



SERIAL FLASH EEPROM SERIES

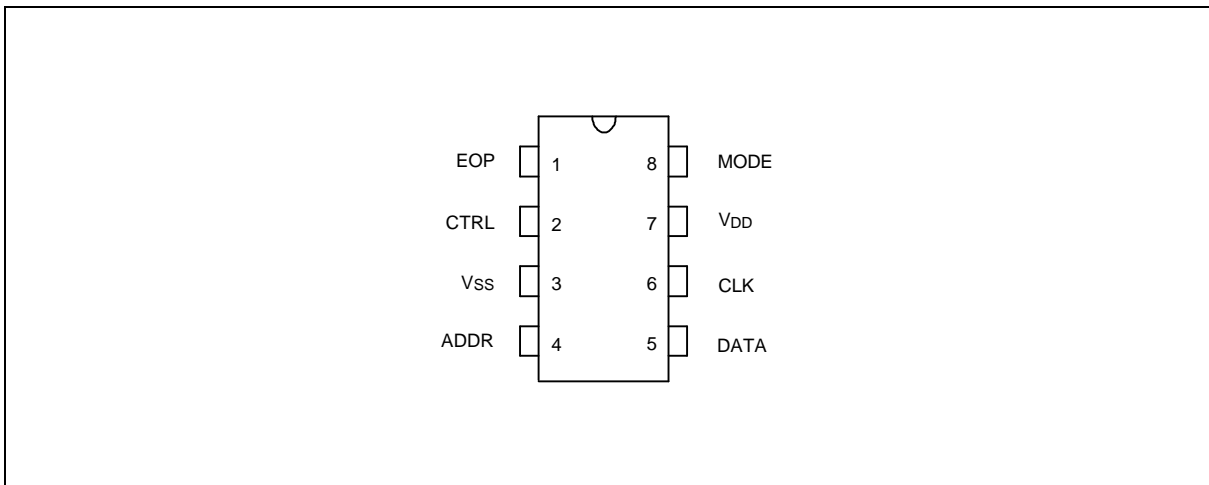
GENERAL DESCRIPTION

The W55FXX is a serial input/output flash EEPROM series that is typically used as the memory cell of a W51300 (voice recorder controller) or the ROM code emulator for the *PowerSpeech*[™] series. The single voltage supply eliminates the need for an extra pump circuit during programming and erasing.

FEATURES

- Provides CLK, ADDR, and DATA pins to operate with Winbond *PowerSpeech*[™] series
- 512K/1M/2M memory sizes available
- Directly cascadable for longer duration
- Fast frame-write operation
 - Frame (32 bits) program cycle time: 400 μ S (typ.)
- Fast whole-chip-erase duration: 50 mS (max.)
- Read data access time: 500 nS (max.)
- Program/erase cycles: 10,000 (typ.)
- Data retention: 10 years (typ.)
- Low power consumption:
 - Operating: 5 mA (typ.)
 - Standby: 2 μ A (typ.)

