Technical Note

Migrating from Macronix's M25X and MX66L to Micron's MT25Q Flash Device

Introduction

This technical note describes the process for converting a system design from the Macronix MX25 and MX66 Flash memory devices to Micron® MT25Q ones. This document is written based on device information available at publication time. In case of inconsistency, information contained in the relevant MT25Q data sheet supersedes the information in this technical note. This technical note does not provide detailed device information. The standard density specific device data sheet provides a complete description of device functionality, operating modes, and specifications. Features compared include memory organization, package options, signal descriptions, the software command set, electrical specifications, and device identification.

Memory Array Architecture

Table 1: Feature Differences

Features	MX25 and MX66	MT25Q
Densities Monolithic	128Mb - 512Mb	128Mb - 512Mb
Densities Stacked	1Gb (2 stack) 2Gb (4 stack)	1Gb (2 stack) 2Gb (4 stack)
Voltage range	1.65 - 2.0 V 2.7 - 3.6 V	1.7 - 2.0 V 2.7 - 3.6 V
Program	1 to 256 bytes	1 to 256 bytes
Sector architecture	Uniform sector (64KB)	Uniform sector (64KB)
Subsector	Uniform subsector (4KB, 32KB)	Uniform subsector (4KB, 32KB)
Endurance	100,000 cycle	100,000 cycle
Retention	20 years	20 years
Industrial temp range	–40 to +85°C	–40 to +85°C
Automotive temp range	N/A	–40 to +105°C

Package Configurations

Table 2: Package Configurations

Package	Shorted name	MX25 and MX66	MT25Q
8-pin SOP2, 208 mil	SO8W	Yes	Yes
16-pin SOP2, 300 mil	SO16W	Yes	Yes
24-ball T-PBGA, 05/6mm x 8mm (5 x 5 array)	T-PBGA 24	Yes	Yes
24-ball T-PBGA, 05/6mm x 8mm (4 x 6 array)	T-PBGA 24	Yes	Yes
W-PDFN-8 6mm x 5mm (MLP8 6mm x 5mm)	WDFN/6x5	Yes	Yes
W-PDFN-8 8mm x 6mm (MLP8 8mm x 6mm)	WDFN/8x6	Yes	Yes
Wafer level chip-scale package	XFWLBGA 0.5P	Yes	Yes

Signal Descriptions

Table 3: Signal Differences

MX25 and MX66 Signal	MT25Q Signal	Type	Description	Notes
CS#	S#	Input	Chip select	
SCLK	C	Input	Serial clock	
WP#	W#	Input	Write protect	1
HOLD#	HOLD#	Input	HOLD or I/O	2,3
RESET#	RESET#	Input	Reset	2,4
SO/SIO[3:0]	DQ[3:0]	I/O	Serial data input or output	
V_{CC}	V_{CC}	Supply	Supply voltage	
GND	V_{SS}	Supply	Ground	

Notes:
1. Signal shared with DQ2.
2. Signal shared with DQ3.
3. Available on the MX66L device WSON package only.
4. For MT25Q devices dedicated RESET# pin is available for every memory size (selected MPN). This signal has an internal pull-up resistor and may be left unconnected if not used.

