



Technical Note

Migrating from Cypress's FL-S and FS-S to Micron's MT25Q

Introduction

This technical note describes the process for converting a system design from the Cypress FL-S and FS-S 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.



General feature differences

Table 1: Feature Differences

Features	FL-S and FS-S	MT25Q
Densities Monolithic	64Mb - 512Mb	128Mb - 512Mb
Densities Stacked	1Gb (2 stack)	1Gb (2 stack) 2Gb (4 stack)
Voltage range	1.7 - 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	Hybrid sector size option - physical set of thirty two 4-kbyte sectors at top or bottom of address space with all remaining sectors of 64 kbytes, for compatibility with prior generation S25FL devices	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	-40 to +125°C	-40 to +105°C



Package Configurations

Table 2: Package Configurations

Package	Shorted name	FL-S and FS-S	MT25Q
8-pin SOP2, 208 mil	SO8W	No	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	No	Yes
W-PDFN-8 8mm x 6mm (MLP8 8mm x 6mm)	WDFN/8x6	Yes	Yes
Wafer level chip-scale package	XFWLBGA 0.5P	No	Yes



Signal Descriptions

Table 3: Signal Differences

FL-S and FS-S Signal	MT25Q Signal	Type	Description	Notes
CS#	S#	Input	Chip select	
SCK	C	Input	Serial clock	
WP#	W#	Input	Write protect	1
HOLD#	HOLD#	Input	HOLD or I/O	2
RESET#	RESET#	Input	Reset	2,3
IO[3:0]	DQ[3:0]	I/O	Serial data input or output	
V _{CC}	V _{CC}	Supply	Supply voltage	
V _{SS}	V _{SS}	Supply	Ground	

- Notes:
1. Signal shared with DQ2.
 2. Signal shared with DQ3.
 3. 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 Differences

Command	Command Code	
	FL-S and FS-S	MT25Q
READ ID	9Fh	9Eh/9Fh
READSTATUSREGISTER-2	07h	N/A
AUTOBOOT REGISTER READ	14h	N/A
AUTOBOOT REGISTER WRIT	15h	N/A
BANK REGISTER READ	16h	N/A
BANK REGISTER WRITE	17h	N/A
ECC READ	18h	N/A
ASP READ	2Bh	N/A
ASP PROGRAM	2Fh	N/A
CLEAR STATUS REGISTER-ERASE/PROGRAM FAIL RESET	30h	N/A
DATA LEARNING PATTERN READ	41h	N/A
PROGRAM NV DATA LEARNING REGISTER	43h	N/A
WRITE VOLATILE DATA LEARNING REGISTER	4Ah	N/A
PROGRAM RESUME	8Ah	N/A
READ ELECTRONIC MANUFACTURER SIGNATURE	90h	N/A
RESERVED FOR MULTI-I/O-HIGHPERF MODE(MPM)	A3h	N/A
SOFTWARE RESET	F0h	N/A
MODE BIT RESET	FFh	N/A
RESET ENABLE	N/A	66h
RESET MEMORY	N/A	99h
MULTIPLE I/O READ ID	N/A	AFh
READ SERIAL FLASH DISCOVERY PARAMETER	N/A	5Ah
DTR DUAL OUTPUT FAST READ	N/A	3Dh
DTR QUAD OUTPUT FAST READ	N/A	6Dh
READ FLAG STATUS REGISTER	N/A	70h
READ NONVOLATILE CONFIGURATION REGISTER	N/A	B5h
READ ENHANCED VOLATILE CONFIGURATION REGISTER	N/A	65h
READ EXTENDED ADDRESS REGISTER	N/A	C8h
READ GENERAL PURPOSE READ REGISTER	N/A	96h
WRITE NONVOLATILE CONFIGURATION REGISTER	N/A	B1h
WRITE VOLATILE CONFIGURATION REGISTER	N/A	81h
WRITE ENHANCED VOLATILE CONFIGURATION REGISTER	N/A	61h
WRITE EXTENDED ADDRESS REGISTER	N/A	C5h
CLEAR FLAG STATUS REGISTER	N/A	50h
DUAL INPUT FAST PROGRAM	N/A	A2h
EXTENDED DUAL INPUT FAST PROGRAM	N/A	D2h



