

Current Sensor

Product Series: STK-BS/Y

Part number: STK-100BS/Y & STK-200BS/Y &
STK-400BS/Y & STK-500BS/Y &
STK-560BS/Y

Version: Ver 1.4



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1. Description

The STK-BS/Y series current sensor is based on Hall and 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
- Electric welder power supply
- Inverter
- Switched model power supplies (SMPS)

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	°C	-40 ~ 105
Storage temperature	T_stg	°C	-40 ~ 105
Mass	m	g	100

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	V _{cc}	V	6
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	5.4	
Impulse withstand voltage 1.2/50 us	U _w	kV	9.6	
Clearance distance (pri. -sec)	d _{Cl}	mm	>10.5	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	mm	>10.5	Shortest path along device body
Case material			V0 according to UL 94	

Selection Guide

Product	Nominal current	Measuring range
STK-100BS/Y	100 A	250 A
STK-200BS/Y	200 A	500 A
STK-400BS/Y	400 A	1000 A
STK-500BS/Y	500 A	1250 A
STK-560BS/Y	560 A	1400 A

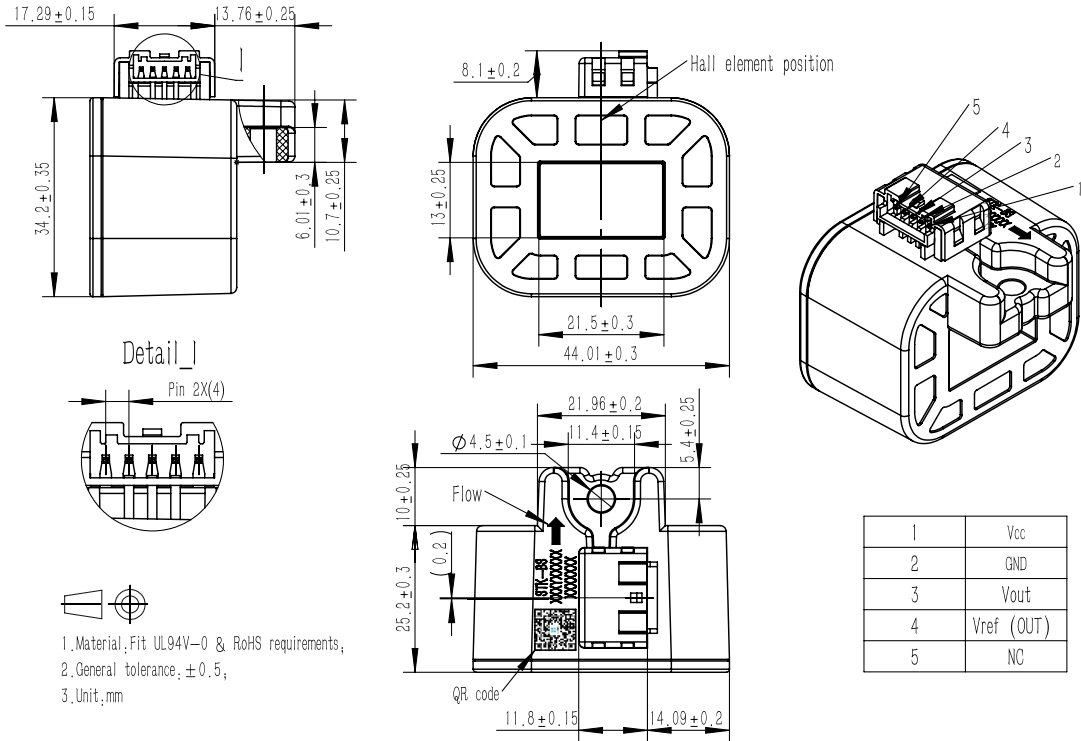
2. Electrical data

 Condition: $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		100		STK-100BS/Y
				200		STK-200BS/Y
				400		STK-400BS/Y
				500		STK-500BS/Y
				560		STK-560BS/Y
Primary current measuring range	I_{PM}	A	-250		250	STK-100BS/Y
			-500		500	STK-200BS/Y
			-1000		1000	STK-400BS/Y
			-1250		1250	STK-500BS/Y
			-1400		1400	STK-560BS/Y
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		10		
Rated output voltage	V_{FS}	V		± 2		$(V_{out} @ \pm I_{PM}) - V_{off}$
Quiescent voltage	V_{off}	V	2.48	2.5	2.52	$V_{out} @ 0\text{A}$
Reference voltage	V_{ref}	V	2.48	2.5	2.52	Output function
Electrical offset voltage	V_{oe}	mV		± 5		$T_A @ 25^\circ\text{C}$
Electrical offset current referred to primary	I_{oe}	A	-0.625		0.625	STK-100BS/Y
			-1.25		1.25	STK-200BS/Y
			-2.5		2.5	STK-400BS/Y
			-3.125		3.125	STK-500BS/Y
			-3.5		3.5	STK-560BS/Y
Theoretical gain	G_{th}	mV/A		8		STK-100BS/Y
				4		STK-200BS/Y
				2		STK-400BS/Y
				1.6		STK-500BS/Y
				1.429		STK-560BS/Y
Rated linearity error	Non-L	% I_{PN}		± 1		$\pm I_{PN}$
Delay time @ 10 % of I_{PN}	t_{D10}	μs		3	3.5	@ 100 A/ μs
Delay time @ 90 % of I_{PN}	t_{D90}	μs		3	3.5	@ 100 A/ μs
Frequency bandwidth (-3dB)	BW	kHz		180		No RC circuit

Output voltage noise	Vnoise	mVpp				
DC ~ 10 kHz				4.6		
DC ~ 100 kHz				8.6		
DC ~ 1 MHz				14.4		
Accuracy @ 25°C	X	% of I _{PN}		± 1.5		@ 25°C
Accuracy @ -40°C~85°C	X_TRange	% of I _{PN}	-3.3		3.3	
Accuracy @ 85°C~105°C	X_TRange	% of I _{PN}	-4		4	

3. Dimension & Pin definitions



Remarks:

- Connection system equivalent to JST B05B-PASK
- Transducer fastening
 - 1 hole $\varnothing 4.5$ mm
 - 1 nonmagnetic screw M4
 - Recommended fastening torque 3.5 N·m