

CURRENT SENSOR

PRODUCT SERIES: STB-LA/F

PRODUCT PART NUMBER: STB-230LA/F

VERSION: Ver 1.2



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1. Description

STB-LA/F series current sensors are based on close loop principle technology. The sensor can detect the current with DC, AC, pulse and irregular wave shape.

Typical application

- Solar inverter
- Direct-current dynamo
- Uninterruptible Power Supplies (UPS)
- Switched model power supplies (SMPS)
- Variable frequency converter

General parameters

Parameter	Symbol	Unit	Value	Remark
Working environment temperature	T_A	°C	-40 ~ 85	
Sensor operating limit temperature	T_{SL}	°C	-40 ~ 90	
Limit temperature of primary conductor	T_{LP}	°C	105	STB-LA/F
Mass	m	g	48	STB-LA/F

Absolute parameters

Parameters	Symbol	Unit	Value
Supply voltage	$V_{CC_{max}}$	V	± 15.75
Maximum primary current	$I_{PN_{max}}$	A	$5 \cdot I_{PN}$

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	3	
Impulse withstand voltage 1.2/50μs	U_W	kV	9.8	
Clearance distance (pri. -sec)	dCl	mm	12	Shortest distance through air
Creepage distance (pri. -sec)	dCp	mm	12	Shortest path along device body

2. Electrical parameters (STB-230LA/F)

Condition: $V_{CC} = \pm 15.0 \text{ V}$, $T_A = 25^\circ\text{C}$, $R_M = 10 \Omega$, unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	I_{PN}	A		230		
Measuring resistance	R_M	Ω	10		100	$V_{CC} = \pm 15\text{V}$
Primary current measuring range	I_{PM}	A	-425		425	$V_{CC} = \pm 15\text{V}$, $R_M = 27 \Omega$ ($t_{max} = 10\text{sec}$)
			-220		220	$V_{CC} = \pm 15\text{V}$, $R_M < 50 \Omega$ ($t_{max} = 1\text{min}$)
Secondary nominal current	I_{SN}	mA		115		
Turns ratio	K_N			1:2000		
Supply voltage	V_{CC}	V	± 15	± 15.375	± 15.75	
Consumption current	I_{CC}	mA		18	22	$I_P = 0$
Offset current	I_O	mA		0.02	0.05	$I_P = 0$ $T_A = 25^\circ\text{C}$
	I_{Oges}				0.07	including I_O, I_{Ot}, I_{OT}
Long term drift Offset current I_O	I_{Ot}	mA		0.025	0.07	
Offset current temperature drift I_O	I_{OT}	mA		0.025	0.07	$T_A = -40^\circ\text{C} \sim 85^\circ\text{C}$
Hysteresis current (caused by primary current $3 \times I_{PN}$)	I_{OH}	mA		0.025	0.05	$I_P = 0$
Supply voltage rejection ratio	$\Delta I_O / \Delta V_C$	mA/V			0.01	
Linearity error within I_{PN}	ε_L	% of I_{PN}			0.1	
Delay time	$\Delta t (I_{PM})$	μs		0.5	1	$d_i/d_t = 100\text{A}/\mu\text{s}$
Response time	t_r	μs		1	2	
-3 dB band width	BW	kHz	100			
Accuracy	X	%		0.1	0.5	$I_{PN} T_A = 25^\circ\text{C}$
Temperature drift of X	X_{Ti}	%			0.1	$T_A = -40 \dots 85^\circ\text{C}$
Resistance of secondary coil	R_S	Ω			44	$T_A = 85^\circ\text{C}$

3. Dimensions: STB-230LA/F

