Application Note

Eon Flash EN39SL160L(H)

vs

SST Flash SST39WF1601(02)

1. INTRODUCTION

The application note introduces how to implement a system design from SST SST39WF1601(02) Flash to Eon EN39SL160L(H) Flash.

2. GENERAL FUNCTION COMPARISON TABLE:

The following table is major features of these two devices.

Features	EN39SL160L(H)	SST39WF1601(02)
voltage range	1.65 ~ 1.95	1.65 ~ 1.95
Pin to Pin	48-ball 6mm x 8mm TFBGA (B3 = WP#/ACC) 48-ball 4mm x 6 mm WFBGA (D5 =WP#/ACC)	48-ball 6mm x 8mm TFBGA (B3 = WP#) 48-ball 4mm x 6 mm WFBGA 48-ball 5mm x 6 mm WFBGA (D5 = WP#)
Access time	70ns	70/90ns
Sector Architecture	512 sectors of 2K word 32 blocks of 32-Kword	512 sectors of 2K word 32 blocks of 32-Kword
Byte/Word mode	48-ball TFBGA and WFBGA only support Word Mode	only support Word Mode
VID and VHH Max	9.0V – 11.0V	None
Autoselect Command	Yes	None
WP#/ACC	Yes	only support WP#
Hardware Block Protection	Yes	Yes
CFI Compliant	Yes	Yes
Erase Suspend/Resume	Yes	Yes
Minimum endurance cycle	100K	100K
Package	48-ball 6mm x 8mm TFBGA 48-ball 4mm x 6 mm WFBGA	48-ball 6mm x 8mm TFBGA 48-ball 4mm x 6 mm WFBGA 48-ball 5mm x 6 mm WFBGA

3. HARDWARE CONSIDERATIONS

3.1 I_{CC} comparison

Current	EN39SL160L/H		SST39WF1601/02		Unit
	Typ	Max	Typ	Max	
Read I_{CC1}	5	10	-	10	mA
Write I_{CC4}	15	25	-	25	mA
Standby I_{CC2}	0.2	5.0	-	40	μA

3.2 Hardware Block-Protection comparison

Block-Protection Area	Eon	SST
Lowest address (Bottom) block	EN39SL160L	SST39WF1601
Highest address (Top) block	EN39SL160H	SST39WF1602

3.3 48-ball package comparison

- For the 48-ball (6mm x 8mm) TFBGA, the Eon EN39SL160L(H)-70BIP is the same as SST SST39WF1601/02 except B3 ball.

Part No.	EN39SL160L(H)-70BIP	SST39WF1601(02)-70(90)-4I(C)-B3KE
B3 ball	WP#/ACC	WP#

- For the ball-out of 48-ball WFBGA, the Eon EN39S160L(H)-70NIP is the same as SST SST39WF1601/02 except D5 ball.

Part No.	EN39SL160L(H)-70NIP	SST39WF1601(02)-70(90)-4I(C)-Y1(MB)QE
D5 ball	WP#/ACC	WP#

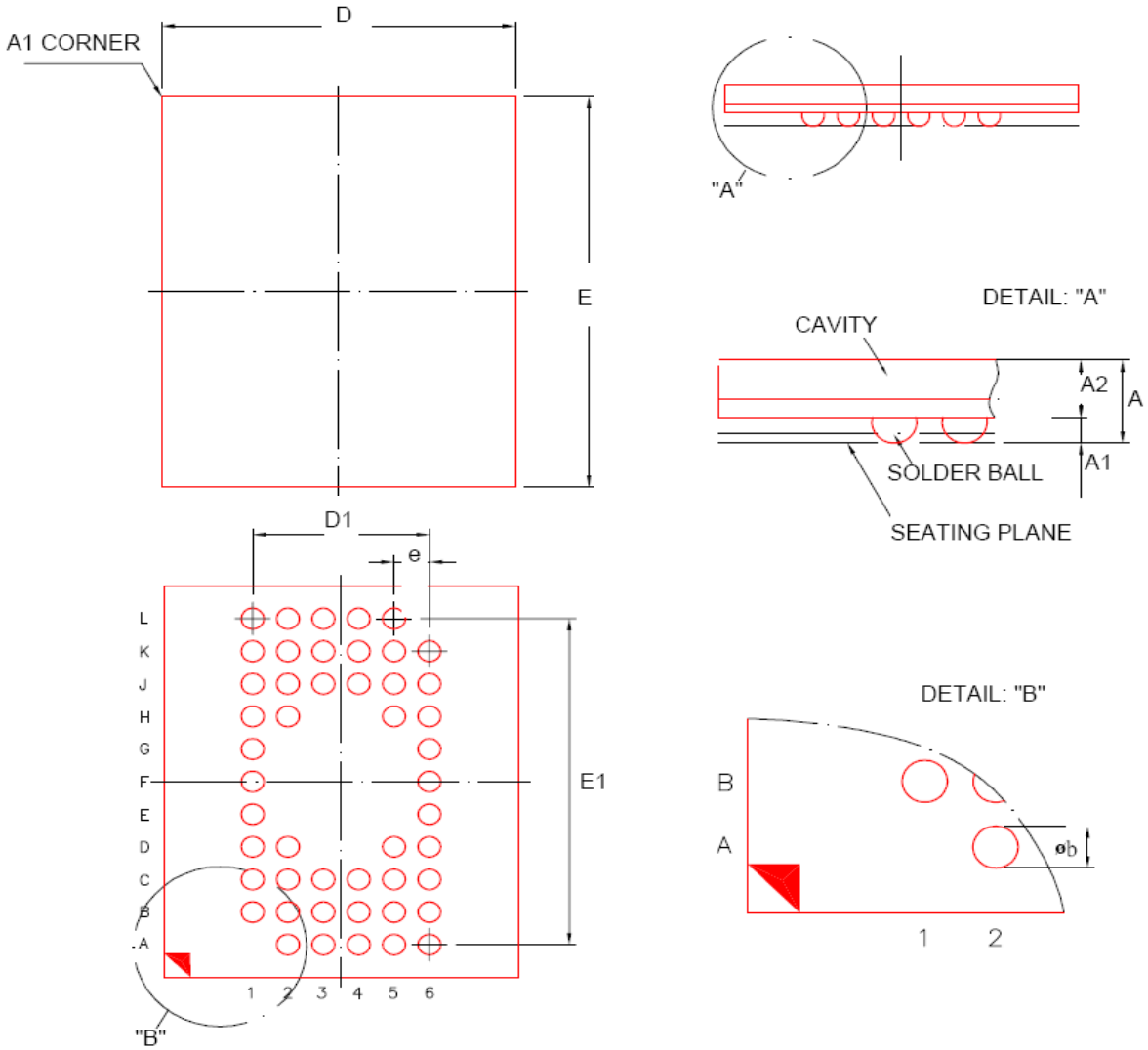
Note:

SST39WF1601(02) WP# pin contains internal pull-up; when unconnected, WP# is at V_{IH} to write unprotect. But EON EN39SL160L(H) Flash WP#/ACC pin can't leave floating and need to input V_{IH} or V_{IL}.

- **For the package dimension of 48-ball WFBGA, the Eon EN39S160L(H)-70NIP is the same as SST SST39WF1601(02)-xx-xx-MBQE except D dimension (from 5mm change to 4mm). The customer can replace SST39WF1601(02) with EN39SL160L(H) on PCB for system design directly.**

The detail information please refers to the table and 48-ball WFBGA package outline are shown below.

Part No.	EN39SL160L(H)-70NIP	SST39WF1601(02)-Y1QE	SST39WF1601(02)-MBQE
48-ball WFBGA	4mm x 6mm	4mm x 6mm	5mm x 6mm



Part No.	EN39SL160L(H)-70NIP (4mm x 6mm) WFBGA D = 4.0 ± 1			SST39WF1601(02)-70(90)-4I(C)-MBQE (5mm x 6mm) WFBGA D = 5.0 ± 0.08		
SYMBOL	DIMENSION IN MM			DIMENSION IN MM		
	MIN.	NOR	MAX	MIN.	NOR	MAX
A	- - -	- - -	0.73	0.53	0.63	0.73
A1	0.15	0.20	0.25	0.14	0.20	0.26
A2	- - -	0.436	- - -	- - -	0.436	- - -
D	3.90	4.00	4.10	4.92	5.00	5.08
E	5.90	6.00	6.10	5.92	6.00	6.08
D1	- - -	2.50	- - -	- - -	2.50	- - -
E1	- - -	5.00	- - -	- - -	5.00	- - -
e	- - -	0.50	- - -	- - -	0.50	- - -
øb	0.25	0.30	0.35	0.27	0.32	0.37
Note :	Coplanarity: 0.1 mm			Coplanarity: 0.08 mm		

4. SOFTWARE CONSIDERATIONS

4.1 Manufacturer and Device Identification comparison

For EN39SL160L(H) 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}	H[1] L	X	L	X	L	L	X	1Ch
															7Fh
Device ID (top boot block)	Word	L	L	H	X	X	V_{ID}	X	X	L	X	L	H	27h	4Ah
	Byte	L	L	H										X	4Ah
Device ID (bottom boot block)	Word	L	L	H	X	X	V_{ID}	X	X	L	X	L	H	27h	4Bh
	Byte	L	L	H										X	4Bh
Block Protection Verification		L	L	H	SA	X	V_{ID}	X	X	L	X	H	L	X	01h (Protected)
														X	00h (Unprotected)

Note:

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

For SST39WF1601(02) Manufacturer ID and Device ID

- **Manufacturer ID : 00BFH**
- **Device ID :**

  SST39WF1601 : 274BH

  SST39WF1602 : 274AH

	Address	Data
Manufacturer's ID	0000H	BFH
Device ID		
SST39WF1601	0001H	BF274B
SST39WF1602	0001H	BF274A

For the EN39SL160L(H), the Device ID is the same as SST39WF1601(02) except the Manufacturer ID.

4.2. Address input for command cycles:

EN39SL160L(H) :

use address input 555H and 2AAH for command cycles.

Address bits A_{10}- A_0 are input for 555H and 2AAH, address bits A_{17}- A_{11} are don't cares.

SST39WF1601(02) :

use address input 5555H and 2AAAH for command cycles.

Address bits A_{14}- A_0 are input for 5555H and 2AAAH, address bits A_{17}- A_{15} are don't cares.

The address input in the command sequence for the SST39WF1601(02) can also be used for the EN39SL160L(H) without any change.

Revisions List

Revision No	Description	Date
A	Initial Release	2009/07/10
B	Add the note of WP#/ACC pin on page 3.	2009/10/15