

# EM-1781

Shipped in packet-tape reel(5000pcs/Reel)

EM-1781 is ultra-small Hall effect ICs of a single silicon chip composed of Hall element and a signal processing IC.

Omnipolar Hall Effect Switch

Supply Voltage 1.6~5.5V

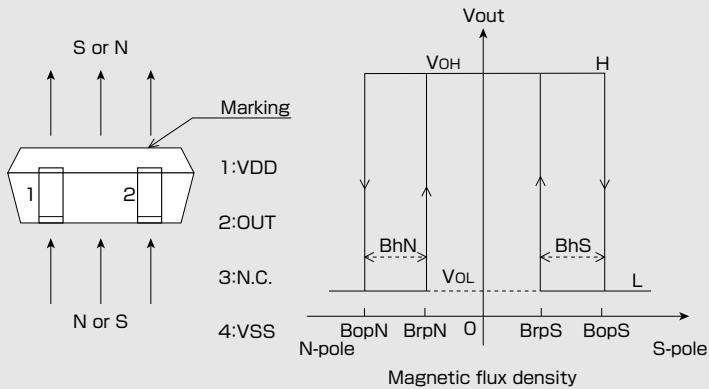
Hall Element Pulse Excitation

High Sensitivity Bop:3mT

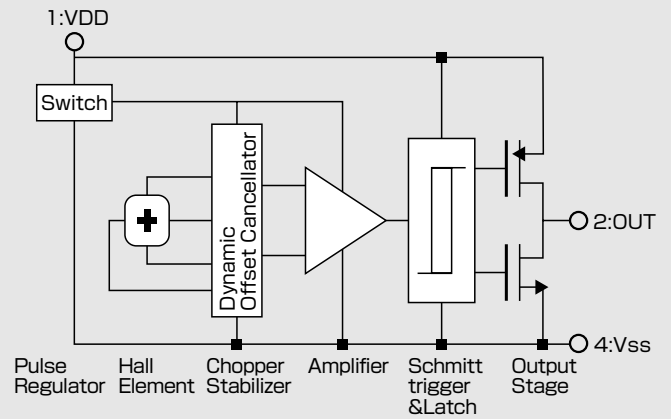
Output CMOS

SMT

## Operational Characteristics



## Functional Block Diagram



## Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Limit	Unit
Supply Voltage	VDD	-0.1 ~ 6	V
Output Current	I <sub>out</sub>	±0.5	mA
Operating Temperature Range	Topr	-30 ~ 85	°C
Storage Temperature Range	Tstg	-40 ~ 125	°C

## Magnetic ① and Electrical Characteristics (Ta=25°C VDD=1.85V)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	VDD		1.6		5.5	V
Operating Point	B <sub>OpS</sub>  B <sub>OpN</sub>		1.4*	3.0	4.0	mT
Release Point	B <sub>rpS</sub>  B <sub>rpN</sub>		1.1	2.2	3.7*	mT
Hysteresis	B <sub>hS</sub>  B <sub>hN</sub>		0.3*	0.8	1.5*	mT
Period	T <sub>p</sub>			50	100	ms
Output High Voltage	V <sub>OH</sub>	I <sub>o</sub> =-0.5mA	VDD-0.4			V
Output Low Voltage	V <sub>OL</sub>	I <sub>o</sub> =+0.5mA			0.4	V
Supply Current	I <sub>DD</sub>	Average		6.5	9	μA

1 [mT]=10 [Gauss]

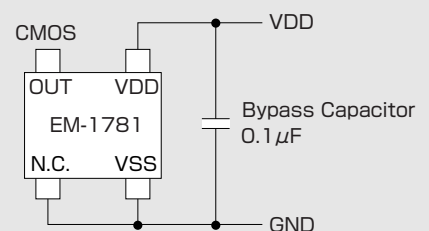
The characteristics with [\*] marks are design targets.

## Magnetic Characteristics ② (Ta=-30°C~85°C VDD=1.85V)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating Point	B <sub>OpS</sub>  B <sub>OpN</sub>		1.2	3.0	4.4	mT
Release Point	B <sub>rpS</sub>  B <sub>rpN</sub>		0.9	2.2	4.1	mT
Hysteresis	B <sub>hS</sub>  B <sub>hN</sub>		0.1	0.8	1.7	mT

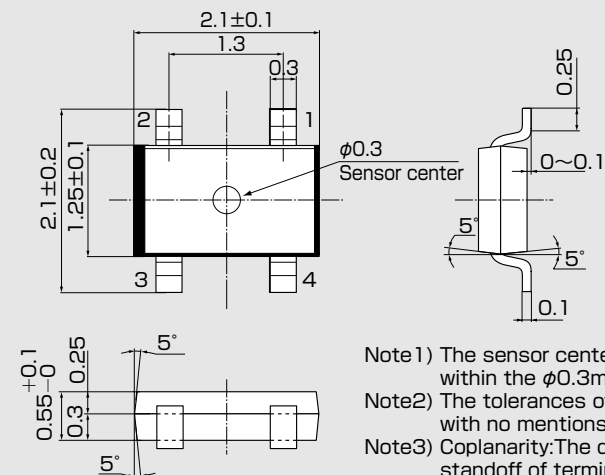
Note) The above specifications are design targets.

