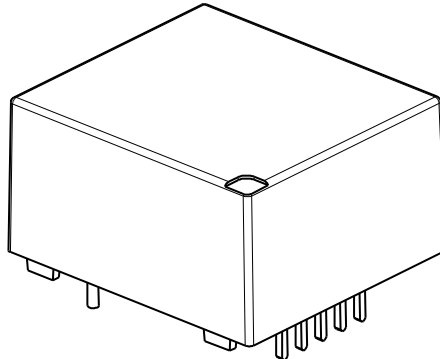


# CN1A PB01 SERIES

## Current Sensor

### Model Number:

CN1A 25 PB01



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.

### 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.

# CN1A PB01 SERIES

## 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	$T_A$	°C	-40		85	
Ambient storage temperature	$T_S$	°C	-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, $T_A=25^\circ\text{C}$
Plastic case	-	-	UL94-V0	
Clearance (pri.- sec.)	$d_{Cl}$	mm	10.6	
Creepage distance (pri.- sec.)	$d_{Cp}$	mm	10.6	
Comparative tracking index	$CTI$	PLC	3	
Application example	-	-	600V	Reinforced insulation, according to IEC 61800-5-1, IEC 62109-1CAT III, PD2
Application example	-	-	1700V	Basic insulation, according to IEC 61800-5-1, IEC 62109-1CAT III, PD2

