

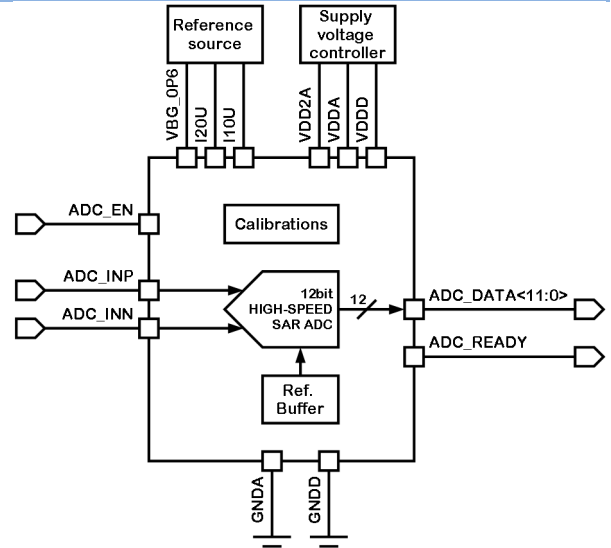
**12-bit 1-channel 10 – 50 MSPS SAR ADC**
**OVERVIEW**

055TSMC\_ADC\_12 is a 12-bit 1-channel SAR ADC with sample rate from 10 to 50 MSPS that operates with 1V peak-to-peak input signal. The block consists of SAR ADC core, reference voltage buffer and calibrations block. The ADC block has a separate power supply for the analog and digital parts of the circuit. The ADC settings allow you to put the block into standby mode.

IP technology: TSMC CMOS 55nm technology.

IP status: pre-silicon verification.

Silicon area: 0.4 mm<sup>2</sup>.


**ELECTRICAL CHARACTERISTICS**

Parameter	Symbol	Conditions	Value			Units
			min	typ.	max	
Supply voltage	VDD2A	-	1.8	2.0	2.2	V
	VDDA	-	1.08	1.2	1.32	
	VDDD	-	1.08	1.2	1.32	
Operating temperature range	T <sub>j</sub>	-	-40	+27	+85	°C
Current consumption	IDD	F <sub>S</sub> = 50 MSPS	-	10	-	mA
		Standby mode	-	9.5	-	uA
Resolution	N	-	-	12	-	bit
Sampling rate	F <sub>S</sub>	Minimal	-	10	-	MSPS
		Maximal	-	50	-	
Input voltage range	V <sub>IN(p-p)</sub>	-	-	1	-	V
Input clock frequency	F <sub>CLK</sub>	Minimal	-	10	-	MHz
		Maximal	-	50	-	
Spurious-free dynamic range	SFDR	@ F <sub>S</sub> = 50 MSPS and F <sub>IN</sub> = 10.7 MHz	-	74	-	dB
Signal to noise ratio	SINAD		-	63	-	dB
Effective number of bits	ENOB		-	10.2	-	bits
Input logic high level	V <sub>IH</sub>	For digital inputs	0.9*VDDD	-	VDDD	V
Input logic low level	V <sub>IL</sub>		0	-	0.1*VDDD	V