Digital Output Type 3-axis Acceleration Sensor

HAAM-372

■ Features

・Serial Interface built-in (I2C or SPI)

・Low Voltage Drive (2.4V～), Interface block can be driven by as low as 1.7V.

・Low Power Consumption (0.4mA Max)

・High Density Mount is possible by small, thin, lightweight package (Size：3.0×3.0×1.0mm Max)

・A/D Converter (8bit) built-in

・Various calibrations are done by built-in EEPROM

・Standby Mode Function

・There is a mode provided that measured data is compared to preset threshold, then output the results as an interrupt signal. Shock detection is possible (Interrupt mode).

・There is a mode provided that detects pulse like acceleration variation which is generated within preset time, then generates interrupt signal. Applications such as monitoring of sporting activity, detection of user input are possible (Click mode).

■ Outline Dimensions

■ Terminal Assignment & Functions

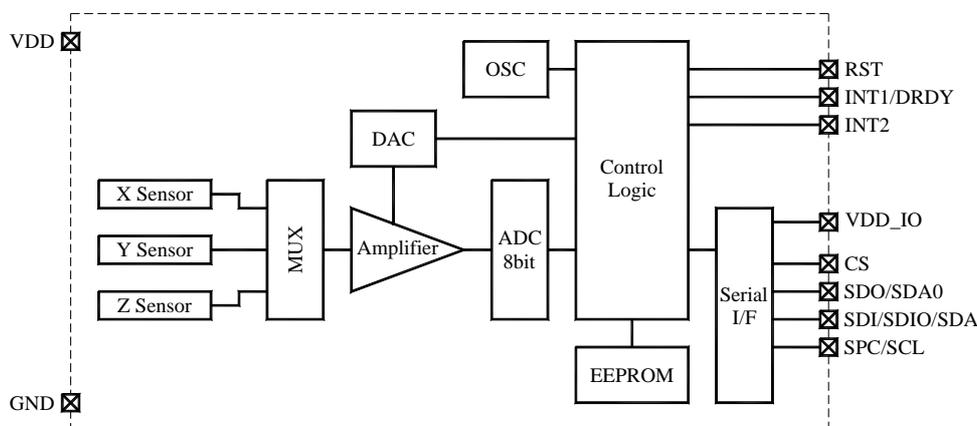| No	Terminal Name	Function
1	GND	Power ground
2	RST	Reset signal input (Lo: Reset／Hi: Normal operation)
3	Reserved	Please leave unconnected.
4		
5		
6	VDD	Power supply input to drive sensor
7	SDO/SAD0	SPI(4-wire) selected：Serial data output I2C selected：Slave address LSB setting (Open=Hi)
8	CS	SPI enable (I2C/SPI selection, Lo:SPI／Hi:I2C)
9	SDI/SDIO/SDA	SPI(4-wire) selected：Serial data input SPI(3-wire) selected：Serial data input/output I2Cselected：Serial data input/output
10	SCL/SPC	Serial data clock input (either SPI or I2C selected)
11	INT1/DRDY	Interrupt 1 signal output, or Data ready signal output
12	INT2	Interrupt 2 signal output
13	Reserved	Please leave unconnected.
14	VDD_IO	Power supply input to drive serial interface

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■ Block Diagram

■ Mode Function

HAAM-372 provides the following modes that can obtain interrupt output based on setting, besides normal measure mode.

Mode	Function	Sampling Frequency	Measure Range
Standby Mode	All measure functions halt. Enter in a state of wait for command from serial interface.	-	-
Normal Measure Mode	Measure accelerations of 3 axes in a constant cycle by internal trigger. Renew value of Measure Data Register for every one measurement, and turn DRDY signal to Hi after finishing data renewal of all 3 axes.	100Hz(Min.)	±2G
Interrupt Mode	Compare measured data to preset threshold, and output the results based on preset condition to INT1 or INT2.	1.2kHz(Min.)	±8G
Click Mode	Compare measures data to preset threshold. When the measured data goes below the threshold within preset time after exceeding the threshold, it is considered as occurrence of quick event, then outputs INT signal. This is a mode to detect only pulse which duration is shorter than preset time.	2.0kHz(Typ.)	±8G

■ Standard Specification

Item			Rating			Unit	Remarks
			Min	Typ	Max		
Operating Condition							
Temperature Range	Storage		-40		85	℃	
	Operating		-20		75	℃	
Power Supply	Operating Voltage		2.4		3.6	V	VDD
	Interface Voltage Range		1.7		VDD	V	
	Current Consumption	±2G		0.2	0.4	mA	When Normal measure mode selected.
		±8G		0.6		mA	When Interrupt mode or Click mode selected.
	Standby Current			5	10	μA	When Standby mode selected.
	Turn-on Time				20	ms	
Shock Durability			5000			G	
Electrical Characteristics (Ta=25℃ Vcc=3.0V)							
Rated Acceleration				±2 ,±8		G	
Output Resolution	±2G			15.6		mg/LSB	8bit output
				64		LSB/G	When Normal measure mode selected.
	±8G			62.5		mg/LSB	8bit output
				16		LSB/G	When Interrupt mode or Click mode selected.
Frequency Response				50 ,600 ,1k		Hz	Change by mode setting
Sampling Frequency				100 ,1.2k ,2k		Hz	Change by mode setting
Serial Interface Specification							
SPI Interface Speed					5	MHz	
I2C Interface Speed					400	kHz	