Commands

Table 4: Command Set

Command	MX25/MX66	MT25Q	Notes
RESET Operations			
NOP	00h	N/A	
PERFORMANCE ENHANCE MODE RESET	FFh	N/A	1
IDENTIFICATION Operations			
READ ID	9Fh	9Eh/9Fh	
MULTIPLE I/O READ ID	AFh	AFh/9Eh	
READ ELECTRONICS SIGNATURE	ABh	N/A	
READ MAN and DEV ID	90h	N/A	
READ Operations			
QUAD OUTPUT FAST READ	6Bh	6Bh	2
QUAD INPUT/OUTPUT FAST READ	EBh	EBh	2
FAST READ (DTR mode)	N/A	0Dh	
DUAL OUTPUT FAST READ (DTR mode)	N/A	3Dh	
DUAL INPUT/OUTPUT FAST READ (DTR mode)	N/A	BDh	
QUAD OUTPUT FAST READ (DTR mode)	N/A	6Dh	
QUAD INPUT/OUTPUT WORD READ	N/A	E7h	
4-BYTE ADDRESS MODE Operations			
4-BYTE FAST READ (DTR mode)	N/A	0Eh	
4-BYTE DUAL INPUT/OUTPUT FAST READ (DTR mode)	N/A	BEh	
4-BYTE QUAD INPUT FAST PROGRAM	N/A	34h	3
REGISTER Operations			
READ FLAG STATUS REGISTER	2Bh	70h	4
CLEAR FLAG STATUS REGISTER	2Fh	50h	4
READ NONVOLATILE CONFIGURATION REGISTER	N/A	B5h	5
WRITE NONVOLATILE CONFIGURATION REGISTER	N/A	B1h	5
READ VOLATILE CONFIGURATION REGISTER	N/A	85h	5
WRITE VOLATILE CONFIGURATION REGISTER	N/A	81h	5
READ ENHANCED VOLATILE CONFIGURATION REGISTER	N/A	65h	
WRITE ENHANCED VOLATILE CONFIGURATION REGISTER	N/A	61h	
Miscellaneous Operations			
READ CONFIGURATION REGISTER	15h	N/A	6
AUTOBOOT REGISTER READ	16h	N/A	
AUTOBOOT REGISTER WRITE	17h	N/A	
AUTOBOOT REGISTER ERASE	18h	N/A	
DYNAMIC PROTECTION BIT READ	E0h	E8h	7
DYNAMIC PROTECTION BIT WRITE	E1h	E5h	8
WRITE PROTECTION SELECTION	68h	N/A	

Table 4: Command Set (Continued)

Command	MX25/MX66	MT25Q	Notes
SET BURST LENGTH	C0h	N/A	
GANG BLOCK LOCK	7Eh	N/A	
GANG BLOCK UNLOCK	98h	N/A	
READ SECTOR PROTECTION	2Dh	2Dh	9
PROGRAM SECTOR PROTECTION	2Ch	2Ch	10
READ NONVOLATILE LOCK BITS	E2h	E2h	11
WRITE NONVOLATILE LOCK BITS	E3h	E3h	12
ERASE NONVOLATILE LOCK BITS	E4h	E4h	13
READ GLOBAL FREEZE BITS	A7h	A7h	14
WRITE GLOBAL FREEZE BIT	A6h	A6h	15
CYCLIC REDUNDANCY CHECK	N/A	9Bh/27h	
PROGRAM Operations			
DUAL INPUT FAST PROGRAM	N/A	A2h	
EXTENDED DUAL INPUT FAST PROGRAM	N/A	D2h	
QUAD INPUT FAST PROGRAM	N/A	32h	
ERASE Operations			
BULK ERASE	60h or C7h	C7h	
PROGRAM/ERASE SUSPEND	B0h	75h	
PROGRAM/ERASE RESUME	30h	7Ah	
ONE-TIME PROGRAMMABLE (OTP) Operations			
READ OTP ARRAY	N/A	4Bh	
PROGRAM OTP ARRAY	N/A	42h	
ENTER SECURE OTP	B1h	N/A	16
EXIT SECURE OTP	C1h	N/A	16

