

Current Sensor

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 _A	°C	-40 ~ 80
Storage temperature	T _{stg}	°C	-40 ~ 85
Mass	m	g	30

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	2.5	
Clearance distance (pri. -sec)	d _{Cl}	mm	4.5	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	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		± 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		± 4		All
Internal output resistance	R_{out}	Ω		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}	μs		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 _{PM}		±1		All
Accuracy @ -40°C ~85°C	X_TRange	% of I _{PM}		±3	±5	All

3. Temperature characteristic

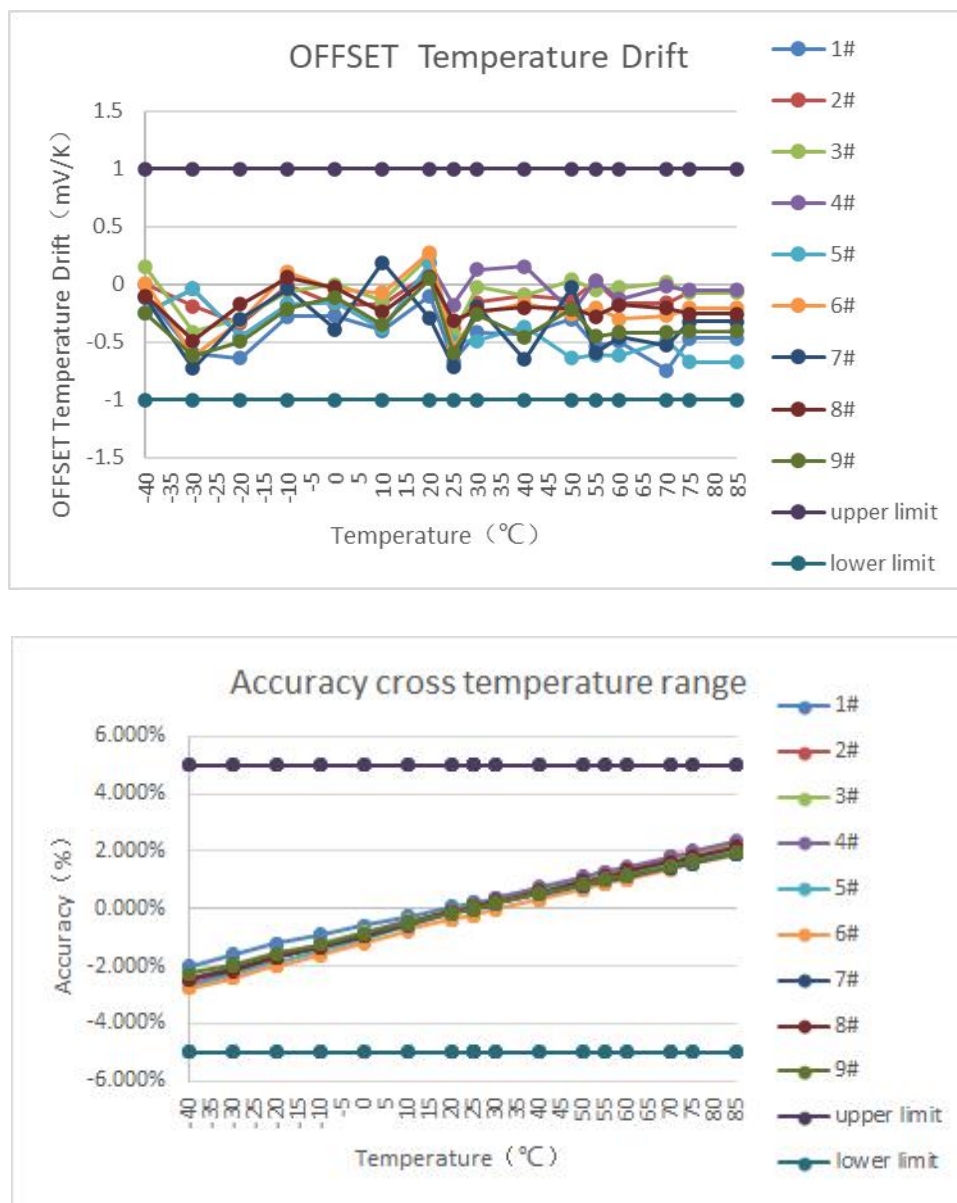
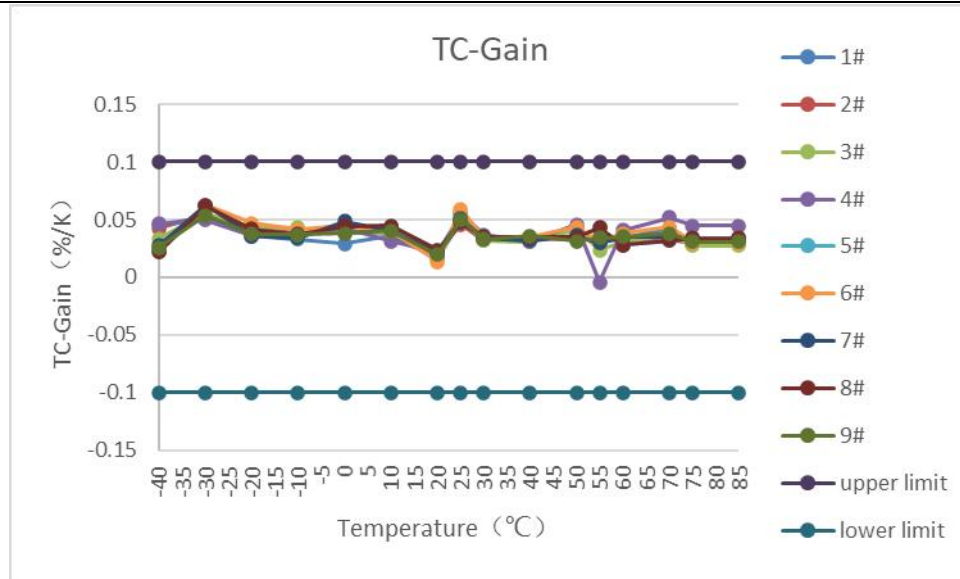


