

SEMICONDUCTOR GENERAL CATALOG

Memories and Storage Devices

NAND Flash Memory

NAND Flash Memory

SLC Small Block

Capacity	Part Number	Page Size (bit)	Block Size (bit)	Access Time		Program/Erase Time (typ.)		Power Supply (V)	Operating Temperature (°C)	Package
				Serial cycle (min) (ns)	1st access (max) (µs)	Program Time (ms)	Block Erase Time (ms)			
512 Mbits	TC58DVM92A5TA00	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
512 Mbits	TC58DVM92A5TAI0	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
512 Mbits	TC58DVM92A5BAJ3	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	2.7 to 3.6	-40 to 85	P-TFPGA63-0813-0.80AZ
512 Mbits	TC58DYM92A5TA00	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	1.70 to 1.95	0 to 70	TSOP I 48-P-1220-0.50
512 Mbits	TC58DYM92A5TAI0	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	1.70 to 1.95	-40 to 85	TSOP I 48-P-1220-0.50
512 Mbits	TC58DYM92A5BAJ3	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	1.70 to 1.95	-40 to 85	P-TFPGA63-0813-0.80AZ
1 Gbits	TC58DVG02A5TA00	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
1 Gbits	TC58DVG02A5TAI0	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
1 Gbits	TC58DVG02A5BAJ4	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	2.7 to 3.6	-40 to 85	P-TFPGA63-0911-0.80CZ
1 Gbits	TC58DYG02A5TA00	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	1.70 to 1.95	0 to 70	TSOP I 48-P-1220-0.50
1 Gbits	TC58DYG02A5TAI0	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	1.70 to 1.95	-40 to 85	TSOP I 48-P-1220-0.50
1 Gbits	TC58DYG02A5BAJ4	(512 + 16) x 8	(16K + 512) x 8	40	25	0.3	2.5	1.70 to 1.95	-40 to 85	P-TFPGA63-0911-0.80CZ

• Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

SLC Large Block Middle Capacity

Capacity	Part Number	Page Size (bit)	Block Size (bit)	Access Time		Program/Erase Time (typ.)		Power Supply (V)	Operating Temperature (°C)	Package
				Serial cycle (min) (ns)	1st access (max) (µs)	Program Time (ms)	Block Erase Time (ms)			
512 Mbits	TC58NVM9S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
512 Mbits	TC58NVM9S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
512 Mbits	TC58NVM9S3EBAI3	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	-40 to 85	P-TFPGA63-0813-0.80AZ
512 Mbits	TC58NYM9S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	0 to 70	TSOP I 48-P-1220-0.50
512 Mbits	TC58NYM9S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	-40 to 85	TSOP I 48-P-1220-0.50
512 Mbits	TC58NYM9S3EBAI3	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	-40 to 85	P-TFPGA63-0813-0.80AZ
1 Gbits	TC58NVG0S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
1 Gbits	TC58NVG0S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
1 Gbits	TC58NVG0S3EBAI4	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	-40 to 85	P-TFPGA63-0911-0.80CZ
1 Gbits	TC58NYG0S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	0 to 70	TSOP I 48-P-1220-0.50
1 Gbits	TC58NYG0S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	-40 to 85	TSOP I 48-P-1220-0.50
1 Gbits	TC58NYG0S3EBAI4	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	-40 to 85	P-TFPGA63-0911-0.80CZ
2 Gbits	TC58NVG1S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
2 Gbits	TC58NVG1S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
2 Gbits	TC58NVG1S3EBAI5	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	2.7 to 3.6	-40 to 85	P-TFPGA63-1013-0.80AZ
2 Gbits	TC58NYG1S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	0 to 70	TSOP I 48-P-1220-0.50
2 Gbits	TC58NYG1S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	-40 to 85	TSOP I 48-P-1220-0.50
2 Gbits	TC58NYG1S3EBAI5	(2048 + 64) x 8	(128K + 4K) x 8	25	25	0.3	2.5	1.70 to 1.95	-40 to 85	P-TFPGA63-1013-0.80AZ
4 Gbits	TC58NVG2S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	30	0.3	2.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
4 Gbits	TC58NVG2S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	30	0.3	2.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
4 Gbits	TC58NVG2S3EBAI5	(2048 + 64) x 8	(128K + 4K) x 8	25	30	0.3	2.5	2.7 to 3.6	-40 to 85	P-TFPGA63-1013-0.80AZ
4 Gbits	TC58NYG2S3ETA00	(2048 + 64) x 8	(128K + 4K) x 8	25	30	0.3	2.5	1.70 to 1.95	0 to 70	TSOP I 48-P-1220-0.50
4 Gbits	TC58NYG2S3ETAI0	(2048 + 64) x 8	(128K + 4K) x 8	25	30	0.3	2.5	1.70 to 1.95	-40 to 85	TSOP I 48-P-1220-0.50
4 Gbits	TC58NYG2S3EBAI5	(2048 + 64) x 8	(128K + 4K) x 8	25	30	0.3	2.5	1.70 to 1.95	-40 to 85	P-TFPGA63-1013-0.80AZ

