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MACRONIX
INTERNATIONAL Co., LTD.

MX29GL640E T/B
MX29GL640E H/L

MX29GL640E T/B, MX29GL640E H/L

DATASHEET

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SINGLE VOLTAGE 3V ONLY FLASH MEMORY

FEATURES

GENERAL FEATURES

- Power Supply Operation
 - 2.7 to 3.6 volt for read, erase, and program operations
 - V I/O voltage must tight with VCC
 - $V_{I/O}=V_{CC}=2.7V\sim 3.6V$
- Byte/Word mode switchable
 - 8,388,608 x 8 / 4,194,304 x 16
- Sector architecture
 - MX29GL640E T/B: 127 x 32Kword(64KB) + 8 x 4Kword(8KB) boot sector
 - MX29GL640E H/L: 128 x 32Kword(64KB) Uniform sector
- 16-byte/8-word page read buffer
- 32-byte/16-word write buffer
- Extra 128-word sector for security
 - Features factory locked and identifiable, and customer lockable
- Advanced sector protection function (Solid and Password Protect)
- Latch-up protected to 100mA from -1V to 1.5xVcc
- Low Vcc write inhibit : $V_{cc} \leq V_{LKO}$
- Compatible with JEDEC standard
 - Pinout and software compatible to single power supply Flash
- Deep power down mode

PERFORMANCE

- High Performance
 - Fast access time: 70ns
 - Page access time: 25ns
 - Fast program time: 10us/word
 - Fast erase time: 0.5s/sector (typical)
- Low Power Consumption
 - Low active read current: 10mA (typical) at 5MHz
 - Low standby current: 20uA (typical)
- Typical 100,000 erase/program cycle
- 20 years data retention

SOFTWARE FEATURES

- Program/Erase Suspend & Program/Erase Resume
 - Suspends sector erase operation to read data from or program data to another sector which is not being erased
 - Suspends sector program operation to read data from another sector which is not being program
- Status Reply
 - Data# Polling & Toggle bits provide detection of program and erase operation completion
- Support Common Flash Interface (CFI)

HARDWARE FEATURES

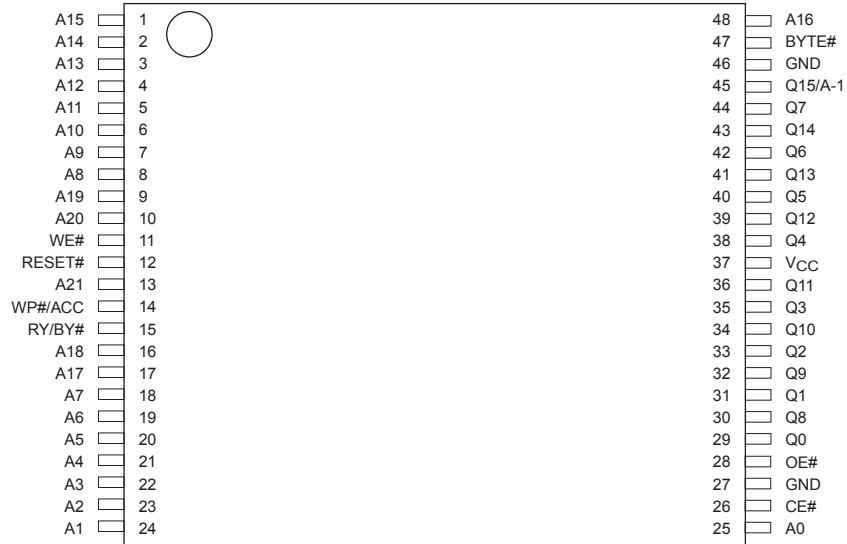
- Ready/Busy# (RY/BY#) Output
 - Provides a hardware method of detecting program and erase operation completion
- Hardware Reset (RESET#) Input
 - Provides a hardware method to reset the internal state machine to read mode
- WP#/ACC input pin
 - Hardware write protect pin/Provides accelerated program capability
 - MX29GL640E T/B: Protect Top or Bottom two sectors if WP#/ACC=Vil
 - MX29GL640E H/L: Protect first or last sector if WP#/ACC=Vil

PACKAGE

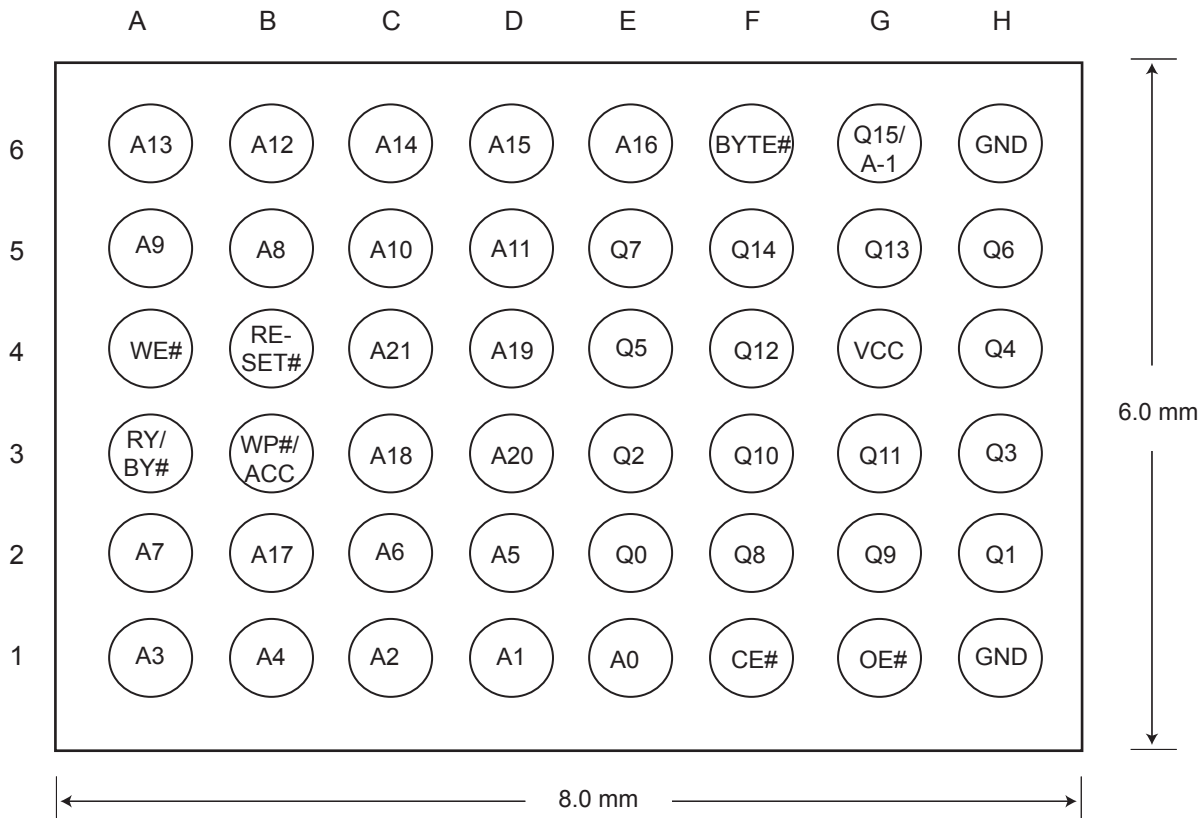
- MX29GL640E T/B
 - 48-pin TSOP
 - 48-ball LFBGA (6x8mm)
- MX29GL640E H/L
 - 56-pin TSOP
 - 64-ball LFBGA (11x13mm)
- **All devices are RoHS Compliant and Halogen-free**