Table 4: Command Set Differences (Continued)

Command	Command Code	
	FL-S and FS-S	MT25Q
4-BYTE QUAD INPUT EXTENDED FAST PROGRAM	N/A	3Eh
32KB SUBSECTOR ERASE	N/A	52h
4-BYTE 32KB SUBSECTOR ERASE	N/A	5Ch
ENTER 4-BYTE ADDRESS MODE	N/A	B7h
RESET QUAD INPUT/OUTPUT MODE	N/A	FCh
READ SECTOR PROTECTION	N/A	2Dh
PROGRAM SECTOR PROTECTION	N/A	2Ch
WRITE VOLATILE LOCK BITS	N/A	E5h
READ PASSWORD	N/A	27h
WRITE PASSWORD	N/A	28h
UNLOCK PASSWORD	N/A	29h
INTERFACE ACTIVATION	N/A	9Bh
CYCLIC REDUNDANCY CHECK	N/A	9Bh/27h

Note: 1. Only differences between device commands are included. See the FL-S, FS-S, and MT25Q data sheets for a complete list of commands.



Table 5: Different Commands Sharing Same Command Code

Command Code	FL-S and FS-S Command	MT25Q Command
35h	READ CONFIGURATION REGISTER	ENTER QUAD INPUT/OUTPUT MODE
85h	PROGRAM SUSPEND	READ VOLATILE CONFIGURATION REGISTER
ABh	READ ELECTRONIC SIGNATURE	RELEASE FROM DEEP POWER-DOWN
B9h	BANK REGISTER ACCESS	ENTER DEEP POWER DOWN
E7h	PASSWORD READ	QUAD INPUT/OUTPUT WORD READ
E8h	PASSWORD PROGRAM	READ VOLATILE LOCK BITS
E9h	PASSWORD UNLOCK	EXIT 4-BYTE ADDRESS MODE

READ Commands

The READ command set for the MT25Q and FL-S and FS-S devices is identical. Both devices follow the standard three address byte protocol. Both devices have configurable dummy cycles. The FL-S and FS-S device dummy cycles can be configured by configuration register bits 7 and 8; the MT25Q device dummy cycles can be configured by non-volatile configuration register bits 12–15 or by volatile configuration register bits 7–4.

XIP Mode

The MT25Q device enters and exits XIP mode via volatile and nonvolatile configuration register settings. The nonvolatile configuration register sets XIP mode at device power on. After it is enabled, XIP management in the MT25Q device is identical to that of the FL-S and FS-S device. The FL-S and FS-S device uses one nibble (code Ah) to enter or exit XIP mode. This solution is compatible with the N25Q methodology of entering and exiting XIP mode because other bits are "Don't Care".

Table 6: XIP Mode

Protocol	FL-S and FS-S	MT25Q
Fast read	N/A	Yes
Dual output fast read	N/A	Yes
Dual I/O fast read	Yes	Yes
Quad output fast read	N/A	Yes
Quad I/O fast read	Yes	Yes

