

# CURRENT SENSOR

PRODUCT SERIES: STB-LA/A

PRODUCT PART NUMBER: STB-25LA/A

VERSION: Ver 1.5



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## CONTENT

|    |                                         |   |
|----|-----------------------------------------|---|
| 1. | Description .....                       | 2 |
| 2. | Electrical parameters (STB-25LA/A)..... | 3 |
| 3. | Dimensions: STB-xxLA/A .....            | 4 |
| 4. | PCB footprint (STB-xxLA/A).....         | 5 |

## 1. Description

STB-LA/A series current sensors are based on close loop principle with TMR technology. The sensor can detect AC arc current detection function.

### General parameters

| Parameter                              | Symbol | Unit | Value     | Remark     |
|----------------------------------------|--------|------|-----------|------------|
| Working temperature                    | T_A    | °C   | -40 ~ 105 |            |
| Storage temperature                    | T_stg  | °C   | -40 ~ 105 |            |
| Limit temperature of primary conductor | T_LP   | °C   | 105       | STB-xxLA/A |
| Mass                                   | m      | g    | 59        | STB-xxLA/A |

### Absolute parameters

| Parameters                    | Symbol    | Unit | Value              |
|-------------------------------|-----------|------|--------------------|
| Supply voltage                | Vcc_max   | V    | 6                  |
| Maximum primary current       | I_p_max   | A    | 450                |
| ESD rating (HBM)              | U_ESD_HBM | kV   | 4                  |
| High temperature and humidity | T_HAST    | -    | 85°C&85%RH (1000h) |

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 parameters

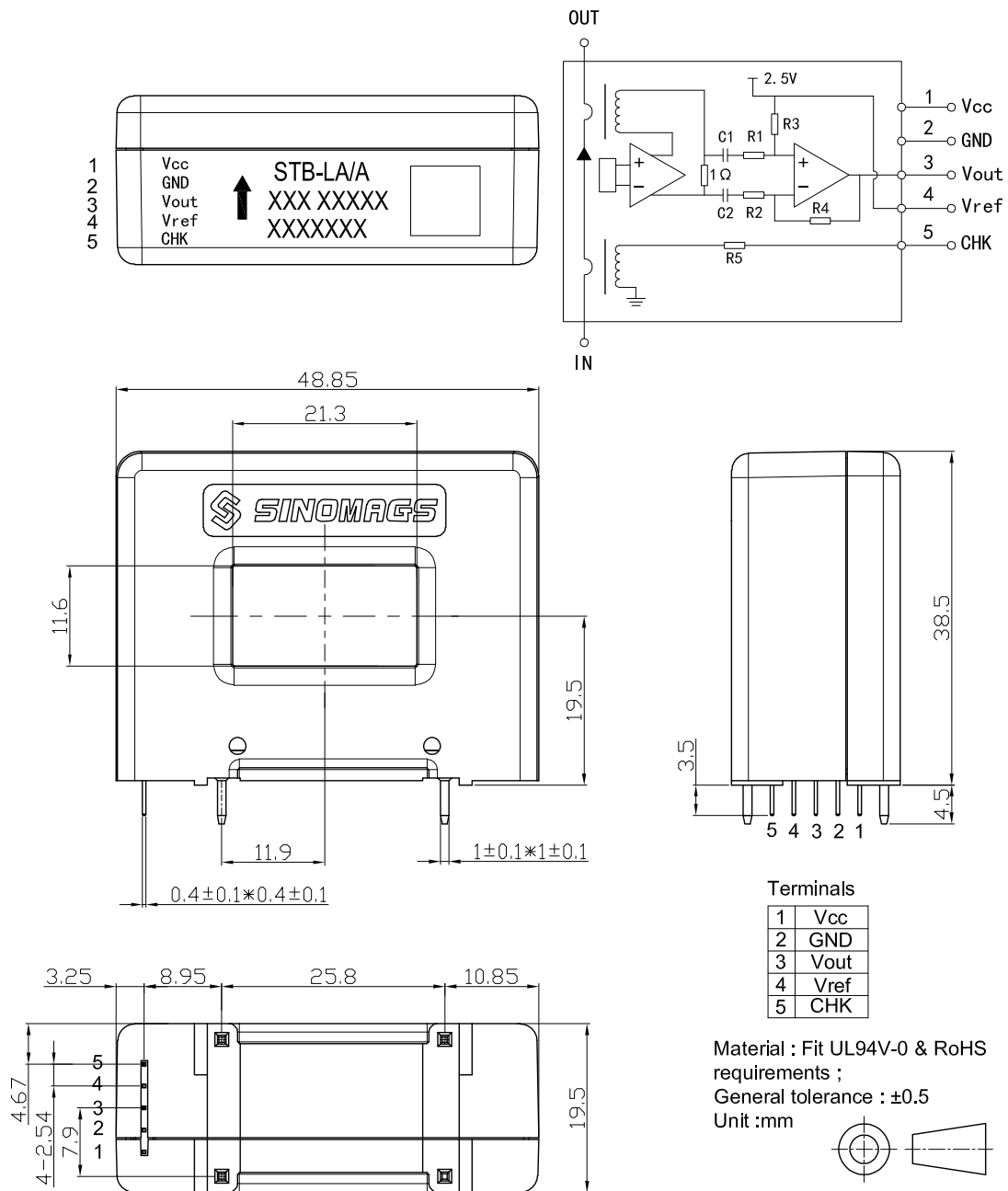
| Parameter                          | Symbol | Unit | Value | Remark                          |
|------------------------------------|--------|------|-------|---------------------------------|
| RMS voltage for AC test 50Hz/1 min | Ud     | kV   | 4     |                                 |
| Impulse withstand voltage 1.2/50μs | Ūw     | kV   | 8     |                                 |
| Clearance distance (pri. -sec)     | dCl    | mm   | 12.9  | Shortest distance through air   |
| Creepage distance (pri. -sec)      | dCp    | mm   | 12.9  | Shortest path along device body |
| Case material                      |        |      | V0    | According to UL 94              |
| Comparative tracking index         | CTI    | V    | 600   |                                 |

