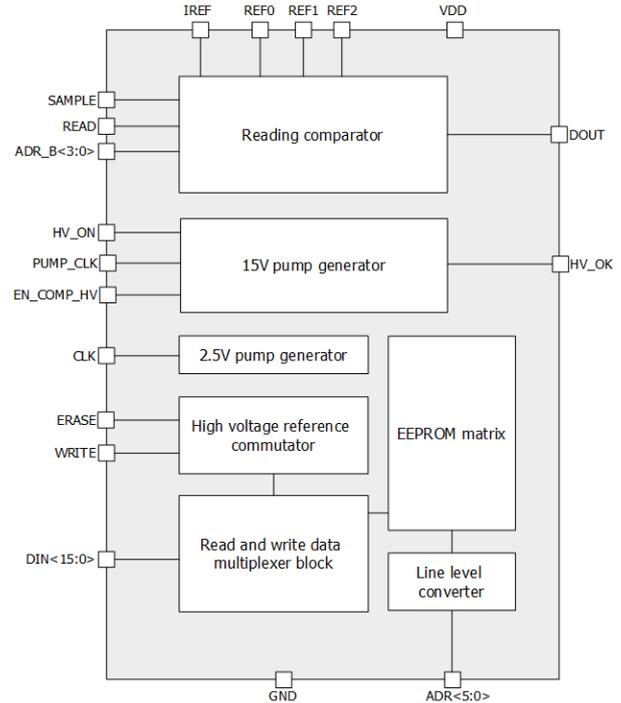


1024-bit EEPROM IP with configuration 32p2w16bit

OVERVIEW

The block is a nonvolatile electrically erasable programmable read-only memory (EEPROM) with volume 1024 bits (16(bit per word) x 2(word per page) x 32(page)), which is organized as 32 pages of 2 words by 16 bit with single-bit output data and parallel write data. Data writing in EEPROM consists of 2 phases - erasing and writing. Written EEPROM page data comes to input DIN<15:0>. Erasing of words from page, performed by setting a signal HV_ON, with the signal ERASE is at state «1». The address of erased page is defined the bus ADR<5:0>. Value of the bus ADR<5:0> doesn't change throughout all cycle of deleting (while HV_ON = «1»). Data writing from latches to the words is produced by signal setting HV_ON, thus the signal WRITE is in a state «1». Data reading is performed using the SAMPLE signal. Memory is optimized for usage in the industrial and commercial applications, requiring low power consumption and supply voltage.



IP technology: SMIC EEPROM CMOS 0.18um

IP status: pre-silicon verification

Total area: 0.076mm²

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Condition	Value			Unit
			min	typ.	max	
Low level supply voltage	V _{dd}	-	0.9*	1.1	1.8	V
Operating temperature range	T _j	-	-40	+27	+90	°C
Clock frequency for power supply generators	F _{clk}	-	400	500	600	kHz
Clock frequency for power supply generators for programing	F _{clk_pump}	-	800	1000	1200	kHz
Reference current	I _{ref}	-	40	50	60	nA
Access time	t _{acc}	V _{dd} = 1.0-1.8V	-	200	300	ns
	t _{acc*}	V _{dd} = 0.9-1.0V	-	-	600	ns
Current consumption in read mode (Fclk = 512kHz)	I _{read}	V _{dd} = 1.1V, T _j =25°C, Fsample = 500kHz	0.98	-	1.0	uA
		V _{dd} = 0.9V, Fsample=500kHz	0.75	-	1.42	uA
		V _{dd} = 1.0-1.5V, Fsample=500kHz	0.89	-	2.0	uA
		V _{dd} = 1.5-1.8V, Fsample=500kHz	1.2	-	2.4	uA
Current consumption in write mode (Fclk = 512kHz)	I _{write}	Fpump=1MHz, V _{dd} =1.0V*	4.0	-	5.3	uA
		Fpump=1MHz, V _{dd} =1.1V	4.7	-	6.0	uA
		Fpump=1MHz, V _{dd} =1.2V	5.5	-	7.5	uA
		Fpump=1MHz, V _{dd} =1.2-1.4V	5.8	-	8.2	uA
		Fpump=1MHz, V _{dd} =1.4-1.8V	5.8	-	11.6	uA
Capacitance on EEPROM supplies (between VDD and GND)	C	@V _{dd} = 1.1-1.5V	-	55	-	pF
Standby current	I _{stand}	Exclude Iref	-	-	0.1	uA
High Level Input Voltage	V _{IH}	For digital inputs	0.7*V _{dd}	-	V _{dd}	V
Low Level Input Voltage	V _{IL}		0	-	0.3	V

*Note – In case Vdd drops below 1 V to 0.9 V (wherein, Fclk = 512kHz, Fclk_pump = 1MHz), writing occurs, but hv_ok indicator does not work. Verification of writing should be done by reading after writing. Data reading speed at voltage less than 1V also decreases and is not guaranteed.