

## Current Sensor

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Product Series: STK-TB1

Part number: STK-50TB1 & STK-50TB1/T &  
STK-100TB1 & STK-100TB1/T &  
STK-150TB1 & STK-200TB1 &  
STK-300TB1 & STK-400TB1 &

VERSION: Ver 2.1



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## 1. Introduction

STK-TB1 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 <sub>A</sub>	°C	-40 ~ 80
Storage temperature	T <sub>stg</sub>	°C	-40 ~ 85
Mass	m	g	30

### Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage (not-destructive)	V <sub>CC</sub>	V	± 18
ESD rating (HBM)	U <sub>ESD</sub>	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	2.5	
Clearance distance (pri. -sec)	d <sub>Cl</sub>	mm	4.5	Shortest distance through air
Creepage distance (pri. -sec)	d <sub>Cp</sub>	mm	4.5	Shortest path along device body
Case material			V0 according to UL 94	

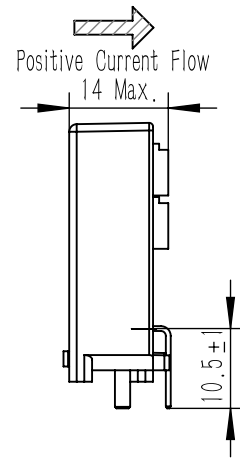
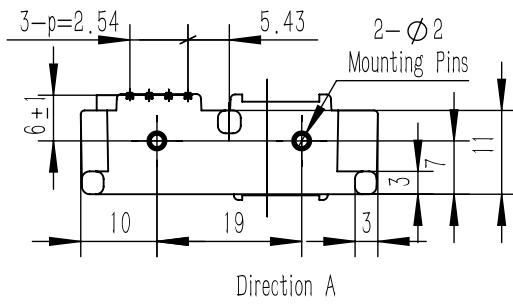
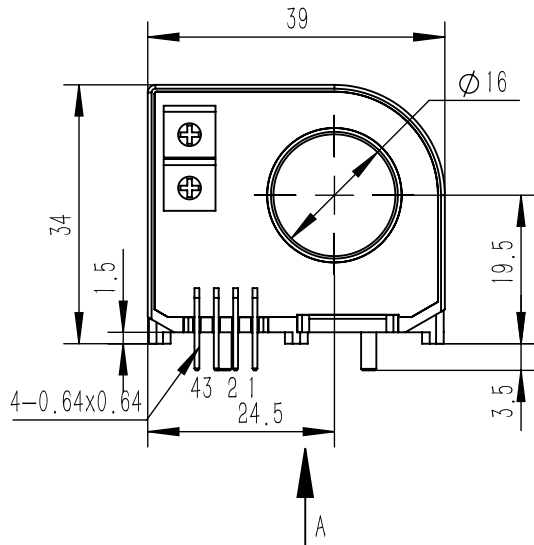
## 2. Electrical Data

 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-50TB1 STK-50TB1/T
				100		STK-100TB1 STK-100TB1/T
				150		STK-150TB1
				200		STK-200TB1
				300		STK-300TB1
				400		STK-400TB1
Current range (refer remark)	$I_{PM}$	A	-150		150	STK-50TB1 STK-50TB1/T
			-300		300	STK-100TB1 STK-100TB1/T
			-450		450	STK-150TB1
			-500		500	STK-200TB1
			-600		600	STK-300TB1
			-600		600	STK-400TB1
Supply voltage	$V_{CC}$	V		$\pm 12 \sim \pm 15$		All
Current consumption	$I_{CC}$	mA		$\pm 15$		All
Quiescent voltage $V_{out} @ 0\text{A}$	$V_{off}$	V	-0.04	0	0.04	All
Peak output voltage ( $V_{out} @ \pm I_{PN}$ ) - $V_{off}$	$V_{FS}$	V		$\pm 4$		All
Internal output resistance	$R_{out}$	$\Omega$		100		$V_{out}$
Theoretical gain (Typ)	$G_{th}$	mV/A		80		STK-50TB1 STK-50TB1/T
				40		STK-100TB1 STK-100TB1/T
				26.6		STK-150TB1
				20		STK-200TB1
				13.3		STK-300TB1
				10		STK-400TB1
Rated linearity error	Non-L	% $I_{PN}$		$\pm 1$		$\pm I_{PN}$
Step response time	$t_{res}$	$\mu\text{s}$		3		@90% of $I_{PN}$
Frequency bandwidth (-3dB)	BW	kHz		50		No RC circuit

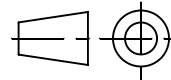
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 30		All
Accuracy @ 25°C	X	% of I <sub>PM</sub>		±1		All
Accuracy @ -40°C ~80°C	X_TRange	% of I <sub>PM</sub>		±5		All

### 3. Dimensions of STK-TB1



Secondary Pin Identification

1	+VC
2	-VC
3	Output
4	0V



1. Material: Fit UL94-V0 & RoHS requirements;
2. General tolerance:  $\pm 0.5$ ;
3. Unit: mm

