

Current Sensor

Product Series: STK-BS1

Part number: STK-50BS1 & STK-100BS1 &
STK-200BS1 & STK-300BS1 &
STK-400BS1 & STK-500BS1 &
STK-600BS1

Version: Ver 2.3



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1. Summary

STK-BS1 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
- Inverter
- Electric welder power supply
- Switched model power supplies (SMPS)

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	°C	-40 ~ 85
Storage temperature	T_stg	°C	-40 ~ 85
Mass	m	g	40

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage (not-destructive)	V _C	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	4	
Clearance distance (pri. -sec)	d _{Cl}	mm	6.23	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	mm	7.08	Shortest path along device body
Case material			V0 according to UL 94	

Selection Guide

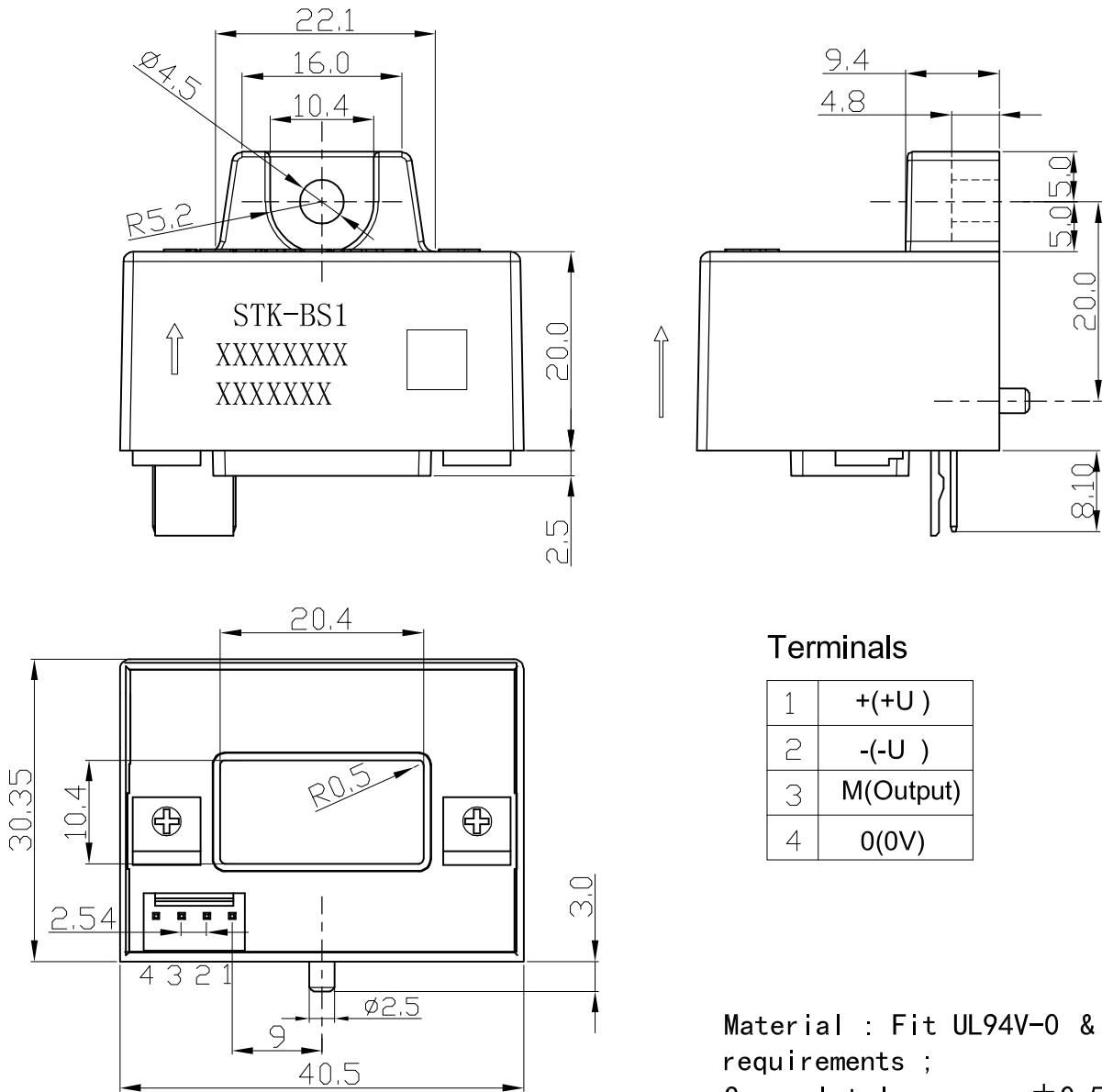
Product	Primary nominal current	Current range
STK-50BS1	50 A	150 A
STK-100BS1	100 A	300 A
STK-200BS1	200 A	600 A
STK-300BS1	300 A	900 A
STK-400BS1	400 A	900 A
STK-500BS1	500 A	900 A
STK-600BS1	600 A	900 A

2. Electrical data of STK-BS1

 Condition: $T_A = 25^\circ\text{C}$ $V_{CC} = \pm 15\text{V}$

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		50		STK-50BS1
				100		STK-100BS1
				200		STK-200BS1
				300		STK-300BS1
				400		STK-400BS1
				500		STK-500BS1
				600		STK-600BS1
Current range	I_{PM}	A	-150		150	STK-50BS1
			-300		300	STK-100BS1
			-600		600	STK-200BS1
			-900		900	STK-300BS1
			-900		900	STK-400BS1
			-900		900	STK-500BS1
			-900		900	STK-600BS1
Supply voltage	V_{CC}	V		$\pm 15 \pm 5\%$		
Current consumption	I_{CC}	mA		± 15		
Rated output voltage	V_{FS}	V		± 4		$(V_{out} @ \pm I_{PN}) - V_{off}$
Internal output resistance	R_{out}	Ω		100		V_{out}
Quiescent voltage	V_{off}	V	-0.04	0	0.04	$V_{out} @ 0\text{A}$
Theoretical gain	G_{th}	mV/A		80		STK-50BS1
				40		STK-100BS1
				20		STK-200BS1
				13.33		STK-300BS1
				10		STK-400BS1
				8		STK-500BS1
				6.66		STK-600BS1
Rated linearity error	Non-L	% I_{PN}		± 1		$\pm I_{PN}$
Step response time	t_{res}	μs		5		@90% of I_{PN}
Frequency bandwidth (-3dB)	BW	kHz		50		No RC circuit
Output voltage noise DC ~ 10 kHz	V_{noise}	mVpp		50		STK-50BS1
				20		Others
Accuracy @ $T_A = 25^\circ\text{C}$	X	% of I_{PN}		± 1		@ 25°C
Temperature coefficient of V_{OE}	TCV_{OE}	mV/K		± 2		STK-50BS1
				± 1		Others
Temperature coefficient of V_{OUT}	TCV_{OUT}	%/K		± 0.1		All

3. Dimension & Pin definitions



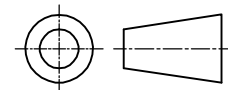
Terminals

1	+(+U)
2	-(-U)
3	M(Output)
4	0(0V)

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 A2510-4A