SINOMAGS 希磁科技

Current Sensor

Product Series:	STK-BS-A(A&A1&A2&A3&A4)
Part number:	STK-xxxBS-A&STK-xxxBS-A1 STK-xxxBS-A2&STK-xxxBS-A3 &STK-xxxBS-A4
VERSION：	V1.7

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1. Introduction

STK-BS-A(A&A1&A2&A3) series current sensor is based on Hall, and it has an open-loop design. It is suitable for DC, AC pulsed and any kind of irregular current measurement under the isolated conditions.

Typical applications

- Battery supplied applications
- Electric welder power supply
- Motor driver
- UPS

General parameter

Parameter	Symbol	Unit	Value	Comment
Working temperature	T_A	℃	-40 ~ 105	ALL
Storage temperature	T_stg	℃	-40 ~ 105	ALL
Mass	m	g	220	ALL

Absolute maximum rating

Parameter	Symbol	Unit	Value	Comment
Supply voltage（not-destructive）	V_{CC}	V	±18	ALL
ESD rating（HBM）	U_{ESD}	kV	4	ALL

Remark: the unrecoverable damage may occur when the product works on the conditions over the absolute maximum ratings. Long-time working on the absolute maximum ratings may cause the degradation on performance and reliability.

Isolation parameter

Parameter	Symbol	Unit	Value	Comment1	Comment2
RMS voltage for AC test 50Hz/1 min	Ud	kV	5		ALL
Creepage distance (pri. -sec)	dCp	mm	13.5	Shortest path along device body	STK-BS-A STK-BS-A1 STK-BS-A2 STK-BS-A3 STK-BS-A4
Clearance distance (pri. -sec)	dCl	mm	7.5	Shortest distance through air	STK-BS-A STK-BS-A1 STK-BS-A2 STK-BS-A3 STK-BS-A4
Case material			V0 according to UL 94		ALL

2. Electrical Data

Condition：T_A = 25℃，Vcc = ±12~ ± 15V[1]

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		300		STK-300BS-A STK-300BS-A1 STK-300BS-A2 STK-300BS-A3 STK-300BS-A4
				400		STK-400BS-A STK-400BS-A1 STK-400BS-A2 STK-400BS-A3 STK-400BS-A4
				600		STK-600BS-A STK-600BS-A1 STK-600BS-A2 STK-600BS-A3 STK-600BS-A4
				800		STK-800BS-A STK-800BS-A1 STK-800BS-A2 STK-800BS-A3 STK-800BS-A4
				1000		STK-1000BS-A STK-1000BS-A1 STK-1000BS-A2 STK-1000BS-A3 STK-1000BS-A4
				1600		STK-1600BS-A STK-1600BS-A1 STK-1600BS-A2 STK-1600BS-A3 STK-1600BS-A4
				2000		STK-2000BS-A STK-2000BS-A1 STK-2000BS-A2 STK-2000BS-A3 STK-2000BS-A4
Current range (refer remark)	I_{PM}	A	-900		900	STK-300BS-A STK-300BS-A1 STK-300BS-A2 STK-300BS-A3 STK-300BS-A4

			-1200		1200	STK-400BS-A STK-400BS-A1 STK-400BS-A2 STK-400BS-A3 STK-400BS-A4
			-1800		1800	STK-600BS-A STK-600BS-A1 STK-600BS-A2 STK-600BS-A3 STK-600BS-A4
			-2400		2400	STK-800BS-A STK-800BS-A1 STK-800BS-A2 STK-800BS-A3 STK-800BS-A4
			-3000		3000	STK-1000BS-A STK-1000BS-A1 STK-1000BS-A2 STK-1000BS-A3 STK-1000BS-A4
			-3000		3000	STK-1600BS-A STK-1600BS-A1 STK-1600BS-A2 STK-1600BS-A3 STK-1600BS-A4
			-3000		3000	STK-2000BS-A STK-2000BS-A1 STK-2000BS-A2 STK-2000BS-A3 STK-2000BS-A4
Supply voltage	Vcc	V	±12	±15		All
Current consumption	Icc	mA		-6;18		All
Quiescent voltage Vout @ 0 A	Voff	V	-0.04	0	0.04	All
Peak output voltage (Vout @ $\pm I_{PN}$) – Voff RL=10kΩ	V_FS	V		± 4		All
Internal output resistance	R_out	Ω		100		Vout
Theoretical gain (Typ)	G_th	mV/A		13.33		STK-300BS-A STK-300BS-A1

