DESIGN-IN WITH WINBOND 4M FWH (W39V040FA) PRODUCT

1. GENERAL DESCRIPTION

The FWH (Firmware Hub) Flash is an application-specific device, which is used for Intel Chipset solution. If users need to use for non-Intel Chipset solution, please refer to Winbond LPC Flash, W39V040A.

There are three major parts listed in this comparison notice to identify the difference among Winbond 4M FWH and the equivalent parts of SST, STM and Intel.

2. DETAIL DESCRIPTION

The comparison on Function, Command, and Pin Assignment in Programmer Mode and FWH mode is described in the following:

Function

FUNCTION COMPARISON	Winbond W39V040FA	SST 49LF004A	INTEL 80802AB	STM M50FW040
Sector Definition	Diversified 4K/64K/16K*	Diversified 4K/64K	64K x 4	64K x 4
Command Sets	AMD-LIKE command	AMD-LIKE command	INTEL-LIKE command	INTEL-LIKE command
LPC BUS(FWH) Interface Mode	FWH	FWH	FWH	FWH
Programmer Interface Mode	Yes	Yes	Yes	Yes
Random Number Generator	No	No	Yes	No
Internal Boot Block Lockout	Yes	No	No	No
External H/W Protect Pins	Yes	Yes	Yes	Yes
Chip Erase	Yes	Yes	No	No
R/W Lock Registers	Yes	Partial	Yes	Yes
Multiple Device Selection	Yes	Yes	Yes	Yes
Device ID Register	Yes	Yes	Yes	Yes
V_{PP} For Fast Programming	No	No	Yes	Yes
Erase/Program Suspend	No	No	Yes	Yes
General Purpose Inputs Register	Yes	Yes	Yes	Yes

Command

Please note that the Intel 80802 and STM M50FW040 belong to its respective command system and it is different from Winbond and SST command system. Therefore, the following table is based on each vendor defined command definitions.

FUNCTION COMPARISON	Winbond W39V040FA	SST 49LF004A	STM M50FW040	INTEL 80802AB
Byte Program	A0H	A0H	40H or 10H	40H or 10H
Chip Erase	10H	10H	-----	-----
Sector Erase (SST Block)	30H	50H		
Page Erase (SST Sector)	50H	30H		
Boot Block Lockout	40H	-----	-----	-----
Product ID Entry	90H	90H	90H	90H
Product ID Exit	F0H	F0H	FFH	FFH
Block Erase/Program Suspend	-----	-----	B0H	B0H
Block Erase/Program Resume	-----	-----	D0H	D0H

Pin Assignment

The W39V040FA is used for specific PC system with Intel chipset solution. Its pin assignment is arranged to be easily adapt to each Intel system. Therefore, all minor differences between Winbond and other vendors can be ignored.

In Programmer Mode

Table 1. 32L-PLCC Pin Assignment in Programmer Mode

Intel 80802AB	SST 49LF004A	STM M50FW040	Winbond W39V040FA	PIN ASSIGNMENT IN PROGRAMMER MODE		Winbond W39V040FA	STM M50FW040	SST 49LF004A	Intel 80802AB
V$_{PP}$	---	V$_{PP}$	---	1	32	V$_{DD}$	V$_{DD}$	V$_{DD}$	V$_{DD}$
RESET#	RESET#	RESET#	RESET#	2	31	R/C#	R/C#	R/C#	R/C#
A9	A9	A9	A9	3	30	A10	A10	A10	A10
A8	A8	A8	A8	4	29	IC	IC	IC	IC
A7	A7	A7	A7	5	28	GND	---	GND	GND
A6	A6	A6	A6	6	27	---	---	---	VDD
A5	A5	A5	A5	7	26	---	GND	---	GND
A4	A4	A4	A4	8	25	V$_{DD}$	V$_{DD}$	V$_{DD}$	V$_{DD}$
A3	A3	A3	A3	9	24	OE#	OE#	OE#	OE#
A2	A2	A2	A2	10	23	WE#	WE#	WE#	WE#
A1	A1	A1	A1	11	22	---	RY/BY#	---	RY/BY#
A0	A0	A0	A0	12	21	DQ7	DQ7	DQ7	DQ7
DQ0	DQ0	DQ0	DQ0	13	20	DQ6	DQ6	DQ6	DQ6
DQ1	DQ1	DQ1	DQ1	14	19	DQ5	DQ5	DQ5	DQ5
DQ2	DQ2	DQ2	DQ2	15	18	DQ4	DQ4	DQ4	DQ4
GND	GND	GND	GND	16	17	DQ3	DQ3	DQ3	DQ3

Center cell: **Winbond 32-LEAD PLCC STANDARD PINOUT**

Note: Different pin assignment has been highlighted in bold font.

In FWH Mode

Table 2. 32L-PLCC Pin Assignment in FWH Mode

Intel 80802AB	SST 49LF004A	STM M50FW040	Winbond W39V040FA	PIN ASSIGNMENT IN FWH MODE			Winbond W39V040FA	STM M50FW040	SST 49LF004A	Intel 80802AB
V$_{PP}$	---	**V**$_{PP}$	---	1		32	V$_{DD}$	V$_{DD}$	V$_{DD}$	V$_{DD}$
RESET#	RESET#	RESET#	RESET#	2		31	CLK	CLK	CLK	CLK
FGPI3	FGPI3	FGPI3	FGPI3	3		30	FPGI4	FPGI4	FPGI4	FPGI4
FGPI2	FGPI2	FGPI2	FGPI2	4		29	IC	IC	IC	IC
FGPI1	FGPI1	FGPI1	FGPI1	5		28	GND	---	GND	GND
FGPI0	FGPI0	FGPI0	FGPI0	6		27	**---**	**---**	**---**	**Vcc**
WP#	WP#	WP#	WP#	7	Winbond	26	**---**	**GND**	**---**	**GND**
TBL#	TBL#	TBL#	TBL#	8	**32-LEAD PLCC**	25	V$_{DD}$	V$_{DD}$	V$_{DD}$	V$_{DD}$
ID3	ID3	ID3	ID3	9	**STANDARD**	24	INIT#	INIT#	INIT#	INIT#
ID2	ID2	ID2	ID2	10	**PINOUT**	23	FWH4	FWH4	FWH4	FWH4
ID1	ID1	ID1	ID1	11		22	---	---	---	---
ID0	ID0	ID0	ID0	12		21	---	---	---	---
FWH0	FWH0	FWH0	FWH0	13		20	---	---	---	---
FWH1	FWH1	FWH1	FWH1	14		19	---	---	---	---
FWH2	FWH2	FWH2	FWH2	15		18	---	---	---	---
GND	GND	GND	GND	16		17	FWH3	FWH3	FWH3	FWH3

Note: Different pin assignment has been highlighted in bold font.

3. CONCLUSION

The W39V040FA is well supported by all famous third parties like BIOS vendors AMI, Award/Phoenix, Insyde and Programmer vendors (please refer to our support list.) They have made efforts to cover the difference on device's command sets and programming algorithm. Therefore, there is no compatible issue for users to directly use it in their system.

For customers who use other 4M FWH, they can still use Winbond W39V040FA as an alternative without any hardware change.