# EM-1712

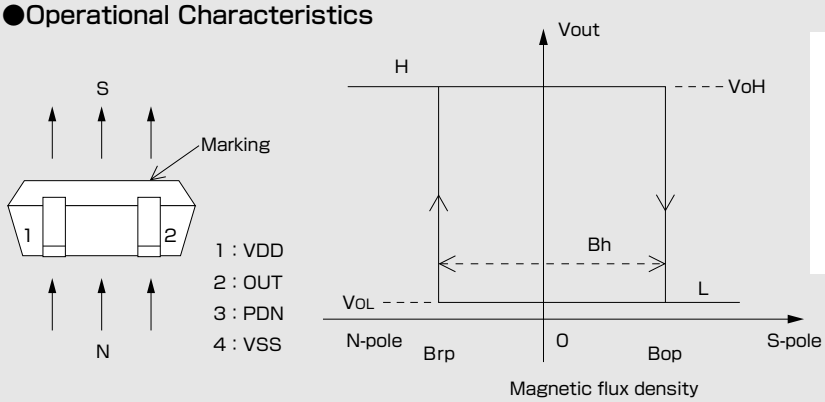
Shipped in packet-tape reel(5000pcs/Reel)

EM-1712 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.

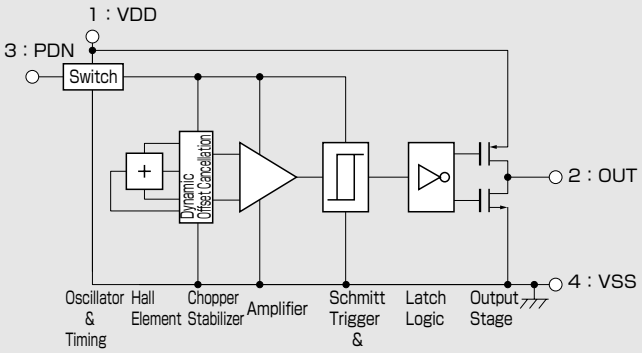
## ●Operational Characteristics




## ●Absolute Maximum Ratings (Ta=25℃)

| Item | Symbol | Limit | Unit |
|---|---|---|---|
| Supply Voltage | VDD | −0.1 ~ 6.0 | V |
| PDN input voltage | $V_{in}$ | −0.1 ~ VDD+0.1 | V |
| PDN input current | $I_{in}$ | ±10 | mA |
| Output Current | $I_{out}$ | ±0.5 | mA |
| Operating Temperature Range | Topr | −30 ~ +85 | ℃ |
| Storage Temperature Range | Tstg | −40 ~ +125 | ℃ |

## ●Functional Block Diagram




## ●Magnetic ① and Electrical Characteristics (Ta=25℃ VDD=3.0V)

| Item | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Supply Voltage | VDD | | 1.6 | | 5.5 | V |
| Operating Point | $B_{OP}$ | | | 1.8 | 4.0 | mT |
| Release Point | $B_{rp}$ | | −4.0 | −1.8 | | mT |
| Hysteresis | $B_h$ | | | 3.6 | | mT |
| PDN input High voltage | $V_{IH}$ | | 0.7VDD | | | V |
| PDN input Low voltage | $V_{IL}$ | | | | 0.3 | V |
| Output High Voltage | $V_{OH}$ | Io=−0.5mA | VDD −0.4 | | | V |
| Output Low Voltage | $V_{OL}$ | Io=+0.5mA | | | 0.4 | V |
| Supply Current1*2 | IDD1 | PDN=L | | | 1 | μA |
| Supply Current2*2 | IDD2 | PDN=H,Average | | 60 | 150 | μA |
| PDN input Current | $I_{in}$ | | −1 | | 1 | μA |
| PDN mode transition time1 | $T_{PD}1$ | Active→PDN | | | (36.6) | μsec |
| PDN mode transition time2 | $T_{PD}2$ | PDN→Active | | | 100 | μsec |

| Item | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Pulse Drive Period | $T_{PD3}$ | PDN=H | 0.5 | 1.0 | 1.5 | msec |
| PDN input Pluse Width | $T_W$ | | 100 | | | μsec |
| Pulse Drive Time | $T_{PD4}$ | PDN=H | 12.2 | 24.4 | 36.6 | μsec |

## ●Magnetic Characteristics ② (Ta=−30~+85℃ VDD=3.0V)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Operating Point | $B_{OP}$ | | | 1.8 | 4.2 | mT |
| Release Point | $B_{rp}$ | | −4.2 | −1.5 | | mT |
| Hysteresis | $B_h$ | | | 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.
*3: This transition time is not guarantee

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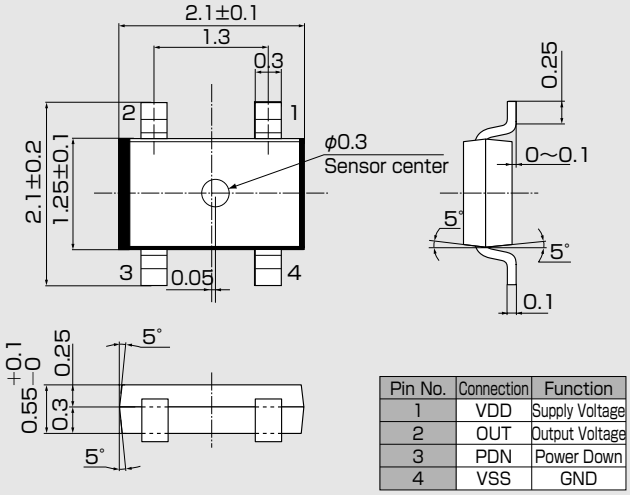
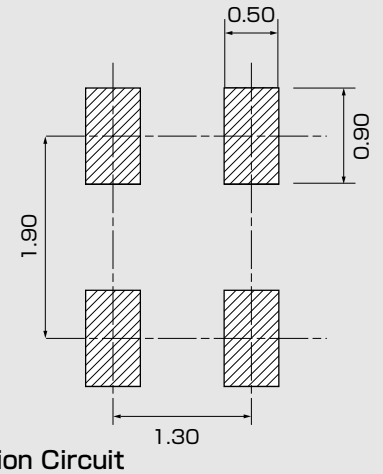
## ●Package (Unit:mm)



