

MultiDimension Technology Co., Ltd.

Product Selection Guide

Magnetic sensors · Sensor ICs · Sensor Modules

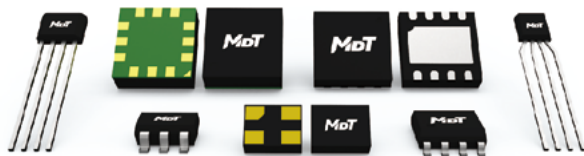
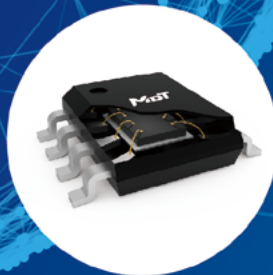
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HALL

GMR

AMR

TMR

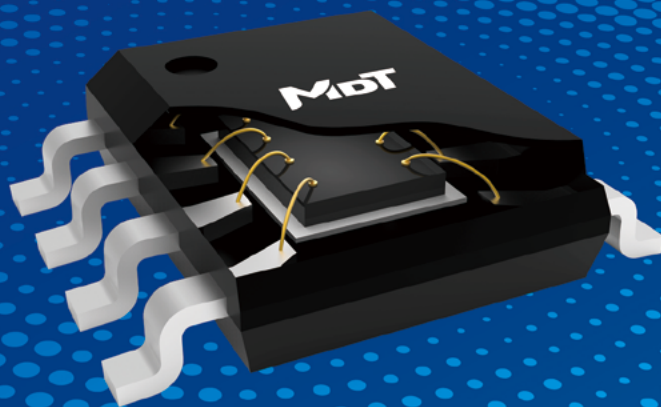


MULTI DIMENSION

— Sensing the Future —

MAGNETIC
SENSOR MANUFACTURER

TMR · GMR · AMR



Wafer Fabrication • Magnetic Sensors



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About MDT

MultiDimension Technology Co., LTD., (MDT) is a magnetic sensor manufacturer founded in 2010 in Zhangjiagang, Jiangsu, China. With over 400 patents, more than 200 magnetic sensor products, and its advanced volume production fab for TMR/GMR/AMR magnetic sensors, MDT can provide a number of high-performance magnetic sensors to meet the diverse application requirements of its customers.

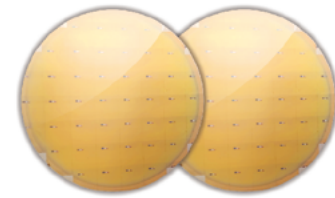
Led by a core management team of elite experts and veterans in magnetic sensor technology and engineering services, MDT is committed to supporting its customers with high-quality and comprehensive services.



High-tech enterprise certificate

Wafer Production Fab

With the advanced mass production fab and the proven wafer fabrication process for magnetic sensors, MDT is capable of supplying high-performance magnetic sensors in large volumes to meet diverse application needs. MDT can also provide complete service options for TMR/GMR/AMR magnetic sensor design, wafer fabrication, and testing.



Magnetic Sensor Wafer

Magnetic Sensor Mass Production Line



Sputter Deposition System



Magnetic Annealing Oven

Quality and Environment

MDT pursues excellence in quality control with a complete quality and environmental management system. MDT is committed to improving customer satisfaction and creating a green production environment.

Quality Policy

Quality Assurance, Industry Leadership
Service Excellence, Customer First



ISO9001:2015



ISO14001:2015



IATF 16949:2016

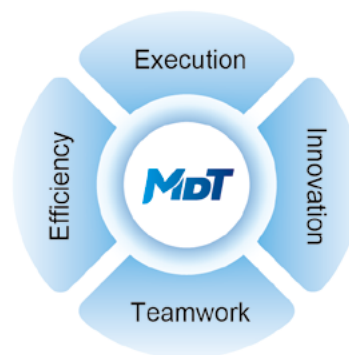
Environmental Policy

Regulatory Compliance, Pollution Prevention, Resource Recycling
Continuous Improvement, All-Staff Participation, Green Home

Business Philosophy



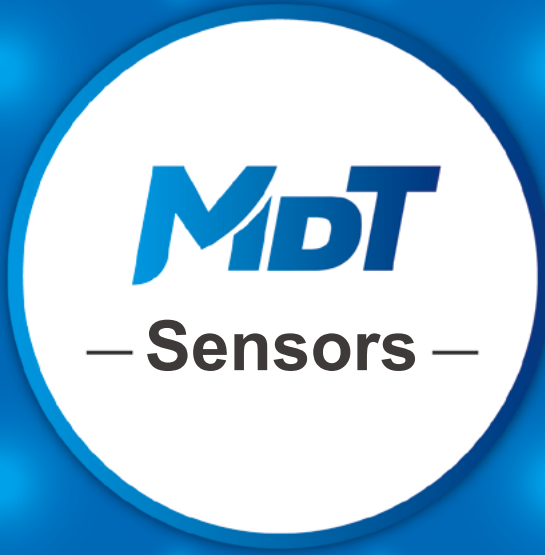
MDT Values



Lithography Equipment



Ion Beam Etch / Deposition Tool



* The package pictures of sensors are 3D schematics and for reference only.
The actual product of MDT shall prevail.

