

# EM-1712

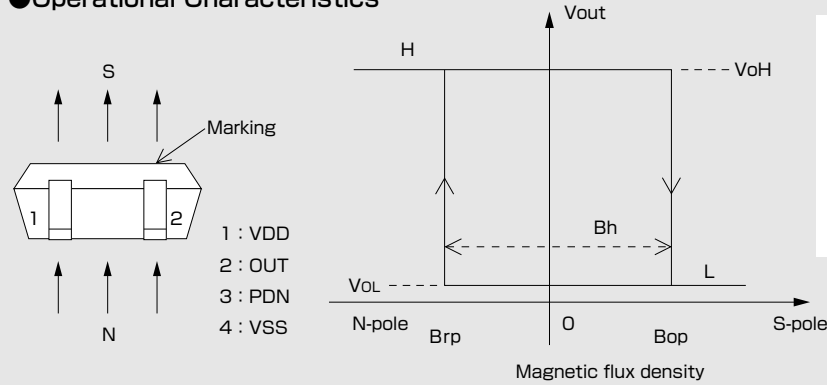
Shipped in packet-tape reel(5000pcs/Reel)

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
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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.

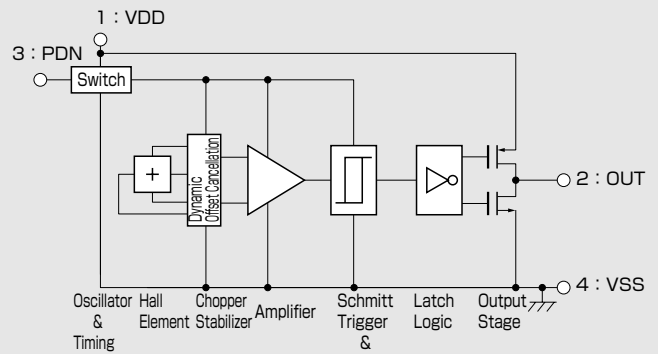
### ●Operational Characteristics



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

Item	Symbol	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		60	150	μA
PDN input Current	I <sub>in</sub>		-1		1	μA
PDN mode transition time1	T <sub>PD1</sub>	Active→PDN			(36.6)	μsec
PDN mode transition time2	T <sub>PD2</sub>	PDN→Active			100	μsec

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Pulse Drive Period	T <sub>PD3</sub>	PDN=H	0.5	1.0	1.5	msec
PDN input Pulse Width	T <sub>W</sub>		100			μsec
Pulse Drive Time	T <sub>PD4</sub>	PDN=H	12.2	24.4	36.6	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]

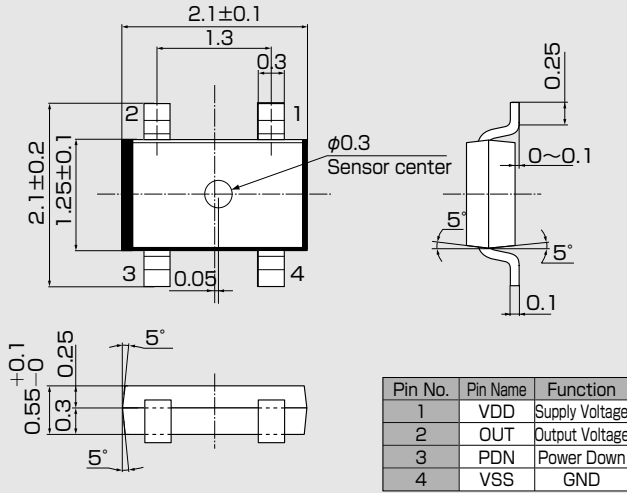
\*1: Positive ("+") polarity flux is defined as the magnetic flux from south pole which is direct toward to the branded face of the sensor (Bop,Brp)

\*2: In case of PDN pin is held at VDD or VSS.