Notes:
1. Execution in place (XIP) device reset. For the MT25Q device, FFh sequence exits from dual or quad protocol (see XIP Mode and XIP Reset).
2. For the MX25 and MX66L device, the quad enable (QE) bit in the status register must be set to 1 before sending the 4READ command.
3. The MX25 and MX66L device does not support the configuration opcode: (single) + address (single) + data (quad); the device supports the extended configuration opcode only: (single) + address (quad) + data (quad).
4. For the MX25 and MX66L device, the flag register is SECURITY and the opcode name is RDSCUR.
5. The MX25 and MX66L device does not have a nonvolatile configuration register (NVCR).
6. Equivalent register in the MT25Q device is VCR.
7. READ VOLATILE LOCK BITS command for the MT25Q device.
8. WRITE VOLATILE LOCK BITS command for the MT25Q device
9. Protection configurations are identical for the MX25 and MX66L and MT25Q devices (READ LOCK REGISTER (RDLR) command).
10. WRITE LOCK REGSITER (WRLR) command in the MX25 and MX66L device.
11. READ SPB STATUS (RDSPB) command in the MX25 and MX66L device.

12. SPB BIT PROGRAM (WRSPB) command in the MX25 and MX66L device.
13. ALL SPB BIT ERASE (ESSPB) command in the MX25 and MX66L device.
14. SPB LOCK REGISTER READ (RDSPBLK) command in the MX25 and MX66L device.
15. SPB LOCK SET (SPBLK) command in the MX25 and MX66L device.
16. Not required for enabling access to the OTP array (64KB instead of 4KB in the MX25 and MX66L device). READ OTP/PROGRAM OTP featured in the MT25Q device.

Table 5: Different Commands Sharing the Same Code

Command Code	MX25/MX66	MT25Q
ABh	RELEASE FROM DEEP POWER-DOWN and READ ELECTRONIC SIGNATURE	RELEASE FROM DEEP POWER-DOWN
B1h	ENTER SECURE OTP	WRITE NVCR

READ Commands

The READ/FAST READ commands for the MT25Q and MX25/MX66L devices are identical, and both devices follow the standard 3-byte and 4-byte address protocol.

Table 6: 4-Byte Mode Configuration

MX25/MX66	MT25Q
Set volatile configuration register bit 5	Set nonvolatile configuration register bit 0
Set operation code B7h	Set operation code B7h
Dedicate command set at 4 bytes	Dedicate command set at 4 bytes

XIP Mode

The MT25Q device enters and exits execute-in-place (XIP) mode via the volatile and nonvolatile configuration registers. The nonvolatile configuration register sets XIP mode at device power on. The M25X/MX66L device uses two confirmation nibbles to enter or exit XIP mode and is fully compatible with the MT25Q XIP methodology; other bits are "Don't Care". XIP management is identical in both devices.

Table 7: XIP Mode

Protocol	MT25X/MX66	MT25Q
Fast read	N/A	Yes
Dual output fast read	N/A	Yes
Dual I/O fast read	N/A	Yes
Quad output fast read	N/A	Yes
Quad I/O fast read	Yes	Yes