Figure 1: XIP Timing

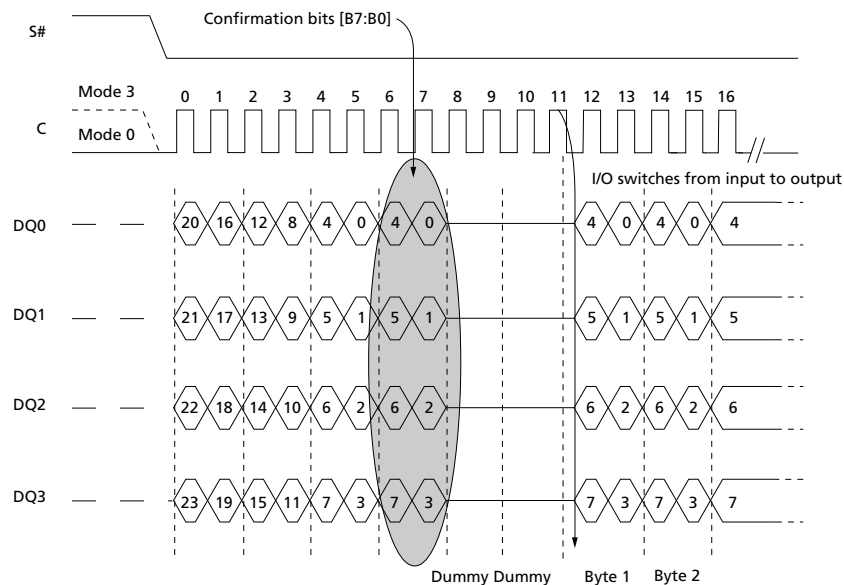




Table 7: XIP Confirmation Bit Software Commands

Description	FL-S and FS-S	MT25Q
Enter/confirm XIP mode	Mode bits = Ah; B7 = 1; B6 = 0; B5 = 1; B4 = 0	B4 = 0 (B7.B5 and B3.B0 = "Don't Care")
Exit XIP mode	Mode bit ≠ Ah	B4 = 1 (B7.B5 and B3.B0 = "Don't Care")



Electrical Characteristics

Table 8: DC Characteristics 1.8V only

Parameter	Symbol	Test Conditions	FS-S		MT25Q		Units	Note
			Typ	Max	Typ	Max		
Standby current 128Mb	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	25	100	12	50	μA	
Standby current 128Mb (automotive)	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	25	300	20	80	μA	
Standby current 256Mb	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	25	100	15	75	μA	
Standby current 256Mb (automotive)	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	25	300	20	120	μA	
Standby current 512Mb	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	70	100	20	100	μA	
Standby current 512Mb (automotive)	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	70	300	20	200	μA	
Standby current 1Gb	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	140	200	40	160	μA	
Standby current 1Gb (automotive)	I_{CC1}	S# = V_{CC} , $V_{in} = V_{SS}$ or V_{CC}	140	600	40	400	μA	
Deep power-down current 128Mb	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	6	50	2	30	μA	
Deep power-down current 128Mb (automotive)	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	6	100	2	50	μA	
Deep power-down current 256Mb	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	6	50	2	30	μA	
Deep power-down current 256Mb (automotive)	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	6	100	2	80	μA	
Deep power-down current 512Mb	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	8	50	2	50	μA	
Deep power-down current 512Mb (automotive)	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	8	150	5	100	μA	
Deep power-down current 1Gb	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	16	120	4	65	μA	
Deep power-down current 1Gb (automotive)	I_{CC2}	S# = V_{CC} , $V_{IN} = V_{SS}$ or V_{CC}	16	300	10	140	μA	
Operating current (fast-read extended I/O) 128,256 and 512Mb	I_{CC3}	C = 0.1 V_{CC} / 0.9 V_{CC} at 166 MHz, DQ1 = open	25	30	–	20	mA	1
		C = 0.1 V_{CC} /0.9 V_{CC} at 54 MHz, DQ1 = open	10	18	–	8	mA	2

Table 8: DC Characteristics 1.8V only (Continued)

