

# EM-1711

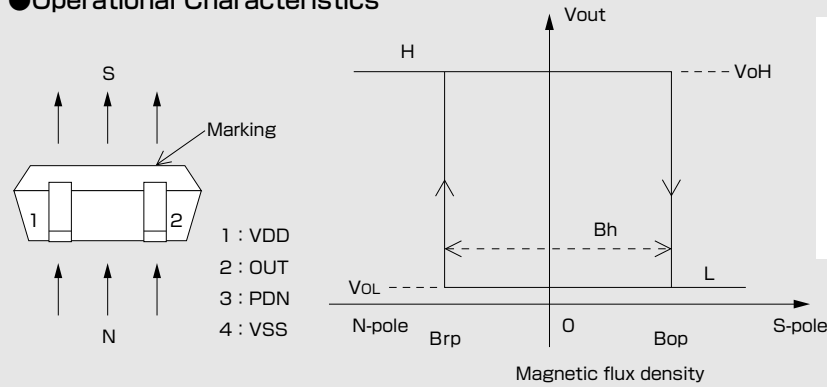
Shipped in packet-tape reel(5000pcs/Reel)

EM-1711 is ultra-small Hall effect ICs of a single silicon chip composed of Hall element and a signal processing IC.

|                           |                         |                     |                                  |             |     |
|---------------------------|-------------------------|---------------------|----------------------------------|-------------|-----|
| Bipolar Hall Effect Latch | Supply Voltage 1.6~5.5V | Power down Function | Ultra High Sensitivity Bop:1.8mT | Output CMOS | SMT |
|---------------------------|-------------------------|---------------------|----------------------------------|-------------|-----|

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

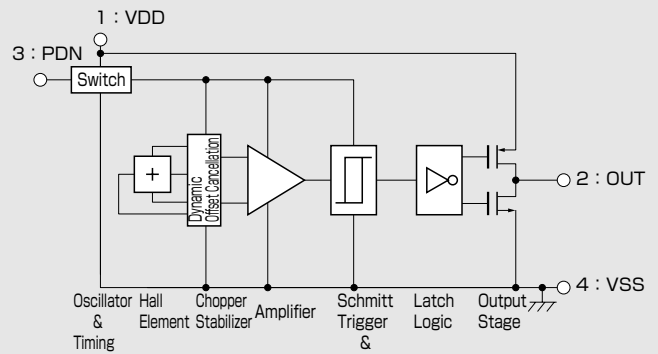
### ●Operational Characteristics



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

| Item                        | Symbol           | Limit          | Unit |
|-----------------------------|------------------|----------------|------|
| Supply Voltage              | VDD              | -0.1 ~ 6.0     | V    |
| PDN input voltage           | V <sub>in</sub>  | -0.1 ~ VDD+0.1 | V    |
| PDN input current           | I <sub>in</sub>  | ±10            | mA   |
| Output Current              | I <sub>out</sub> | ±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=3.0V)

| Item                      | Symbol          | Conditions             | Min.    | Typ. | Max. | Unit |
|---------------------------|-----------------|------------------------|---------|------|------|------|
| Supply Voltage            | VDD             |                        | 1.6     |      | 5.5  | V    |
| Operating Point           | B <sub>OP</sub> |                        |         | 1.8  | 4.0  | mT   |
| Release Point             | B <sub>RP</sub> |                        | -4.0    | -1.8 |      | mT   |
| Hysteresis                | B <sub>H</sub>  |                        |         | 3.6  |      | mT   |
| PDN input High voltage    | V <sub>IH</sub> |                        | 0.7VDD  |      |      | V    |
| PDN input Low voltage     | V <sub>IL</sub> |                        |         |      | 0.3  | V    |
| 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 Current1*2         | IDD1            | PDN=L                  |         |      | 1    | μA   |
| Supply Current2*2         | IDD2            | PDN=H,Average          |         | 2.5  | 6    | mA   |
| PDN input Current         | I <sub>in</sub> |                        | -1      |      | 1    | μA   |
| PDN mode transition time1 | TPD1            | Active→PDN             |         |      | 100  | μsec |
| PDN mode transition time2 | TPD2            | PDN→Active             |         |      | 100  | μsec |

### ●Magnetic Characteristics ② (Ta=-30~+85°C VDD=3.0V)

| Parameter       | Symbol          | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|-----------------|------------|------|------|------|------|
| Operating Point | B <sub>OP</sub> |            |      | 1.8  | 4.2  | mT   |
| Release Point   | B <sub>RP</sub> |            | -4.2 | -1.5 |      | mT   |
| Hysteresis      | B <sub>H</sub>  |            |      | 3.6  |      | mT   |

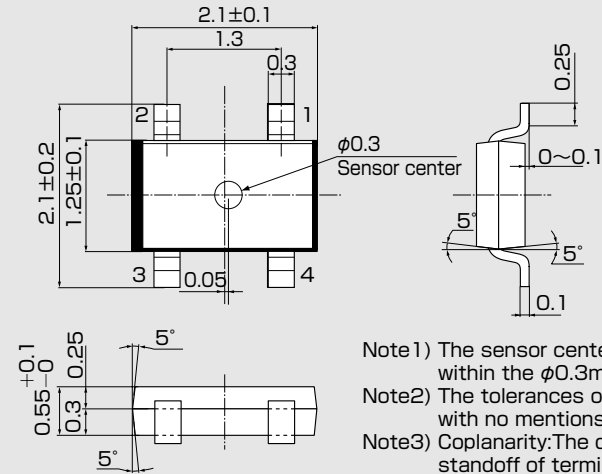
Note) The above specifications are design targets.

