

Current Sensor

Product Series: STK-BS/X7

Part number: STK-1200BS/X7 & STK-1500BS/X7 &
STK-2000BS/X7 & STK-2500BS/X7 &
STK-3000BS/X7

VERSION: Ver 1.2



CONTENT

1.	Introduction	2
2.	Electrical Data	3
3.	Dimension & Pin Definitions	4

1. Introduction

STK-BS/X7 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
- Motor driver
- Electric welder power supply
- UPS

General parameter

Parameter	Symbol	Unit	Value
Working temperature ^[1]	T_A	°C	-40 ~ 105
Storage temperature ^[2]	T_stg	°C	-40 ~ 105
Mass	m	g	620

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage (not-destructive)	V _{CC}	V	± 18
ESD rating (HBM)	U _{ESD}	kV	4

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	Comment
RMS voltage for AC test 50Hz/1 min	U _d	kV	5	
Clearance distance (pri. -sec)	d _{Cl}	mm	14mm(min)	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	mm	14mm(min)	Shortest path along device body
Case material			V0 according to UL 94	

2. Electrical Data

Condition: $T_A = 25^\circ\text{C}$, $V_{CC} = \pm 12 \sim \pm 15\text{V}$

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		1200		STK-1200BS/X7
				1500		STK-1500BS/X7
				2000		STK-2000BS/X7
				2500		STK-2500BS/X7
				3000		STK-3000BS/X7
Current range (refer remark)	I_{PM}	A	-3600		3600	STK-1200BS/X7
			-4500		4500	STK-1500BS/X7
			-5500		5500	STK-2000BS/X7
			-5500		5500	STK-2500BS/X7
			-5500		5500	STK-3000BS/X7
Supply voltage	V_{CC}	V	$\pm 12 \pm 5\%$	$\pm 15 \pm 5\%$		STK-1200BS/X7 STK-1500BS/X7 STK-2000BS/X7 STK-2500BS/X7 STK-3000BS/X7
Hysteresis error	V_{OH}	mV	-15		15	@0A → I_{PN} → 0A
Current consumption	I_{CC}	mA		25	30	All
Quiescent voltage $V_{out} @ 0\text{A}$	V_{OFF}	V	-0.04	0	0.04	STK-1200BS/X7 STK-1500BS/X7 STK-2000BS/X7 STK-2500BS/X7
Peak output voltage ($V_{out} @ \pm I_{PN}$) - V_{OFF} ; $R_L = 10\text{k}\Omega$	V_{FS}	V	3.96	4	4.04	STK-1200BS/X7 STK-1500BS/X7 STK-2000BS/X7 STK-2500BS/X7 STK-3000BS/X7
Internal output resistance	R_{out}	Ω		100		V_{out}
Theoretical gain (Typ)	G_{th}	mV/A		3.33		STK-1200BS/X7
				2.66		STK-1500BS/X7
				2		STK-2000BS/X7
				1.6		STK-2500BS/X7
				1.33		STK-3000BS/X7
Rated linearity error	Non-L	% I_{PN}	-1		1	$\pm I_{PN}$
Step response time	t_{res}	μs		5		@90% of I_{PN}
Frequency bandwidth (-3dB)	BW	kHz	25			No RC circuit



