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Except for specially designed product, Macronix' products shall not be used for applications relating to nuclear facility, military, life saving, life sustaining, aircraft, or systems where failure or malfunction may result in personal injury.

MACRONIX FLASH PRODUCT

SELECTION GUIDE





Serial NOR Flash Memory Parallel NOR Flash Memory NAND Flash Memory

JANUARY. 2012



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Macronix, the leading provider of innovative Non-Volatile Memory (NVM) semiconductor solutions, is the largest supplier of ROM products and Serial NOR Flash worldwide. The company currently produces a wide range of ROM, NOR Flash and NAND Flash memories across various densities in embedded, consumer, enterprise, wireless, and automotive applications. Flash products are also available in packages with a small footprint and thin profile for space- constrained applications.

Macronix is one of the few IDM companies worldwide with complete capabilities of Design, Manufacturing and Marketing with own Brand. Macronix dedicates itself to developing top-notch homegrown technologies and improving its manufacturing capability to offer its customers high quality products and services.

Macronix is committed to providing reliable and stable support to satisfy customers' expectation for a longlasting partnership. Macronix customers are served by efficient global logistic coverage, a dedicated service team, a dependable product roadmap, and innovative technology for next generation requirements.

Macronix has over 20 years of IDM experience with manufacturing excellence and in-house design capabilities which facilitate continuous improvement processes in all aspects of the development and production cycle. We provide high quality parts that make driving more reliable, comfortable and eco-friendly; this is our passion and common goal that we share with our customers.

Our stringent quality standards, based on the ISO 9001 philosophy, have resulted in TS16949 certification. With the mind-set of building up a responsible business, Macronix is ISO14001(Environmental Management), IECQ QC 080000(Hazardous Substances Management), and SA 8000(Social Accountability Management) certified.

Our Green Product Management system has been highly recognized by our customers, thereby, Macronix is SONY's Green Partner, and has green partnership approvals from Nintendo, Samsung, LG and Canon. All Macronix products do not use the so called "Conflict Metals" as the raw materials; and our products are ROHS compliant, Halogen-Free, Phthalate-Free, and are free of SVHC (Substances of Very High Concern). Macronix has a well- run program working with our supply chain partners to fully comply with green product



- Green Product Certifications from well-known electronics companies
- Social Accountability Management SA 8000 Certificate
- ISO 14064 GreenHouse Gases Emissions Verification



SERIAL NOR FLASH

5/06 - Standard Serial Interface Series The MX25xxx05 and MX25xxx06 series provide Standard Serial Interface x1 or x2 I/O [Single I/O or Dual I/O] at single 3V or 2.5V power-supply voltage. These products are offered with 4KB sectors and 64KB blocks, ranging from 512Kb to 64Mb density.

nique ID Series The MX25xxx08 series provides 512-bit secured area, independent from main array, to store unique ID data for system identifier. These products are offered from 16Mb to 64Mb density.

refault Lock Protection Series The default lock protection series is optimized for Parameter Protection applications. These products utilize the BP volatile protection bits to protect selected boot areas of memory against misuse of program and erase instructions in the protected area.

Multi-I/O (MXSMIO®) Flash provides two kinds of Multi-I/O interfaces. One of them is MX25xxx35 series, which offers Multi-in / Multi-out interface. The other is MX25xxx36 series, which offers Single-in / Multi-out interface.

Both series are available on Quad I/O operation which quadruples the read performance of systems for high-end consumer applications. The MX25xxx35 and MX25xxx36 families are provided from 4Mb to 256Mb.

Furthermore, the MXSMIO® Duplex family, MX25xxx45 series, offers Quad I/O interface with Double Transfer Rate (DTR) mode operation providing fast data transfer rate up to 400MHz, which makes it the fastest Serial Flash in the industry. MXSMIO® Duplex family offers 64Mb to 128Mb density with independent block lock protection on boot sector.



