

512-bit EEPROM IP with configuration 16p2w16bit
OVERVIEW

The block is a nonvolatile electrically erasable programmable read-only memory (EEPROM) with volume 512 bits (16(bit per word) x 2(word per page) x 16(page)), which is organized as 16 pages of 2 words by 16 bit with single-bit output data and parallel write data.

Write EEPROM page data comes to input D0<15:0> and write by words to latch through the signal SAMPLE, while the signal write in a state of «1». The address of a word written down in latches is defined by two low bits of the bus adr_bl<1:0>.

Set of flags that define the words that will be erased/written to the page is produced by signals set_flag <1:0>. Erasing of words from page, that correspond to the flags, performed by setting a signal BUSY, with the signal ERASE is at state «1». The address of erased page is defined by four high bits of the bus adr_s<15:0>. Value of the bus adr_s<15:0> doesn't change throughout all cycle of deleting (while BUSY = «1»).

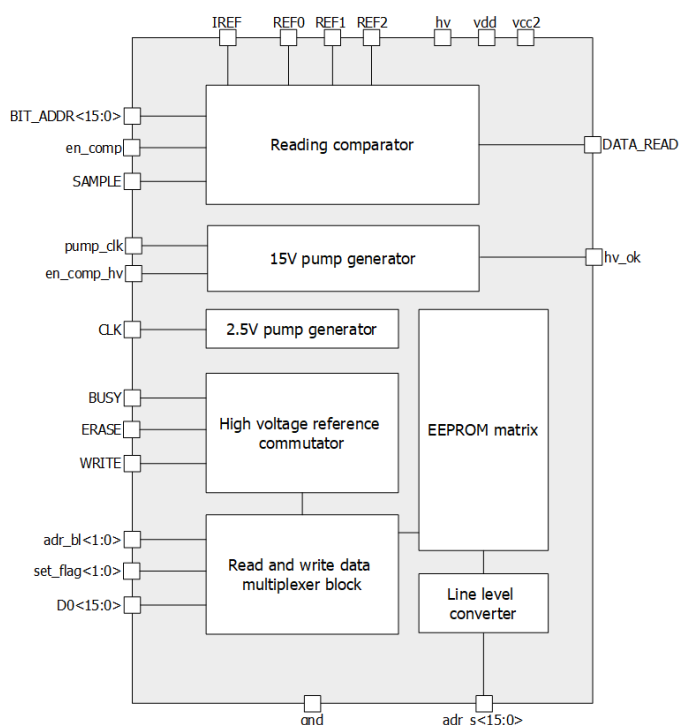
Data writing from latches to the words of page corresponding to flags, is produced by signal setting BUSY, thus the signal WRITE is in a state «1». The address of writeable page is defined by four high bits of the bus adr_s<15:0>.

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: silicon proven

Area: 0.055mm²


ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Condition	Value			Unit
			min	typ.	max	
Low level supply voltage	V _{dd}	-	0.7*	1.0	1.8	V
Operating temperature range	T	-	-40	+27	+125	°C
EEPROM size	S	-	-	512	-	bit
Clock frequency for power supply generators	F _{clkgen}	-	-	500	-	kHz
Access time	t _{acc}	-	-	-	620	ns
Time between write and erase modes	t _{we}	-	0	-	-	us
Set/reset pulse width	t _{rs}	-	160	-	-	ns
Active pulse width of busy signal	t _{busy}	-	2000	-	2210	us
Current consumption in read mode	I _{read}	F _{clk} = 512KHz	198	314	802	nA
Current consumption in write mode	I _{write}	F _{clk} = 512KHz, F _{pump} = 1MHz	1.18	2.20	9.51	uA
Standby current	I _{stand}	-	-	0	-	uA
High level input voltage	V _{IH}	For digital inputs	0.7	-	-	V
Low level input voltage	V _{IL}		-	-	0.3	V

*Note – When V_{dd} drops below 1 V to 0.7 V (wherein, F_{clk} = 512kHz, F_{vcc2} = 512kHz, F_{pump} = 1MHz): In this case, writing occurs, but hv_ok does not. Verification of the writing should be done by reading after writing.