

## Current Sensor

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Product Series: STK-BS/H

Part number: STK-50BS/H & STK-50BS/H1 &  
STK-100BS/H & STK-100BS/H1 &  
STK-150BS/H & STK-200BS/H &  
STK-300BS/H & STK-400BS/H &

VERSION: Ver 2.5



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## 1. Introduction

STK-BS/H 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

- AC Variable speed drives
- Motor driver
- Electric welder power supply
- UPS

### General parameter

Parameter	Symbol	Unit	Value
Working temperature	T <sub>A</sub>	°C	-40 ~ 80
Storage temperature	T <sub>stg</sub>	°C	-40 ~ 85
Mass	m	g	30

### Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage (not-destructive)	V <sub>CC</sub>	V	± 18
ESD rating (HBM)	U <sub>ESD</sub>	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 <sub>d</sub>	kV	2.5	
Clearance distance (pri. -sec)	d <sub>Cl</sub>	mm	4.5	Shortest distance through air
Creepage distance (pri. -sec)	d <sub>Cp</sub>	mm	4.5	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		50		STK-50BS/H STK-50BS/H1
				100		STK-100BS/H STK-100BS/H1
				150		STK-150BS/H
				200		STK-200BS/H
				300		STK-300BS/H
				400		STK-400BS/H
Current range (refer remark)	$I_{PM}$	A	-150		150	STK-50BS/H STK-50BS/H1
			-300		300	STK-100BS/H STK-100BS/H1
			-450		450	STK-150BS/H
			-500		500	STK-200BS/H
			-600		600	STK-300BS/H
			-600		600	STK-400BS/H
Supply voltage	$V_{CC}$	V	-11.4		15.75	All
Current consumption	$I_{CC}$	mA		$\pm 15$		All
Electrical offset voltage (@ 25 °C)	$V_{OE}$	V	-0.03	0	0.03	All
Hysteresis offset voltage @ $I_P = 0$ , after $1 \times I_{PN}$	$V_{OH}$	V	-0.01	0	0.01	All
Peak output voltage ( $V_{out}$ @ $\pm I_{PN}$ ) – $V_{off}$	$V_{FS}$	V		$\pm 4$		All
Internal output resistance	$R_{out}$	$\Omega$		100		$V_{out}$
Theoretical gain (Typ)	$G_{th}$	mV/A		80		STK-50BS/H STK-50BS/H1
				40		STK-100BS/H STK-100BS/H1
				26.6		STK-150BS/H
				20		STK-200BS/H
				13.3		STK-300BS/H
				10		STK-400BS/H
Rated linearity error	Non-L	% $I_{PN}$	-1		1	$\pm I_{PN}$
Step response time ( $di/dt=50\text{A}/\mu\text{s}$ )	$t_{res}$	$\mu\text{s}$		3	5	@90% of $I_{PN}$
Frequency bandwidth(-3dB)	BW(DC)	KHz			50	

Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp	20 30		All
Accuracy @ 25°C	X	% of I <sub>PM</sub>	±1		All
Accuracy @ -40°C ~85°C	X_TRange	% of I <sub>PM</sub>	±3	±5	All