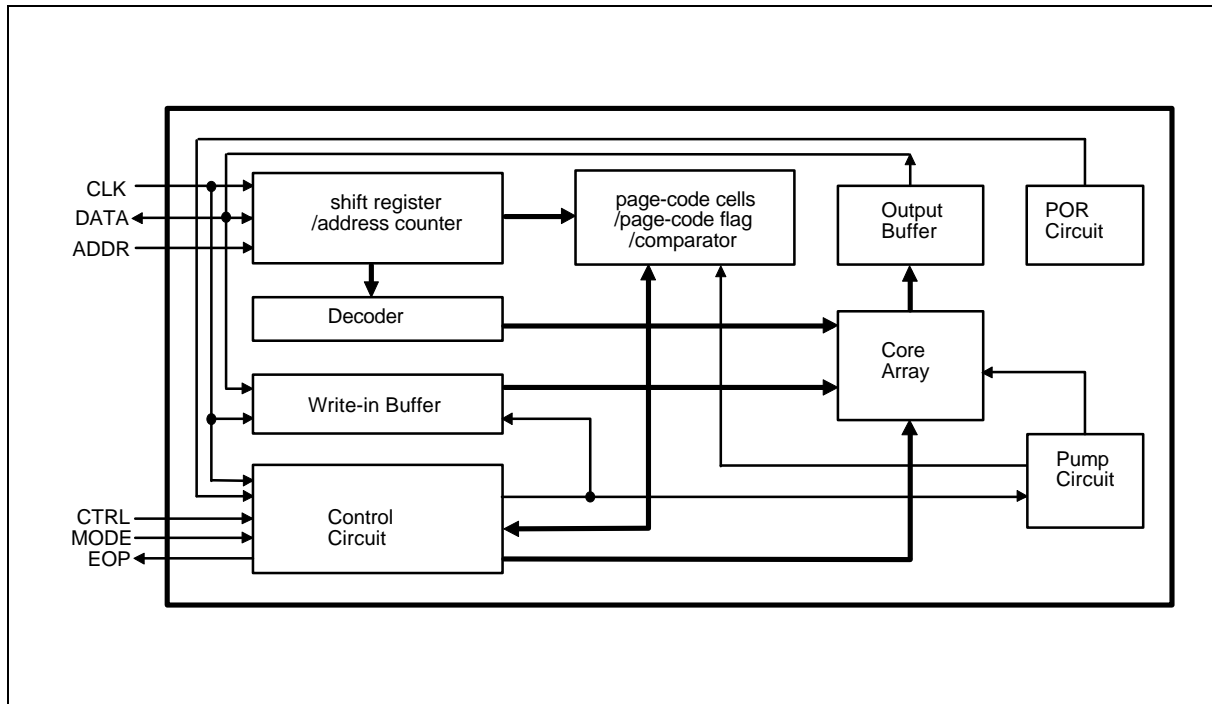
PIN CONFIGURATION



PIN DESCRIPTION

NO.	PIN NAME	I/O	DESCRIPTION
1	EOP	O	End of process signal output
2	CTRL	I	Enable signal for program and erase operations when MODE = 0 Input clock for mode counter when MODE = 1
3	Vss	I	Ground
4	ADDR	I	Input clock for start adress shift-in
5	DATA	I/O	Bidirectional data line
6	CLK	I	Input clock for data write-in and read-out
7	VDD	I	Positive voltage supply
8	MODE	I	Mode select control pin

BLOCK DIAGRAM





ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	CONDITION	RATED VALUE	UNIT
Operating Temp.	TOPR	-	0 to +70	°C
Storage Temp.	TSTG	-	-65 to +150	°C
Power Supply	VDD-VSS	-	-0.3 to +7.0	V
Input DC Voltage	VDC	All pins	-0.5 to VDD +1.0	V
Transient Voltage (< 20 nS)	VTRAN	All pins	-1.0 to VDD +1.0	V

Note: Exposure to conditions beyond those listed under Absolute Maximum Ratings may adversely affect the life and reliability of the device.

DC CHARACTERISTICS

(V_{DD} = 4.5V, V_{SS} = 0V, T_A = 25° C)

PARAMETER	SYMBOL	CONDITIONS	LIMITS			UNIT	
			MIN.	TYP.	MAX.		
Operating voltage	V _{DD}	-	2.4 (Note)	4.5	5.5	V	
Standby current	I _{SB}	All inputs = GND DATA & EOP open	-	2	4	μA	
Operating current	I _{OP}	In read mode DATA & EOP open FOSC = 1 MHz	-	5	10	mA	
Input voltage	High	All input pins	V _{IH}	2.0	V _{DD}	V	
	Low		V _{IL}	-0.3	-	0.8	V
Output current	Sink	I _{OL}	V _{OL} = 0.5V	2.5	5	-	mA
	Drive	I _{OH}	V _{OH} = 4.0V	-2.5	-5	-	mA
Input leakage current of CTRL, MODE	I _{LI1}	V _{IN} = 4.5V	-	-	4.5	μA	
Input leakage current of DATA	I _{LI2}	V _{IN} = 0V	-	-	-4.5	μA	

Note: For been working with W52900, the minimum operating voltage couldn't be less than 3.6 volt.



