Migrating to MX25L2026E from MX25L2025 and MX25L2025C

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1. Introduction

This application note indicates the differences between MX25L2026E and MX25L2025/MX25L2025C.

In Single I/O mode, MX25L2026E is identical in forms and functions with the MX25L2025 / MX25L2025C. MX25L2026E is capable of Dual Output mode (Single Input / Dual Output) but no longer supports Dual Input / Dual Output mode. The comparison and features of new products are described as below.

The information provided is based on the data available at the time. The MX25L2026E datasheet may override this application note if there is a difference description for the same in the datasheet.

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2. General Features

2-1: Feature Comparison

The Dual Output mode (1I/2O) is one of the new features of the MX25L2026E, and the most advanced technique is that this new product accepts wide range of clock rate from DC (Direct Current)~ 86MHz for frequency control from host system.

Table 1: Major Feature Comparison of 2Mb Devices

Feature		MX25L2025/ MX25L2025C	MX25L2026E
Voltage		2.7~3.6 V	2.7~3.6 V
Interface		x1	x1, 1I/2O*
Package		8-SOP(150mil)	8-SOP(150mil)
Operation Temperature		-40~85 °C	-40~85 °C
Sector / Block Structure		4KB / 64KB	4KB / 64KB
Clock Rate**	**Fast Read**	1KHz~85MHz	DC~86MHz
	Read	1KHz~33MHz	DC~33MHz
	DREAD (Dual Output)	NA	DC~80MHz
Byte Program		NA	Yes
Block Protection (NVM Protect)		BP1,BP0	BP1,BP0
HOLD#		Yes	Yes
WP#		Yes	Yes

Note:
** MX25L2026E 1I/2O is Dual Output mode , means Single input -Dual Output*
*** 1KHz is minimum clock rate. DC = no minimum clock rate*

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2-2: Performance Comparison

Table below is the comparison of new product and the former products.

Table 2: Performance Comparison of 2Mb Devices

Performance		MX25L2025/ MX25L2025C	MX25L2026E
Clock High/ Low Time@33MHz	tCH	15ns(min.)	13ns(min.)
	tCL	15ns(min.)	13ns(min.)
Program Time	Byte	NA	9us(typ.); 300us(max.)
	Page	1.4ms(typ.) ; 5ms(max.)	1.4ms(typ.) ; 5ms(max.)
Erase Time	Sector(4KB)	60ms(typ.)	60ms(typ.)
	Block(64KB)	1s(typ.); 2s(max.)	0.7s(typ.) ; 2s(max.)
	Chip	1.8s (typ.); 3.8s(max.)	1.8s (typ.); 3.8s(max.)
Read ID	tRES1	3us(max.)	8.8us(max.)
	tRES2	1.8us(max.)	8.8us(max.)
Write Status Register	tW	5ms(typ.); 15ms(max.)	5ms(typ.); 15ms(max.)
CS# Deselect Time	tSHSL	Read/write=100ns(min.)	Read=15ns(min.) ; Write=40ns(min.)
Active Setup Time	tSLCH	5ns(min.)	7ns(min.)
Not Active Setup Time	tSHCH	5ns(min.)	7ns(min.)
Active Hold Time	tCHSH	5ns(min.)	7ns(min.)
Not Active Hold Time	tCHSL	5ns(min.)	7ns(min.)
VCC Standby	ISB1	10uA(max.)	25uA(max.)
Deep Power Down	tDP	3us(max.)	10us(max.)
	ISB2	10uA(max.)	10uA(max.)
Active Current	ICC1	12mA(max.) @85MHz	12mA(max.) @86MHz
	ICC2	15mA	20mA
	ICC3	15mA	15mA
	ICC4	15mA	15mA
	ICC5	15mA	20mA

3. Command Set Comparison

The new product adds new command Double Output Mode Command (DREAD) for the new feature.

Table 3: Commands for the MX25L2025/MX25L2025C and MX25L2026E Devices

Command		MX25L2025/ MX25L2025C	MX25L2026E
Write	WREN	06h	06h
	WRDI	04h	04h
	WRSR	01h	01h
Read	RDID	9Fh	9Fh
	RDSR	05h	05h
	READ	03h	03h
	Fast Read	0Bh	0Bh
	DREAD	-	3Bh
	RES	ABh	ABh
	REMS	90h	90h
Erase	SE	20h	20h
	BE	52h or D8h	52h or D8h
	CE	60h or C7h	60h or C7h
Program	PP	02h	02h
Deep Power Down	DP	B9h	B9h
	DRP	ABh	ABh

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4. Device ID Code Comparison of 2Mb Devices

Manufacturer and Device IDs for the new products have not been changed and the density (12) that is defined by MXIC also has not been changed.

Table 4: ID Code Comparison

Command Type	MX25L2025			MX25L2025C			MX25L2026E		
RDID Command	M ID	Type	Density	M ID	Type	Density	M ID	Type	Density
	C2	20	12	C2	20	12	C2	20	12
RES Command	E ID			E ID			E ID		
	11			11			11		
REMS	M ID	Device ID		M ID	Device ID		M ID	Device ID	
	C2	11		C2	11		C2	11	

5. References

The following datasheets were used for preparing this comparison note:

Datasheet	Location	Date Issued	Versions
MX25L2025	Macronix	Dec., 2008	1.0
MX25L2025C	Macronix Website	Jul., 2009	1.1
MX25L2026E	Macronix Website	Jul., 2010	1.0

For more functional and parametric specifications, please refer to the datasheet on the Macronix Website at http://www.macronix.com/ and go to: Products/Flash Memory/Serial Flash.

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REVISION HISTORY

Revision No.	Description	Page	Date
1.0	1. Removed SFDP descriptions	P2-3,5	JUL/2/2010
	2. Emphasizes wide range of clock rate	P3	
	3. Revised Write Status Register of MX25L2026E to align with datasheet Rev. 1.0	P4	

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