

# MACRONIX

## PART NUMBER SELECTION GUIDE



July 2017

# MACRONIX Serial NOR Flash

OctaFlash																
Density	Voltage	Product Status <sup>1</sup>	Part Number	Organization			Bus Width	DTR	SFDP Mode	HOLD Pin	RESET Pin <sup>2</sup>	Security Feature	Note	Package	KGD	
				4 (KB)	32 (KB)	64 (KB)										
128Mb	3V	⊕	MX25LM12845G	•	•	•	x1, x8	•	•	•	•	•	7	16-SOP, 24-TFBGA		
	1.8V	⊕	MX25UM12845G	•	•	•	x1, x8	•	•	•	•	•	7	16-SOP, 24-TFBGA		
256Mb	3V	⊕	MX25LM25645G	•	•	•	x1, x8	•	•	•	•	•	7	16-SOP, 24-TFBGA		
	1.8V	⊕	MX25UM25645G	•	•	•	x1, x8	•	•	•	•	•	7	16-SOP, 24-TFBGA		
512Mb	3V	⊕	MX25LM51245G	•	•	•	x1, x8	•	•	•	•	•	7	16-SOP, 24-TFBGA	•	
	1.8V	⊕	MX25UM51245G	•	•	•	x1, x8	•	•	•	•	•	7	16-SOP, 24-TFBGA		
1Gb	3V	⊕	MX66LM1G45G	•	•	•	x1, x8	•	•	•	•	•	7	24-TFBGA		
	1.8V	⊕	MX66UM1G45G	•	•	•	x1, x8	•	•	•	•	•	7	24-TFBGA		
2Gb	3V	⊕	MX66LM2G45G	•	•	•	x1, x8	•	•	•	•	•	7	24-TFBGA		
	1.8V	⊕	MX66UM2G45G	•	•	•	x1, x8	•	•	•	•	•	7	24-TFBGA		
Ultra Low Power / Wide Range Vcc Flash																
512Kb	1.65-3.6V	⊕	MX25R512F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / TSSOP / USON, WLCSP		
1Mb		⊕	MX25R1035F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / TSSOP / USON, WLCSP		
2Mb		⊕	MX25R2035F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / TSSOP / USON, WLCSP	•	
4Mb		⊕	MX25R4035F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / USON / WSON, WLCSP	•	
8Mb		⊕	MX25R8035F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / USON / WSON, WLCSP	•	
16Mb		⊕	MX25R1635F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / USON / WSON, WLCSP	•	
32Mb		⊕	MX25R3235F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / WSON / USON, WLCSP	•	
64Mb		⊕	MX25R6435F	•	•	•	x1, x2, x4	•	•	•	•	•	7,12,14	8-SOP / WSON / USON, WLCSP	•	
Serial NOR Flash I-Grade (-40°C to 85°C)																
512Kb	3V		MX25L512E	•		•	x1, x2		•	•				8-SOP / TSSOP / USON	•	
			MX25L512IE	•		•	x1					5,10		8-SOP / TSSOP / USON	•	
	2.5V		MX25V512E	•		•	x1, x2			•				8-SOP / TSSOP / USON	•	
		⊕	MX25V512F	•	•	•	x1, x2, x4			•		7		8-SOP / USON	•	
1Mb	3V		MX25U512IE	•		•	x1, x2, x4			•				8-SOP / TSSOP / USON	•	
			MX25L1006E	•		•	x1, x2			•	•			8-SOP / USON, WLCSP	•	
			MX25L1021E	•		•	x1					5,10		8-SOP	•	
			MX25L1026E	•		•	x1, x2			•		10		8-SOP	•	
	2.5V		MX25V1006E	•		•	x1, x2				•			8-SOP / TSSOP / USON	•	
		⊕	MX25V1006F	•	•	•	x1, x2							8-SOP / TSSOP / USON	•	
			MX25V1035F	•	•	•	x1, x2, x4			•		7		8-SOP / USON	•	
		⊕	MX25U1001E	•		•	x1, x2, x4				•			8-SOP / TSSOP / USON	•	
2Mb	3V		MX25L2006E	•		•	x1, x2			•				8-SOP / WSON / USON	•	
			MX25L2026E	•		•	x1, x2					10		8-SOP	•	
			MX25V2006E	•		•	x1, x2							8-SOP / VSOP / WSON / USON	•	
		⊕	MX25V2033F	•	•	•	x1, x2, x4					7		8-SOP	•	
	1.8V		MX25U2033F	•		•	x1, x2, x4				•			8-SOP / WSON / USON	•	
			MX25U2033E	•		•	x1, x2, x4				•			8-SOP / WSON / USON, WLCSP	•	
			MX25U2035F	•		•	x1, x2, x4					7		8-USON	•	
		⊕	MX25L4006E	•		•	x1, x2				•			8-PDIP / SOP / WSON / USON	•	
4Mb	3V		MX25L4026E	•		•	x1, x2							8-SOP	•	
			MX25V4006E	•		•	x1, x2							8-SOP / VSOP / WSON / USON	•	
	2.5V	⊕	MX25V4035F	•	•	•	x1, x2, x4					7		8-SOP / WSON / USON	•	
			MX25U4033E	•		•	x1, x2, x4				•			8-SOP / WSON / USON, WLCSP	•	
8Mb	3V		MX25U4035F	•		•	x1, x2, x4							8-USON	•	
			MX25L8006E	•		•	x1, x2							8-PDIP / SOP / WSON / USON	•	
	2.5V		MX25L8036E	•		•	x1, x2, x4							8-SOP	•	
		⊕	MX25V8006E	•		•	x1, x2				•			8-SOP / WSON	•	
16Mb	3V		MX25V8035F	•	•	•	x1, x2, x4							8-SOP / WSON / USON	•	
			MX25U8033E	•		•	x1, x2, x4							8-SOP / WSON / USON, WLCSP	•	
			MX25U8035F	•		•	x1, x2, x4					7		8-USON	•	
		⊕	MX25U8035F	•		•	x1, x2, x4					7		8-USON	•	
	2.5V		MX25L1606E	•		•	x1, x2								8-PDIP / SOP / WSON / USON, 16-SOP, 24-TFBGA	•
			MX25L1633E	•		•	x1, x2, x4								8-SOP / WSON / USON	•
			MX25L1636E	•		•	x1, x2, x4								8-SOP	•
			MX25L1655D	•		•	x1, x2, x4						•		8-SOP, 24-TFBGA	•
1.8V		MX25L1673E	•		•	x1, x2, x4				•		9		8-SOP / WSON	•	
	⊕	MX25V1635F	•	•	•	x1, x2, x4						7		8-SOP / WSON / USON, 16-SOP, 24-TFBGA,	•	
		MX25U1633F	•		•	x1, x2, x4						7		8-USON	•	
	⊕	MX25U1635F	•		•	x1, x2, x4						7		8-SOP / WSON / USON, WLCSP	•	
32Mb	3V		MX25L3206E	•		•	x1, x2							8-SOP / WSON / USON, 24-TFBGA	•	
		⊕	MX25L3233F	•		•	x1, x2, x4						7		8-SOP / WSON / USON, 24-TFBGA	•
			MX25L3236F	•		•	x1, x2, x4						7		8-SOP	•
			MX25L3255E	•		•	x1, x2, x4								8-SOP, 24-TFBGA	•
	1.8V		MX25L3273F	•		•	x1, x2, x4						7,9		8-SOP	•
		⊕	MX25U3235F	•		•	x1, x2, x4						7		8-SOP / WSON / USON / XSON, WLCSP	•
			MX25U3273F	•		•	x1, x2, x4						7,9		8-SOP	•
			MX25U3273F	•		•	x1, x2, x4						7		8-SOP	•

