

## Current Sensor

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Product Series: STK-BS/T

Part number: STK-200BS/T & STK-400BS/T &  
STK-500BS/T & STK-600BS/T &  
STK-800BS/T & STK-1000BS/T &  
STK-1200BS/T & STK-1500BS/T

VERSION: Ver 2.4



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## 1. Introduction

STK-BS/T 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

- Battery supplied applications
- Motor driver
- Electric welder power supply
- UPS

### General parameter

| Parameter           | Symbol           | Unit | Value    |
|---------------------|------------------|------|----------|
| Working temperature | T <sub>A</sub>   | °C   | -40 ~ 85 |
| Storage temperature | T <sub>stg</sub> | °C   | -40 ~ 85 |
| Mass                | m                | g    | 300      |

### Absolute maximum rating

| Parameter                           | Symbol           | Unit | Value |
|-------------------------------------|------------------|------|-------|
| Supply voltage<br>(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   | 4.9                   |                                 |
| Clearance distance (pri. -sec)     | d <sub>Cl</sub> | mm   | 11                    | Shortest distance through air   |
| Creepage distance (pri. -sec)      | d <sub>Cp</sub> | mm   | 11                    | Shortest path along device body |
| Case material                      |                 |      | V0 according to UL 94 |                                 |

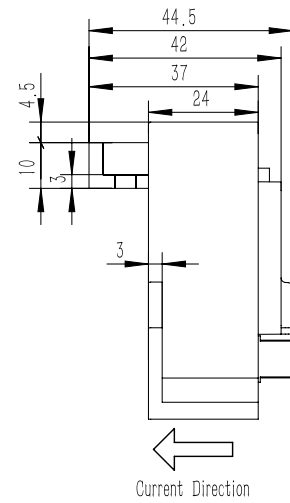
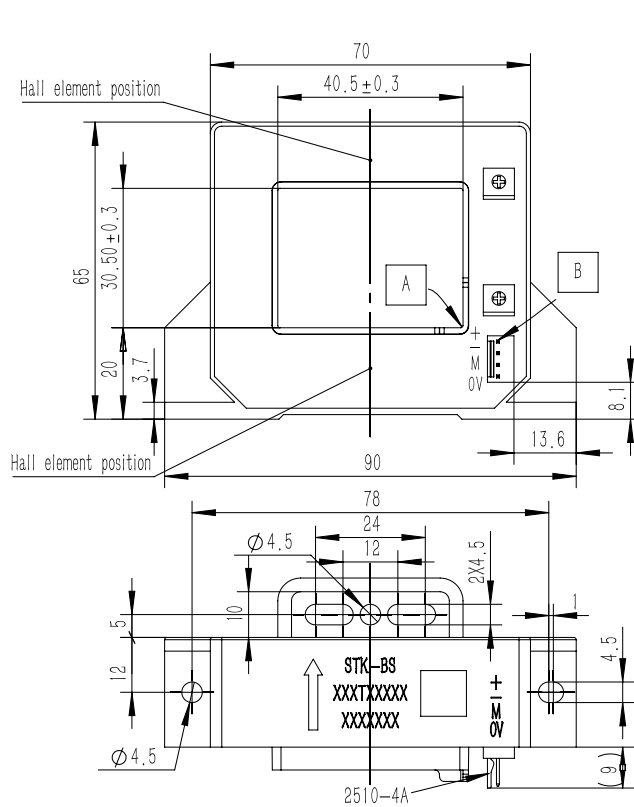
## 2. Electrical Data