STK-BS/X7 series current sensor

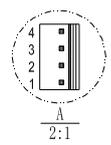
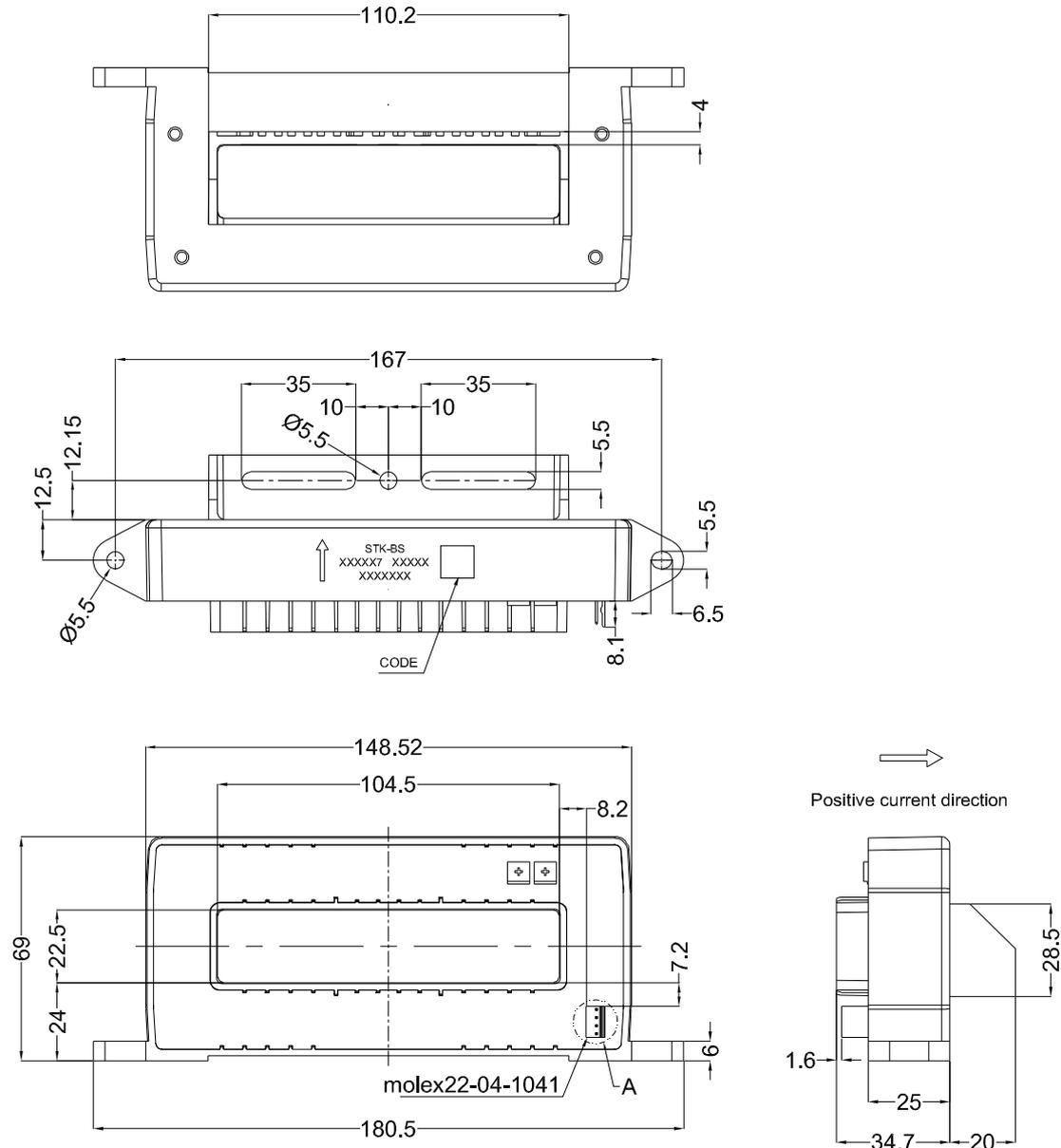
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 30		STK-1200BS/X7 STK-1500BS/X7 STK-2000BS/X7 STK-2500BS/X7 STK-3000BS/X7
Accuracy @ 25°C	X	% of I _{PN}	-1		1	All
Temperature coefficient of V _{OE}	TCV _{OE}	mV/K	-1		1	@ Working temperature
Temperature coefficient of V _{OUT}	TCV _{OUT}	%/K	-0.1		0.1	@Working temperature

Notes: ^[1] Using the B4B-XH-A-G connector as the electrical interface, the operating temperature is -25°C ~ 85°C.

