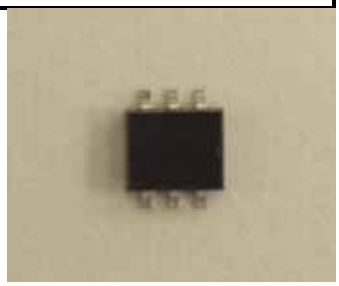
Angular Position Sensing (EM-3242)
(Preliminary Specification)

All values specified in this data sheet are target specifications and are not guaranteed. The specifications are subject to change without notice.

Features

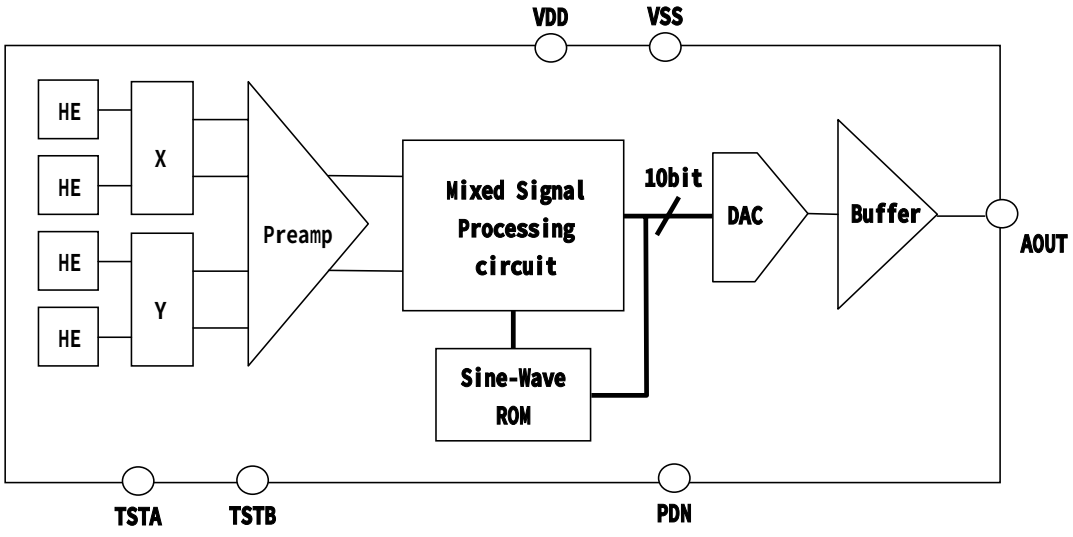


- Angular position sensing with Hall effect device
- Non contact rotation angle sensing by coin shape magnet and magnetic sensing IC
- Very small package with good stability against temperature change
- Single operative voltage 3～5V

Outline

EM-3242 outputs analog signal proportional to angular position of magnet using signal from Hall sensors and the signal's processing. The combination EM-3242 with coin shape magnet realizes non contact angular position sensing features. Very wide variety of magnets can be used for the measurement, and very stable output without any significant error can be available even if the magnet has some temperature dependency

Block diagram



Absolute maximum rating

Symbol	Parameters	Min.	Typ.	Max.	Unit	Remarks
Vc	Supply voltage	-0.3		6.5	V	
V_{IN}	Input Voltage	-0.3		Vc+0.3		
Tstg	Storage temperature	-55		105	°C	

Recommended operating condition

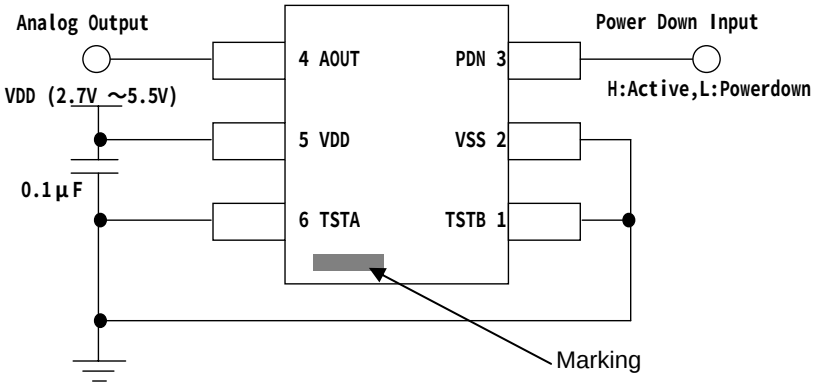
Symbol	Parameters	Min.	Typ.	Max.	Unit	Remarks
V_{DD}	Supply Voltage	2.7		5.5	V	
Topr	Operating Temperature	-30		85	°C	