1 [mT]=10 [Gauss]

\*1: Positive ("+") polarity flux is defined as the magnetic flux from south pole which is direct toward to the branded face of the sensor (Bop,Brp)  
\*2: In case of PDN pin is held at VDD or VSS.

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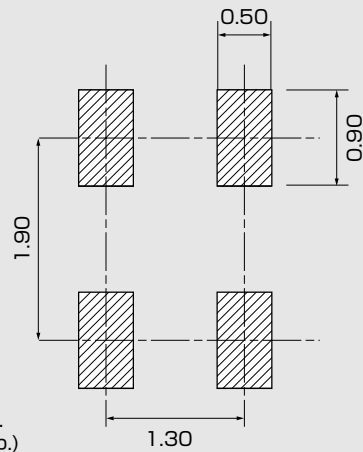
●Package (Unit:mm)



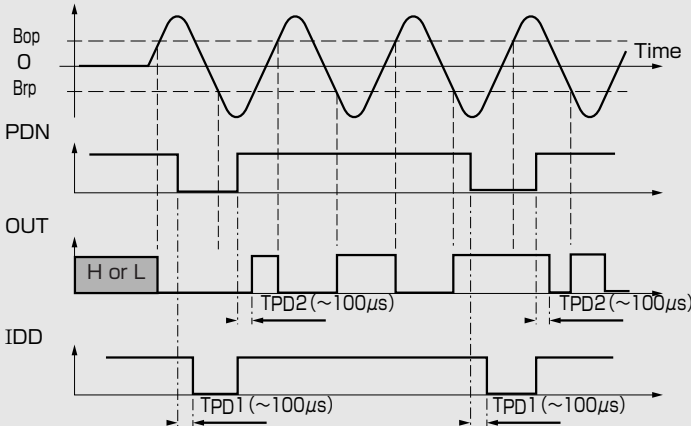
| Pin No. | Pin Name | Function       |
|---------|----------|----------------|
| 1       | VDD      | Supply Voltage |
| 2       | OUT      | Output Voltage |
| 3       | PDN      | Power Down     |
| 4       | VSS      | GND            |

- Note 1) The sensor center is located within the φ0.3mm circle.
- Note 2) The tolerances of dimensions with no mentions is ±0.1mm.
- 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)

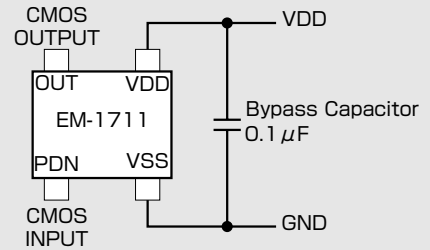


●Function Timing Chart

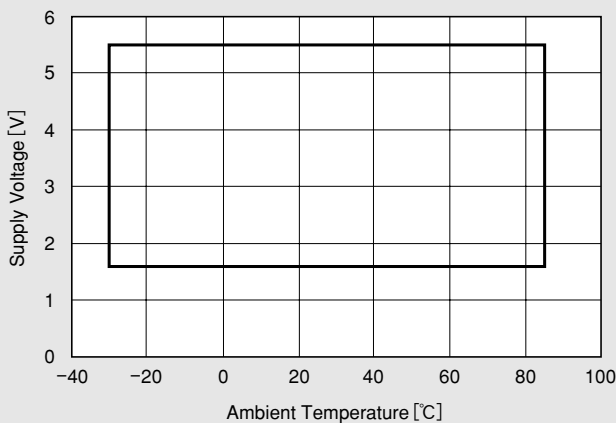


- Note 1) In power down mode, Output is kept current status.
- Note 2) When VDD is supplied ,output settling time after power supply voltage exceeds 1.6V is equal to TPD2.

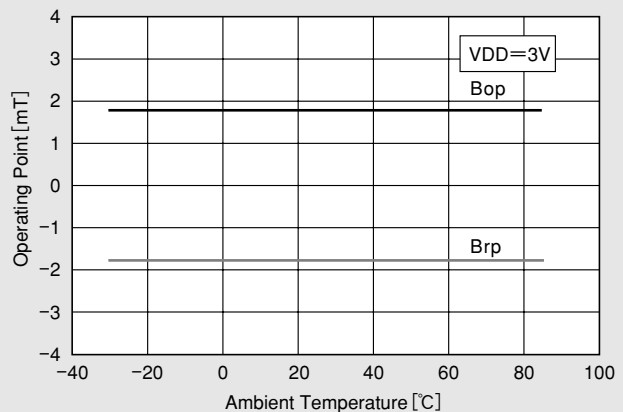
●Application Circuit



●Supply Voltage



●Temperature Dependence of Bop, Brp



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April 4, 2012