

CA-IS1305x Series Product Instructions

1 Overview

The CA-IS1305x series are high-precision isolated Sigma-Delta (Σ - Δ) modulators optimized for shunt resistance-based current detection. Low misalignment, gain errors and associated temperature drift can maintain measurement accuracy over the full working temperature range.

The CA-IS1305 series provide a ±50mV differential input voltage option to reduce power losses on the shunt resistor. The output bit streams of the CA-IS1305x series can be processed by FPGA or DSP in the secondary order. The CA-IS1305x series can achieve a signal-to noise ratio (SNR) of 85dB at 78.1kSPS data throughput using the sinc3 filter. External clock frequency range from 5MHz to 21MHz for ease of synchronization while providing flexibility for use.



Fig. 1 CA-IS130x Series System Block Diagram



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2 Differential Analysis of the CA-IS1305x Series



Tab. 1 Comparison of Pin Functions between CA-IS1305AMx and CA-IS1305Mx

Pin No.	CA-IS1305AMx	CA-IS1305Mx	
		NC, this pin is connected to internal AGND. Please	
1	AVDD, high side analog power supply, 4.5V to 5.5V	suspend or connect to AGND. Do not connect to power	
		supply.	
2	AINP, in-phase analog input	AINP, in-phase analog input	
3	AINN, out-phase analog input	AINN, out-phase analog input	
4,8	AGND, high-side analog ground	AGND, high-side analog ground	
5,6,10,12,15	NC, there is no internal connection. It can be	NC, there is no internal connection. It can be suspended,	
	suspended, grounded and connected to power supply.	grounded and connected to power supply.	
7	NC, there is no internal connection. It can be	AVDD, high-side analog power supply, 4.5V to 5.5V	
	suspended, grounded and connected to power supply.		
9,16	DGND, low-side digital ground	DGND, low-side digital ground	
11	DOUT, modulator data output	DOUT, modulator data output	
13	CLKIN, modulator clock input, internal 1.5M Ω pull-	CLKIN, modulator clock input, internal 1.5MΩ pull-down	
	down resistance, support 5MHz to 21MHz	resistance, support 5MHz to 21MHz	
14	DVDD, low-side digital power supply, 3V to 5.5V	DVDD, low-side digital power supply, 3V to 5.5V	

Function parameter difference:

Order Model	Rated Input Range	Differential Input Resistor	Isolation Level	Digital Output Coding Mode
CA-IS1305M05W	±50 mV	4.9 kΩ	5000 V _{RMS}	Non-coding CMOS logic
CA-IS1305M25W	±250 mV	22 kΩ	5000 V _{RMS}	Non-coding CMOS logic
CA-IS1305AM25W	±250 mV	22 kΩ	5000 V _{RMS}	Non-coding CMOS logic



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AN010 Rev1.0, Mar, 2022

3 Product Application Information



Fig. 2 Typical Application of Current Detection

4 Version Information

Version	Date	State Description
Ver1.0	July.2021	Initial version

5 Important Statement

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