Notes: ^[2] Using the B4B-XH-A-G connector as the electrical interface, the storage temperature is -25°C ~ 85°C.

3. Dimension & Pin Definitions

(1) Molex 22041041 connector

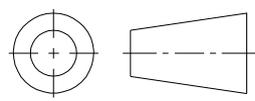


Terminals

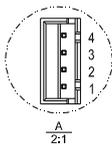
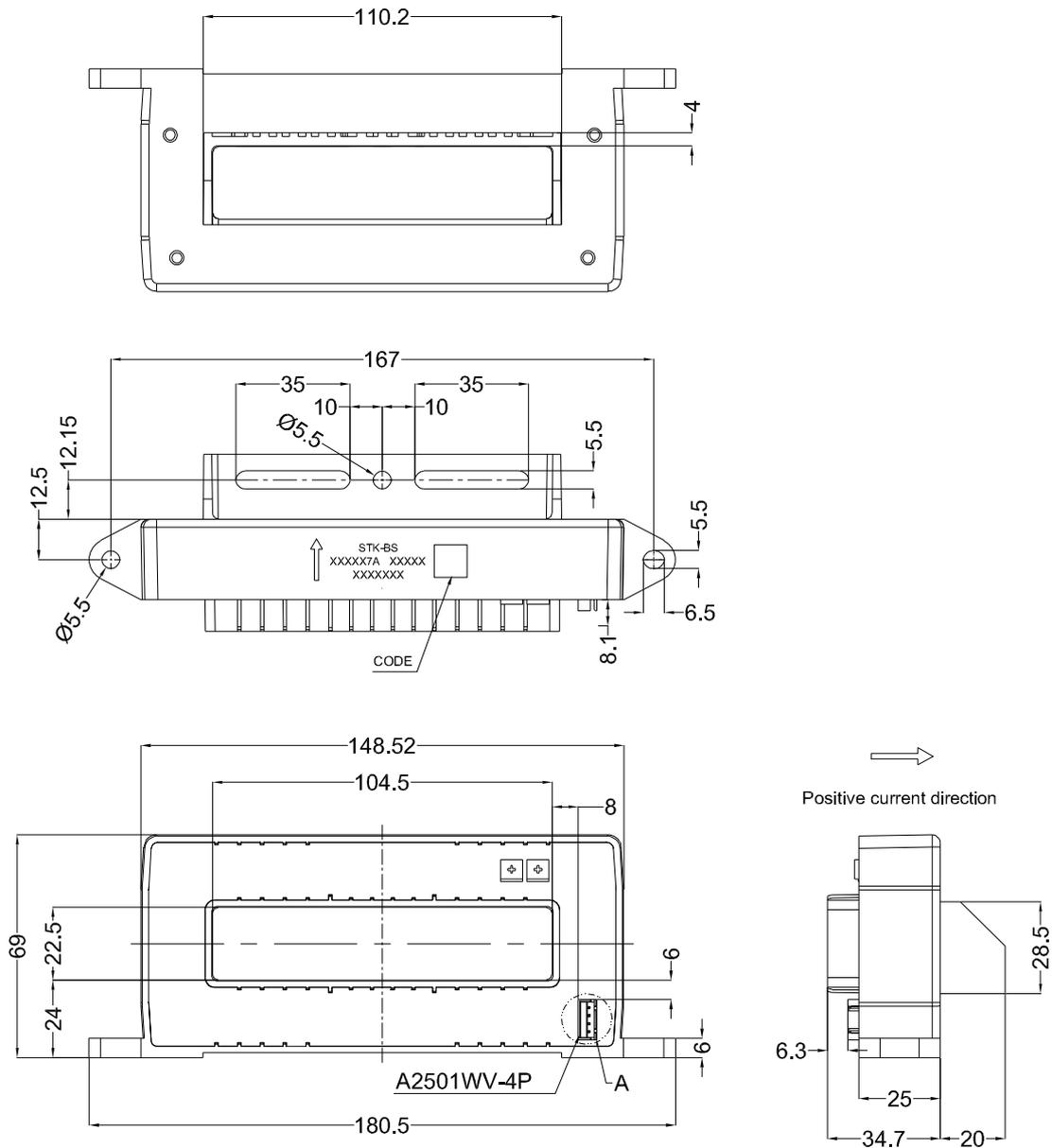
1	+Vcc(+15V)
2	-Vcc(-15V)
3	Vout
4	GND