TMR Magnetic Switch Sensors

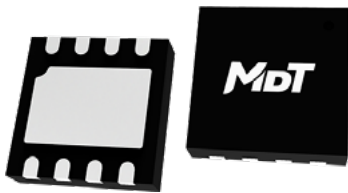
Low Power Consumption
High Frequency Response

Features

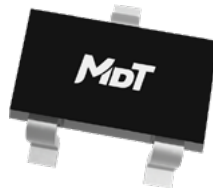
- Tunneling magnetoresistance (TMR) technology
- High sensitivity, small switching points
- Low power consumption (1.5 μ A@3V)
- Wide range supply voltages (low voltage 1.8~5.5VDC; high voltage 5~40VDC)
- Excellent operating point consistency
- Excellent temperature stability
- Fast field sensing speed and high frequency response: up to 5 kHz
- Excellent ESD protection performance
- Compact size

Applications

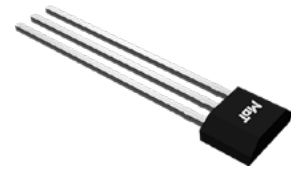
- Utility meters: water, gas, and heat meters
- Speed sensing
- Position sensing
- Motor and fan control
- Bi-stable state switch in elevator door operator



DFN8L(3×3×0.75)



SOT23-3



TO92S



LGA3L (2×1.5×0.63)



DFN3L (2×2×0.55)

TMR Magnetic Switch Sensors

Low Power Consumption
High Frequency Response

Part Number	Type	Supply Voltage (V)	Power Consumption	Power Mode	Sensing Direction	B _{OP} (Gs,25°C)	B _{RP} (Gs,25°C)	Output Interface	Package
—— Microampere High Frequency Response TMR Magnetic Switch Sensors ——									
TMR1102	Unipolar	1.8~5.5	1.5μA	Continuous power, no duty cycling	X-axis	17	13	CMOS	SOT23-3
TMR1148		1.8~5.5	1.5μA		X-axis	±14	±10	Open Drain	SOT23-3
TMR1202	Bipolar Latching	1.8~5.5	1.5μA	Continuous power, no duty cycling	X-axis	17	-17	CMOS	SOT23-3 TO92S
TMR1202H		1.8~5.5	1.5μA		X-axis	17	-17	CMOS	SOT23-3 TO92S
TMR1202HT		1.8~5.5	1.5μA		X-axis	17	-17	CMOS	SOT23-3 TO92S
TMR1206		1.8~5.5	1.5μA		Z-axis	27	-27	CMOS	SOT23-3
TMR1208		1.8~5.5	1.5μA		X-axis	5	-5	CMOS	SOT23-3 TO92S
TMR1302		Omnipolar	1.8~5.5		1.5μA	Continuous power, no duty cycling	X-axis	±17	±10
TMR1302H	1.8~5.5		1.5μA	X-axis	±17		±10	CMOS	SOT23-3 TO92S
TMR1302HT	1.8~5.5		1.5μA	X-axis	±17		±10	CMOS	SOT23-3 TO92S
TMR1303	1.8~5.5		1.5μA	X-axis	±35		±22	CMOS	SOT23-3 TO92S LGA3L (2×1.5×0.63)
TMR1304	1.8~5.5		1.5μA	X-axis	±10		±5	CMOS	SOT23-3 TO92S
TMR1305	1.8~5.5		2.0μA	Z-axis	±17		±10	CMOS	SOT23-3 TO92S
TMR1308	1.8~5.5		1.5μA	X-axis	±5		±4	CMOS	SOT23-3 TO92S
TMR1309	1.8~5.5		1.5μA	X-axis	±2		±2	CMOS	SOT23-3
TMR1340	Omnipolar		1.8~5.5	1.5μA	Continuous power, no duty cycling		X-axis	±14	±10
TMR1341		1.8~5.5	1.5μA	X-axis		±34	±30	Open Drain	LGA3L (2×1.5×0.63)
TMR1342		1.8~5.5	1.5μA	X-axis		±42	±37	Open Drain	LGA3L (2×1.5×0.63)
TMR1343		1.8~5.5	1.5μA	X-axis		±50	±45	Open Drain	LGA3L (2×1.5×0.63)
TMR1345		1.8~5.5	1.5μA	X-axis		±72	±63	Open Drain	LGA3L (2×1.5×0.63)
TMR1348		1.8~5.5	1.5μA	X-axis		±14	±10	Open Drain	SOT23-3
TMR13DX		1.8~5.5	1.5μA	X-axis		10~50 Programmable	5~45 Programmable	CMOS	SOT23-3 TO92S

TMR Magnetic Switch Sensors

Low Power Consumption
High Frequency Response

Part Number	Type	Supply Voltage (V)	Power Consumption	Power Mode	Sensing Direction	B _{OP} (Gs,25°C)	B _{RP} (Gs,25°C)	Output Interface	Package
—— Dual-Axis (X/Y) High Frequency Response TMR Magnetic Switch Sensors ——									
TMR1222	Bipolar Latching	1.8~5.5	1.5μA	Continuous power, no duty cycling	X-axis Y-axis	17	-17	CMOS	DFN8L (3×3×0.75)
TMR1228		1.8~5.5	1.5μA		X-axis Y-axis	5	-5	CMOS	DFN8L (3×3×0.75)
TMR1223		3~40	500μA		X-axis Y-axis	35	-35	Open Drain	DFN8L (3×3×0.75)
—— High Voltage, Low Power Consumption TMR Magnetic Switch Sensors ——									
TMR1155	Unipolar	3~40	0.6mA	Continuous power, no duty cycling	Z-axis	70	55	Open Drain	SOT23-3 TO92S
TMR1157		3~40	0.6mA		Z-axis	140	110	Open Drain	SOT23-3 TO92S
TMR1252	Bipolar Latching	3~40	0.6mA		Z-axis	60	-60	Open Drain	SOT23-3 TO92S
TMR1283	Bipolar Latching	3~40	0.6mA	Power cycling	X-axis	25	-25	CMOS	SOT23-3
TMR1287		3~40	0.6mA		X-axis	60	-60	CMOS	SOT23-3
TMR1383	Omnipolar	3~40	0.6mA	Continuous power, no duty cycling	X-axis	±26	±19	Open Drain	SOT23-3
TMR1387		3~40	0.6mA		X-axis	±65	±40	Open Drain	SOT23-3
—— Bi-stable State TMR Magnetic Switch Sensors ——									
TMR1212	Bipolar Latching Memory	1.8~5.5	1.5μA	Continuous power, no duty cycling	X-axis	45	-45	CMOS	SOT23-3 TO92S
TMR1213		1.8~5.5	1.5μA		X-axis	75	-75	CMOS	SOT23-3 TO92S
TMR1215		1.8~5.5	1.5μA		X-axis	35	-35	CMOS	SOT23-3 TO92S
—— Nanoampere TMR Magnetic Switch Sensors ——									
TMR1162	Unipolar	1.8~5.5	200nA	Power cycling	X-axis	17	13	Open Drain	SOT23-3 TO92S
TMR1362	Omnipolar	1.8~5.5	200nA		X-axis	±17	±12	CMOS	SOT23-3 TO92S
TMR1366		1.8~5.5	200nA		X-axis	±7	±5	CMOS	SOT23-3 TO92S
TMR1262	Bipolar Latching	1.8~5.5	200nA		X-axis	17	-17	CMOS	SOT23-3 TO92S

