

# EM-1781

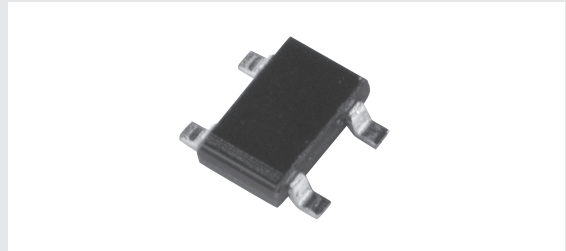
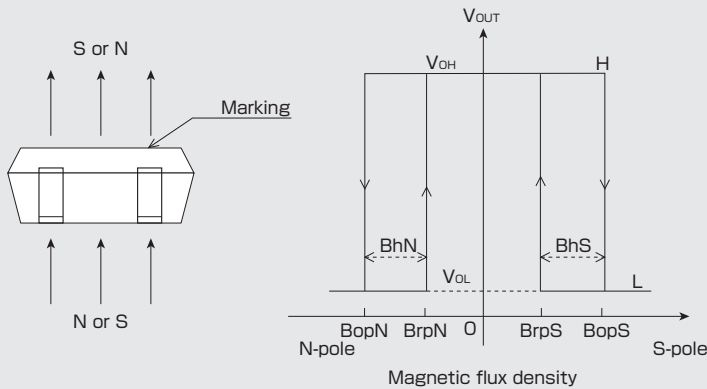
Shipped in packet-tape reel(5000pcs/Reel)

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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Notice:It is requested to read and accept "IMPORTANT NOTICE" written on the back of the front cover of this catalogue.

### Operational Characteristics



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

Item	Symbol	Min.	Max.	Unit
Supply Voltage	V <sub>DD</sub>	-0.1	6.0	V
Output Current	I <sub>OUT</sub>	-0.5	+0.5	mA
Storage Temperature Range	T <sub>STG</sub>	-40	+125	°C

### Recommended Operating Conditions

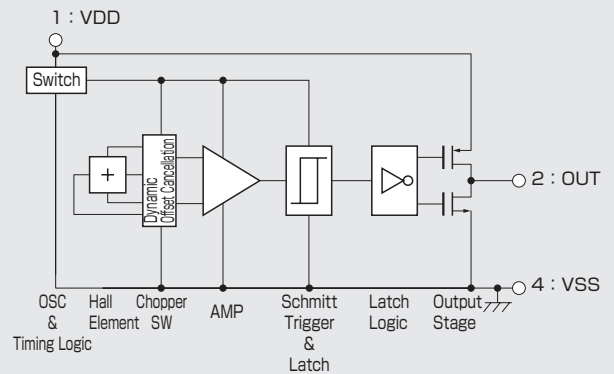
Item	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V <sub>DD</sub>	1.6	1.85	5.5	V
Operating Temperature Range	T <sub>opr</sub>	-30	+25	+85	°C

### Magnetic ① and Electrical Characteristics (Ta=25°C V<sub>DD</sub>=1.85V)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating Point	BopS  BopN		1.4*	3.0	4.0	mT
Releasing Point	BrpS  BrpN		1.1	2.2	3.7*	mT
Hysteresis	BhS  BhN		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	V <sub>DD</sub> -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

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

### Functional Block Diagram

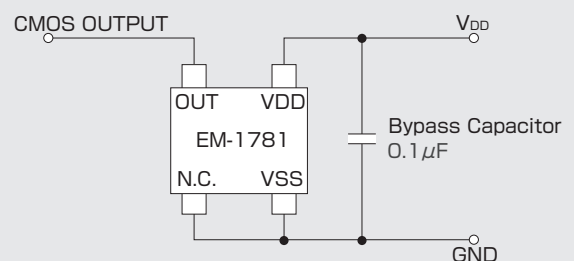


### Magnetic Characteristics ② (Ta=-30~+85°C V<sub>DD</sub>=1.85V)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating Point	BopS  BopN		1.2	3.0	4.4	mT
Releasing Point	BrpS  BrpN		0.9	2.2	4.1	mT
Hysteresis	BhS  BhN		0.1	0.8	1.7	mT

Note) The above specifications are design targets.

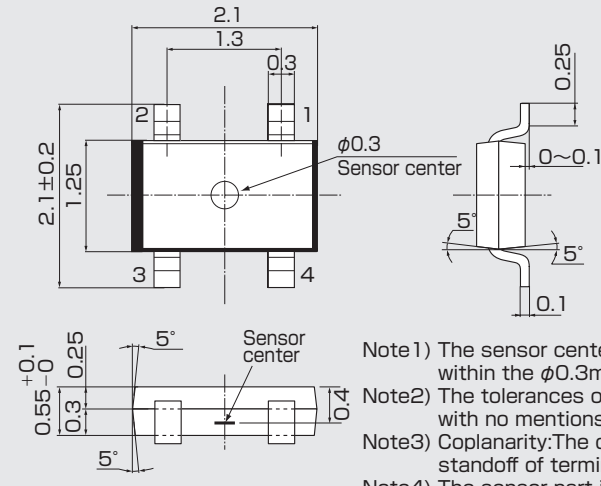
### Application Circuit



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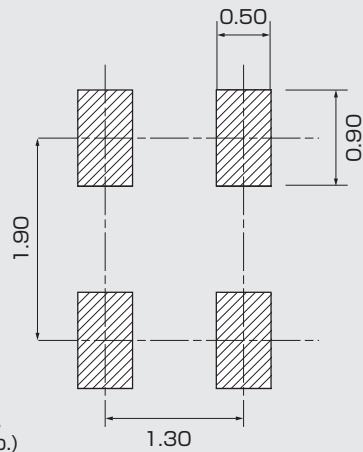
●Package (Unit:mm)



