

Current Sensor

Product Series: STK-BS/S1

Part number: STK-50BS/S1 & STK-100BS/S1 &
STK-200BS/S1 & STK-300BS/S1 &
STK-400BS/S1 & STK-500BS/S1 &
STK-600BS/S1

Version: Ver 2.9



CONTENT

1.	Description	2
2.	Electrical data	3
3.	Dimension & Pin definitions.....	4

1. Description

The STK-BS/S1 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	57 ± 5

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	3.3	
Impulse withstand voltage 1.2/50 us	U _d	kV	6	
Clearance distance (pri. -sec)	d _{Cl}	mm	>5.5	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	mm	>5.5	Shortest path along device body
Case material			V0 according to UL 94	

Selection Guide

Product	Nominal current	Measuring range
STK-50BS/S1	50 A	150 A
STK-100BS/S1	100 A	300 A
STK-200BS/S1	200 A	600 A
STK-300BS/S1	300 A	900 A
STK-400BS/S1	400 A	1100 A
STK-500BS/S1	500 A	1100 A
STK-600BS/S1	600 A	1100 A

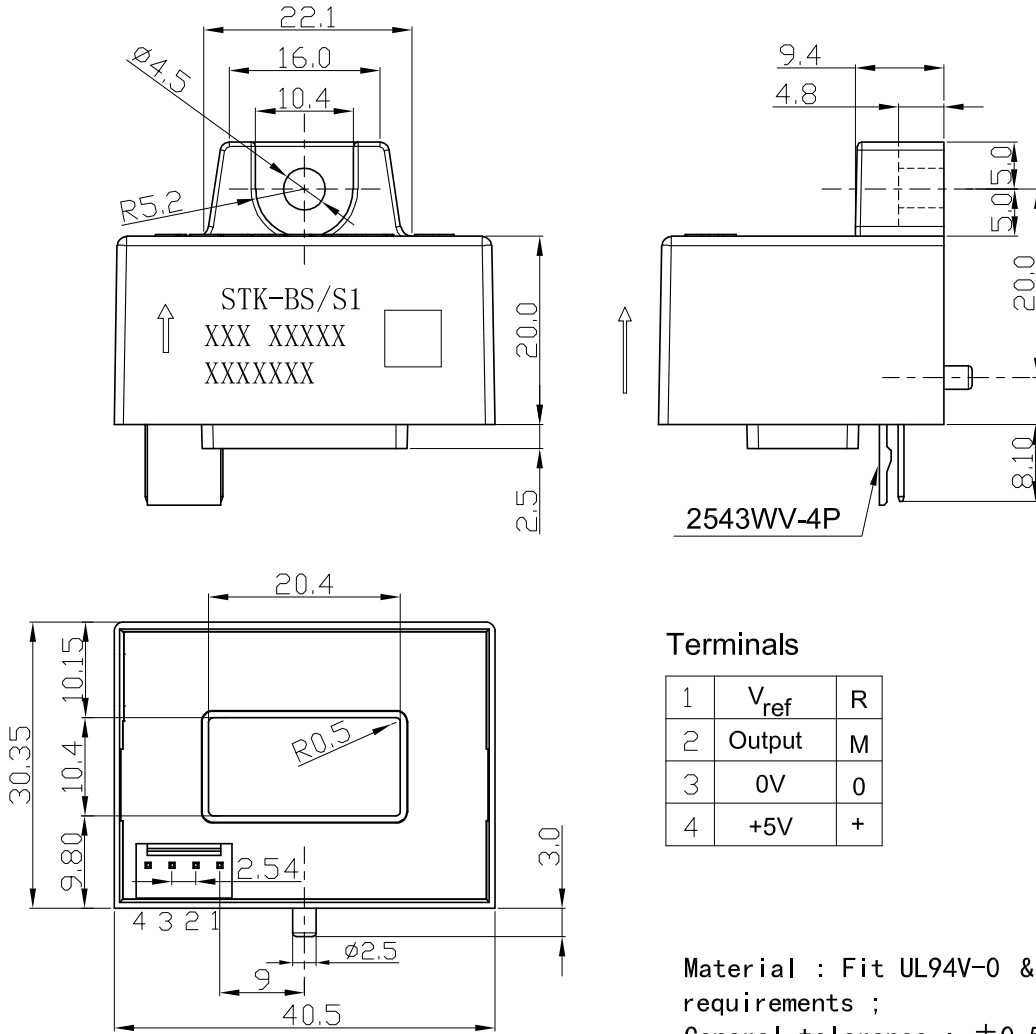
2. Electrical data

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		50		STK-50BS/S1
				100		STK-100BS/S1
				200		STK-200BS/S1
				300		STK-300BS/S1
				400		STK-400BS/S1
				500		STK-500BS/S1
				600		STK-600BS/S1
Primary current measuring range	I_{PM}	A	-150		150	STK-50BS/S1
			-300		300	STK-100BS/S1
			-600		600	STK-200BS/S1
			-900		900	STK-300BS/S1
			-1100		1100	STK-400BS/S1
			-1100		1100	STK-500BS/S1
			-1100		1100	STK-600BS/S1
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		20		
Rated output voltage	V_{FS}	V		± 0.625		$(V_{out} @ \pm I_{PN}) - V_{off}$
Internal output resistance	R_{out}	Ω		2		V_{out}
Reference output resistance	R_{ref}	Ω		2		V_{ref}
Quiescent voltage	V_{off}	V	2.475	2.5	2.525	$V_{out} @ 0\text{A}$
Reference voltage	V_{ref}	V	2.475	2.5	2.525	Output function
Electrical offset voltage	V_{oe}	V	-0.015	0	0.015	$T_A @ 25^\circ\text{C}$
Theoretical gain	G_{th}	mV/A		12.5		STK-50BS/S1
				6.25		STK-100BS/S1
				3.12		STK-200BS/S1
				2.08		STK-300BS/S1
				1.56		STK-400BS/S1
				1.25		STK-500BS/S1
				1.04		STK-600BS/S1
Rated linearity error	Non-L	% I_{PN}		± 1		$\pm I_{PN}$
Step response time ($di/dt=50\text{A}/\mu\text{s}$)	t_{res}	μs		3.5	7	@90% of I_{PN}
Frequency bandwidth (-3dB)	BW	kHz		60		No RC circuit
Output voltage noise DC ~ 10 kHz	V_{noise}	mVpp		30		

DC ~ 100 kHz				40		
Accuracy @ 25°C	X	% of I _{PN}		±1		@ 25°C
Accuracy @ -40°C~105°C	X_TRange	% of I _{PN}	-3.5		3.5	-40°C ~ 105°C

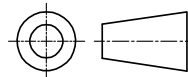
3. Dimension & Pin definitions



Terminals

1	V _{ref}	R
2	Output	M
3	0V	0
4	+5V	+

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit : mm



Mechanical characteristics:

- General tolerance ± 0.5 mm
- Transducer fastening
 - 1 hole $\varnothing 4.5$ mm
 - 1 M4 steel screw
 - Recommended fastening torque 0.7 N·m ($\pm 10\%$)
- Connection of secondary A2543WV-4P