

MH 249α version Hall-effect sensor is a temperature stable, stress-resistant switch. Superior high-temperature performance is made possible through a dynamic offset cancellation that utilizes chopper-stabilization. This method reduces the offset voltage normally caused by device over molding, temperature dependencies, and thermal stress.

The MH 249α version includes the following on a single silicon chip: voltage regulator, Hall voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, and a short circuit protected open-drain output. Advanced CMOS wafer fabrication processing is used to take advantage of low-voltage requirements, component matching, very low input-offset errors, and small component geometries.

This device requires the presence of omni-polar magnetic fields for operation.

The MH 249α version is rated for operation between the ambient temperatures -40°C and $+85^{\circ}\text{C}$ for the E temperature range. The package style available provide magnetically optimized solutions for most applications. Package SO is an SOT-23, a miniature low-profile surface-mount package.

The package type is in a lead (Pb)-free version was verified by third party Lab.

Features and Benefits

- CMOS Hall IC Technology
- Solid-State Reliability much better than reed switch
- Omni polar output switches with absolute value of North or South pole from magnet
- Operation down to 2.5V and up to 6 V.
- High Sensitivity for reed switch replacement
- Small Size in Sot 23 package

Applications

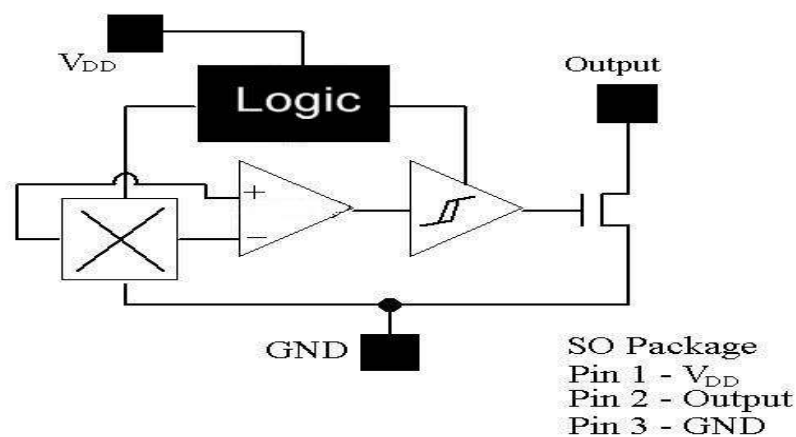
- Solid state switch
- Lid close sensor for power supply devices
- Magnet proximity sensor for reed switch replacement in high duty cycle applications.
- Safety Key
- Revolution counter

Ordering Information

XX-XXX-X-XX-XX-XX-X	Lead Free	Company Name and Product Category	MH:MST Hall Effect/MP:MST Power MOSFET
	Handling Code	Part number	181,182,183,184,185,248,249...
	Package Identification	Temperature range	E: 85 Degree C, K: 125 Degree C, L: 150 Degree C
	Sorting Code	Package type	UA:TO-92S,SO:SOT-23,ST:Tsol-25,SU:USON
	Package type	Sorting	α , β , Blank,....
	Temperature code	Package Identification Code	01,02,03,....
	Part number	Handling Code	BLANK: ESD bag, TR: Tape & Reel
	Company Name and Product Category	Lead Free Code	BLANK: Lead Free Device ,G: Green

Part No.	Temperature Suffix	Package Type	Package Identification
MH 249	E (-40°C to + 85°C)	SO (SOT-23)	05

Functional Diagram



Note: Static sensitive device; please observe ESD precautions. Reverse V_{DD} protection is not included. For reverse voltage protection, a 100 Ω resistor in series with V_{DD} is recommended.

MH249-α Absolute Maximum Ratings

Supply Voltage (Operating), V_{DD}	8V
Supply Current (Fault), I_{DD}	3mA
Output Voltage, V_{OUT}	8V
Output Current (Fault), I_{OUT}	25mA
Operating Temperature Range, T_A	-40°C to +85°C
Storage Temperature Range, T_S	-55°C to +150°C

MH249-α Electrical Specifications

DC operating parameters: $T_A = 25^\circ\text{C}$, $V_{DD}=3V_{DC}$ (unless otherwise specified).

<i>Parameter</i>	<i>Symbol</i>	<i>Test Conditions</i>	<i>Min.</i>	<i>Typ.</i>	<i>Max.</i>	<i>Units</i>
Supply Voltage	V_{DD}	Operating	2.5		6.0	V
Supply Current	I_{DD}	Average		1.5		mA
Output Current	I_{OUT}				10	mA
Saturation Voltage	V_{SAT}	$I_{OUT} = 1\text{mA}$			0.4	V

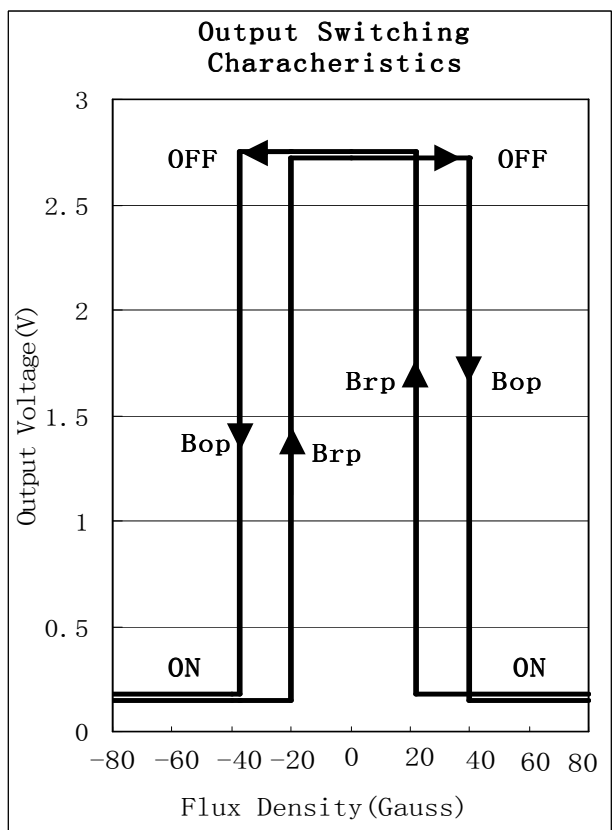
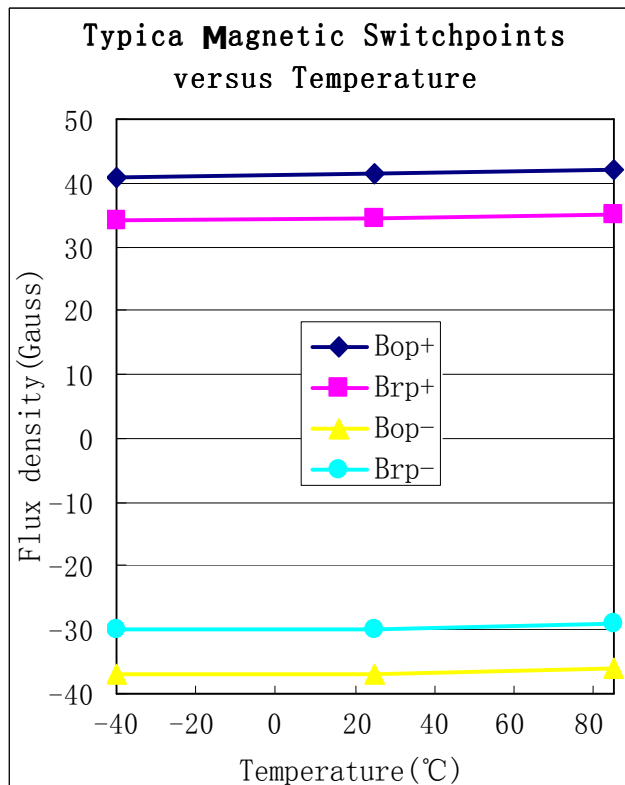
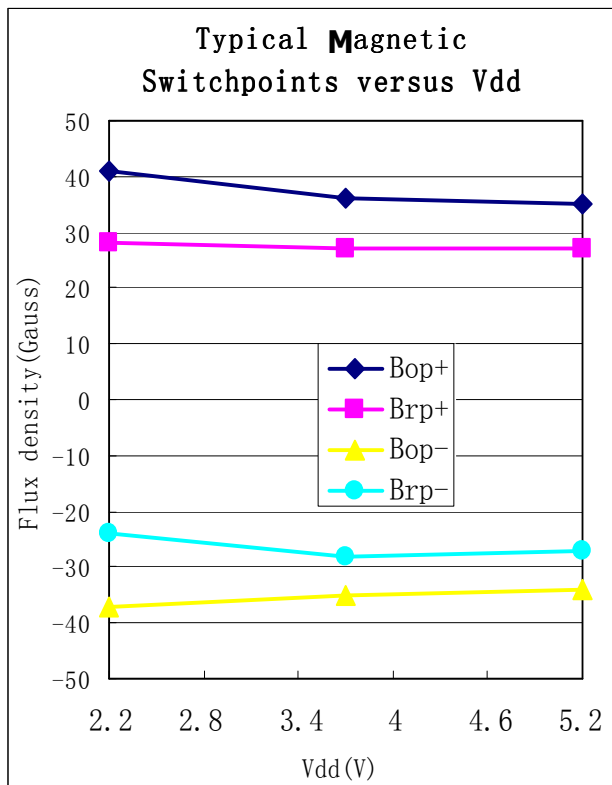
MH249-α Magnetic Specifications

DC operating parameters: $T_A = 25^\circ\text{C}$, $V_{DD}=3V_{DC}$ (unless otherwise specified).

<i>Parameter</i>	<i>Symbol</i>	<i>Test Conditions</i>	<i>Min.</i>	<i>Typ.</i>	<i>Max.</i>	<i>Units</i>
Operating Point	B_{OPS}	South pole to branded side, $B > BOP$, Vout On	0.6		6.0	mT
	B_{OPN}	North pole to branded side, $B > BOP$, Vout On	-6.0		-0.6	mT
Release Point	B_{RPS}	South pole to branded side, $B < BRP$, Vout Off	0.5		5.9	mT
	B_{RPN}	North pole to branded side, $B < BRP$, Vout Off	-5.9		-0.5	mT
Hysteresis	B_{HYS}	$ B_{OPx} - B_{RPx} $		0.7		mT

Note: 1 mT = 10 Gauss.

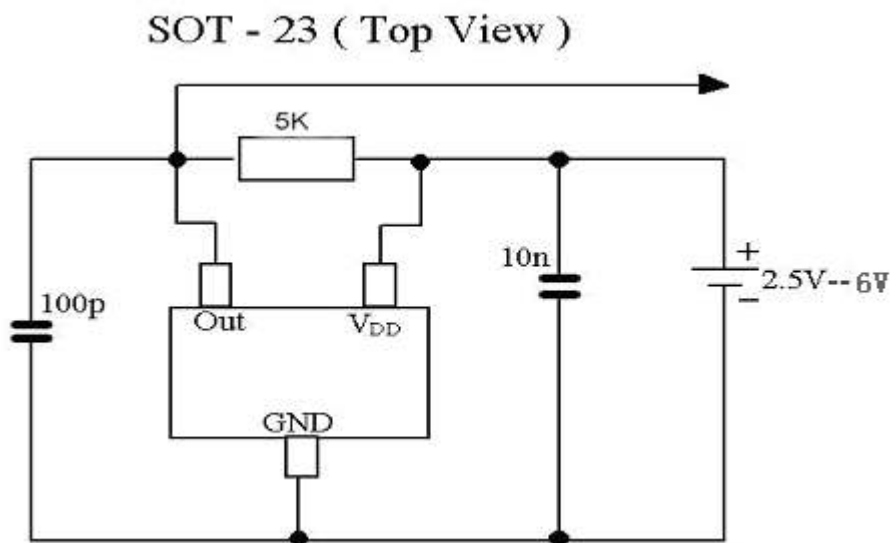
Performance Graphs



Installation Comments

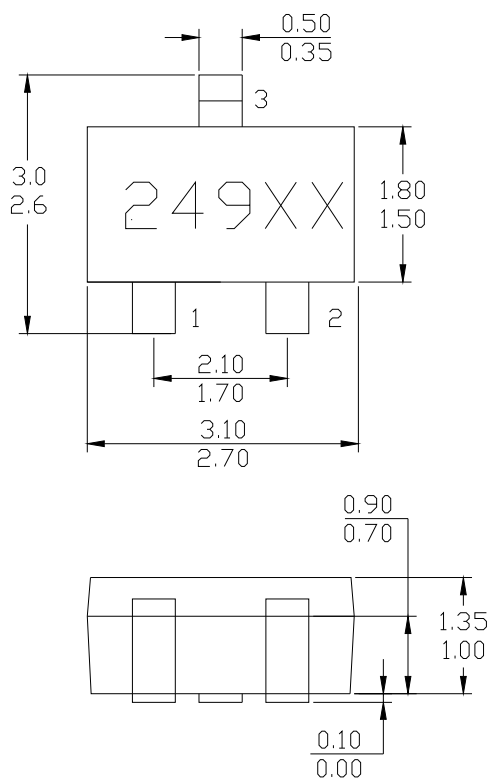
Consider temperature coefficients of Hall IC and magnetic, as well as air gap and life time variations. Observe temperature limits during wave soldering.

Typical Application

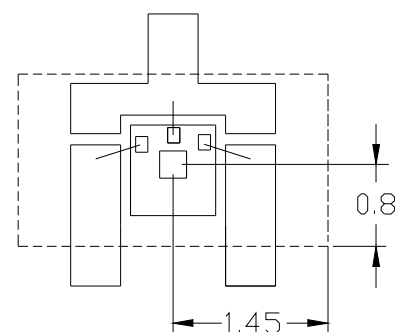


SOT-23 Package Physical Characteristics and sensor location

MH 249ESO 05 Package
(Top View)



SOT-23 Hall Plate / Chip Location
(Bottom view)



NOTES:

- PINOUT (See Top View at left):
Pin 1 VDD
Pin 2 Output
Pin 3 GND
- Controlling dimension: mm;
- Lead thickness after solder plating will be 0.254mm maximum.

Tape On Reel Dimension for Sot 23 package

