

1. General Description

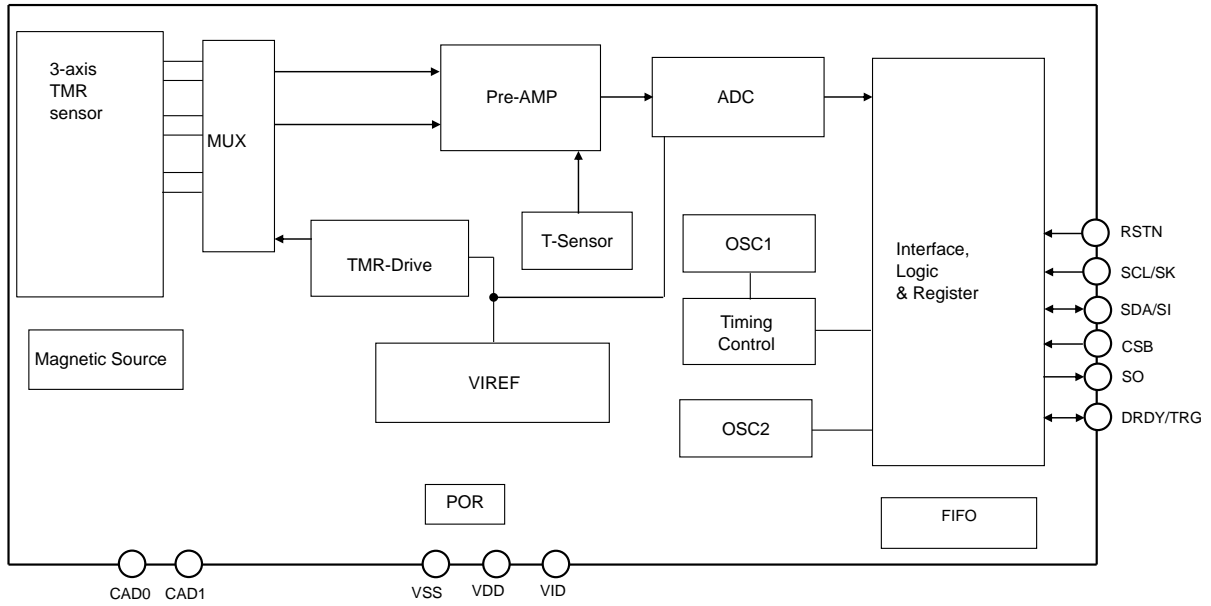
AK09940A is ultrahigh precision 3-axis electronic magnetometer IC with ultrahigh sensitive TMR sensor technology. Small package of AK09940A incorporates magnetic sensors for detecting magnetic field in the X-axis, Y-axis, and Z-axis, a sensor driving circuit, signal amplifier chain, and an arithmetic circuit for processing the signal from each sensor. Self-test function is also incorporated.

2. Features

- Functions:
 - Upward compatible with AK09940
 - 3-axis magnetometer device
 - Built-in A to D Converter for magnetometer data out
 - 18-bit data out for each 3-axis magnetic component
 - Sensitivity: 10 nT/LSB (typ.)
 - Range: ±1200 μT (max.)
 - Serial interface
 - I²C bus interface
Standard and Fast modes compliant with Philips I²C specification Ver.2.1
 - 4-wire SPI
 - Operation mode
 - Power-down, Single measurement, Continuous measurement, External trigger measurement and Self-test
 - DRDY function for measurement data ready
 - Magnetic sensor overflow monitor function
 - Built-in oscillator for internal clock source
 - Power on Reset circuit
 - Self-test function with internal magnetic source
 - Built-in temperature sensor
 - Built-in magnetic sensitivity adjustment circuit
 - 8 FIFO data buffer
 - Selectable sensor drive
 - Low power drive / Low noise drive / Ultra low power drive
- Operating temperatures:
 - -30°C to +85°C
- Operating supply voltage:
 - Analog power supply +1.7 V to +1.98 V
 - Digital Interface supply +1.65 V to +3.6 V
- Current consumption:
 - Power-down: 1.0 μA (typ.)
 - Measurement:
 - Average current consumption at 100 Hz repetition rate
 - ✧ Ultra low power drive: 16 μA (typ.)
 - ✧ Low power drive 1: 30 μA (typ.)
 - ✧ Low power drive 2: 60 μA (typ.)
 - ✧ Low noise drive 1: 100 μA (typ.)
 - ✧ Low noise drive 2: 200 μA (typ.)
- Package:
 - AK09940A 11-pin LGA: 1.6 mm × 1.6 mm × 0.58 mm (typ.)

1. Block Diagram and Functions

1.1. Block Diagram



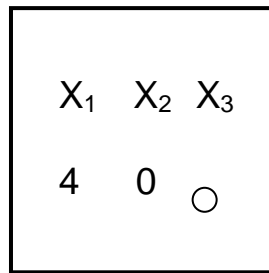
2. Package

2.1. Marking

Product name: 40

Date code: X₁X₂X₃

- X₁ = Year code
- X₂ = Month code
- X₃ = Lot



<Top view>

2.2. Pin Assignment

	4	3	2	1
D	RSTN		CAD1	CAD0
C	VID			VSS
B	SO			VDD
A	SDA/SI	SCL/SK	CSB	DRDY/TRG

<Top view>

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