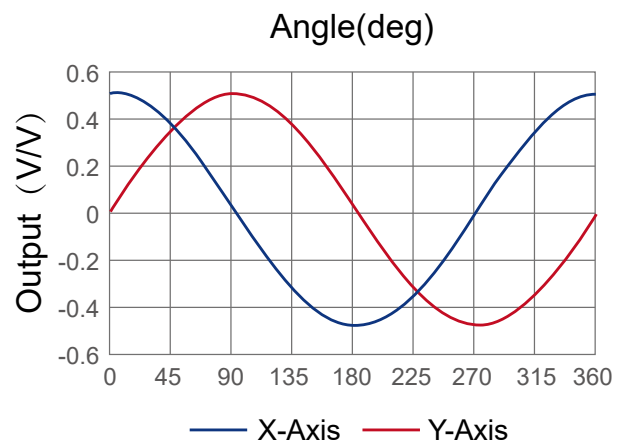
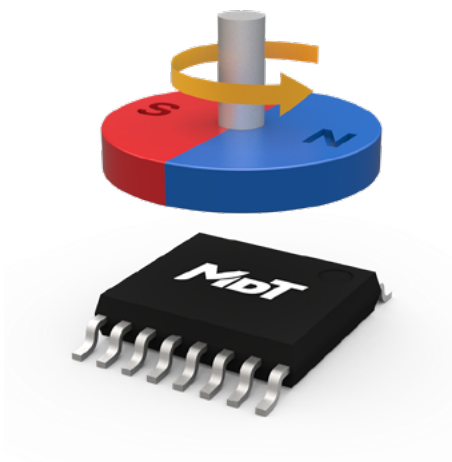
TMR Angle Sensors

Features

- Tunneling Magnetoresistance (TMR) technology
- 2-axis 360° full range angle measurement
- High sensitivity
- Large output signals
- Saturation field operating
- Adapt to small magnet and large air gap
- Excellent thermal stability
- Low hysteresis, low power consumption

Applications

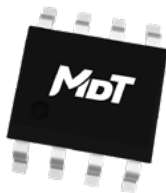
- Contactless angular position measurement
- Brushless motor position sensing
- Rotary encoders
- Valve position sensors
- Knob position sensors
- Rotary speed sensing
- Rotary angular sensing
- Robotics



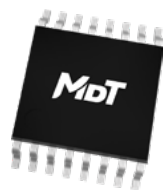
TMR Angle Sensors

Part Number	Type	Supply Voltage (V)	Angle range	Resistance (kΩ)	OutputPeak (mV/V)	Magnetic Field Measuring Range (Gs)	Angle Accuracy	Output Interface	Package
— Analog Angle Sensors —									
TMR3001	Biaxial	0~7	360°	4	450	70~400	±2.5°	Differential Analog	LGA8L (3×3×0.75)
TMR3002	Biaxial	0~7	360°	280	500	70~400	±2.5°		LGA8L (3×3×0.75)
TMR3004	Biaxial	0~7	360°	7.5	500	150~1100	±1.5°		LGA8L (3×3×0.75)
TMR3005	Biaxial	0~7	360°	6/140/1900	340	200~800	±0.6°		LGA8L (3×3×0.75)

Part Number	Supply Voltage (V)	Angle Range	Resolution	Angle Accuracy	Response Time (μs)	Maximum Rotation Speed (RPM)	Magnetic Field Measuring Range (Gs)	Output Interface	Package
— Digital Angle Sensors —									
TMR3102	3.0~5.5	360°	12bit	<±1°	4	20000	200~800	SPI/PWM/ Analog	SOP8
TMR3105A	3.3~5	360°	12bit	<±1°	4	20000	200~800	SPI/ABZ/UVW/ PWM/Analog	TSSOP16L
TMR3103	3.3~5	360°	14bit	<±0.2°	4	20000	>200	SPI	SOP8
TMR3106	3.3~5	360°	14bit	<±0.2°	4	20000	>200	SPI/ABZ/ UVW/PWM	TSSOP16L



SOP8



TSSOP16L



LGA8L (3×3×0.75)

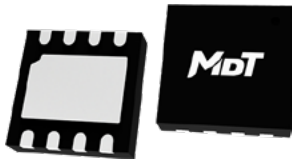
TMR Linear Magnetic Field Sensors

Features

- Tunneling magnetoresistance (TMR) technology
- High sensitivity
- Low power consumption
- Low hysteresis and large dynamic range
- Wide range supply voltages
- Excellent temperature stability
- Fast field sensing speed and high frequency response
- Excellent ESD protection performance

Applications

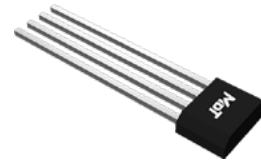
- Precise measurement of weak field
- Current sensor
- Position and speed sensing
- Security monitoring
- Vehicle detection
- E-compass
- Non-destructive testing
- Motor and fan driving
- Magnetic communication
- Room temperature magnetocardiogram detection



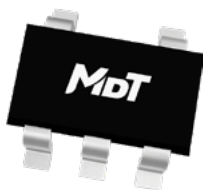
DFN8L (3×3×0.75)



