

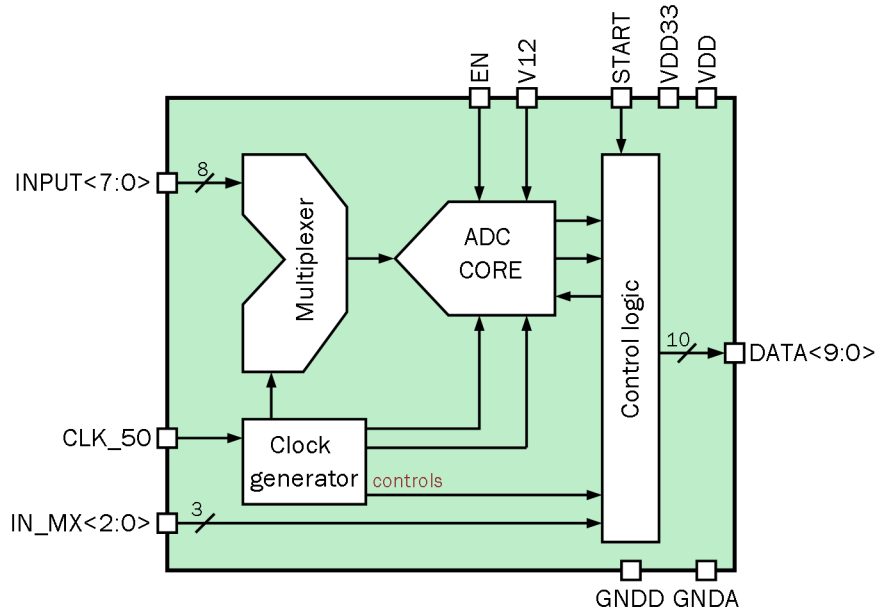
10-bit 1-channel 1 MSPS SAR ADC

OVERVIEW

090TSMC\_ADC\_02 is a 10-bit 1-channel successive-approximation register (SAR) analog to digital converter (ADC) circuit with sample rates up to 1 MSPS.

This ADC consist of: input multiplexer block, ADC core, output logic block, clock generator. The ADC core consist of internal DAC, bias, sample and hold circuit, analog voltage comparator. The ADC requires 3.0...3.6 V analog supply and 0.9...1.1 V digital supply voltage, there are standby mode which allow to optimize power consumption for system need.

IP technology: TSMC CMOS 90 nm.  
 IP status: pre-silicon verification.  
 Area: 0.045mm<sup>2</sup>.



ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Units
			min	typ.	max	
Analog blocks supply voltage	V <sub>DD33</sub>	-	3.0	3.3	3.6	V
Digital blocks supply voltage	V <sub>DD</sub>	-	0.9	1	1.1	V
Operating temperature range	T <sub>j</sub>	-	-40	+27	+125	°C
Reference voltage	V <sub>ref</sub>	-	-	1.2	-	V
Operating input range	V <sub>IN</sub>	-	0	-	V <sub>ref</sub>	V
Resolution	N	-	-	10	-	bit
Clock frequency	F <sub>CLK</sub>	-	-	50	-	MHz
Sampling rate	F <sub>S</sub>	-	-	1	-	MSPS
Bandwidth	F <sub>B</sub>	-	-	0.5	-	MHz
Current consumption in standby mode	I <sub>STB</sub>	-	-	230	-	nA
Power consumption	P <sub>C</sub>	-	0.69	1.32	3.08	mW
Spurious-free dynamic range	SFDR	F <sub>CLK</sub> = 50 MHz	65	67	68	dB
High level input voltage	V <sub>IH</sub>	For digital inputs	V <sub>DD</sub> - 0.3V	-	V <sub>DD</sub>	V
Low level input voltage	V <sub>IL</sub>		0	-	V <sub>DD</sub> - 0.7V	V