MH 249 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 249 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 249 is rated for operation between the ambient temperatures –40°C and + 85°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.

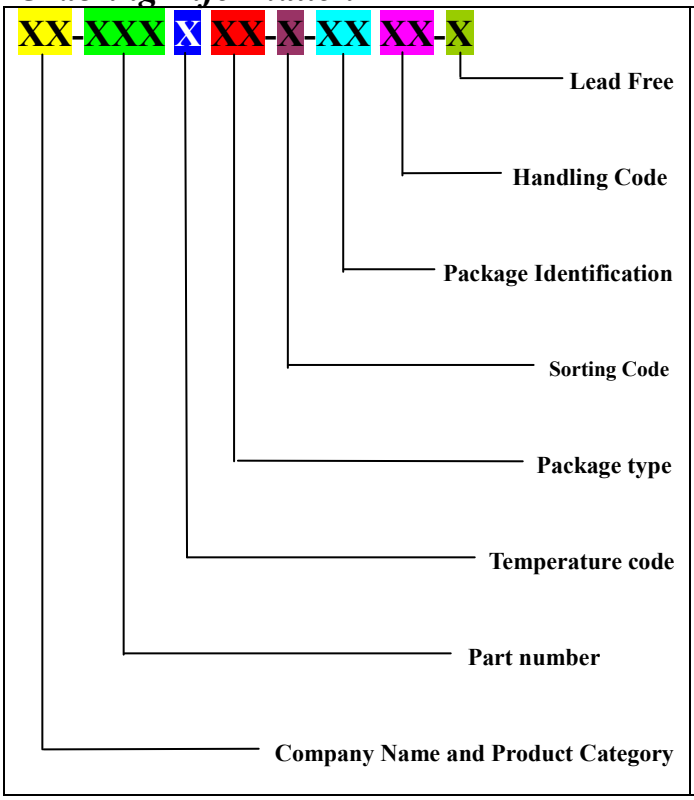
Features and Benefits

- 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
- 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



Company Name and Product Category
MH:MST Hall Effect/MP:MST Power MOSFET

Part number
181,182,183,184,185,248,249…

Temperature range
E: 85 Degree C, K: 125 Degree C, L: 150 Degree C

Package type
UA:TO-92S,SO:SOT-23,ST:Tsot-25,SU:USON

Sorting
α, β, Blank…..

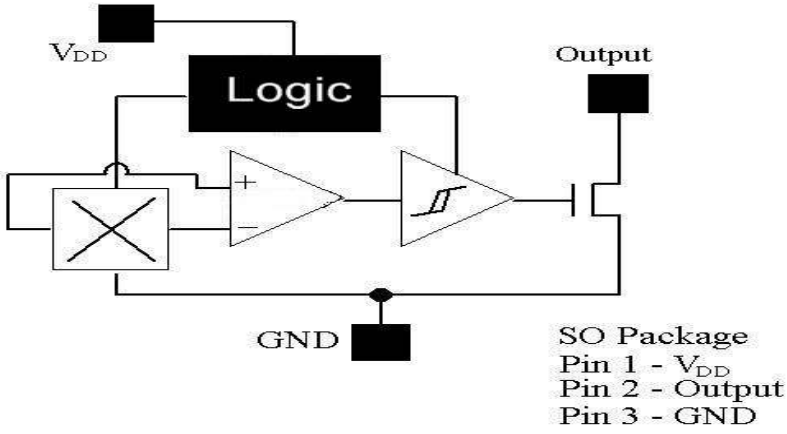
Package Identification Code
01,02,03…..

Handling Code
BLANK: ESD bag, TR: Tape & Reel

Lead Free Code
BLANK: Lead Free Device ,G: Green

Part No.	Temperature Suffix	Package Type	Package Identification
249	E (-40℃ to + 85℃)	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 100Ω resistor in series with V_{DD} is recommended.

Absolute Maximum Ratings

Supply Voltage (Operating), V_{DD}	5V
Supply Current (Fault), I_{DD}	3mA
Output Voltage, V_{OUT}	5V
Output Current (Fault), I_{OUT}	25mA
Operating Temperature Range, T_A	-40℃ to +85℃
Storage Temperature Range, T_S	-55℃ to +150℃

Electrical Specifications

DC operating parameters: T_A = 25℃, V_{DD}=3V_{DC} (unless otherwise specified).