Parameter	Symbol	Test Conditions	FS-S		MT25Q		Units	Note
			Typ	Max	Typ	Max		
Operating current (fast-read dual I/O) 128,256 and 512Mb	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	25	mA	1
Operating current (fast-read quad I/O) 128,256 and 512Mb	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} at 166 MHz STR or 80Mhz DTR, DQ1 = open	60	65	–	28	mA	3
Operating current (fast-read quad I/O) 128,256 and 512Mb	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} 90Mhz DTR, DQ1 = open	70	90	–	31	mA	4
Operating current (fast-read extended I/O) 1Gb	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} at 166 MHz, DQ1 = open	25	45	–	35	mA	1
		C = 0.1V _{CC} /0.9V _{CC} at 54 MHz, DQ1 = open	18	25	–	15	mA	2
Operating current (fast-read dual I/O) 1Gb	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} at 166 MHz, DQ1 = open	N/A	N/A	–	40	mA	1
Operating current (fast-read quad I/O) 1Gb	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} at 166 MHz STR or 80Mhz DTR, DQ1 = open	60	65	–	50	mA	3
Operating current (fast-read quad I/O) 1Gb	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} 90Mhz DTR, DQ1 = open	70	90	–	55	mA	4
Operating current (page program)	I_{CC4}	S# = V _{CC}	60	100	–	35	mA	
Operating current (write status register)	I_{CC5}	S# = V _{CC}	60	100	–	35	mA	
Operating current (erase)	I_{CC6}	S# = V _{CC}	60	100	–	35	mA	

- Notes:
1. The frequency is 133 Mhz for S25F
 2. The frequency is 50 Mhz for S25F
 3. The frequency is only 133 Mhz for S25F
 4. The frequency is 80 Mhz for S25F

Table 9: DC Characteristics 3.0V

Parameter	Symbol	Test Conditions	FL-S		MT25Q		Units	Note
			Typ	Max	Typ	Max		
Standby current 128Mb	I_{CC1}	S# = V _{CC} , V _{in} = V _{SS} or V _{CC}	70	100	15	50	μA	
Standby current 128Mb (automotive)	I_{CC1}	S# = V _{CC} , V _{in} = V _{SS} or V _{CC}	70	300	30	80	μA	



Table 9: DC Characteristics 3.0V (Continued)

Parameter	Symbol	Test Conditions	FL-S		MT25Q		Units	Note
			Typ	Max	Typ	Max		
Standby current 256Mb	I_{CC1}	$S\# = V_{CC}, V_{in} = V_{SS}$ or V_{CC}	70	100	30	75	μA	
Standby current 256Mb (automotive)	I_{CC1}	$S\# = V_{CC}, V_{in} = V_{SS}$ or V_{CC}	70	300	30	120	μA	
Standby current 512Mb	I_{CC1}	$S\# = V_{CC}, V_{in} = V_{SS}$ or V_{CC}	70	100	30	100	μA	
Standby current 512Mb (automotive)	I_{CC1}	$S\# = V_{CC}, V_{in} = V_{SS}$ or V_{CC}	70	300	30	200	μA	
Standby current 1Gb	I_{CC1}	$S\# = V_{CC}, V_{in} = V_{SS}$ or V_{CC}	70	200	45	160	μA	
Standby current 1Gb (automotive)	I_{CC1}	$S\# = V_{CC}, V_{in} = V_{SS}$ or V_{CC}	70	300	60	400	μA	
Deep power-down current 128Mb	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	5	30	μA	
Deep power-down current 128Mb (auto- motive)	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	5	50	μA	
Deep power-down current 256Mb	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	5	35	μA	
Deep power-down current 256Mb (auto- motive)	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	5	80	μA	
Deep power-down current 512Mb	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	5	50	μA	
Deep power-down current 512Mb (auto- motive)	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	5	100	μA	
Deep power-down current 1Gb	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	10	60	μA	
Deep power-down current 1Gb (auto- motive)	I_{CC2}	$S\# = V_{CC}, V_{IN} = V_{SS}$ or V_{CC}	N/A	N/A	10	200	μA	
Operating current (fast-read extended I/O)	I_{CC3}	$C = 0.1V_{CC}/0.9V_{CC}$ at 133 MHz, DQ1 = open	-	33	-	20	mA	
		$C = 0.1V_{CC}/0.9V_{CC}$ at 54 MHz, DQ1 = open	-	22	-	8	mA	1
Operating current (fast-read dual I/O)	I_{CC3}	$C = 0.1V_{CC}/0.9V_{CC}$ at 133 MHz, DQ1 = open	N/A	N/A	-	25	mA	
Operating current (fast-read quad I/O)	I_{CC3}	$C = 0.1V_{CC}/0.9V_{CC}$ at 133 MHz STR DQ1 = open	-	33	-	22	mA	2