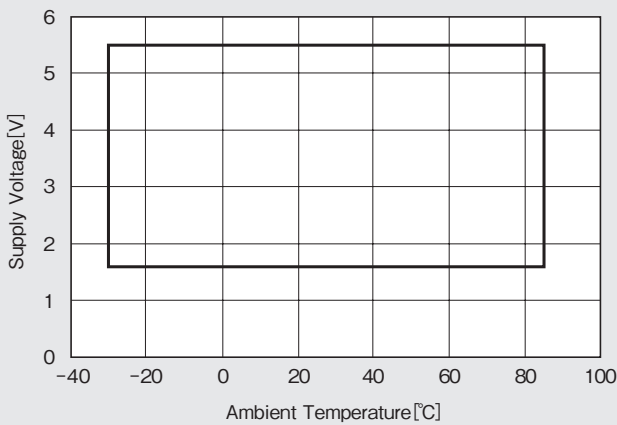
Pin No.	Pin Name	Function	Note
1	VDD	Power Supply	
2	OUT	Output	
3	N.C.	—	Short to Ground
4	VSS	Ground	

- Note 1) The sensor center is located within the  $\phi 0.3$ mm circle.
- Note 2) The tolerances of dimensions with no mentions is  $\pm 0.1$ mm.
- Note 3) Coplanarity: The differences between standoff of terminals are max. 0.1mm.
- Note 4) The sensor part is located 0.4mm (typ.) far from marking surface.

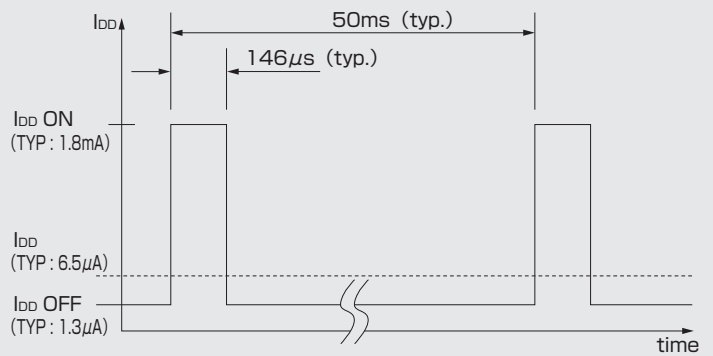
●(For reference only) Land Pattern (Unit:mm)



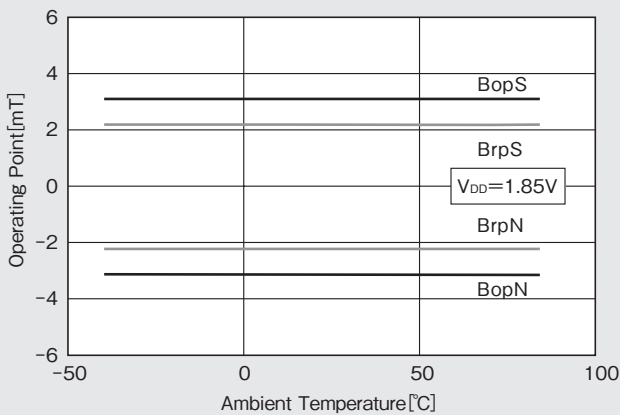
●Supply Voltage



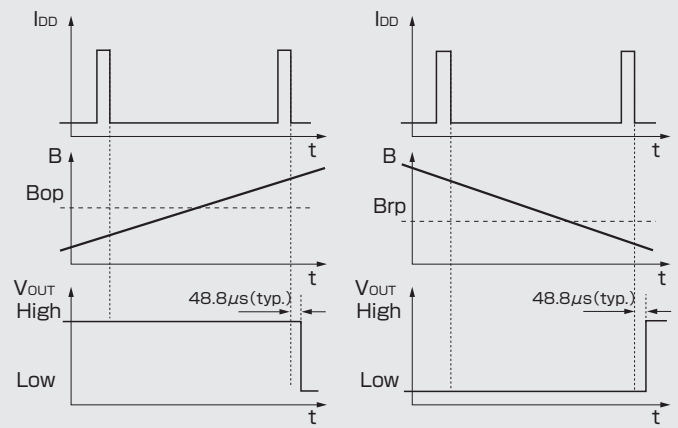
●IDD Pulse Driving ( $V_{DD}=1.85V$ )



●Temperature Dependence of Bop, Brp



●Function Timing Chart



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February 21, 2013

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