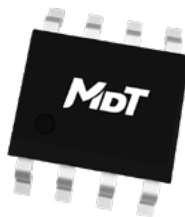
SSIP4



TO94



SOT23-5



SOP8

TMR Linear Magnetic Field Sensors

Part Number	Bridge Configuration	Supply Voltage (V)	Sensitivity (mV/V/Gs)	Resistance (kΩ)	Saturation Field (Gs)	Sensing Direction	Hysteresis (Gs)	Noise (nT/rt(Hz)@1Hz)	Package
—— Low Cost TMR Linear Magnetic Field Sensors ——									
TMR2001	Full bridge	0~7	8	60	±25	X-axis	0.4	-	SOT23-5
TMR2003		0~7	6	60	±35	X-axis	0.4	-	SOT23-5
—— Large Dynamic Range TMR Linear Magnetic Field Sensors ——									
TMR2102	Full bridge	0~7	4.9	90/45	±90	X-axis	0.1	~10	SOP8 DFN8L (3×3×0.75)
TMR2103		0~7	6	50	±75	X-axis	0.3	~10	SOP8 DFN8L (3×3×0.75)
TMR2104		0~7	3.1	30	±150	X-axis	0.5	~10	SOP8 DFN8L (3×3×0.75)
—— Z-axis TMR Linear Magnetic Field Sensors ——									
TMR2501	Full bridge	0~7	0.3	5	±1000	Z-axis	1	~50	TO94 SSIP4
TMR2503		0~7	1	0.9	±750	Z-axis	1	~50	TO94 SSIP4 SOT23-5
TMR2505		0~7	2.2	1600	±100	Z-axis	1	~50	TO94 SSIP4
—— High Sensitivity TMR Linear Magnetic Field Sensors ——									
TMR2901	Full bridge	0~7	25	45,7~10	±20	Y-axis	0.2	~2	SOP8 DFN8L (3×3×0.75)
TMR2905		0~7	50~60	45,2~8	±11	Y-axis	<0.8	~2	SOP8 DFN8L (3×3×0.75)
TMR2922		0~7	7~15	2	±15	Y-axis	<1	~1	SOP8
—— Low Noise TMR Linear Magnetic Field Sensors ——									
TMR9082	Full bridge	0~3	100	50	±4	X-axis	0.1	0.15	SOP8

TMR Linear Magnetic Field Sensors

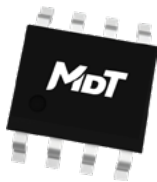
Features

- Integrated signal conditioning circuit
- Pre-programmable parameter settings according to demand
- High frequency response, fast transient response
- Programmable sensitivity and calibratable temperature coefficient
- Programmable zero offset and calibratable temperature coefficient
- Linearity correction

Applications

- Current sensor
- Linear position sensor
- Gaussmeter
- Encoder

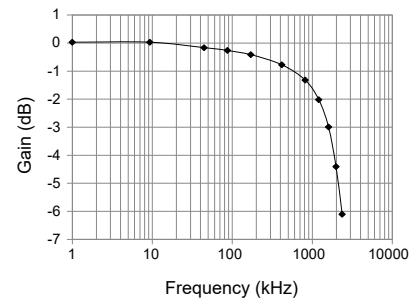
Part Number	Supply Voltage (V)	Linear Range (Gs)	Sensitivity @5V (mV/Gs)	Sensing Direction	Zero Offset @5V (mV)	Non-linearity (%)	Temperature Coefficient of Sensitivity (-45~125°C)	Package
—— Preprogrammable TMR Linear Magnetic Field Sensors ——								
TMR2602	3.2~5.5	±25	80	X-axis	2.5V±5	0.3	-600 PPM	SOP8 DFN6L (3×2×0.75)
TMR2604	3.2~5.5	±80	25	X-axis	2.5V±5	0.5	-600 PPM	SOP8 DFN6L (3×2×0.75)
TMR2605	3.2~5.5	±500	4	X-axis	2.5V±5	0.1	-300 PPM	SOP8 DFN6L (3×2×0.75)
TMR2651	3.2~5.5	±1500	1.3	X-axis	2.5V±5	0.2	100 PPM	DFN6L (3×2×0.75)
TMR2652	3.2~5.5	±1000	2	X-axis	2.5V±5	0.2	100 PPM	DFN6L (3×2×0.75)
TMR2653	3.2~5.5	±500	4	X-axis	2.5V±5	0.2	100 PPM	DFN6L (3×2×0.75)



SOP8



DFN6L (3×2×0.75)



TMR Geartooth / Magnetic Scale Sensors

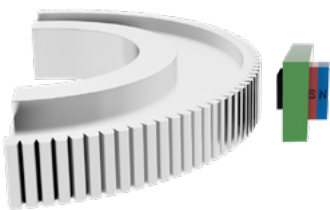
Features

- Tunneling magnetoresistance (TMR) technology
- High sensitivity, high resolution, high response frequency (>20MHz)
- Large output signals, no amplification required
- Micro gear pitch monitoring, adapt to large air gap
- Sine/cosine signal output with accurate phase difference
- Wide range supply voltages
- Excellent temperature stability, compact size

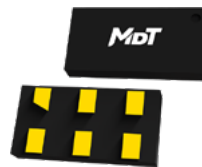
Applications

- Gear speed and direction measurement
- Linear and angular speed sensing
- Linear and angular displacement sensing
- Magnetic scale
- Magnetic encoder

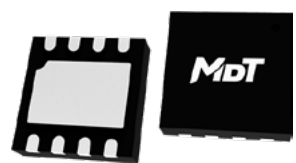
Part Number	Bridge Channel	Supply Voltage (V)	Gear Tooth Pitch (mm)	Resistance (kΩ)	Saturation Field (Gs)	Sensing Direction	Package
—— Standard Module TMR Geartooth / Magnetic Scale Sensors ——							
TMR4M04	Dual	0~7	0.4 in module	3	±70	X-axis	LGA6L(3×3×0.9) DFN8L(3×3×0.75)
TMR4M05		0~7	0.5 in module	3	±70		LGA6L(3×3×0.9) DFN8L(3×3×0.75)
TMR4M08		0~7	0.8 in module	3	±70		LGA6L(3×3×0.9) DFN8L(3×3×0.75)
TMR4M02B		0~7	0.2 in module	2	±70		LGA6L(6×3×0.9)
TMR4M03B		0~7	0.3 in module	2	±70		LGA6L(6×3×0.9)
TMR4M04B		0~7	0.4 in module	2	±70		LGA6L(6×3×0.9)
TMR4M05B		0~7	0.5 in module	2	±70		LGA6L(6×3×0.9)
TMR4M08B		0~7	0.8 in module	2	±70		LGA6L(6×3×0.9)