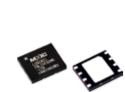
Serial Flash Function List

Device								3	V								1.	BV
Function	xx05	xx06E	xx08D	xx08E	xx25C	xx26E	xx33E	xx35D	1635E	12835E/25835E	xx36D	8036E/1636E	6436E/12836E	xx37D	xx45E	xx55E	U2033E/4033E/8033E	U1635E
H/W ACC Pin			•															
H/W Hold# Pin	•	•	•	•	•	•				•								
11/0 (1-1-1)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
11/20 (1-1-2)*		•				•				•	•	•	•					
21/0 (1-2-2)**			•	•			•	•	•	•		•		•	•	•	•	•
11/40 (1-1-4)**										•	•		•					
41/0 (1-4-4)**							•	•	•	•		•		•	•	•	•	•
QPI (4-4-4)**																		•
DTR function															•	•		
BPx Bits (NVM)	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•
BPx Bits (SRAM)					•	•												
WPSEL Mode (BPx mode individual WP mode)										•			•		•	•	•	•
Security Function (BPG, read lock)																•		
Security OTP & Register		•*	•	•			•	•	•	•	•	•	•	•	•	•	•	•
Unique ID			•	•														
CP mode			•					•		•	•		•	•	•	•		
VI/O														•				
Note																		

- * 4Mb/2Mb None
- ** I/O Nomenclature defined in Command, Address (Input), Data (Output) Configuration For eg: 1-1-1 denotes 1-Command, 1-Address (Input), 1-Data (Output)

Serial Flash Portfolio Table

		512Kb	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb	256Mb
	MX25Lxx05/06 Standard Serial Interface	•	•	•	•	•	•	•	•		
	MX25Lxx08 Unique ID series						•	•	•		
3V	MX25Lxx25/26 Default Lock Protection series		•	•	•			•			
	MX25Lxx35/36/45 MXSMIO [®] & MXSMIO [®] Duplex series					•	•	•	•	•	•
	MX25Lxx55 MXSMIO® Secure series						•	•	•	•	•
2.5V	MX25Vxx05/06 Standard Serial Interface	•	•		•	•					
Z.3V	MX25Vxx35 MXSMIO [®] series				•	•					
1.8V	MX25Uxx35/33 MXSMIO [®] series			•	•	•	•	•	•	•	



3V Serial Flash Family:

Standard Serial Interface Series: MX25L512E 512Kb 4KB / 64KB Single / Dual 104(x1), 80(x2) 150mil 8-SOP, 8-TSSOP, 8-USON(2x3mm), WLCSP 2.7-3.6V MX25L1006E 1Mb 4KB / 64KB Single / Dual 104(x1), 80(x2) 150mil 8-SOP, 8-USON(2x3mm), WLCSP 2.7-3.6V MX25L1026E 1Mb 4KB / 64KB Single / Dual 104(x1), 80(x2) 150mil 8-SOP 2.7-3.6V MX25L2006E 2Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 150mil 8-SOP, 8-USON(2x3mm), 8-USON(6x5mm) 2.7-3.6V	-40°C to 105°C -40°C to 105°C
MX25L512E 512Kb 4KB / 64KB Single / Dual 104(x1), 80(x2) 8-TSSOP, 8-USON(2x3mm), WLCSP 2.7-3.6V MX25L1006E 1Mb 4KB / 64KB Single / Dual 104(x1), 80(x2) 150mil 8-SOP, 8-USON(2x3mm), WLCSP 2.7-3.6V MX25L1026E 1Mb 4KB / 64KB Single / Dual 104(x1), 80(x2) 150mil 8-SOP 2.7-3.6V MX25L2006E 2Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 8-USON(2x3mm) 2.7-3.6V	
MX25L1006E 1Mb 4KB / 64KB Single / Dual 104(x1), 80(x2) 8-USON(2x3mm), WLCSP 2.7-3.6V MX25L1026E 1Mb 4KB / 64KB Single / Dual 104(x1), 80(x2) 150mil 8-S0P 2.7-3.6V MX25L2006E 2Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 8-USON(2x3mm) 2.7-3.6V	
MX25L2006E 2Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 8-USON(2x3mm) 2.7-3.6V	-40°C to 105°C
MX25L2006E 2Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 8-USON(2x3mm) 2.7~3.6V	-40°C to 105°C
MX25L4006E 4Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 150mil 8-SOP, 200mil 8-SOP, 200mil 8-SOP, 300mil 8-PDIP, 8-USON(2x3mm) 8-WSON(6x5mm)	-40°C to 105°C
MX25L8006E 8Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 150mil 8-SOP, 200mil 8-SOP, 300mil 8-PDIP, 8-WSON(6x5mm), 8-USON(4x4mm)	-40°C to 125°C
MX25L1606E 16Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 150mil 8-SOP, 200mil 8-SOP, 300mil 16-SOP, 300mil 16-SOP, 300mil 8-PDIP, 8-WSON(6x5mm), 8-USON(4x4mm)	-40°C to 85°C
MX25L3206E 32Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 200mil 8-SOP, 300mil 16-SOP, 300mil 8-PDIP, 8-WSON(6x5mm), 8-USON(4x4mm)	-40°C to 125°C
MX25L6406E 64Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 200mil 8-SOP, 300mil 16-SOP, 8-WSON(8x6mm)	
Default Lock Protection Series	
MX25L1025C 1Mb 4KB / 64KB Single 85 150mil 8-SOP 2.7~3.6V	
MX25L2026E 2Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 150mil 8-SOP 2.7~3.6V	
MX25L4026E 4Mb 4KB / 64KB Single / Dual 86(x1), 80(x2) 150mil 8-SOP 2.7~3.6V	
MX25L3225D 32Mb 4KB / 64KB Single / Dual / Quad 104(x1), 75(x2, x4) 200mil 8-SOP 2.7-3.6V	

