

CURRENT SENSOR

PRODUCT SERIES: STB-LA/A

PRODUCT PART NUMBER: STB-25LA/A

VERSION: Ver 1.3



Sinomags Technology Co., Ltd.

Web site: www.sinomags.com

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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

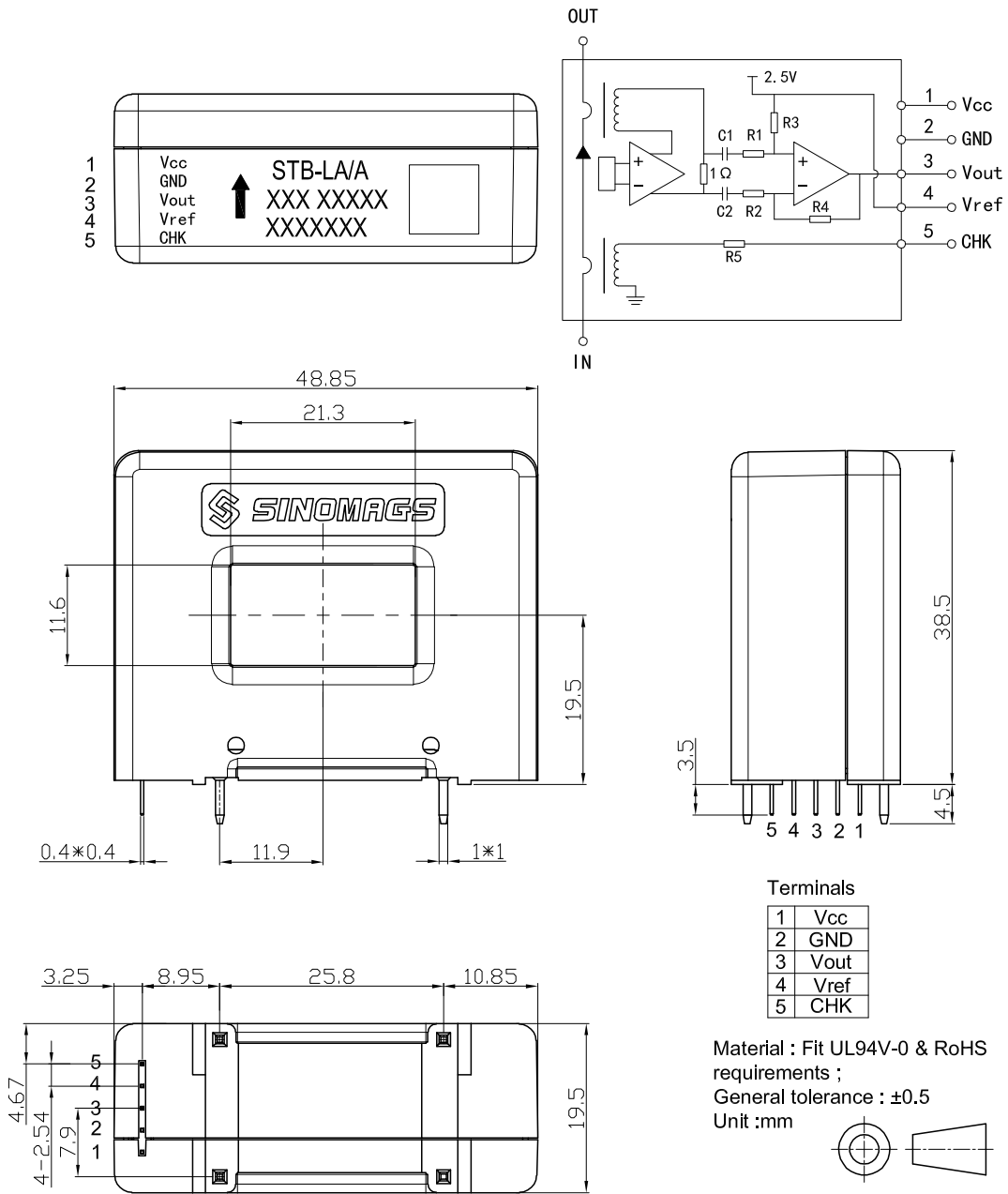
| Parameter | Symbol | Unit | Value | Remark |
|------------------------------------|--------|------|-------|---------------------------------|
| RMS voltage for AC test 50Hz/1 min | Ud | kV | 4 | |
| Impulse withstand voltage 1.2/50μs | Ūw | kV | 8 | |
| Clearance distance (pri. -sec) | dCl | mm | 12.9 | 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)