Notes: For further product details and specifications, please refer to the respective datasheets.

- ⊕ Primary product for promotion.
- ⊕ Advance Information
- Blank Product is available for custom applications or special markets.
- RESET pin may not be available for all package options.
- OTP area pre-programmed at the factory.
- 3- and 4-Byte addressing.
- Commercial temperature only.
- 4-Byte addressing only, with legacy commands.
- Suspend/Resume function added.
- Wireless temperature range.
- Quad Mode enabled at factory (QE Bit=1).
- Volatile Block Protect (BP) bits.
- Extended Temperature (-55°C to 125°C)
- Ultra low Power Mode and High Performance Mode support (Default Mode by option.)
- N grade=Industrial plus plus (-40°C to 105°C).
- RESET# and HOLD# depends on part number options.

Package Type	WLCSP	8-PDIP	8-SOP	8-SOP	8-SOP	8-VSOP	8-VSOP	8-TSSOP	8-WSON	8-WSON	8-USON	8-USON	8-USON	8-XSON	16-SOP	24-TFBGA	24-TFBGA
Package Size (mm)		300mil	150mil	200mil	150mil	200mil	173mil	6x5	8x6	2x3	4x3	4x4	4x4	4x4	300mil	4x6 grid	5x5 grid

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For other information or specification of succeeding products, please contact your local Macronix sales representative or visit Macronix's website at [www.macronix.com](http://www.macronix.com)

# MACRONIX Serial NOR Flash

## Serial NOR Flash I-Grade (-40°C to 85°C)

Density	Voltage	Product Status	Part Number	Organization			Bus Width	DTR	SFDP Mode	HOLD Pin	RESET Pin	Security Feature	Note	Package	KGD	
				4 (KB)	32 (KB)	64 (KB)										
64Mb	3V		MX25L6406E	●	●	●	x1, x2		●	●			7	8-SOP/ VSON/ WSON/ USON, 24-TFBGA	●	
			MX25L6433F	●	●	●	x1, x2, x4		●	●						
			MX25L6435E	●	●	●	x1, x2, x4		●	●						
			MX25L6436F	●	●	●	x1, x2, x4		●	●				7	8-SOP	
			MX25L6439E	●	●	●	x1, x4		●	●				7	8-VSON	
			MX25L6450F	●	●	●	x1, x2, x4		●	●				9	8-PDIP/ SOP/ WSON	
	1.8V			MX25L6456F	●	●	●	x1, x2, x4		●	●			7	8-SOP, 24-TFBGA	●
				MX25L6473E	●	●	●	x1, x2, x4		●	●			9	8-SOP / WSON/ WSON, WLCS	
				MX25L6473F	●	●	●	x1, x2, x4		●	●			7,9	8-SOP / WSON	
				MX25U6435F	●	●	●	x1, x2, x4		●	●			7	8-SOP / WSON, WLCS	●
				MX25U6473F	●	●	●	x1, x2, x4		●	●			7,9	8-SOP	
				MX25L12835F	●	●	●	x1, x2, x4		●	●			7	8-SOP / WSON, 16-SOP	●
128Mb	3V		MX25L12839F	●	●	●	x1, x4		●	●			7,8	8-WSON		
			MX25L12845G	●	●	●	x1, x2, x4	●	●	●			7	8-SOP / WSON, 16-SOP, 24-TFBGA		
			MX25L12850F	●	●	●	x1, x2, x4		●	●			7,9	8-PDIP / SOP / WSON		
			MX25L12855F	●	●	●	x1, x2, x4		●	●			7	16-SOP, 24-TFBGA		
			MX25L12865F	●	●	●	x1, x2, x4		●	●			7	16-SOP		
			MX25L12873G	●	●	●	x1, x2, x4		●	●			7,9	8-SOP / WSON, 16-SOP		
	1.8V			MX25L12873G	●	●	●	x1, x2, x4	●	●	●			7	8-SOP / WSON, 16-SOP	
				MX25U12835F	●	●	●	x1, x2, x4		●	●			7	8-SOP / WSON, 16-SOP, WLCS	●
				MX25U12873F	●	●	●	x1, x2, x4		●	●			7,9	8-SOP / WSON	
				MX25L25635F	●	●	●	x1, x2, x4		●	●			4,7	8-WSON, 16-SOP, 24-TFBGA	●
				MX25L25639F	●	●	●	x1, x4		●	●			4,7,8	8-WSON	
				MX25L25645G	●	●	●	x1, x2, x4	●	●	●			4,7	8-SOP / WSON, 16-SOP, 24-TFBGA	●
256Mb	3V		MX25L25655F	●	●	●	x1, x2, x4		●	●			4,7	16-SOP, 24-TFBGA		
			MX25L25673G	●	●	●	x1, x2, x4	●	●	●			4,7	8-SOP / WSON, 16-SOP		
			MX25L25735F	●	●	●	x1, x2, x4		●	●			6,7	8-WSON, 16-SOP		
	1.8V			MX25U25635F	●	●	●	x1, x2, x4		●	●			4,7	8-WSON, 16-SOP, 24-TFBGA, WLCS	
				MX25U25645G	●	●	●	x1, x2, x4	●	●	●			4,7	8-WSON, 16-SOP, 24-TFBGA	
				MX25L51237G	●	●	●	x1, x2, x4		●	●			4,7	16-SOP	
512Mb	3V		MX25L51245G	●	●	●	x1, x2, x4		●	●			4,7	8-WSON, 16-SOP, 24-TFBGA	●	
			MX25L51255G	●	●	●	x1, x2, x4		●	●			4,7	16-SOP, 24-TFBGA		
			MX66L51235F	●	●	●	x1, x2, x4		●	●			4,7	8-WSON, 16-SOP, 24-TFBGA		
	1.8V			MX66L51255F	●	●	●	x1, x2, x4		●	●			4,7	16-SOP, 24-TFBGA	
				MX25U51245G	●	●	●	x1, x2, x4	●	●	●			4,7	8-WSON, 16-SOP, 24-TFBGA, WLCS	●
				MX66U51235F	●	●	●	x1, x2, x4		●	●			4,7	8-WSON, 16-SOP, 24-TFBGA	
1Gb	3V		MX66L1G37G	●	●	●	x1, x2, x4	●	●	●			4,7	16-SOP		
			MX66L1G45G	●	●	●	x1, x2, x4	●	●	●			4,7	16-SOP, 24-TFBGA		
			MX66L1G55G	●	●	●	x1, x2, x4	●	●	●	●		4,7	16-SOP, 24-TFBGA		
	1.8V			MX66L1G85G	●	●	●	x1, x2, x4	●	●	●			4,7	24-TFBGA	
				MX66U1G45G	●	●	●	x1, x2, x4	●	●	●			4,7	16-SOP, 24-TFBGA	
				MX66L2G45G	●	●	●	x1, x2, x4	●	●	●			4,7	24-TFBGA	●
2Gb	3V		MX66U2G45G	●	●	●	x1, x2, x4	●	●	●		4,7	24-TFBGA	●		
1.8V		MX66U2G45G	●	●	●	x1, x2, x4	●	●	●			4,7	24-TFBGA	●		