PIN CONFIGURATION for MX29GL640E T/B

48 TSOP

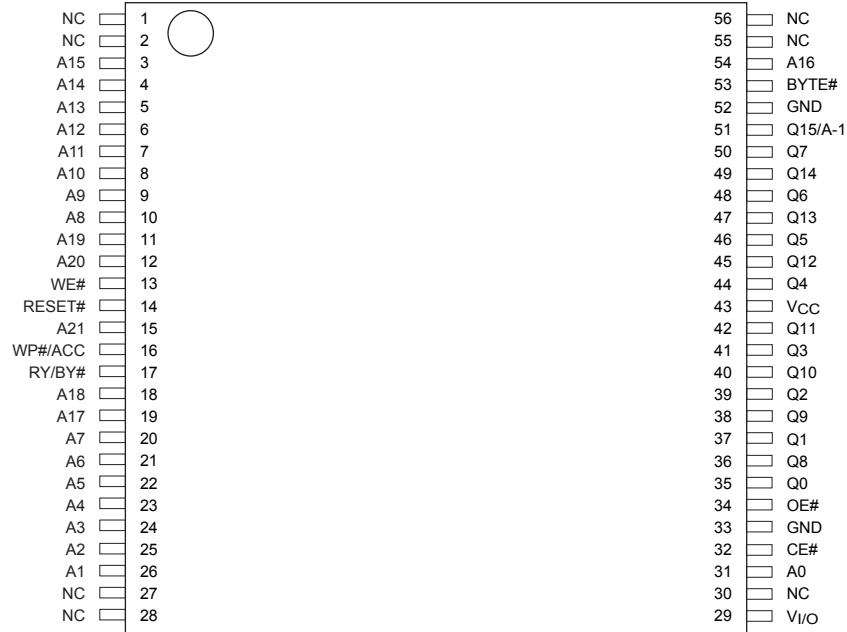


48 LFBGA

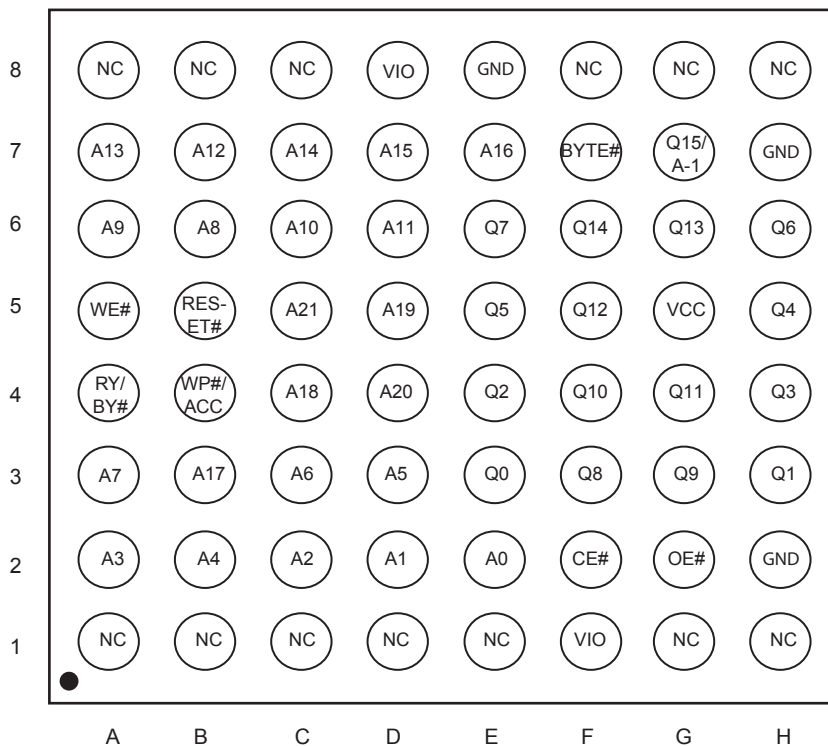


PIN CONFIGURATION for MX29GL640E H/L

56 TSOP



64 LFBGA



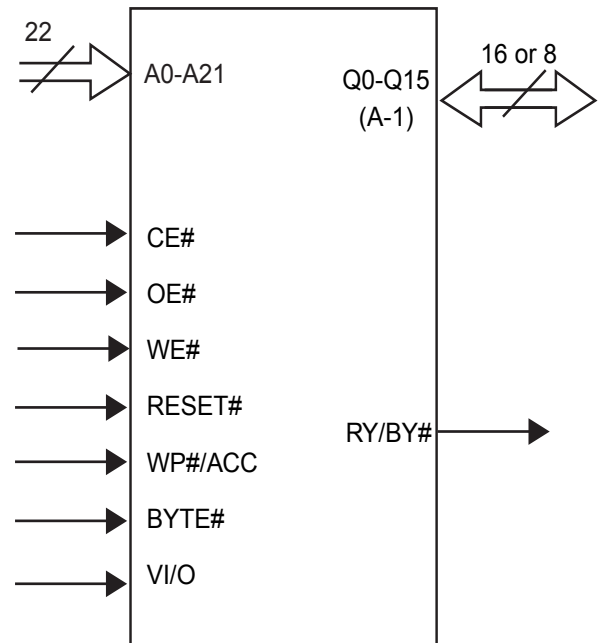
PIN DESCRIPTION

SYMBOL	PIN NAME
A0~A21	Address Input
Q0~Q14	Data Inputs/Outputs
Q15/A-1	Q15(Word Mode)/LSB addr(Byte Mode)
CE#	Chip Enable Input
WE#	Write Enable Input
OE#	Output Enable Input
RESET#	Hardware Reset Pin, Active Low
WP#/ACC*	Hardware Write Protect/Programming Acceleration input
RY/BY#	Read/Busy Output
BYTE#	Selects 8 bits or 16 bits mode
VCC	+3.0V single power supply
GND	Device Ground
NC	Pin Not Connected Internally
VI/O	Power Supply for Input/Output

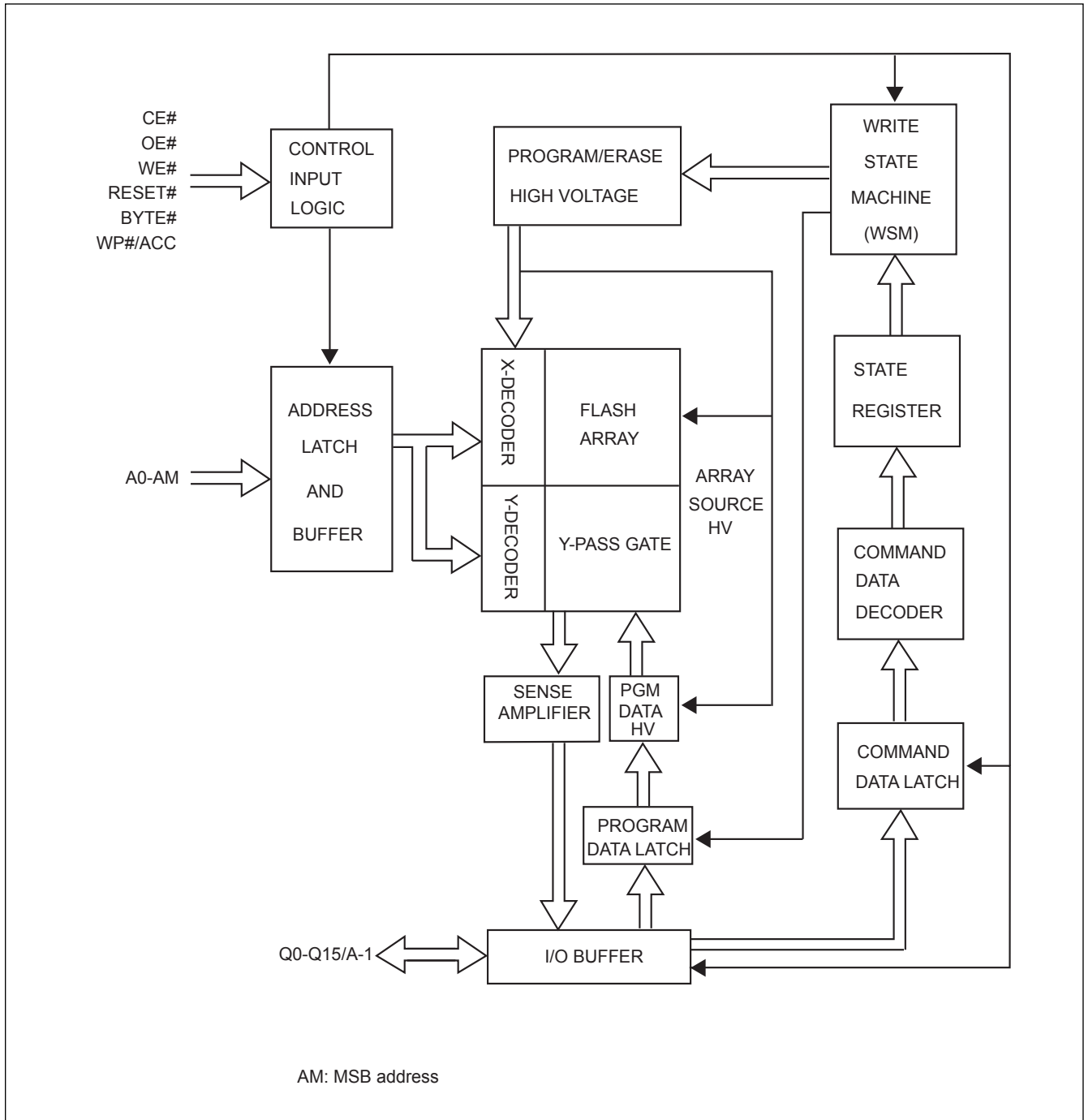
Notes:

1. WP#/ACC has internal pull up.
2. VI/O voltage must tight with VCC.
VI/O = VCC =2.7V~3.6V.

LOGIC SYMBOL



BLOCK DIAGRAM



BLOCK DIAGRAM DESCRIPTION

The [block diagram](#) illustrates a simplified architecture of this device. Each block in the block diagram represents one or more circuit modules in the real chip used to access, erase, program, and read the memory array.

The "CONTROL INPUT LOGIC" block receives input pins CE#, OE#, WE#, RESET#, BYTE#, and WP#/ACC. It creates internal timing control signals according to the input pins and outputs to the "ADDRESS LATCH AND BUFFER" to latch the external address pins A0-AM. The internal addresses are output from this block to the main array and decoders composed of "X-DECODER", "Y-DECODER", "Y-PASS GATE", AND "FLASH ARRAY". The X-DECODER decodes the word-lines of the flash array, while the Y-DECODER decodes the bit-lines of the flash array. The bit lines are electrically connected to the "SENSE AMPLIFIER" and "PGM DATA HV" selectively through the Y-PASS GATES. SENSE AMPLIFIERS are used to read out the contents of the flash memory, while the "PGM DATA HV" block is used to selectively deliver high power to bit-lines during programming. The "I/O BUFFER" controls the input and output on the Q0-Q15/A-1 pads. During read operation, the I/O BUFFER receives data from SENSE AMPLIFIERS and drives the output pads accordingly. In the last cycle of program command, the I/O BUFFER transmits the data on Q0-Q15/A-1 to "PROGRAM DATA LATCH", which controls the high power drivers in "PGM DATA HV" to selectively program the bits in a word or byte according to the user input pattern.

The "PROGRAM/ERASE HIGH VOLTAGE" block comprises the circuits to generate and deliver the necessary high voltage to the X-DECODER, FLASH ARRAY, and "PGM DATA HV" blocks. The logic control module comprises of the "WRITE STATE MACHINE, WSM", "STATE REGISTER", "COMMAND DATA DECODER", and "COMMAND DATA LATCH". When the user issues a command by toggling WE#, the command on Q0-A15/A-1 is latched in the COMMAND DATA LATCH and is decoded by the COMMAND DATA DECODER. The STATE REGISTER receives the command and records the current state of the device. The WSM implements the internal algorithms for program or erase according to the current command state by controlling each block in the block diagram.

ARRAY ARCHITECTURE

The main flash memory array can be organized as Byte mode (x8) or Word mode (x16). The details of the address ranges and the corresponding sector addresses are shown in [Table 1](#).



BLOCK STRUCTURE

Table 1-1. MX29GL640ET SECTOR ARCHITECTURE

Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA0	000000xxx	000000h-00FFFFh	000000h-07FFFFh
64	32	SA1	0000001xxx	010000h-01FFFFh	008000h-0FFFFh
64	32	SA2	0000010xxx	020000h-02FFFFh	010000h-17FFFFh
64	32	SA3	0000011xxx	030000h-03FFFFh	018000h-01FFFFh
64	32	SA4	0000100xxx	040000h-04FFFFh	020000h-027FFFh
64	32	SA5	0000101xxx	050000h-05FFFFh	028000h-02FFFFh
64	32	SA6	0000110xxx	060000h-06FFFFh	030000h-037FFFh
64	32	SA7	0000111xxx	070000h-07FFFFh	038000h-03FFFFh
64	32	SA8	0001000xxx	080000h-08FFFFh	040000h-047FFFh
64	32	SA9	0001001xxx	090000h-09FFFFh	048000h-04FFFFh
64	32	SA10	0001010xxx	0A0000h-0AFFFFh	050000h-057FFFh
64	32	SA11	0001011xxx	0B0000h-0BFFFFh	058000h-05FFFFh
64	32	SA12	0001100xxx	0C0000h-0CFFFFh	060000h-067FFFh
64	32	SA13	0001101xxx	0D0000h-0DFFFFh	068000h-06FFFFh
64	32	SA14	0001110xxx	0E0000h-0EFFFFh	070000h-077FFFh
64	32	SA15	0001111xxx	0F0000h-0FFFFFh	078000h-07FFFFh
64	32	SA16	0010000xxx	100000h-10FFFFh	080000h-087FFFh
64	32	SA17	0010001xxx	110000h-11FFFFh	088000h-08FFFFh
64	32	SA18	0010010xxx	120000h-12FFFFh	090000h-097FFFh
64	32	SA19	0010011xxx	130000h-13FFFFh	098000h-09FFFFh
64	32	SA20	0010100xxx	140000h-14FFFFh	0A0000h-0A7FFFh
64	32	SA21	0010101xxx	150000h-15FFFFh	0A8000h-0AFFFFh
64	32	SA22	0010110xxx	160000h-16FFFFh	0B0000h-0B7FFFh
64	32	SA23	0010111xxx	170000h-17FFFFh	0B8000h-0BFFFFh
64	32	SA24	0011000xxx	180000h-18FFFFh	0C0000h-0C7FFFh
64	32	SA25	0011001xxx	190000h-19FFFFh	0C8000h-0CFFFFh
64	32	SA26	0011010xxx	1A0000h-1AFFFFh	0D0000h-0D7FFFh
64	32	SA27	0011011xxx	1B0000h-1BFFFFh	0D8000h-0DFFFFh
64	32	SA28	0011100xxx	1C0000h-1CFFFFh	0E0000h-0E7FFFh
64	32	SA29	0011101xxx	1D0000h-1DFFFFh	0E8000h-0EFFFFh
64	32	SA30	0011110xxx	1E0000h-1EFFFFh	0F0000h-0F7FFFh
64	32	SA31	0011111xxx	1F0000h-1FFFFFh	0F8000h-0FFFFFh
64	32	SA32	0100000xxx	200000h-20FFFFh	100000h-107FFFh
64	32	SA33	0100001xxx	210000h-21FFFFh	108000h-10FFFFh
64	32	SA34	0100010xxx	220000h-22FFFFh	110000h-117FFFh
64	32	SA35	0100011xxx	230000h-23FFFFh	118000h-11FFFFh
64	32	SA36	0100100xxx	240000h-24FFFFh	120000h-127FFFh
64	32	SA37	0100101xxx	250000h-25FFFFh	128000h-12FFFFh
64	32	SA38	0100110xxx	260000h-26FFFFh	130000h-137FFFh
64	32	SA39	0100111xxx	270000h-27FFFFh	138000h-13FFFFh



Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA40	0101000xxx	280000h-28FFFFh	140000h-147FFFh
64	32	SA41	0101001xxx	290000h-29FFFFh	148000h-14FFFFh
64	32	SA42	0101010xxx	2A0000h-2AFFFFh	150000h-157FFFh
64	32	SA43	0101011xxx	2B0000h-2BFFFFh	158000h-15FFFFh
64	32	SA44	0101100xxx	2C0000h-2CFFFFh	160000h-147FFFh
64	32	SA45	0101101xxx	2D0000h-2DFFFFh	168000h-14FFFFh
64	32	SA46	0101110xxx	2E0000h-2EFFFFh	170000h-177FFFh
64	32	SA47	0101111xxx	2F0000h-2FFFFFh	178000h-17FFFFh
64	32	SA48	0110000xxx	300000h-30FFFFh	180000h-187FFFh
64	32	SA49	0110001xxx	310000h-31FFFFh	188000h-18FFFFh
64	32	SA50	0110010xxx	320000h-32FFFFh	190000h-197FFFh
64	32	SA51	0110011xxx	330000h-33FFFFh	198000h-19FFFFh
64	32	SA52	0110100xxx	340000h-34FFFFh	1A0000h-1A7FFFh
64	32	SA53	0110101xxx	350000h-35FFFFh	1A8000h-1AFFFFh
64	32	SA54	0110110xxx	360000h-36FFFFh	1B0000h-1B7FFFh
64	32	SA55	0110111xxx	370000h-37FFFFh	1B8000h-1BFFFFh
64	32	SA56	0111000xxx	380000h-38FFFFh	1C0000h-1C7FFFh
64	32	SA57	0111001xxx	390000h-39FFFFh	1C8000h-1CFFFFh
64	32	SA58	0111010xxx	3A0000h-3AFFFFh	1D0000h-1D7FFFh
64	32	SA59	0111011xxx	3B0000h-3BFFFFh	1D8000h-1DFFFFh
64	32	SA60	0111100xxx	3C0000h-3CFFFFh	1E0000h-1E7FFFh
64	32	SA61	0111101xxx	3D0000h-3DFFFFh	1E8000h-1EFFFFh
64	32	SA62	0111110xxx	3E0000h-3EFFFFh	1F0000h-1F7FFFh
64	32	SA63	0111111xxx	3F0000h-3FFFFFh	1F8000h-1FFFFFh
64	32	SA64	1000000xxx	400000h-40FFFFh	200000h-207FFFh
64	32	SA65	1000001xxx	410000h-41FFFFh	208000h-20FFFFh
64	32	SA66	1000010xxx	420000h-42FFFFh	210000h-217FFFh
64	32	SA67	1000011xxx	430000h-43FFFFh	218000h-21FFFFh
64	32	SA68	1000100xxx	440000h-44FFFFh	220000h-227FFFh
64	32	SA69	1000101xxx	450000h-45FFFFh	228000h-22FFFFh
64	32	SA70	1000110xxx	460000h-46FFFFh	230000h-237FFFh
64	32	SA71	1000111xxx	470000h-47FFFFh	238000h-23FFFFh
64	32	SA72	1001000xxx	480000h-48FFFFh	240000h-247FFFh
64	32	SA73	1001001xxx	490000h-49FFFFh	248000h-24FFFFh
64	32	SA74	1001010xxx	4A0000h-4AFFFFh	250000h-257FFFh
64	32	SA75	1001011xxx	4B0000h-4BFFFFh	258000h-25FFFFh
64	32	SA76	1001100xxx	4C0000h-4CFFFFh	260000h-247FFFh
64	32	SA77	1001101xxx	4D0000h-4DFFFFh	268000h-24FFFFh
64	32	SA78	1001110xxx	4E0000h-4EFFFFh	270000h-277FFFh
64	32	SA79	1001111xxx	4F0000h-4FFFFFh	278000h-27FFFFh
64	32	SA80	1010000xxx	500000h-50FFFFh	280000h-287FFFh
64	32	SA81	1010001xxx	510000h-51FFFFh	288000h-28FFFFh
64	32	SA82	1010010xxx	520000h-52FFFFh	290000h-297FFFh



Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA83	1010011xxx	530000h-53FFFFh	298000h-29FFFFh
64	32	SA84	1010100xxx	540000h-54FFFFh	2A0000h-2A7FFFh
64	32	SA85	1010101xxx	550000h-55FFFFh	2A8000h-2AFFFFh
64	32	SA86	1010110xxx	560000h-56FFFFh	2B0000h-2B7FFFh
64	32	SA87	1010111xxx	570000h-57FFFFh	2B8000h-2BFFFFh
64	32	SA88	1011000xxx	580000h-58FFFFh	2C0000h-2C7FFFh
64	32	SA89	1011001xxx	590000h-59FFFFh	2C8000h-2CFFFFh
64	32	SA90	1011010xxx	5A0000h-5AFFFFh	2D0000h-2D7FFFh
64	32	SA91	1011011xxx	5B0000h-5BFFFFh	2D8000h-2DFFFFh
64	32	SA92	1011100xxx	5C0000h-5CFFFFh	2E0000h-2E7FFFh
64	32	SA93	1011101xxx	5D0000h-5DFFFFh	2E8000h-2EFFFFh
64	32	SA94	1011110xxx	5E0000h-5EFFFFh	2F0000h-2F7FFFh
64	32	SA95	1011111xxx	5F0000h-5FFFFFh	2F8000h-2FFFFFh
64	32	SA96	1100000xxx	600000h-60FFFFh	300000h-307FFFh
64	32	SA97	1100001xxx	610000h-61FFFFh	308000h-30FFFFh
64	32	SA98	1100010xxx	620000h-62FFFFh	310000h-317FFFh
64	32	SA99	1100011xxx	630000h-63FFFFh	318000h-31FFFFh
64	32	SA100	1100100xxx	640000h-64FFFFh	320000h-327FFFh
64	32	SA101	1100101xxx	650000h-65FFFFh	328000h-32FFFFh
64	32	SA102	1100110xxx	660000h-66FFFFh	330000h-337FFFh
64	32	SA103	1100111xxx	670000h-67FFFFh	338000h-33FFFFh
64	32	SA104	1101000xxx	680000h-68FFFFh	340000h-347FFFh
64	32	SA105	1101001xxx	690000h-69FFFFh	348000h-34FFFFh
64	32	SA106	1101010xxx	6A0000h-6AFFFFh	350000h-357FFFh
64	32	SA107	1101011xxx	6B0000h-6BFFFFh	358000h-35FFFFh
64	32	SA108	1101100xxx	6C0000h-6CFFFFh	360000h-347FFFh
64	32	SA109	1101101xxx	6D0000h-6DFFFFh	368000h-34FFFFh
64	32	SA110	1101110xxx	6E0000h-6EFFFFh	370000h-377FFFh
64	32	SA111	1101111xxx	6F0000h-6FFFFFh	378000h-37FFFFh
64	32	SA112	1110000xxx	700000h-70FFFFh	380000h-387FFFh
64	32	SA113	1110001xxx	710000h-71FFFFh	388000h-38FFFFh
64	32	SA114	1110010xxx	720000h-72FFFFh	390000h-397FFFh
64	32	SA115	1110011xxx	730000h-73FFFFh	398000h-39FFFFh
64	32	SA116	1110100xxx	740000h-74FFFFh	3A0000h-3A7FFFh
64	32	SA117	1110101xxx	750000h-75FFFFh	3A8000h-3AFFFFh
64	32	SA118	1110110xxx	760000h-76FFFFh	3B0000h-3B7FFFh
64	32	SA119	1110111xxx	770000h-77FFFFh	3B8000h-3BFFFFh
64	32	SA120	1111000xxx	780000h-78FFFFh	3C0000h-3C7FFFh
64	32	SA121	1111001xxx	790000h-79FFFFh	3C8000h-3CFFFFh
64	32	SA122	1111010xxx	7A0000h-7AFFFFh	3D0000h-3D7FFFh
64	32	SA123	1111011xxx	7B0000h-7BFFFFh	3D8000h-3DFFFFh
64	32	SA124	1111100xxx	7C0000h-7CFFFFh	3E0000h-3E7FFFh
64	32	SA125	1111101xxx	7D0000h-7DFFFFh	3E8000h-3EFFFFh



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MX29GL640E T/B MX29GL640E H/L

Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA126	1111110xxx	7E0000h-7EFFFFh	3F0000h-3F7FFFh
8	4	SA127	1111111000	7F0000h-7F1FFFh	3F8000h-3FFFFFFh
8	4	SA128	1111111001	7F2000h-7F3FFFh	3F9000h-3F9FFFh
8	4	SA129	1111111010	7F4000h-7F5FFFh	3FA000h-3FAFFFh
8	4	SA130	1111111011	7F6000h-7F7FFFh	3FB000h-3FBFFFh
8	4	SA131	1111111100	7F8000h-7F9FFFh	3FC000h-3FCFFFh
8	4	SA132	1111111101	7FA000h-7FBFFFh	3FD000h-3FDFFFh
8	4	SA133	1111111110	7FC000h-7FDFFFh	3FE000h-3FEFFFh
8	4	SA134	1111111111	7FE000h-7FFFFFFh	3FF000h-3FFFFFFh



