

CURRENT SENSOR

PRODUCT SERIES: STB-LA/N1
STB-25LA/N1
PRODUCT PART NUMBER: STB-50LA/N1
STB-100LA/N1
VERSION: Ver 1.3



Sinomags Technology Co., Ltd.

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1. Description

STB-LA/N1 series current sensors are based on close loop principle with TMR technology.

The

sensor can detect the current with DC, AC, pulse and irregular wave shape.

Typical application

- Solar inverter
- BMS
- Direct-current dynamo
- Solar inverter
- Switched model power supplies (SMPS)

General parameters

Parameter	Symbol	Unit	Value
Working temperature	T_{SL}	°C	-40 ~ 85
Storage temperature	T_S	°C	-40 ~ 95
STB-LA/N1 max secondary Coil Res.@25°C	R_S	Ω	18
STB-LA/N1 max secondary Coil Res.@85°C	R_S	Ω	25
Mass	m	g	28

Maximum effective value

Parameter	Symbol	Unit	Value
Supply voltage (non demolition)	$V_{CC_{max}}$	V	±16
ESD Class (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 parameters

Parameter	Symbol	Unit	Value	Remark
RMS voltage for AC test 50Hz/1 min	U_d	kV	5	
Impulse withstand voltage 1.2/50μs	U_w	kV	10	
Clearance distance (pri.-sec)	dCl	mm	13	Shortest distance through air
Creepage distance (pri.-sec)	dCp	mm	13	Shortest path along device body
Case material			V0 according to UL 94	

2. STB-25LA/N1 Electrical parameters

Condition: $V_{CC} = \pm 15V$, $T_A = 25^\circ C$, unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	I_{PN}	A		25		
Primary current measuring range	I_{PM}	A	-55		55	Remark1
Supply voltage	V_{CC}	V	± 12		± 15	
Secondary Coil turns	N_S	N		1000		
Sampling resistance	R_M	Ω	0	33	200	
Secondary Coil Rated output current	I_{SN}	mA		25		
Consumption Current	I_{CC}	mA		$10 + I_S$		$I_S = \text{ABS}(I_{PN} / N_S)$
Sensitivity error	X	%			± 0.5	within I_{PN}
Linearity error within I_{PN}	ε_L	% of I_{PN}			± 0.10	
offset	I_{OE}	mA			± 0.10	@ $I_P = 0$ A
Magnetic bias current	I_{OM}	mA			± 0.25	$3 * I_{PN}$ remanence
Offset Temperature drift	I_{OT}	mA		± 0.15	± 0.30	$-40^\circ C \sim 85^\circ C$
Reaction time	t_{ra}	μs			0.3	@10% of I_{PN}
Step response time (Remark2)	t_{res}	μs			0.5	@90% of I_{PN}
-1dB band width	BW	kHz		150		

Remark:

- 1) The maximum test current is 200 A, DC or peak current, $85^\circ C$, $V_{CC} = \pm 12$ V (tolerance ± 0.3 V), sampling resistor $R_M \leq 33 \Omega$. $X \leq 1\%$. If a larger maximum detection current is required, refer to the sampling resistance specification sheet.
- 2) $di/dt = 100A / \mu s$.

3. STB-50LA/N1 Electrical parameters

Condition: $V_{CC} = \pm 15V$, $T_A = 25^\circ C$, unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	I_{PN}	A		50		
Primary current measuring range	I_{PM}	A	-128		128	Remark1
Supply voltage	V_{CC}	V	± 12		± 15	
Secondary Coil turns	N_S	N		1000		
Sampling resistance	R_M	Ω	0	33	200	
Secondary Coil Rated output current	I_{SN}	mA		50		
Consumption Current	I_{CC}	mA		$10 + I_S$		$I_S = \text{ABS}(I_{PN} / N_S)$
Sensitivity error	X	%			± 0.5	within I_{PN}
Linearity error within I_{PN}	ε_L	% of I_{PN}			± 0.10	
offset	I_{OE}	mA			± 0.10	@ $I_P = 0$ A
Magnetic bias current	I_{OM}	mA			± 0.25	$3 * I_{PN}$ remanence
Offset Temperature drift	I_{OT}	mA		± 0.15	± 0.30	$-40^\circ C \sim 85^\circ C$
Reaction time	t_{ra}	μs			0.3	@10% of I_{PN}
Step response time (Remark2)	t_{res}	μs			0.5	@90% of I_{PN}
-1dB band width	BW	kHz		150		

Remark:

1) The maximum test current is 200 A, DC or peak current, $85^\circ C$, $V_{CC} = \pm 12$ V (tolerance ± 0.3 V), sampling resistor $R_M \leq 33 \Omega$. $X \leq 1\%$. If a larger maximum detection current is required, refer to the sampling resistance specification sheet.

2) $di/dt = 100A / \mu s$.

