IP Data Sheet

13ns High-Speed Comparator with no Hysteresis

The TS_CMP_13ns_X8 is a high-speed comparator with no hysteresis and a propagation delay of 13ns while having a differential input signal of 25mV. The comparator consumes current of 350µA. The circuit features an Enable signal turning on/off the comparator. The proposed circuit is a free-running comparator, therefore, no clock signal is needed, as depicted in the comparator symbol in Figure 1.

The comparator requires a bias current of 20uA supplied from an external biasing circuit and can provide an output toggling between 0V and Vcc. A comparator hysteresis can be added via feedback circuit.

Technology: X-FAB XT018-0.18µm BCD-on-SOI CMOS

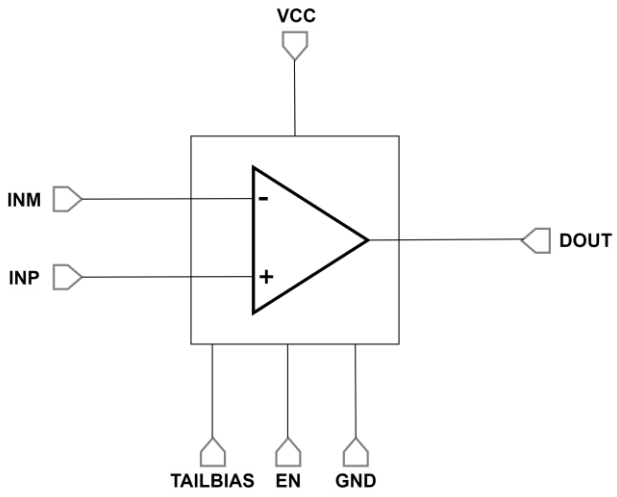

Figure 1: High-speed comparator symbol

OPERATING CONDITIONS

Parameters	Values
Junction temperature range	-40˚C to 150˚C
Supply voltage	3.2 V to 3.4 V

Table 1: High-speed Comparator Operating Conditions

SPECIFICATION

Parameters	Condition	Values
Comparator propagation delay	V_{in_diff} = 25mV	13 ns
Input offset voltage (V_{OS}) (3-sigma)	Tail bias current = 20uA	±1.42 mV
Total current consumption		350 µA
Comparator Area		0.024 mm²

Table 2: High-speed Comparator Specifications

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LAYOUT VIEW

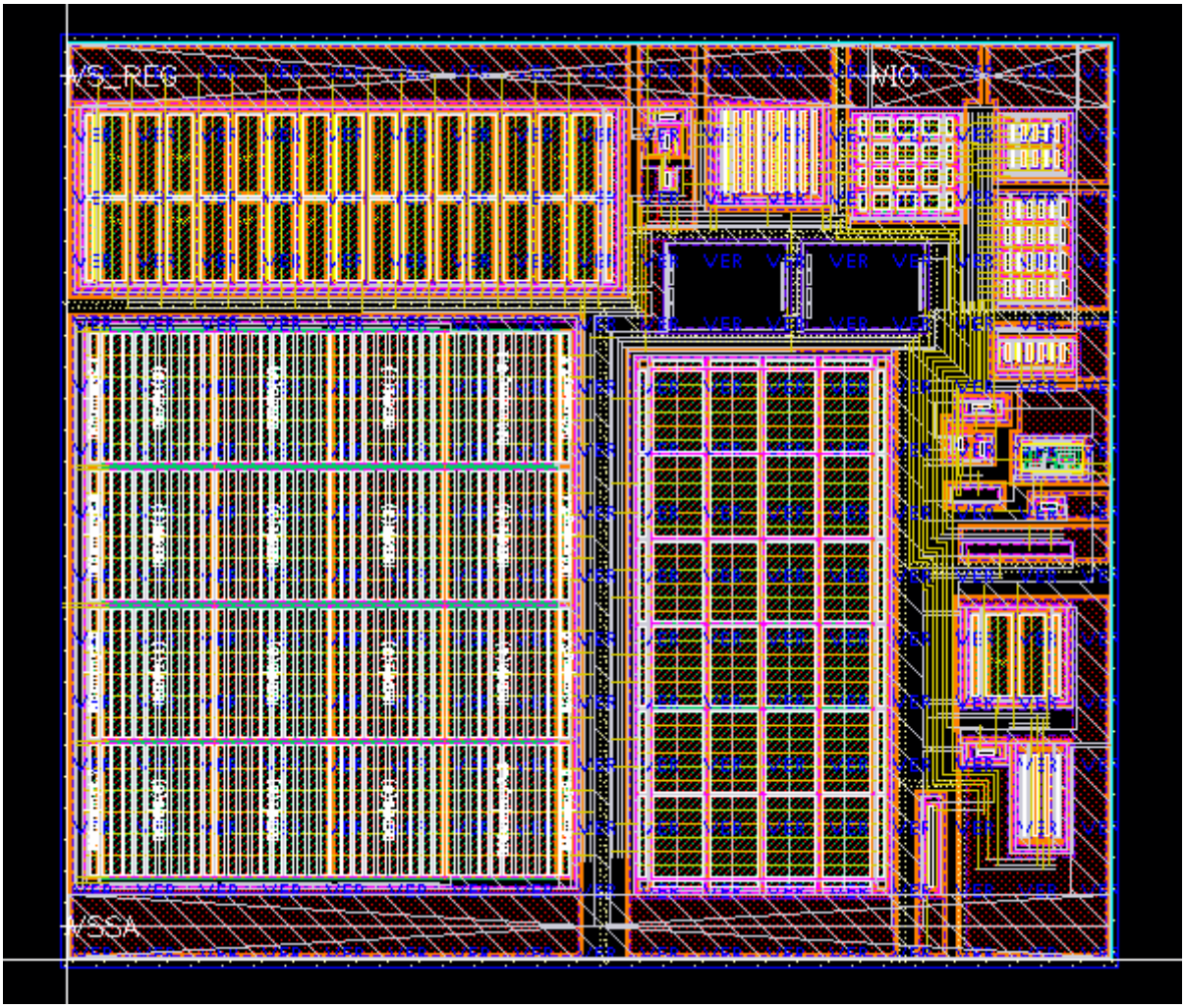

Fig. 2: High-speed Comparator Layout View