3V MXSMIO[®] & MXSMIO[®] Duplex Family:

Part number	Density	Organization	I/O Bus	Frequency(MHz)	Package	Voltage	Features	Automotive Grade
MX25L8035E	8Mb	4KB / 64KB	Single / Dual / Quad	108(x1, x4), 80(x2)	200mil 8-SOP	2.7~3.6V	Multi-in, Multi-out	
MX25L8036E	8Mb	4KB / 64KB	Single / Dual / Quad	133(x1, x2, x4)	200mil 8-SOP	2.7~3.6V	Multi-in, Multi-out	
MX25L1633E	16Mb	4KB / 64KB	Single / Dual / Quad	104(x1), 85(x2, x4)	200mil 8-SOP, 8-WSON(6x5mm)	2.7~3.6V	Multi-in, Multi-out	-40°C to 125°C
MX25L1635E	16Mb	4KB / 64KB	Single / Dual / Quad	108(x1, x4), 80(x2)	200mil 8-SOP	2.7~3.6V	Multi-in, Multi-out	
MX25L1636E	16Mb	4KB / 64KB	Single / Dual / Quad	133(x1, x2, x4)	200mil 8-SOP	2.7~3.6V	Multi-in, Multi-out	
MX25L3235D	32Mb	4KB / 64KB	Single / Dual / Quad	104(x1), 75(x2, x4)	200mil 8-SOP, 300mil 16-SOP, 8-WSON(6x5mm), 8-WSON(8x6mm)	2.7~3.6V	Multi-in, Multi-out	-40°C to 85°C
MX25L3236D	32Mb	4KB / 64KB	Single / Dual / Quad	86(x1), 75(x2, x4)	200mil 8-SOP	2.7~3.6V	Multi-in, Multi-out	
MX25L3237D	32Mb	4KB / 64KB	Single / Dual / Quad	86(x1), 75(x2, x4)	300mil 16-SOP 8-WSON(6x5mm)	2.7~3.6V	VI/O=1.8V Multi-in, Multi-out	
MX25L6436E	64Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1), 70(x2, x4)	200mil 8-SOP 300mil 16-SOP 8-WSON(8x6mm)	2.7~3.6V	Single-in, Multi-out	
MX25L6445E	64Mb	4KB / 32KB / 64KB	Single / Dual / Quad/DTR	104(x1), 70(x2, x4)	200mil 8-SOP 300mil 16-SOP 8-WSON(8x6mm)	2.7~3.6V	Multi-in, Multi-out With DTR Function	-40°C to 125°C
MX25L12835E	128Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1), 70(x2, x4)	300mil 16-SOP 8-WSON(8x6mm)	2.7~3.6V	Multi-in, Multi-out	
MX25L12836E	128Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1), 70(x2, x4)	300mil 16-SOP 8-WSON(8x6mm)	2.7~3.6V	Single-in, Multi-out	
MX25L12845E	128Mb	4KB / 32KB / 64KB	Single / Dual / Quad/DTR	104(x1), 70(x2, x4)	300mil 16-SOP 8-WSON(8x6mm)	2.7~3.6V	Multi-in, Multi-out With DTR Function	-40°C to 125°C
MX25L25635E	256Mb	4KB / 32KB / 64KB	Single / Dual / Quad	80(x1), 70(x2, x4)	300mil 16-SOP 8-WSON(8x6mm)	2.7~3.6V	Multi-in, Multi-out	-40°C to 105°C
MX25L25735E	256Mb	4KB / 32KB / 64KB	Single / Dual / Quad	80(x1), 70(x2, x4)	300mil 16-SOP 8-WSON(8x6mm)	2.7~3.6V	Multi-in, Multi-out	-40°C to 125°C
MX25L25835E	256Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1), 70(x2, x4)	300mil 16-SOP	2.7~3.6V	Multi-in, Multi-out	