Table 1-2. MX29GL640EB SECTOR ARCHITECTURE

Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
8	4	SA0	0000000000	000000h-001FFFh	000000h-000FFFh
8	4	SA1	0000000001	002000h-003FFFh	001000h-001FFFh
8	4	SA2	0000000010	004000h-005FFFh	002000h-002FFFh
8	4	SA3	0000000011	006000h-007FFFh	003000h-003FFFh
8	4	SA4	0000000100	008000h-009FFFh	004000h-004FFFh
8	4	SA5	0000000101	00A000h-00BFFFh	005000h-005FFFh
8	4	SA6	0000000110	00C000h-00DFFFh	006000h-006FFFh
8	4	SA7	0000000111	00E000h-00FFFFh	007000h-007FFFh
64	32	SA8	0000001xxx	010000h-01FFFFh	008000h-00FFFFh
64	32	SA9	0000010xxx	020000h-02FFFFh	010000h-017FFFh
64	32	SA10	0000011xxx	030000h-03FFFFh	018000h-01FFFFh
64	32	SA11	0000100xxx	040000h-04FFFFh	020000h-027FFFh
64	32	SA12	0000101xxx	050000h-05FFFFh	028000h-02FFFFh
64	32	SA13	0000110xxx	060000h-06FFFFh	030000h-037FFFh
64	32	SA14	0000111xxx	070000h-07FFFFh	038000h-03FFFFh
64	32	SA15	0001000xxx	080000h-08FFFFh	040000h-047FFFh
64	32	SA16	0001001xxx	090000h-09FFFFh	048000h-04FFFFh
64	32	SA17	0001010xxx	0A0000h-0AFFFFh	050000h-057FFFh
64	32	SA18	0001011xxx	0B0000h-0BFFFFh	058000h-05FFFFh
64	32	SA19	0001100xxx	0C0000h-0CFFFFh	060000h-067FFFh
64	32	SA20	0001101xxx	0D0000h-0DFFFFh	068000h-06FFFFh
64	32	SA21	0001110xxx	0E0000h-0EFFFFh	070000h-077FFFh
64	32	SA22	0001111xxx	0F0000h-0FFFFFh	078000h-07FFFFh
64	32	SA23	0010000xxx	100000h-10FFFFh	080000h-087FFFh
64	32	SA24	0010001xxx	110000h-11FFFFh	088000h-08FFFFh
64	32	SA25	0010010xxx	120000h-12FFFFh	090000h-097FFFh
64	32	SA26	0010011xxx	130000h-13FFFFh	098000h-09FFFFh
64	32	SA27	0010100xxx	140000h-14FFFFh	0A0000h-0A7FFFh
64	32	SA28	0010101xxx	150000h-15FFFFh	0A8000h-0AFFFFh
64	32	SA29	0010110xxx	160000h-16FFFFh	0B0000h-0B7FFFh
64	32	SA30	0010111xxx	170000h-17FFFFh	0B8000h-0BFFFFh
64	32	SA31	0011000xxx	180000h-18FFFFh	0C0000h-0C7FFFh
64	32	SA32	0011001xxx	190000h-19FFFFh	0C8000h-0CFFFFh
64	32	SA33	0011010xxx	1A0000h-1AFFFFh	0D0000h-0D7FFFh
64	32	SA34	0011011xxx	1B0000h-1BFFFFh	0D8000h-0DFFFFh
64	32	SA35	0011100xxx	1C0000h-1CFFFFh	0E0000h-0E7FFFh
64	32	SA36	0011101xxx	1D0000h-1DFFFFh	0E8000h-0EFFFFh
64	32	SA37	0011110xxx	1E0000h-1EFFFFh	0F0000h-0F7FFFh
64	32	SA38	0011111xxx	1F0000h-1FFFFFh	0F8000h-0FFFFFh
64	32	SA39	0100000xxx	200000h-20FFFFh	100000h-107FFFh
64	32	SA40	0100001xxx	210000h-21FFFFh	108000h-10FFFFh



Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA41	0100010xxx	220000h-22FFFFh	110000h-117FFFh
64	32	SA42	0100011xxx	230000h-23FFFFh	118000h-11FFFFh
64	32	SA43	0100100xxx	240000h-24FFFFh	120000h-127FFFh
64	32	SA44	0100101xxx	250000h-25FFFFh	128000h-12FFFFh
64	32	SA45	0100110xxx	260000h-26FFFFh	130000h-137FFFh
64	32	SA46	0100111xxx	270000h-27FFFFh	138000h-13FFFFh
64	32	SA47	0101000xxx	280000h-28FFFFh	140000h-147FFFh
64	32	SA48	0101001xxx	290000h-29FFFFh	148000h-14FFFFh
64	32	SA49	0101010xxx	2A0000h-2AFFFFh	150000h-157FFFh
64	32	SA50	0101011xxx	2B0000h-2BFFFFh	158000h-15FFFFh
64	32	SA51	0101100xxx	2C0000h-2CFFFFh	160000h-167FFFh
64	32	SA52	0101101xxx	2D0000h-2DFFFFh	168000h-16FFFFh
64	32	SA53	0101110xxx	2E0000h-2EFFFFh	170000h-177FFFh
64	32	SA54	0101111xxx	2F0000h-2FFFFFh	178000h-17FFFFh
64	32	SA55	0110000xxx	300000h-30FFFFh	180000h-187FFFh
64	32	SA56	0110001xxx	310000h-31FFFFh	188000h-18FFFFh
64	32	SA57	0110010xxx	320000h-32FFFFh	190000h-197FFFh
64	32	SA58	0110011xxx	330000h-33FFFFh	198000h-19FFFFh
64	32	SA59	0110100xxx	340000h-34FFFFh	1A0000h-1A7FFFh
64	32	SA60	0110101xxx	350000h-35FFFFh	1A8000h-1AFFFFh
64	32	SA61	0110110xxx	360000h-36FFFFh	1B0000h-1B7FFFh
64	32	SA62	0110111xxx	370000h-37FFFFh	1B8000h-1BFFFFh
64	32	SA63	0111000xxx	380000h-38FFFFh	1C0000h-1C7FFFh
64	32	SA64	0111001xxx	390000h-39FFFFh	1C8000h-1CFFFFh
64	32	SA65	0111010xxx	3A0000h-3AFFFFh	1D0000h-1D7FFFh
64	32	SA66	0111011xxx	3B0000h-3BFFFFh	1D8000h-1DFFFFh
64	32	SA67	0111100xxx	3C0000h-3CFFFFh	1E0000h-1E7FFFh
64	32	SA68	0111101xxx	3D0000h-3DFFFFh	1E8000h-1EFFFFh
64	32	SA69	0111110xxx	3E0000h-3EFFFFh	1F0000h-1F7FFFh
64	32	SA70	0111111xxx	3F0000h-3FFFFFh	1F8000h-1FFFFFh
64	32	SA71	1000000xxx	400000h-40FFFFh	200000h-207FFFh
64	32	SA72	1000001xxx	410000h-41FFFFh	208000h-20FFFFh
64	32	SA73	1000010xxx	420000h-42FFFFh	210000h-217FFFh
64	32	SA74	1000011xxx	430000h-43FFFFh	218000h-21FFFFh
64	32	SA75	1000100xxx	440000h-44FFFFh	220000h-227FFFh
64	32	SA76	1000101xxx	450000h-45FFFFh	228000h-22FFFFh
64	32	SA77	1000110xxx	460000h-46FFFFh	230000h-237FFFh
64	32	SA78	1000111xxx	470000h-47FFFFh	238000h-23FFFFh
64	32	SA79	1001000xxx	480000h-48FFFFh	240000h-247FFFh
64	32	SA80	1001001xxx	490000h-49FFFFh	248000h-24FFFFh
64	32	SA81	1001010xxx	4A0000h-4AFFFFh	250000h-257FFFh
64	32	SA82	1001011xxx	4B0000h-4BFFFFh	258000h-25FFFFh



Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA83	1001100xxx	4C0000h-4CFFFFh	260000h-267FFFh
64	32	SA84	1001101xxx	4D0000h-4DFFFFh	268000h-26FFFFh
64	32	SA85	1001110xxx	4E0000h-4EFFFFh	270000h-277FFFh
64	32	SA86	1001111xxx	4F0000h-4FFFFFFh	278000h-27FFFFh
64	32	SA87	1010000xxx	500000h-50FFFFh	280000h-287FFFh
64	32	SA88	1010001xxx	510000h-51FFFFh	288000h-28FFFFh
64	32	SA89	1010010xxx	520000h-52FFFFh	290000h-297FFFh
64	32	SA90	1010011xxx	530000h-53FFFFh	298000h-29FFFFh
64	32	SA91	1010100xxx	540000h-54FFFFh	2A0000h-2A7FFFh
64	32	SA92	1010101xxx	550000h-55FFFFh	2A8000h-2AFFFFh
64	32	SA93	1010110xxx	560000h-56FFFFh	2B0000h-2B7FFFh
64	32	SA94	1010111xxx	570000h-57FFFFh	2B8000h-2BFFFFh
64	32	SA95	1011000xxx	580000h-58FFFFh	2C0000h-2C7FFFh
64	32	SA96	1011001xxx	590000h-59FFFFh	2C8000h-2CFFFFh
64	32	SA97	1011010xxx	5A0000h-5AFFFFh	2D0000h-2D7FFFh
64	32	SA98	1011011xxx	5B0000h-5BFFFFh	2D8000h-2DFFFFh
64	32	SA99	1011100xxx	5C0000h-5CFFFFh	2E0000h-2E7FFFh
64	32	SA100	1011101xxx	5D0000h-5DFFFFh	2E8000h-2EFFFFh
64	32	SA101	1011110xxx	5E0000h-5EFFFFh	2F0000h-2F7FFFh
64	32	SA102	1011111xxx	5F0000h-5FFFFFFh	2F8000h-2FFFFFFh
64	32	SA103	1100000xxx	600000h-60FFFFh	300000h-307FFFh
64	32	SA104	1100001xxx	610000h-61FFFFh	308000h-30FFFFh
64	32	SA105	1100010xxx	620000h-62FFFFh	310000h-317FFFh
64	32	SA106	1100011xxx	630000h-63FFFFh	318000h-31FFFFh
64	32	SA107	1100100xxx	640000h-64FFFFh	320000h-327FFFh
64	32	SA108	1100101xxx	650000h-65FFFFh	328000h-32FFFFh
64	32	SA109	1100110xxx	660000h-66FFFFh	330000h-337FFFh
64	32	SA110	1100111xxx	670000h-67FFFFh	338000h-33FFFFh
64	32	SA111	1101000xxx	680000h-68FFFFh	340000h-347FFFh
64	32	SA112	1101001xxx	690000h-69FFFFh	348000h-34FFFFh
64	32	SA113	1101010xxx	6A0000h-6AFFFFh	350000h-357FFFh
64	32	SA114	1101011xxx	6B0000h-6BFFFFh	358000h-35FFFFh
64	32	SA115	1101100xxx	6C0000h-6CFFFFh	360000h-367FFFh
64	32	SA116	1101101xxx	6D0000h-6DFFFFh	368000h-36FFFFh
64	32	SA117	1101110xxx	6E0000h-6EFFFFh	370000h-377FFFh
64	32	SA118	1101111xxx	6F0000h-6FFFFFFh	378000h-37FFFFh
64	32	SA119	1110000xxx	700000h-70FFFFh	380000h-387FFFh
64	32	SA120	1110001xxx	710000h-71FFFFh	388000h-38FFFFh
64	32	SA121	1110010xxx	720000h-72FFFFh	390000h-397FFFh
64	32	SA122	1110011xxx	730000h-73FFFFh	398000h-39FFFFh
64	32	SA123	1110100xxx	740000h-74FFFFh	3A0000h-3A7FFFh
64	32	SA124	1110101xxx	750000h-75FFFFh	3A8000h-3AFFFFh



Sector Size		Sector	Sector Address A21-A12	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA125	1110110xxx	760000h-76FFFFh	3B0000h-3B7FFFh
64	32	SA126	1110111xxx	770000h-77FFFFh	3B8000h-3BFFFFh
64	32	SA127	1111000xxx	780000h-78FFFFh	3C0000h-3C7FFFh
64	32	SA128	1111001xxx	790000h-79FFFFh	3C8000h-3CFFFFh
64	32	SA129	1111010xxx	7A0000h-7AFFFFh	3D0000h-3D7FFFh
64	32	SA130	1111011xxx	7B0000h-7BFFFFh	3D8000h-3DFFFFh
64	32	SA131	1111100xxx	7C0000h-7CFFFFh	3E0000h-3E7FFFh
64	32	SA132	1111101xxx	7D0000h-7DFFFFh	3E8000h-3EFFFFh
64	32	SA133	1111110xxx	7E0000h-7EFFFFh	3F0000h-3F7FFFh
64	32	SA134	1111111xxx	7F0000h-7FFFFFFh	3F8000h-3FFFFFFh



Table 1-3. MX29GL640E H/L SECTOR ARCHITECTURE

Sector Size		Sector	Sector Address A21-A15	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA0	000000	000000h-00FFFFh	000000h-007FFFh
64	32	SA1	000001	010000h-01FFFFh	008000h-00FFFFh
64	32	SA2	000010	020000h-02FFFFh	010000h-017FFFh
64	32	SA3	000011	030000h-03FFFFh	018000h-01FFFFh
64	32	SA4	0000100	040000h-04FFFFh	020000h-027FFFh
64	32	SA5	0000101	050000h-05FFFFh	028000h-02FFFFh
64	32	SA6	0000110	060000h-06FFFFh	030000h-037FFFh
64	32	SA7	0000111	070000h-07FFFFh	038000h-03FFFFh
64	32	SA8	0001000	080000h-08FFFFh	040000h-047FFFh
64	32	SA9	0001001	090000h-09FFFFh	048000h-04FFFFh
64	32	SA10	0001010	0A0000h-0AFFFFh	050000h-057FFFh
64	32	SA11	0001011	0B0000h-0BFFFFh	058000h-05FFFFh
64	32	SA12	0001100	0C0000h-0CFFFFh	060000h-067FFFh
64	32	SA13	0001101	0D0000h-0DFFFFh	068000h-06FFFFh
64	32	SA14	0001110	0E0000h-0EFFFFh	070000h-077FFFh
64	32	SA15	0001111	0F0000h-0FFFFFh	078000h-07FFFFh
64	32	SA16	0010000	100000h-10FFFFh	080000h-087FFFh
64	32	SA17	0010001	110000h-11FFFFh	088000h-08FFFFh
64	32	SA18	0010010	120000h-12FFFFh	090000h-097FFFh
64	32	SA19	0010011	130000h-13FFFFh	098000h-09FFFFh
64	32	SA20	0010100	140000h-14FFFFh	0A0000h-0A7FFFh
64	32	SA21	0010101	150000h-15FFFFh	0A8000h-0AFFFFh
64	32	SA22	0010110	160000h-16FFFFh	0B0000h-0B7FFFh
64	32	SA23	0010111	170000h-17FFFFh	0B8000h-0BFFFFh
64	32	SA24	0011000	180000h-18FFFFh	0C0000h-0C7FFFh
64	32	SA25	0011001	190000h-19FFFFh	0C8000h-0CFFFFh
64	32	SA26	0011010	1A0000h-1AFFFFh	0D0000h-0D7FFFh
64	32	SA27	0011011	1B0000h-1BFFFFh	0D8000h-0DFFFFh
64	32	SA28	0011100	1C0000h-1CFFFFh	0E0000h-0E7FFFh
64	32	SA29	0011101	1D0000h-1DFFFFh	0E8000h-0EFFFFh
64	32	SA30	0011110	1E0000h-1EFFFFh	0F0000h-0F7FFFh
64	32	SA31	0011111	1F0000h-1FFFFFh	0F8000h-0FFFFFh
64	32	SA32	0100000	200000h-20FFFFh	100000h-107FFFh
64	32	SA33	0100001	210000h-21FFFFh	108000h-10FFFFh
64	32	SA34	0100010	220000h-22FFFFh	110000h-117FFFh
64	32	SA35	0100011	230000h-23FFFFh	118000h-11FFFFh
64	32	SA36	0100100	240000h-24FFFFh	120000h-127FFFh
64	32	SA37	0100101	250000h-25FFFFh	128000h-12FFFFh
64	32	SA38	0100110	260000h-26FFFFh	130000h-137FFFh
64	32	SA39	0100111	270000h-27FFFFh	138000h-13FFFFh
64	32	SA40	0101000	280000h-28FFFFh	140000h-147FFFh
64	32	SA41	0101001	290000h-29FFFFh	148000h-14FFFFh
64	32	SA42	0101010	2A0000h-2AFFFFh	150000h-157FFFh



