

MAGNETIC FIELD SENSOR

YAS537 MS-3T

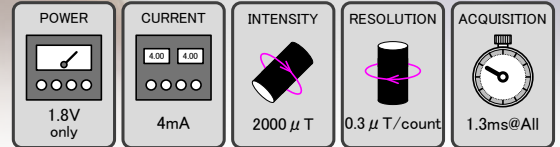
1.2mm × 1.2mm WLCSP8 3-AXIS MAGNETIC FIELD SENSOR

Preliminary

Simple & Accurate

Mounting area is minimized by the smallest package size and the minimum peripheral components.

Ultra low power consumption can be realized by 1.8V single power supply and optimization of the internal circuit.



Target Applications

1. Smartphone
2. Tablet Computer
3. Mobile GPS Device

Features & Specs.

1. 3-Axis Magnetic Field Sensor, LNA and ADC are Packaged in 1 Chip
2. I²C External I/F Supports 400kHz Fast Mode
3. Repeated Data Acquisition Mode & Measurement Completion Interrupt Mode
4. 1.8V Single Power Supply Operation
5. Automatic Power Down Function After Measurement Completion
6. Sensor Driver With Soft-Iron Effect Compensation Algorithm
7. Best-In-Class Ultra Low Power 1chip Magnetic Field Sensor

Supply Power Voltage: 1.8V (single)

Dynamic Range: 2000 μ T

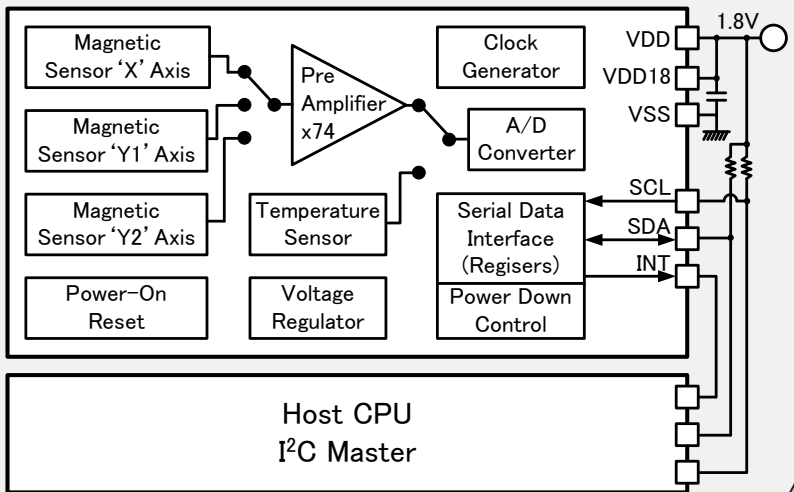
Sensitivity: 0.3 μ T/count

Power Consumption in Measurement: 4mA

Measurement Time (Mag.&Temp.): 1.3msec.

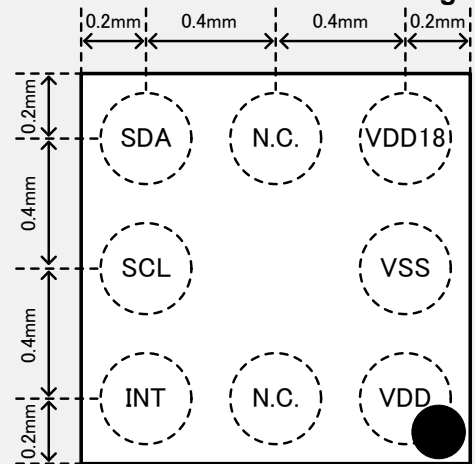
Package: 1.2mm x 1.2mm WLCSP8

Application Diagram



Package

WLCSP8 Package



Top View

This is a preliminary information, and subject to change without notice. Please refer to the latest information for your design.

Industry's Smallest

- **Tiny 1.2 mm × 1.2 mm package**
36% footprint reduction in chip packaging over our previous generation (YAS532 MS-3R) device makes YAS537 one of the smallest on the market.
- **Industry's smallest e-compass**
The chip needs just three additional components for complete e-compass subsystem making it the industry's smallest e-compass which easily fits even in today's densely populated smartphone PCBs.

Configurable Self Timed Sampling

- **Repeated periodic sampling**
Built-in sequencer runs by itself, samples, and updates data at configured interval offloading the host processor which just reads out the current values at its convenient time.
- **New-data-ready interrupt**
Doing repeated periodic sampling with this host interrupt makes getting sample sequences at a precise interval easy without using any host timer resources.
- **Configurable averaging**
How raw sensor element outputs are averaged can be configured differently for different applications allowing high frequency spurious to be removed to show the underlying signal.

Low Power Operation

- **Faster sampling / Self power down**
New low noise high sensitivity sensor element makes sampling faster and its duty cycle lower making the self power down control more effective to reduce the operating current.
- **Single 1.8 V supply operation**
Our sensor element technology allows lower voltage across the sensor bridge and the whole chip runs off a single 1.8 V supply, helping to achieve unmatched low power operation.

Soft Iron Error Free

- **Unique algorithm to dynamically adjust soft iron error**
Also provided is our YAS537 device driver software specifically equipped with an algorithm to keep adjusting for changing soft iron distortion.
This allows the users to run e-compass applications correctly on portable devices even if their construction use some soft iron materials.

YAS537 Specification [Preliminary]

Recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage (VDD)	V _{VDD}	1.65	1.8	3.6	V
Supply Voltage (VDD18)	V _{VDD18}	1.65	1.8	1.95	V
Operating Ambient Temperature	T _{OP}	-40	25	85	°C
Power supply ramp up time	T _{VON}	0.01		50	ms

Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Standby Current (T _{OP} =25°C)				1.5 (TBD)	μA
Current drawn from VDD during magnetic field acquisition			4		mA
Current drawn from VDD during temperature acquisition			1.5		mA
Current drawn during standby (Repeated data acquisition)			10		μA
Maximum Measurable Magnetic Field			2000		μT
Magnetic Field Sensitivity(X,Y,Z)			0.3		μT/count
Sensitivity Axis Deviation				±5	
Temperature Acquisition Range		-40		85	°C
Temperature Resolution			0.05		°C/count
Acquisition Time			1.3		ms
Initialization Time after all power supplies reach the operating ranges	T _{DOP}			4	ms

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Created in Feb. 2014

Document Code: PBAS537A-000-01-e

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