# CN1A PB01 SERIES

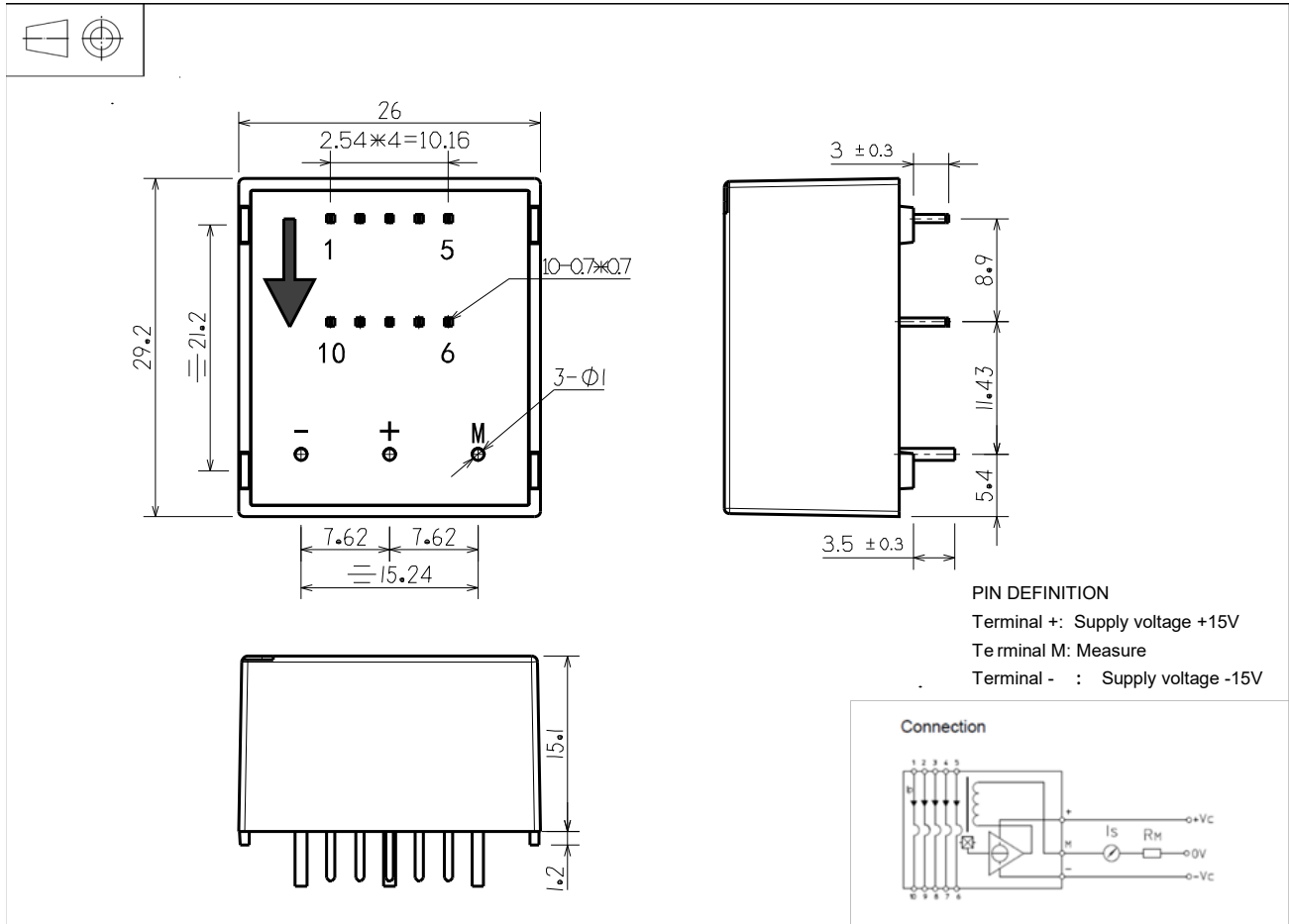
## Electrical data

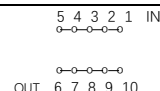
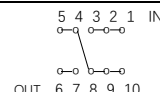
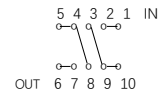
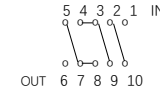
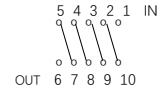
※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = \pm 12\text{V}$ ,  $R_L = 100\Omega$ , unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN}$	At		$\pm 25$		
Maximum measuring current	$I_{PM}$	At	-36		36	
Measuring resistance	$R_M$	$\Omega$	50 50		259 146	@ $\pm 25\text{At}$ , @ $85^\circ\text{C}$ @ $\pm 36\text{At}$ , @ $85^\circ\text{C}$
Primary resistance (each coil)	$R_P$	m $\Omega$			1.25	@ $25^\circ\text{C}$
Secondary coil resistance	$R_S$	$\Omega$		115		@ $85^\circ\text{C}$
Output nominal rms current	$I_{SN}$	mA		$\pm 25$		
Supply voltage	$V_C$	V		$\pm 12$		@ $\pm 5\%$
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	$\pm 0.05$	0.15	
Thermal drift of offset current	$I_{0T}$	mA	-0.5 -1.2	$\pm 0.15$ $\pm 0.30$	0.5 1.2	@ $-25^\circ\text{C} \sim 85^\circ\text{C}$ @ $-40^\circ\text{C} \sim 85^\circ\text{C}$
Residual current@ $I_P=0$ after $3 \times I_{PN}$	$I_{0M}$	mA	-0.15	$\pm 0.05$	0.15	
Sensitivity error	$\varepsilon_G$	%	-0.3		0.3	
Linearity error	$\varepsilon_L$	% of $I_{PN}$	-0.2		0.2	Exclusive of $I_0$
Accuracy@ $I_{PN}$	$\chi$	% of $I_{PN}$	-0.5		0.5	Exclusive of $I_0$
Response time@90% of $I_{PN}$	$t_r$	$\mu\text{s}$			1	@ $di/dt=100\text{A/s}$
Frequency bandwidth(-1dB)	$BW$	kHz	150			

# CN1A PB01 SERIES

Dimensions (in mm. 1 mm = 0.0394 inch)



Primary turns	Primary current		Nominal output current $I_{SN}(mA)$	Turns ratio $K_N$	Primary resistance $R_P$ (mΩ)	Primary inductance $L_P$ (μH)	Connection way
	Nominal current $I_N(A)$	Max. current $I_M(A)$					
1	25	36	25	1 / 1000	0.3	0.023	
2	12	18	24	2 / 1000	1.1	0.09	
3	8	12	24	3 / 1000	2.5	0.21	
4	6	9	24	4 / 1000	4.4	0.37	
5	5	7	25	5 / 1000	6.3	0.58	

# CN1A PB01 SERIES

## Mechanical characteristics

◇ General tolerance	±0.3 mm
◇ Primary connecting pin	10 pins 0.7×0.7mm
◇ Secondary signal connecting pin	3 pins Φ1mm
◇ Recommended PCB hole	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.