Sector Size		Sector	Sector Address A21-A15	(x8) Address Range	(x16) Address Range
Kbytes	Kwords				
64	32	SA43	0101011	2B0000h-2BFFFFh	158000h-15FFFFh
64	32	SA44	0101100	2C0000h-2CFFFFh	160000h-167FFFh
64	32	SA45	0101101	2D0000h-2DFFFFh	168000h-16FFFFh
64	32	SA46	0101110	2E0000h-2EFFFFh	170000h-177FFFh
64	32	SA47	0101111	2F0000h-2FFFFFFh	178000h-17FFFFh
64	32	SA48	0110000	300000h-30FFFFh	180000h-187FFFh
64	32	SA49	0110001	310000h-31FFFFh	188000h-18FFFFh
64	32	SA50	0110010	320000h-32FFFFh	190000h-197FFFh
64	32	SA51	0110011	330000h-33FFFFh	198000h-19FFFFh
64	32	SA52	0110100	340000h-34FFFFh	1A0000h-1A7FFFh
64	32	SA53	0110101	350000h-35FFFFh	1A8000h-1AFFFFh
64	32	SA54	0110110	360000h-36FFFFh	1B0000h-1B7FFFh
64	32	SA55	0110111	370000h-37FFFFh	1B8000h-1BFFFFh
64	32	SA56	0111000	380000h-38FFFFh	1C0000h-1C7FFFh
64	32	SA57	0111001	390000h-39FFFFh	1C8000h-1CFFFFh
64	32	SA58	0111010	3A0000h-3AFFFFh	1D0000h-1D7FFFh
64	32	SA59	0111011	3B0000h-3BFFFFh	1D8000h-1DFFFFh
64	32	SA60	0111100	3C0000h-3CFFFFh	1E0000h-1E7FFFh
64	32	SA61	0111101	3D0000h-3DFFFFh	1E8000h-1EFFFFh
64	32	SA62	0111110	3E0000h-3EFFFFh	1F0000h-1F7FFFh
64	32	SA63	0111111	3F0000h-3FFFFFFh	1F8000h-1FFFFFFh
64	32	SA64	1000000	400000h-40FFFFh	200000h-207FFFh
64	32	SA65	1000001	410000h-41FFFFh	208000h-20FFFFh
64	32	SA66	1000010	420000h-42FFFFh	210000h-217FFFh
64	32	SA67	1000011	430000h-43FFFFh	218000h-21FFFFh
64	32	SA68	1000100	440000h-44FFFFh	220000h-227FFFh
64	32	SA69	1000101	450000h-45FFFFh	228000h-22FFFFh
64	32	SA70	1000110	460000h-46FFFFh	230000h-237FFFh
64	32	SA71	1000111	470000h-47FFFFh	238000h-23FFFFh
64	32	SA72	1001000	480000h-48FFFFh	240000h-247FFFh
64	32	SA73	1001001	490000h-49FFFFh	248000h-24FFFFh
64	32	SA74	1001010	4A0000h-4AFFFFh	250000h-257FFFh
64	32	SA75	1001011	4B0000h-4BFFFFh	258000h-25FFFFh
64	32	SA76	1001100	4C0000h-4CFFFFh	260000h-267FFFh
64	32	SA77	1001101	4D0000h-4DFFFFh	268000h-26FFFFh
64	32	SA78	1001110	4E0000h-4EFFFFh	270000h-277FFFh
64	32	SA79	1001111	4F0000h-4FFFFFFh	278000h-27FFFFh
64	32	SA80	1010000	500000h-50FFFFh	280000h-287FFFh
64	32	SA81	1010001	510000h-51FFFFh	288000h-28FFFFh
64	32	SA82	1010010	520000h-52FFFFh	290000h-297FFFh
64	32	SA83	1010011	530000h-53FFFFh	298000h-29FFFFh
64	32	SA84	1010100	540000h-54FFFFh	2A0000h-2A7FFFh
64	32	SA85	1010101	550000h-55FFFFh	2A8000h-2AFFFFh



Sector Size		Sector	Sector Address A21-A15	(x8)	(x16)
Kbytes	Kwords			Address Range	Address Range
64	32	SA86	1010110	560000h-56FFFFh	2B0000h-2B7FFFh
64	32	SA87	1010111	570000h-57FFFFh	2B8000h-2BFFFFh
64	32	SA88	1011000	580000h-58FFFFh	2C0000h-2C7FFFh
64	32	SA89	1011001	590000h-59FFFFh	2C8000h-2CFFFFh
64	32	SA90	1011010	5A0000h-5AFFFFh	2D0000h-2D7FFFh
64	32	SA91	1011011	5B0000h-5BFFFFh	2D8000h-2DFFFFh
64	32	SA92	1011100	5C0000h-5CFFFFh	2E0000h-2E7FFFh
64	32	SA93	1011101	5D0000h-5DFFFFh	2E8000h-2EFFFFh
64	32	SA94	1011110	5E0000h-5EFFFFh	2F0000h-2F7FFFh
64	32	SA95	1011111	5F0000h-5FFFFFh	2F8000h-2FFFFFh
64	32	SA96	1100000	600000h-60FFFFh	300000h-307FFFh
64	32	SA97	1100001	610000h-61FFFFh	308000h-30FFFFh
64	32	SA98	1100010	620000h-62FFFFh	310000h-317FFFh
64	32	SA99	1100011	630000h-63FFFFh	318000h-31FFFFh
64	32	SA100	1100100	640000h-64FFFFh	320000h-327FFFh
64	32	SA101	1100101	650000h-65FFFFh	328000h-32FFFFh
64	32	SA102	1100110	660000h-66FFFFh	330000h-337FFFh
64	32	SA103	1100111	670000h-67FFFFh	338000h-33FFFFh
64	32	SA104	1101000	680000h-68FFFFh	340000h-347FFFh
64	32	SA105	1101001	690000h-69FFFFh	348000h-34FFFFh
64	32	SA106	1101010	6A0000h-6AFFFFh	350000h-357FFFh
64	32	SA107	1101011	6B0000h-6BFFFFh	358000h-35FFFFh
64	32	SA108	1101100	6C0000h-6CFFFFh	360000h-367FFFh
64	32	SA109	1101101	6D0000h-6DFFFFh	368000h-36FFFFh
64	32	SA110	1101110	6E0000h-6EFFFFh	370000h-377FFFh
64	32	SA111	1101111	6F0000h-6FFFFFh	378000h-37FFFFh
64	32	SA112	1110000	700000h-70FFFFh	380000h-387FFFh
64	32	SA113	1110001	710000h-71FFFFh	388000h-38FFFFh
64	32	SA114	1110010	720000h-72FFFFh	390000h-397FFFh
64	32	SA115	1110011	730000h-73FFFFh	398000h-39FFFFh
64	32	SA116	1110100	740000h-74FFFFh	3A0000h-3A7FFFh
64	32	SA117	1110101	750000h-75FFFFh	3A8000h-3AFFFFh
64	32	SA118	1110110	760000h-76FFFFh	3B0000h-3B7FFFh
64	32	SA119	1110111	770000h-77FFFFh	3B8000h-3BFFFFh
64	32	SA120	1111000	780000h-78FFFFh	3C0000h-3C7FFFh
64	32	SA121	1111001	790000h-79FFFFh	3C8000h-3CFFFFh
64	32	SA122	1111010	7A0000h-7AFFFFh	3D0000h-3D7FFFh
64	32	SA123	1111011	7B0000h-7BFFFFh	3D8000h-3DFFFFh
64	32	SA124	1111100	7C0000h-7CFFFFh	3E0000h-3E7FFFh
64	32	SA125	1111101	7D0000h-7DFFFFh	3E8000h-3EFFFFh
64	32	SA126	1111110	7E0000h-7EFFFFh	3F0000h-3F7FFFh
64	32	SA127	1111111	7F0000h-7FFFFFh	3F8000h-3FFFFFh

