

Current Sensor

Product Series: STK-BS/X4

Part number: STK-500BS/X4 & STK-600BS/X4 &
STK-850BS/X4 & STK-1000BS/X4 &
STK-1500BS/X4 & STK-2000BS/X4 &
STK-2500BS/X4

VERSION: Ver 1.2



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1. Introduction

STK-BS/X 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	T _A	°C	-40 ~ 85
Storage temperature	T _{stg}	°C	-40 ~ 85
Mass	m	g	450

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	26.1	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	mm	42.8	Shortest path along device body
Case material			V0 according to UL 94	

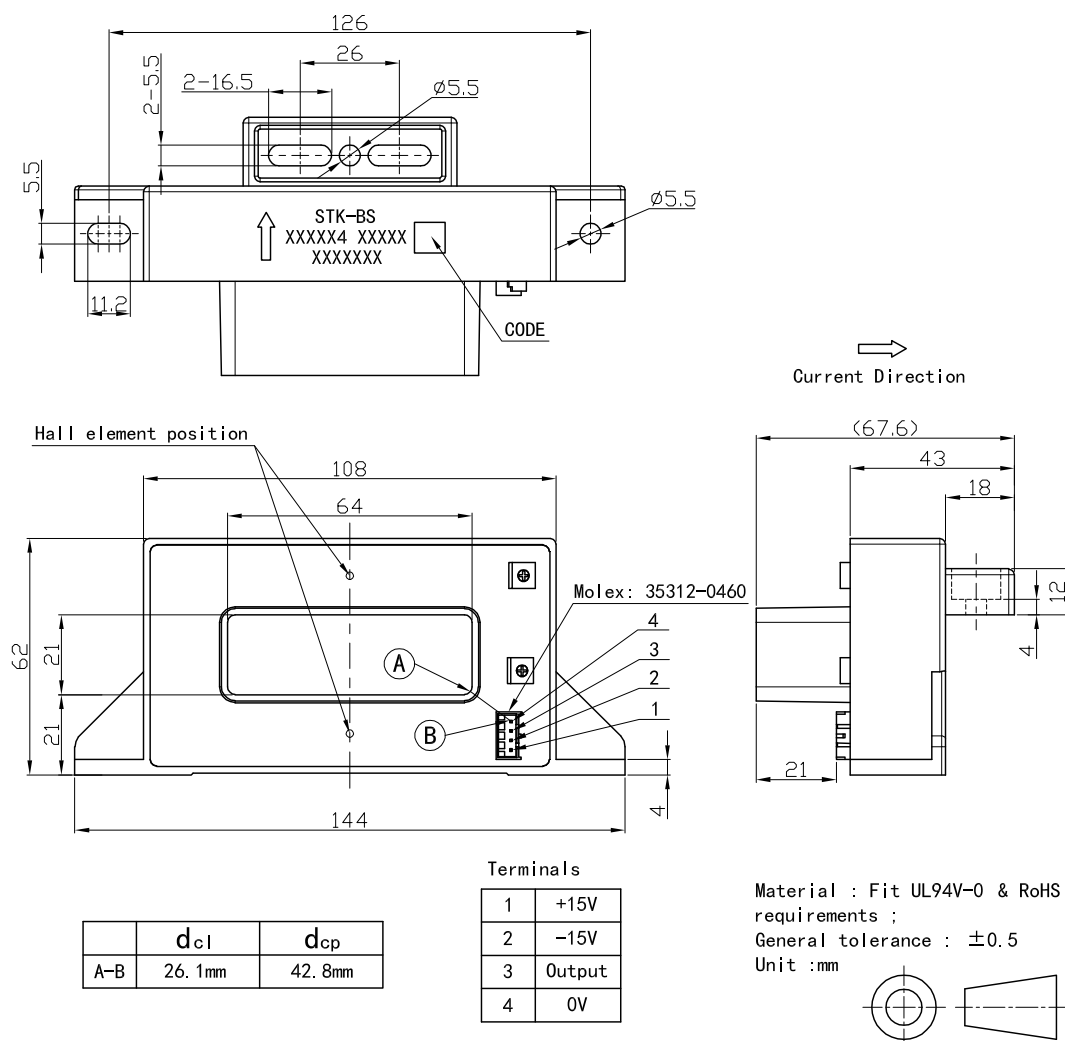
2. Electrical Data

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		500		STK-500BS/X4
				600		STK-600BS/X4
				850		STK-850BS/X4
				1000		STK-1000BS/X4
				1500		STK-1500BS/X4
				2000		STK-2000BS/X4
				2500		STK-2500BS/X4
Current range (refer remark)	I_{PM}	A	-1500		1500	STK-500BS/X4
			-1800		1800	STK-600BS/X4
			-2550		2550	STK-850BS/X4
			-3000		3000	STK-1000BS/X4
			-4500		4500	STK-1500BS/X4
			-5500		5500	STK-2000BS/X4
			-5500		5500	STK-2500BS/X4
Supply voltage	V_{CC}	V		$\pm 12 \sim \pm 15$		STK-500BS/X4 STK-600BS/X4 STK-850BS/X4 STK-1000BS/X4 STK-1500BS/X4 STK-2000BS/X4 STK-2500BS/X4
Current consumption	I_{CC}	mA		± 20		All
Quiescent voltage $V_{out} @ 0\text{A}$	V_{off}	V	-0.04	0	0.04	STK-500BS/X4 STK-600BS/X4 STK-850BS/X4 STK-1000BS/X4 STK-1500BS/X4 STK-2000BS/X4 STK-2500BS/X4
Peak output voltage ($V_{out} @ \pm I_{PN}$) – V_{off}	V_{FS}	V		± 4		STK-500BS/X4 STK-600BS/X4 STK-850BS/X4 STK-1000BS/X4 STK-1500BS/X4 STK-2000BS/X4 STK-2500BS/X4
Internal output	R_{out}	Ω		100		V_{out}

resistance						
Theoretical gain (Typ)	G _{th}	mV/A		8		STK-500BS/X4
				6.66		STK-600BS/X4
				4.7		STK-850BS/X4
				4		STK-1000BS/X4
				2.66		STK-1500BS/X4
				2		STK-2000BS/X4
				1.6		STK-2500BS/X4
Rated linearity error	Non-L	% I _{PN}		± 1		± I _{PN}
Step response time	t _{res}	μs		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		STK-500BS/X4 STK-600BS/X4 STK-850BS/X4 STK-1000BS/X4 STK-1500BS/X4 STK-2000BS/X4 STK-2500BS/X4
Accuracy @ 25°C	X	% of I _{PN}		± 1		All
Temperature coefficient of V _{OE}	TCV _{OE}	mV/K		± 1		@ -40°C ~ 85°C
Temperature coefficient of V _{OUT}	TCV _{OUT}	%/K		± 0.05	± 0.1	@ -40°C ~ 85°C

3. Dimension & Pin Definitions



Mechanical characteristics:

- General tolerance ± 0.5 mm
- Transducer fastening
 - 1 hole $\phi 4.5$ mm
 - 1 M4 steel screw
 - Recommended fastening torque 0.7 N·m ($\pm 10\%$)
- Connection of secondary 353120460