Fig.1: $X = (V_{out} @ T_x @ 25^{\circ}\text{C} - G_{th} * I_{n-b}) / V_{FS}$.



4. Frequency bang width

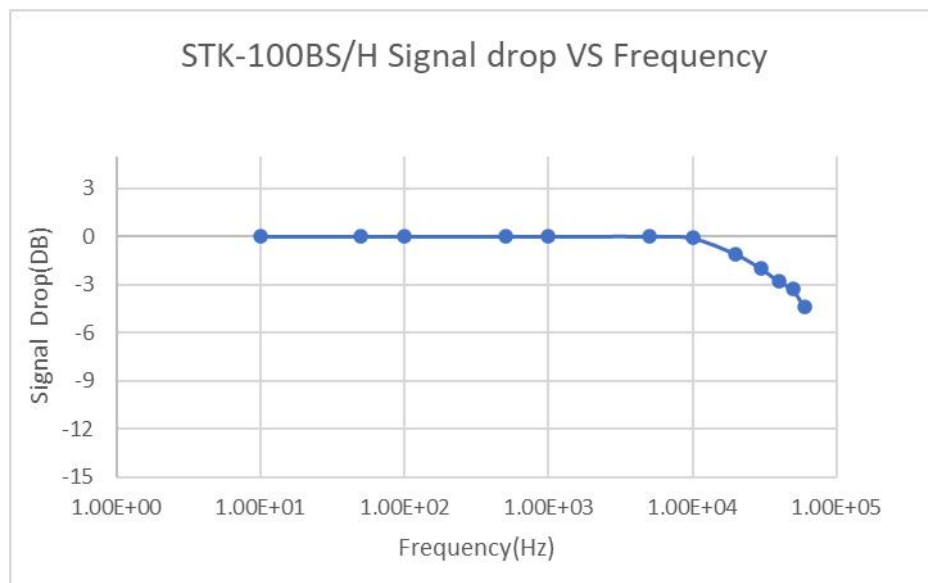
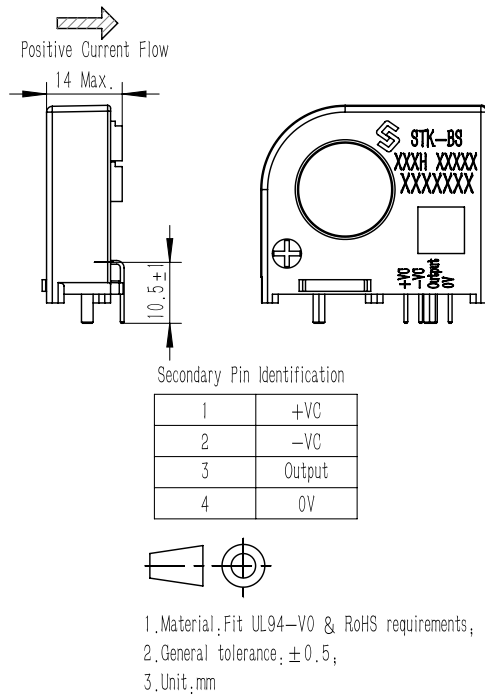
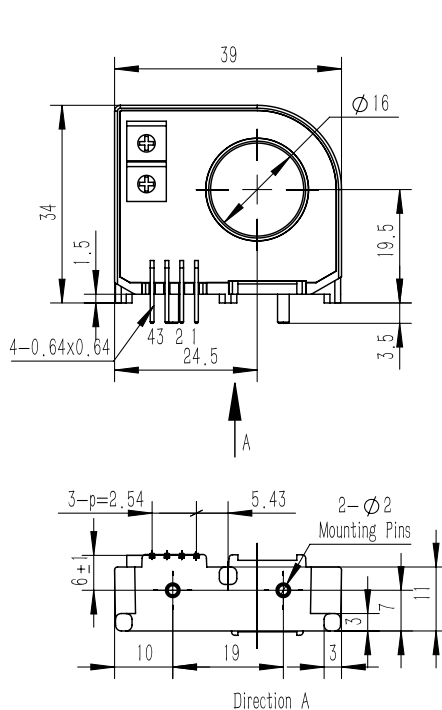


Fig.2: The frequency bang width of STK-BS/H&H1 series current sensors.

5. Dimensions of STK- BS/H



6. Dimensions of STK- BS/H1

