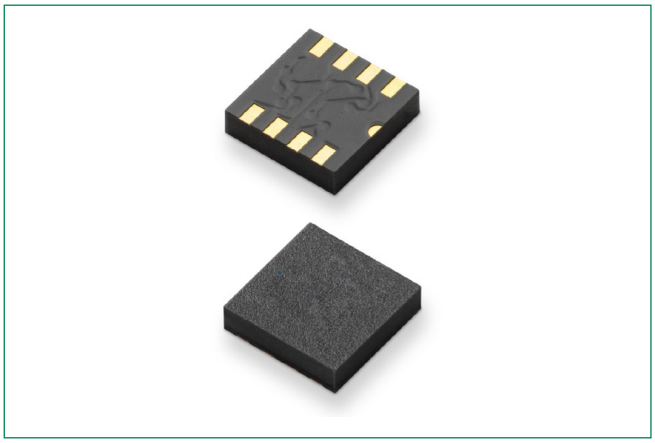
LGA8L LF53464-08TMR

Omnipolar Magnetic Sensor

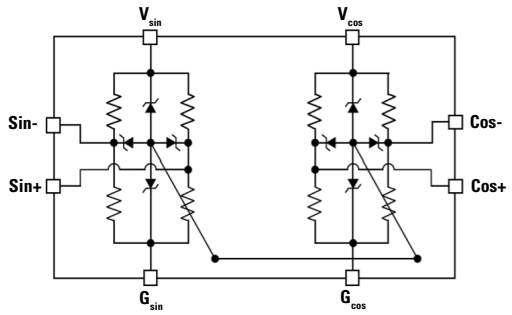
RoHS



Additional Information

Resources | Accessories | Samples

Functional Block Diagram



Description

The LF53464-08TMR angle sensor features a dual-axis, orthogonal push-pull Wheatstone bridge architecture. Each bridge integrates four high-sensitivity TMR (Tunnel Magnetoresistor) elements, delivering output voltage of up to 65% of the supply voltage. This strong signal output minimizes the need for external amplification or additional processing circuitry. The sensor also adjusts for ambient temperature variation.

When a magnet is positioned above the sensor to create a magnetic field parallel to the chip surface, the chip's dual-axis output produces voltage signals in a sine/cosine relationship proportional to the angle of the magnetic field.

The LF53464-08TMR is offered in a compact LGA8L package, measuring 3 mm × 3 mm × 0.75 mm.

Features & Benefits

- Tunneling Magnetoresistance technology (TMR)
- 0-360° angle measurement
- Up to 7V operating range
- Differential output
- Excellent thermal stability
- Wider airgap capability
- Low power consumption
- Compact Package
- X-Y axis sensing direction
- Operates with smaller magnets for cost reduction
- RoHS and REACH compliant

Applications

- Rotary position sensor
- Rotary encoders
- Contactless potentiometers
- Valve position sensors
- Knob position sensors

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Electrical Ratings (@TA = +25°C, Vcc = 3V, 0.1µF capacitor connected between Vcc & GND)

Symbol	Characteristics	Min.	Typ.	Max.	Unit
V_{CC}	Supply voltage	-	1	7	V
V_{OH}	Output high voltage	Vcc -0.1	Vcc -0.005	-	V
V_{OL}	Output low voltage	-	0.015	0.1	V
V_{Peak}	Peak Voltage[1]	-	340	-	mV/V
V_{Offset}	Offset Voltage	-20	-	20	mV/V
R_B	Bridge resistance[2]	100	140	190	kΩ
ESD_{HBM}	Human body model ESD	-	-	4000	V
T_{STG}	Storage temperature	-40	-	150	˚C
T_A	Operating temperature	-40	-	85	˚C

Notes:
1. V_{Peak} is the amplitude of the output sinusoidal voltage, which equals half of the peak to peak value
2. V_{cc} – GND is the single axis resistance

Magnetic Characteristics (@TA = +25°C, Vcc = 3V, 0.1µF capacitor connected between Vcc & GND)

Symbol	Characteristics	Min.	Typ.	Max.	Unit
Bop Dynamic Range	Omnipolar	200	9	800	Gauss
BMax	Maximum magnetic field	-	-	3000	G
θ	Angle Range	0	-	360	°
Δθ	Angular Error[1]	-	0.6	-	°

Notes:
1. Angular error is defined by zero to peak

Operation Principle

By rotating a small magnet placed on top of LF53464TMR, a rotating magnetic field parallel to the surface of the sensor is generated and is at the same angle as the magnet. Below figure shows the typical output signals of the LF53464TMR in response to a rotating field.