Table 9: DC Characteristics 3.0V (Continued)

Parameter	Symbol	Test Conditions	FL-S		MT25Q		Units	Note
			Typ	Max	Typ	Max		
Operating current (fast-read quad I/O)	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} at 80Mhz DTR, DQ1 = open	-	90	-	28	mA	
Operating current (fast-read quad I/O)	I_{CC3}	C = 0.1V _{CC} / 0.9V _{CC} at 90Mhz DTR, DQ1 = open	-	N/A	-	28	mA	2,8
Operating current (page program)	I_{CC4}	S# = V _{CC}	-	100	-	35	mA	
Operating current (write status register)	I_{CC5}	S# = V _{CC}	-	100	-	35	mA	
Operating current (erase)	I_{CC6}	S# = V _{CC}	-	100	-	35	mA	

- Notes:
1. The frequency is 50 Mhz for S25F
 2. The frequency is 104 Mhz for S25F
 3. The frequency is 80 Mhz for S25F



Table 10: AC Specifications 1.8V

Parameter	Symbol	Trans rate	FS-S		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	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	3.57	–	2.7	–	ns
		DTR	5.6	–	5	–	ns
Clock LOW time	t _{CL}	STR	3.57	–	2.7	–	ns
		DTR	5.6	–	5	–	ns

Table 11: AC Specifications 3.0V

Parameter	Symbol	Trans rate	FL-S		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	104	DC	133	MHz
		DTR	DC	N/A	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	4	–	3.375	–	ns
		DTR	N/A	–	5	–	ns
Clock LOW time	t _{CL}	STR	4	–	3.375	–	ns
		DTR	N/A	–	5	–	ns

Table 12: WRITE Cycle, PROGRAM, ERASE Times

Parameter	Symbol	FL-S and FS-S		MT25Q		Units	Note
		Typ	Max	Typ	Max		
WRITE STATUS REGISTER cycle time	t _{WNVCR}	240	750	200	1000	ms	
PAGE PROGRAM (256 bytes)	t _{PP}	0.36	2	0.2	2.8	ms	
64KB SECTOR ERASE	t _{SE}	0.24	0.725	0.15	1	s	
4KB SECTOR ERASE	t _{SSE}	0.24	0.725	0.05	0.4	s	
32KB SUBSECTOR ERASE	t _{SSE}	N/A	N/A	0.1	1	s	
128Mb BULK ERASE	t _{BE}	60	180	38	114	s	
256Mb BULK ERASE	t _{BE}	120	360	77	231	s	
512Mb BULK ERASE	t _{BE}	220	720	153	460	s	