2.5V Serial Flash Family: Standard Serial Interface Series

Part Number	Density	Organization	I/O Bus	Frequency (MHz)	Package
MX25V512E	512Kb	4KB / 64KB	Single / Dual	75(x1), 70(x2)	173mil 8-TSSOP, 8-WSON(2x3mm)
MX25V1006E	1Mb	4KB / 64KB	Single / Dual	75(x1), 70(x2)	173mil 8-TSSOP, 8-WSON(2x3mm)
MX25V2006E	2Mb	4KB / 64KB	Single / Dual	75(x1), 70(x2)	150mil 8-SOP, 8-WSON(6x5mm)
MX25V4006E	4Mb	4KB / 64KB	Single / Dual	75(x1), 70(x2)	150mil 8-SOP, 8-WSON(6x5mm)
MX25V8006E	8Mb	4KB / 64KB	Single / Dual	75(x1), 70(x2)	150mil 8-SOP, 8-WSON(6x5mm)

2.5V Serial Flash Family: MXSMIO[®] Series:

Part Number	Density	Organization	I/O Bus	Frequency (MHz)	Package
MX25V4035	4Mb	4KB /32KB / 64KB	Single / Dual / Quad	66(x1), 50(x2, x4)	150mil 8-SOP, 8-WSON(6x5mm)
MX25V8035	8Mb	4KB / 32KB / 64KB	Single / Dual / Quad	66(x1), 50(x2, x4)	150mil 8-SOP, 8-WSON(6x5mm)

1.8V MXSMIO® Family:

Part Number	Density	Organization	I/O Bus	Frequency (MHz)	Package	Feature
MX25U2033E	2Mb	4KB / 32KB / 64KB	Single / Dual / Quad	80(x1, x2), 70(x4)	150mil 8-SOP, 8-WSON(6x5mm), 8USON(4x4mm), WLCSP	
MX25U4033E	4Mb	4KB / 32KB / 64KB	Single / Dual / Quad	80(x1, x2), 70(x4)	150mil 8-SOP, 8-WSON(6x5mm), 8USON(4x4mm), WLCSP	
MX25U8033E	8Mb	4KB / 32KB / 64KB	Single / Dual / Quad	80(x1, x2), 70(x4)	150mil 8-SOP, 8-WSON(6x5mm), 8USON(4x4mm), WLCSP	
MX25U1635E	16Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1, x4), 84(x2)	150mil 8-SOP,200mil 8-SOP, 8-WSON(6x5mm),8-USON(4x4mm) WLCSP	QPI
MX25U3235E	32Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1, x4), 84(x2)	200mil 8-SOP, 8-WSON(6x5mm)	QPI
MX25U3235F	32Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1, x4), 84(x2)	200mil 8-SOP, 8-WSON(6x5mm)	QPI
MX25U6435E	64Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1, x4), 84(x2)	8-WSON(6x5mm)	QPI
MX25U6435F	64Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1, x4), 84(x2)	200mil 8-SOP, 8-WSON(6x5mm)	QPI
MX25U12835F	128Mb	4KB / 32KB / 64KB	Single / Dual / Quad	104(x1, x4), 84(x2)	300mil 16-SOP, 8-WSON(6x5mm)	QPI

Applications

Segment	Application	512Kb	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb	256Mb
	Mobile PC				•	•	•	•	•		
	DeskTop PC					•	•	•	•		
	Server						•	•	•	•	•
Computer	Printer						•	•	•	•	•
	Graphics	•	•	•							
	HDD		•	•	•	•					
	ODD			•	•	•	•	•			
	DSL					•	•	•	•		
	Cable Modem						•	•	•	•	
Communication	IAD/Home Gateway								•	•	•
	WiMAX							•	•	•	•
	IP Phone							•	•	•	
	AP Router				•	•	•	•	•		
	Digital TV					•	•	•	•		
Consumer	Digital Audio/ DAM		•	•	•						
	DVD Player					•	•	•			
	Set Top Box					•	•	•	•	•	•
Automotive	After Market/In Cabin	•	•	•	•	•	•	•	•	•	•



