# CR1V PB05 SERIES

Current sensor

Model Number:

CR1V 75 PB05

RoHS compliant

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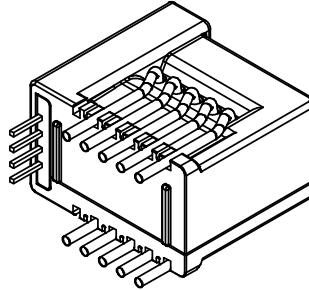
For the electronic measurement of current:DC,AC,pulsed...,with galvanic separation between the primary and the secondary circuit.

Features

◇ Closed loop（compensated）current sensor using the Hall effect
◇ Galvanic separation between primary and secondary
◇ Insulating plastic case recognized according toUL 94-V0
◇ Very good linearity
◇ High accuracy
◇ Very low offset drift over temperature
◇ No insertion losses
◇ Standards:
  • IEC 60664-1:2020
  • IEC 61800-5-1:2022
  • IEC 62109-1:2010

Applications

◇ AC variable speed and servo motor drives
◇ Uninterruptible Power Supply (UPS)
◇ Static converters for DC motor drives
◇ Switch Mode Power Supplies (SMPS)
◇ Power supply for welding applications
◇ Battery management
◇ Photovoltaic inverter
◇ Module power supply

Safety

The sensor must be used according to IEC 61800-5-1.
The 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	6
Primary conductor temperature	T_B	℃	110
ESD rating, Human Body Model (HBM)	V_{ESD}	kV	4

※ Stresses 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		105	
Ambient storge temperature	T_S	℃	−55		125	
Mass	m	g		10		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test, @50Hz,1min	V_d	kV	4.1	
Impulse withstand voltage 1.2/50μs	V_W	kV	7.5	
Clearance(Pri.-sec.)	d_{Cl}	mm	7.5	
Creepage distance(Pri.-sec.)	d_{Cp}	mm	7.5	
Plastic case	-	-	UL94-V0	
Comparative traking index	CTI	PLC	3	
Application example	-	-	300V CAT Ⅲ PD2	Reinforced insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ, PD2
Application example	-	-	600V CAT Ⅲ PD2	Basic insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ, PD2

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※ With T_A = 25℃, V_C = 5V, R_L = 10kΩ,Unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A		±75		
Maximum measured current	I_{PM}	A	-180		180	
Turns ratio	K_N	-	1-2-3-4- 5			
Supply voltage	V_C	V	4.75	5	5.25	@ ±5%
Current consumption	I_C	mA	8 + I_P/N_S			@ N_S=966
Theoretical sensitivity	G_{th}	mV/A		6.25		@ V_C=5V
Sensitivity error	$\mathcal{E}_G$	%	-1		1	Exclusive of V_{OE}
Temperature of G	TCG	ppm/K	-40		40	@ -40℃~105℃
Reference voltage@I_P=0A	V_{REF}	V	2.495	2.5	2.505	
Output voltage	V_{OUT}	V	2.5 ± （1.125 * I_{PN} / I_{PM}）			
Output voltage@I_P=0A	V_{OUT}	V		V_{REF}		
Offset voltage	V_{OE}	mV	-5		5	
Temperature drift of reference voltage	TCV_{REF}	ppm/K	-50	±5	50	Reference
Temperature drift of output voltage@I_P=0A	TCV_{OUT}	ppm/K	-4		4	@ ppm/K of 2.5V @ -40℃~105℃
Load resistance	R_L	kΩ	10			
Linearity error	$\mathcal{E}_L$	% of I_{PN}	-0.1		0.1	Exclusive of V_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}			1	Exclusive of V_{OE}
Response time@ 90% of I_{PN}	t_r	µs			1	
Frequency bandwidth(-3dB)	BW	kHz	200			

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Dimensions （in mm. 1 mm = 0.0394 inch）

Typical application circuit
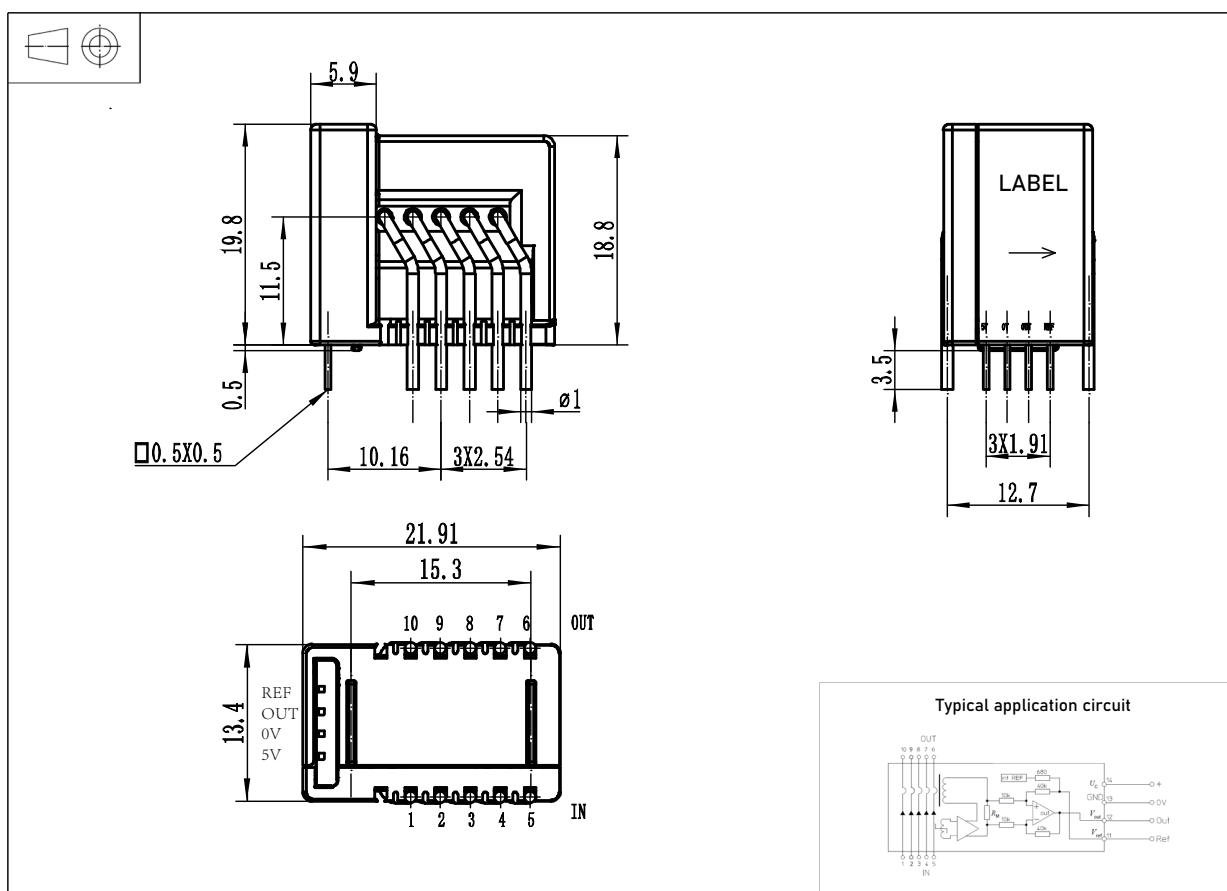
Mechanical characteristics

✧ General tolerance ±0.3 mm

Remarks

✧ I_S is positive when the measured electric current flows from 1,2,3,4,5 to 6,7,8,9,10.

This is a standard model. For different applications (measurement, secondary connections…), please contact CHIPSENSE.

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