\*3: This transition time is not guarantee

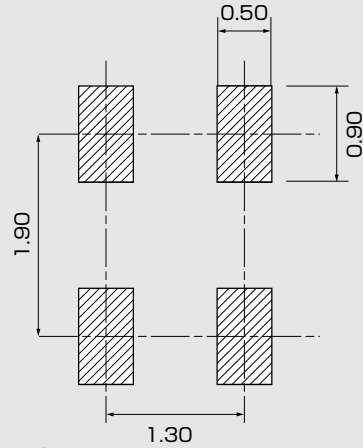
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●Package (Unit:mm)

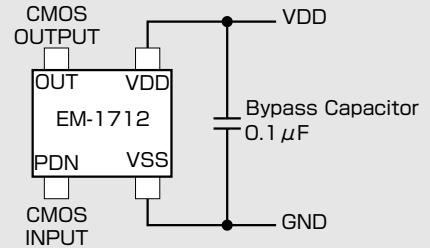


- Note1) The sensor center is located within the  $\phi 0.3$ mm circle.
- Note2) The tolerances of dimensions with no mentions is  $\pm 0.1$ mm.
- Note3) Coplanarity: The differences between standoff of terminals are max.0.1mm.
- Note4) The sensor part is located 0.4mm(typ.) far from marking surface.

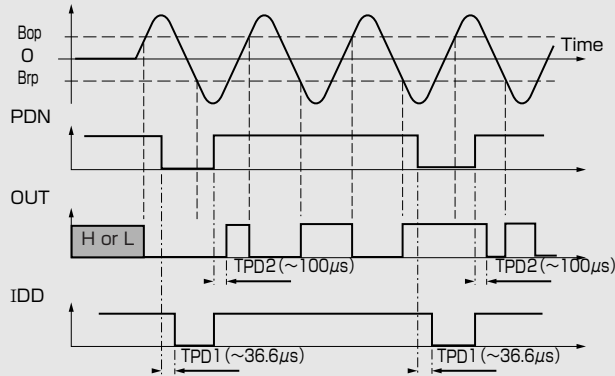
●(For reference only)Land Pattern (Unit:mm)



●Application Circuit

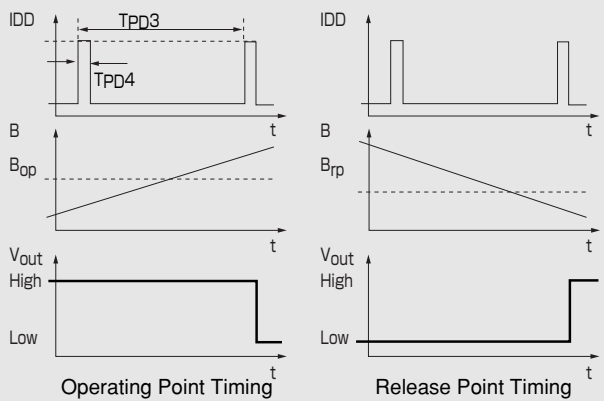


●Function Timing Chart 1

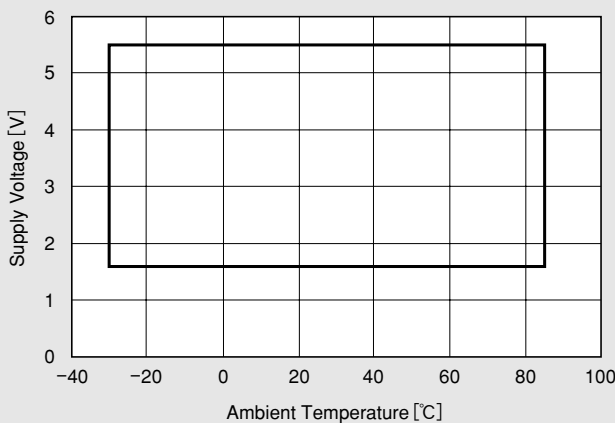


- Note1) In power down mode, Output is kept current status.
- Note2) When VDD is supplied, output settling time after power supply voltage exceeds 1.6V is equal to TPD2.

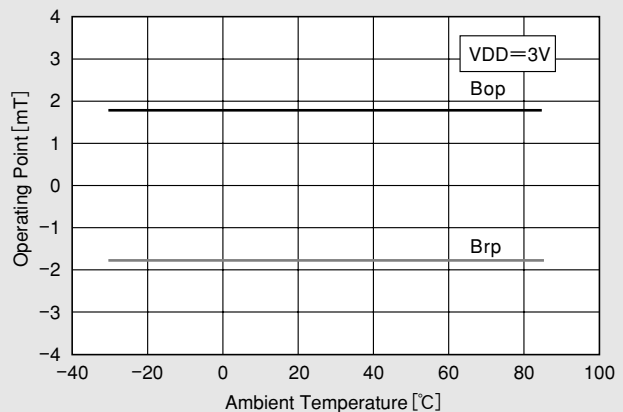
●Function Timing Chart 2 (PDN=H)



●Supply Voltage



●Temperature Dependence of Bop, Brp



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April 4, 2012