Serial Flash Example

MX 25L 256 35 E M I - 10 G

DEVICE: 25L: 3V, Serial Flash 25U: 1.8V, Serial Flash

25V: 2.5V, Serial Flash

DENSITY: 10: 1Mb

20: 2Mb 40: 4Mb

80: 8Mb 16: 16Mb 32: 32Mb

64: 64Mb 128: 128Mb 256/257: 256Mb

MODE: -

05: Standand single I/O 06: Single-in, Dual-out

08: Unique ID

25/26: Default lock protection 33/35: MXSMIO®- Multi-in, Multi-out 36: MXSMIO®- Single-in, Multi-out 45: MXSMIO® Duplex- Multi I/O with DTR

55: MXSMIO® - Security type

G: RoHS Compliant

SPEED: **TEMPERATURE RANGE:**

OPTION:

10: 104MHz 12: 85MHz / 86MHz

13: 75MHz

25: 40MHz

(-40°C to 125°C) PACKAGE TYPE :

P: 300mil 8-PDIP ZN: 8-WSON (6x5mm)

I: Industrial (-40°C to 85°C)

S: Automotive Grade 3

R: Automotive Grade 2

Q: Automotive Grade 1

(-40°C to 85°C)

(-40°C to 105°C)

Z2: 8-WSON (8x6mm) ZU: 8-USON

M: SOP

O: 173mil 8-TSSOP

XC: 24-Ball TFBGA

GENERATION

15: 66MHz

20: 50MHz

PARALLEL NOR FLASH

Macronix's industry standard Parallel Flash memories offer an extensive line of 3V products from 4Mb to 1Gb densities. Macronix Flash memory provides customers with cost-effective, high performance and reliable products that offer low-power consumption and high endurance. 4Mb and 8Mb products are also offered in 4mm x 6mm BGA packages for space-constrained applications.

Macronix also offers a family of 1.8V products from 4Mb to 128Mb, whereas the 16Mb and 32Mb products interface an I/O voltage of 1.8V and the 32Mb to 128Mb products are featured by AD-Mux and Burst Mode. These products are used in applications like Bluetooth, MP3 Players, GPS as well as other portable applications.

Standard Read Access The standard read access Parallel Flash series (MX29F, MX29LV and MX29SL) offer Boot and Uniform Sector architectures in selectable x8, x16 and x8/x16 configurations at single 5V, 3V and 1.8V power-supply voltages.

Page Mode Read Access The MX29GL product series provide an advanced page mode interface to optimize the system performance for both read and program operations.



Standard Read Access Family:

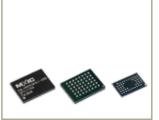
Part Number	Density	Bus Width	Access Time(ns)	Package	Vcc.	Features	Automotive Grade
5V Series							
MX29F200CT/B	2Mb	x8/ x16	70 / 90	44-SOP, 48-TSOP	5V	Boot Sector	
MX29F040C	4Mb	x8	70 / 90	32-TSOP, 32-PLCC	5V	Uniform Sector	
MX29F400CT/B	4Mb	x8/ x16	70 / 90	44-SOP, 48-TSOP	5V	Boot Sector	
MX29F800C T/B	8Mb	x8/ x16	70 / 90	44-SOP, 48-TSOP, 48-TFBGA	5V	Boot Sector	
3V Series							
MX29LV004CT/B	4Mb	x8	55 / 70 / 90	32-PLCC	3V	Boot Sector	
MX29LV040C	4Mb	x8	55 / 70 / 90	32-TSOP, 32-PLCC	3V	Uniform Sector	
MX29LV400CT/B	4Mb	x8/ x16	55 / 70 / 90	44-SOP, 48-TSOP, 48-WFBGA 48-TFBGA, 48-LFBGA	3V	Boot Sector	
MX29LV800CT/B	8Mb	x8/ x16	55 / 70 / 90	44-SOP, 48-TSOP, 48-WFBGA 48-TFBGA, 48-LFBGA, 48-XFLGA	3V	Boot Sector	-40°C to 105°(
MX29LV160DT/B	16Mb	x8/ x16	70	48-TSOP, 48-WFBGA, 48-TFBGA, 48-LFBGA, 48-XFLGA	3V	Boot Sector	-40°C to 85°C
MX29LV161DT/B	16Mb	x16	90	48-TSOP, 48-WFBGA, 48-TFBGA, 48-XFLGA	3V	Boot Sector; V I/O=1.8V	
MX29LV320ET/B	32Mb	x8/ x16	70	48-TSOP, 48-TFBGA, 48-LFBGA, 44-SOP	3V	Boot Sector	-40°C to 125°C
MX29LV321DT/B	32Mb	x16	90	48-TSOP, 48-TFBGA	3V	Boot Sector; V I/O=1.8V	
MX29LV640ET/B	64Mb	x8/ x16	70	48-TSOP, 48-TFBGA	3V	Boot Sector	
1.8V Series							
MX29SL402CT/B	4Mb	x8/ x16	90	48-TSOP, 48-WFBGA, 48-TFBGA, 48-LFBGA, 48-XFLGA	1.8V	Boot Sector	
MX29SL800CT/B	8Mb	x8/ x16	90	48-TSOP, 48-WFBGA, 48-TFBGA, 48-LFBGA, 48-XFLGA	1.8V	Boot Sector	

