

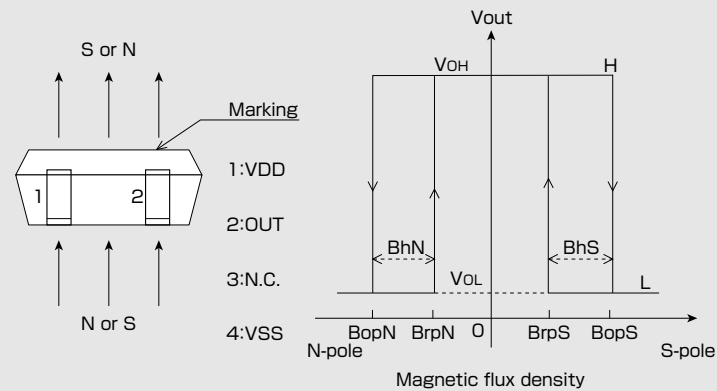
# EM-1781

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
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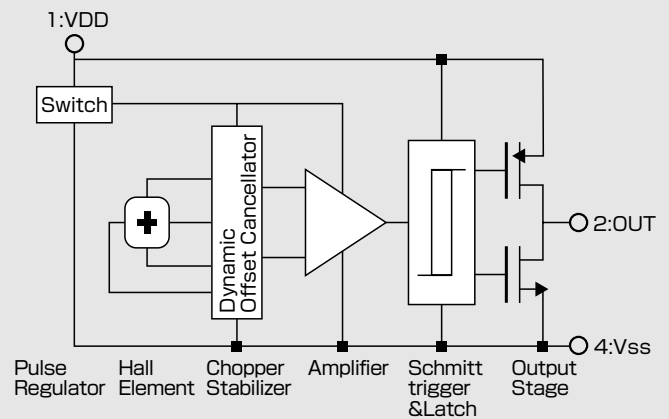
## ●Operational Characteristics



## ●Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Limit	Unit
Supply Voltage	VDD	-0.1 ~ 6.0	V
Output Current	$I_{out}$	$\pm 0.5$	mA
Operating Temperature Range	Topr	-30 ~ 85	°C
Storage Temperature Range	Tstg	-40 ~ 125	°C

## ●Functional Block Diagram



## ●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	$B_{opS}$ $ B_{opN} $		1.4*	3.0	4.0	mT
Release Point	$B_{rpS}$ $ B_{rpN} $		1.1	2.2	3.7*	mT
Hysteresis	$B_{hS}$ $ B_{hN} $		0.3*	0.8	1.5*	mT
Period	$T_p$			50	100	ms
Output High Voltage	$V_{OH}$	$I_o = -0.5mA$	$VDD - 0.4$			V
Output Low Voltage	$V_{OL}$	$I_o = +0.5mA$			0.4	V
Supply Current	IDD	Average		6.5	9	$\mu A$

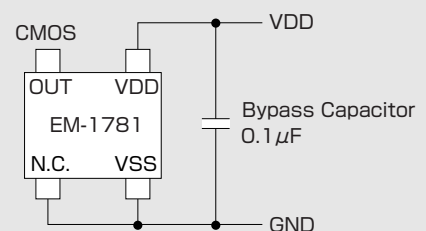
The characteristics with [\*] marks are design targets. 1 [mT] = 10 [Gauss]

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

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating Point	$B_{opS}$ $ B_{opN} $		1.2	3.0	4.4	mT
Release Point	$B_{rpS}$ $ B_{rpN} $		0.9	2.2	4.1	mT
Hysteresis	$B_{hS}$ $ B_{hN} $		0.1	0.8	1.7	mT

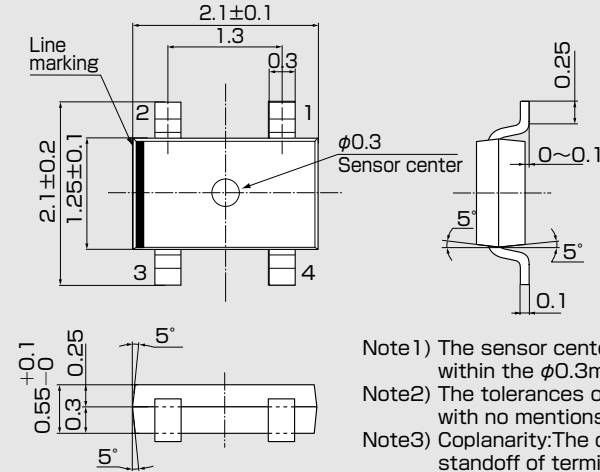
Note) The above specifications are design targets.