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ± 1.0

Unit :mm



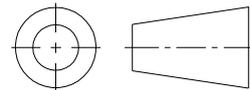
(2) A2501WV-4P connector



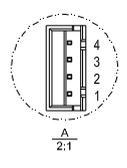
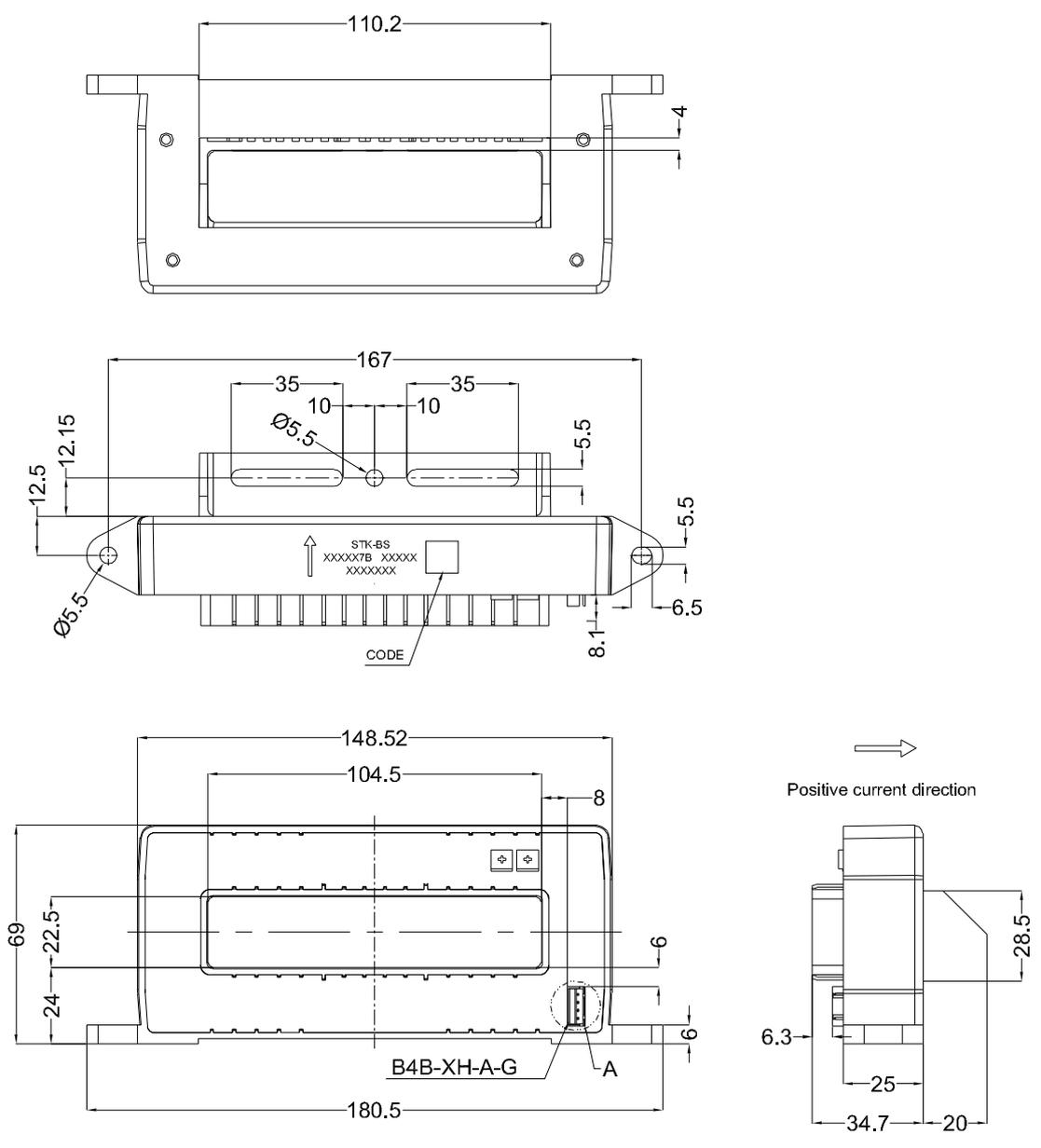
Terminals