## Serial NOR Flash J-Grade (-40°C to 105°C)

1Mb	3V		MX25L1006E	●	●	●	x1, x2		●	●				8-SOP	●	
4Mb	2.5V		MX25V4006E	●	●	●	x1, x2		●	●					●	
			MX25V4035F	●	●	●	x1, x2, x4		●	●			7	8-SOP	●	
8Mb	3V		MX25L8006E	●	●	●	x1, x2		●	●					●	
			MX25R8035F	●	●	●	x1, x2, x4		●	●			7,12,14	8-SOP	●	
16Mb	3V		MX25L1606E	●	●	●	x1, x2		●	●				8-USON / SOP		
			MX25V1635F	●	●	●	x1, x2, x4		●	●					8-USON	
32Mb	3V		MX25L3233F	●	●	●	x1, x2, x4		●	●			7	8-SOP		
			MX25L3235E	●	●	●	x1, x2, x4		●	●					24-TFBGA	
	1.65-3.6V			MX25L3255E	●	●	●	x1, x2, x4		●	●				24-TFBGA	
				MX25R3235F	●	●	●	x1, x2, x4		●	●			7,12,14	8-USON	
64Mb	3V		MX25L6433F	●	●	●	x1, x2, x4		●	●			7	8-SOP, 16-SOP		
			MX25L6435E	●	●	●	x1, x2, x4		●	●					8-SOP	
	1.65-3.6V			MX25L6456F	●	●	●	x1, x2, x4		●	●			7	24-TFBGA	
				MX25R6435F	●	●	●	x1, x2, x4		●	●			7,12,14	8-SOP	
128Mb	3V		MX25L12835F	●	●	●	x1, x2, x4		●	●				8-SOP / WSON, 16-SOP		
			MX25L12845G	●	●	●	x1, x2, x4	●	●	●			7	24-TFBGA		
	1.8V			MX25U12835F	●	●	●	x1, x2, x4		●	●			8-SOP / WSON		
256Mb	3V		MX25U12835F	●	●	●	x1, x2, x4		●	●			7,13	16-SOP		
			MX25L25635F	●	●	●	x1, x2, x4		●	●			4,7	16-SOP, 24-TFBGA		
512Mb	3V		MX25L25655F	●	●	●	x1, x2, x4		●	●			4,7	24-TFBGA		
			MX66L51235F	●	●	●	x1, x2, x4		●	●			4,7	16-SOP		
			MX25L51245G	●	●	●	x1, x2, x4		●	●			4,7	16-SOP, 24-TFBGA		
1Gb	3V		MX66L1G45G	●	●	●	x1, x2, x4	●	●	●			4,7	24-TFBGA		
			MX66U1G45G	●	●	●	x1, x2, x4	●	●	●			4,7	16-SOP		
	1.8V		A	MX66U1G45G	●	●	●	x1, x2, x4	●	●	●		4,7	24-TFBGA		

## Serial NOR Flash K-Grade (-40°C to 125°C)

512Kb	3V		MX25L512E	●	●	●	x1, x2		●	●				8-USON	●	
2Mb	3V		MX25L2006E	●	●	●	x1, x2		●	●					8-SOP	
			MX25V2006E	●	●	●	x1, x2		●	●						8-SOP / USON
4Mb	3V		MX25L4006E	●	●	●	x1, x2		●	●						
			MX25V4006E	●	●	●	x1, x2		●	●						
8Mb	3V		MX25L8006E	●	●	●	x1, x2		●	●					8-USON	
32Mb	3V		MX25L3235E	●	●	●	x1, x2, x4		●	●					8-SOP	
64Mb	3V		MX25R6435F	●	●	●	x1, x2, x4		●	●			7,12,14	8-SOP		
256Mb	3V		MX25L25635F	●	●	●	x1, x2, x4		●	●			4,7	8-WSON		
512Mb	1.8V		MX66U51235F	●	●	●	x1, x2, x4		●	●			4,7,11	16-SOP		

Notes: For further product details and specifications, please refer to the respective datasheets.