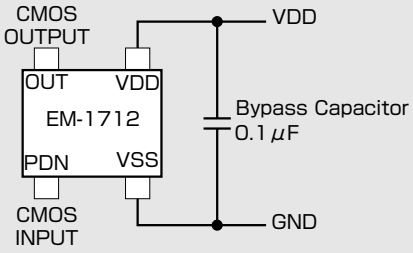

| Pin No. | Connection | Function |
|---|---|---|
| 1 | VDD | Supply Voltage |
| 2 | OUT | Output Voltage |
| 3 | PDN | Power Down |
| 4 | VSS | GND |

Note1) The sensor center is located within the φ0.3mm circle.
Note2) The tolerances of dimensions with no mentions is ±0.1mm.
Note3) Coplanarity:The differnces between standoff of terminals are max.0.1mm.
Note4) The sensor part is located 0.4mm(typ.) far from marking surface.

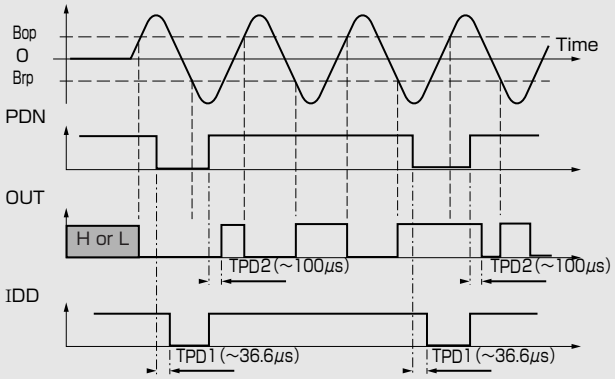
## ●(For reference only)Land Pattern (Unit:mm)



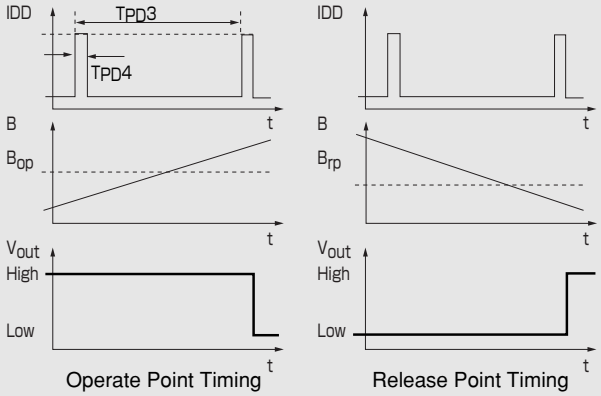

## ●Application Circuit




## ●Function Timing Chart 1

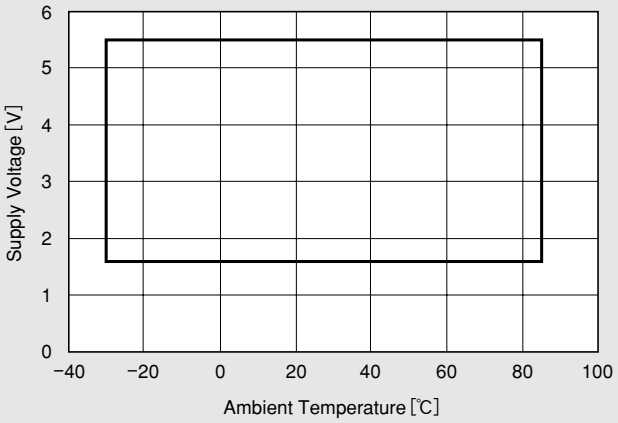



## ●Function Timing Chart 2 (PDN=H)

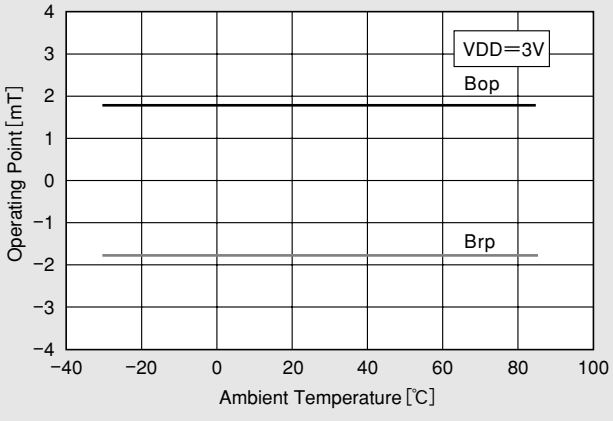



Note1) In power down mode, Output is kept current status.
Note2) When VDD is supplied ,output settling time after power supply voltage exceeds 1.6V is equal to TPD2.

## ●Supply Voltage




## ●Temparature Dependence of Bop. Brp



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