Part Numbers

Table 13: Cross-Reference Part Numbers 128Mb

FL-S and FS-S Part Number	MT25Q Part Number	Package	Voltage	Auto	Note
N/A	MT25QL128ABA1ESE-0SIT	SO8 Wide	2.7V-3.6V	No	
S25FS128SDSMFI1Dx	MT25QU128ABA1ESE-0SIT	SO8 Wide	1.7V-2.0V	No	
S25FL128SDPMFIG0x	MT25QL128ABA8ESF-0SIT	SO16 Wide	2.7V-3.6V	No	1
S25FL128SDSMFBG0x	MT25QL128ABA8ESF-0AAT	SO16 Wide	2.7V-3.6V	Yes	1
S25FS128SAGMFI100	MT25QU128ABA8ESF-0SIT	SO16 Wide	1.7V-2.0V	No	1,2
S25FL128SDPBHIC0x	MT25QL128ABA8E12-0SIT	T-PBGA	2.7V-3.6V	No	1
S25FL128SDPBHBC0x	MT25QL128ABA8E12-0AAT	T-PBGA	2.7V-3.6V	Yes	1
N/A	MT25QL128ABA8E14-0SIT	T-PBGA	2.7V-3.6V	No	
S25FS128SDSBHI20x	MT25QU128ABA8E12-0SIT	T-PBGA	1.7V-2.0V	No	1
N/A	MT25QU128ABA8E12-0AAT	T-PBGA	1.7V-2.0V	Yes	
S25FS128SDSBHI30x	MT25QU128ABA8E14-0SIT	T-PBGA	1.7V-2.0V	No	
N/A	MT25QU128ABA8E14-1SIT	T-PBGA	1.7V-2.0V	No	1
N/A	MT25QL128ABA1EW7-0SIT	DFN-8	2.7V-3.6V	No	
S25FL128SDPNFI00x	MT25QL128ABA1EW9-0SIT	DFN-8	2.7V-3.6V	No	
N/A	MT25QU128ABA1EW7-0SIT	DFN-8	1.7V-2.0V	No	
S25FL128SDPNFI00x	MT25QU128ABA1EW9-0SIT	DFN-8	1.7V-2.0V	No	
N/A	MT25QU128ABA8E54-0SIT	XFWLBGA 0.5P	1.7V-2.0V	No	

- Notes: 1. MT25Q has a dedicated #RESET pin with internal pull up
 2. FL-S and FS-S has only 133 Mhz SDR (no DDR)

Table 14: Cross-Reference Part Numbers 256Mb

S25F Part Number	MT25Q Part Number	Package	Voltage	Auto	Note
S25FL256SDSMFI00x	MT25QL256ABA8ESF-0SIT	SO16 Wide	2.7V-3.6V	No	1
S25FL256SDSMFB00x	MT25QL256ABA8ESF-0AAT	SO16 Wide	2.7V-3.6V	Yes	1
S25FS256SDSMFI00x	MT25QU256ABA8ESF-0SIT	SO16 Wide	1.7V-2.0V	No	1
S25FS256SDSMFV01x	MT25QU256ABA8ESF-0AAT	SO16 Wide	1.7V-2.0V	Yes	1,2
S25FS256SDSMFV01x	MT25QL256ABA8E12-1SIT	T-PBGA	2.7V-3.6V	No	1,3
N/A	MT25QL256ABA8E14-1SIT	T-PBGA	2.7V-3.6V	No	1
S25FL256SDSBHV21x	MT25QL256ABA8E12-0AAT	T-PBGA	2.7V-3.6V	Yes	1,2
S25FS256SDSBHI203x	MT25TU256HBA8E12-0SIT	T-PBGA	1.7V-2.0V	No	1
S25FS256SDSBHB20x	MT25QU256ABA8E12-0AAT	T-PBGA	1.7V-2.0V	Yes	1
S25FL256SAGNFI00x	MT25QL256ABA1EW9-0SIT	DFN-8	2.7V-3.6V	No	4
S25FL256SDPNFB00x	MT25QL256ABA1EW9-0AAT	DFN-8	2.7V-3.6V	Yes	5
S25FL256SAGNFI00x	MT25QL256ABA1EW9-0SIT	DFN-8	2.7V-3.6V	No	4
N/A	MT25QU256ABA1EW7-0SIT	DFN-8	1.7V-2.0V	No	



Table 14: Cross-Reference Part Numbers 256Mb (Continued)

S25F Part Number	MT25Q Part Number	Package	Voltage	Auto	Note
S25FS256SDSNFI00x	MT25QU256ABA1EW9-0SIT	DFN-8	1.7V-2.0V	No	

- Notes:
1. MT25Q has a dedicated #RESET pin with internal pull up
 2. For FL-S and FS-S the configuration is Industrial plus not Automotive grade B
 3. For MT25Q is available only secure release
 4. For FL-S and FS-S the configuration is only 133 Mhz (no DDR)
 5. For FL-S and FS-S the configuration is only 133 Mhz and 66 Mhz DDR