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SLC Large Capacity (Block Size: 256 K)

Capacity	Part Number	Page Size (bit)	Block Size (bit)	Access Time		Program/Erase Time (typ.)		Power Supply (V)	Operating Temperature (°C)	Package
				Serial cycle (min) (ns)	1st access (max) (µs)	Program Time (ms)	Block Erase Time (ms)			
8 Gbits	TC58DVG3S0ETA00	(4096 + 128) x 8	(256K + 8K) x 8	25	30	0.4	3	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
8 Gbits	TC58DVG3S0ETA10	(4096 + 128) x 8	(256K + 8K) x 8	25	30	0.4	3	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
16 Gbits	TH58DVG4S0ETA20	(4096 + 128) x 8	(256K + 8K) x 8	25	30	0.4	3	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
16 Gbits	TH58DVG4S0ETA0	(4096 + 128) x 8	(256K + 8K) x 8	25	30	0.4	3	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
32 Gbits	TH58DVG5S0ETA20	(4096 + 128) x 8	(256K + 8K) x 8	25	30	0.4	3	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
32 Gbits	TH58DVG5S0ETA0	(4096 + 128) x 8	(256K + 8K) x 8	25	30	0.4	3	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
8 Gbits	TC58NVG3S0FTA00 **	(4096 + 232) x 8	(256K + 14.5K) x 8	25	30	0.3	3	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
8 Gbits	TC58NVG3S0FTA10 **	(4096 + 232) x 8	(256K + 14.5K) x 8	25	30	0.3	3	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
16 Gbits	TH58NVG4S0FTA20 **	(4096 + 232) x 8	(256K + 14.5K) x 8	25	30	0.3	3	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
16 Gbits	TH58NVG4S0FTA0 **	(4096 + 232) x 8	(256K + 14.5K) x 8	25	30	0.3	3	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
32 Gbits	TH58NVG5S0FTA20 **	(4096 + 232) x 8	(256K + 14.5K) x 8	25	30	0.3	3	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
32 Gbits	TH58NVG5S0FTA0 **	(4096 + 232) x 8	(256K + 14.5K) x 8	25	30	0.3	3	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50

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SLC Large Capacity (Block Size: 512 K)

Capacity	Part Number	Page Size (bit)	Block Size (bit)	Access Time		Program/Erase Time (typ.)		Power Supply (V)	Operating Temperature (°C)	Package
				Serial cycle (min) (ns)	1st access (max) (µs)	Program Time (ms)	Block Erase Time (ms)			
16 Gbits	TC58NVG4S2ELA48	(8192 + 376) x 8	(512K + 23.5K) x 8	25	50	0.35	5	2.7 to 3.6	0 to 70	P-TLGA52-1418-1.00AZ
16 Gbits	TC58NVG4S2ELAM8	(8192 + 376) x 8	(512K + 23.5K) x 8	25	50	0.35	5	2.7 to 3.6	-40 to 85	P-TLGA52-1418-1.00AZ
32 Gbits	TH58NVG5S2ELA48	(8192 + 376) x 8	(512K + 23.5K) x 8	25	50	0.35	5	2.7 to 3.6	0 to 70	P-TLGA52-1418-1.00AZ
32 Gbits	TH58NVG5S2ELAM8	(8192 + 376) x 8	(512K + 23.5K) x 8	25	50	0.35	5	2.7 to 3.6	-40 to 85	P-TLGA52-1418-1.00AZ
64 Gbits	TH58NVG6S2ELA48	(8192 + 376) x 8	(512K + 23.5K) x 8	25	50	0.35	5	2.7 to 3.6	0 to 70	P-TLGA52-1418-1.00AZ
64 Gbits	TH58NVG6S2ELAM8	(8192 + 376) x 8	(512K + 23.5K) x 8	25	50	0.35	5	2.7 to 3.6	-40 to 85	P-TLGA52-1418-1.00AZ
16 Gbits	TC58NVG4S2FTA00 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
16 Gbits	TC58NVG4S2FTA10 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
32 Gbits	TH58NVG5S2FTA20 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
32 Gbits	TH58NVG5S2FTA0 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
64 Gbits	TH58NVG6S2FTA20 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
64 Gbits	TH58NVG6S2FTA0 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50
128 Gbits	TH58NVG7S2FTA30 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
128 Gbits	TH58NVG7S2FTA0 **	(8192 + 576) x 8	(512K + 36K) x 8	25	45	0.4	3.5	2.7 to 3.6	-40 to 85	TSOP I 48-P-1220-0.50

