# EM-0712

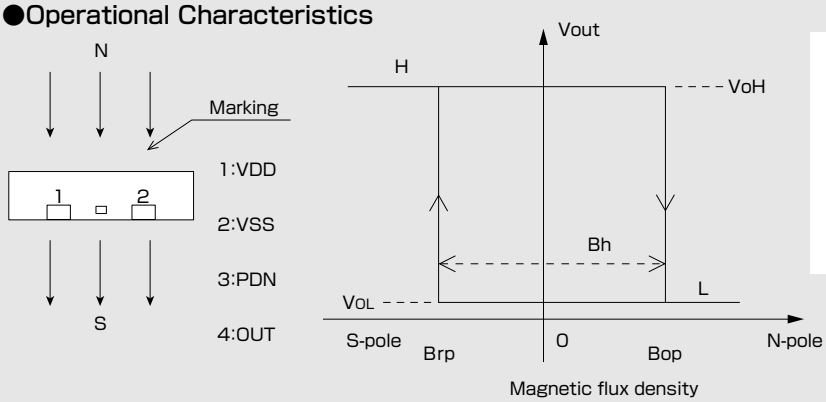
Shipped in packet-tape reel(5000pcs/Reel)

EM-0712 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 | SON |

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

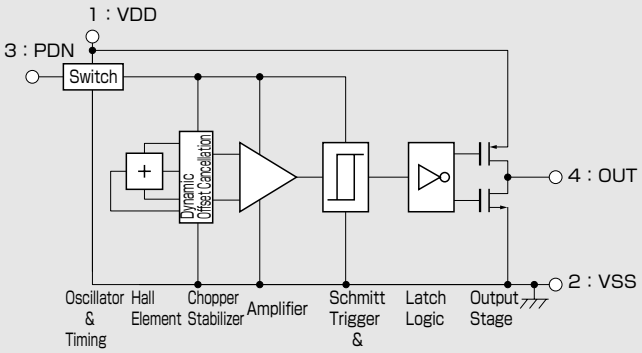
## ●Operational Characteristics




## ●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 | $T_{PD1}$ | Active→PDN | | | (36.6) | μsec |
| PDN mode transition time2 | $T_{PD2}$ | 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)

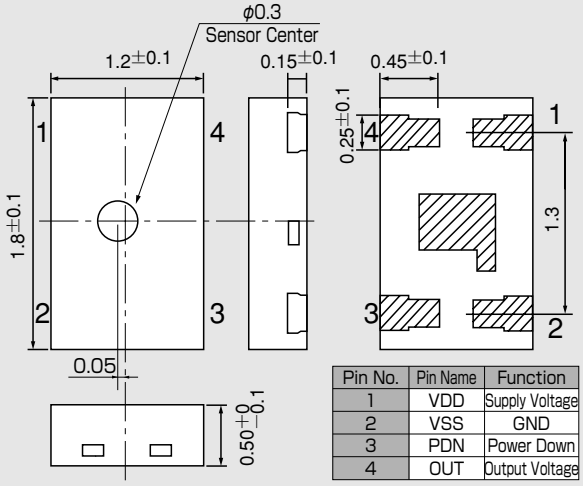
| Item | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Operating Point | $B_{OP}$ | | | 1.8 | 4.2 | mT |
| Release Point | $B_{rp}$ | | −4.2 | −1.8 | | mT |
| Hysteresis | $B_h$ | | | 3.6 | | mT |

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

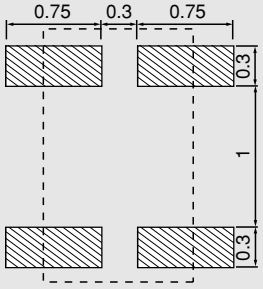
## ●Package (Unit:mm)



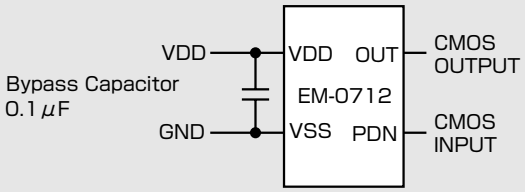

| Pin No. | Pin Name | Function |
|---|---|---|
| 1 | VDD | Supply Voltage |
| 2 | VSS | GND |
| 3 | PDN | Power Down |
| 4 | OUT | Output Voltage |

※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.50μm.
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.2.