1	+Vcc(+15V)
2	-Vcc(-15V)
3	Vout
4	GND

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ± 1.0
Unit :mm



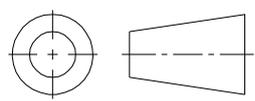
(3) B4B-XH-A-G connector



Terminals

1	+Vcc(+15V)
2	-Vcc(-15V)
3	Vout
4	GND

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ± 1.0
Unit : mm



(4) A2543WV-4P connector

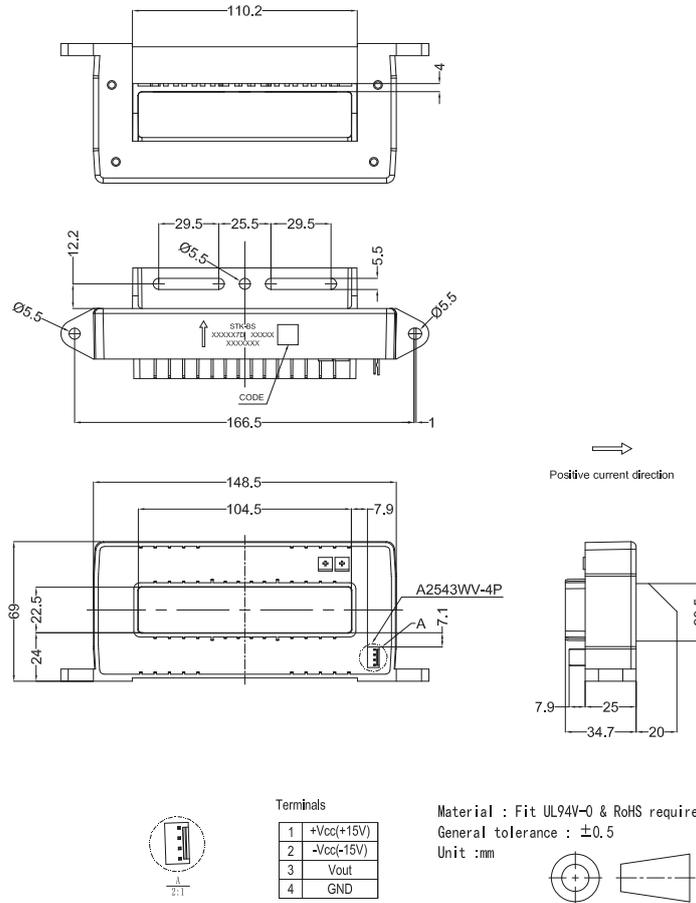


Table-01						
Type of mark	Electrical interfaces	brand	Pin spacing	dCl	dCp	Working temperature
STK-BS/X7	22041041	MOLEX	2.50mm	15mm	25mm	-40~105 °C
STK-BS/X7A	A2501WV-4P	CHANGJIANG	2.50mm	15.8mm	34mm	-40~105 °C
STK-BS/X7B	B4B-XH-A-G	JST	2.50mm	15.8mm	34mm	-25~85 °C
STK-BS/X7D	A2543WV-4P	CHANGJIANG	2.54mm	15mm	25mm	-40~105 °C

4. Recommended circuit

