



MACRONIX  
INTERNATIONAL Co., LTD.

## APPLICATION NOTE

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# Migrating to MX25L3206E from MX25L3205D



## **Migrating to MX25L3206E from MX25L3205D**

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### **1. Introduction**

This application note introduces the related notices for migrating to MX25L3206E from MX25L3205D. 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.

MX25L3206E supports new features, the Dual Output mode (Single Input / Dual Output), but no longer supports x2 I/O (Dual Input / Dual Output), Continuous Program (CP) mode and ACC function.

The information provided is based on the data available at the time the document is released. MX25L3206E datasheet may override this application note if there are content differences in the latest datasheet.

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



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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 MX25L3206E, 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.

In Single I/O mode, MX25L3206E is identical in forms and functions with the MX25L3205D.

In comparison with the previous generations, MX25L3206E no longer supports Continuous Program (CP) mode and Program/Erase Acceleration (ACC) function (for fast Program/Erase by 9.5~10.5V high voltage input on WP#/ACC pin). The removal of the ACC mode means that the high voltage can no longer be applied to the WP# pin. Doing this will damage the MX25L3206E. Make sure that the programmer does not use the ACC mode.

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

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Table 1: Major Feature Comparison

Feature		MX25L3205D	MX25L3206E
<b>Voltage</b>		2.7 to 3.6V	2.7 to 3.6V
<b>Interface</b>		x1, x2	x1, 1I/2O*
<b>Package</b>		16-SOP(300mil) 8-SOP(209mil) 8-PDIP(300MIL) 8-WSON(6x5mm) 8-USON(4x4mm)	16-SOP(300mil) 8-SOP(209mil) 8-PDIP(300MIL) 8-WSON(6x5mm) 8-USON(4x4mm)
<b>Operation Temperature</b>		-40°C to 85 °C	-40°C to 85 °C
<b>Sector Structure</b>		4KB / 64KB	4KB / 64KB
<b>Clock Rate</b>	<b>Fast Read</b>	10KHz~86MHz	DC~86MHz
	<b>Read</b>	10KHz~33MHz	DC~33MHz
	<b>2 Read(x2 I/O)</b>	10KHz~50MHz	--
	<b>DREAD (Dual Output)</b>	--	DC~80MHz
<b>Byte Program</b>		Yes	Yes
<b>CP Mode (Continuous Program)</b>		Yes	No
<b>ACC Mode**</b>		Yes	No
<b>Data Protection</b>	<b>Secure OTP</b>	512 bits	512 bits
	<b>Block Protection</b>	BP3~BP0	BP3~BP0
<b>HOLD#</b>		Yes	Yes
<b>WP#</b>		Yes	Yes
<b>Endurance (typ.)</b>		100k	100k
<b>Data Retention</b>		20y	20y

**Note:**

\* Dual Output mode (1I/2O) means Single Input / Dual Output.

\*\* The removal of the ACC mode means that high voltage can no longer be applied to the WP# pin. Doing this will damage the MX25L3206E. Make sure that programmer does not use the ACC feature.

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### 2-2: Performance Comparison

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

**Table 2: Performance Comparison**

Performance		MX25L3205D	MX25L3206E
Clock High/Low Time	tCH (86MHz)	5.5ns(min.)	5.5ns(min.)
	tCL (86MHz)	5.5ns(min.)	5.5ns(min.)
Program Time	Byte	9us(typ.); 300us(max.)	9us(typ.); 300us(max.)
	Page	1.4ms(typ.); 5ms(max.)	1.4ms(typ.); 5ms(max.)
Erase Time	Sector(4KB)	60ms(typ.); 300ms(max.)	60ms(typ.); 300ms(max.)
	Block(64KB)	0.7s(typ.); 2s(max.)	0.7s(typ.); 2s(max.)
	Chip	25s(typ.); 50s(max.)	25s(typ.); 50s(max.)
Active Setup Time	tSLCH	5ns(min.)	7ns(min.)
Not Active Setup Time	tSHCH	5ns(min.)	5ns(min.)
Active Hold Time	tCHSH	5ns(min.)	5ns(min.)
Not Active Hold Time	tCHSL	5ns(min.)	7ns(min.)
CS# Deselect Time	tSHSL	Read=40ns(min.); Write=40ns(min.)	Read=15ns(min.); Write=40ns(min.)
VCC Standby	ISB1	20uA(max.)	40uA(max.)
Deep Power Down	ISB2	20uA(max.)	20uA(max.)
Active Current	ICC1	25mA(max.) @86MHz	25mA(max.) @86MHz
	ICC2	20mA	20mA
	ICC3	20mA	20mA
	ICC4	20mA	20mA
	ICC5	20mA	20mA