Figure 1: XIP Timing

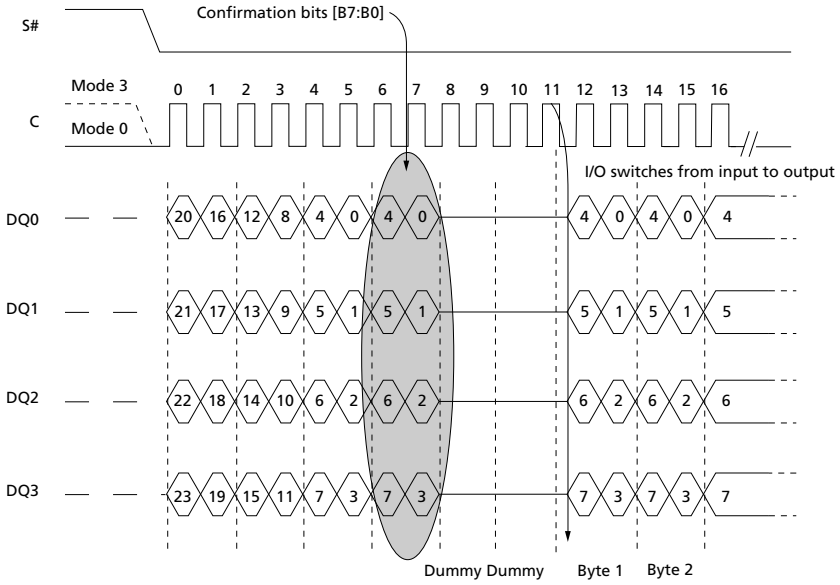

Table 8: XIP Confirmation Bit Software Commands

Description	MT25X/MX66	MT25Q
Enter/confirm XIP mode	B7 ≠ B3 and B6 ≠ B2 and B5 ≠ B1 and B4 ≠ B0	B4 = 0 (B7.B5 and B3.B0 = "Don't Care")
Exit XIP mode	B7 = B3 or B6 = B2 or B5 = B1 or B4 = B0	B4 = 1 (B7.B5 and B3.B0 = "Don't Care")

Electrical Characteristics for 128Mb density

Table 9: DC Characteristics 1.8V

Parameter	Symbol	Test Conditions		MX25		MT25Q		Units
		MX25	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		15	50	12	50	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	20	80	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		1.5	15	2	30	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	2	50	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	20	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	8	mA
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	25	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 133 (1) MHz STR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz STR or 80Mhz DTR, DQ1 = open	-	27	–	28	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC}84Mhz STR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC}90Mhz DTR, DQ1 = open	-	15	–	31	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		20	25	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		10	20	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		20	25	–	35	mA

Note: 1. The frequency is 133 MHz for MX25U12835FZNI-08G and 104MHz for others (max value for I_{cc3} is 20 mA)

Table 10: DC Characteristics 3.0V

Parameter	Symbol	Test Conditions		MX25		MT25Q		Units
		MX25	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		15	100	15	30	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	30	80	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		3	20	5	30	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	5	50	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	16	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	8	mA
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	20	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR or 80Mhz DTR, DQ1 = open	-	25	–	28	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC}84Mhz STR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC}90Mhz DTR, DQ1 = open	-	15	–	31	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		12	20	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		10	12	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		14	25	–	35	mA

Table 11: AC Specifications 1.8V

Parameter	Symbol	Trans rate	MX25		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	133(1)	DC	166	MHz
		DTR	DC	84	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	55	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.36	2	0.2	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.35	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.035	0.2	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.2	1	0.1	1	s
128Mb BULK ERASE	^{t}BE	-	100	150	38	114	s

Note: 1. The frequency is 133 MHz for MX25U12835FZNI-08G and 104MHz for others

Table 12: AC Specifications 3.0V

Parameter	Symbol	Trans rate	MX25		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	120	DC	133	MHz
		DTR	DC	80	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	50	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	5.6	–	3.375	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	5.6	–	3.375	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.25	0.75	0.2	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.38	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.3	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.18	1	0.1	1	s
128Mb BULK ERASE	^{t}BE	-	55	100	38	114	s

Electrical Characteristics for 256Mb density

Table 13: DC Characteristics 1.8V

Parameter	Symbol	Test Conditions		MX25		MT25Q		Units
		MX25	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		20	180	15	75	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	20	120	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		3	50	2	30	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	2	80	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 =open	N/A	N/A	–	20	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 =open	N/A	N/A	–	8	mA
Operating current (fast-read dual I/O)		N/A	C =0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 =open	N/A	N/A	–	25	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR , DQ1=open	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz STR or 80Mhz DTR, DQ1=open	22	30	–	28	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} 84Mhz STR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} 90Mhz DQ1 = open	13	16	–	31	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		30	40	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		20	40	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		20	40	–	35	mA

Table 14: DC Characteristics 3.0V

Parameter	Symbol	Test Conditions		MX25		MT25Q		Units
		MX25	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		15	100	30	75	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	30	120	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		3	20	5	35	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	5	80	µA
Operating current (fast-read extended I/O)	I_{CC3}	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	16	mA
		C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	10	mA
Operating current (fast-read dual I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	20	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR or 80Mhz DTR, DQ1 = open	14	25	–	28	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC}84Mhz STR DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC}90Mhz DTR, DQ1 = open	12	15	–	31	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		12	25	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		10	12	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		14	25	–	35	mA