### 3. Temperature characteristic

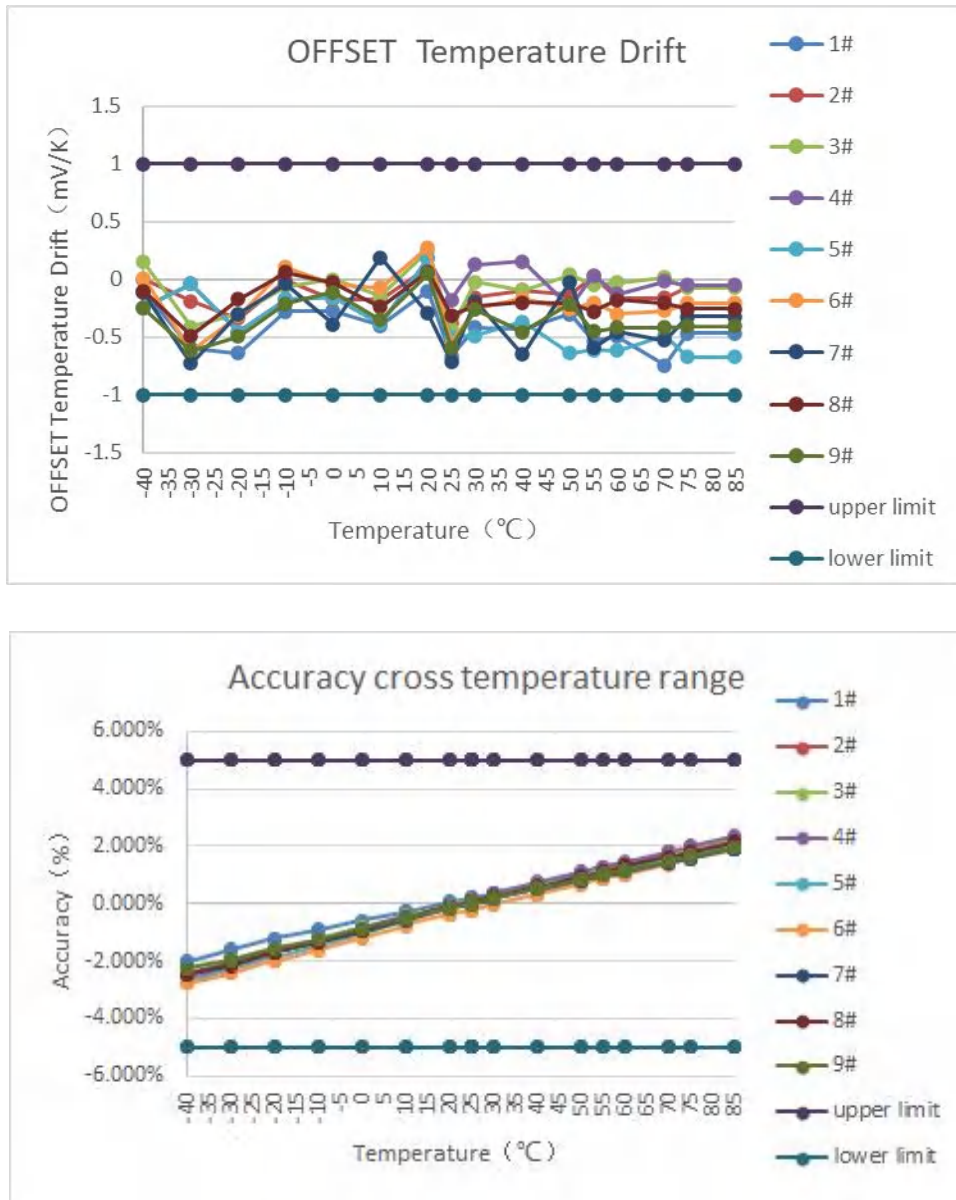
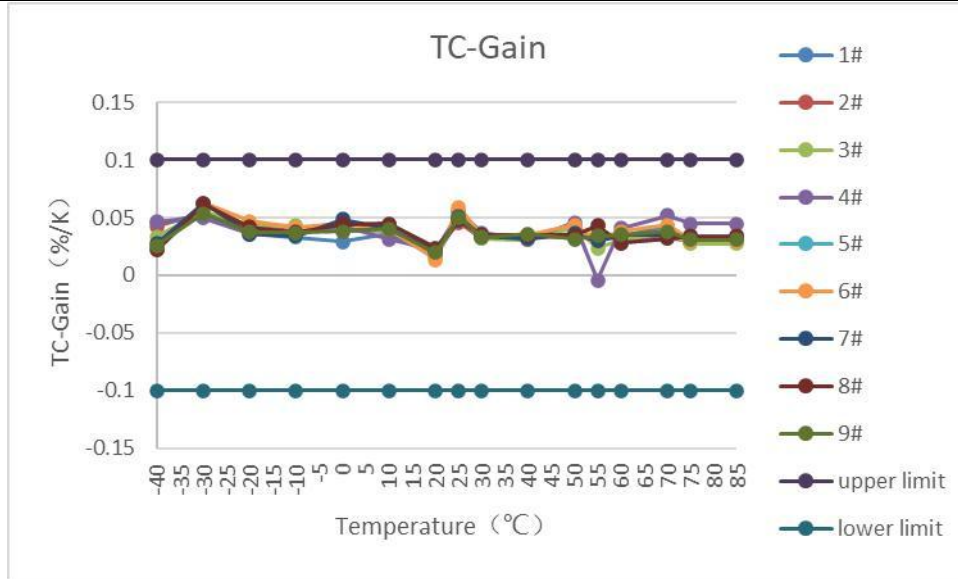


Fig.1:  $X = (V_{out} @ T_x @ 25^\circ\text{C} - G_{th} * I_{n-b}) / V_{FS}$ .