## 2. Electrical parameters (STB-25LA/A)

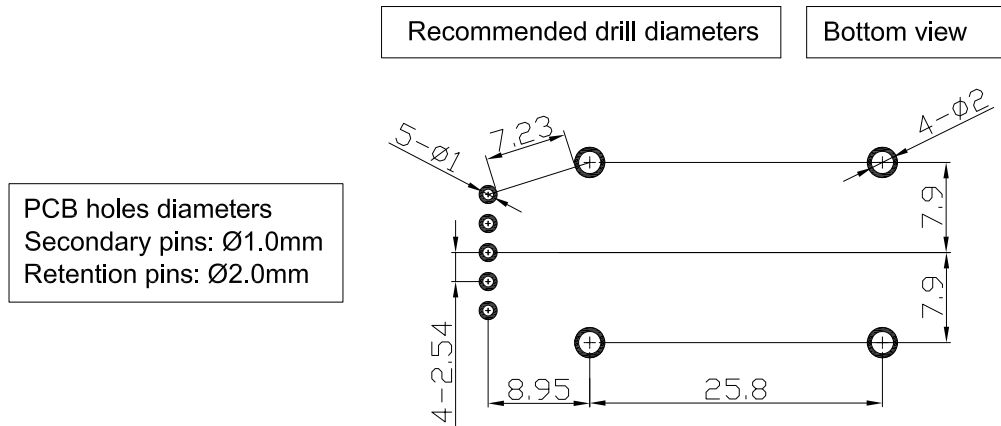
Condition: Vcc = 5.0 V, RL = 10 kΩ, T A = 25°C, unless specified.

| Parameters                                  | Symbol           | Unit                 | Min.                         | Typ.   | Max. | Remark                                                   |
|---------------------------------------------|------------------|----------------------|------------------------------|--------|------|----------------------------------------------------------|
| Primary current measuring range             | I <sub>pn</sub>  | A                    | -25                          |        | 25   |                                                          |
| Supply voltage                              | Vcc              | V                    | 4.75                         | 5      | 5.25 |                                                          |
| Self-Checking voltage                       | Vchk             | V                    | 3.3                          |        | 5.25 | AC wave, 2K~100K                                         |
| Consumption current                         | Ic               | mA                   | 15 + I <sub>p</sub> /NS*1000 |        |      | NS = 1500                                                |
| Reference voltage                           | V <sub>ref</sub> | V                    | 2.48                         | 2.5    | 2.52 |                                                          |
| Electrical offset voltage@25°C              | V <sub>oe</sub>  | mV                   | -10                          |        | 10   | 100 % tested (V <sub>out</sub> – V <sub>ref</sub> )@ 0 A |
| Full-scale voltage                          | V <sub>fs</sub>  | V                    |                              | ± 2    |      | (V <sub>out</sub> – V <sub>ref</sub> )@ I <sub>pn</sub>  |
| Theoretical sensitivity                     | G <sub>th</sub>  | mV/A                 |                              | 80     |      | 2 V @ I <sub>pn</sub> @25°C                              |
| Sensitivity error                           | G <sub>err</sub> | % of I <sub>pn</sub> | -3                           |        | 3    |                                                          |
| Linearity error within I <sub>pn</sub>      | ξ <sub>L</sub>   | % of I <sub>pn</sub> | -0.15                        |        | 0.15 | @25°C                                                    |
| Reaction time @ 10 % of I <sub>p</sub>      | t <sub>ra</sub>  | μs                   |                              | 0.3    |      |                                                          |
| Step response time @ 90 % of I <sub>p</sub> | t <sub>r</sub>   | μs                   |                              | 0.3    |      |                                                          |
| -3 dB band width                            | BW               | kHz                  | 0.5                          |        | 200  | @-3dB                                                    |
| Noise<br>DC ~ 10 kHz<br>DC ~ 100 kHz        | Vnoise           | mVpp                 |                              | 5<br>6 |      |                                                          |
| Accuracy                                    | X                | % of I <sub>pn</sub> | -10                          |        | 10   | @In@TEMP                                                 |
| Self-Checking p-p                           | I <sub>chk</sub> | mA                   | 400                          | 500    | 600  |                                                          |

### 3. Dimensions: STB-xxLA/A



#### 4. PCB footprint (STB-xxLA/A)



##### Assembly on PCB

- Recommended PCB hole diameter: 1 mm for secondary pins, 2 mm for retention pin.
- Maximum PCB thickness: 2.4 mm (can be customized per request).
- Wave soldering profile: maximum 265°C for 10 seconds.