

# M-0781

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

EM-0781 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

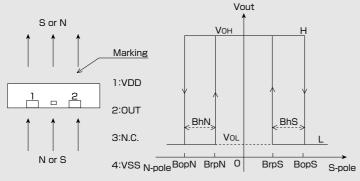
Hall Element Pulse Excitation

High Sensitivity Bop:3mT

Output **CMOS** 

SON

#### Operational Characteristics

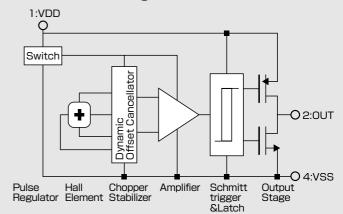


Magnetic flux density

Functional Block Diagram

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

| Item                        | Symbol           | Limit      | Unit |  |
|-----------------------------|------------------|------------|------|--|
| Supply Voltage              | VDD              | −0.1 ~ 6.0 | 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) ●Magnetic Characteristics ② (Ta=-30°C~85°C VDD=1.85V)

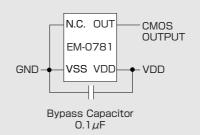
| Item                | Symbol                                   | Conditions | Min.     | Тур. | Max. | Unit |
|---------------------|--|------------|----------|------|------|------|
| Supply Voltage      | VDD                                      |            | 1.6      |      | 5.5  | ٧    |
| Operating Point     | B <sub>OP</sub> S<br> B <sub>OP</sub> N  |            | 1.4*     | 3.0  | 4.0  | mT   |
| Release Point       | B <sub>rp</sub> S<br>IB <sub>rp</sub> NI |            | 1.1      | 2.2  | 3.7* | mT   |
| Hysteresis          | B <sub>h</sub> S<br> B <sub>h</sub> N    |            | 0.3*     | 0.8  | 1.5* | mT   |
| Period              | Тр                                       |            |          | 50   | 100  | ms   |
| Output High Voltage | Vон                                      | Io=-0.5mA  | VDD -0.4 |      |      | V    |
| Output Low Voltage  | VoL                                      | Io=+0.5mA  |          |      | 0.4  | V    |
| Supply Current      | IDD                                      | Average    |          | 6.5  | 9    | μΑ   |

1 [mT] =10 [Gauss] The characteristics with  $\lceil \star \rfloor$  marks are design targets.

| Item            | Symbol                                  | Conditions | Min. | Тур. | Max. | Unit |
|-----------------|---|------------|------|------|------|------|
| Operating Point | B <sub>OP</sub> S<br> B <sub>OP</sub> N |            | 1.2  | 3.0  | 4.4  | mT   |
| Release Point   | B <sub>rp</sub> S<br> B <sub>rp</sub> N |            | 0.9  | 2.2  | 4.1  | mT   |
| Hysteresis      | B <sub>h</sub> S<br>IB <sub>h</sub> NI  |            | 0.1  | 0.8  | 1.7  | mT   |

Note) The above specifications are design targets.

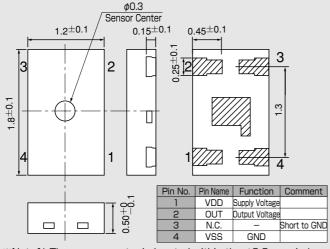
#### Application Circuit

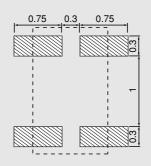


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### Package (Unit:mm)

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





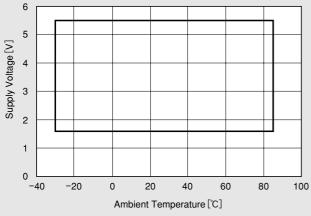
%Note 1) The sensor center is located within the  $\phi$ 0.3mm circle. Note2) The tolerances of dimensions with no mentions is  $\pm 0.1$  mm. Note3) Coplanarity: The differnces between standoff of terminals are  $max.50 \mu m.$ 

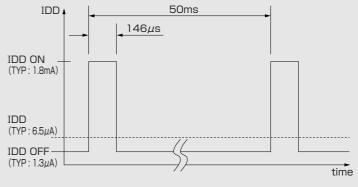
Note4) Shaded area is plating area

#### Note5) The center shadow area of the bottom of HIC does not need to be soldered. This area shares the lead frame with VSS inside the package and please be careful not to short this area to pins except No.4.

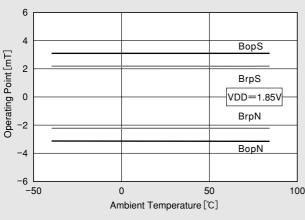
#### Supply Voltage

#### ●IDD Pulse Driving (VDD=1.85V)

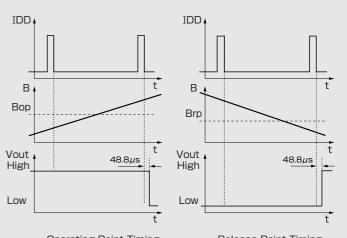




## Temparature Dependence of Bop. Brp



#### Function Timing Chart



Operating Point Timing

Release Point Timing

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

n

0

p

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