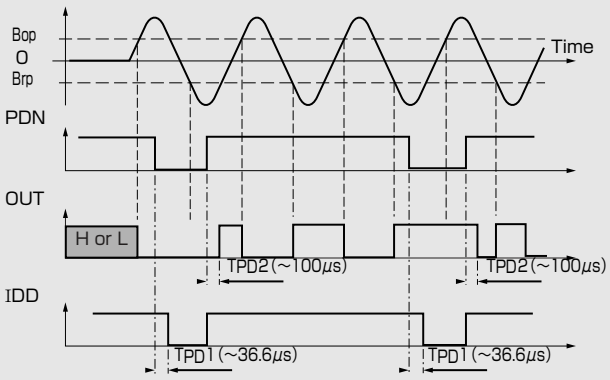
## ●(For reference only)Land Pattern (Unit:mm)




## ●Application Circuit

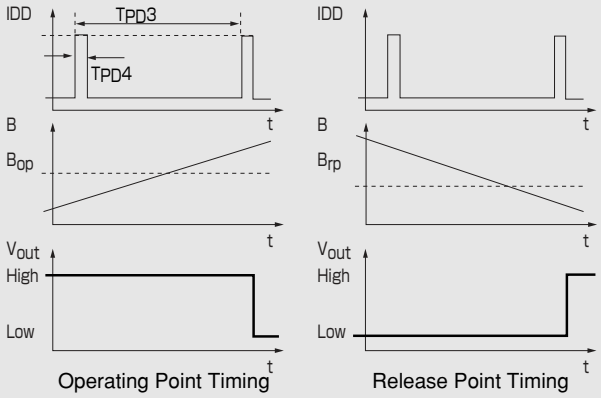



## ●Function Timing Chart1

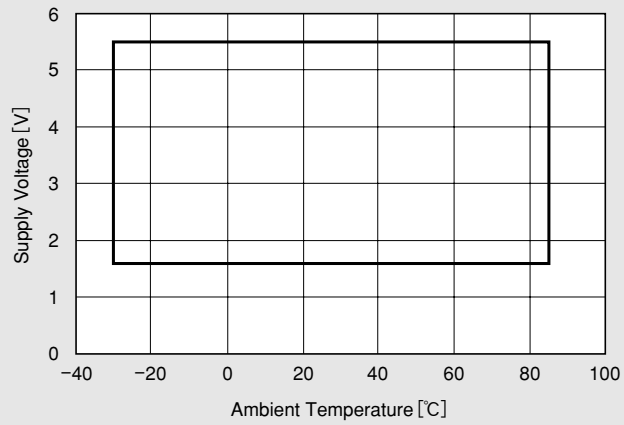



Note1) In power down mode, Output is kept current status.
Note2) When VDD is supplied ,output settling time after power supply voltage exceeds 1.6V is equal to TPD2.

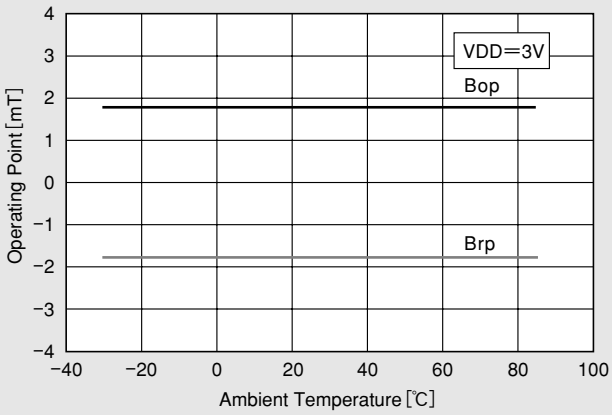
## ●Function Timing Chart2 (PDN=H)




## ●Supply Voltage




## ●Temparature Dependence of Bop. Brp



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