



Migration Note

Spansion Flash S29AL008J

to

Eon Flash EN29LV800C



Eon Silicon Solution Inc.

1. INTRODUCTION

The application note introduces how to implement a system design from Spansion S29AL008J Flash to Eon EN29LV800C Flash.

2. GENERAL FUNCTION COMPARISON TABLE:

The following table is major features of these two devices.

Features	EN29LV800C	S29AL008J
Process Technology	0.13 μ m	0.11 μ m
voltage range	2.7 ~ 3.6	2.7 ~ 3.6
Pin to Pin	Pin 14 = NC (for 48 TSOP) B3 = NC (for 48 TFBGA)	Pin 14 = WP# (for TSOP 48) B3 = WP# (for 48 FBGA)
Access time	70ns	70ns 55ns (Vcc=3.0~3.6V)
Secured Silicon Sector region	None	128-word/256-byte
Sector Architecture	32Kword x 15 sectors and 16Kword + 4Kword x 2 + 8Kword boot sectors at Top or Bottom	32Kword x 15 sectors and 16Kword + 4Kword x 2 + 8Kword boot sectors at Top or Bottom
Byte/Word mode	Yes	Yes
VID and VHH Max	10.5V - 11.5V	8.5V - 12.5V
CFI Compliant	None	Yes
Erase Suspend/Resume	Yes	Yes
Continuous Sector Erasure	None	Yes
Minimum endurance cycle	100K	1,000K (typ.)
Package	48-pin 12mm x 20mm TSOP 48 ball 6mm x 8mm TFBGA	48-pin 12mm x 20mm TSOP 48 ball 6mm x 8mm FBGA 56-pin 16mm x 23.7mm SSOP



3. HARDWARE CONSIDERATIONS

3.1 I_{CC} comparison

Current	EN29LV800C		S29AL008J		Unit
	Typ	Max	Typ	Max	
Read I _{CC1} (5MHz)	7	20	7	12	mA
Write I _{CC2}	15	30	20	30	mA
Standby I _{CC3}	1	5.0	0.2	5.0	μA

3.2 WP# input pin

Pin	EN29LV800C	S29AL008J
14	NC	<p>For boot sector device: at V_{IL} protect first or last 16Kbyte sector depending on boot configuration (top boot or bottom boot).</p> <p>When unconnected, WP# is internal pull-up at V_{IH} to unprotect.</p>

3.3 Max VID

S29AL008J VID range is 8.5V and 11.5V. But EN29LV800C VID range is 10.5V~11.5V.

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



4. SOFTWARE CONSIDERATIONS

4.1 Manufacturer, Device Identification and Autoselect Information comparison

EN29LV800C:

Description	Mode	CE #	OE #	WE #	A18 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 block)	Word	L	L	H	X	X	V _{ID}	X	X	L	X	L	H	22h	DAh
	Byte	L	L	H	X	X	V _{ID}	X	X	L	X	L	H	X	DAh
Device ID (bottom boot block)	Word	L	L	H	X	X	V _{ID}	X	X	L	X	L	H	22h	5Bh
	Byte	L	L	H	X	X	V _{ID}	X	X	L	X	L	H	X	5Bh
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:

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

S29AL008J:

Description	Mode	CE#	OE#	WE#	A18 to A10	A9	A8 to A7	A6	A5 to A4	A3 to A2	A1	A0	DQ8 to DQ15	DQ7 to DQ0
Manufacturer ID: Spansion		L	L	H	X	V _{ID}	X	L	X	L	L	L	X	01h
Device ID: S29AL008J (Top Boot Block)	Word	L	L	H	X	V _{ID}	X	L	X	L	L	H	22h	DAh
	Byte	L	L	H	X	V _{ID}	X	L	X	L	L	H	X	DAh
Device ID: S29AL008J (Bottom Boot Block)	Word	L	L	H	X	V _{ID}	X	L	X	L	L	H	22h	5Bh
	Byte	L	L	H	X	V _{ID}	X	L	X	L	L	H	X	5Bh
Sector Group Protection Verification		L	L	H	SA	V _{ID}	X	L	X	L	H	L	X	01h (protected)
													X	00h (unprotected)
Secured Silicon Sector Indicator Bit (DQ7) Top Boot Block		L	L	H	X	V _{ID}	X	L	X	L	H	H	X	8Eh (factory locked) 0Eh (not factory locked)
Secured Silicon Sector Indicator Bit (DQ7) Bottom Boot Block		L	L	H	X	V _{ID}	X	L	X	L	H	H	X	96h (factory locked) 16h (not factory locked)

Legend

L = Logic Low = V_{IL}; H = Logic High = V_{IH}; SA = Sector Address; X = Don't care



4-2. Secured Silicon Sector

The EN29LV800C doesn't have Secured Silicon Sector and does not support enter or Exit Secured Silicon Sector command.

4-3. Continuous Sector Erasure

The EN29LV800C 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 EN29LV800C.

4-4. CFI (Common Flash Interface) commands

The EN29LV800C doesn't support CFI as S29AL008J 03/04. We support CFI from 16Mbit flash. If user has to use CFI to get flash information, we suggest user to use EN29LV160.



5. PERFORMANCE DIFFERENCES

5.1 Power-on and Reset Timings

Parameter	Description	Test Setup	EN29LV800C	S29AL008J
t _{VCS}	Vcc Setup Time	Min.	50μs	50μs
t _{RP1}	RESET# Pulse Width (During Embedded Algorithms)	Min.	10μs	500ns
t _{RP2}	RESET# Pulse Width (NOT During Embedded Algorithms)	Min.	500ns	500ns
t _{RH}	Reset# High Time Before Read	Min.	50ns	50ns
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	None*
t _{READY1}	Reset# Pin Low (During Embedded Algorithms) to Read or Write	Max.	20μs	35μs
t _{READY2}	Reset# Pin Low (NOT During Embedded Algorithms) to Read or Write	Max.	500ns	500ns

Note* : There is no description in datasheet.

5.2 ERASE AND PROGRAM PERFORMANCE

The erase and program performance comparison.

Parameter	EN29LV800C		S29AL008J		Unit	
	Typ	Max	Typ	Max		
Sector Erase Time	0.1	2	0.5	10	sec	
Chip Erase Time	2	20	10	Note*	sec	
Byte Programming Time	8	200	6	Note*	μs	
Word Programming Time	8	200	6	150	μs	
Chip Programming Time	Byte	4.2	12.6	Note*	Note*	sec
	Word	8.4	25.2	Note*	Note*	sec

Note* : There is no description in datasheet.



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Revisions List

Revision No	Description	Date
A	Initial Release	2009/04/10