- Primary product for promotion.
- Advance Information
- Blank Product is available for custom applications or special markets.
- RESET pin may not be available for all package options.
- OTP area pre-programmed at the factory.
- 3- and 4-Byte addressing.
- Commercial temperature only.
- 4-Byte addressing only, with legacy commands.
- Suspend/Resume function added.
- Wireless temperature range.
- Quad Mode enabled at factory (QE Bit=1).
- Volatile Block Protect (BP) bits.
- Extended Temperature (-55°C to 125°C)
- Ultra low Power Mode and High Performance Mode support (Default Mode by option.)
- N grade=Industrial plus plus (-40°C to 105°C).
- RESET# and HOLD# depends on part number options.

Package Type	Package Size (mm)	WLCSP	8-PDIP	8-SOP	8-SOP	8-VSON	8-VSON	8-TSOP	8-WSON	8-WSON	8-USON	8-USON	8-USON	8-USON	16-SOP	24-TFBGA	24-TFBGA
			300mil	150mil	200mil	150mil	200mil	173mil	6x5	8x6	2x3	4x3	4x4	4x4	300mil	4x6 grid	5x5 grid

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# MACRONIX Parallel NOR Flash

Parallel NOR Flash I-Grade (-40°C to 85°C)																
Density	Voltage	Product Status <sup>1</sup>	Part Number	Organization		Sector		Read Speed (ns)			W/P#/ACC	Advanced Sector Protection	Advanced Security <sup>7</sup>	Note	Package	KGD
				x8	x16	Unif.	Boot									
2Mb	5V	⊕	MX29F200C	•	•	•	•	70	90						44-SOP, 48-TSOP	
		⊕	MX29F040C	•	•	•	•	70	90						32-PLCC / TSOP	•
		⊕	MX29F400C	•	•	•	•	70	90						44-SOP, 48-TSOP	
4Mb	3V	⊕	MX29LV040C	•	•	•	•	55Q	70	90				4	32-PLCC / TSOP	
		⊕	MX29LV400C	•	•	•	•	55Q	70	90				4	44-SOP, 48-TSOP / LFBGA / TFBGA / WFBGA / XFLGA	•
			MX29SL402C	•	•	•	•	90							48-TSOP / LFBGA / TFBGA / WFBGA / XFLGA	•
8Mb	5V		MX29F800C	•	•	•	•	70							44-SOP, 48-TSOP / LFBGA	
		⊕	MX29LV800C	•	•	•	•	45Q	55Q	70	90				44-SOP, 48-TSOP / LFBGA / TFBGA / WFBGA / XFLGA	•
			MX29SL800C	•	•	•	•	90							48-TSOP / LFBGA / TFBGA / XFLGA	
16Mb	3V	⊕	MX29SL802C	•	•	•	•	90							48-WFBGA	
			MX29LV160D	•	•	•	•	70				•			48-TSOP / LFBGA / TFBGA / WFBGA / XFLGA	•
			MX29GA320E/321E	•	•	•	•	70				•	•	•	64-FBGA / LFBGA	
32Mb	3V		MX29GL320E T/B	•	•	•	•	70				•			48-TSOP / LFBGA	
			MX29GL320E H/L	•	•	•	•	70				•			56-TSOP, 64-LFBGA	•
			MX29LA320E	•	•	•	•	70				•		•	64-FBGA	•
		⊕	MX29LV320E	•	•	•	•	70				•			44-SOP, 48-TSOP / LFBGA / TFBGA	•
			MX29NS320E	•	•	•	•	80						5	56-TFBGA	
64Mb	3V		MX29GA640E/641E	•	•	•	•	70	90			•	•	•	64-FBGA / LFBGA	
			MX29GL640E T/B	•	•	•	•	70				•			48-TSOP / LFBGA	•
			MX29GL640E H/L	•	•	•	•	70				•			56-TSOP, 64-LFBGA	•
			MX29LA640E	•	•	•	•	70				•			64-FBGA	•
		⊕	MX29LV640E	•	•	•	•	70				•			48-TSOP / LFBGA	•
128Mb	3V		MX29NS640E	•	•	•	•	80						5	56-TFBGA	
			MX29GA128F/129F	•	•	•	•	90				•	•	•	64-FBGA / LFBGA	
		⊕	MX29GL128F	•	•	•	•	70	90	110			•		3	56-TSOP / FBGA, 64-LFBGA, 70-SSOP
256Mb	3V		MX29NS128F	•	•	•	•	80						5	56-TFBGA	
			MX29V5128F	•	•	•	•	80						6	56-TFBGA	•
		⊕	MX29GA256F/257F	•	•	•	•	90	100			•	•	•	64-FBGA / LFBGA	•
512Mb	3V		MX29GL256F	•	•	•	•	70Q	90Q	100	110			3	56-TSOP / FBGA, 64-LFBGA, 70-SSOP	•
			MX29GA512F	•	•	•	•	100	110			•			64-LFBGA	
		⊕	MX29GL512F	•	•	•	•	100	110	120			•		3	56-TSOP / FBGA, 64-LFBGA, 70-SSOP
1Gb	3V		MX29GL512G	•	•	•	•	100	110			•		3	56-TSOP, 64-LFBGA	
			MX68GA1G0F	•	•	•	•	110				•			64-LFBGA	
		⊕	MX68GL1G0F	•	•	•	•	110	120			•		3	56-TSOP, 64-LFBGA, 70-SSOP	•
2Gb	3V		MX68GL1G0G	•	•	•	•	100			•		3	56-TSOP		
			MX68GL2G0F	•	•	•	•	120			•		3	70-SSOP		

## Parallel NOR Flash J-Grade (-40°C to 105°C)

512Mb	3V		MX29GL512F	•	•	•	•	120				•			56-TSOP	
1Gb	3V		MX68GL1G0F	•	•	•	•	120				•			56-TSOP	

Notes : For further product details and specifications, please refer to the respective datasheets.

- ⊕ Primary product for promotion.  
**Blank** Product is available for custom applications or special markets.
- Advanced Security indicates that a portion of memory may be permanently locked by user.
- VIO=1.65-3.6V option available.
- 45Q and/or 55Q = Restricted Vcc (3.0-3.6V)
- Burst Read capable.
- Multi Bank, Read While Write, Multiplexed, Burst Read capable.