Table 15: AC Specifications 1.8V

Parameter	Symbol	Trans rate	MX25		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	166	DC	166	MHz
		DTR	DC	84	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	66	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.15	0.75	0.12	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.25	1.3	0.12	0.8	s
4KB SECTOR ERASE	^{t}SSE	-	0.025	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.015	1	0.1	1	s
256Mb BULK ERASE	^{t}BE	-	75	150	77	231	s

Table 16: AC Specifications 3.0V

Parameter	Symbol	Trans rate	MX25		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	120	DC	133	MHz
		DTR	DC	80	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	50	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	5.6	–	3.375	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	5.6	–	3.375	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.25	0.75	0.12	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.38	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.3	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.18	1	0.1	1	s
256Mb BULK ERASE	^{t}BE	-	110	150	77	231	s

Electrical Characteristics for 512Mb density

Table 17: DC Characteristics 1.8V

Parameter	Symbol	Test Conditions		MX25		MT25Q		Units
		MX25	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		20	180	20	100	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	20	200	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		3	50	2	50	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	5	100	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	20	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	8	mA
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	25	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR , DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz STR or 80Mhz DTR, DQ1 = open	22	30	–	28	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC}84Mhz STR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC}90Mhz DTR, DQ1 = open	13	16	–	31	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		30	40	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		20	40	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		20	40	–	35	mA

Table 18: DC Characteristics 3.0V

Parameter	Symbol	Test Conditions		MX25		MT25Q		Units
		MX25	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		20	100	30	100	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	30	200	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		3	20	5	50	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	5	100	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	16	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	10	mA
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	20	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 104 MHz STR , DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR or 80Mhz DTR, DQ1 = open	-	20	–	28	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC}84Mhz STR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC}90Mhz DTR, DQ1 = open	-	15	–	31	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		20	25	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		-	20	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		20	25	–	35	mA

Table 19: AC Specifications 1.8V

Parameter	Symbol	Trans rate	MX25		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	166	DC	166	MHz
		DTR	DC	84	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	66	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.15	0.75	0.12	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.22	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.025	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.15	1	0.1	1	s
512Mb BULK ERASE	^{t}BE	-	150	300	153	460	s

Table 20: AC Specifications 3.0V

Parameter	Symbol	Trans rate	MX25 and MX66		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	166	DC	133	MHz
		DTR	DC	80	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	66	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	2.7	–	3.375	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	2.7	–	3.375	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.25	0.75	0.2	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.28	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.3	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.15	1	0.1	1	s
512Mb BULK ERASE	^{t}BE	-	140	200	38	114	s

Electrical Characteristics for 1Gb density

Table 21: DC Characteristics 1.8V

Parameter	Symbol	Test Conditions		MX66		MT25Q		Units
		MX66	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		40	300	40	160	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	40	300	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		6	80	4	65	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	10	140	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	35	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	15	mA
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	40	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/0.9V_{CC} at 133 MHz STR , DQ1 = open	C = 0.1V_{CC}/0.9V_{CC} at 166 MHz STR or 80Mhz DTR, DQ1 = open	44	60	–	50	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/0.9V_{CC}84Mhz DTR, DQ1 = open	C = 0.1V_{CC}/0.9V_{CC}90Mhz DTR, DQ1 = open	26	32	–	55	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		30	40	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		40	80	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		40	80	–	35	mA