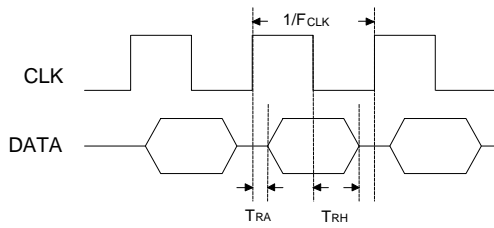
AC CHARACTERISTICS

(V_{DD} = 4.5V, V_{SS} = 0V, T_A = 25° C)

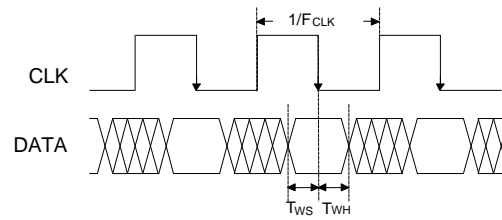
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
MODE pulse width	TMP	-	1	-	-	μS
CTRL pulse width	TWP	Page coding mode	400	-	700	μS
Clock frequency of ADDR	FADDR	-	-	-	1	MHz
Clock frequency of CLK	FCLK	-	-	-	1	MHz
Clock frequency of CTRL	FCTRL	-	-	-	1	MHz
Interval between ADDR end & CLK begin	TI	Read/Write mode	1	-	-	μS
Interval between CLK & CTRL	TGCC	Write mode	1	-	-	μS
Interval between ADDR & CTRL	TGCA	Page coding mode	1	-	-	μS
Interval between addressing end & block-erase begin	TAE	Block erase mode	1	-	-	μS
Interval between MODE rising edge & CTRL clock begin	TMB	Mode selection	500	-	-	nS
Interval between CTRL clock end & MODE falling edge	TME	Mode selection	500	-	-	nS
Interval between MODE falling edge & another pin active	TGM	-	1	-	-	μS
Data access time	TRA	Read mode	-	-	500	nS
Data set up time	TWS	Write mode	250	-	-	nS
	TAS	-	250	-	-	nS
Data hold time	TRH	Read mode	0	-	-	nS
	TWH	Write mode	10	-	-	nS
	TAH	-	10	-	-	nS
Programming duration	TPR	Write mode	400	-	-	μS
Whole-chip-erase time	TWE	Whole-chip-erase mode	45	-	50	mS
Block-erase time	TBE	Block-erase mode	40	-	45	mS