Output Curve

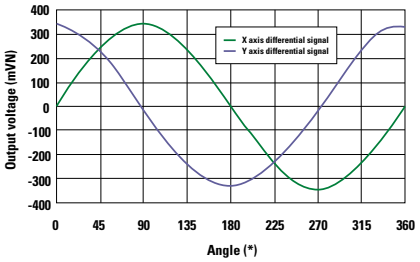
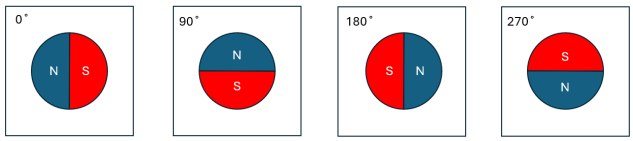
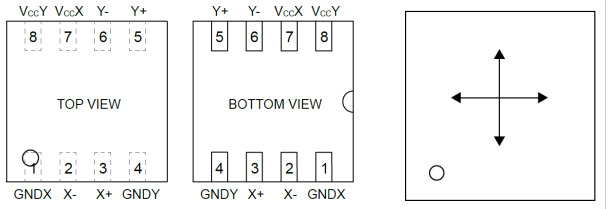


Figure 3. Typical output curve



Pin Configuration and Sensing Direction of Magnetic Field



Pin Name	Pin No. TSSOP8	Pin Function
GNDX	1	Ground (X-axis)
X-	2	Output 2 (X-axis)
X+	3	Output 1 (X-axis)
GNDY	4	Ground (Y-axis)
Y+	5	Output 1 (Y-axis)
Y-	6	Output 2 (Y-axis)
$V_{cc}X$	7	Supply Voltage (X-axis)
$V_{cc}Y$	8	Supply Voltage (Y-axis)

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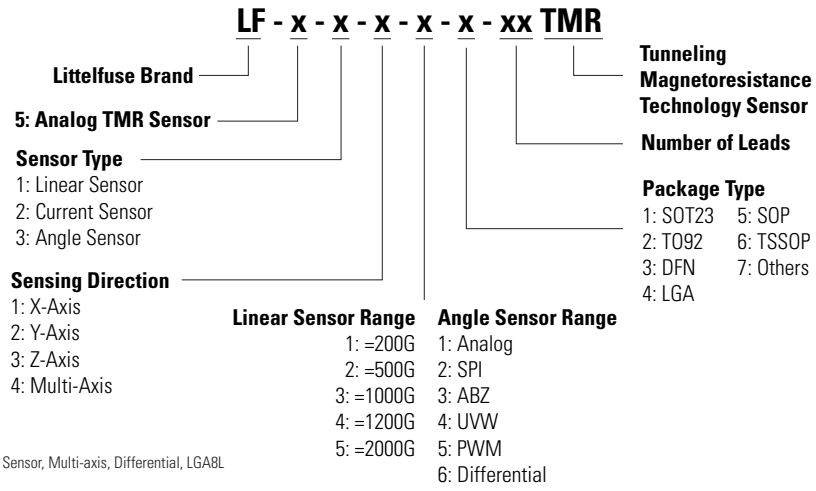
Part Numbering System



Example: : LF53464-08TMR is Analog, Angle Sensor, Multi-axis, Differential, LGA8L

Notes:

1. Every combination is NOT offered. Contact Littelfuse for availability.

Part Marking System

YWWaa	Y = Year Ending Digit WW = Work Week aa = Serialized Switch Type (aa, ab, ac) EX: 514aa, where aa represents LF53464-08TMR.

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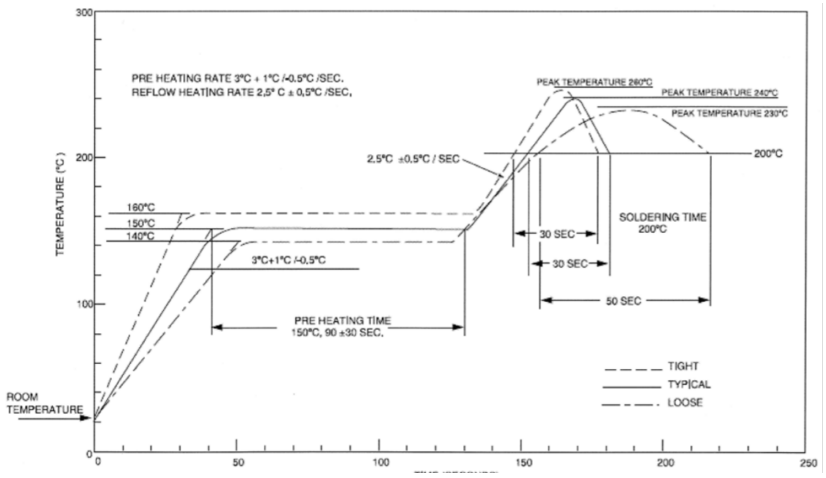
Soldering Profile for Lead-free packages



LGA8L Package Information
Dimensions in mm