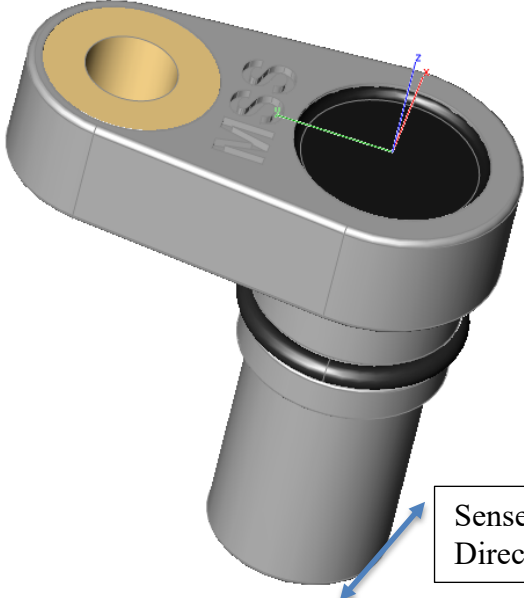


3-Wire Differential Magnetic Speed and Direction Sensors

<p>Description</p> <p>This sensor uses a Back Biased differential Hall Effect device to measure the passing teeth of a ferrous target. The sensor face must be oriented such that, the bolt hole is in line with the direction of rotation.</p> <p>The device uses an industry standard 2 Voltage output (Pulse width variable for direction information).</p> 	<p>Features and Benefits</p> <ul style="list-style-type: none"> • Senses motion of a ferrous object, no additional magnet(s) need to be added • 3-wire Voltage output • Extremely small size (Body: OD:13.75mm x L:38mm), and 38mm flange • Robust to EMC • True Zero Speed • AGC (Automatic Gain Control) • AOA (Automatic Offset Adjust) • Under voltage Lockout
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Absolute Maximum Ratings

Characteristics	Symbol	Notes	Rating	Units
Forward Supply Voltage	Vcc		27	V
Reverse-Supply Voltage	Vrcc		-18	V
Output Sink Current	Iout	Open/short detection	25	mA
Operating Ambient Temp	Ta		-40 to 150	C

Electrical Characteristics

Characteristics	Symbol	Test Condition	Min	Typ	Max.	Units
Supply Voltage	V _{cc}	T<=150C	4.0	-	24	V
Undervoltage Lockout	V _{cc(uv)}	V _{cc} , 0-5 or 5-0	-	-	3.95	V
Reverse Supply Current	I _{cc}	V _{cc} = V _{rcc(max)}	-	-	-10	mA
Supply Zener Clamp Voltage	V _{zs}	I _{cc} = I _{cc_max} + 3mA, T _a =25C	27	-	-	V
Supply Zener Current	I _{cc}	T _a =25C, V _{cc} =28V	-	-	13	mA
Supply Current	I _{cc}	T _J < T _{J(max)} , V _{CC} = 27 V	-	8	10	mA

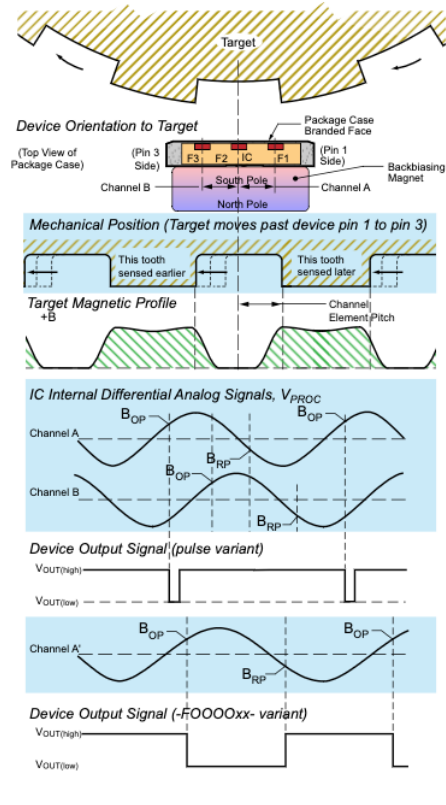
Output Characteristics

Characteristics	Symbol	Test Condition	Min	Typ	Max.	Units
Power-on State	POS	Connected as in Circuit Example	-	High	-	-
Power-On Time	T _{po}	F _{op} < 100HZ	-	-	2	ms
Low Output Voltage	V _{low}	4.75 V < V _{PU} < 5.25 V, Output = Low, 1.45 kΩ ≤ R _{PU} ≤ 3.4 kΩ	435	875	1115	mV
Low Output Voltage Impedance	Z _{out}	I _{SINK} = 10 mA, Output transistor ON, R _{OUT} = 0 Ω	-	-	50	Ω
High Output Voltage	V _{high}	4.75 V < V _{PU} < 5.25 V, Output = High, 1.45 kΩ ≤ R _{PU} ≤ 3.4 kΩ	3735	4125	4475	mV
Output Zener Clamp Voltage	V _{zout}	I _{OUT} = 3 mA, T _A = 25°C	27	-	-	V
Output Current Limit	I _{lim}	V _{OUT} = 12 V, T _J < T _{J(max)}	25	45	70	mA
Output Rise Time	T _{out_on}	R _{PU} = 1.5kΩ, V _{PU} = 5V, from 10%to90%, R _{OUT} = 0Ω		15		μS
Output Fall Time	T _f	R _{PU} = 1.5kΩ, V _{PU} = 5V, from 90%to10%, R _{OUT} = 0Ω	1.5		4.5	μS