Package Type	32-PLCC	32-TSOP	32-TSOP	44-SOP	48-TSOP	48-TFBGA	48-TFBGA	48-LFBGA	48-WFBGA	56-TSOP	56-FBGA	56-TFBGA	64-FBGA	64-LFBGA	70-SSOP
Package Size (mm)		8x20	8x14	500mil	12x20	6x8x1.2	6x8x1.2	6x8x1.3	4x6x0.75	14x20	7x9x1.2	7.7x6.2x1.2	10x13x1.2	11x13x1.4	16x58.5
Ball Size (mm)						0.30	0.40	0.40	0.30		0.40	0.30	0.40	0.60	
Ball Pitch (mm)						0.80	0.80	0.80	0.50		0.80	0.50	1.00	1.00	

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# MACRONIX NAND Flash

SLC NAND Flash I-Grade (-40°C to 85°C)																			
Density	Voltage	Product Status <sup>1</sup>	Part Number	Tech. Node	Organization		Page Size		Read Speed		ECC Mode	ONFI	P/E Cycles	Cache Read	WP# Pin	Secure Feature		Package	KGD
					x8	x16	2KB	Latency	Seq. Read	Block Protection						Permanent Block Lock			
512Mb	3V		MX30LF1208AA	75nm	•		•	25µs	30ns	1-bit	n/a	100K	•	•			48-TSOP, 63-VFBGA	•	
1Gb	3V		MX30LF1G08AA	75nm	•		•	25µs	30ns	1-bit	n/a	100K	•	•			48-TSOP, 63-VFBGA	•	
		⊕	MX30LF1G18AC	36nm	•		•	25µs	20ns	4-bit	•	100K	•	•	•		48-TSOP, 63-VFBGA	•	
			MX30LF1G185C	36nm	•		•	25µs	20ns	4-bit	•	100K	•	•	•	•		63-VFBGA	
			MX30LF1G28AC	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		63-VFBGA	
			MX30LF1G285C	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		63-VFBGA	
		MX30LF1GE8AB	36nm	•		•	70µs	20ns	ECC-free	•	100K	•	•	•	•		48-TSOP / VFBGA, 63-VFBGA		
	1.8V		MX30UF1G16AC	36nm		•	•	25µs	25ns	4-bit	•	100K	•	•	•	•		48-VFBGA, 63-VFBGA	
		⊕	MX30UF1G18AC	36nm	•		•	25µs	25ns	4-bit	•	100K	•	•	•	•		48-TSOP / VFBGA, 63-VFBGA	
		⊕	MX30LF2G18AC	36nm	•		•	25µs	20ns	4-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	•
			MX30LF2G185C	36nm	•		•	25µs	20ns	4-bit	•	100K	•	•	•	•		63-VFBGA	
		MX30LF2G28AC	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA		
2Gb	3V		MX30LF2G285C	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		63-VFBGA	
			MX30LF2G28AB	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX30LF2GE8AB	36nm	•		•	70µs	20ns	ECC-free	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX30UF2G16AB	36nm		•	•	25µs	25ns	4-bit	•	100K	•	•	•	•		63-VFBGA	
			MX30UF2G16AC	36nm		•	•	25µs	25ns	4-bit	•	100K	•	•	•	•		48-VFBGA	
	1.8V		MX30UF2G18AB	36nm	•		•	25µs	25ns	4-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
		⊕	MX30UF2G18AC	36nm	•		•	25µs	25ns	4-bit	•	100K	•	•	•	•		48-TSOP / VFBGA	
			MX30UF2G26AB	36nm		•	•	25µs	25ns	8-bit	•	100K	•	•	•	•		63-VFBGA	
			MX30UF2G28AB	36nm	•		•	25µs	25ns	8-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX30UF2GE8AB	36nm	•		•	70µs	25ns	ECC-free	•	100K	•	•	•	•		63-VFBGA	
4Gb	3V	⊕	MX30LF4G18AC	36nm	•		•	25µs	20ns	4-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	•
			MX30LF4G185C	36nm	•		•	25µs	20ns	4-bit	•	100K	•	•	•	•		63-VFBGA	
			MX30LF4G28AB	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX30LF4G28AC	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX30LF4GE8AB	36nm	•		•	70µs	20ns	ECC-free	•	100K	•	•	•	•		48-TSOP	
	1.8V		MX30UF4G16AB	36nm		•	•	25µs	25ns	4-bit	•	100K	•	•	•	•		63-VFBGA	
		⊕	MX30UF4G18AB	36nm	•		•	25µs	25ns	4-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX30UF4G26AB	36nm		•	•	25µs	25ns	8-bit	•	100K	•	•	•	•		63-VFBGA	
			MX30UF4G28AB	36nm	•		•	25µs	25ns	8-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX30UF4GE8AB	36nm	•		•	70µs	25ns	ECC-free	•	100K	•	•	•	•		63-VFBGA	
8Gb	3V	⊕	MX60LF8G18AC	36nm	•		•	25µs	20ns	4-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	
			MX60LF8G28AB	36nm	•		•	25µs	20ns	8-bit	•	100K	•	•	•	•		48-TSOP, 63-VFBGA	

Notes: For further product details and specifications, please refer to the respective datasheets.

- ⊕ Primary product for promotion.  
**CM** Please contact Macronix sales representative for product application.  
**Blank** Product is available for custom applications or special markets.

Package Type	48-TSOP	48-VFBGA	63-VFBGA
Package Size (mm)	12x20	6x8	9x11

Serial NAND Flash I-Grade (-40°C to 85°C)													
Density	Voltage	Product Status <sup>1</sup>	Part Number	Tech. Node	Read Speed per "cmd-addr-data" Bus Width (MHz) <sup>2</sup>			Read Speed	Page Size	ECC Mode	P/E Cycles	WP# Pin	Package
					FREAD 1-1-1	DREAD 1-1-2	QREAD 1-1-4						
1Gb	3V		MX35LF1GE4AB	36nm	104	104	104	70µs	•	ECC-free	100K	•	8-WSON
2Gb	3V		MX35LF2GE4AB	36nm	104	104	104	70µs	•	ECC-free	100K	•	16-SOP
		A	MX35LF2G14AC	36nm	104	104	104	25µs	•	4-bit ECC	100K	•	8-WSON

Notes: For further product details and specifications, please refer to the respective datasheets.

