

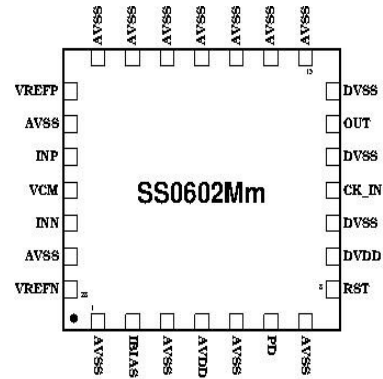
SS1002Mm 16-Bit, Low-Power, Sigma-Delta ADC

PRODUCT CODE(S): SS1002Mm

TECHNOLOGY: STM 90nm

KEY FEATURES

- analog supply voltage range: 1.2 – 1.8V
- 16-bit effective resolution Sigma Delta ADC
- oversampling ratio: 512x
- temperature range -40°C to 80°C
- external reference voltage



SHORT DESCRIPTION

SS1002mm is a ultra-low power, analog-to-digital converter (ADC) for low frequency measurement applications. It consists of a low-power and low-noise sigma-delta modulator with 15.2-bit effective resolution.

The ADC operates from a single 1.2V supply and accepts fully differential inputs signals. The current consumptions is 30µA.

The SS1002Mm is available in a 28-pin QFN package.

APPLICATIONS

Industrial Instruments. Weigh Scales. Strain-Gauge Measurements. Flow and Gas Meters. Medical Instrumentation

PIN FUNCTIONS

#	NAME	DESCRIPTION	NOTE
1	AVSS	Analog ground	
2	IBIAS	Input bias current (to PMOS device)	
3	AVSS	Analog ground	
4	AVDD	Analog power supply (1.2V)	
5	AVSS	Analog ground	
6	PD	Power-down mode	
7	AVSS	Analog ground	
8	RST	Reset signal	
9	DVDD	Digital power supply (1.2V)	
10	DVSS	Digital ground	
11	CK_IN	Clock signal	
12	DVSS	Digital ground	
13	OUT	Output stream-out of the modulator	
14	DVSS	Digital ground	
15	AVSS	Analog ground	
16	AVSS	Analog ground	
17	AVSS	Analog ground	
18	AVSS	Analog ground	

19	AVSS	Analog ground	
20	AVSS	Analog ground	
21	AVSS	Analog ground	
22	VREFP	Positive reference voltage	
23	AVSS	Analog ground	
24	INP	Positive input signal	
25	VCM	Input common-mode voltage	
26	INN	Negative input signal	
27	AVSS	Analog ground	
28	VREFN	Negative reference voltage	

RECCOMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
VDD	Supply voltage	1.2	1.8	V
T	Storage temperature	-40	80	°C
ESD	ESD protection level, HBM		2	kV

ELECTRICAL CHARACTERISTICS

Typical Conditions: VDD = 1.2V, VREFP=1V, VREFN=0V. All specifications Tmin to Tmax unless otherwise noted.

Parameter	Condition	Min	Typ	Max	Unit	Note
ADC CHANNEL SPECIFICATION						
Output Update Rate			250		kHz	
ADC CHANNEL						
Resolution			15.2		bits	
Output noise			12.4		μVrms	
IDD (current consumption), @ 1.2V			30		μA	
Power Supply Rejection, @ 35Hz			75.86		dB	
ANALOG INPUTS						
Bipolar Input Voltage Range			±VREFP		V	
Unipolar Voltage Range			0 to VREFP		V	
REFERENCE INPUT						
Input Common Mode Voltage			0.5		V	
Common-Mode Rejection, @ 35Hz			58		dB	

TYPICAL PERFORMANCE CHARACTERISTICS (VDD = 1.2-V, VREFP=1-V, VREFN=0-V)

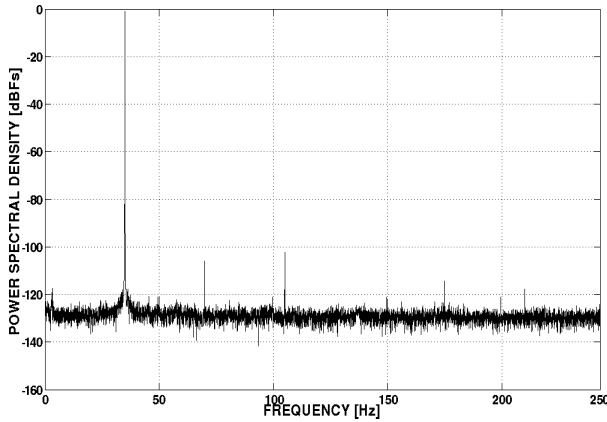


Figure 1: Typical Output Spectra Plot. Input test signal: -0.91 dBFS amplitude, 35 Hz frequency.

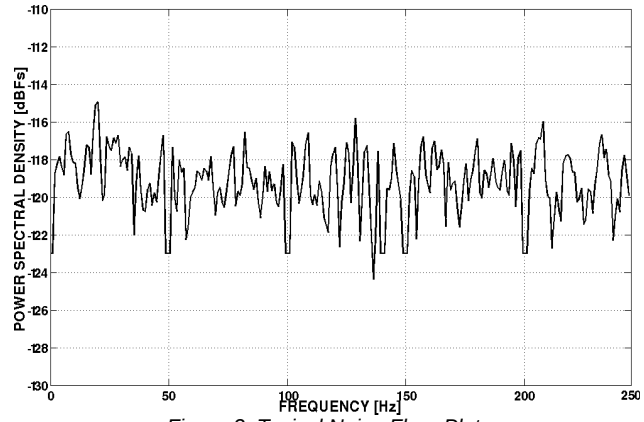


Figure 2: Typical Noise Floor Plot.

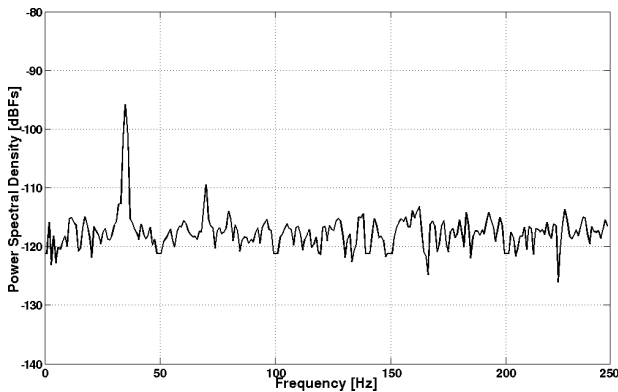


Figure 3: Measured PSRR plot. 35-Hz input sine-wave disturbance.

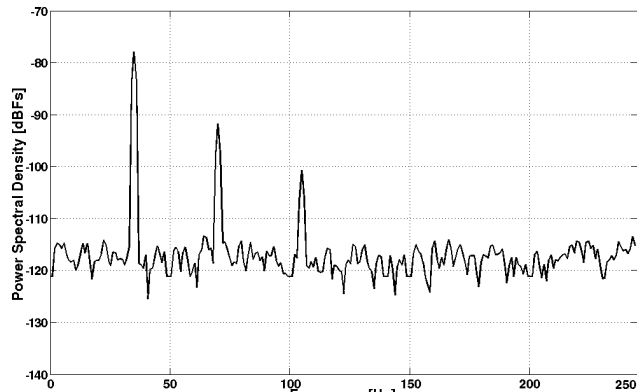


Figure 4: Measured CMRR plot. 35-Hz input sine-wave disturbance.

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