LGA6L (3×3×0.9)



LGA6L (6×3×0.9)



DFN8L (3×3×0.75)

TMR Geartooth / Magnetic Scale Sensors

Part Number	Compatible Part Number	Bridge Channel	Supply Voltage (V)	Gear Tooth Pitch (mm)	Resistance (kΩ)	Saturation Field (Gs)	Sensing Direction	Package	
—— Standard Pitch TMR Geartooth / Magnetic Scale Sensors ——									
TMR4001	MMG145F	Single	0~7	about 0.5	15	±70	X-axis	LGA6L (3×3×0.9)	
TMR4002	MMG245F		0~7	about 1.0	15	±70		LGA6L (3×3×0.9)	
TMR4003	MMG345F		0~7	about 1.5	15	±70		LGA6L (3×3×0.9)	
TMR4004	MMG245D	Dual	0~7	about 1.0	7.5	±70		X-axis	LGA6L (3×3×0.9)
TMR4005	MMG445D		0~7	about 2.0	7.5	±70			LGA6L (3×3×0.9)
TMR4006	MMG845D		0~7	about 4.0	7.5	±70			LGA6L (6×3×0.9)
TMR4007	MMGC45D		0~7	about 6.0	7.5	±70			LGA6L (6×3×0.9)
TMR4011	-	Dual	0~7	about 0.8	7.5	±70	X-axis		LGA6L (3×3×0.9)
TMR4012	-		0~7	about 1.2	7.5	±70			LGA6L (3×3×0.9)
TMR4013	-		0~7	about 1.6	7.5	±70			LGA6L (3×3×0.9)
TMR4015	-		0~7	about 2.4	7.5	±70		LGA6L (6×3×0.9)	
TMR4016	-		0~7	about 2.8	7.5	±70		LGA6L (6×3×0.9)	
TMR4017	-		0~7	about 3.2	7.5	±70		LGA6L (6×3×0.9)	
TMR4018	-		0~7	about 3.6	7.5	±70		LGA6L (6×3×0.9)	
TMR4019	-		0~7	about 4.8	7.5	±70		LGA6L (6×3×0.9)	

AMR Magnetic Switch Sensors

Features

- Low power consumption
- Omnipolar switch
- High sensitivity, small switching points
- Wide range supply voltages
- Excellent temperature stability
- High tolerance to external magnetic field interference

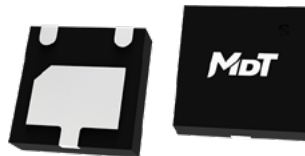
Applications

- Utility meters: water, gas, and heat meters
- Proximity switches
- Speed sensing
- Linear and rotary position sensing
- Wake up switches

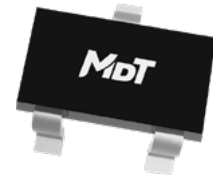
Part Number	Type	Supply Voltage (V)	Power Consumption (μ A)	Power Mode	Sensing Direction	B _{OP} (Gs,25°C)	B _{RP} (Gs,25°C)	Output Interface	Package
—— Dual-Axis (X/Y) AMR Magnetic Switch Sensors ——									
AMR1320	Omnipolar	1.8~5.5	1	power cycling (30Hz)	360°	±17	±12	CMOS	SOT23-3
AMR1321	Omnipolar	1.8~5.5	3	power cycling (100Hz)	360°	±25	±20	CMOS	SOT23-3
—— Single Axis AMR Magnetic Switch Sensors ——									
AMR1341	Omnipolar	1.6~5	40	power cycling (1kHz)	X-axis	±15	±10	CMOS	DFN3L (2×2×0.55) LGA3L (2×1.5×0.63)
AMR1342	Omnipolar	1.6~5	40	power cycling (1kHz)	X-axis	±35	±27	CMOS	DFN3L (2×2×0.55) LGA3L (2×1.5×0.63)



LGA3L (2×1.5×0.63)



DFN3L (2×2×0.55)



SOT23-3

AMR Angle Sensors

Features

- Anisotropic magnetoresistance (AMR) technology
- Wide range supply voltages
- Adapt to large air gap
- Excellent temperature stability
- Lower hysteresis

Applications

- Rotary position sensing
- Rotary encoder
- Non-contact potentiometer
- Valve position sensor
- Dial sensor

Part Number	Type	Supply Voltage (V)	Angle Range	Resistance (k Ω)	Output Peak (mV/V)	Magnetic Field Measuring Range (Gs)	Angle Accuracy	Output Interface	Package
— Analog Angle Sensors —									
AMR3001	Biaxial	0~12	180°	1.6	7.5	>200	$\pm 0.1^\circ$	Differential Analog	SOP8
AMR3003	Biaxial	0~18	180°	0.35	16	>200	$\pm 0.1^\circ$		LGA8L(5×5×0.9) DNF6L(2×3×0.75)
AMR3005	Biaxial	0~18	180°	0.7	16	>200	$\pm 0.1^\circ$		LGA8L(5×5×0.9)
AMR3008	Biaxial	0~18	180°	4.2	13	>200	$\pm 0.1^\circ$		LGA8L(5×5×0.9)
AMR3013	Biaxial	0~18	180°	4.2	13	>200	$\pm 0.1^\circ$		SOP8
AMR4100	Biaxial	0~9	180°	2.7	13	>200	$\pm 0.1^\circ$		DFN12L(6×2×0.75)

Part Number	Supply Voltage (V)	Angle Range	Resolution	Angle Accuracy	Response Time (μ s)	Maximum Rotation Speed (RPM)	Magnetic Field Measuring Range (Gs)	Output Interface	Package
— Digital Angle Sensors —									
AMR3108A	3.0~5.5	180°	12bit	$< \pm 0.5^\circ$	4	20000	>200	SPI/ABZ/ UVW/PWM/ Analog	TSSOP16L