Electric & Magnetic characteristics

Symbol	Parameters	Min.	Typ.	Max.	Unit	Remarks
B_{RANGE}	Detective Magnetic Range	20	35	50	mT	
A_{RANGE}	Detective angle range			360	Deg.	
A_{RES}	Angle Resolution		0.36		Deg	10bit
A_{PREC}	Angle preciseness	-1.5	0	1.5	Deg.	@25°C
A_{TD}	Angle Temperature Drift	-1	0	1	Deg.	@-30～85°C
T_p	Output Cycle		40		KHz	
T_d	Output signal delay		100	130	μs	
V_{OUT}	Output Voltage range	0.1VDD		0.9VDD	V	Ratio metric
I_{SUP}	Supply Current		8	12	mA	w/ sensor drive
I_{PD}				1	μA	Power-down
T_{PD}	Wake-up time		680	850	μs	PDN：L→H
I_{OUT}	Output current	-0.3		+0.3	mA	
CL	Load capacitance			200	pF	

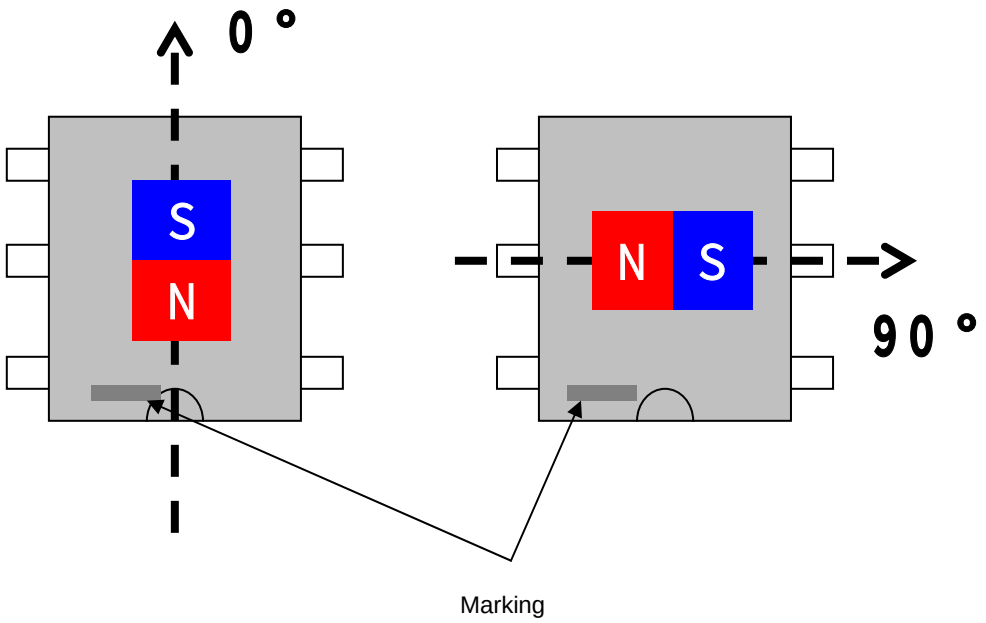
The rpm which EM-3242 meets the above specification is 1500rpm.
Over 1500rpm,resolution of EM-3242 decreases,but output analog output comes out.