BUS OPERATION

Table 2-1. BUS OPERATION

Mode Select	RE-SET#	CE#	WE#	OE#	Address (Note4)	Data I/O Q7~Q0	Byte#		WP#/ACC
							Vil	Vih	
							Data (I/O) Q15~Q8		
Device Reset	L	X	X	X	X	HighZ	HighZ	HighZ	L/H
Standby Mode	$V_{CC} \pm 0.3V$	$V_{CC} \pm 0.3V$	X	X	X	HighZ	HighZ	HighZ	H
Output Disable	H	L	H	H	X	HighZ	HighZ	HighZ	L/H
Read Mode	H	L	H	L	AIN	DOUT	Q8-Q14=	DOUT	L/H
Write	H	L	L	H	AIN	DIN	HighZ,	DIN	Note1,2
Accelerate Program	H	L	L	H	AIN	DIN	Q15=A1	DIN	Vhv

Notes:

- MX29GL640E T/B: Protect Top or Bottom two sectors if WP#/ACC=Vil.
MX29GL640E H/L: Protect first or last sector if WP#/ACC=Vil.
- When WP#/ACC = Vih, the protection conditions of the outmost sector depends on previous protection conditions. Refer to the advanced protect feature.
- Q0~Q15 are input (DIN) or output (DOUT) pins according to the requests of command sequence, sector protection, or data polling algorithm.
- In Word Mode (Byte#=Vih), the addresses are AM to A0, AM: MSB of address.
In Byte Mode (Byte#=Vil), the addresses are AM to A-1 (Q15), AM: MSB of address.

Table 2-2. BUS OPERATION

Item	Control Input			AM to A12	A11 to A10	A9 V _{hv}	A8 to A7	A6	A5 to A4	A3 to A2	A1	A0	Q7 ~ Q0	Q15 ~ Q8
	CE#	WE#	OE#											
Sector Lock Status Verification	L	H	L	SA	X	V _{hv}	X	L	X	L	H	L	01h or 00h (Note 1)	X
Read Silicon ID Manufacturer Code	L	H	L	X	X	V _{hv}	X	L	X	L	L	L	C2H	X
Read Silicon ID -- MX29GL640E T/B														
Cycle 1	L	H	L	X	X	V _{hv}	X	L	X	L	L	H	7EH	22H(Word), XXH(Byte)
Cycle 2	L	H	L	X	X	V _{hv}	X	L	X	H	H	L	10H	22H(Word), XXH(Byte)
Cycle 3	L	H	L	X	X	V _{hv}	X	L	X	H	H	H	01H (Top) 00H (Bottom)	22H(Word), XXH(Byte)
Read Silicon ID -- MX29GL640E H/L														
Cycle 1	L	H	L	X	X	V _{hv}	X	L	X	L	L	H	7EH	22H(Word), XXH(Byte)
Cycle 2	L	H	L	X	X	V _{hv}	X	L	X	H	H	L	0CH	22H(Word), XXH(Byte)
Cycle 3	L	H	L	X	X	V _{hv}	X	L	X	H	H	H	01H	22H(Word), XXH(Byte)

Notes:

- Sector unprotected code:00h. Sector protected code:01h.
- Factory locked code: WP# protects high address sector: 9Ah.
WP# protects low address sector: 8Ah
Factory unlocked code: WP# protects high address sector: 1Ah.
WP# protects low address sector: 0Ah
- AM: MSB of address.

FUNCTIONAL OPERATION DESCRIPTION

READ OPERATION

To perform a read operation, the system addresses the desired memory array or status register location by providing its address on the address pins and simultaneously enabling the chip by driving CE# & OE# LOW, and WE# HIGH. After the Tce and Toe timing requirements have been met, the system can read the contents of the addressed location by reading the Data (I/O) pins. If either the CE# or OE# is held HIGH, the outputs will remain tri-stated and no data will appear on the output pins.

PAGE READ

This device is able to conduct MXIC MaskROM compatible high performance page read. Page size is 16 bytes or 8 words. The higher address Amax ~ A3 select the certain page, while A2~A0 for word mode, A2~A-1 for byte mode select the particular word or byte in a page. The page access time is Taa or Tce, following by Tpa for the rest of the page read time. When CE# toggles, access time is Taa or Tce. Page mode can be turned on by keeping "page-read address" constant and changing the "intra-read page" addresses.

WRITE OPERATION

To perform a write operation, the system provides the desired address on the address pins, enables the chip by asserting CE# LOW, and disables the Data (I/O) pins by holding OE# HIGH. The system then places data to be written on the Data (I/O) pins and pulses WE# LOW. The device captures the address information on the falling edge of WE# and the data on the rising edge of WE#. To see an example, please refer to the timing diagram in [Figure 4](#). The system is not allowed to write invalid commands (commands not defined in this datasheet) to the device. Writing an invalid command may put the device in an undefined state.

DEVICE RESET

Driving the RESET# pin LOW for a period of Trp or more will return the device to Read mode. If the device is in the middle of a program or erase operation, the reset operation will take at most a period of Tready1 before the device returns to Read mode. Until the device does returns to Read mode, the RY/BY# pin will remain Low (Busy Status).

When the RESET# pin is held at GND±0.3V, the device only consumes standby (Isbr) current. However, the device draws larger current if the RESET# pin is held at a voltage greater than GND+0.3V and less than or equal to Vil.

It is recommended to tie the system reset signal to the RESET# pin of the flash memory. This allows the device to be reset with the system and puts it in a state where the system can immediately begin reading boot code from it.

STANDBY MODE

The device enters Standby mode whenever the RESET# and CE# pins are both held High except in the embedded mode. While in this mode, WE# and OE# will be ignored, all Data Output pins will be in a high impedance state, and the device will draw minimal (Isb) current.

FUNCTIONAL OPERATION DESCRIPTION (cont'd)**OUTPUT DISABLE**

While in active mode (RESET# HIGH and CE# LOW), the OE# pin controls the state of the output pins. If OE# is held HIGH, all Data (I/O) pins will remain tri-stated. If held LOW, the Byte or Word Data (I/O) pins will drive data.

BYTE/WORD SELECTION

The BYTE# input pin is used to select the organization of the array data and how the data is input/output on the Data (I/O) pins. If the BYTE# pin is held HIGH, Word mode will be selected and all 16 data lines (Q0 to Q15) will be active.

If BYTE# is forced LOW, Byte mode will be active and only data lines Q0 to Q7 will be active. Data lines Q8 to Q14 will remain in a high impedance state and Q15 becomes the A-1 address input pin.

HARDWARE WRITE PROTECT

By driving the WP#/ACC pin LOW. The Top or Bottom two sectors (for MX29GL640E T/B) and the highest or lowest sector (for MX29GL640E H/L) was protected from all erase/program operations. If WP#/ACC is held HIGH (Vih to VCC), these sectors revert to their previously protected/unprotected status.

ACCELERATED PROGRAMMING OPERATION

By applying high voltage (Vhv) to the WP#/ACC pin, the device will enter the Accelerated Programming mode. This mode permits the system to skip the normal command unlock sequences and program byte/word locations directly. During accelerated programming, the current drawn from the WP#/ACC pin is no more than ICP1.

WRITE BUFFER PROGRAMMING OPERATION

Programs 32bytes/16words in a programming operation. To trigger the Write Buffer Programming, start by the first two unlock cycles, then third cycle writes the Write Buffer Load command at the destined programming Sector Address. The forth cycle writes the "word locations subtract one" number.

Following above operations, system starts to write the mingling of address and data. After the programming of the first address or data, the "write-buffer-page" is selected. The following data should be within the above mentioned page.

The "write-buffer-page" is selected by choosing address Amax-A4.

"Write-Buffer-Page" address has to be the same for all address/ data write into the write buffer. If not, operation will ABORT.

To program the content of the write buffer page this command must be followed by a write to buffer Program confirm command.

The operation of write-buffer can be suspended or resumed by the standard commands, once the write buffer programming operation is finished, it'll return to normal READ mode.