



## DESIGN-IN WITH WINBOND 2M FWH(W49V002FA) 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, W49V002A/W39V040A.

There are three major parts listed in this comparison notice to identify the difference among Winbond 2M FWH and the equivalent parts of SST 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 W49V002FA	SST SST49LF002A	INTEL 80802AA
Sector Definition	16K + 8K + 8K + 32Kx4	Diversified 4K/16K	64Kx4
Command Sets	AMD-LIKE command	AMD-LIKE command	INTEL-LIKE command
LPC BUS(FWH) Interface Mode	FWH	FWH	FWH
Programmer Interface Mode	Yes	Yes	Yes
Random Number Generator	No	No	Yes
Internal Boot Block Lockout	Yes	No	No
External H/W Protect Pins	Yes	Yes	Yes
Chip Erase	Yes	Yes	No
R/W Lock Registers	No	Partial	Yes
Multiple Device Selection	Yes	Yes	Yes
Device ID Register	Yes	Yes	Yes
VPP For Fast Programming	No	No	Yes
Erase/Program Suspend	No	No	Yes
General Purpose Inputs Register	Yes	Yes	Yes

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## Command

Please note that the Intel 80802 belongs 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 W49V002FA	SST SST49LF002A	INTEL 80802AA
Byte Program	A0H	A0H	40H or 10H
Chip Erase	10H	10H	-----
Sector Erase	30H	30H or 50H	
Boot Block Lockout	40H	-----	-----
Product ID Entry	90H	90H	90H
Product ID Exit	F0H	F0H	FFH
Block Erase/Program Suspend	-----	-----	B0H
Block Erase/Program Resume	-----	-----	D0H

## Pin Assignment

The W49V002FA 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 80802AA	SST SST49LF002A	WINBOND W49V002FA	PIN ASSIGNMENT IN PROGRAMMER MODE	WINBOND W49V002FA	SST SST49LF002A	INTEL 80802AA
VPP	---	---	1	32	VDD	VDD
RESET#	RESET#	RESET#	2	31	R/C#	R/C#
A9	A9	A9	3	30	A10	A10
A8	A8	A8	4	29	IC	IC
A7	A7	A7	5	28	GND	GND
A6	A6	A6	6	27	---	VDD
A5	A5	A5	7	26	GND	GND
A4	A4	A4	8	25	VDD	VDD
A3	A3	A3	9	24	OE#	OE#
A2	A2	A2	10	23	WE#	WE#
A1	A1	A1	11	22	---	RY/BY#
A0	A0	A0	12	21	DQ7	DQ7
DQ0	DQ0	DQ0	13	20	DQ6	DQ6
DQ1	DQ1	DQ1	14	19	DQ5	DQ5
DQ2	DQ2	DQ2	15	18	DQ4	DQ4
GND	GND	GND	16	17	DQ3	DQ3

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

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## In FWH Mode

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

INTEL 80802AA	SST SST49LF002A	WINBOND W49V002FA	PIN ASSIGNMENT IN FWH MODE		WINBOND W49V002FA	SST SST49LF002A	INTEL 80802AA
V <sub>PP</sub>	---	---	1		32	V <sub>DD</sub>	V <sub>DD</sub>
RESET#	RESET#	RESET#	2		31	CLK	CLK
FGPI3	FGPI3	FGPI3	3		30	FPGI4	FPGI4
FGPI2	FGPI2	FGPI2	4		29	IC	IC
FGPI1	FGPI1	FGPI1	5		28	GND	GND
FGPI0	FGPI0	FGPI0	6		27	---	V <sub>CC</sub>
WP#	WP#	WP#	7	WINBOND	26	GND	GND
TBL#	TBL#	TBL#	8	32-LEAD PLCC	25	V <sub>DD</sub>	V <sub>DD</sub>
ID3	ID3	ID3	9	STANDARD PINOUT	24	INIT#	INIT#
ID2	ID2	ID2	10		23	FWH4	FWH4
ID1	ID1	ID1	11		22	---	---
ID0	ID0	ID0	12		21	---	---
FWH0	FWH0	FWH0	13		20	---	---
FWH1	FWH1	FWH1	14		19	---	---
FWH2	FWH2	FWH2	15		18	---	---
GND	GND	GND	16		17	FWH3	FWH3

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

### 3. CONCLUSION

The W49V002FA 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.

Based on its specific sector definition, W49V002FA's memory is more efficiency and often used to directly replace Intel 4M FWH parts. For customers who use SST49LF002A, they can still use Winbond W49V002F as an alternative without any hardware change.

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