TIMING WAVEFORM

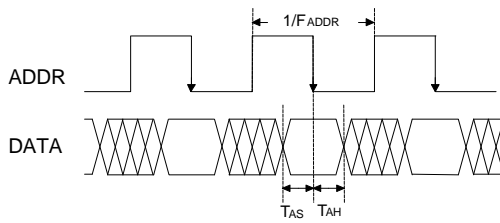
Read Cycle



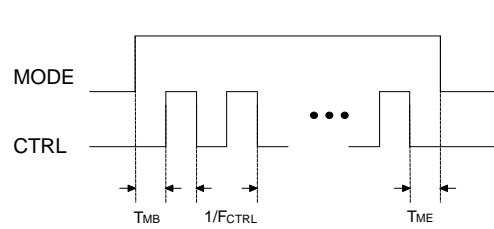
Write Cycle



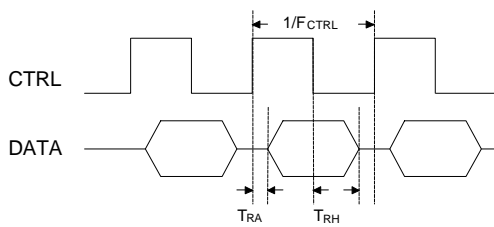
Address Shift-in Cycle



Mode Select Duration

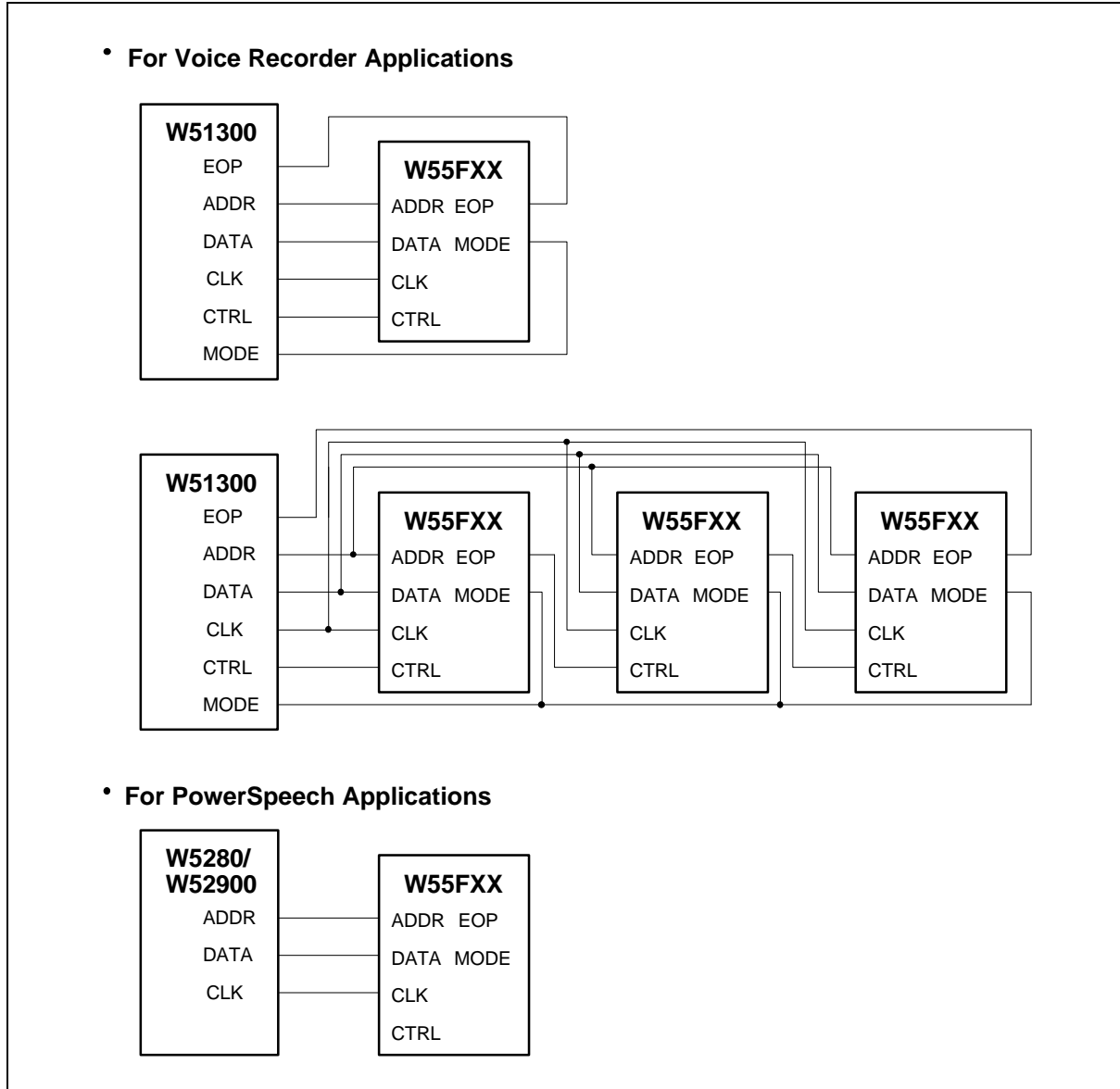


Page-code Cell Read Out Cycle



Note: The duty cycle of any clock is 50%.

APPLICATION CIRCUITS (for reference only)



ORDERING INFORMATION

PART NO.	MEMORY SIZE
W55F05	512K BITS
W55F10	1M BITS
W55F20	2M BITS



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Note: All data and specifications are subject to change without notice.