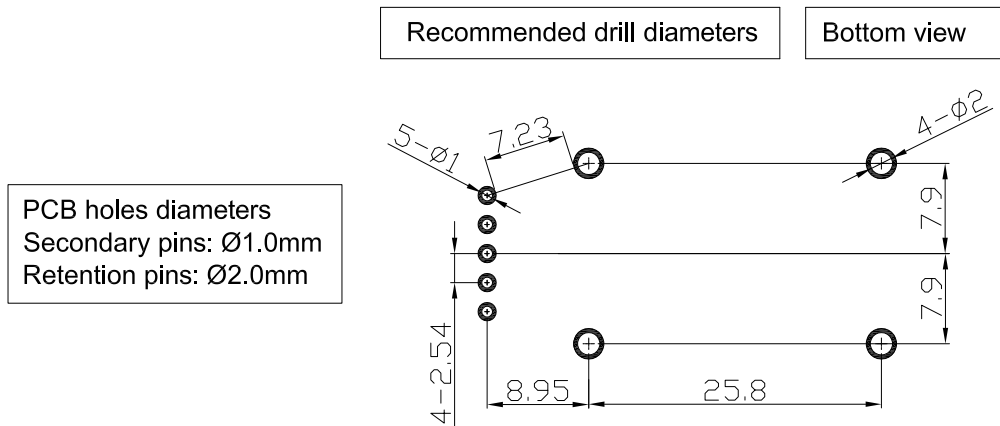
Condition: Vcc = 5.0 V, RL = 10 kΩ, TA = 25°C, unless specified.

| Parameters | Symbol | Unit | Min. | Typ. | Max. | Remark |
|---|--------------------|----------------------|------------------------------|--------|------|---|
| Primary current measuring range | I _{pn} | A | -25 | | 25 | |
| Supply voltage | V _{cc} | V | 4.75 | 5 | 5.25 | |
| Self-Checking voltage | V _{chk} | V | 3.3 | | 5.25 | AC wave, 2K~100K |
| Consumption current | I _c | mA | 15 + I _p /NS*1000 | | | NS = 1500 |
| Reference voltage | V _{ref} | V | 2.48 | 2.5 | 2.52 | |
| Electrical offset voltage@25°C | V _{oe} | mV | -10 | | 10 | 100 % tested (V _{out} - V _{ref})@ 0 A |
| Full-scale voltage | V _{fs} | V | | ± 2 | | (V _{out} - V _{ref})@ I _{pn} |
| Theoretical sensitivity | G _{th} | mV/A | | 80 | | 2 V @ I _{pn} @25°C |
| Sensitivity error | G _{err} | % of I _{pn} | -3 | | 3 | |
| Linearity error within I _{pn} | ξ _L | % of I _{pn} | -0.15 | | 0.15 | @25°C |
| Reaction time @ 10 % of I _p | t _{ra} | μs | | 0.3 | | |
| Step response time @ 90 % of I _p | t _r | μs | | 0.3 | | |
| -3 dB band width | BW | kHz | 0.5 | | 200 | @-3dB |
| Noise DC ~ 10 kHz DC ~ 100 kHz | V _{noise} | mVpp | | 5 6 | | |
| Accuracy | X | % of I _{pn} | -10 | | 10 | @In@TEMP |
| Self-Checking p-p | I _{chk} | 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 260°C for 10 seconds.