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### 3. Command Set Comparison

MX25L3206E is capable of new features and their command sets for Dual Output mode (1I/2O, Single Input / Dual Output).

MX25L3206E does not support x2 I/O (Dual Input / Dual Output) and CP (Continuous Program). All commands of MX25L3205D for x2 I/O are not available, such as 2READ.

User has to check the differences in detail by comparison tables below. For the details of command sets function, please refer to the datasheet of each product.

**Migrating to MX25L3206E from MX25L3205D****Table 3. Command Set Comparison**

Command		MX25L3205D	MX25L3206E
<b>Write</b>	WREN	06h	06h
	WRDI	04h	04h
	WRSR	01h	01h
<b>Read</b>	RDID	9Fh	9Fh
	RDSR	05h	05h
	READ	03h	03h
	Fast Read	0Bh	0Bh
	2READ	BB	--
	RES	ABh	ABh
	REMS	90h	90h
	REMS2	EFh	--
	DREAD	--	3Bh
<b>Erase</b>	SE	20h	20h
	BE	D8h	52h or D8h
	CE	60h or C7h	60h or C7h
<b>Program</b>	PP	02h	02h
	CP	ADh	--
<b>Security Register</b>	RDSCUR	2Bh	2Bh
	WRSCUR	2Fh	2Fh
<b>OTP</b>	ENSO	B1h	B1h
	EXSO	C1h	C1h
<b>SO Output</b>	ESRY	70h	--
	DSRY	80h	--
<b>Deep Power Down</b>	DP	B9h	B9h
	DRP	ABh	ABh



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**4. Device ID Code Comparison of 32Mb Devices**

This table shows that Manufacturer and Device IDs have not been changed. The density (16) is defined by MXIC and also has not been changed.

**Table 4: ID Code Comparison**

Command Type	MX25L3205D			MX25L3206E		
RDID Command	M ID	Type	Density	M ID	Type	Density
	C2	20	16	C2	20	16
RES Command	E ID			E ID		
	15			15		
REMS	M ID	Device ID		M ID	Device ID	
	C2	15		C2	15	

**5. References**

The following datasheets were used for preparing this comparison note:

Datasheet	Location	Date Issued	Versions
MX25L3205D	Macronix Website	Apr., 2009	1.5
MX25L3206E	Macronix Website	Jan., 2011	1.3

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
0.01	1. Modified DMC description	P5	MAR/31/2010
	2. Revised notes for 11 / 20	P2	
	3. Revised Table 2-1	P2	
1.0	1. Revised Introduction	P2	MAY/12/2010
	2. Revised Table 2-1 and added notes	P3	
	3. Revised Table 2-2. Performance Comparison	P4	
	4. Modified DMC as SFDP	P3,5-6	
1.1	1. Added descriptions.	P3-5	JULY/2/2010
	2. Revised Table 4: ID Code Comparison	P7	
	3. Revised copyright page	P9	
	4. Revised JEDEC ID as REMS	P8	
	5. Added description for Future comparison and Command Set Comparison	P2, 5	
	6. Remove SFDP till it becomes a standard of JEDEC	All	
1.2	1. Modified Table 2: Performance Comparison, Revised tCH, tCL value of MX25L3205D and MX25L3206E Added max. value of Sector Erase Time Added max. and revised value of Chip Erase Time Revised tSLCH, tSHCH, tCHSH, tCHSL to min. Revised tSHCH and tCHSH of MX25L3206E to 5ns(min.) Revised VCC Standby of MX25L3206E to 40uA(max.)	P4	JAN/07/2011



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## APPLICATION NOTE

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