						STK-300BS-A2 STK-300BS-A3 STK-300BS-A4
				10		STK-400BS-A STK-400BS-A1 STK-400BS-A2 STK-400BS-A3 STK-400BS-A4
				6.67		STK-600BS-A STK-600BS-A1 STK-600BS-A2 STK-600BS-A3 STK-600BS-A4
				5		STK-800BS-A STK-800BS-A1 STK-800BS-A2 STK-800BS-A3 STK-800BS-A4
				4		STK-1000BS-A STK-1000BS-A1 STK-1000BS-A2 STK-1000BS-A3 STK-1000BS-A4
				2.5		STK-1600BS-A STK-1600BS-A1 STK-1600BS-A2 STK-1600BS-A3 STK-1600BS-A4
				2		STK-2000BS-A STK-2000BS-A1 STK-2000BS-A2 STK-2000BS-A3 STK-2000BS-A4
Rated linearity error	Non-L	% I_{PN}	-1		1	$\pm I_{PN}$
Step response time	t_res	μs		3	5	@90% of I_{PN}
Frequency bandwidth (-3dB)	BW	kHz	25			No RC circuit
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 30		All

Accuracy @ 25℃	X	% of I_{PN}	-1		1	All
Temperature coefficient of V_{OE}	TCV_{OE}	mV/K	-1		1	@ Working Temperature
Temperature coefficient of V_{OUT}	TCV_{OUT}	%/K	-0.1		0.1	@ Working Temperature

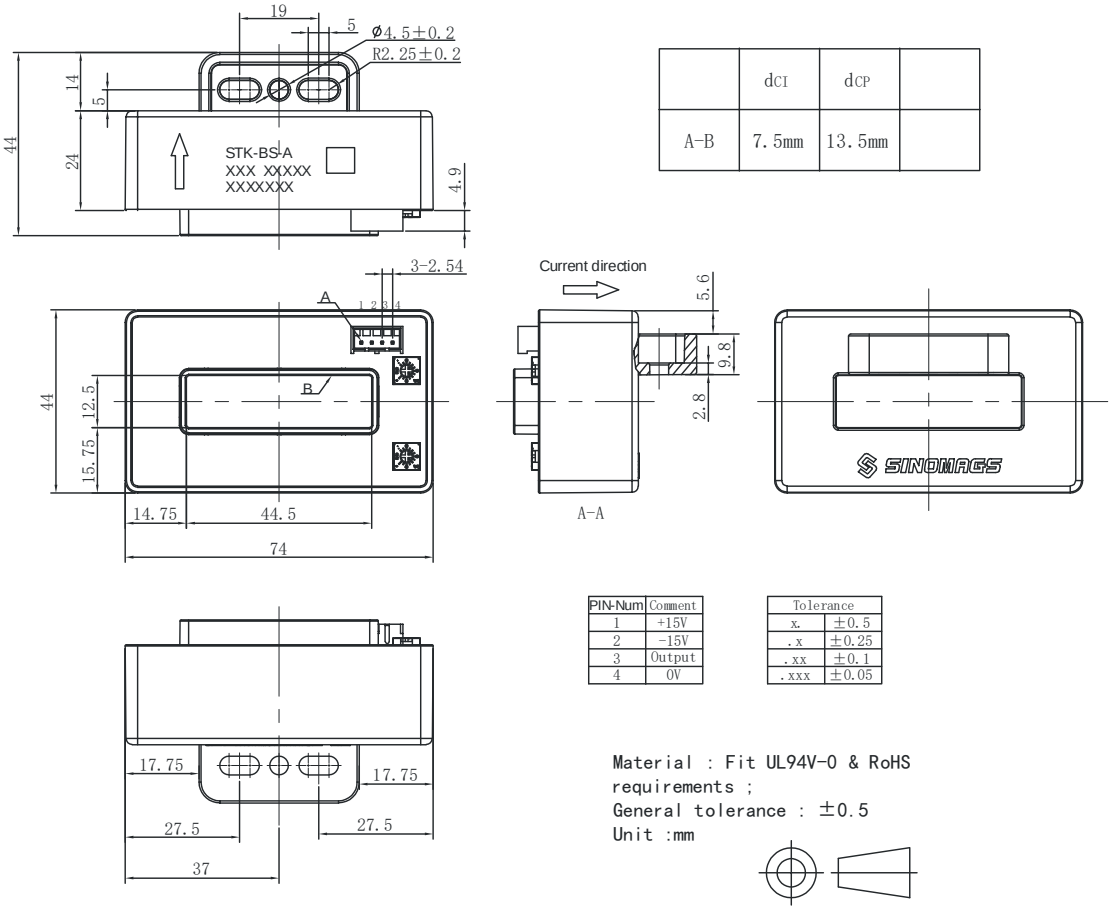
Notes:[1]
Operating at ±12 V ≤ Vcc< ±15(±5%)V will reduce the measuring range.
If the power supply voltage of the user side is ±12V. It is recommended to control the test current range within 2.5 times the rated range.

Vout=G_th*I，I=Vout/G_th;

Now I is primary side current to be measured. And Vout is Output Voltage.

