



DATA SHEET

Hall Effect Current Sensor

P/N: CHK_QR375S2L

$I_{PN} = \pm 800 \sim \pm 1200A$

Description

- Automotive grade hall chip.
- The three-phase current sensor series is an open-loop Hall current sensor.
- The primary and secondary circuits are insulated and used in automotive control applications for measuring DC, AC, and pulse current. The CHK-QR375S2L series can be selected for use with different measurement current ranges from 800A to 1200A.
- Supply voltage: DC +5.0V

Feature

- Low voltage applications
- The maximum allowable current is defined by the busbar $T < +150^{\circ}C$
- Operating temperature range: $-40^{\circ}C < T < +125^{\circ}C$
- Output voltage: fully proportional to sensitivity and offset
- Three phase integrated sensor



Advantages

- High precision and good linearity
- Low temperature drift
- No insertion loss
- High frequency bandwidth
- Strong anti-interference ability

Applications

- Generator
- HEV / EV application
- DC/DC converter
- Inverter
- Application of electric vehicles



RoHS

Main electrical parameters:

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			MIN.	TYP.	MAX.	
Supply voltage	U_c	V	-0.3		6.5	
Electrostatic discharge voltage	$U_{ESD\ HBM}$	KV			8	IEC-61000-4-2
Effective value of AC isolation withstand voltage	U_d	KV			2.5	50HZ, 1min, IEC 60664 Part1
Insulation impedance	d_{ci}	mm		4.0		
Creepage Distance	d_{cp}	mm		5.1		



Working performance parameters:

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			MIN.	TYP.	MAX.	
Measuring range	I_{PM}	A				800A~1200A
Power supply	U_c	V	4.75	5	5.25	
Rated output	U_{out}	V	$U_{out} = (U_c / 5) \times (U_o + S \times I_p)$			@ $T_A = 25^\circ C$
Sensitivity	S	mV/A	-	$2000/I_{PN}$	-	@ $U_c = 5V$
Zero offset voltage	U_o	V		2.5		@ $U_c = 5V$
Current consumption	I_c	mA	-	39	45	@ $T_A = 25^\circ C, U_c = 5V$
Load resistance	R_L	K Ω	4.7	10	-	
Output internal resistance	R_{OUT}	Ω	1	5	10	DC
Capacitive load	C_L	nF	-	1	10	
Operating temperature range	T_A	$^\circ C$	-40		125	

Performance parameters:

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			MIN.	TYP.	MAX.	
Ratio error	ε_r	%	-	± 0.5	-	
Electronic offset voltage range	U_{OE}	mV	-5	± 3	+5	@ $T_A = 25^\circ C, U_c = 5V$
Magnetic offset voltage range	U_{OM}	mV	-5	± 3	+5	@ $T_A = 25^\circ C, U_c = 5V$, after $\pm I_p$
Sensitivity error	ε_s	%	-1	± 0.5	+1	@ $T_A = 25^\circ C, @U_c = 5V$
Zero point accuracy	X_0	%	-0.5	-	+0.5	@ $T_A = 25^\circ C, @U_c = 5V$
Linearity Error	ε_L	%	-1		+1	$ I_p \leq 900$
			-2		-2	$900 < I_p < 1200$
Zero point voltage temperature coefficient	T_{CUOEAV}	mV/ $^\circ C$	-0.08	± 0.05	+0.08	@ $-40^\circ C < T_A < 125^\circ C$
Output voltage temperature coefficient	$T_{CUOUTAV}$	%/ $^\circ C$	-0.05	± 0.035	+0.05	@ $-40^\circ C < T_A < 125^\circ C$
Response time	T_{d90}	μs		3	5	@ 90% of I_{PN} , 100A/us
Bandwidth	BW	KHz	40			@-3dB
Phase shift	$\Delta \phi$	$^\circ$	-4		0	@DC to 1KHz
Output noise	$U_{no pp}$	mV			10	@DC to 1MHz

Notes:

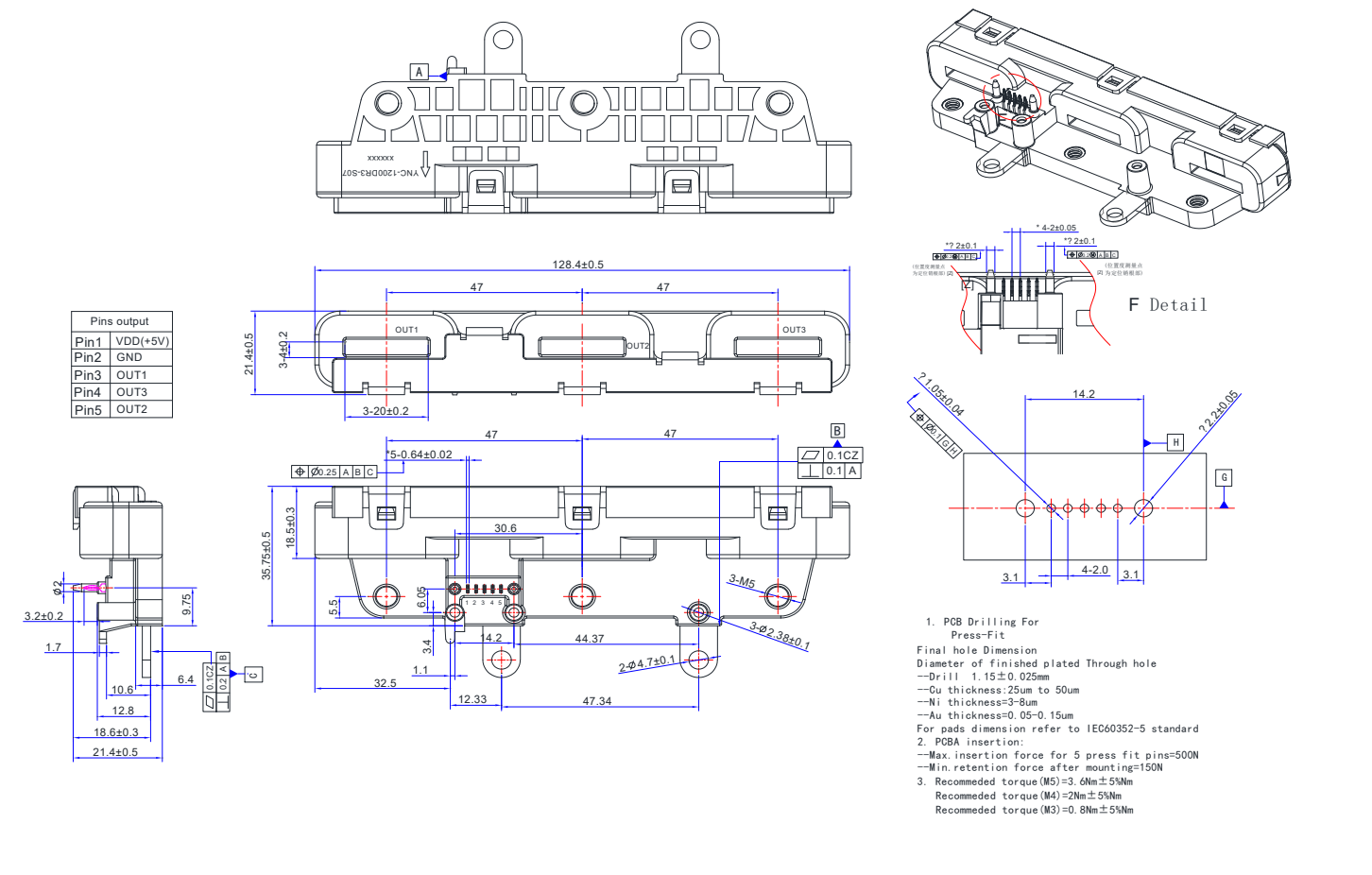
- 1) The output voltage V_{out} is fully ratiometric. The offset and sensitivity are dependent on the supply voltage U_c



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

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

Dimensions(mm):



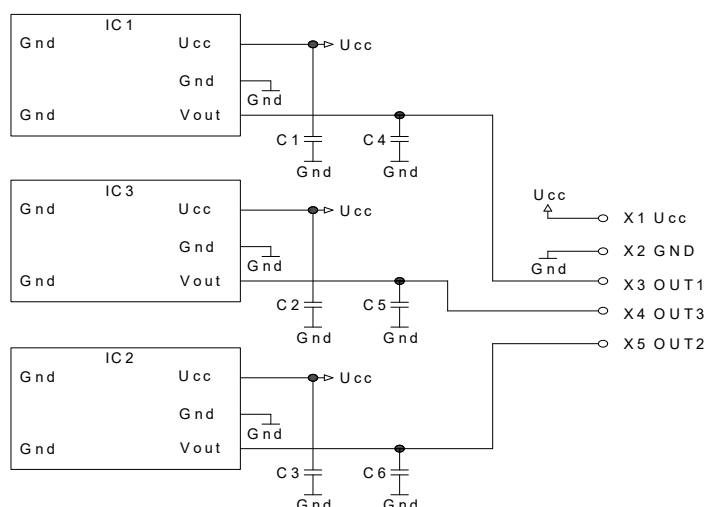
Mechanical structural characteristics

• Plastic shell	PBT+GF30
• CORE	Silicon steel sheet winding
• Connector	Su Ph Bz
• Gross weight	85g

Installation recommendations

• PIN connection	PCB insertion
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Wiring connection



Cheemi Technology Co., Ltd

● Maximum insertion force of 5 PINs	500N	● Recommended maximum torque
● Minimum retention force	125N	M5 = 3.6Nm±5%
		M4 = 2Nm±5%

Remarks:

- When the primary current I_p flows in the direction of the positive arrow, the output voltage U_{out} is greater than the offset voltage U_o (refer to the arrow marked on the drawing.)
- Incorrect wiring may cause sensor damage.
- 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.