Table 22: DC Characteristics 3.0V

Parameter	Symbol	Test Conditions		MX66		MT25Q		Units
		MX66	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		40	200	45	160	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	60	300	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		6	40	10	60	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	10	140	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	35	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	20	mA
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	35	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 104 MHz STR , DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR or 80Mhz DTR, DQ1 = open	-	40	–	45	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC}84Mhz STR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC}90Mhz DTR, DQ1 = open	-	30	–	55	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		40	50	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		-	40	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		40	50	–	35	mA

Table 23: AC Specifications 1.8V

Parameter	Symbol	Trans rate	MX66		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	166	DC	166	MHz
		DTR	DC	84	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	66	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	2.7	–	2.7	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	2.7	–	2.7	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.15	0.75	0.2	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.22	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.025	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.15	1	0.1	1	s
512Mb DIE ERASE	^{t}BE	-	150	300	153	460	s

Table 24: AC Specifications 3.0V

Parameter	Symbol	Trans rate	MX66		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	166	DC	133	MHz
		DTR	DC	80	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	66	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	2.7	–	3.375	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	2.7	–	3.375	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.25	3	0.12	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.28	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.03	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.15	1	0.1	1	s
512Mb CHIP ERASE	^{t}BE	-	200	600	153	460	s

Electrical Characteristics for 2Gb density

Table 25: DC Characteristics 1.8V

Parameter	Symbol	Test Conditions		MX66		MT25Q		Units	Note
		MX66	MT25Q	Typ	Max	Typ	Max		
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		80	500	90	320	µA	
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	90	450	µA	
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		12	150	8	130	µA	
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	8	280	µA	
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	60	mA	
		N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	30	mA	
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	70	mA	
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC} at 133 MHz STR , DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC} at 166 MHz STR or 80Mhz DTR, DQ1 = open	88	120	–	85	mA	1
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/ 0.9V_{CC}84Mhz DTR, DQ1 = open	C = 0.1V_{CC}/ 0.9V_{CC}90Mhz DTR, DQ1 = open	52	64	–	94	mA	2
Operating current (page program)	I_{CC4}	S# = V_{CC}		30	40	–	35	mA	
Operating current (write status register)	I_{CC5}	S# = V_{CC}		40	80	–	35	mA	
Operating current (erase)	I_{CC6}	S# = V_{CC}		80	160	–	35	mA	

Table 26: DC Characteristics 3.0V

Parameter	Symbol	Test Conditions		MX66		MT25Q		Units
		MX66	MT25Q	Typ	Max	Typ	Max	
Standby current	I_{CC1}	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}		140	600	90	320	µA
Standby current (automotive)	I_{CC1}	N/A	S# = V_{CC}, V_{in} = V_{SS} or V_{CC}	N/A	N/A	90	450	µA
Deep power-down current	I_{CC2}	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}		100	250	20	130	µA
Deep power-down current (automotive)	I_{CC2}	N/A	S# = V_{CC}, V_{IN} = V_{SS} or V_{CC}	N/A	N/A	20	280	µA
Operating current (fast-read extended I/O)	I_{CC3}	N/A	C = 0.1V_{CC}/0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	55	mA
		N/A	C = 0.1V_{CC}/0.9V_{CC} at 54 MHz, DQ1 = open	N/A	N/A	–	35	mA
Operating current (fast-read dual I/O)		N/A	C = 0.1V_{CC}/0.9V_{CC} at 133 MHz, DQ1 = open	N/A	N/A	–	60	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/0.9V_{CC} at 133 MHz STR DQ1 = open	C = 0.1V_{CC}/0.9V_{CC} at 133 MHz STR or 80Mhz DTR, DQ1 = open	88	120	–	65	mA
Operating current (fast-read quad I/O)		C = 0.1V_{CC}/0.9V_{CC}84Mhz DTR, DQ1 = open	C = 0.1V_{CC}/0.9V_{CC}90Mhz DTR, DQ1 = open	52	64	–	94	mA
Operating current (page program)	I_{CC4}	S# = V_{CC}		30	40	–	35	mA
Operating current (write status register)	I_{CC5}	S# = V_{CC}		40	80	–	35	mA
Operating current (erase)	I_{CC6}	S# = V_{CC}		80	160	–	35	mA