1.8V AD-Mux Parallel Family:

Part Number	Density	Bus Width	Access Time(ns)	Package	Features
MX29NS320E	32Mb	x16	80	56 TFBGA	AD-Mux; Burst Mode
MX29NS640E	64Mb	x16	80	56 TFBGA	AD-Mux; Burst Mode
MX29NS128E	128Mb	x16	80	56 TFBGA	AD-Mux; Burst Mode

Page Mode Read Access Family:

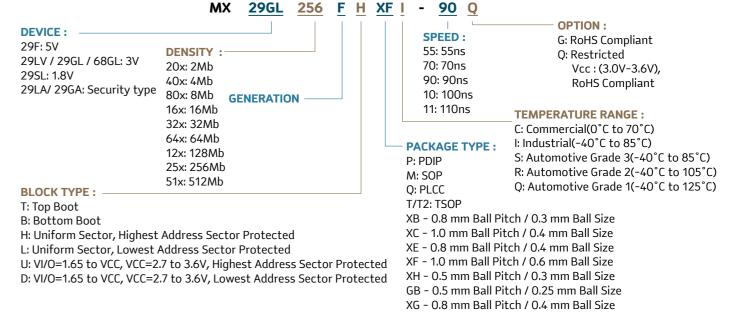
Part Number	Density	Bus Width	Access Time(ns)	Package	Vcc.	Features	Automotive Grade
MX29GL320EH/L	32Mb	x8/ x16	70	56-TSOP, 64-LFBGA	3V	Uniform Sector	-40°C to 125°C
MX29GL320ET/B	32Mb	x8/ x16	70	48-TSOP, 48-LFBGA	3V	Boot Sector	-40°C to 125°C
MX29GL640EH/L	64Mb	x8/ x16	70	56-TSOP, 64-LFBGA	3V	Uniform Sector	-40°C to 125°C
MX29GL640ET/B	64Mb	x8/ x16	70	48-TSOP, 48-LFBGA	3V	Boot Sector	-40°C to 125°C
MX29GL128EH/L	128Mb	x8/ x16	90	56-TSOP, 64-FBGA, 70-SSOP	3V	Uniform Sector	-40°C to 125°C
MX29GL128FH/L	128Mb	x8/ x16	90	56-TSOP, 64-FBGA, 70-SSOP, 56-FBGA	3V	Uniform Sector	
MX29GL128EU/D	128Mb	x8/ x16	110	56-TSOP, 64-FBGA	3V	V I/O=1.8V;Uniform Sector	
MX29GL256EH/L	256Mb	x8/ x16	90	56-TSOP, 64-FBGA	3V	Uniform Sector	-40°C to 105°C
MX29GL256FH/L	256Mb	x8/ x16	90	56-TSOP, 56-FBGA , 64-FBGA, 70-SSOP	3V	Uniform Sector	
MX29GL256FU/D	256Mb	x8/ x16	110	56-TSOP, 64-FBGA	3V	V I/O=1.8V; Uniform Sector	
MX29GL512FH/L	512Mb	x8/ x16	100	56-TSOP, 64-FBGA, 70-SSOP	3V	Uniform Sector	
MX68GL1G0FH/L*	1Gb	x8/x16	110	56-TSOP, 64-FBGA, 70-SSOP	3V	Uniform Sector	



Applications

	≤8Mb	16Mb	32Mb	64Mb	128Mb	256Mb	512Mb	1Gb
Bluetooth	•	•						
AP Router		•	•	•	•			
WiMAX				•	•	•		
IAD/Home Gateway			•	•	•	•	•	•
Switching Router				•	•	•	•	•
Digital TV		•	•	•	•	•		
Set Top Box			•	•	•	•	•	•
G-PON			•	•	•	•		
Telematics	•				•	•	•	•
IP Phone			•	•	•			
DSC			•	•	•			
Gaming				•	•	•	•	•
Automotive	•	•	•	•	•	•	•	•

Parallel Flash Example



(D)

SECURE FLASH

Several customers have sensitive data stored in their systems on flash memory. To protect this data from hostile access, Macronix provides several Secure Flash products. We provide products from 32Mb to 1Gb densities in Parallel Flash, and from 16Mb to 256Mb densities in Serial Flash – typically used in applications like Set-Top Boxes, Digital TVs and other systems requiring security of their code and data.