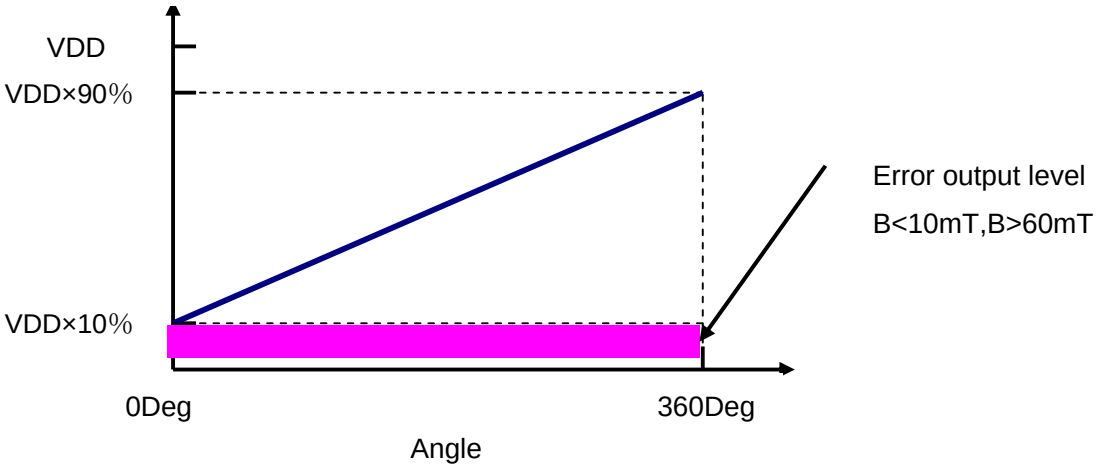
Recommended Connection Diagram



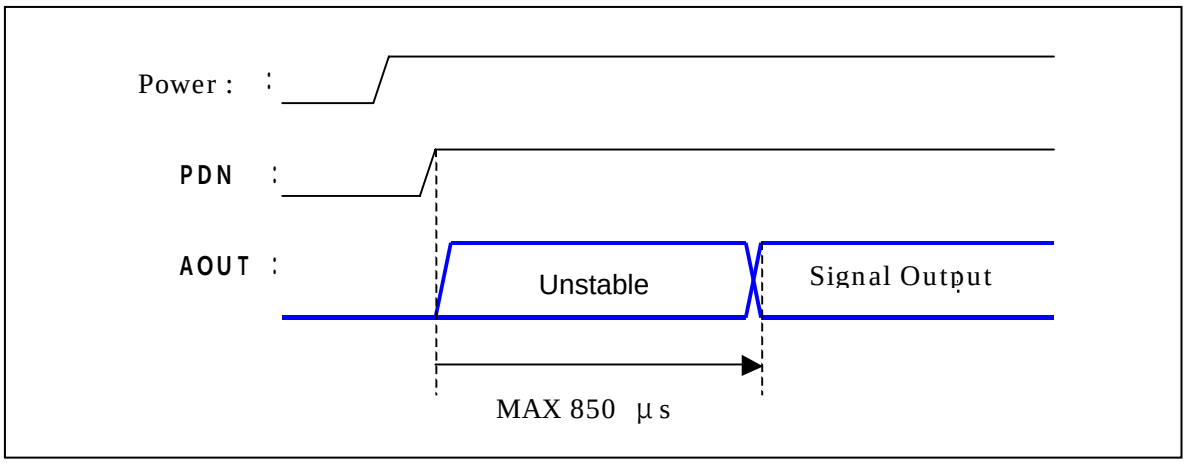
Absolute angle position & Magnet Position

Analog output increases with clockwise magnet rotation.



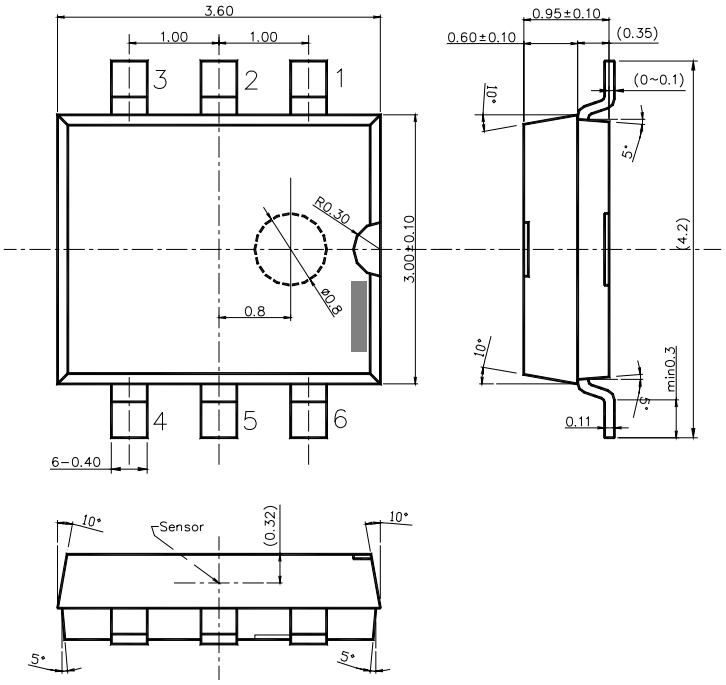


Timing chart for output



Please note there is “output unstable state” before actual signal outputs when the state is change from “Power Down” to “Active.”

Package



Pin No.	Name	Comments
1	TSTB	Test pin B.Please connect to GND.
2	VSS	Ground pin. A ceramic capacitor (0.1μF) should be connected between VDD and VSS.
3	PDN	Power down. PDN=Logic High→ IC active. Internally being pulled down and power-down state kept when reset(power on).
4	*AOUT*	Sensor output
5	VDD	Power supply. Please see above “VSS” for capacitor attach
6	TSTA	Test pin A.Please connect to GND.

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1-23-7 Nishi-Shinjuku, Shinjuku-ku
Tokyo, 160-0023 Japan
PHONE: +81-3-6911-2800, FAX: +81-3-6911-2815