4. STB-100LA/N1 Electrical parameters

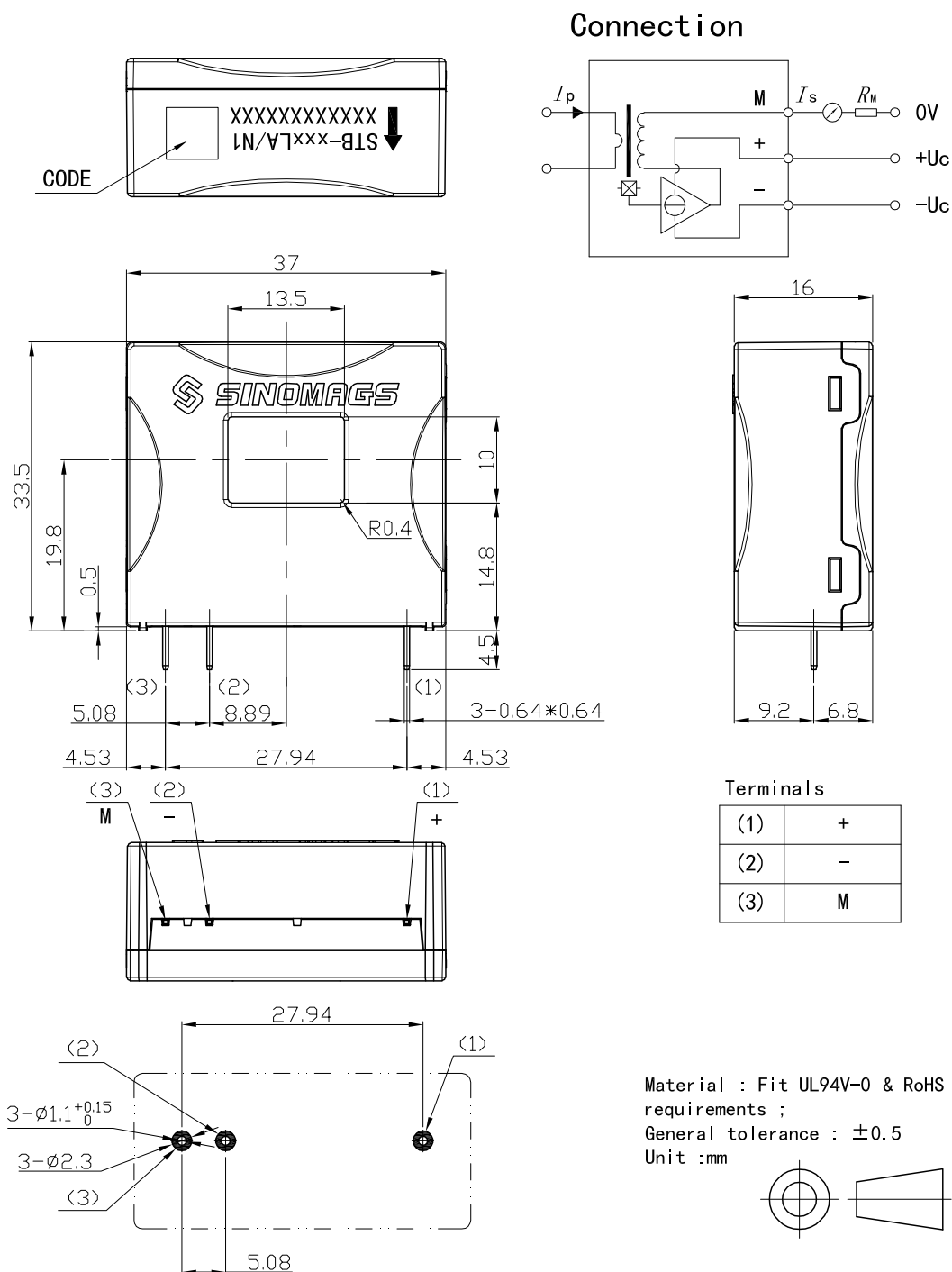
Condition: $V_{CC} = \pm 15V$, $T_A = 25^\circ C$, unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal rms current	I_{PN}	A		100		
Primary current measuring range	I_{PM}	A	-200		200	Remark1
Supply voltage	V_{CC}	V	± 12		± 15	
Secondary Coil turns	N_S	N		1000		
Sampling resistance SPEC	R_M	Ω	10		200	
Secondary Coil Rated output current	I_{SN}	mA		100		
Consumption current	I_{CC}	mA		$10 + I_S$		$I_S = \text{ABS}(I_{PN} / N_S)$
Sensitivity error	X	%			± 0.5	within I_{PN}
Linearity error within I_{PN}	ε_L	% of I_{PN}			± 0.10	
offset	I_{OE}	mA			± 0.10	@ $I_P = 0$ A
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- 2) $di/dt = 100A / \mu s$.

5. STB-LA/N1 Dimensions & Pin define



Mechanical properties

- General tolerances ± 0.5 mm;
- Fixed connection second coil 3 PIN size is 0.6 * 0.6mm . The recommended diameter of PCB pad is 1.1 mm;