

CURRENT SENSOR

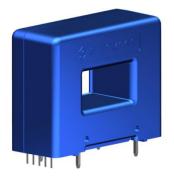
PRODUCT SERIES: STB-LA/Zx

STB-100LA/Z, STB-100LA/ZN

PRODUCT PART NUMBER: STB-150LA/Z, STB-150LA/ZN

STB-200LA/Z, STB-200LA/ZN

VERSION: Ver 5.2





Sinomags Technology Co., Ltd.

Web site: www.sinomags.com



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1. Description

STB-LA/Z 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

O Solar inverter

O Direct-current dynamo

O Uninterruptible Power Supplies (UPS)

O Switched model power supplies (SMPS)

O Variable frequency converter

General parameters

Parameter	Symbol	Unit	Value	Remark
Working temperature	T_A	°C	-40 ~ 85	
Storage temperature	T_stg	°C	-40 ~ 85	
Limit temperature of primary conductor	T_LP	°C	105	STB-xxxLA/Z
Mass	m	g	59	STB-xxxLA/ZN
Mass	m	g	86	STB-xxxLA/Z

Absolute parameters

Parameters	Symbol	Unit	Value
Supply voltage	Vcc_max	V	6
Maximum primary current	I_p_max	Α	10*l_pn
ESD rating (HBM)	U_ESD_HBM	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	Ud	kV	4	
test 50Hz/1 min	Ou	N.V	4	
Impulse withstand voltage	Ûw	kV	8	
1.2/50µs	OW	K V	0	
Clearance distance (prisec)	dCl	mm	12.9	Shortest distance
Clearance distance (pinsec)	uCi	mm	12.9	through air
Creepage distance (prisec)	dCp	mm	12.9	Shortest path along
Creepage distance (prisec)	аср	111111	12.9	device body
Case material			V0	According to UL 94
Comparative tracking index	CTI	V	600	



2. Electrical parameters (STB-100LA/Z, STB-100LA/ZN)

Condition: Vcc = 5.0 V, RL = 10 k Ω , T A = 25 $^{\circ}$ C, unless specified.

Parameters	Symbol	Unit	Min.	Тур.	Max.	Remark
Primary nominal	Lon	^		100		
rms current	l_pn	Α		100		
Primary current	Lnm	^	-300		300	
measuring range	I_pm	Α	-300		300	
Supply voltage	Vcc	V	4.75	5	5.25	
Consumption	lc	mA	15	⊥ L n/N C*10	000	NS = 1500
current	IC.	ША	15 + I_p/NS*1000			143 - 1500
Reference	V_ref	V	2.48	2.5	2.52	
voltage	v_iei	V	2.40	2.5	2.32	
Electrical offset	\/ 00	mV		5		100 % tested
voltage	V_oe	IIIV		5		(V_out - V_ref)@ 0 A
Magnetic offset	I_om	Α	100		100	@6*I_pn
current	1_0111	Α	100		100	@σ i_pii
Full-scale voltage	V_fs	V		± 0.625		(V_out - V_ref)@ I_pn
Theoretical	C th	mV/A		6.25		0.625 V @ I_pn
sensitivity	G_th	IIIV/A		0.25		0.025 V @ I_pH
Sensitivity error	G_err	% of	-0.8		0.8	
Sensitivity endi		l_pn	-0.0		0.0	
Linearity error	ξ_L	% of	-0.15		0.15	@25 ℃
within I_pn	\L	l_pn	-0.13		0.13	@23 C
Reaction time @	t_ra	116		0.3		
10 % of I_p	(_la	μs		0.5		
Step response						
time @ 90 % of	t_r	μs		0.3		
l_p						
-3 dB band width	BW	kHz		300		
Noise						
DC ~ 10 kHz	Vnoise	mVpp		5		
DC ~ 100 kHz				6		
Accuracy @	Х	% of	-0.8		0.8	
25 ℃	^	l_pn	0.0		0.0	
Accuracy @	X IRange		-1.1		1.1	
85 °C			1.1		1.1	



3. Electrical parameters (STB-150LA/Z, STB-150LA/ZN)

Condition: Vcc = 5.0 V, RL = 10 k Ω , T A = 25 $^{\circ}$ C, unless specified.

