



# **Migration Note**

## **EON Flash EN25F40 to EN25Q40**



# Eon Silicon Solution Inc.

## 1. INTRODUCTION

The application note introduces how to implement a system design from EON EN25F40 Flash to Eon EN25Q40 Flash.

## 2. GENERAL FUNCTION COMPARISON TABLE:

2.1 The following table is major features of these two devices.

Features	EN25Q40	EN25F40
voltage range	2.7 ~ 3.6	2.7 ~ 3.6
SPI frequency	100MHz (standard mode) 80MHz @ dual & quad mode	100MHz (standard mode)
Secured Silicon Sector region	256 Byte	256 Byte
Sector Architecture	Uniform 128 sectors of 4K byte / 8 block of 64K byte	Uniform 128 sectors of 4K byte / 8 block of 64K byte
SPI mode	Mode 0 / Mode 3	Mode 0 / Mode 3
Minimum endurance cycle	100K	100K
Package	8-pin SOP 150mil 8-pin SOP 200mil 8 contact VDFN 8-pin PDIP	8-pin SOP 150mil 8-pin SOP 200mil 8 contact VDFN 8-pin PDIP

2.2 The following table is pin comparison

Pin number	EN25Q40	EN25F40
Pin1	CS#	CS#
Pin2	DO (DQ1)	DO
Pin3	WP# (DQ2)	WP#
Pin4	VSS	VSS
Pin5	DI (DQ0)	DI
Pin6	CLK	CLK
Pin7	NC (DQ3)	HOLD#
Pin8	VCC	VCC

Note: If customers don't use Hold# pin function on EN25F40, which can be replaced by EN25Q40 in [standard SPI mode](#).

EN25F40 only support general standard SPI mode.

EN25Q40 can support general standard / [dual](#) / [quad](#) SPI mode. (Need specific SPI controller)



## 3. HARDWARE CONSIDERATIONS

### 3.1 I<sub>CC</sub> comparison

Current	EN25Q40		EN25F40		Unit
	Typ	Max	Typ	Max	
Read I <sub>CC1</sub>	N/A	25	N/A	25	mA
Write I <sub>CC2</sub>	N/A	18	N/A	15	mA
Standby I <sub>CC3</sub>	N/A	5.0	N/A	5.0	μA

### 3.2 The 8 contact VDFN (5mmx6mm) package outline comparison

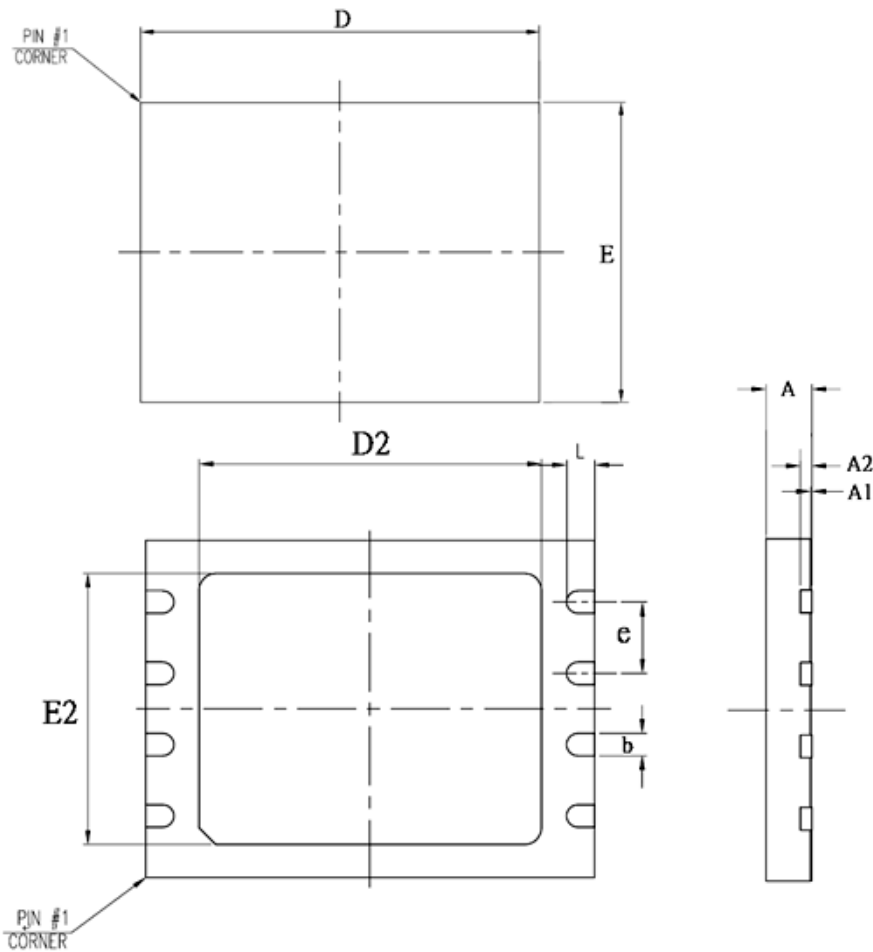
Part No.	EN25Q40-100WIP	EN25F40-100VIP
Package Outline	8 contact VDFN (5mmx6mm) D2 = 3.4 ± 0.1	8 contact VDFN (5mmx6mm) D2 = 4.23 ± 0.1