Parameter	*Symbol*	*Test Conditions*	*Min.*	*Typ.*	*Max.*	*Units*
Supply Voltage	V_{DD}	Operating	2.5		5.0	V
Supply Current	I_{DD}	Average		1.5		mA
Output Current	I_{OUT}				10	mA
Saturation Voltage	V_{SAT}	I_{OUT} = 1mA			0.4	V

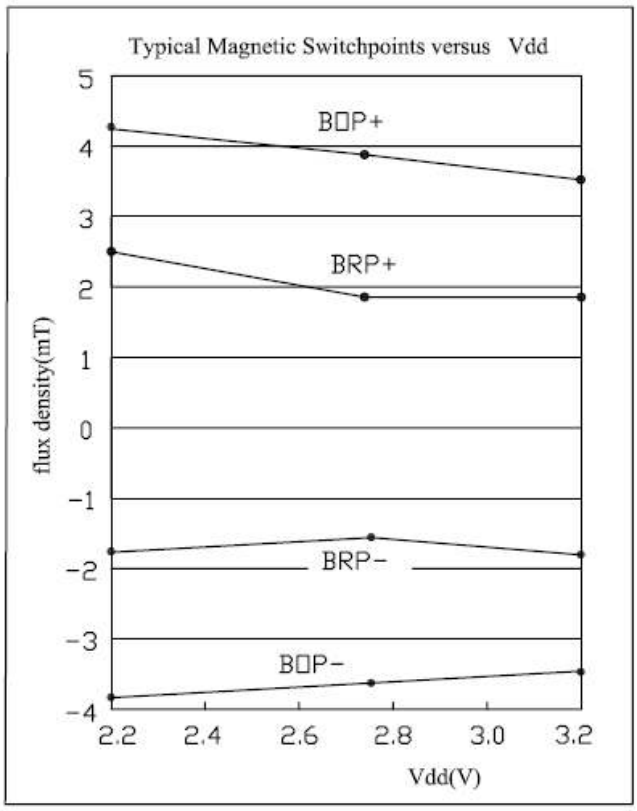
Magnetic Specifications

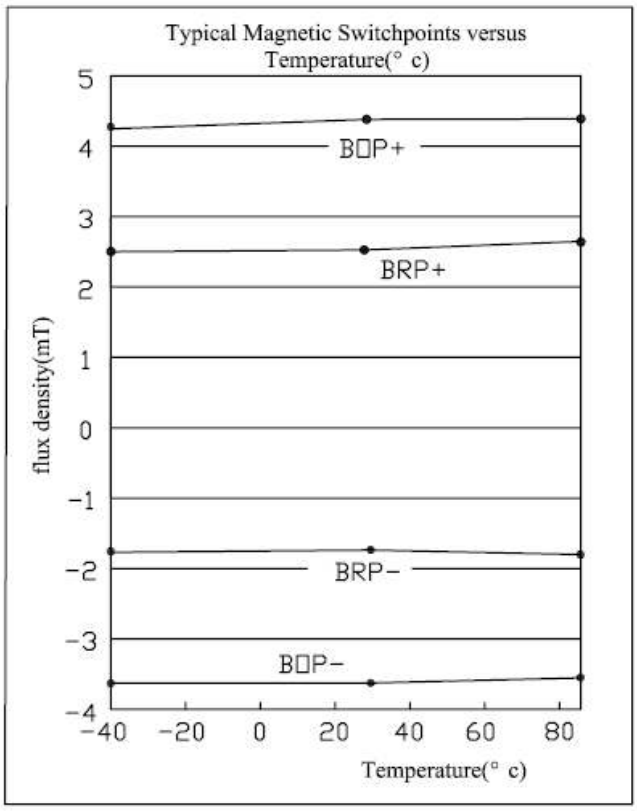
DC operating parameters: T_A = 25℃, V_{DD}=3V_{DC} (unless otherwise specified).

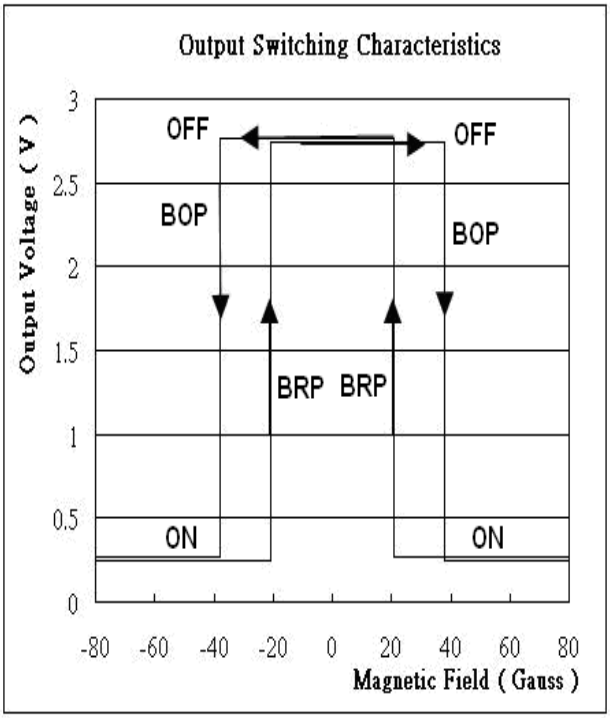
Parameter	*Symbol*	*Test Conditions*	*Min.*	*Typ.*	*Max.*	*Units*
Operating Point	B_{OPS}	South pole to branded side, B > BOP, Vout On	0.6		6.0	mT
	B_{OPN}	North pole to branded side, B > BOP, Vout On	-6.0		-0.6	mT
Release Point	B_{RPS}	South pole to branded side, B < BRP, Vout Off	0.5		5.9	mT
	B_{RPN}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

Note: 1 mT = 10 Gauss.

Performance Graphs





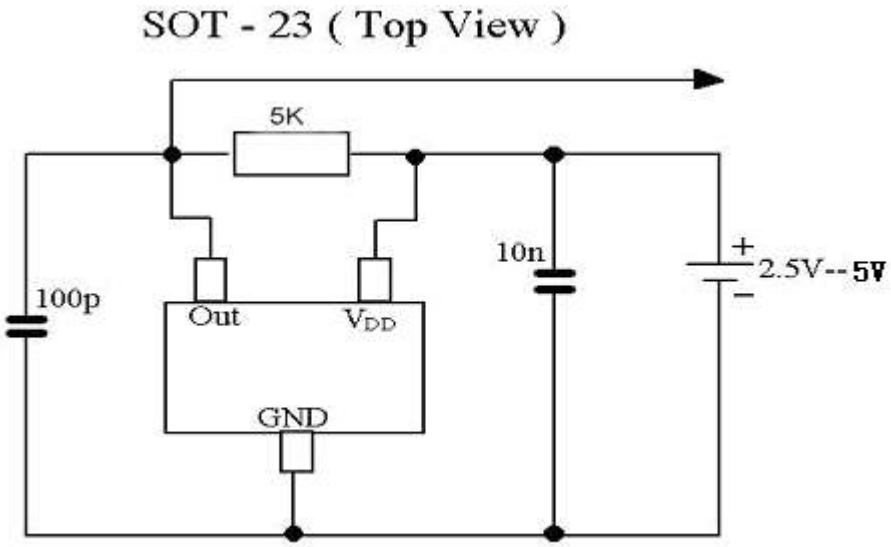


Installation Comments

Consider temperature coefficients of Hall IC and magnetic, as well as air gap and life time variations.

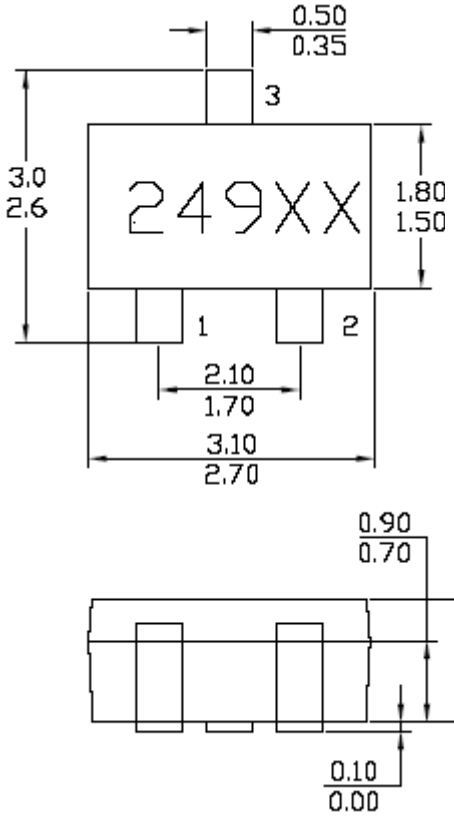
Observe temperature limits during wave soldering.