Operating Characteristics: variant used; -RSIBCEJ-A

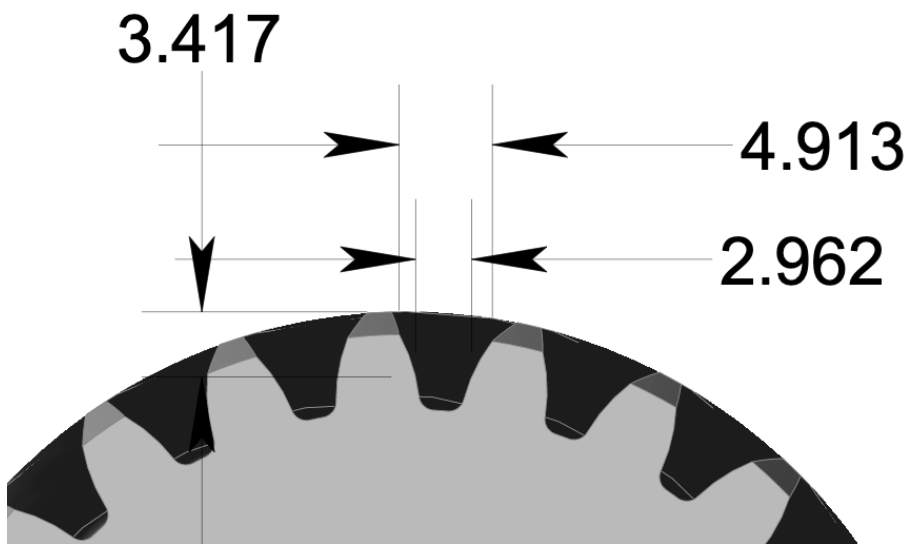
Characteristics	Symbol	Test Condition	Min	Typ	Max.	Units
Pulse Width, Forward Rotation	T _w (FWD)	From Falling to Rising edge	38	45	52	μS
Pulse Width, Reverse Rotation	T _w (REV)	From Falling to Rising edge	114	135	156	μS
Pulse Width, Non-Direction	T _w (ND)		306	360	414	μS
Operating Frequency	F _{fwd}	All Options	0	-	12	kHz
Operating Frequency	F _{rev}	I-Option	0	-	6	kHz
Operating Frequency	F _{ND}	All Options	0	-	2	kHz
First Direction Output Pulse		Cxx variant	-	1	<1.5	Tcycle

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Sensing Configuration:



Target Geometry:

A nominal 4.0mm wide teeth and valleys should be used as well as at least 4mm of valley depth. Hyzon Target example below is acceptable.



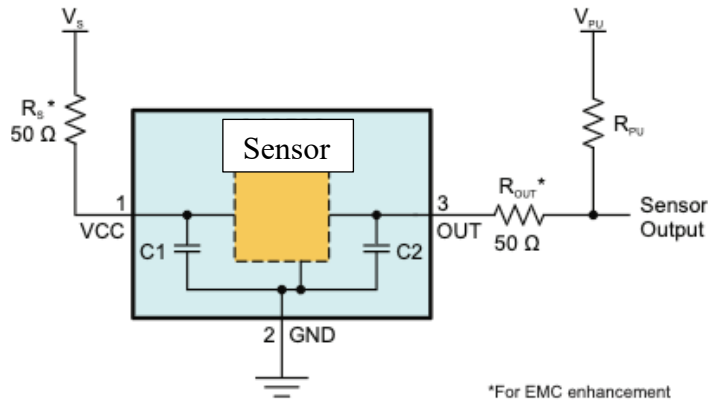
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Pin-out

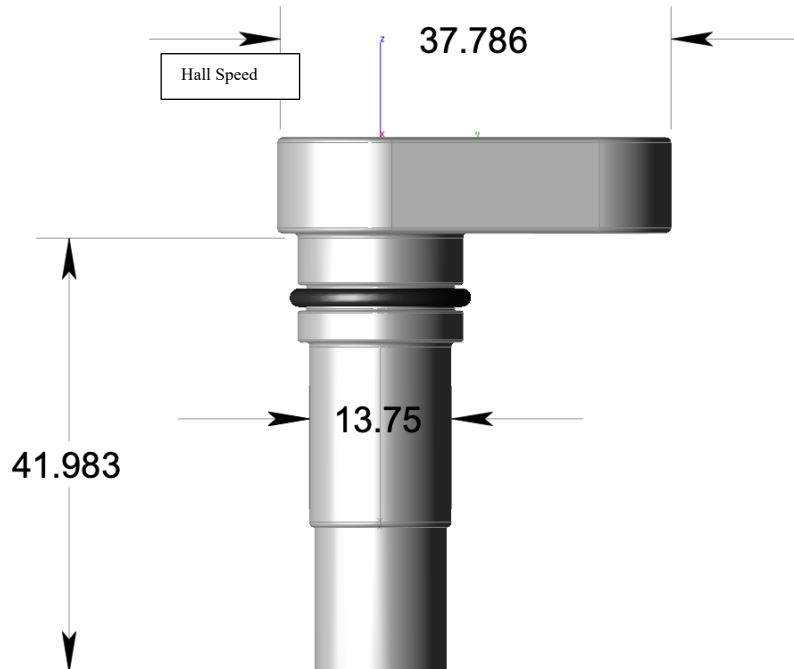
Red = Vcc

White = Vout

Circuit Example: C1=220nF, C2=4.7n, *Rs and Rout Optional



Base dimensions (Speed and Direction Sensor)



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Appendix A: Setting choices. This Product uses: -RSIBCEJ-A

