PRELIMINARY

12bit 3.3Ksps Analog to Digital Converter IC

MM4013, MM4014, MM4015

Outline

The MM401X, MM4014 and MM4015 are precision, low-power, 12-bit delta sigma analog-to-digital converter IC with I2C compatible interface. MM4014 and MM4015 have build-in PGA (programmable gain amplifier) and well suited sensor mesurement applications by switching input voltage range. MM4015 can measure by two differntial or four single-ended input. This ADC operate in either continuous-conversion mode or single-shot conversion mode.

Applications

Industrinal Instrumentation　　Robot Control
Temperature Measurement System
Battery Voltage and Current Monitoring
Portable Instrumentation

Features

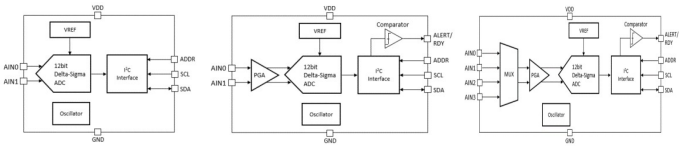
① Ultra Small SQFN package: 2.0(W) × 1.5(D) × 0.4(H)mm
② 12-Bit Noise-Free Resolution
③ Programmable Data Rate : 128 sps to 3.3 Ksps
④ Single-Cycle Settling
⑤ Four Single-Ended or Two Differential Inputs(MM4015)
⑥ Low Current Consumption:150μA(Continuous-Conv. Mode)
⑦ Internal Low-Drift Voltage Referrence and Internal Oscillator
⑧ Programmable Comparator(MM4014 or MM4015)

Specification

Item	Specification	Unit
Operation temperature	-40～+125	℃
Power supply range	2.0～5.5	V
Differencial input impedance	22 (FSR=±6.144V)	MΩ
Resolution(no missing codes)	12	bit
Data rate (DR)	128,250,490,920,1600,2400,3300	SPS
INL	±0.5 (FSR=±2.048V,DR=128sps)	LSB
Offset error	±0.5 (FSR=±2.048V,Diff.inputs)	LSB
Offset drift over temperature	0.005 (typ.)	LSB/℃
Supply current	150(@Operating,25℃)	μA
	0.5(@Power-down,25℃)	
Gain error	0.25 (FSR=±2.048V,25℃)	%
Communication IF	I^2C (max. 3.4MHz)	-

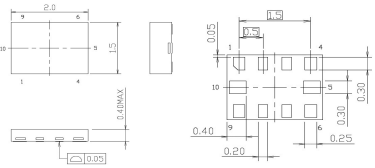
Block Diagram

・MM4013　・MM4014　・MM4015

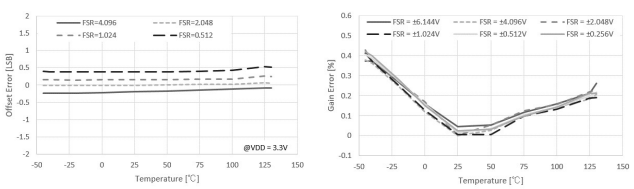


Package

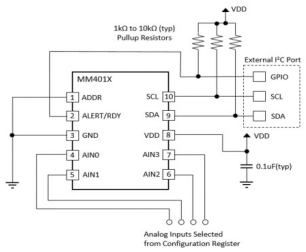
・SQFN-10A



Typical Performance Characteristics



Application circuit



MinebeaMitsumi
Passion to Create Value through Difference

Mitsumi　Search
https://mtm-sec.mitsumi.co.jp/web/ic/

Mitsumi Electric CO.,LTD.
Semiconductor Business Division
Strategy Engineering Department
tel:+81-46-230-3470

February 2023 Rev.6