## ●Application Circuit



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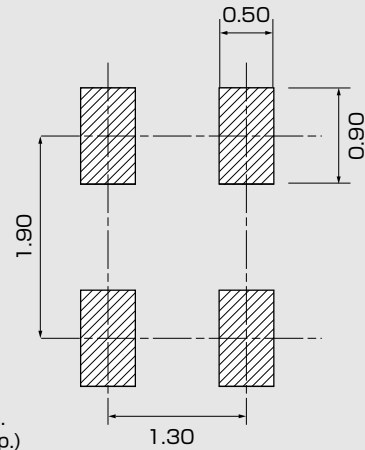
●Package (Unit:mm)



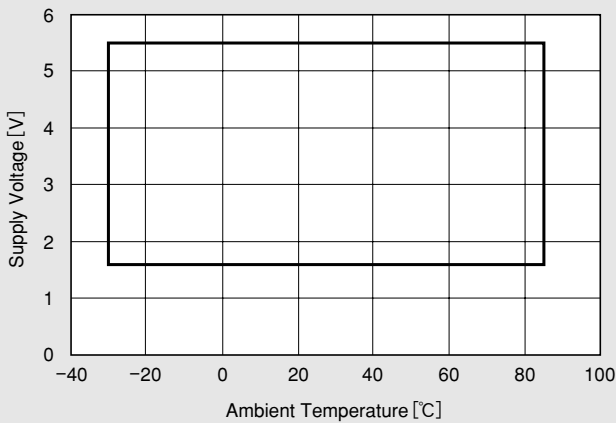
Pin No.	Pin Name	Function	Comment
1	VDD	Supply Voltage	
2	OUT	Output Voltage	
3	N.C.	—	Short to GND
4	VSS	GND	

- 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.

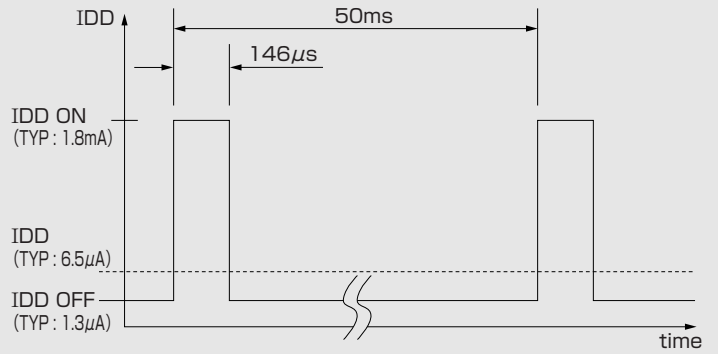
●(For reference only)Land Pattern (Unit:mm)



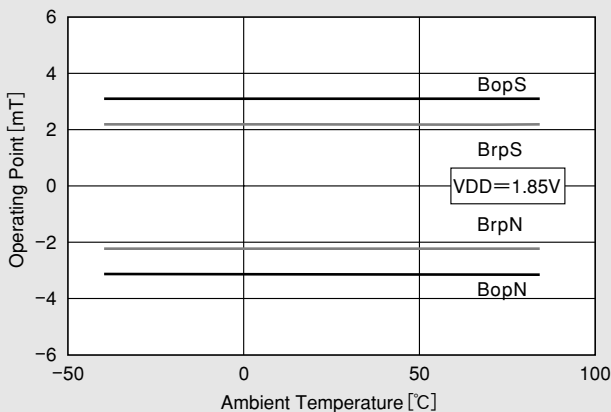
●Supply Voltage



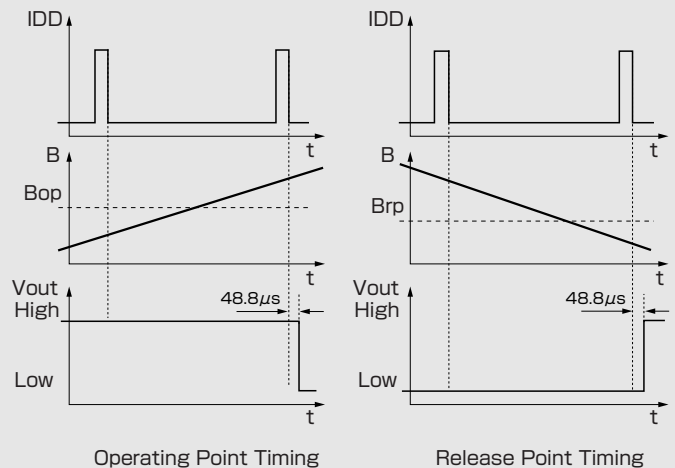
●IDD Pulse Driving (VDD=1.85V)



●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

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April 4, 2012