LGA8L (5×5×0.9)



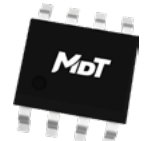
DFN12L (6×2×0.75)



DFN6L(3×2×0.75)



TSSOP16L



SOP8

AMR Linear Magnetic Field Sensors

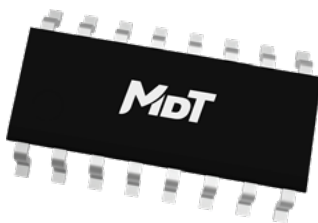
Features

- Anisotropic magnetoresistance (AMR) technology
- Excellent temperature stability
- Lower hysteresis
- Wide range supply voltages
- Low noise
- Wide saturation field range
- Wide operating field range

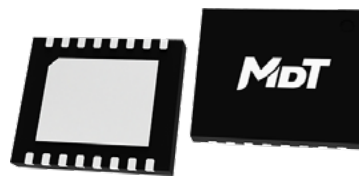
Applications

- Weak magnetic field sensing
- Current sensor
- Position sensor
- Magnetometer

Part Number	Supply Voltage (V)	Sensitivity (mV/V/Gs)	Resistance (kΩ)	Saturation Field (Gs)	Sensing Direction	Hysteresis (Gs)	Noise (nT/rt (Hz)@1Hz)	Package
AMR2302	1~12	0.7	0.75	± 10	X/Y-axis	0.05	0.4	SOP16
AMR2501	1~12	2.1	0.77	± 4	X-axis	0.02	0.15	DFN16L (6×5×0.75)



SOP16



DFN16L (6×5×0.75)

AMR Magnetic Scale Sensors

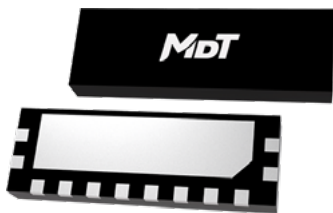
Features

- Anisotropic magnetoresistance (AMR) technology
- Wide range supply voltages
- Adapt to large air gap
- Sin/cosine output
- Excellent temperature stability

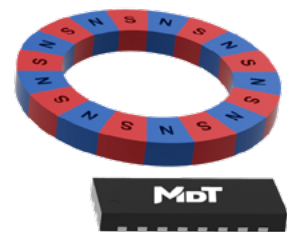
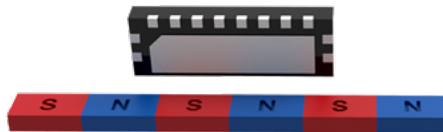
Applications

- Incremental or absolute encoder
- Linear or angular displacement encoder
- Magnetic scale and magnetic encoder

Part Number	Output Type	Output Channel	Pole Pitch Width (mm)	Package
AMR4010	Analog	2	1	DFN12L (6×2×0.75)
AMR4020	Analog	2	2	DFN12L (6×2×0.75)
AMR4050	Analog	2	5	DFN12L (6×2×0.75)



DFN12L (6×2×0.75)





* The module pictures are 3D schematics and for reference only.
The actual product of MDT shall prevail.

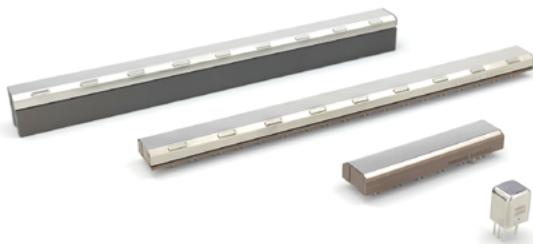
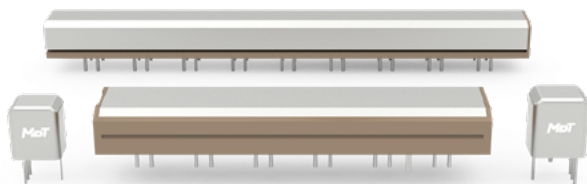
TMR Magnetic Image Sensors

Features

- Tunneling magnetoresistance (TMR) technology
- Large saturation field, can work in large DC magnetic fields
- Adapt to large air gap
- Highly sensitive to field gradient
- Excellent temperature stability
- Low noise
- High tolerance to external magnetic field interference
- Compatible with existing products on the market

Applications

- ATM
- Bill counter and validator
- Bill sorter
- Magnetic detection of the paper bills



TMR Magnetic Image Sensors

Part Number	Sensing Width (mm)	Resolution × Channels	Dimensions (L × W × H) (mm)	Output Mode
TMR6501	5	5mm × 1 channel	8 × 10.5 × 9.6	Full bridge differential
TMR6401C	5	5mm × 1 channel	8.8 × 11.1 × 12.5	Half bridge single-ended
TMR6401	5	5mm × 1 channel	8.8 × 11.1 × 12.5	Full bridge differential
TMR6403A	30	10mm × 3 channels	36 × 11.1 × 12.5	
TMR6404X	40	10mm × 4 channels	43.8 × 11.5 × 15.2	
TMR6306	54	0.25mm × 216 channels	64 × 11.5 × 15.2	Serial analog
TMR6406X	60	10mm × 6 channels	64 × 11.5 × 15.2	Full bridge differential
TMR6206D	60	10mm × 6 channels	66.6 × 15 × 10	Digital
TMR6206L	60	10mm × 6 channels	66.6 × 15 × 7.5	Full bridge differential
TMR6209	90	10mm × 9 channels	99 × 12 × 7.5	
TMR6218LA	180	10mm × 18 channels	191.5 × 16 × 7.5	
TMR6218XA	180	10mm × 18 channels	191.5 × 16 × 7.5	
TMR6318C	180	2.5mm × 72 channels	191.5 × 16 × 19	Serial analog
TMR6318	180	0.25mm × 720 channels	191.5 × 16 × 17	

