

## Current Sensor

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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 2.5



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## 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	40

### Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	V <sub>cc</sub>	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 <sub>d</sub>	kV	3.3	
Impulse withstand voltage 1.2/50 us	U <sub>d</sub>	kV	6	
Clearance distance (pri. -sec)	d <sub>Cl</sub>	mm	>5.5	Shortest distance through air
Creepage distance (pri. -sec)	d <sub>Cp</sub>	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

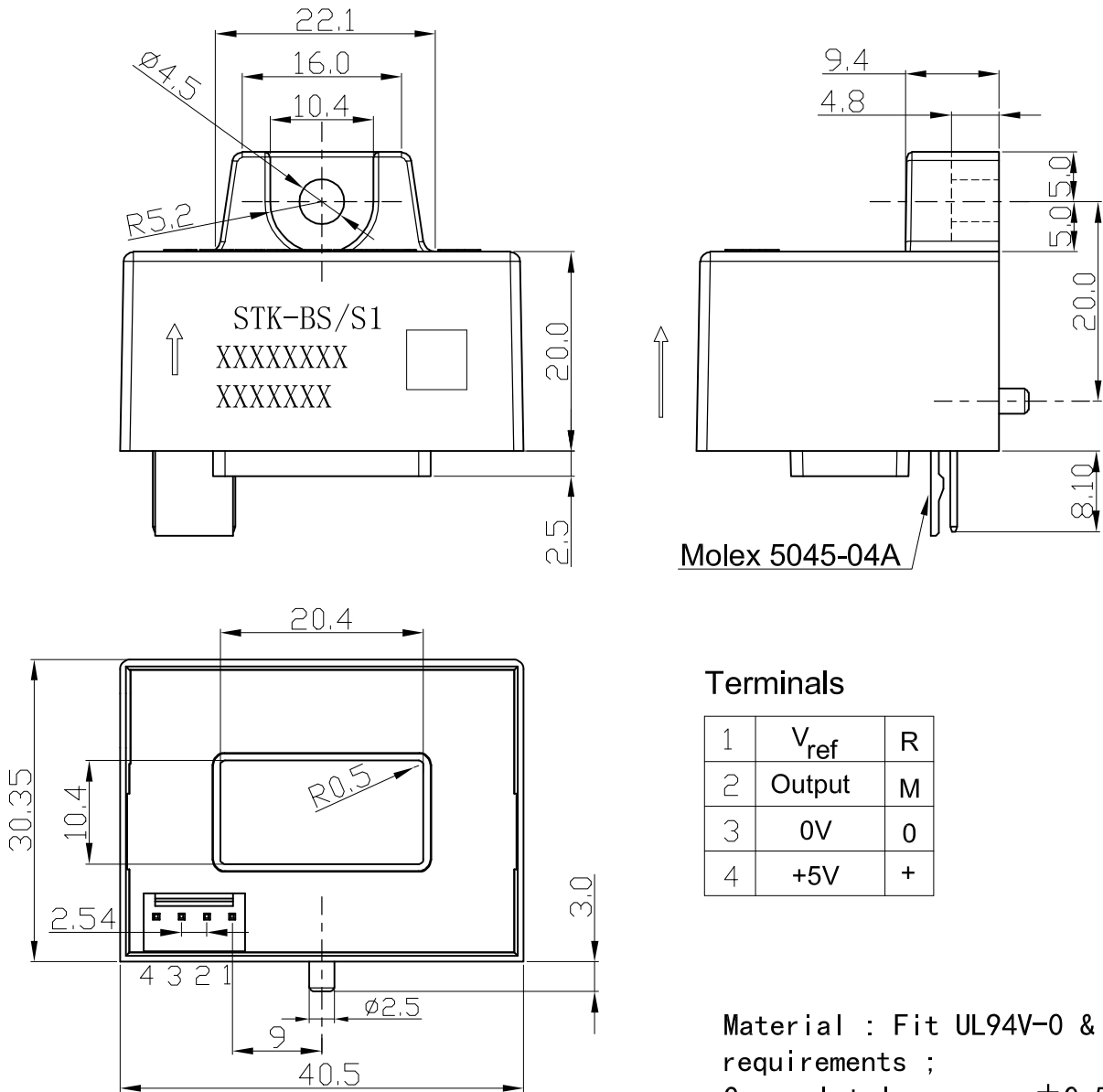
## 2. Electrical data

 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		$\pm 0.625$		$(V_{out} @ \pm I_{PN}) - V_{off}$
Internal output resistance	$R_{out}$	$\Omega$		2		$V_{out}$
Reference output resistance	$R_{ref}$	$\Omega$		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		$V_{ref} \pm 0.015$		$T_A @ 25^\circ\text{C}$
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	% $I_{PN}$		$\pm 1$		$\pm I_{PN}$
Step response time ( $di/dt=50\text{A}/\mu\text{s}$ )	$t_{res}$	$\mu\text{s}$		3.5	7	@90% of $I_{PM}$
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 <sub>PN</sub>		±1		@ 25°C
Accuracy @ -40°C~105°C	X_TRange	% of I <sub>PN</sub>	-3.5		3.5	-40°C ~ 105°C

### 3. Dimension & Pin definitions



Molex 5045-04A

#### Terminals

1	V <sub>ref</sub>	R
2	Output	M
3	0V	0
4	+5V	+