Typical Application



SOT-23 Package Physical Characteristics and sensor location

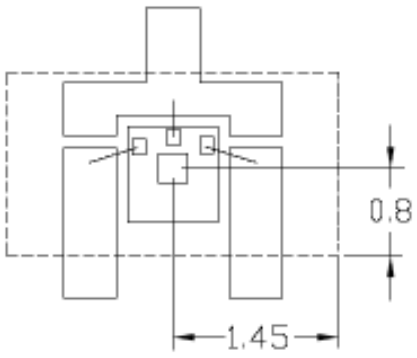
MH 249 SO-05 Package
(Top View)



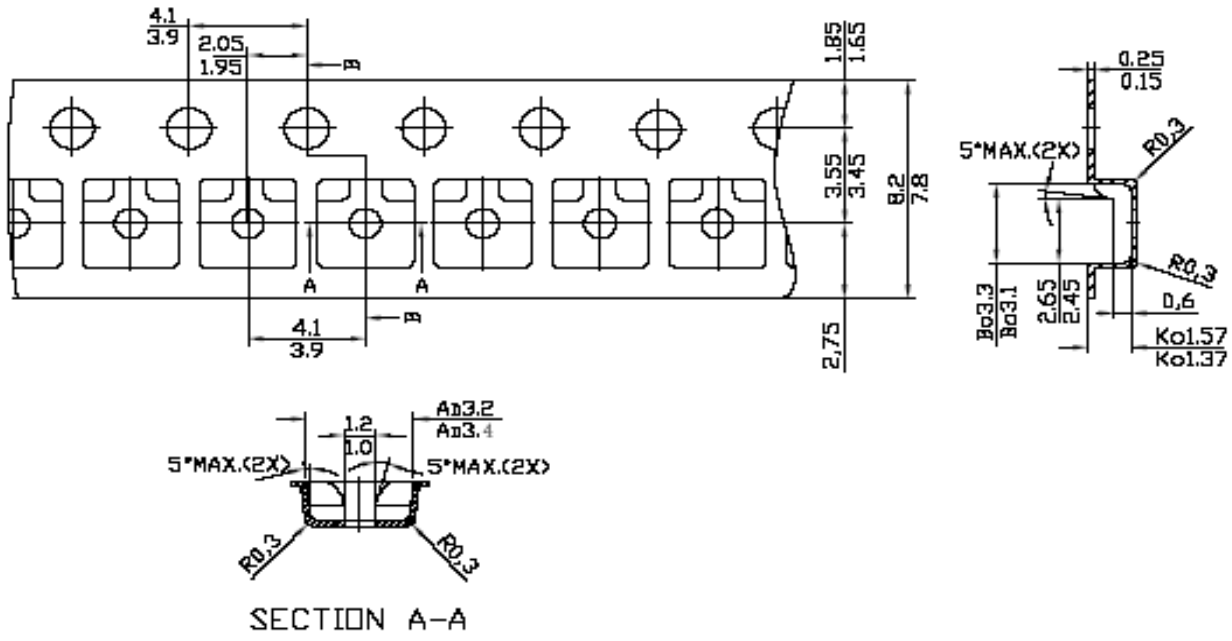
NOTES:

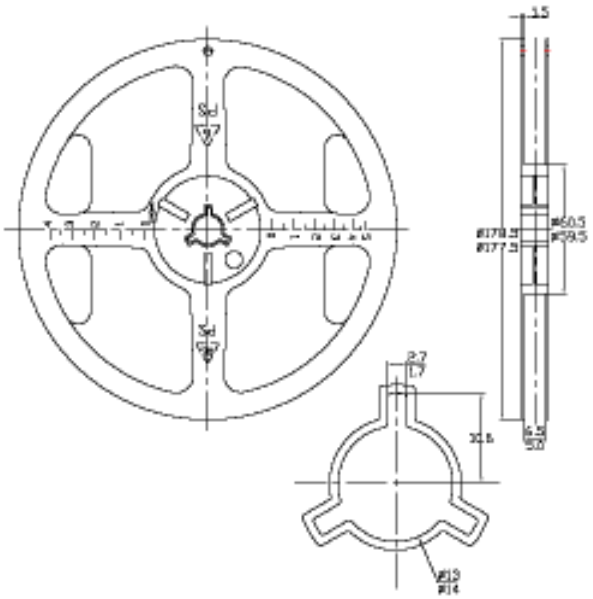
1. PINOUT (See Top View at left:)
   Pin 1 VDD
   Pin 2 Output
   Pin 3 GND
2. Controlling dimension: mm;
3. Lead thickness after solder plating will be 0.254mm maximum.

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



Tape On Reel Dimension for Sot 23 package





NOTES:

1. Material: Conductive polystyrene;
2. DIM in mm;
3. 10 sprocket hole pitch cumulative tolerance ±0.2;
4. Camber not to exceed 1mm in 100mm;
5. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole;
6. (SR OHM/SQ) Means surface electric resistivity of the carrier tape.