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SLC toggle

Capacity	Part Number	Page Size (bit)	Block Size (bit)	Access Time		Program/Erase Time (typ.)		Power Supply (V)	I/O Port Power Supply (V)	Operating Temperature (°C)	Package
				Serial cycle (min) (ns)	1st access (max) (µs)	Program Time (ms)	Block Erase Time (ms)				
32 Gbits	TH58TVG5S2FBA49 **	(8192 + 576) x 8	(512K + 36K) x 8	15	45	0.4	3.5	2.7 to 3.6	2.7 to 3.6	0 to 70	P-FBGA132-1218-1.00BZ
64 Gbits	TH58TVG6S2FBA89 **	(8192 + 576) x 8	(512K + 36K) x 8	15	45	0.4	3.5	2.7 to 3.6	2.7 to 3.6	0 to 70	P-FBGA132-1218-1.00BZ
128 Gbits	TH58TVG7S2FBA89 **	(8192 + 576) x 8	(512K + 36K) x 8	15	45	0.4	3.5	2.7 to 3.6	2.7 to 3.6	0 to 70	P-FBGA132-1218-1.00BZ
32 Gbits	TH58TAG5S2FBA49 **	(8192 + 576) x 8	(512K + 36K) x 8	15	45	0.4	3.5	2.7 to 3.6	1.70 to 1.95	0 to 70	P-FBGA132-1218-1.00BZ
64 Gbits	TH58TAG6S2FBA89 **	(8192 + 576) x 8	(512K + 36K) x 8	15	45	0.4	3.5	2.7 to 3.6	1.70 to 1.95	0 to 70	P-FBGA132-1218-1.00BZ
128 Gbits	TH58TAG7S2FBA89 **	(8192 + 576) x 8	(512K + 36K) x 8	15	45	0.4	3.5	2.7 to 3.6	1.70 to 1.95	0 to 70	P-FBGA132-1218-1.00BZ

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** : Under development

e-MMC™*1

The e-MMC series has an interface compatible with the JEDEC/MMCA V4.4/4.41 high-speed memory card standard, which simplifies its use as an embedded MMC memory in end products.

Capacity	Part Number	e-MMC Version	Speed (MHz)	Power Supply		Operating Temperature (°C)	Package
				Vcc (V)	VccQ (V)		
2 GBytes	THGBM3G4D1FB8AI8 *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA153-1113-0.50B4
4 GBytes	THGBM3G5D2FB8AI8 *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA169-1216-0.50A4
8 GBytes	THGBM2G6D2FB8AI9	4.4	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA169-1216-0.50A4
16 GBytes	THGBM2G7D4FB8AI9	4.4	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA169-1216-0.50A4
32 GBytes	THGBM2G8D8FB8AI8	4.4	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-FBGA169-1216-0.50B4
64 GBytes	THGBM2G9D8FB8AIF	4.4	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-FBGA237-1722-0.50A4
128 GBytes	THGBM2T0DBF8AIF	4.4	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-FBGA237-1722-0.50A4

*: New product

Capacity	Part Number	e-MMC Version	Speed (MHz)	Power Supply		Operating Temperature (°C)	Package
				Vcc (V)	VccQ (V)		
2 GBytes	THGBM4G4D1HB8AIR *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA153-1113-0.50-002
4 GBytes	THGBM4G5D1HB8AIR *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA153-1113-0.50-002
8 GBytes	THGBM4G6D2HB8AIR *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA153-1113-0.50-002
16 GBytes	THGBM4G7D2GB8AIE *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA169-1216-0.50A4
32 GBytes	THGBM4G8D4GB8AIE *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA169-1216-0.50A4
64 GBytes	THGBM4G9D8GB8AII *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-TFBGA169-1418-0.50A4
128 GBytes	THGBM4T0DBG8BAIJ *	4.41	52	2.7 to 3.6	1.7 to 1.95, 2.7 to 3.6	-25 to 85	P-FBGA169-1418-0.50A4

• e-MMC™ is the trademark of JEDEC/MMCA.

*: New product

*1: NAND flash memories with an integrated controller, which supports error correction, wear leveling, bad block management and so on. This eliminates the need for external control specifically required for NAND flash and simplifies use of eSD.

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SmartNAND™

Capacity	Part Number	Page Size (bit)	CE & Ready/Busy Signals	Power Supply (V)	Operating Temperature (°C)	Package
4 GBytes	THGVR1G5D1HTA00	8K	1 & 1	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50
8 GBytes	THGVR1G6D1GTA00	8K	1 & 1	2.7 to 3.6	0 to 70	TSOP I 48-P-1220-0.50C
8 GBytes	THGVR1G6D1GLA09 **	8K	1 & 1	2.7 to 3.6	0 to 70	P-TLGA52-1418-1.00CZ
16 GBytes	THGVR1G7D2GLA09	8K	2 & 2	2.7 to 3.6	0 to 70	P-TLGA52-1418-1.00CZ
32 GBytes	THGVR1G8D4GLA09	8K	2 & 2	2.7 to 3.6	0 to 70	P-TLGA52-1418-1.00CZ
64 GBytes	THGVR1G9D8GLA09 **	8K	2 & 2	2.7 to 3.6	0 to 70	P-TLGA52-1418-1.00CZ

• SmartNAND™ is the trademark of TOSHIBA CORPORATION.

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