

1Kbyte EEPROM

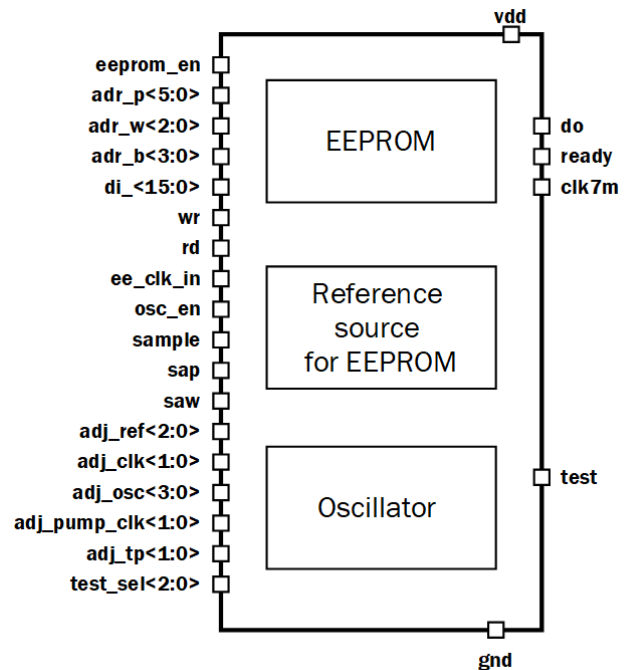
OVERVIEW

The block is a nonvolatile electrically erasable programmable read-only memory (EEPROM) with volume 1Kbyte (16(bit per word) x 8(words per page) x 64(pages)) with single-bit output data and parallel write data in one word. Write EEPROM page data comes to input $di_{<15:0>}$ and write process execute if signal $wr=“1”$. Data $di_{<15:0>}$, page address $adr_p_{<5:0>}$, word address in page $adr_w_{<2:0>}$ are latched into internal registers and cannot be changed until the end of the writing process. At the end of the writing, the $ready = “1”$ flag is set. Data reading is carried out by specifying the page address $adr_p_{<5:0>}$ and the address of the word in the page $adr_w_{<2:0>}$, as well as the reading bit in the word $adr_b_{<3:0>}$. After applying the reading strobe, the do signal is set at the output corresponding to the reading data from the corresponding addresses of the EEPROM cell. EEPROM also has a 7MHz output from a built-in oscillator. The oscillator has frequency control inputs to compensate for process variation. Memory is optimized for usage in the industrial and commercial applications, requiring low power consumption and supply voltage. The EEPROM is designed under SMIC EEPROM CMOS 0.18 um technology process with 2P5M metal option (the block is also available in 2P6M metal option).

IP technology: SMIC EEPROM CMOS 0.18um

IP status: pre-silicon verification

Area: 0.204mm²



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ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Condition	Value			Unit
			min	typ.	max	
Low level supply voltage	V_{dd}	-	1.1	1.2	1.3	V
Operating temperature range	T	-	-40	+27	+125	°C
EEPROM size	S	-	-	1	-	Kbyte
Output clock frequency	F_{out}	$adj_osc = "1000"$ (by default)	5.7	7.0	8.8	MHz
		$adj_osc = "1111"$	6.7	-	-	
		$adj_osc = "0000"$	-	-	7.2	
Access time	t_{acc}	-	-	320	620	ns
Time of writing process of one word	t_{wr}	-	-	4.1	-	ms
Read setup time relative to read signal	t_{reads}	-	10	-	-	us
Oscillator current consumption	I_{cc_osc}	-	1.3	1.6	2.9	uA
Current consumption in read mode	I_{read}	not including OSC Icc	2.5	3.5	10.3	uA
Average current consumption in write mode	I_{write}	not including OSC Icc	10	19	28	uA
Peak current consumption in write mode	I_{peak_write}	not including OSC Icc	30	39	42	uA
Standby current	I_{std}	-	-	-	0.1	uA
High level input voltage	V_{IH}	For digital inputs	$0.7 * V_{dd}$	-	-	V
Low level input voltage	V_{IL}		-	-	0.3	V

*Note – All parameters are based on simulation results excluding Monte Carlo simulation results