- Blank** Product is available for custom applications or special markets.  
**A** Advance Information
- Read Speeds with maximum number of dummy cycles.

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Package Type	8-WSON	16-SOP
Package Size (mm)	8x6	300mil

# MACRONIX NOR-Based MCP

MCP NOR Flash I-Grade (-40°C to 85°C)							
Part Number	Product Type	OctaFlash Density	OctaRAM Density	OctaFlash Bus Width	OctaRAM Bus Width	Voltage	Package
<b>Serial NOR Flash</b>							
MX65L12A64AA	OctaMCP	512Mb	64Mb	x8	x8	3V	6x8mm 24-TFBGA
Part Number	Product Type	NOR Density	pSRAM Density	NOR Bus Width	pSRAM Bus Width	Voltage	Package
<b>Parallel NOR Flash</b>							
MX69GL126F	De-Mux	128Mb	32Mb	x16	x16	3V	7x9mm 56-TFBGA
MX69GL640E	De-Mux	64Mb (Uniform Sector)	32Mb	x16	x16	3V	7x9mm 56-TFBGA
MX69GL642E	De-Mux	64Mb (Top Boot)	32Mb	x16	x16	3V	7x9mm 56-TFBGA
MX69N64E32	AD-Mux	64Mb	32Mb	x16	x16	1.8V	6.2x7.7mm 56-TFBGA
MX69N64E32	AD-Mux	64Mb	32Mb	x16	x16	1.8V	6x6mm 56-TFBGA

MCP NOR Flash W-Grade (-25°C to 85°C)							
Part Number	Product Type	NOR Density	pSRAM Density	NOR Bus Width	pSRAM Bus Width	Voltage	Package
<b>Serial NOR Flash</b>							
MX65U28F64	QPI Mode	128Mb	64Mb	x4	x16	1.8V	6.2x7.7mm 56-TFBGA
MX65U64F32	QPI Mode	64Mb	32Mb	x4	x16	1.8V	6.2x7.7mm 56-TFBGA
<b>Parallel NOR Flash</b>							
MX69V28F64	AD-Mux	128Mb	64Mb	x16	x16	1.8V	6.2x7.7x1.2mm 56-TFBGA
MX69V28F64	AD-Mux	128Mb	64Mb	x16	x16	1.8V	6.2x7.7x1.05mm 56-TFBGA
MX69N64E32	AD-Mux	64Mb	32Mb	x16	x16	1.8V	6x6mm 56-TFBGA

# MACRONIX NAND-Based MCP

MCP NAND Flash I-Grade (-40°C to 85°C)															
Part Number	NAND ONFI Product Type	LPDDR Product Type		NAND Density	LPDDR Density	NAND Bus Width	LPDDR Bus Width	Voltage	ECC Requirement	Package		Temperature Range			
		LPDDR2	LPDDR							8x10.5mm 162-TFBGA	8x9mm 130-TFBGA	-30°C to +85°C	-40°C to +85°C		
MX63U4GC2GGA	•	•		4Gb	2Gb	x8	x16	1.8V	4-bit ECC	•		•	•		
MX63U4GC2GHA	•	•					x32	1.8V		•		•	•		
MX63U4GA2GHA	•	•					x32	1.8V		•		•	•		
MX63U4GA2GBA	•	•		2Gb	2Gb	x8	x32	1.8V	8-bit ECC	•		•	•		
MX63U2GE2GGA	•	•					x16	1.8V		•		•	•		
MX63U2GE2GHA	•	•					x32	1.8V		•		•	•		
MX63U2GE2GGA	•	•					x16	1.8V	•		•	•			
MX63U2GD1GJA	•		•				x16	1.8V	•		•	•			
MX63U2GC1GCA	•	•					x8	x32	1.8V	•		•	•		
MX63U2GC1GKA	•		•	1Gb	1Gb	x8	x32	1.8V	4-bit ECC	•		•	•		
MX63U2GA1GCA	•	•					x8	x32		1.8V	•		•	•	
MX63U2GB1GCA	•	•					x16	x32		1.8V	•		•	•	
MX63U1GD1GAA	•	•		1Gb	1Gb	x16	x16	1.8V	8-bit ECC	•		•	•		
MX63U1GD12EA	•		•				512Mb	x16		x16	1.8V	•		•	•
MX63U1GC1GCA	•	•					1Gb	x8		x32	1.8V	•		•	•
MX63U1GC1GAA	•	•					1Gb	x8		x16	1.8V	•		•	•
MX63U1GC12HA	•	•					512Mb	x8		x32	1.8V	•		•	•
MX63U1GC12FA	•		•				512Mb	x8		x32	1.8V	•		•	•
MX63U1GD12EA	•		•	512Mb	x16	x16	1.8V	•		•		•			

Note: For further information, please contact our regional sales representatives.

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# MACRONIX e•MMC™

## e•MMC™ I-Grade (-40°C to 85°C)

Density	Voltage	Product Status <sup>1</sup>	Part Number	Tech. Node	e.MMC Version	Bus Width	Max. Bandwidth (MB/s)	Package
8GB	2.7V-3.6V	A	MX52LM08A11XVI	MLC	5.1	x1, x4, x8	400	11.5x13mm 153-FBGA
4GB	2.7V-3.6V	A	MX52LM04A11XSI	MLC	5.1	x1, x4, x8	400	11.5x13mm 153-FBGA
2GB	2.7V-3.6V	A	MX52LM02A11XTI	MLC	5.1	x1, x4, x8	400	9x9mm 153-FBGA
2GB	2.7V-3.6V	A	MX52LM02A11XSI	MLC	5.1	x1, x4, x8	400	11.5x13mm 153-FBGA
1GB	2.7V-3.6V	A	MX52LM01A11XTI	MLC	5.1	x1, x4, x8	400	9x9mm 153-FBGA
1GB	2.7V-3.6V	A	MX52LM01A11XSI	MLC	5.1	x1, x4, x8	400	11.5x13mm 153-FBGA

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

Notes: For further product details and specifications, please refer to the respective datasheets.