For EN25Q40-100WIP, all of the parameters of 8 contact VDFN (5mmx6mm) package (for example: pin assignment, pin pitch, E, D, and E2 dimension etc.) are the same as the EN25F40-100VIP except D2 dimension (change from 4.23mm to 3.4mm). The customer can replace F40-100VIP with Q40-100WIP on PCB directly.

The detail information please refers to the table and 8 contact VDFN (5mmx6mm) package outline are shown below.



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Controlling dimensions are in millimeters (mm).

Part No.	EN25Q40-100WIP 8 contact VDFN (5mmx6mm) D2 = 3.4 ± 0.1			EN25F40-100VIP 8 contact VDFN (5mmx6mm) D2 = 4.23 ± 0.1		
	DIMENSION IN MM			DIMENSION IN MM		
SYMBOL	MIN.	NOR	MAX	MIN.	NOR	MAX
A	0.70	0.75	0.80	0.70	0.75	0.80
A1	0.00	0.02	0.04	0.00	0.02	0.04
A2	---	0.20	---	---	0.20	---
D	5.90	6.00	6.10	5.90	6.00	6.10
E	4.90	5.00	5.10	4.90	5.00	5.10
D2	3.30	3.40	3.50	4.13	4.23	4.33
E2	3.90	4.00	4.10	3.90	4.00	4.10
e	---	1.27	---	---	1.27	---
b	0.35	0.40	0.45	0.35	0.40	0.45
L	0.55	0.60	0.65	0.55	0.60	0.65

Note : 1. Coplanarity: 0.1 mm



## 4. SOFTWARE CONSIDERATIONS

Except of memory type, (only difference on 9Fh command) there is no difference in Manufacture ID, Device ID

### 4.1 Manufacturer, Memory Type & Device Identification (M7~M0: manufacture ID, D15~ID0: memory type, ID7~ID0: memory density)

For EN25F40

OP Code	(M7-M0)	(ID15-ID0)	(ID7-ID0)
ABh			12h
90h	1Ch		12h
9Fh	1Ch	3113h	

For EN25Q40

OP Code	(M7-M0)	(ID15-ID0)	(ID7-ID0)
ABh			12h
90h	1Ch		12h
9Fh	1Ch	3013h	



## 5. PERFORMANCE DIFFERENCES

### 5.1 ERASE AND PROGRAM PERFORMANCE

The erasing and programming performance comparison.

Parameter	EN25Q40		EN25F40		Unit
	Typ	Max	Typ	Max	
Sector Erase Time	0.09	0.3	0.09	0.3	Sec
Block Erase Time	0.5	2	0.5	2	Sec
Chip Erase Time	3.5*	10	3.5*	10	Sec
Page Programming Time	1.3	5	1.3	5	ms

\* **NOTE:** ERASE FROM “1” → “1”.

### 5.2 KEY AC PARAMETER PERFORMANCE

Parameter	EN25Q40	EN25F40
tCH (serial clock high time)	Min@ 4ns	Min@ 4ns
tCL (serial clock low time)	Min@ 4ns	Min@ 4ns
tCLCH(serial clock rise time)	Min@ 0.1V / ns	Min@ 0.1V / ns
tCLCL(serial clock fall time)	Min@ 0.1V / ns	Min@ 0.1V / ns
tCHSH(CS# active setup / hold time)	Min@ 5ns	Min@ 5ns
tSHSL(CS# high time)	Min@100ns	Min@100ns
tDSU(Data in setup time)	Min@2ns	Min@2ns
tDH(Data in hold time)	Min@5ns	Min@5ns



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## Revisions List

Revision No	Description	Date
A	Initial Release	2009/8/17