#### 4. Frequency bang width

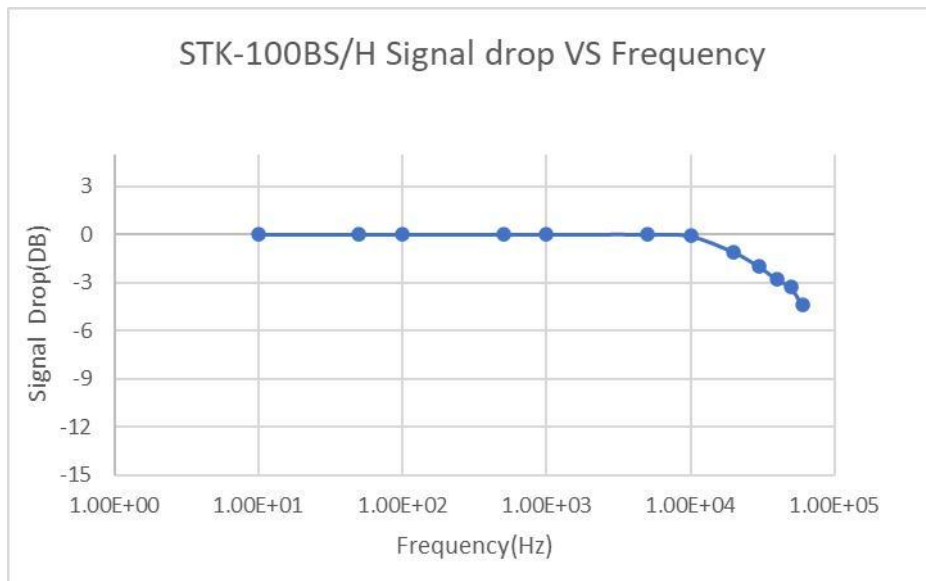
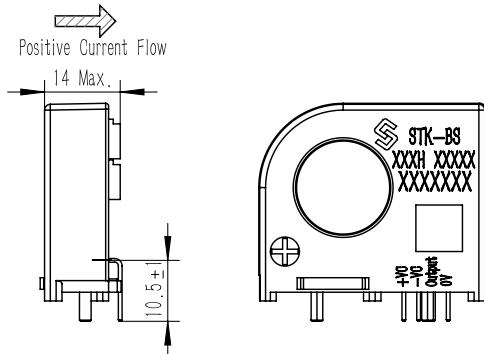
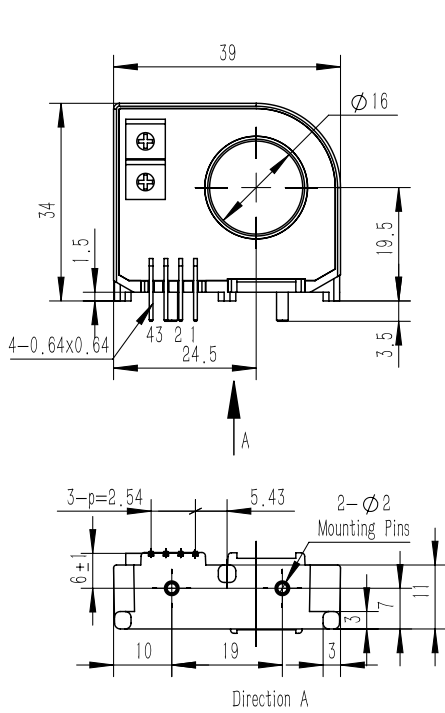


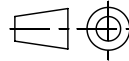
Fig.2: The frequency bang width of STK-BS/H&H1 series current sensors.

### 5. Dimensions of STK- BS/H



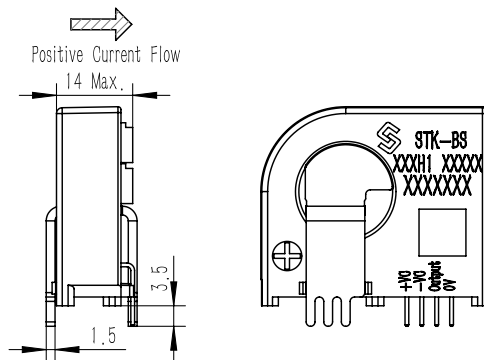
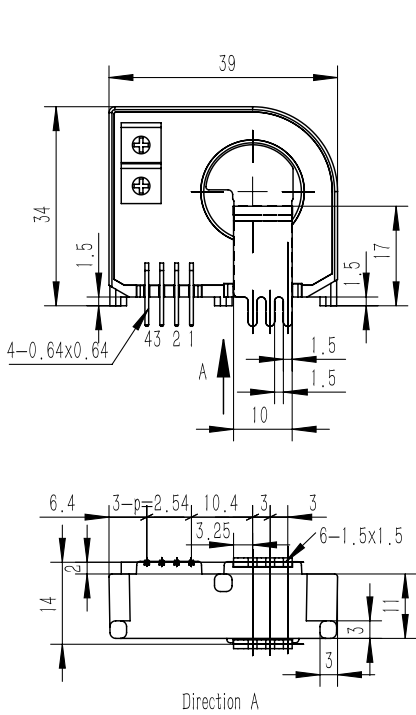
Secondary Pin Identification

1	+VC
2	-VC
3	Output
4	0V



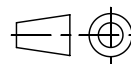
1. Material: Fit UL94-V0 & RoHS requirements,
2. General tolerance:  $\pm 0.5$ ,
3. Unit: mm

### 6. Dimensions of STK- BS/H1



Secondary Pin Identification

1	+VC
2	-VC
3	Output
4	0V



1. Material: Fit UL94-V0 & RoHS requirements,
2. General tolerance:  $\pm 0.5$ ,
3. Unit: mm