Application Note

Eon Flash EN29LV160B

vs

MXIC Flash MX29LV160D

Rev. A, Issue Date: 2009/12/01

1. INTRODUCTION

The application note introduces how to implement a system design from MXIC MX29LV160D Flash to Eon EN29LV160B Flash.

2. GENERAL FUNCTION COMPARISON TABLE:

The following table is major features of these two devices.

Features	EN29LV160B	MX29LV160D
voltage range	2.7 ~ 3.6	2.7 ~ 3.6
Pin to Pin	Compatible (for 48 TSOP Except Pin 14 = NC) Compatible (for 48 TFBGA Except Ball B3 = NC)	Compatible (for 48 TSOP Except Pin 14 = WP#/ACC) Compatible (for 48 TFBGA Except Ball B3 = WP#/ACC)
Access time	70ns	70ns
Secured Silicon Sector region	None	None
Sector Architecture	16K Byte X 1 sector / 8K Byte x 2 sectors /32K Byte X1 sector / 64K Byte X 31 sectors boot sectors at Top or Bottom	16K Byte X 1 sector / 8K Byte x 2 sectors /32K Byte X1 sector / 64K Byte X 31 sectors boot sectors at Top or Bottom
Byte/Word mode	Yes	Yes
WP#/ACC	None	Yes
VID and VHH Max (High Voltage)	10.5V - 11.5V	9.5V - 10.5V
CFI Compliant	Yes	Yes
Erase Suspend/Resume	Yes	Yes
Continuous Sector Erasure	None	Yes
Minimum endurance cycle	100K	100K
Package	48-pin 12mm x 20mm TSOP 48-ball 6mm x 8mm TFBGA	48-pin 12mm x 20mm TSOP 48-ball 6 mm x 8 mm FBGA 48-ball 4 mm x 6 mm WFBGA 48-ball 4 mm x 6 mm XFLGA

3. HARDWARE CONSIDERATIONS

3.1 I_{CC} comparison

Current	EN29LV160B		MX29LV160D		Unit
	Typ	Max	Typ	Max	
Read I_{CC1}	9	16	5	12	mA
Write I_{CC2}	20	30	15	30	mA
Standby I_{CC3}	1	5.0	5	15	μA

3.2 Pin Configuration

48 pin TSOP (Type 1)	EN29LV160BT(B)-70TIP	MX29LV160DT(B)TC(I) -70G
Pin 14	NC	WP#/ACC

48 ball 6 x 8 mm TFBGA	EN29LV160BT(B)-70BIP	MX29LV160DT(B)XBC(I) -70G
Ball B3	NC	WP#/ACC

3.3 WP#/ACC feature:

EN29LV160B: No

MX29LV160D: Support

3.4 Max VID comparison

MX29LV160D Vhv (High Voltage) range is 9.5V and 10.5V. But EN29LV160B VID range is 10.5V~11.5V.

Any voltage level higher than 11.5V would damage the device, possibly.

4. SOFTWARE CONSIDERATIONS

Except manufacture ID, there is no difference in Device ID, and Autoselect functions for EN29LV160B and MX29LV160D are the same.

4.1 Manufacturer, Device Identification and Autoselect Information

Eon		MXIC	
Manufacture ID: 7Fh (A8 = "0"), 1Ch (A8 = "1").		Manufacture ID: C2h	
Part No.	Device ID	Part No.	Device ID
EN29LV160BT	22C4h	MX29LV160DT	22C4h
EN29LV160BB	2249h	MX29LV160DB	2249h

For EN29LV160B autoselect mode table

Description		CE#	OE#	WE#	A19 to A12	A11 to A10	A9[2]	A8	A7	A6	A5 to A2	A1	A0	DQ8 to DQ15	DQ7 to DQ0
Manufacturer ID: Eon		L	L	H	X	X	V_{ID}	L	X	L	X	L	L	X	7FH
								H[1]							1CH
Device ID (top boot block)	Word	L	L	H	X	X	V_{ID}	X	X	L	X	L	H	22h	C4H
	Byte	L	L	H										X	C4H
Device ID (bottom boot block)	Word	L	L	H	X	X	V_{ID}	X	X	L	X	L	H	22h	49H
	Byte	L	L	H										X	49H
Sector Protection Verification		L	L	H	SA	X	V_{ID}	X	X	L	X	H	L	X	01h (Protected)
														X	00h (Unprotected)

Note:
1. A8=H is recommended for Manufacturing ID check. If a manufacturing ID is read with A8=L, the chip will output a configuration code 7Fh
2. A9 = VID is for HV A9 Autoselect mode only. A9 must be ≤ Vcc (CMOS logic level) for Command Autoselect Mode.

For MX29LV160D autoselect mode table

		Address (Hex)	Data (Hex)	Representation
Manufacturer ID	Word	X00	00C2	
	Byte	X00	C2	
Device ID	Word	X01	22C4/2249	Top/Bottom Boot Sector
	Byte	X02	C4/49	Top/Bottom Boot Sector
Sector Protect Verify	Word	(Sector address) X 02	0000/0001	Unprotected/protected
	Byte	(Sector address) X 04	00/01	Unprotected/protected

After entering automatic select mode, no other commands are allowed except the reset command.

4.2. Continuous Sector Erasure

The EN29LV160B doesn't support Continuous Sector Erasure function. Users must issue another sector erase command for the next sector to be erased after the previous one is completed for EN29LV160B.

5. PERFORMANCE DIFFERENCES

5.1 Power-on and Reset Timings

Parameter	Description	Test Setup	EN29LV160B	MX29LV160D
t_{VCS}	Vcc Setup Time	Min.	50µs	200µs
t_{RP1}	RESET# Pulse Width (During Embedded Algorithms)	Min.	10us	10µs
t_{RP2}	RESET# Pulse Width (NOT During Embedded Algorithms)	Min.	500ns	500ns
t_{RH}	Reset# High Time Before Read	Min.	50ns	70ns
t_{RB1}	RY/BY# Recovery Time (to CE#, OE# go low)	Min.	0ns	0ns
t_{RB2}	RY/BY# Recovery Time (to WE# go low)	Min.	50ns	50ns
t_{READY1}	Reset# Pin Low (During Embedded Algorithms) to Read or Write	Max.	20µs	20µs
t_{READY2}	Reset# Pin Low (NOT During Embedded Algorithms) to Read or Write	Max.	500ns	500ns

5.2 ERASE AND PROGRAM PERFORMANCE

The erasing and programming performance comparison.

Parameter		EN29LV160B		MX29LV160D		Unit
		Typ	Max	Typ	Max	
Sector Erase Time		0.1	2	0.7	2	sec
Chip Erase Time		4	35	15	32	sec
Byte Programming Time		8	200	9	300	µs
Word Programming Time		8	200	11	360	µs
Chip Programming Time	Byte	16.8	50.4	18	54	sec
	Word	8.4	25.2	12	36	sec

Revisions List

Revision No	Description	Date
A	Initial Release	2009/12/01