CN1A PB00 SERIES

芯森 CHIPSENSE

Current Sensor

Model Number:

CN1A 25 PB00

RoHS compliant

CE
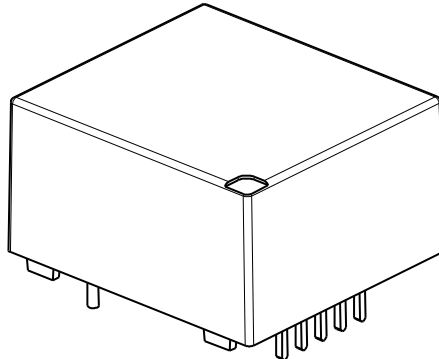
For the electronic measurement of voltage: DC, AC, pulsed…, with galvanic separation between the primary and the secondary circuit.

Features

✧ Closed loop (compensated) current sensor using the Hall Effect

✧ Galvanic separation between primary and secondary

✧ Insulating plastic case recognized according to UL94-V0

✧ Very good linearity

✧ High accuracy

✧ Very low offset drift over temperature

✧ No insertion loss

✧ Standards:
  - IEC 60664-1:2020
  - IEC 61800-5-1:2022
  - IEC 62109-1:2010

Applications

✧ AC variable speed and servo motor drives

✧ Uninterruptible Power Supplies (UPS)

✧ Static converters for DC motor drives

✧ Switch Mode Power Supplies (SMPS)

✧ Power supplies for welding applications

✧ Battery management

✧ Wind energy inverter

✧ Test and detection devices

Safety

This sensor must be used according to IEC61800-5-1.

This sensor must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacture's operating instructions.

Caution, risk of electrical shock!

When operating the sensor, certain parts of the module can carry hazardous voltage (e.g., Primary busbar, power supply). Ignore this warning can lead to injury and/or cause serious damage.

This sensor is a built-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.

Main supply must be able to be disconnected.

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Absolute maximum ratings（not operating）

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	± 18

※ Stress above these ratings may cause permanent damage.

※ Exposure to absolute maximum ratings for extended periods may degrade reliability.

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	℃	–40		85	
Ambient storage temperature	T_S	℃	–40		90	
Mass	m	g		23		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @ 50Hz,1min	V_d	kV	2.5	According to IEC 60664-1
Impulse withstand voltage 1.2/50µs	V_W	kV	9	
Insulation resistance	R_{IS}	MΩ	1500	@500V，T_A=25℃
Plastic case	-	-	UL94-V0	
Clearance (pri.- sec.)	d_{Cl}	mm	10.6	
Creepage distance (pri.- sec.)	d_{Cp}	mm	10.6	
Comparative traking index	CTI	PLC	3	
Application example	-	-	600V	Reinforced insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ，PD2
Application example	-	-	1700V	Basic insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ，PD2

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Electrical data

※ With T_A = 25℃, V_C = ±15V, R_L = 150Ω,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	At		±25		
Maximum measuring current	I_{PM}	At	−36		36	
Measuring resistance	R_M	Ω	100		320	@70℃，±25At
			100		315	@85℃，±25At
			100		190	@70℃，±36At
			100		185	@85℃，±36At
Primary resistance（each coil）	R_P	mΩ			1.25	@ 25℃
Secondary coil resistance	R_S	Ω		115		@ 85℃
Output nominal rms current	I_{SN}	mA		±25		
Supply voltage	V_C	V		±15		@ ±5%
Coil turn ratio	K_N	-	1-2-3-4-5:1000			
Current consumption	I_C	mA		10 + I_S		
Zero offset current	I_0	mA	−0.15	±0.05	0.15	
Thermal drift of offset current	I_{0T}	mA	−0.5	±0.15	0.5	@ −25℃~85℃
			−1.2	±0.30	1.2	@ −40℃~85℃
Residual current@ I_P=0 after 3 × I_{PN}	I_{0M}	mA	−0.15	±0.05	0.15	
Sensitivity error	ε_G	%	−0.3		0.3	
Linearity error	ε_L	% of I_{PN}	−0.2		0.2	Exclusive of I_O
Accuracy@ I_{PN}	X	% of I_{PN}	−0.5		0.5	Exclusive of I_O
Response time@90% of I_{PN}	t_r	μs			1	@ di/dt=100A/s
Frequency bandwidth(-1dB)	BW	kHz	150			

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Dimensions （in mm. 1 mm = 0.0394 inch）