Table 27: AC Specifications 1.8V

Parameter	Symbol	Trans rate	MX66		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	133	DC	166	MHz
		DTR	DC	84	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	66	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	4.5	–	2.7	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.15	1.5	0.2	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.22	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.025	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.15	1	0.1	1	s
512Mb DIE ERASE	^{t}BE	-	150	300	153	460	s

Table 28: AC Specifications 3.0V

Parameter	Symbol	Trans rate	MX66		MT25Q		Units
			Min	Max	Min	Max	
Clock frequency for all commands other than READ (extended-SPI, DIO-SPI, and QIO-SPI protocols)	^{f}C	STR	DC	133	DC	133	MHz
		DTR	DC	80	DC	90	MHz
Clock frequency for READ commands	^{f}R	STR	DC	66	DC	54	MHz
		DTR	DC	N/A	DC	27	MHz
Clock HIGH time	^{t}CH	STR	5.6	–	3.375	–	ns
		DTR	7	–	5	–	ns
Clock LOW time	^{t}CL	STR	5.6	–	3.375	–	ns
		DTR	7	–	5	–	ns
WRITE STATUS REGISTER cycle time	^{t}W	-	-	40	1.3	8	ms
PAGE PROGRAM (256 bytes)	^{t}PP	-	0.15	1.5	0.2	2.8	ms
64KB SECTOR ERASE	^{t}SE	-	0.25	2	0.15	1	s
4KB SECTOR ERASE	^{t}SSE	-	0.025	0.4	0.05	0.4	s
32KB SUBSECTOR ERASE	^{t}SSE	-	0.15	1	0.1	1	s
128Mb BULK ERASE	^{t}BE	-	150	300	153	460	s

Part Numbers

Table 29: Cross-Reference Part Numbers 128Mb

MX25 Part Number	MT25Q Part Number	Package	Voltage	Note
MX25L12845GM2I-10G	MT25QL128ABA1ESE-0SIT	SO8 Wide	2.7V-3.6V	
MX25U12835FM2I-10G	MT25QU128ABA1ESE-0SIT	SO8 Wide	1.7V-2.0V	
MX25L12845GMI-10G	MT25QL128ABA8ESF-0SIT	SO16 Wide	2.7V-3.6V	1
MX25U12835FMI-10G	MT25QU128ABA8ESF-0SIT	SO16 Wide	1.7V-2.0V	1
MX25L12845GXDI-08G	MT25QL128ABA8E12-0SIT	T-PBGA	2.7V-3.6V	1,2
MX25L12845GXCI-08G	MT25QL128ABA8E14-0SIT	T-PBGA	2.7V-3.6V	2
MX25U12835FXDI-10G	MT25QU128ABA8E12-0SIT	T-PBGA	1.7V-2.0V	1
N/A	MT25QU128ABA8E14-0SIT	T-PBGA	1.7V-2.0V	
MX25L12845GZNI-10G	MT25QL128ABA1EW7-0SIT	DFN-8	2.7V-3.6V	
MX25L12845GZ2I-08G	MT25QL128ABA1EW9-0SIT	DFN-8	2.7V-3.6V	2
MX25U12835FZNI-08G	MT25QU128ABA1EW7-0SIT	DFN-8	1.7V-2.0V	2
N/A	MT25QU128ABA1EW9-0SIT	DFN-8	1.7V-2.0V	
MX25U12835FBBI-10G	MT25QU128ABA8E54-0SIT	XFWLBGA 0.5P	1.7V-2.0V	

Notes:
1. MT25Q has a dedicated #RESET pin with internal pull up
2. MX25 has 104MHz as max freq

