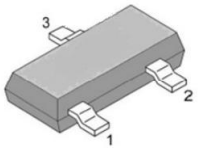
Bipolar Hall-effect Sensor

PRODUCT DESCRIPTION

The MS40/MS40S is bipolar hall switch circuit, which has fast response speed and high sensitivity. The MS40/MS40S is also featured by wide operating temperature range, high reliability and reverse voltage protection. DC operating voltage ranges from 4.5V to 24V. The MS40/MS40S integrates hall unit and consists of voltage regulator, hysteresis comparator and output-stage circuit. The MS40/MS40S is especially suitable for rotation detection and motor control.

TO-92S



TSOT23-3

FEATURES

- Small Outline Package
- Bipolar Magnetic Field Sensing, High Sensitivity, Specially Suitable for Speed Sensing and Rotation Detection Applications
- Integrated Reverse Voltage Protection
- Current Sink Output Mode
- Wide Temperature Range: -40°C to 120°C
- Frequency Range: 0Hz to 100kHz

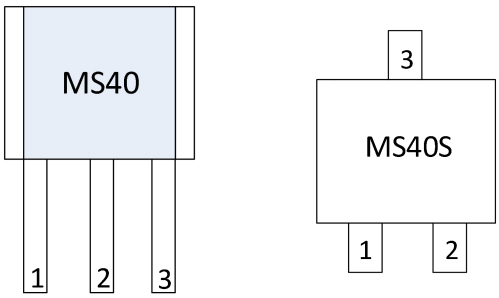
APPLICATIONS

- DC Brushless Motor
  (Electrombile, Air-conditioner, Washing Machine and so on)
- Motor and Fan Control
- Speed and Rotation Sensing
- Flow Rate Detection

PRODUCT SPECIFICATION

Part Number	Package	Marking
MS40	TO-92S	MS40
MS40S	TSOT23-3	40

PIN CONFIGURATION



PIN DESCRIPTION

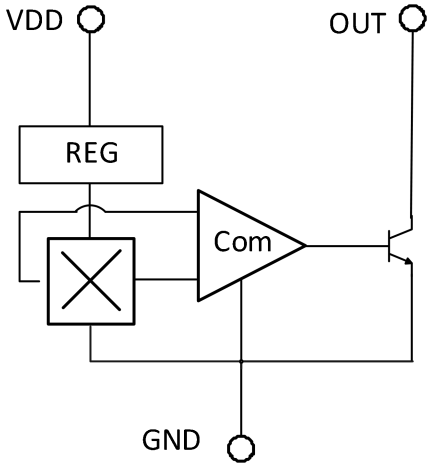
MS40

Pin	Name	Type	Description
1	VDD	-	Power Supply
2	GND	-	Ground
3	OUT	O	Output

MS40S

Pin	Name	Type	Description
1	VDD	-	Power Supply
2	OUT	O	Output
3	GND	-	Ground

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Any exceeding absolute maximum rating application causes permanent damage to device. Because long-time absolute operation state affects device reliability. Absolute ratings just conclude from a series of extreme tests. It doesn't represent chip can operate normally in these extreme conditions.

Parameter	Symbol	Range	Unit
Power Supply	VDD	-0.5 ~ +60	V
Output Voltage	VO	-0.5 ~ +60	V
Operating Temperature	Topr	-40 ~ +120	°C
Storage Temperature	Tstg	-40 ~ +150	°C
Output Driving Current	IOUT	30	mA

RECOMMENDED OPERATING CONDITIONS

Operating Power Supply

Parameter	Symbol	Range			Unit
		Min	Norm	Max	
Power Supply	VDD	4.5		24	V

ELECTRICAL CHARACTERISTICS

Unless otherwise noted,Ta = 25°C ±2°C.

Current Consumption

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating Power Supply Current	ICC			7.7	10	mA

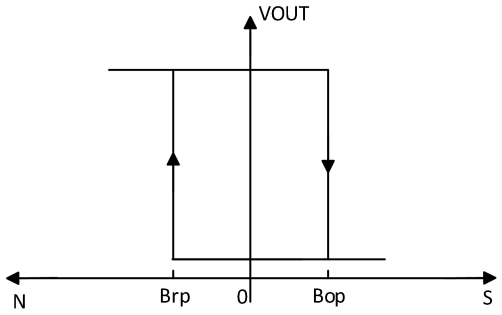
Output Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Output Current	Iout				20	mA
Output Leakage Current	Ileak	Gauss<Brp			1	μA
Output Saturation Voltage Drop @15mA	Isat	Iout=15mA, Gauss>Bop			0.4	V
Rise Time	Tr			0.1	0.3	us
Fall Time	Td			0.2	0.4	us
Response Time	Tres			4.0	5.0	us

Magnetic Field Characteristic

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating Point	Bop			40	110	Gauss
Release Point	Brp			-40	-110	Gauss
Magnetic Field Hysteresis	Bhys			80		Gauss

Characteristic Curve



Classification Information

A Classification:

15G≤Bop≤65G and (-65G)≤Brp-≤(-15G)

