

Macronix MX25U6435E/3235E to MX25U6435F/3235F Migration Guide

1. Introduction

This application note introduces the related notices for migrating of following products.

- To MX25U6435F from MX25U6435E
- To MX25U3235F from MX25U3235E

The document does not provide detailed information on individual devices, but highlights the similarities and differences between them. The comparison covers the general features, performance, command set and device ID.

MX25U6435F and MX25U3235F support new features, "n" Byte Program ("n" = how many bytes to program) and Hardware Reset# pin. These functions provide user better ways to control Flash memory efficiently.

The information provided is based on the data available at the time. MX25U6435F and MX25U3235F datasheets may override this application note if there is a different description for the same specification in the datasheets.

Please refer to the contents and comparison tables below for more details.

2. General Features

2-1. Feature Comparison

MX25U6435F, MX25U3235F products provide following new features.

- 1. If user needs to program data that is less than 256 bytes, "n" Byte Program ("n" = how many bytes to program) provides user to program the data at the requested address without affecting data on other addresses of the same page (256 bytes per page).
- 2. The Hardware Reset# pin provides user additional method to control memory.

For the differences between these products, please check the comparison tables below for the details.



Parameter\Product		MX25U6435E	MX25U6435F		
Package		8-WSON(6x5mm)	8-SOP(200mil) 8-WSON(6x5mm)		
Clock Rate	Fast Read	104MHz	104MHz		
	Read	33MHz	50MHz*		
	2READ (2 x I/O read command)	84MHz	84MHz		
	4READ (4 x I/O read command)	104MHz**	104MHz**		
"n" Byte Program		No	Yes		
Hardware Reset# pin		No	Yes		

Table 2-1. Feature Comparison for 64Mb Products

Table 2-2. Feature Comparison for 32Mb Products

Parameter\Product		MX25U3235E	MX25U3235F	
Clock Rate	Fast Read	104MHz	104MHz	
	Read	33MHz	50MHz*	
	2READ (2 x I/O read command)	84MHz	84MHz	
	4READ (4 x I/O read command)	104MHz**	104MHz**	
"n" Byte Program		No	Yes	
Hardware Reset# pin		No	Yes	

Note:

* The maximum clock rate=33MHz when reading secured OTP area.

**When dummy cycle=4 (in both SPI & QPI mode), maximum clock rate=84MHz; when dummy cycle=6 (in both SPI & QPI mode), maximum clock rate=104MHz.



2-2. Performance Comparison

Tables below are the comparison of new products and the former products.

Table 2-3: Performance Comparison for 64Mb Products

Parameter				MX25U6435E	MX25U6435F	
	1011	Othe	ers(fSCLK) 4.5ns(min.)		4.5ns(min.)	
Clock High/Low Time		Normal Read(fRSCLK)		13ns(min.)	9ns(min.)	
	tCl	Others(fSCLK)		4.5ns(min.)	4.5ns(min.)	
	tCL -	Normal Read(fRSCLK)		13ns(min.)	9ns(min.)	
Dragram Time		Byte		8us(typ.)* ; 30us(max.)	12us(typ.)** ; 30us(max.)	
	Page			1.2ms(typ.); 3ms(max.)	1.2ms(typ.); 3ms(max.)	
	Sector			60ms(typ.)	60ms(typ.)	
Franc Time	Block(32KB)		3)	0.25s(typ.); 1s(max.)	0.25s(typ.); 1s(max.)	
	Block(64KB)		3)	0.5s(typ.); 2s(max.)	0.5s(typ.); 2s(max.)	
	Chip			36s(typ.); 80s (max.)	50s(typ.); 100s (max.)	
			Read	12ns(min.)	5ns(min.)	
CS# Deselect Time	tSHS	SL Write/Erase/ Program		30ns(min.)	30ns(min.)	
Vcc Standby Current (Max.)			100uA	80uA		

Table 2-4: Performance Comparison for 32Mb Products

Paramete	r		MX25U3235E	MX25U3235F	
		Others(fSCLK)	4.5ns(min.)	4.5ns(min.)	
	τCH	Normal Read(fRSCLK)	13ns(min.)	9ns(min.)	
Clock High/Low Hine	tCl	Others(fSCLK)	4.5ns(min.)	4.5ns(min.)	
	tCL	Normal Read(fRSCLK)	13ns(min.)	9ns(min.)	
Program Time			8us(typ.)*; 30us(max.)	12us(typ.)** ; 30us(max.)	
		;	1.2ms(typ.); 3ms(max.)	1.2ms(typ.) ; 3ms(max.)	
	Sector		60ms(typ.)	60ms(typ.)	
	Block(32KB)		0.25s(typ.); 1s(max.)	0.25s(typ.); 1s(max.)	
Erase nine	Block(64KB)		0.5s(typ.); 2s(max.)	0.5s(typ.); 2s(max.)	
	Chip		18s(typ.); 40s(max.)	25s(typ.); 50s (max.)	
		Read	12ns(min.)	5ns(min.)	
CS# Deselect Time	tSHS	L Write/Erase/ Program	30ns(min.)	30ns(min.)	
Vcc Standby Current (Max.)			100uA	80uA	

Note:

* The typical time for single byte programming is 8us, and more than single byte (\leq 256 bytes) programming is 1.2ms. **For MX25U6435F, MX25U3235F, "n" Byte Program feature is provided. The formula of calculating byte program time is 8us + (n x 4us). "n" = how many bytes to program. In the formula, while N=1, byte program time = 12us.



3. Command Set Comparison

MX25U3235E and MX25U3235F have the same command sets for all operation. MX25U6435E and MX25U6435F have the same command sets for all operation.

4. Device ID Code Comparison

The following tables show that the Manufacturer and Device IDs have not changed.

Command Type	MX25U6435E			MX25U6435F			
RDID	Manufactory ID	Туре	Density	Manufactory ID	Туре		Density
	C2	25	37	C2	25		37
RES	E	Electronic ID	Electronic ID				
		37	37				
REMS	Manufactory ID		Device ID	Manufactory ID		Device ID	
	C2		37	C2		37	

Table 4-1: ID Code Comparison for 64Mb Products

Table 4-2: ID Code Comparison for 32Mb Products

Command Type	MX25U3235E			MX25U3235F			
RDID/QPIID	Manufactory ID	Туре	Density	Manufactory ID	Туре		Density
	C2	25	36	C2	25		36
DEC	E	Electronic ID	Electronic ID				
RE3		36	36				
REMS	Manufactory ID		Device ID	Manufactory ID		Device ID	
	C2		36	C2			36



5. References

The following datasheets were used for preparing this comparison note:

Datasheet	Location	Date Issued	Version
MX25U6435E	Macronix Website	Apr. 2013	1.4
MX25U6435F	Macronix Website	Feb. 2012	1.0
MX25U3235E	Macronix Website	Apr. 2013	1.8
MX25U3235F	Macronix Website	Feb. 2012	1.0

6. Revision History

Revision No.	Description	Page	Date
REV. 1	Initial Release	ALL	MAY 04, 2011
	1. Removed Product Support section	5	
REV. 2	2. Correct Performance Comparison Table for both 32Mb and	3	ARP. 19, 2013
	64Mb products		



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