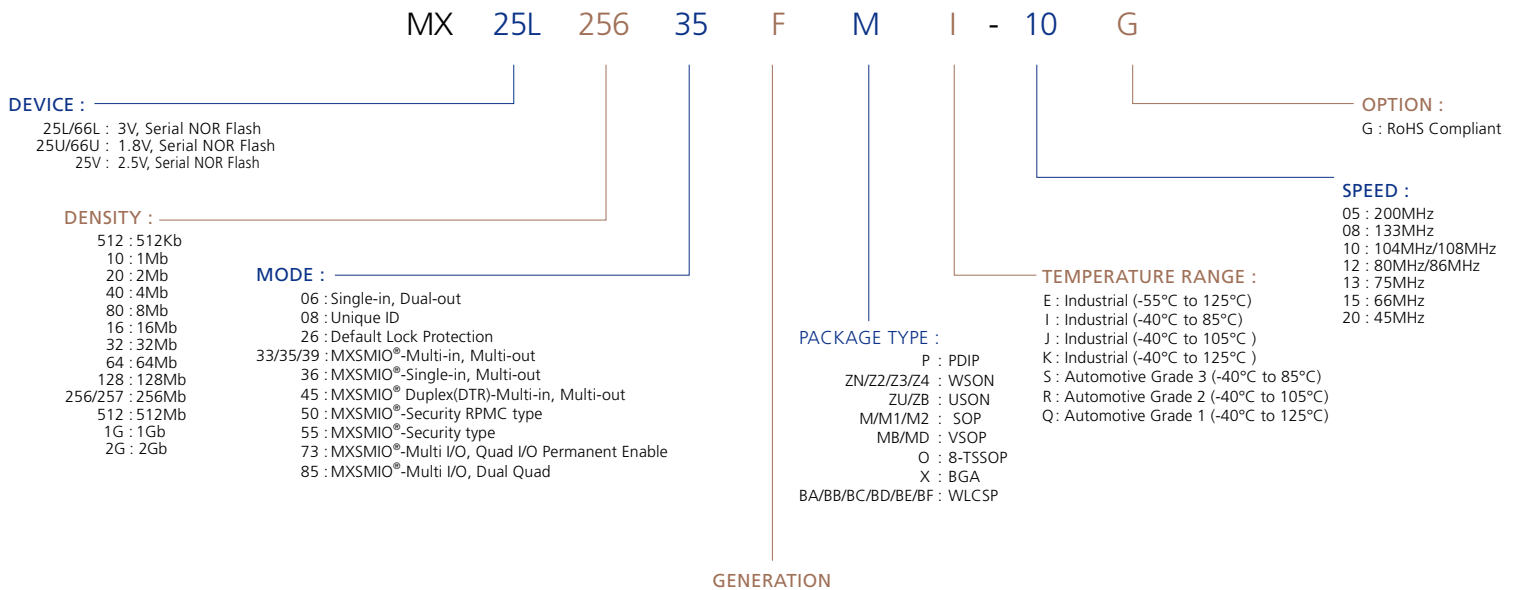
1. **Blank** Product is available for custom applications or special markets.

A Advance Information

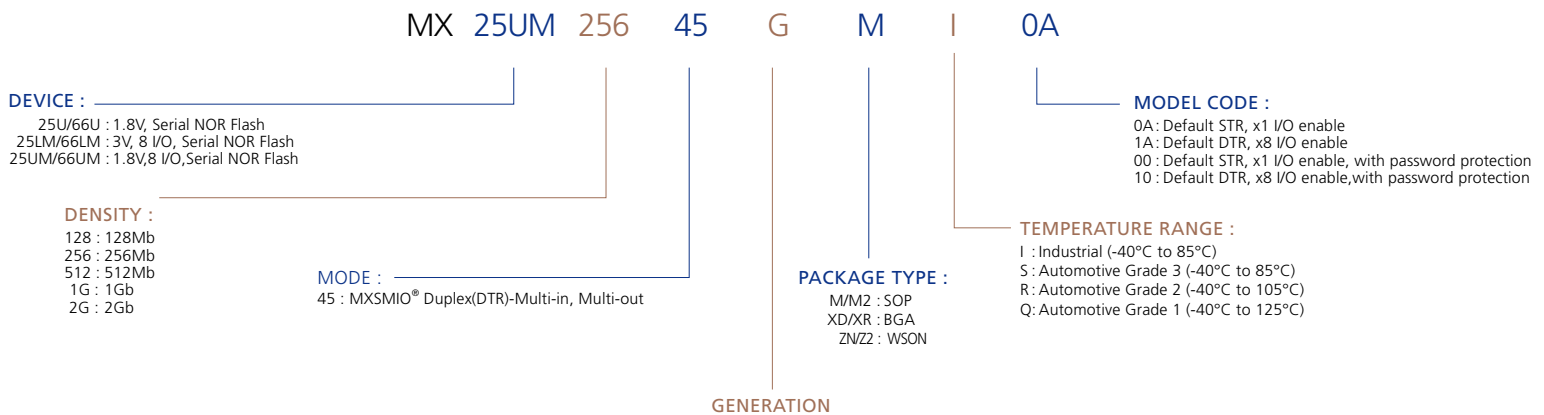
Package Type	153-VFBGA	153-VFBGA	153-VFBGA
Package Size (mm)	11.5x13x0.8	11.5x13x1.0	9x9x0.8