3. Dimension & Pin Definitions

Ⅰ STK-BS-A molex 35312-0460 connector



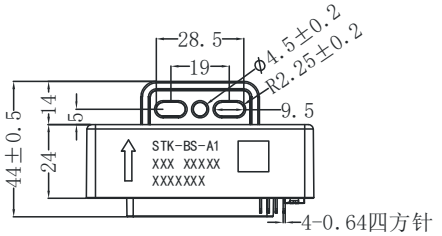
	dCI	dCP	
A-B	7.5mm	13.5mm	

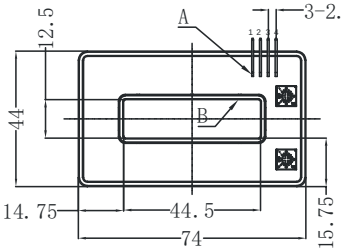
PIN-Num	Comment
1	+15V
2	-15V
3	Output
4	0V

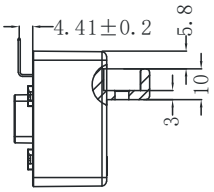
Tolerance	
x.	±0.5
.x	±0.25
.xx	±0.1
.xxx	±0.05

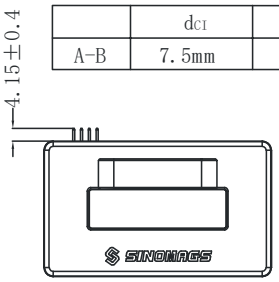
Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

Ⅱ STK-BS-A1 Custom (non-standard) connector

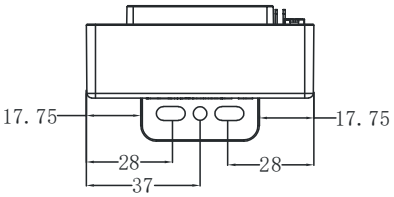








	dCI	dCP
A-B	7.5mm	13.5mm

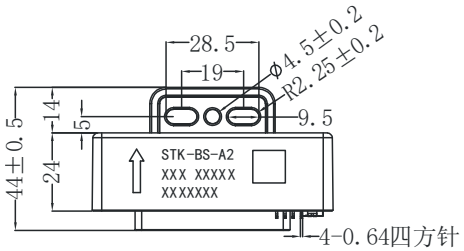


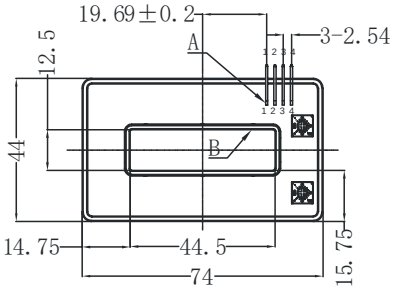
PIN-Num	Comment
1	+15V
2	-15V
3	Output
4	0V

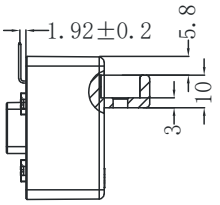
Tolerance	
X.	±0.5
.X	±0.25
.XX	±0.1
.XXX	±0.05

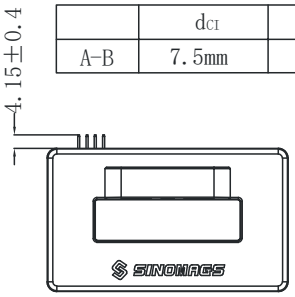
Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

