

CURRENT SENSOR

PRODUCT SERIES: STK-X.XP/P1B

PRODUCT PART NUMBER: STK-1.0P/P1B

VERSION: Ver 1.1



Sinomags Technology Co., Ltd.

Web site: www.sinomags.com

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1. Description

Features

- Open loop current transducer
- Voltage output
- Insulation voltage for 4kV/AC
- Single supply voltage
- PCB mounting.

Applications

- Residual current measurement
- Leakage current measurement in transformerless PV inverters
- First human contact protection of PV arrays
- Failure detection in power sources
- Leakage current detection in stacked DC sources
- Communication power

Advantages

- High accuracy
- High overload capability
- High insulation capability
- High separation ability
- Low temperature drift
- Degauss and test functions.

Standards

- EN 50178
- IEC 61326-1: 2012

Application Domain

- Industry.

2. Absolute parameter

Absolute maximum ratings

Parameter	Symbol	Unit	Value
Supply voltage	V _c	V	6.5
Primary conductor temperature		°C	110
Overload capability (100 μs, 500 A/μs)		A	3300

Stresses above these ratings may cause permanent damage. Exposure to absolute maximum ratings for extended periods may degrade reliability.

Isolation parameters

Parameter	Symbol	Unit	Value	Remark
RMS voltage for AC test 50Hz/1 min	V _d	kV	5	
Impulse withstand voltage 1.2/50μs	V _w	kV	10.1	
Comparative tracking index	CTI	V	600	
Clearance distance (pri. –pri.)	d _{cl}	mm	4.2	Shortest distance through air
Creepage distance (pri. – pri.)	d _{cp}	mm	6.9	Shortest path along device body
Clearance distance (pri. –sec.)	d _{cl}	mm	8.3	Shortest distance through air
Creepage distance (pri. –sec.)	d _{cp}	mm	8.3	Shortest path along device body
Case material			V0 according to UL 94	

Environmental and mechanical characteristics

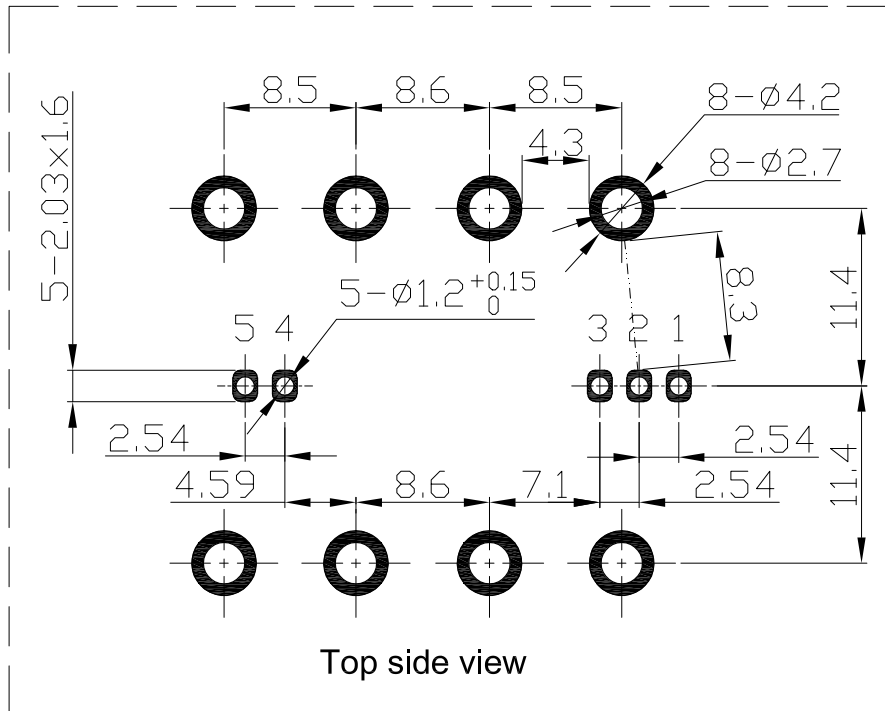
Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T _A	°C	-40		105	
Ambient storage temperature	T _S	°C	-40		105	
Mass	m	g		45		
standard	EN 50178, IEC 61010-1, UL 508					

3. Electrical data

At $T_A = 25\text{ }^\circ\text{C}$, $V_C = 5\text{ V}$.

Parameters	Symbol	Unit	Min	Typ	Max	Remark
Primary nominal residual rms current	I_{pn}	A		1		
Primary residual current, measuring range	I_{pm}	A	-1.7		1.7	
Supply voltage	V_C	V	4.75	5	5.25	
Current consumption	I_C	mA		6	10	
Reference voltage @ $I_P = 0$	V_{ref}	V	2.48	2.5	2.52	Internal reference
Electrical offset voltage	V_{oe}	mV	-25		25	$(V_{out} - V_{ref})$ @ 0 A
Temperature coefficient of V_{OE} @ $I_P = 0\text{ A}$	TCV_{oe}	ppm/K		570		ppm/K of 2.5 V -40 ... 105 °C
Theoretical sensitivity	G_{th}	V/A		1.2		
Sensitivity error	ϵ_G	%	-1.6	0.5	1.6	$R_L > 500\text{ k}\Omega$
Temperature coefficient of G	TCG	ppm/K		± 400		- 40°C ..105°C
Linearity error	ϵ_L	%		0.5	1	
Check current	I_{CK}	mA	156	166	166	$\pm 10\text{ mA}$
Output voltage(Checkfunction)	V_{CK}	V	V_{oe+} 0.188	$V_{oe+0.2}$	V_{oe+} 0.212	
Check enable voltage	V_{CE}	V	3.3		V_C	
Check disabled voltage	V_{CD}	V		< 0.2		
Reaction time @ 10 % of I_{PRN}	t_{ra}	μs		10		$R_L > 500\text{ k}\Omega$, $di/dt > 5\text{ A}/\mu\text{s}$
Step response time to 90 % of I_{PN}	t_r	μs		40		$R_L > 500\text{ k}\Omega$, $di/dt > 5\text{ A}/\mu\text{s}$
Frequency bandwidth (-3dB)	BW	kHz		15		$R_L > 500\text{ k}\Omega$
Noise(1 Hz ~ 10 kHz)	V_{no}	mV rms		10		$R_L > 500\text{ k}\Omega$
Accuracy@ $I_{PN}@TA= 25\text{ }^\circ\text{C}$	X_{25c}	% of I_{PN}		± 2		
Accuracy@ I_{PN} @ $TA= 105\text{ }^\circ\text{C}$	X_{105c}	% of I_{PN}		± 5		

