

ULTRA-SENSITIVE BIPOLAR HALL-EFFECT SWITCHES

The Hall-effect switch is designed for magnetic actuation using a bipolar magnetic field, i.e., a north-south alternating field, and they are designed to operate continuously over extended temperatures to +100°C. They combine extreme magnetic sensitivity with excellent stability over varying temperature and supply voltage. The high sensitivity permits their use with multi-pole ring magnets over relatively large distances.

Each device includes a voltage regulator, quadratic Hal voltage generator, temperature stability circuit, signal amplifier, Schmitt trigger, and open-collector output on a single silicon chip. The on-board regulator permits operation with supply voltages of 2.5 to 18 V. The switch output can sink up to 15 mA. With suitable output pull up, they can be used directly with bipolar or MOS logic circuits.

FEATURES

Wide Supply Voltage Range
Fast Response Time
Wide Frequency And Temperature Range
Long Operating Life
Small Size, Convenient Installing
Output Compatible With AI Digital Logic families

TYPICAL APPLICATIONS

Contactless Switch . Position Control
Speed Measurement . Revolution Detection
Isolation Measurement . Brushless DC Motor
Automotive Ignitor

ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Value	Unit
Supply Voltage	V_{cc}	18	V
Magnetic Flux Density	B	Unlimited	mT
Output OFF Voltage	V_{ce}	28	V
Continuous Output Current	I_{OL}	15	mA
Operating Temperature Range	T_A	-25~100	°C
Storage Temperature Range	T_s	-50~155	°C

ELECTRICAL CHARACTERISTICS $T_A=25$

Parameter	Symbol	Test condition °C	Type and Value			Unit
			min	typ	max	
Supply Voltage	V_{cc}		2.5	-	16	V
Output Saturation Voltage	V_{OL}	$I_{out}=15mA$ B> B_{OP}	-	200	400	mV
Output Leakage Current	I_{OH} $V_{out}=16V$	B< B_{RP}	-	0.1	10	μA
Supply Current	I_{CC}	$V_{cc}=18V$ Output Open	-	-	10	mA
Output Rise Time	t_r	$R_L=820\Omega$ $C_L=20PF$	-	0.12	-	μS
Output Fall Time	t_f	$R_L=820\Omega$ $C_L=20PF$	-	0.18	-	μS

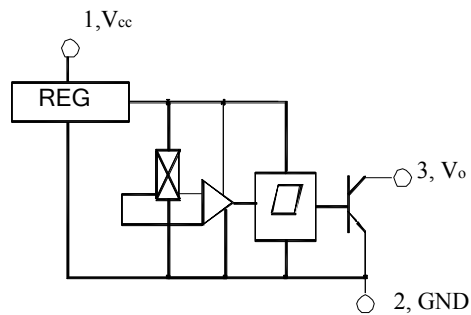
MAGNET CHARACTERISTICS

$V_{CC}=4.5\sim 24V$

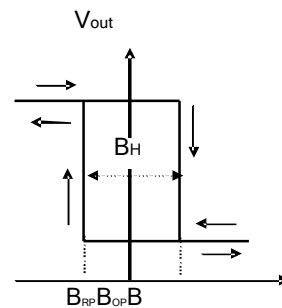
Parameter	Symbol	Value			Unit
		min	typ	max	
Operate Point	B_{OP}	-	-	7	mT
Release Point	$B_{RP}-7$		-	-	mT
Hysteresis	B_H	3	-	-	mT

NOTE: 1mT=10GS

BLOCK DIAGRAM

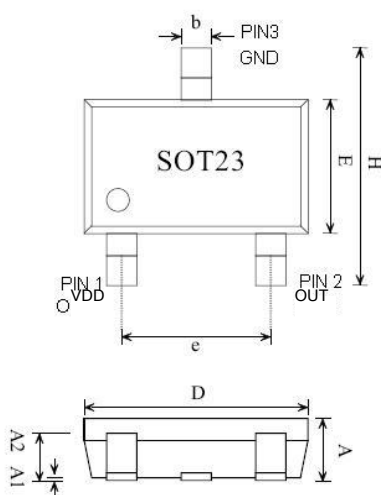


MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS

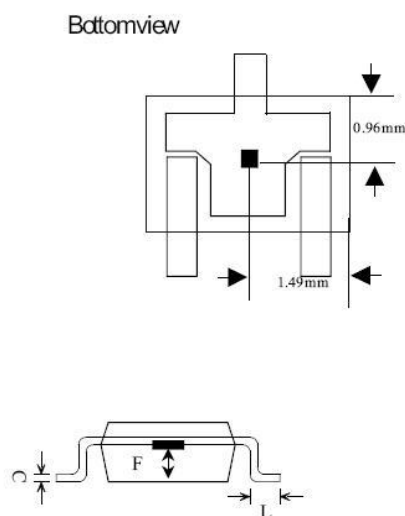


DIMENSIONS (in: mm)

Package Outline



Sensor Location



Symbol	Value (mm)
A	1.10
A1	0.05
A2	0.80
b	0.40
C	0.15
D	2.90
E	1.60
F	0.60
H	2.80
L	1.90
	0.20