 Condition:  $T_A = 25^{\circ}\text{C}$ ,  $V_{CC} = \pm 12 \sim \pm 15\text{V}$ 

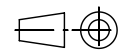
| Parameter                                                     | Symbol    | Unit | Min   | Typ                  | Max  | Comment                                                                                                                 |
|---------------------------------------------------------------|-----------|------|-------|----------------------|------|-------------------------------------------------------------------------------------------------------------------------|
| Primary nominal current                                       | $I_{PN}$  | A    |       | 200                  |      | STK-200BS/T                                                                                                             |
|                                                               |           |      |       | 400                  |      | STK-400BS/T                                                                                                             |
|                                                               |           |      |       | 500                  |      | STK-500BS/T                                                                                                             |
|                                                               |           |      |       | 600                  |      | STK-600BS/T                                                                                                             |
|                                                               |           |      |       | 800                  |      | STK-800BS/T                                                                                                             |
|                                                               |           |      |       | 1000                 |      | STK-1000BS/T                                                                                                            |
|                                                               |           |      |       | 1200                 |      | STK-1200BS/T                                                                                                            |
|                                                               |           |      |       | 1500                 |      | STK-1500BS/T                                                                                                            |
| Current range<br>(refer remark)                               | $I_{PM}$  | A    | -600  |                      | 600  | STK-200BS/T                                                                                                             |
|                                                               |           |      | -1200 |                      | 1200 | STK-400BS/T                                                                                                             |
|                                                               |           |      | -1500 |                      | 1500 | STK-500BS/T                                                                                                             |
|                                                               |           |      | -1800 |                      | 1800 | STK-600BS/T                                                                                                             |
|                                                               |           |      | -2400 |                      | 2400 | STK-800BS/T                                                                                                             |
|                                                               |           |      | -2500 |                      | 2500 | STK-1000BS/T                                                                                                            |
|                                                               |           |      | -2500 |                      | 2500 | STK-1200BS/T                                                                                                            |
|                                                               |           |      | -2500 |                      | 2500 | STK-1500BS/T                                                                                                            |
| Supply voltage                                                | $V_{CC}$  | V    |       | $\pm 12 \sim \pm 15$ |      | STK-200BS/T<br>STK-400BS/T<br>STK-500BS/T<br>STK-600BS/T<br>STK-800BS/T<br>STK-1000BS/T<br>STK-1200BS/T<br>STK-1500BS/T |
| Current consumption                                           | $I_{CC}$  | mA   |       | $\pm 20$             |      | All                                                                                                                     |
| Quiescent voltage<br>$V_{out} @ 0\text{A}$                    | $V_{off}$ | V    | -0.04 | 0                    | 0.04 | STK-200BS/T<br>STK-400BS/T<br>STK-500BS/T<br>STK-600BS/T<br>STK-800BS/T<br>STK-1000BS/T<br>STK-1200BS/T<br>STK-1500BS/T |
| Peak output voltage<br>( $V_{out} @ \pm I_{PN}$ ) – $V_{off}$ | $V_{FS}$  | V    |       | $\pm 4$              |      | STK-200BS/T<br>STK-400BS/T<br>STK-500BS/T<br>STK-600BS/T                                                                |

|                                                     |                    |                      |  |          |  |                                                                                                                         |
|-----------------------------------------------------|--------------------|----------------------|--|----------|--|-------------------------------------------------------------------------------------------------------------------------|
|                                                     |                    |                      |  |          |  | STK-800BS/T<br>STK-1000BS/T<br>STK-1200BS/T<br>STK-1500BS/T                                                             |
| Internal output resistance                          | R <sub>out</sub>   | Ω                    |  | 100      |  | V <sub>out</sub>                                                                                                        |
| Theoretical gain (Typ)                              | G <sub>th</sub>    | mV/A                 |  | 20       |  | STK-200BS/T                                                                                                             |
|                                                     |                    |                      |  | 10       |  | STK-400BS/T                                                                                                             |
|                                                     |                    |                      |  | 8        |  | STK-500BS/T                                                                                                             |
|                                                     |                    |                      |  | 6.66     |  | STK-600BS/T                                                                                                             |
|                                                     |                    |                      |  | 5        |  | STK-800BS/T                                                                                                             |
|                                                     |                    |                      |  | 4        |  | STK-1000BS/T                                                                                                            |
|                                                     |                    |                      |  | 3.33     |  | STK-1200BS/T                                                                                                            |
|                                                     |                    |                      |  | 2.66     |  | STK-1500BS/T                                                                                                            |
| Rated linearity error                               | Non-L              | % I <sub>PN</sub>    |  | ± 1      |  | ±I <sub>PN</sub>                                                                                                        |
| Step response time                                  | t <sub>res</sub>   | μs                   |  | 5        |  | @90% of I <sub>PN</sub>                                                                                                 |
| Frequency bandwidth (-3dB)                          | BW                 | kHz                  |  | 25       |  | No RC circuit                                                                                                           |
| Output voltage noise<br>DC ~ 10 kHz<br>DC ~ 100 kHz | V <sub>noise</sub> | mV <sub>pp</sub>     |  | 20<br>30 |  | STK-200BS/T<br>STK-400BS/T<br>STK-500BS/T<br>STK-600BS/T<br>STK-800BS/T<br>STK-1000BS/T<br>STK-1200BS/T<br>STK-1500BS/T |
| Accuracy @ 25°C                                     | X                  | % of I <sub>PN</sub> |  | ± 1      |  | All                                                                                                                     |
| Temperature coefficient of V <sub>OE</sub>          | TCV <sub>OE</sub>  | mV/K                 |  | ± 1      |  | @ -40°C ~ 85°C                                                                                                          |
| Temperature coefficient of V <sub>OUT</sub>         | TCV <sub>OUT</sub> | %/K                  |  | ± 0.1    |  | @ -40°C ~ 85°C                                                                                                          |

### 3. Dimension & Pin Definitions



|     |          |          |
|-----|----------|----------|
|     | $d_{cl}$ | $d_{cp}$ |
| A-B | 11 mm    | 11 mm    |



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