Parameters	Symbol	Unit	Min.	Тур.	Max.	Remark
Primary nominal	Lpp	Α		150		
rms current I_pn		A		150		
Primary current	I_pm	Α	-400		400	
measuring range	1_pm		-400		400	
Supply voltage	Vcc	V	4.75	5	5.25	
Consumption	lc	mA	15	+ 1 n/NS*10	200	NS = 1500
current	10	ША	15 + I_p/NS*1000			NO - 1500
Reference	V_ref	V	2.48	2.5	2.52	
voltage	V_1C1	V	2.40	2.0	2.52	
Electrical offset	V_oe	mV		5		100 % tested
voltage	V_0C	111 V		0		(V_out - V_ref)@ 0 A
Magnetic offset	I_om	mA	100		100	@6*I_pn
current	_		100		100	₩ 0 1_p
Full-scale voltage	V_fs	V		± 0.625		(V_out – V_ref)@ I_pn
Theoretical	G_th	mV/A		4.167		0.625 V @ I_pn
sensitivity	<u> </u>					0.020 1 @ 1_p.1
Sensitivity error	G_err	% of	-0.8		0.8	
-		l_pn				
Linearity error	ξ_L	% of	-0.15		0.15	@25 ℃
within I_pn	>_ -	l_pn				<u> </u>
Reaction time @	t_ra	μs		0.3		
10 % of I_p						
Step response						
time @ 90 % of	t_r	μs		0.3		
l_p						
-3 dB band width	BW	kHz		300		
Noise						
DC ~ 10 kHz	Vnoise	mVpp		5		
DC ~ 100 kHz				6		
Accuracy @	X	% of	-0.8		0.8	
25℃		l_pn				
Accuracy @	X_TRange	% of	-1.1		1.1	
85 °C		l_pn				



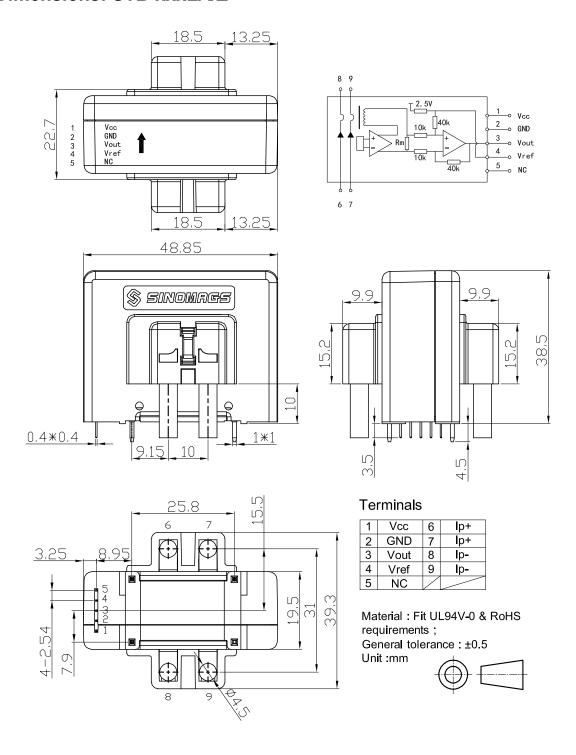
4. Electrical parameters (STB-200LA/Z, STB-200LA/ZN)

Condition: Vcc = 5.0 V, RL = 10 k Ω , T A = 25 $^{\circ}$ C, unless specified.