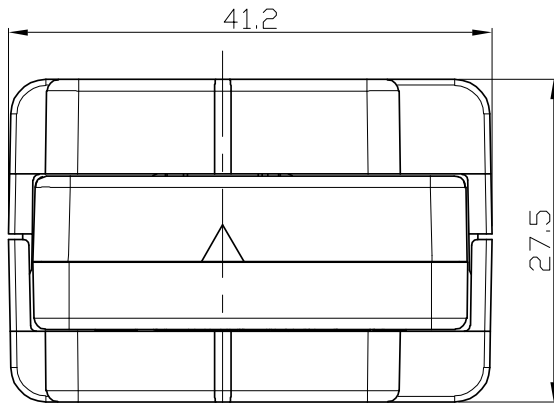
4. Assembly on PCB



Assembly on PCB

- Maximum PCB thickness 2.4 mm
- Wave-soldering: 260°C @ 10 s

Dimensions (in mm)

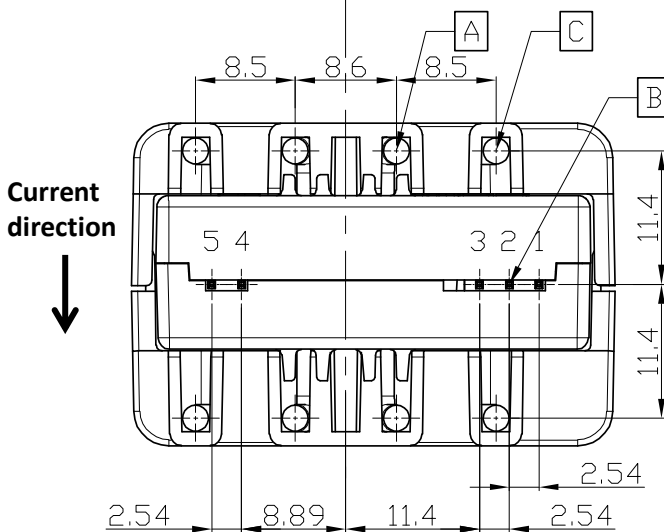
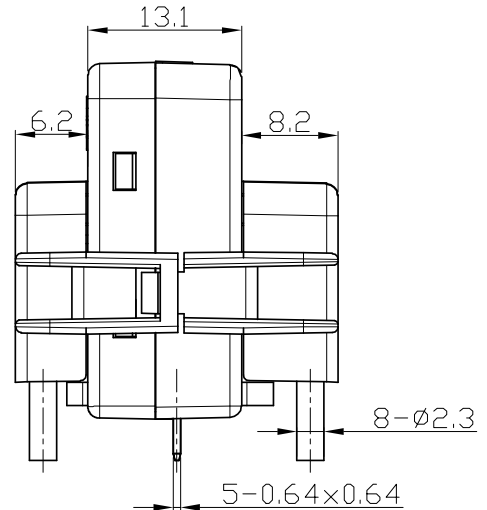
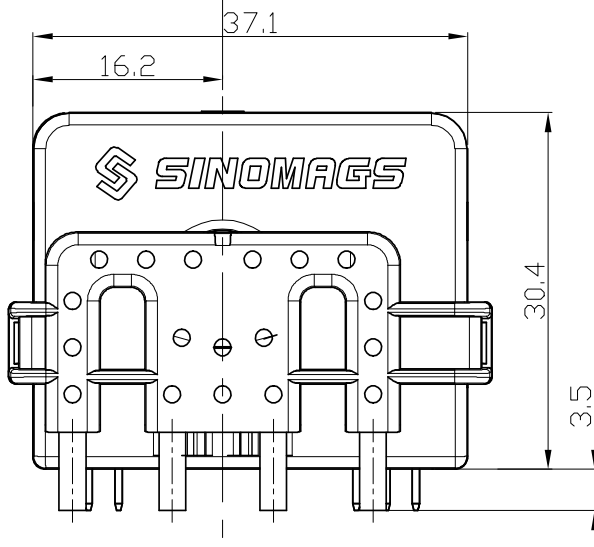


	d_{CI}	d_{CP}
C-B	9.9mm	---
A-C	4.5mm	6mm
C-D	11.6mm	16.0mm

D is secondary inside the transducer

On the customer's PCBA

	d_{CI}	d_{CP}
C-B	8.3mm	8.3mm
A-C	4.3mm	4.3mm



Terminals

1	Vout
2	CHK
3	GND
4	Vcc
5	Vref

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ± 0.5
Unit : mm