TMR Current Sensors

Features

- Tunneling magnetoresistance (TMR) technology
- Split core, easy to install
- High accuracy, low power consumption
- Wide response bandwidth
- Wide measurement range
- Excellent linearity
- Excellent temperature stability
- Galvanic separation measurement

Applications

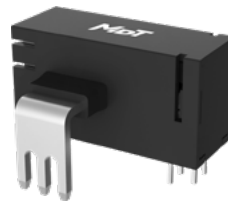
- Power grid, energy storage
- Photovoltaic, wind power
- Industry control
- Frequency conversion speed regulation system
- DC motor drive
- Battery supplied system
- Weak current measurement
- Charging pile



TMR7102



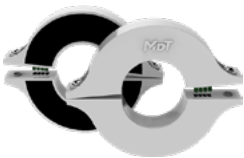
TMR7302



TMR7303



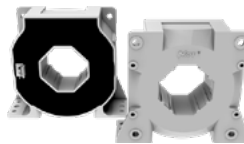
TMR7304



TMR7204



TMR7401



TMR7551



TMR7503

TMR Current Sensors

Part Number	Feature	Nominal Current (A)	Primary Measuring Range (A)	Supply Voltage (V)	Rated Output	Load Resistance (kΩ)	Sum of Error (%FS)	Linearity Error (%FS)	Offset voltage	Gain Temperature Drift (PPM/°C)	Response Time (μs)	Ambient Operating Temperature (°C)
TMR7102-C	Automotive	500 to 1000	0 to ±1000	12	CAN	-	±0.6	0.1	±0.1A	±100	150 ms	-40 to +85
TMR7302-E	Module with copper busbar	50 to 250	0 to ±250	5	4.5V	10	±1	0.5	±10mV	±250	10	-40 to +125
TMR7303-D		10 to 80	0 to ±200	5	3.3V	10	±1	0.5	±10mV	±250	0.5	-40 to +105
TMR7304-B		6 to 75	0 to ±180	5	3.125 V	≥1	±0.8	0.1	±5mV	±100	1	-40 to +105
TMR7502-C	Solid core square hole	500 to 2500	0 to ±5500	±15	4V	≥1	±1	0.5	±20mV	±125	5	-40 to +105
TMR7503-B		50 to 600	0 to ±900	±15	4V	≥1	±1	0.5	±20mV	±125	1	-40 to +105
TMR7504-B		200 to 1500	0 to ±2500	±15	4V	≥1	±1	0.5	±20mV	±125	5	-40 to +105
TMR7551-B	Solid core round hole	1000	0 to ±1500	±(15~24)	200mA	-	±0.3	0.1	±0.3mA	±50	1	-40 to +85
TMR7552-C		6 to 25	0 to ±80	5	3.125V	≥2	±0.5	0.1	±10mV	±100	0.3	-40 to +85
TMR7553-B		50 to 300	0 to ±600	±(12~15)	50/100/150mA	-	±0.8	0.2	±0.2mA	±50	1	-40 to +85
TMR7553-C		50 to 300	0 to ±600	±(12~15)	50/100/150mA	-	±0.8	0.2	±0.2mA	±50	1	-40 to +85
TMR7553-D		300	0 to ±500	±(12~15)	100mA	-	±0.8	0.2	±0.2mA	±50	1	-40 to +85
TMR7554-B	PCB mount	25	0 to ±36	±15	25mA	-	±0.5	0.2	±0.15mA	±50	1	-40 to +85
TMR7556-B	Solid core round hole	300	0 to ±500	±(12~20)	150mA	-	±0.5	0.1	±0.2mA	±50	1	-40 to +85
TMR7401-300mA	Leakage current	0.3	0 to ±0.5	5	3.7V	≥10	±2	1	±30mV	±100	10	-40 to +85
TMR7401-600mA		0.6	0 to ±1.0	5	3.7V	≥10	±2	1	±30mV	±100	10	-40 to +85
TMR7401-1000mA		1	0 to ±1.5	5	3.833V	≥10	±2	1	±30mV	±100	10	-40 to +85
TMR-MAC005	Micro-ampere	50μA	0 to ±10mA	5	-	-	±1	0.5	±10mV	-300	-	-40 to +125
TMR7901	Voltage sensor	1000V	0 to 3000V	±(12~24)	50mA	-	±0.7	0.1	0.15mA	100	12	-40 to +85
TMR7902		50V	0 to 400V	5	4.5	≥2	±0.5	0.1	±10mV	75	15	-55 to +85
TMR7903	AC voltage switch	80Vac	0 to 380Vac	12	Switch quantity	-	-	-	-	-	500 ms	-40 to +85

TMR Magnetic Rotary Encoders

Features

- ABZ incremental signals
- Quick response, applicable to high speed spindle shaft
- High resolution, high accuracy measurement
- Adapt to harsh environments
- Customizable specifications
- Real time calibration available with debug box

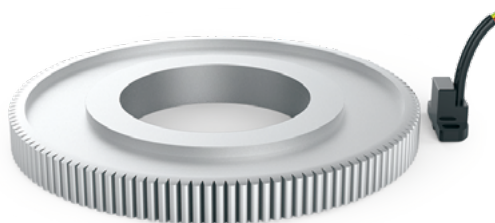
Applications

- Spindles and motors
- CNC machine tools
- Energy and power generation systems
- Elevators

Part Number	Description	Output Signal	Supply Voltage	Gear Module	Calibration After Installation
GE-T	Incremental TTL	RS422 (TTL)	5VDC±10%	0.3~1	Support
GE-A	Incremental Sine Wave	Sin/Cos (1Vpp)	5VDC±10%	0.3~1	Support



TMR magnetic rotary encoders



Debug box

AGV Magnetic Guide Sensors

Features

- Adaptive installation height and tape width
- High tolerance to external magnetic field interference
- N pole, S pole and N/S poles detection modes
- Instant magnetic polarity output
- Reverse polarity protection, overload protection, surge suppression

Applications

- Automated guided vehicle (AGV)
- Trackless mobile shelving
- Logistics sortation
- Heavy-duty AGV for smart port
- Heavy-duty AGV for smart PV and smart wind power