Parameters	Symbol	Unit	Min.	Тур.	Max.	Remark
Primary nominal	Lpp	Α		200		
rms current	ms current I_pn			200		
Primary current	I_pm	Α	-450		450	
measuring range	i_piii		-430		430	
Supply voltage	Vcc	V	4.75	5	5.25	
Consumption	lc	mA	15	+ n*/NS*1	000	NS = 1500
current	10	ША	15 + I_p*/NS*1000			140 - 1500
Reference	V_ref	V	2.48	2.5	2.52	
voltage	V_1C1	V	2.40	2.0	2.02	
Electrical offset	V_oe	mV		5		100 % tested
voltage	V_00	111 V				(V_out – V_ref)@ 0 A
Magnetic offset	l_om	mA	-210		210	@10*l_pn
current	_					 .
Full-scale voltage	V_fs	V		± 0.625		(V_out – V_ref)@ I_pn
Theoretical	G_th	mV/A		3.125		0.625 V @ I_pn
sensitivity						
Sensitivity error	G_err	% of	-0.8		0.8	
-	_	l_pn				
Linearity error	ξ_L	% of	-0.15		0.15	@25 ℃
within I_pn		l_pn				_
Reaction time @	t_ra	μs		0.3		
10 % of I_p		-				
Step response	4			0.0		
time @ 90 % of	t_r	μs		0.3		
I_p	DW	ld la		200		
-3 dB band width Noise	BW	kHz		300		
DC ~ 10 kHz	Vnoise	mVpp		5		
DC ~ 10 kHz	Vnoise	πνρρ		6		
Accuracy @		% of		U		
25°C	X		-0.8		0.8	
Accuracy @		I_pn % of				
85 °C	X_TRange		-1.4		1.4	
00 0		l_pn				



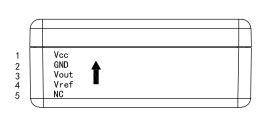
5. Dimensions: STB-xxxLA/Z

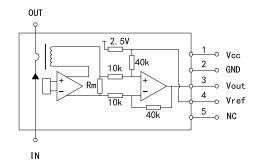


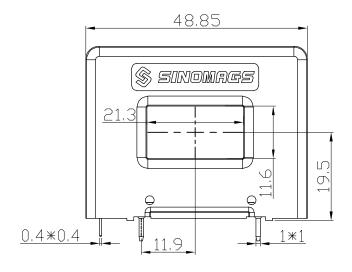
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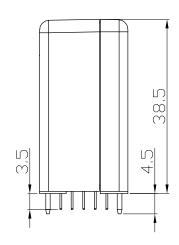


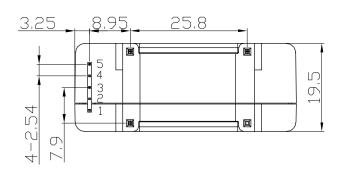
6. Dimensions: STB-xxxLA/ZN











Terminals

1	Vcc
2	GND
3	Vout
4	Vref
5	NC

Material: Fit UL94V-0 & RoHS

requirements;

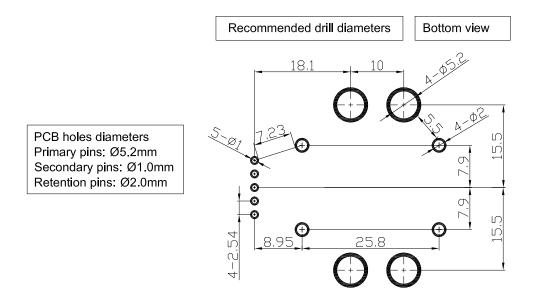
General tolerance: ±0.5

Unit:mm





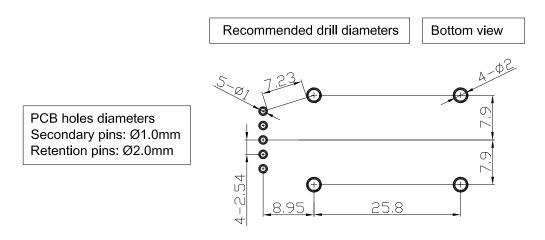
7. PCB footprint (STB-xxxLA/Z)



Assembly on PCB

- O Recommended PCB hole diameter: 1 mm for secondary pins, 2 mm for retention pin.
- O Maximum PCB thickness: 2.4 mm (can be customized per request).
- O Wave soldering profile: maximum 260 $^{\circ}$ C for 10 seconds.

8. PCB footprint (STB-xxxLA/ZN)



Assembly on PCB

- O Recommended PCB hole diameter: 1 mm for secondary pins, 2 mm for retention pin.
- O Maximum PCB thickness: 2.4 mm (can be customized per request).
- O Wave soldering profile: maximum 260 ℃ for 10 seconds.

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