



Migration Note

EON Flash EN25F16 to EN25Q16



Eon Silicon Solution Inc.

1. INTRODUCTION

The application note introduces how to implement a system design from EON EN25F16 Flash to Eon EN25Q16 Flash.

2. GENERAL FUNCTION COMPARISON TABLE:

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

Features	EN25Q16	EN25F16
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	128 Byte	128 Byte
Sector Architecture	Uniform 512 sectors of 4K byte / 32 block of 64K byte	Uniform 512 sectors of 4K byte / 32 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	EN25Q16	EN25F16
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 EN25F16, which can be replaced by EN25Q16 in [standard SPI mode](#).

EN25F16 only support general standard SPI mode.

EN25Q16 can support general standard / [dual](#) / [quad](#) SPI mode. (Need specific SPI controller)



3. HARDWARE CONSIDERATIONS

3.1 I_{CC} comparison

Current	EN25Q16	EN25F16	Unit
	Max	Max	
Read I _{CC3}	25	25	mA
Page Program (PP) I _{CC4}	28	28	mA
Sector Erase (SE) I _{CC6}	25	25	mA
Standby I _{CC1}	5.0	5.0	μA

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 EN25F16

OP Code	(M7-M0)	(ID15-ID0)	(ID7-ID0)
ABh			14h
90h	1Ch		14h
9Fh	1Ch	3115h	

For EN25Q16

OP Code	(M7-M0)	(ID15-ID0)	(ID7-ID0)
ABh			14h
90h	1Ch		14h
9Fh	1Ch	3015h	



5. PERFORMANCE DIFFERENCES

5.1 ERASE AND PROGRAM PERFORMANCE

The erasing and programming performance comparison.

Parameter	EN25Q16		EN25F16		Unit
	Typ	Max	Typ	Max	
Sector Erase Time	0.09	0.3	0.09	0.3	Sec
Block Erase Time	0.4	2	0.4	2	Sec
Chip Erase Time	12*	35	12*	35	Sec
Page Programming Time	1.3	5	1.3	5	ms

* **NOTE:** ERASE FROM “1” → “1”.

5.2 KEY AC PARAMETER PERFORMANCE

Parameter	EN25Q16	EN25F16
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, read @15ns Program/Erase @50ns	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	2009/08/28