## Application Circuit



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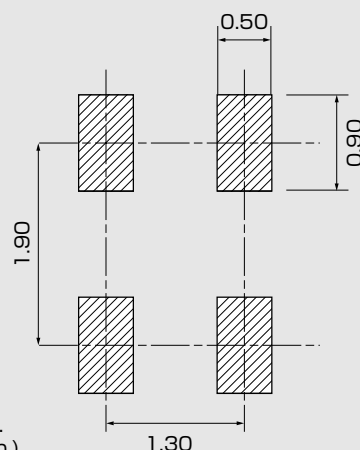
●Package (Unit:mm)



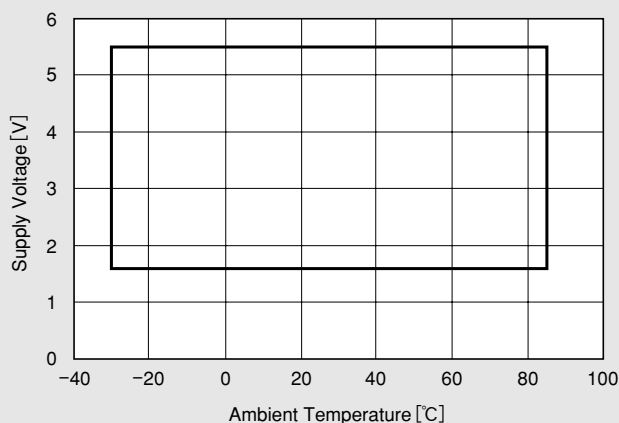
- Note1) The sensor center is located within the  $\phi 0.3$ mm circle.
- Note2) The tolerances of dimensions with no mentions is  $\pm 0.1$ mm.
- Note3) Coplanarity: The differences between standoff of terminals are max.0.1mm.
- Note4) The sensor part is located 0.4mm(typ.) far from marking surface.

Pin No.	Connection	Function	Comment
1	VDD	Supply Voltage	
2	OUT	Output Voltage	
3	N.C.	-	Short to GND
4	VSS	GND	

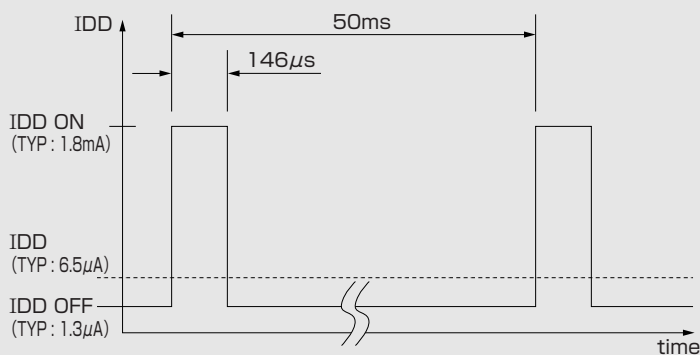
●(For reference only)Land Pattern (Unit:mm)



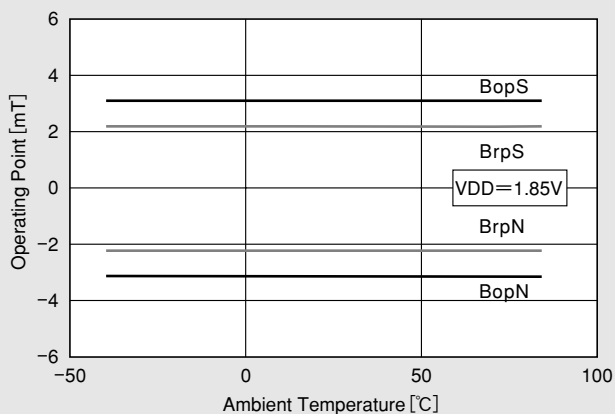
●Supply Voltage



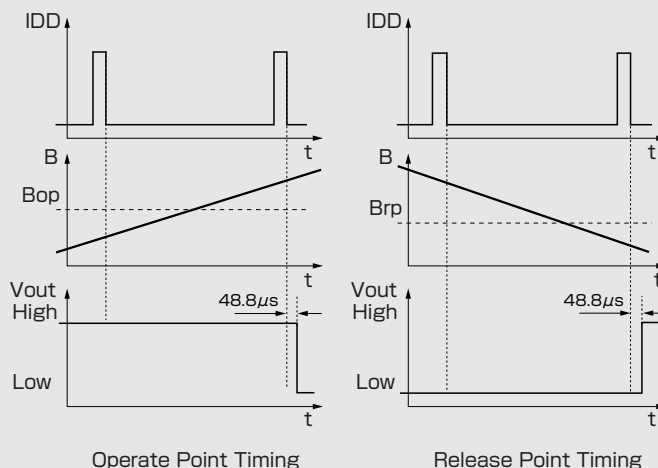
●IDD Pulse Driving (VDD=1.85V)



●Temperature Dependence of Bop, Brp



●Function Timing Chart



This Hall IC's output is held as internal data just before the internal circuit turns OFF (IDD OFF). And after 48.8  $\mu$ s, the output changes.  
 Note) 48.8  $\mu$ s in figures is typical value

b

f

j

n

o

p

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