Table 15: Cross-Reference Part Numbers 512Mb

FL-S and FS-S Part Number	MT25Q Part Number	Package	Voltage	Auto	Note
S25FL512SDPMFIx1x	MT25QL512ABB8ESF-0SIT	SO16 Wide	2.7V-3.6V	No	1,2
S25FL512SDSMFBx1x	MT25QL512ABB8ESF-0AAT	SO16 Wide	2.7V-3.6V	Yes	1
S25FS512SDSMFI01x	MT25QU512ABB8ESF-0SIT	SO16 Wide	1.7V-2.0V	No	1
S25FS512SDSMFV01x	MT25QU512ABB8ESF-0AAT	SO16 Wide	1.7V-2.0V	Yes	1,3
S25FL512SDSBHV21x	MT25QL512ABB8E12-0SIT	T-PBGA	2.7V-3.6V	No	1
S25FL512SDSBHV21x	MT25QL512ABB8E12-0AAT	T-PBGA	2.7V-3.6V	Yes	1,3
S25FS512SDSBHI21x	MT25QU512ABB8E12-0SIT	T-PBGA	1.7V-2.0V	No	1
S25FS512SDSBHB21x	MT25QU512ABB8E12-0AAT	T-PBGA	1.7V-2.0V	Yes	1
N/A	MT25QL512ABB1EW9-0SIT	DFN-8	2.7V-3.6V	No	
S25FS512SDSNFI01x	MT25QU512ABB1EW9-0SIT	DFN-8	1.7V-2.0V	No	

- Notes:
1. MT25Q has a dedicated #RESET pin with internal pull up
 2. For FL-S and FS-S the configuration is only 133 Mhz and 66 Mhz DDR
 3. For FL-S and FS-S the configuration is Industrial plus not Automotive grade B

Table 16: Cross-Reference Part Numbers 1Gb

FL-S and FS-S Part Number	MT25Q Part Number	Package	Voltage	Auto	Note
S70FL01GSDPMFI01x	MT25QL01G BBB8ESF-0SIT	SO16 Wide	2.7V-3.6V	No	1,2
S70FL01GSDPMFV011	MT25QL01G BBB8ESF-0AAT	SO16 Wide	2.7V-3.6V	Yes	1,2,3
S70FS01GSDSMFI01x	MT25QU01G BBB8ESF-0SIT	SO16 Wide	1.7V-2.0V	No	1
S70FS01GSDSBHM21x	MT25QU01G BBB8ESF-0AAT	SO16 Wide	1.7V-2.0V	Yes	1
S70FL01GSDPBHIC1x	MT25QL01G BBB8E12-0SIT	T-PBGA	2.7V-3.6V	No	1,2
S79FL01GSDSBHVC1x	MT25QL01G BBB8E12-0AAT	T-PBGA	2.7V-3.6V	Yes	1,3
S70FS01GSDSBHI21x	MT25QU01G BBB8E12-0SIT	T-PBGA	1.7V-2.0V	No	1
S70FS01GSDSBHB21x	MT25QU01G BBB8E12-0AAT	T-PBGA	1.7V-2.0V	Yes	1
N/A	MT25QL01G BBB1EW9-0SIT	DFN-8	2.7V-3.6V	No	
N/A	MT25QU01G BBB1EW9-0SIT	DFN-8	1.7V-2.0V	No	

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



TN-25-37: Migrating from Cypress's FL-S and FS-S to Micron's MT25Q Part Numbers

2. For FL-S and FS-S the configuration is only 133 Mhz and 66 Mhz DDR
3. For FL-S and FS-S the configuration is Industrial plus not Automotive grade B



Revision History

Rev. A – 05/17

- Initial release

8000 S. Federal Way, P.O. Box 6, Boise, ID 83707-0006, Tel: 208-368-4000
www.micron.com/products/support Sales inquiries: 800-932-4992
Micron and the Micron logo are trademarks of Micron Technology, Inc.
All other trademarks are the property of their respective owners.