DATA SHEET
Hall Effect Current Sensor

PN:PTCHK-DAB5S2L | **I_{PN}=200A ~1000A**

Feature

- Open- loop
- Supply voltage: DC +5.0V
- Capable measurement of currents: DC, AC, pulse with galvanic isolation between primary circuit and secondary circuit.
- Ratio sensor
- Low voltage applications
- The maximum allowable current is defined by the busbar T<+150 ° C
- Operating temperature range: − 40 ° C<T<+125 ° C
- Output voltage: fully proportional to sensitivity and offset

Advantages

- High accuracy, very good linearity
- Low temperature drift
- Optimized response time, no insertion losses
- High immunity to external interference

Applications

- Electric power steering system
- Starting power generation
- Converter
- Battery Pack Monitoring
- Motor driven applications

CE RoHS

Ultimate performance parameters:

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			MIN.	TYP.	MAX.	
Maximum supply voltage	U_C	V	-14	-	14	
Insulation impedance	R_{IS}	MΩ	500	-	-	500V DC-ISO 16750
Electrical safety distance	d_{CI}	mm		3.0		
Creepage distance	d_{CP}	mm		3.0		
Relative leakage index	C_{TI}			P_{LC3}		
Maximum output current	I_{OUT}	mA	-10	-	10	Continuous output
Maximum output voltage (analog)		V	-14	-	14	Output over voltage, 1min@25°C

General performance parameters:

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			MIN.	TYP.	MAX.	
Power supply voltage	U_C	V	4.75	5	5.25	
Current consumption	I_C	mA	-	15	20	@T_A = 25°C, Uc = 5V
Output current	I_C	mA	-1		1	
Load resistance	R_L	KΩ	10		-	
Output impedance	R_{OUT}	Ω	1	-	10	
Capacitive load	C_L	nF	1	-	100	
Working temperature	T_A	°C	-40		125	
Performance parameter channel 1:						
Rated measurement current	I_{PN}	A	-		-	According to model: ± 20... ± 100
Zero voltage	U_O	V		2.5		@Uc = 5V
Rated output [1)]	Uout	V	$Uout = (UC/5) \times (Uo + S \times IP)$			@T_A = 25°C
Sensitivity	S	mV/A	-	2000/I_{PN}	-	@Uc = 5V
Minimum output clamp voltage	U_{SZ}	V	0.2	0.25	0.3	@Uc = 5V
Maximum output clamp voltage			4.7	4.75	4.8	@Uc = 5V
Proportional error	εr	%	-0.6		0.6	
Sensitivity error	εS	%		±0.4		@T_A = 25°C
				±1.0		@-10°C<T_A<65°C
				±1.5		@-40°C<T_A<125°C
Electronic offset voltage range	U_{OE}	mV		±10		@T_A = 25°C,Uc=5V
Magnetic offset voltage range	U_{OM}	mV		±5		@T_A = 25°C,Uc=5V,after ±I_P
Linearity error	εL	%	-	±0.5	-	@T_A = 25°C,Uc=5V
Zero voltage temperature coefficient	$TCU_{O\,EAV}$	mV/°C	-0.1		+0.1	@-40°C<T_A<125°C
Output voltage temperature coefficient	$TCU_{O\,UTAV}$	%/°C	-0.08	±0.04	+0.08	@-40°C<T_A<125°C
Response time	tr	μs		4	6	@ 90% of I_{PN}
Bandwidth [2)]	BW	KHz		1.1		@-3dB
Output noise	$U_{no\,pp}$	mV			15	
Performance parameter channel 2:						
Rated measurement current	I_{PN}	A	-		-	According to model: ±200 … ±1000
Zero voltage	U_O	V		2.5		@Uc = 5V

Rated output [1]	U_{out}	V	*Uout* = (*UC*/ 5) × (*Uo* + *S* × *IP*)			@T_A = 25°C
Sensitivity	S	mV/ A	-	2000/I_{PN}	-	@Uc = 5V
Minimum output clamp voltage	U_{SZ}	V	0.2	0.25	0.3	@Uc = 5V
Maximum output clamp voltage			4.7	4.75	4.8	@Uc = 5V
Proportional error	εr	%	-0.6		0.6	
Sensitivity error	εS	%		±0.4		@T_A = 25°C
				±0.8		@-10°C<T_A<65°C
				±1.2		@-40°C<T_A<125°C
Electronic offset voltage range	U_{OE}	mV		±10		@T_A = 25°C,Uc=5V
Magnetic offset voltage range	U_{OM}	mV		±5		@T_A = 25°C, Uc=5V, after ±I_P
Linearity error	εL	%	-	±0.5	-	@T_A = 25°C,Uc=5V
Zero voltage temperature coefficient	TCU_{OEAV}	mV/ °C	-0.1		+0.1	@-40°C<T_A<125°C
Output voltage temperature coefficient	TCU_{OUTAV}	%/°C	-0.08	±0.04	+0.08	@-40°C<T_A<125°C
Response time	tr	μs		4	6	@ 90% of I_{PN}
Bandwidth [2]	BW	KHz		1.1		@-3dB
Output noise	U	mV			15	

Notes:

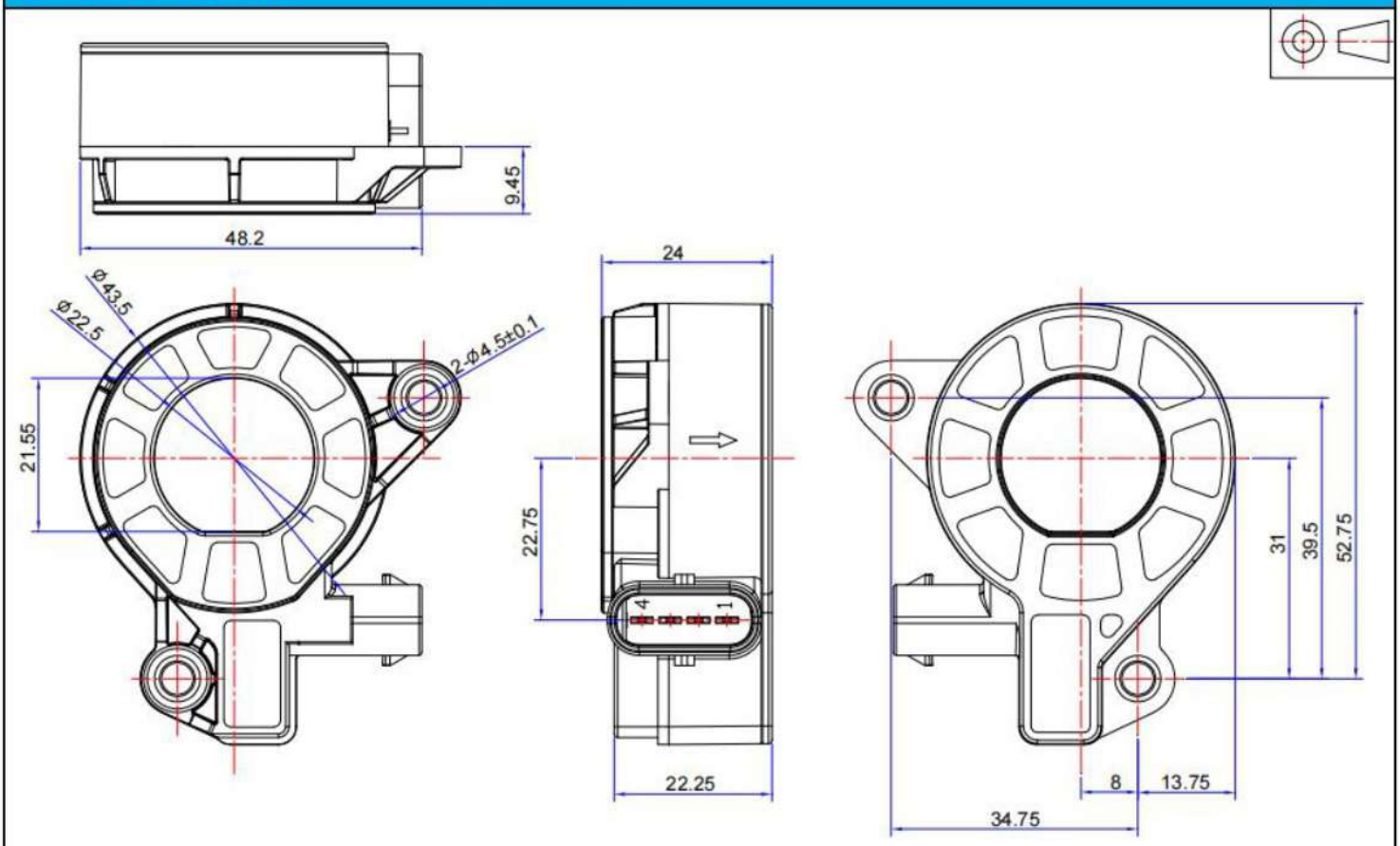
1) The output voltage U_{OUT} is fully proportional, and the zero offset voltage and sensitivity depend on the value of the power supply Uc. The relevant formula is as follows:

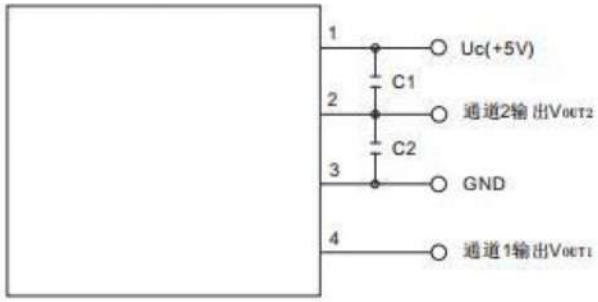
$$I_P = (5/U_C * U_{OUT} - U_O) * 1/S \text{ with } S \text{ in } (V/A)$$

2) In order to avoid overheating of the busbar, magnetic ring, and Hall IC, the frequency of the primary current must be limited.

General data:	
Parameter	**Value**
Operating temperature TA(°C)	-40 ~ +125
Storage temperature TS(°C)	-55~ +125
Mass M(g)	80
Plastic material	PBT+GF30
Standards	ISO16750
	GB/T28046
	IEC60068

Dimensions(mm):



Electronic schematic	Bill of Materials
	Plastic shell : PBT+GF30
	Magnetic core: Silicon steel sheet winding/amorphous
	Connector terminal: Tinned brass
	Gross weight: 85g
	Mounting recommendation
	Connector model TYCO 1-14564265-5 Recommended maximum torque 2.5 N·m
	General tolerance
	General tolerance:< ±0.5mm

Remarks:

- When the primary current Ip flows in the direction of the positive arrow, the output voltage Uout is greater than the offset voltage Uo (refer to the arrow marked on the drawing.
- The dynamic performance (di/dt and response time) is the best when the busbar is fully filled with primary perforation.
- Sensors with different rated input currents and output voltages can be customized according to user needs.

WARNING : Incorrect wiring may cause damage to the sensor.