PIN DEFINITION

Terminal +: Supply voltage +15V

Terminal M: Measure

Terminal - : Supply voltage -15V
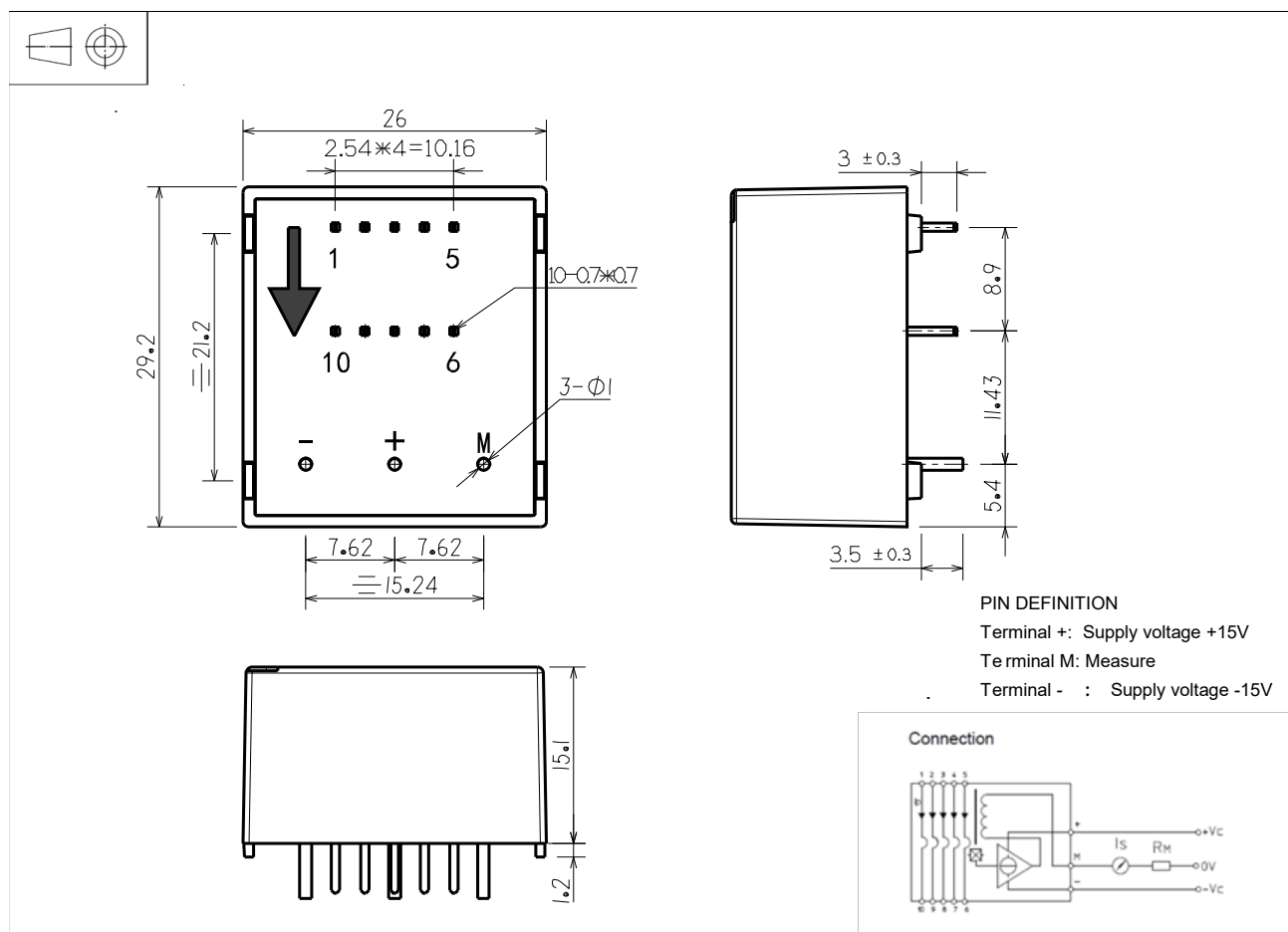
Primary turns	Primary current		Norminal output current	Turns ratio	Primary resistance	Primary inductance	Connection way
	Nominal current $I_{PN}(A)$	Max. current $I_{PM}(A)$	$I_{SN}(mA)$	K_N	R_P （mΩ）	L_P （μH）	
1	25	36	25	1 / 1000	0.3	0.023	5 4 3 2 1 IN / OUT 6 7 8 9 10
2	12	18	24	2 / 1000	1.1	0.09	5 4 3 2 1 IN / OUT 6 7 8 9 10
3	8	12	24	3 / 1000	2.5	0.21	5 4 3 2 1 IN / OUT 6 7 8 9 10
4	6	9	24	4 / 1000	4.4	0.37	5 4 3 2 1 IN / OUT 6 7 8 9 10
5	5	7	25	5 / 1000	6.3	0.58	5 4 3 2 1 IN / OUT 6 7 8 9 10

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Mechanical characteristics

- ✧ General tolerance
- ✧ Primary connecting pin
- ✧ Secondary signal connecting pin
- ✧ Recommended PCB hole

±0.3 mm
10 pins 0.7×0.7mm
3 pins Φ1mm
Φ1.2

Remarks

- ✧ I_S is positive when the measured electric current flows from 1,2,3,4,5 to 10,9,8,7,6.
- ✧ This is a standard model. For different applications(measurement, secondary connections…), please contactCHIPSENSE.

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