR	M40		
	▲MN41V16100SJ-05	16,777,216 × 1	50	90	4096/64ms	3.0 ~ 3.6	288	1.8	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN41V16100SJ-06		60	110			252					
	▲MN41V16100SJ-07		70	130			216					
	▲MN41V16100SJ-08		80	150			180					
	▲MN41V16400SJ-05	4,194,304 × 4	50	90	4096/64ms	3.0 ~ 3.6	288	1.8	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN41V16400SJ-06		60	110			252					
	▲MN41V16400SJ-07		70	130			216					
	▲MN41V16400SJ-08		80	150			180					
	▲MN41V17100SJ-05	16,777,216 × 1	50	90	2048/32ms	3.0 ~ 3.6	468	1.8	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN41V17100SJ-06		60	110			396					
	▲MN41V17100SJ-07		70	130			324					
	▲MN41V17100SJ-08		80	150			288					
	▲MN41V17400SJ-05	4,194,304 × 4	50	90	2048/32ms	3.0 ~ 3.6	468	1.8	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN41V17400SJ-06		60	110			396					
	▲MN41V17400SJ-07		70	130			324					
	▲MN41V17400SJ-08		80	150			288					

▲ Under development

(Package Symbol) DIC = Dual-In-Line Ceramic Package, DIP = Dual-In-Line Plastic Package, SOW = Small Outline Package (Wide Type),
SOJ = Small Outline J-Bend Package, SOP = Small Outline Package, TSOP = Thin Small Outline Package

■ Dynamic RAMs (continued)

Memory Size (bit)	Type No.	Memory Composition (Word × bit)	Access Time max. (ns)	Cycle Time min. (ns)	Refresh Cycle (cycle/ms)	Supply Voltage (V)	Power Consumption max. (mW)		Package		Process	Remarks
							Operating	Stand-by		No.		
16M	▲MN42V16100SJ-05	16,777,216 × 1	50	90	4096/256ms	3.0 ~ 3.6	288	0.36	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN42V16100SJ-06		60	110			252					
	▲MN42V16100SJ-07		70	130			216					
	▲MN42V16100SJ-08		80	150			180					
	▲MN42V16400SJ-05	4,194,304 × 4	50	90	4096/256ms	3.0 ~ 3.6	288	0.36	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN42V16400SJ-06		60	110			252					
	▲MN42V16400SJ-07		70	130			216					
	▲MN42V16400SJ-08		80	150			180					
	▲MN42V17100SJ-05	16,777,216 × 1	50	90	2048/256ms	3.0 ~ 3.6	468	0.36	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN42V17100SJ-06		60	110			396					
	▲MN42V17100SJ-07		70	130			324					
	▲MN42V17100SJ-08		80	150			288					
	▲MN42V17400SJ-05	4,194,304 × 4	50	90	2048/256ms	3.0 ~ 3.6	468	0.36	SOJ026-P-0300B	M19	CMOS	● High-speed page mode
	▲MN42V17400SJ-06		60	110			396					
	▲MN42V17400SJ-07		70	130			324					
	▲MN42V17400SJ-08		80	150			288					

▲ Under development

(Package Symbol) DIC = Dual-In-Line Ceramic Package, DIP = Dual-In-Line Plastic Package, SOW = Small Outline Package (Wide Type),
SOJ = Small Outline J-Bend Package, SOP = Small Outline Package, TSOP = Thin Small Outline Package