# MACRONIX Product Naming Guide

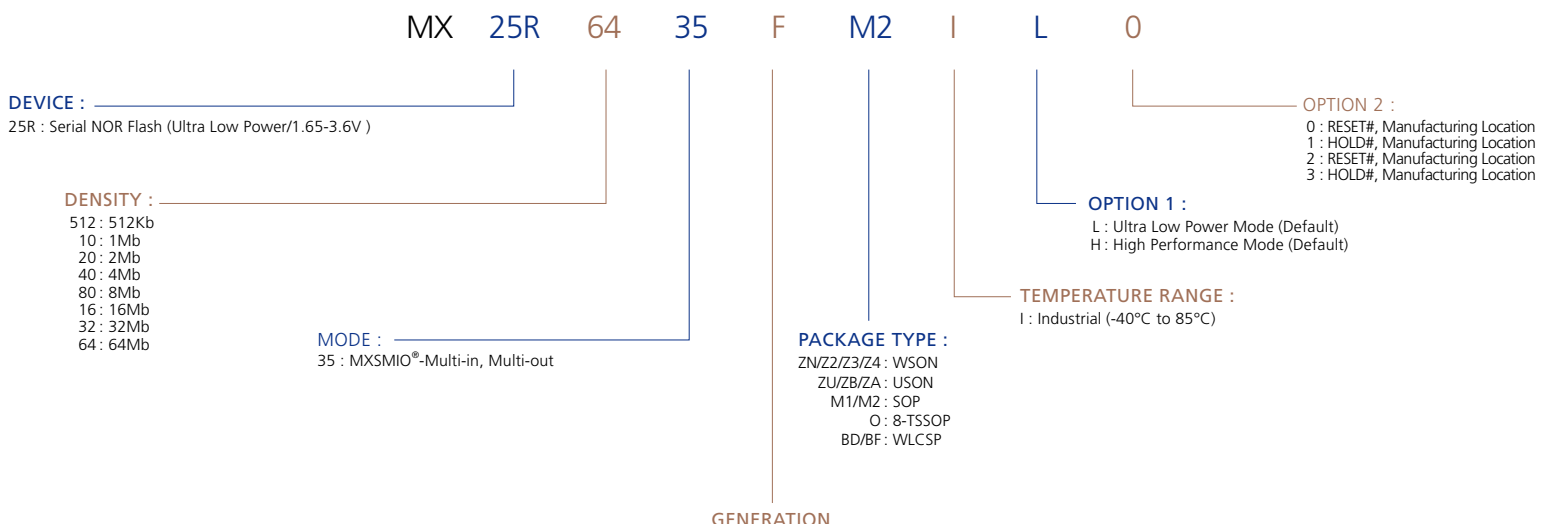
## Serial NOR Flash Example



## OctaFlash and Serial NOR Flash 1.8V G-Generation Example



## Ultra Low Power / Wide Range Vcc Serial NOR Flash Example





# MACRONIX Product Naming Guide

## Parallel NOR Flash Example

MX 29GL 512 F H XF I - 90 G

**DEVICE :**  
 29F : 5V  
 29LV/29GL/68GL : 3V  
 29NS/29VS/29SL : 1.8V  
 29LA/29GA/68GA : Security type

**DENSITY :**  
 20x : 2Mb  
 40x/040 : 4Mb  
 80x : 8Mb  
 16x : 16Mb  
 32x : 32Mb  
 64x : 64Mb  
 12x : 128Mb  
 25x : 256Mb  
 51x : 512Mb  
 1Gx : 1Gb

**GENERATION**

**PACKAGE TYPE :**  
 M : SOP  
 Q : PLCC  
 T : TSOP  
 X : BGA

**OPTION :**  
 G : RoHS Compliant  
 Q : Restricted Vcc (3.0V-3.6V),  
 RoHS Compliant

**SPEED :**  
 55 : 55ns  
 70 : 70ns  
 80 : 80ns  
 90 : 90ns  
 10 : 100ns  
 11 : 110ns  
 12 : 120ns

**TEMPERATURE RANGE :**  
 C : Commercial (0°C to 70°C)  
 I : Industrial (-40°C to 85°C)  
 J : Industrial (-40°C to 105°C)  
 S : Automotive Grade 3 (-40°C to 85°C)  
 R : Automotive Grade 2 (-40°C to 105°C)

**BLOCK TYPE :**  
 T : Top Boot  
 B : Bottom Boot  
 H : Uniform Sector, Highest Address Sector Protected  
 L : Uniform Sector, Lowest Address Sector Protected  
 U : V/I=1.65 to VCC, VCC=2.7V-3.6V,  
 Highest Address Sector Protected  
 D : V/I=1.65 to VCC, VCC=2.7V-3.6V,  
 Lowest Address Sector Protected

## NAND Flash Example

MX 30 L F 1G 0 8 A A - XK I x

**TYPE :**  
 30 : SLC NAND Flash  
 60 : SLC NAND Flash (stacked die)  
 35 : SLC Serial NAND Flash

**VOLTAGE :**  
 L : 2.7V-3.6V  
 U : 1.7V-1.95V

**CLASSIFICATION :**  
 F : SLC+Large Block

**DENSITY :**  
 12 : 512Mb  
 1G : 1Gb  
 2G : 2Gb  
 4G : 4Gb  
 8G : 8Gb

**ECC :**  
 0 : 1bit (2bit in Automotive Grade)  
 1 : 4bit  
 2 : 8bit  
 E : ECC-free

**Bus Width :**  
 4 : x4  
 8 : x8  
 6 : x16

**MODE :**  
 A : Die#, CE#:1, R/B#:1  
 S : Die#, CE#:1, R/B#:1; Security feature supported

**GENERATION**

**PACKAGE TYPE :**  
 M : 16-SOP (300mil)  
 T : 48-TSOP (12x20mm)  
 XK : 63-VFBGA (9x11mm)  
 XQ : 48-VFBGA (6x8mm)  
 Z2/Z4 : 8-WSON (8x6mm)

**OPERATING TEMPERATURE :**  
 I : Industrial (-40°C to 85°C)  
 J : Industrial (-40°C to 105°C)  
 S : Automotive Grade 3 (-40°C to 85°C)  
 R : Automotive Grade 2 (-40°C to 105°C)

**RESERVED**

## eMMC Example

MX 52 L M 04 A 1 1 XS I x

**TYPE :**  
 52 : e•MMC™ Series

**VOLTAGE :**  
 L : 2.7V-3.6V

**CLASSIFICATION :**  
 M : MLC

**DENSITY :**  
 01 : 1G-byte  
 02 : 2G-byte  
 04 : 4G-byte  
 08 : 8G-byte

**Controller Rev. :**  
 1 : CTR #1

**Configuration :**  
 1 : Standard Type

**PACKAGE TYPE :**  
 XS : 153-VFBGA (11.5x13x0.8mm)  
 XV : 153-VFBGA (11.5x13x1.0mm)  
 XT : 153-VFBGA (9x9x0.8mm)

**OPERATING TEMPERATURE :**  
 I : Industrial (-40°C to 85°C)

**RESERVED**

**GENERATION :**

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**MXIC**

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INTERNATIONAL Co., LTD.



[www.macronix.com](http://www.macronix.com)

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