Part Number	Description	Supply Voltage (VDC)	Supply Current (mA)	Communication Mode	Communication Data	Operating TEMP (°C)	Resolution (mm)	Accuracy (mm)	Detection Height (mm)	Magnetic Field Measuring Range (Gs)	Response Time (ms)	Dimensions (mm)	Ingress Protection
— AGV Tape/Marker Magnetic Guide Sensors —													
AGV-TMR15XN	Switch series, adapt to magnetic tape/marker guide	10~30	50	NPN	Switch on/off	-25~80	10	5	10~50	5~25	1	178×17×50	IP65
AGV-TMR15XP		10~30	50	PNP		-25~80	10	5	10~50	5~25	1	178×17×50	IP65
AGV-TMR25LC	Adapt to magnetic tape/marker guide	10~30	50	RS232 +CAN customizable	Displacement + Digital switch output	-25~80	1	0.1	10~60	5~25	5	180×17×50	IP65
AGV-TMR25XC		10~30	50			-25~80	1	0.1	10~60	5~25	5	180×17×50	IP65
AGV-TMR25X4		10~30	50			RS232 +RS485	-25~80	1	0.1	10~60	5~25	5	180×17×50
AGV-TMR36XC	Magnetic marker guide	10~30	100	CAN customizable	Displacement	-25~80	5	1	50~250	customizable	20	1088×32×50 (customizable)	IP67



AGV tape magnetic guide sensor



AGV marker magnetic guide sensor

AGV Magnetic Guide Sensors

Features

- Provides a variety of guide information
- Relative displacement, yaw angle, signal amplitude
- Large detection range
- High detection height
- Adapt to harsh outdoor environment

Applications

- Intelligent animal husbandry
- Smart golf courses
- Robotic lawn mower
- Other Outdoor Wire Guidance Scenarios

Part Number	Description	Channels	Supply Voltage (VDC)	Supply Current (mA)	Communication Mode	Communication Data	Resolution (mm)	Detection Width (mm)	Detection Height (mm)	Response Time (ms)	Operating Temperature (°C)	Ingress Protection
— AGV Electromagnetic Guide Sensors —												
AGV-TMR46LC	Sensor	6	5	120	CAN Customizable	Relative displacement, Yaw angle, Signal amplitude	1	±500	50~200	25	-25~80	IP65
AGV-TMR46L4	Sensor	6	5	120	RS485		1	±500	50~200	25	-25~80	IP65
AGV-TMR46XS	Signal generator	6	24	50	-	-	-	-	-	-	-25~80	IP65



AGV electromagnetic guide sensor



Signal generator

TMR Low Noise Linear Sensors

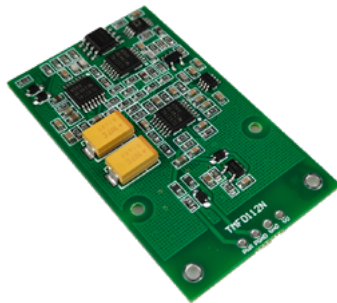
Features

- Suitable for low frequency dynamic magnetic field detection
- Large dynamic range: $\sim \pm 600 \mu\text{T}$
- Wide linear range: $\sim \pm 300 \mu\text{T}$
- Integrated device, friendly to secondary integration
- High resolution

Applications

- Security monitoring
- Magnetic materials detection
- Traffic control

Part Number	Sensing Direction	Response Frequency (-3dB) (Hz)	Supply Voltage (V)	Measuring range (μT)	Sensitivity (mV/ μT)	Noise (pT/rt (Hz)@1Hz)	Linearity (%FS)	Dimensions (mm)
TMR8105N	Single axis	0~10	5	± 300	40k	100	1	50×30×5
TMR8105B	Single axis	10~1000	5	± 300	40k	100	1	50×30×5
TMR8112N	Single axis	0~10	12	± 300	40k	100	1	50×30×5
TMR8112B	Single axis	10~1000	12	± 300	40k	100	1	50×30×5
TMR8501	Single axis	100k	$\pm 5 \sim \pm 15$	± 300	15	20	0.05	29×18.5×9



TMR8112N



TMR8501

USB Magnetometers

Features

- Tunneling magnetoresistance (TMR) technology
- High resolution
- USB interface, plug and play
- Graphical user interface, command line user interface
- Measurement range adjustable
- Adjustable filtering and averaging
- Customizable linearization and orthogonalization
- Documented programming interface
- Reconfigurable hardware

Applications

- High Resolution Laboratory Measurements
- Automated Data Acquisition and Control
- Materials Research
- Non Destructive Testing
- Magnetic Object Tracking
- Sensor Algorithm Development
- STEM Education
- Hobby and DIY

Part Number	Description	Measurement Range (Gs)	Sensing Direction	Hysteresis (Gs)	Uncorrected Nonlinearity	Resolution (mGs)	Temperature Coefficient of Sensitivity (%/°C)	Sampling Frequency (Hz)
USB21023	3-axis low-field	-100~100	X/Y/Z	0.1 (Fit@±30Gs)	1%FS (Fit@±30Gs)	0.2	-0.1	250
USB27053	3-axis low-field	-50~50	X/Y/Z	0.3 (Fit@±15Gs)	3%FS (Fit@±15Gs)	0.35	-0.1	250
USB2705A	Axial low-field	-50~50	X	0.3 (Fit@±15Gs)	3%FS (Fit@±15Gs)	0.35	-0.1	110
USB25103	3-axis high-field	-20k~20k	X/Y/Z	0	2%FS (Fit@±5kGs)	75	-0.06	250
USB2510A	Axial high-field	-20k~20k	X	0	2%FS (Fit@±5kGs)	75	-0.06	110
USB2510T	Transverse high-field	-20k~20k	Z	0	2%FS (Fit@±5kGs)	75	-0.06	110
USB2510-CAL01-800	Calibration magnet	-	-	-	-	-	-	-



USB Magnetometer 3-axis series



USB Magnetometer single axis series

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