Table 30: Cross-Reference Part Numbers 256Mb

MX25 Part Number	MT25Q Part Number	Package	Voltage	Note
MX25L25645GMI-10G	MT25QL256ABA8ESF-0SIT	SO16 Wide	2.7V-3.6V	1
MX25U25645GMI00	MT25QU256ABA8ESF-0SIT	SO16 Wide	1.7V-2.0V	1
MX25L25645GXDI-08G	MT25QL256ABA8E12-1SIT	T-PBGA	2.7V-3.6V	1,2
MX25L25645GXCI-08G	MT25QL256ABA8E14-1SIT	T-PBGA	2.7V-3.6V	1,2
MX25U25645GXDI00	MT25TU256HBA8E12-0SIT	T-PBGA	1.7V-2.0V	1
MX25L25645GZNI-10G	MT25QL256ABA1EW7-0SIT	DFN-8	2.7V-3.6V	
MX25L25645GZ2I-10G	MT25QL256ABA1EW9-0SIT	DFN-8	2.7V-3.6V	
N/A	MT25QU256ABA1EW7-0SIT	DFN-8	1.7V-2.0V	
MX25U25645GZ4I00	MT25QU256ABA1EW9-0SIT	DFN-8	1.7V-2.0V	

Notes:
1. MT25Q has a dedicated #RESET pin with internal pull up
2. MX25 has 104MHz as max freq

Table 31: Cross-Reference Part Numbers 512Mb

MX25 Part Number	MT25Q Part Number	Package	Voltage	Note
MX25L51245GMI-10G	MT25QL512ABB8ESF-0SIT	SO16 Wide	2.7V-3.6V	1
MX25U51245GMI0A	MT25QU512ABB8ESF-0SIT	SO16 Wide	1.7V-2.0V	1
MX25L51245GXDI-10G	MT25QL512ABB8E12-0SIT	T-PBGA	2.7V-3.6V	1

Table 31: Cross-Reference Part Numbers 512Mb (Continued)

MX25 Part Number	MT25Q Part Number	Package	Voltage	Note
MX25U51245GXDI0A	MT25QU512ABB8E12-0SIT	T-PBGA	1.7V-2.0V	1
MX25L51245GZ2I-10G	MT25QL512ABB1EW9-0SIT	DFN-8	2.7V-3.6V	
MX25U51245GZ2I00	MT25QU512ABB1EW9-0SIT	DFN-8	1.7V-2.0V	

Note: 1. MT25Q has a dedicated #RESET pin with internal pull up

Table 32: Cross-Reference Part Numbers 1Gb

MX66 Part Number	MT25Q Part Number	Package	Voltage	Note
MX66L1G45GMI-10G	MT25QL01GBBB8ESF-0SIT	SO16 Wide	2.7V-3.6V	1
MX66U1G45GMI00	MT25QU01GBBB8ESF-0SIT	SO16 Wide	1.7V-2.0V	1
MX66L1G45GXDI-10G	MT25QL01GBBB8E12-0SIT	T-PBGA	2.7V-3.6V	1
MX66U1G45GXDI00	MT25QU01GBBB8E12-0SIT	T-PBGA	1.7V-2.0V	1
N/A	MT25QL01GBBB1EW9-0SIT	DFN-8	2.7V-3.6V	
N/A	MT25QU01GBBB1EW9-0SIT	DFN-8	1.7V-2.0V	

Note: 1. MT25Q has a dedicated #RESET pin with internal pull up

Table 33: Cross-Reference Part Numbers 2Gb

MX66 Part Number	MT25Q Part Number	Package	Voltage	Note
MX66L2G45GXRI00	MT25QL02GCBB8E12-0SIT	T-PBGA	2.7V-3.6V	1
MX66U2G45GXRI00	MT25QU02GCBB8E12-0SIT	T-PBGA	1.7V-2.0V	1

Note: 1. MT25Q has a dedicated #RESET pin with internal pull up

Revision History

Rev. B – 6/17

- Generalization to compare all densities

Rev. A – 1/14

- Initial release

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