Please contact our regional sales representatives for detailed specifications.

Parallel Secure NOR Flash Family:

Part Number	Density	Organization	Access Time(ns)	Package	Vcc.	Features
Standard Read Access Serie	es					
MX29LA320DH/L	32Mb	x8 / x16	70	64-FBGA	3V	Uniform Sector
MX29LA320EH/L	32Mb	X8 / x16	70	64-FBGA	3V	Uniform Sector
MX29LA321DH/L	32Mb	x8 / x16	70	64-FBGA	3V	Uniform Sector
MX29LA640EH/L	64Mb	x8 / x16	70	64-FBGA	3V	Uniform Sector
MX29LA641DH/L	64Mb	x8 / x16	90	64-FBGA	3V	Uniform Sector
Page Mode Read Access Se	ries					
MX29GA320E H/L	32Mb	x8 / x16	70	64-FBGA	3V	Uniform Sector
MX29GA321E H/L	32Mb	x8 / x16	70	64-FBGA	3V	Uniform Sector
MX29GA640E H/L	64Mb	x8 / x16	90	64-FBGA	3V	Uniform Sector
MX29GA641E H/L	64Mb	x8 / x16	90	64-FBGA	3V	Uniform Sector
MX29GA128E H/L	128Mb	x8 / x16	90	64-FBGA	3V	Uniform Sector
MX29GA129E H/L	128Mb	x16	90	64-FBGA	3V	Uniform Sector
MX29GA128F H/L	128Mb	x8 / x16	90	64-FBGA	3V	Uniform Sector
MX29GA129F H/L	128Mb	x16	90	64-FBGA	3V	Uniform Sector
MX29GA256E H/L	256Mb	x8 / x16	90Q	64-FBGA	3V	Uniform Sector
MX29GA256F H/L	256Mb	x8 / x16	90Q	64-FBGA	3V	Uniform Sector
MX29GA257F H/L	256Mb	x16	90Q	64-FBGA	3V	Uniform Sector
MX29GA512F H/L*	512Mb	x8 / x16	100Q	64-FBGA	3V	Uniform Sector
MX68GA1G0F H/L*	1Gb	x8 / x16	100Q	64-FBGA	3V	Uniform Sector

^{*} Advance Information

Serial Secure NOR Flash Family:

Part No.	Density	Organization	I/O Bus	Clock Speed(MHz)	Packages	Vcc.
MX25L1608E	16Mb	4KB / 64KB	Single/ Dual	86(x1), 80(x2)	200mil 8-SOP	3V
MX25L1655D	16Mb	4KB / 64KB	Single/Dual/Quad	104(x1), 75(x2, x4)	200mil 8-SOP, 24-BGA(8x6mm)	3V
MX25L3208E	32Mb	4KB / 64KB	Single/ Dual	86(x1), 80(x2)	200mil 8-SOP	3V
MX25L3255D	32Mb	4KB / 64KB	Single/Dual/Quad	104(x1), 75(x2, x4)	200mil 8-SOP, 24-BGA(8x6mm)	3V
MX25L6408E	64Mb	4KB / 64KB	Single/ Dual	86(x1), 80(x2)	200mil 8-SOP, 300mil 16-SOP	3V
MX25L6455E	64Mb	4KB / 32KB / 64KB	Single/Dual/Quad/ DTR	104(x1), 70(x2, x4)	300mil 16-SOP, 24-BGA(8x6mm)	3V
MX25L12855E	128Mb	4KB / 32KB / 64KB	Single/Dual/Quad/ DTR	104(x1), 70(x2, x4)	300mil 16-SOP,24-BGA(8x6mm)	3V
MX25L25655E	256Mb	4KB / 32KB / 64KB	Single/Dual/Quad	80(x1), 70(x2, x4)	300mil 16-SOP,24-BGA(8x6mm)	3V

KGD (Known Good Die)

We also offer Known Good Die for System in Package (SiP) solutions.