Ⅲ STK-BS-A2 Custom (non-standard) connector

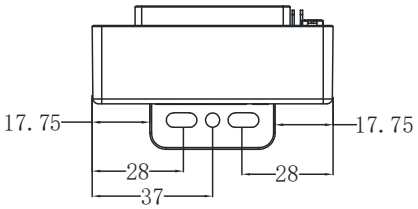








	dCI	dCP
A-B	7.5mm	13.5mm

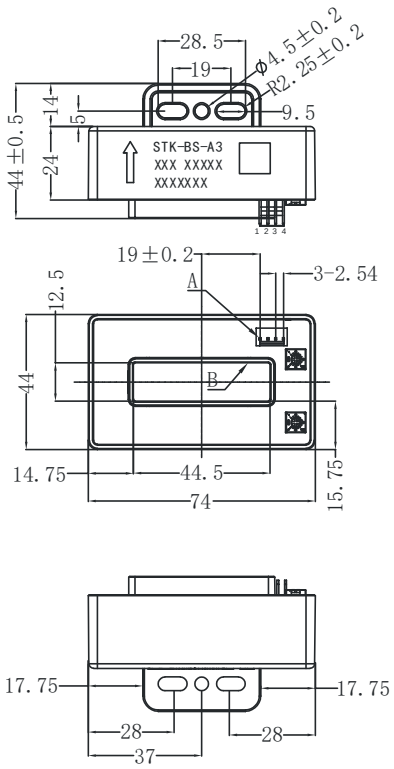


PIN-Num	Comment
1	+15V
2	-15V
3	Output
4	0V

Tolerance	
X.	±0.5
.X	±0.25
.XX	±0.1
.XXX	±0.05

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

Ⅳ STK-BS-A3 2543WV-4P connector



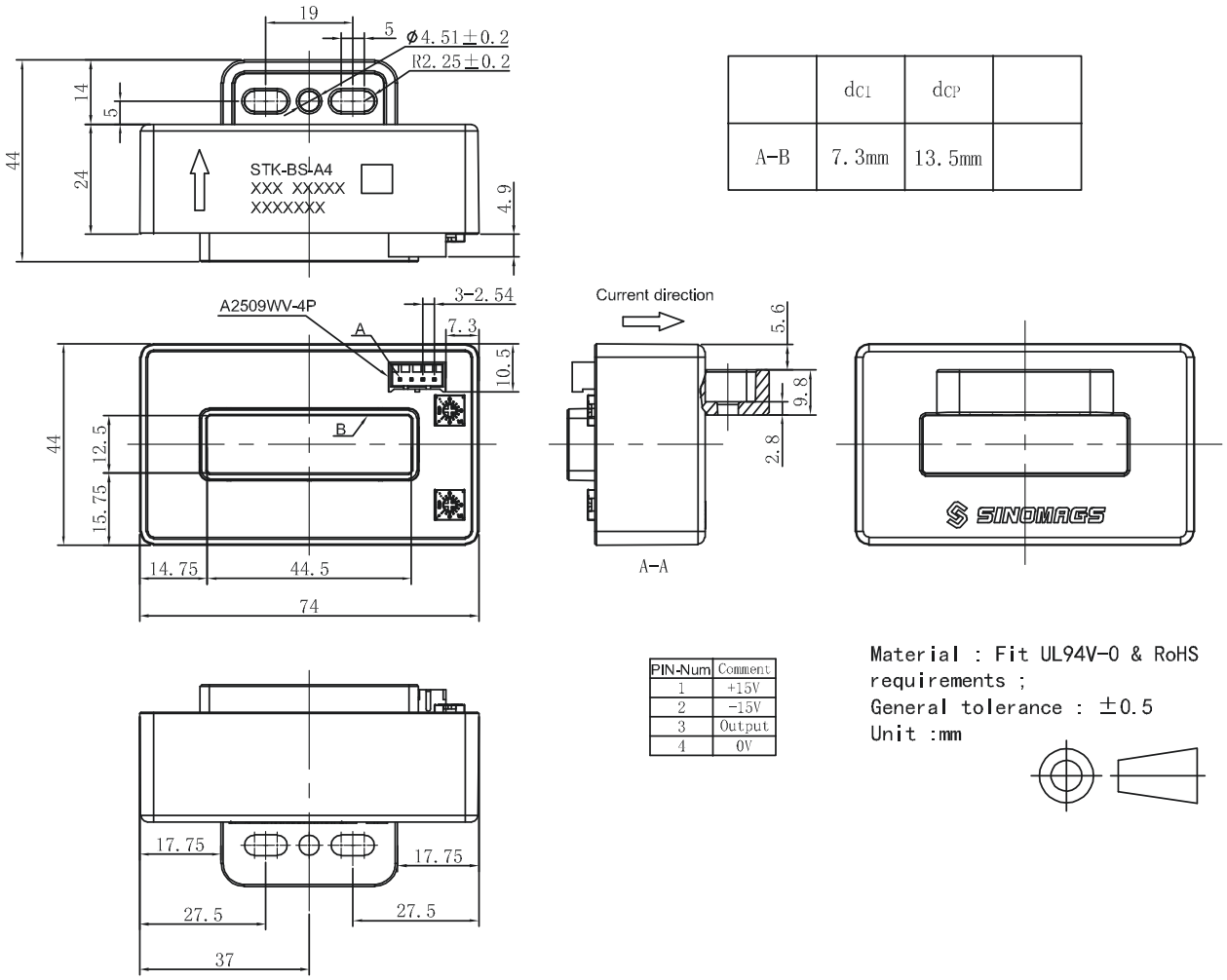
	dCI	dCP
A-B	7.5mm	13.5mm

PIN-Num	Comment
1	+15V
2	-15V
3	Output
4	0V

Tolerance	
X.	±0.5
.X	±0.25
.XX	±0.1
.XXX	±0.05

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

V STK-BS-A4 A2509WV-4P connector



	dc1	dcp	
A-B	7.3mm	13.5mm	

PIN-Num	Comment
1	+15V
2	-15V
3	Output
4	0V

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm