



Application Note

Eon Flash EN29LV320B

VS

MXIC Flash MX29LV320D



Eon Silicon Solution Inc.

1. INTRODUCTION

The application note introduces how to implement a system design from MXIC MX29LV320D Flash to Eon EN29LV320B Flash.

2. GENERAL FUNCTION COMPARISON TABLE:

The following table is major features of these two devices.

| Features | EN29LV320B | MX29LV320D |
|--------------------------------|---|---|
| voltage range | 2.7 ~ 3.6 | 2.7 ~ 3.6 |
| Pin to Pin | Compatible (for 48 TSOP) Compatible (for 48 TFBGA) | Compatible (for 48 TSOP) Compatible (for 48 TFBGA) |
| Access time | 70ns | 70ns |
| Secured Silicon Sector region | None | 64 Kbyte |
| Sector Architecture | Boot sector models: 8K Byte x 8 sectors / 64K Byte X 63 sectors, boot sectors at Top or Bottom | Boot sector models: 8K Byte x 8 sectors / 64K Byte X 63 sectors, boot sectors at Top or Bottom |
| Byte/Word mode | Yes | Yes |
| WP#/ACC | Yes | 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 | 44-pin SOP 48-pin 12mm x 20mm TSOP 48-ball 6mm x 8mm TFBGA 48-ball 6mm x 8mm LFBGA |



3. HARDWARE CONSIDERATIONS

3.1 I_{CC} comparison

| Current | EN29LV320B | | MX29LV320D | | Unit |
|--------------------------|------------|-----|------------|-----|------|
| | Typ | Max | Typ | Max | |
| Read I _{CC1} | 9 | 16 | 10 | 16 | mA |
| Write I _{CC2} | 20 | 30 | 15 | 30 | mA |
| Standby I _{CC3} | 1 | 5.0 | 5 | 15 | μA |

3.2 Max VID comparison

MX29LV320D V_{hv} (High Voltage) range is 9.5V and 10.5V. But EN29LV320B VID range is 10.5V~11.5V.

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

4. SOFTWARE CONSIDERATIONS

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 |
| EN29LV320BT | 22F6h | MX29LV320DT | 22A7h |
| EN29LV320BB | 22F9h | MX29LV320DB | 22A8h |



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For EN29LV320B autoselect mode table

| Description | CE# | OE# | WE# | A20 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} | H ¹ | X | L | X | L | L | X | 1Ch | |
| | | | | | | | L | | | | | | | 7Fh | |
| Device ID (top boot sector) | Word | L | L | H | X | X | V _{ID} | X | X | L | X | L | H | 22h | F6h |
| | Byte | L | L | H | | | | | | | | | | X | F6h |
| Device ID (bottom boot sector) | Word | L | L | H | X | X | V _{ID} | X | X | L | X | L | H | 22h | F9h |
| | Byte | L | L | H | | | | | | | | | | X | F9h |
| Sector Protection Verification | L | L | H | SA | X | V _{ID} | X | X | L | X | H | L | X | 01h (Protected) | |
| | | | | | | | | | | | | | X | 00h (Unprotected) | |

L=logic low= V_{IL}, H=Logic High= V_{IH}, V_{ID} = 11 ± 0.5V, X=Don't Care (either L or H, but not floating!), SA=Sector Addresses

Note:

- 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.
- A9 = V_{ID} is for HV A9 Autoselect mode only. A9 must be ≤ V_{cc} (CMOS logic level) for Command Autoselect Mode.

For MX29LV320D autoselect mode table

| | | Address (Hex) | Data (Hex) | Representation |
|-----------------------|------|-----------------------|------------|-------------------------|
| Manufacturer ID | Word | X00 | C2 | |
| | Byte | X00 | C2 | |
| Device ID | Word | X01 | 22A7/22A8 | Top/Bottom Boot Sector |
| | Byte | X02 | A7/A8 | Top/Bottom Boot Sector |
| Secured Silicon | Word | X03 | 99/19 | Factory locked/unlocked |
| | Byte | X06 | 99/19 | Factory locked/unlocked |
| Sector Protect Verify | Word | (Sector address) X 02 | 00/01 | 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 EN29LV320B 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 EN29LV320B.

4.3. Secured Silicon Sector region

EN29LV320B: No support.

MX29LV320D: Support 64 Kbyte.



5. PERFORMANCE DIFFERENCES

5.1 Power-on and Reset Timings

| Parameter | Description | Test Setup | EN29LV320B | MX29LV320D |
|---------------------|--|------------|------------|------------|
| t _{VCS} | Vcc Setup Time | Min. | 50μs | 200μs |
| t _{RP1} | RESET# Pulse Width (During Embedded Algorithms) | Min. | 10us | 10us |
| 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 | EN29LV320B | | MX29LV320D | | Unit | |
|------------------------------------|------------|------|------------|-----|------|-----|
| | Typ | Max | Typ | Max | | |
| Sector Erase Time | 0.1 | 2 | 0.7 | 2 | sec | |
| Chip Erase Time | 8 | 70 | 35 | 50 | sec | |
| Byte Programming Time | 8 | 200 | 9 | 300 | μs | |
| Accelerated Byte/Word Program Time | 7 | 200 | 7 | 210 | μs | |
| Word Programming Time | 8 | 200 | 11 | 360 | μs | |
| Chip Programming Time | Byte | 33.6 | 100.8 | 36 | 108 | sec |
| | Word | 16.8 | 50.4 | 24 | 72 | sec |



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Revisions List

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