Please contact Macronix regional sales for datasheet & technical support

KGD Flash Portfolio

Parallel Flash

Vcc.	Product Series	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb	256Mb	512Mb
3V	MX29LV (Boot Sector)	•	•	•	•	•			
	MX29GL (Uniform Sector)				•	•	•	•	•
	MX29SL	•	•						
1.8V	MX29NS				•	•	•		
	MX29VS						•		

Serial Flash

Vcc.	Product Series	512Kb	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb
3V	MX25L(Single I/O)	•	•	•	•	•	•	•	•	•
31	MX25L(Multi I/O)	•	•	•	•	•	•	•	•	•
2.5	MX25V	•	•	•	•	•				
1.8V	MX25U			•	•	•	•	•	•	•



NAND FLASH MEMORY

Macronix is a leader in the embedded NOR Flash market. Over the years as the NOR requirements evolved - from Parallel to Serial interface or 3V to low power products - Macronix has enhanced it's product portfolio to meet the market demand. Today as embedded applications get more complex, the flash density requirements have grown as well. An increasing number of system designers are looking for choices when selecting higher flash memory densities to store their code and/or applications. Macronix has once again met their demand with the introduction of a SLC NAND product line to complement it's existing high density NOR products. Focusing on the low density NAND market, Macronix now offers 512Mb and 1Gb SLC NAND products with industry standard packages and features.

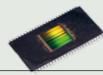
Part number	Density	Cell Type	Page Size	Bus Width	Sequential Read Speed(ns)	Package	Vcc.	Temperature Range
MX30LF1208AA	512Mb	SLC	2KB	x8	30ns	48TSOP, 63-ball VFBGA*	3V	-40°C ~ 85°C
MX30LF1G08AA	1Gb	SLC	2KB	x8	30ns	48TSOP, 63-ball VFBGA*	3V	-40°C ~ 85°C

^{*} Advance Information





PACKAGE OPTIONS



Macronix provides Flash products with extremely small packages as well as very thin profiles for spaceconstrained applications.

Serial Packages



8 SOP (150r	nil)
Length	6
Width	5
Thickness	1.75
Pitch	1.27
	(mm)



8 SOP (200r	nil)
Length	7.9
Width	5.23
Thickness	2.16
Pitch	1.27
	(mm)



16 SOP (300	mil)
Length	10.3
Width	10.3
Thickness	2.65
Pitch	1.27
	(mm)



24 BGA (Ball Dia.0.4)			
Length	8		
Width	6		
Thickness	1.2		
Pitch	1.0		
	(mm)		



8 WSON (8x6)				
Length	8			
Width	6			
Thickness	0.8			
Pitch	1.27			
	(mm)			



8 WSON (6x5)				
Length	6			
Width	5			
Thickness	0.8			
Pitch	1.27			
	(mm)			



8 USON (4x4)
Length	4
Width	4
Thickness	0.6
Pitch	0.8
	(mm



8 USON (2x3	3)
Length	3
Width	2
Thickness	0.6
Pitch	0.5
	(mm)

Parallel Packages



(Ball Dia.0.3)	
Length	8
Width	6
Thickness	1.2
Pitch	0.8
	(mm)



48 XFLGA (Land Open	0.25)
Length	6
Width	4
Thickness	0.5
Pitch	0.5
	(mm)



44 SOP (500mil)	
Length	28.5
Width	12.6
Thickness	3
Pitch	1.27
	(mm)



48 LFBGA (Ball Dia.0.4)	
Length	8
Width	6
Thickness	1.3
Pitch	0.8



(Ball Dia. 0.4	45)
Length	9
Width	11
Thickness	1.0
Pitch	8.0
	(mm)

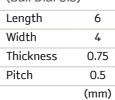


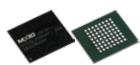
48 TSOP (Standar	d Type)
Length	20
Width	12
Thickness	1.2
Pitch	0.5
	(mm)



(mm)



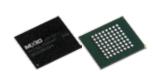




64 FBGA (Ball Dia. 0.4) Length 13 10 Width 1.2 Thickness Pitch 1.0 (mm)



56 TSOP (Stand	dard Type
Length	20
Width	14
Thickness	1.2
Pitch	0.5
	(mm)



64 FBGA (Ball Dia. 0.6) 13 Length 11 Width Thickness 1.4 1.0 Pitch (mm)



70 SSOP	
Length	28.5
Width	16.03
Thickness	3.05
Pitch	0.8
	(mm)