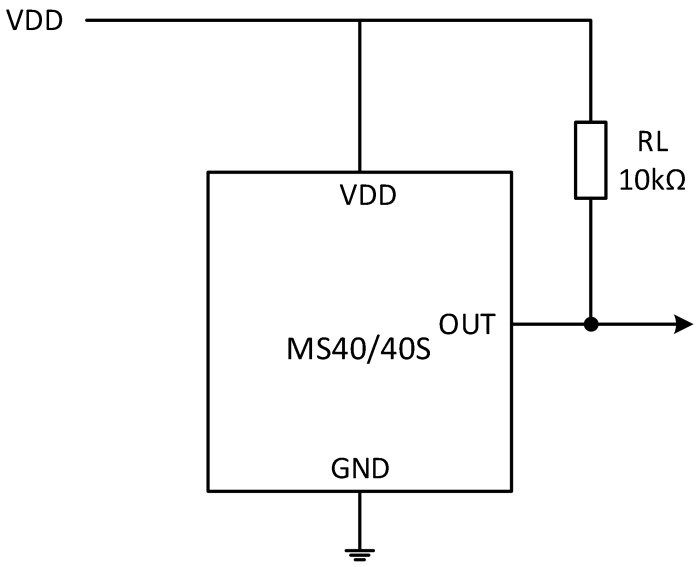
B Classification:

0G≤Bop≤95Gand (-95G)≤Brp-≤(0G)

C Classification:

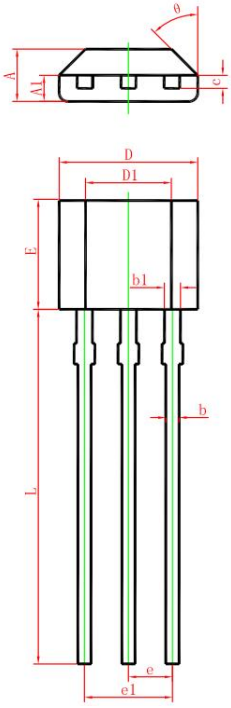
-110G≤Bop+≤110G and (-110G)≤Brp≤(110G)

TYPICAL APPLICATION DIAGRAM



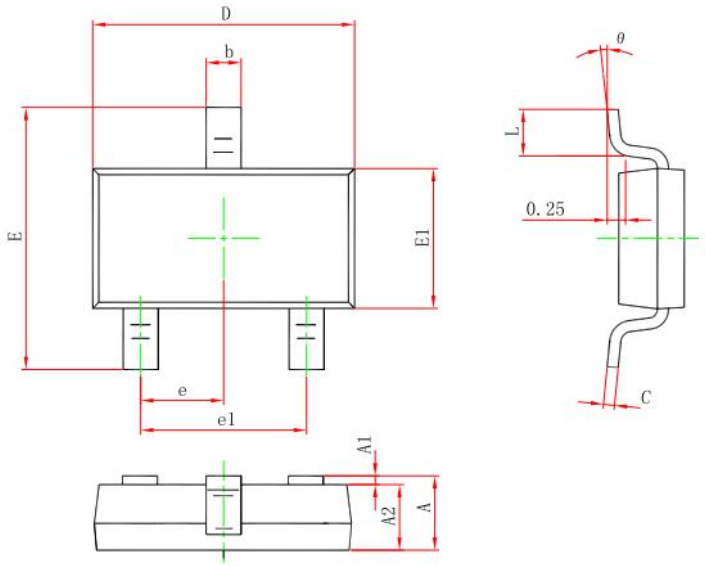
PACKAGE OUTLINE DIMENSIONS

TO-92S (4.1x1.27x0.86)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	1.420	1.620	0.056	0.064
A1	0.660	0.860	0.026	0.034
b	0.350	0.480	0.014	0.019
b1	0.400	0.550	0.016	0.022
c	0.360	0.510	0.014	0.020
D	3.900	4.100	0.154	0.161
D1	2.280	2.680	0.090	0.106
E	3.050	3.250	0.120	0.128
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	15.100	15.500	0.594	0.610
θ	45° TYP		45° TYP	

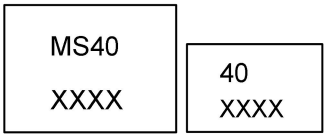
TSOT23-3 (3.02x1.7x0.9)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	---	0.900	---	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b	0.350	0.500	0.014	0.020
c	0.080	0.200	0.003	0.008
D	2.820	3.020	0.111	0.119
E1	1.600	1.700	0.063	0.067
E	2.650	2.950	0.104	0.116
e	0.95(BSC)		0.037(BSC)	
e1	1.90(BSC)		0.075(BSC)	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

MARKING and PACKAGING SPECIFICATIONS

1. Marking Drawing Description



Product Name : MS40, 40

Product Code： XXXX

2. Marking Drawing Demand

Laser printing, contents in the middle, font type Arial.

3. Packaging Specifications

Device	Package	Piece/Bag	Bag/Box	Piece/Box	Box/Carton	Piece/Carton
MS40	TO-92S	1000	10	10000	10	100000
MS40S	TSOT23-3	3000	10	30000	4	120000

STATEMENT

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- When using Ruimeng products to design and produce, purchaser has the responsibility to observe safety standard and adopt corresponding precautions, in order to avoid personal injury and property loss caused by potential failure risk.
- The process of improving product is endless. And our company would sincerely provide more excellent product for customer.

MOS CIRCUIT OPERATION PRECAUTIONS

Static electricity can be generated in many places. The following precautions can be taken to effectively prevent the damage of MOS circuit caused by electrostatic discharge:

1. The operator shall ground through the anti-static wristband.
2. The equipment shell must be grounded.
3. The tools used in the assembly process must be grounded.
4. Must use conductor packaging or anti-static materials packaging or transportation.

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