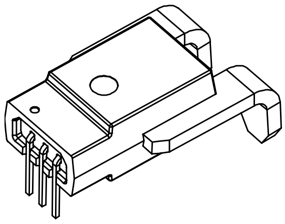
AN1V PB30

Current Sensor

Model Number：

AN1V 50 PB30
AN1V 100 PB30
AN1V 150 PB30
AN1V 200 PB30



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

Features

- Open loop current sensor using the Hall effect
- ASIC technology
- Supply voltage 3.3V
- Maintain output proportional to changes in the power supply（include offset and sensitivity）
- Galvanic separation between primary and secondary
- Insulating plastic case recognized according to UL 94-V0
- No insertion losses
- Small size
- Standards:
  - IEC 60664-1:2020
  - IEC 61800-5-1:2022
  - IEC 62109-1:2010

Applications

- AC variable speed
- Uninterruptible Power Supply (UPS)
- Static converters for DC motor drives
- Switch Mode Power Supplies (SMPS)
- Power supply for welding applications
- Battery Management
- Wind energy inverter

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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芯森 CHIPSENSE

Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	6.5
ESD rating, Human Body Model (HBM)	V_{ESD}	V	8000

※ 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 -40 -40 -40		150 150 125 85	AN1V 50 PB30 AN1V 100 PB30 AN1V 150 PB30 AN1V 200 PB30
Ambient storge temperature	T_S	℃	-55		150	
Primary resistance value	R_P	μΩ		100		
Mass	m	g		5		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test, @50Hz,1min	V_d	kV	4.8	According to IEC 60664-1
Plastic case	-	-	UL94-V0	
Comparative traking index	*CTI*	PLC	2	
Application example	-	-	$475V_{RMS}$	Reinforced insulation,According to IEC 61800-5-1, IEC 62109-1CATⅢ， PD2
Application example	-	-	$960V_{RMS}$	Basic insulation,According to IEC 61800-5-1, IEC 62109-1CATⅢ， PD2

Electrical data

AN1V 50 PB30

※ With T_A = 25℃, V_C = 3.3V, R_L = 10kΩ,unless otherwise

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-50		50	
Supply voltage	V_C	V	3	3.3	3.6	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/3.3)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		26.4		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_1	nF		1	10	
Power filter capacitor	C_2	nF		100		
Performance data						
Sensitivity error	ε_G	%	-1		1	
Temperature of G	TCG	%	-1.5		1.5	@T_A=-40℃~150℃
Electrical offset current	V_{OE}	mV	-10	±5	10	@V_C=3.3V also I_P=0A
Electrical offset error of temperature drift	TCV_{OE}	mV	-10		10	@T_A=-40℃~150℃
Hysteresis offset voltage	V_{OM}	mV		4		@V_C=3.3V, after ±I_{PN}
Linearity error	ε_L	% of I_{PN}	-1		1	Exclusive of V_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}	-2		2	@T_A=-40℃~150℃
Response time@ 90% of I_{PN}	t_r	μs		2.5	5	@C_1=1 nF
Frequency bandwidth(-3dB)	BW	kHz		250		@C_1=1 nF
Output noise	V_{no}	mV		2.1		@C_1=1 nF

Electrical data

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※ With T_A = 25℃, V_C = 3.3V, R_L = 10kΩ,Unless otherwise

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-100		100	
Supply voltage	V_C	V	3	3.3	3.6	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/3.3)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		13.2		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_1	nF		1	10	
Power filter capacitor	C_2	nF		100		
Performance data						
Sensitivity error	ε_G	%	-1		1	
Temperature of G	TCG	%	-1.5		1.5	@ T_A=-40℃~150℃
Electrical offset current	V_{OE}	mV	-10	±5	10	@ V_C=3.3V also I_P=0A
Electrical offset error of temperature drift	TCV_{OE}	mV	-10		10	@ T_A=-40℃~150℃
Hysteresis offset voltage	V_{OM}	mV		4		@ V_C=3.3V, after ± I_{PN}
Linearity error	ε_L	% of I_{PN}	-1		1	Exclusive of V_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}	-2		2	@ T_A=-40℃~150℃
Response time@ 90% of I_{PN}	t_r	µs		2.5	5	@ C_1=1 nF
Frequency bandwidth(-3dB)	BW	kHz		250		@ C_1=1 nF
Output noise	V_{no}	mV		1.8		@ C_1=1 nF

AN1V 150 PB30

※ With T_A = 25℃, V_C = 3.3V, R_L = 10kΩ,unless otherwise

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-150		150	
Supply voltage	V_C	V	3	3.3	3.6	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/3.3)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		8.8		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_1	nF		1	10	
Power filter capacitor	C_2	nF		100		
Performance data						
Sensitivity error	ε_G	%	-1		1	
Temperature of G	TCG	%	-1.5		1.5	@ T_A=-40℃~125℃
Electrical offset current	V_{OE}	mV	-10	±5	10	@V_C=3.3V also I_P=0A
Electrical offset error of temperature drift	TCV_{OE}	mV	-10		10	@ T_A=-40℃~125℃
Hysteresis offset voltage	V_{OM}	mV		4		@V_C=3.3V, after ±I_{PN}
Linearity error	ε_L	% of I_{PN}	-1		1	Exclusive of V_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}	-2		2	@ T_A=-40℃~125℃
Response time@ 90% of I_{PN}	t_r	µs		2.5	5	@C_1=1 nF
Frequency bandwidth(-3dB)	BW	kHz		250		@C_1=1 nF
Output noise	V_{no}	mV		1		@C_1=1 nF

Electrical data

AN1V 200 PB30

※ With T_A = 25℃, V_C = 3.3V, R_L = 10kΩ,unless otherwise

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-200		200	
Supply voltage	V_C	V	3	3.3	3.6	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/3.3)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		6.6		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_1	nF		1	10	
Power filter capacitor	C_2	nF		100		
Performance data						
Sensitivity error	ε_G	%	-1		1	
Temperature of G	TCG	%	-1.5		1.5	@T_A=-40℃~85℃
Electrical offset current	V_{OE}	mV	-10	±5	10	@V_C=3.3V also I_P=0A
Electrical offset error of temperature drift	TCV_{OE}	mV	-10		10	@T_A=-40℃~85℃
Hysteresis offset voltage	V_{OM}	mV		4		@V_C=3.3V, after ±I_{PN}
Linearity error	ε_L	% of I_{PN}	-1		1	Exclusive of V_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}	-2		2	@T_A=-40℃~85℃
Response time@ 90% of I_{PN}	t_r	μs		2.5	5	@C_1=1 nF
Frequency bandwidth(-3dB)	BW	kHz		250		@C_1=1 nF
Output noise	V_{no}	mV		0.9		@C_1=1 nF

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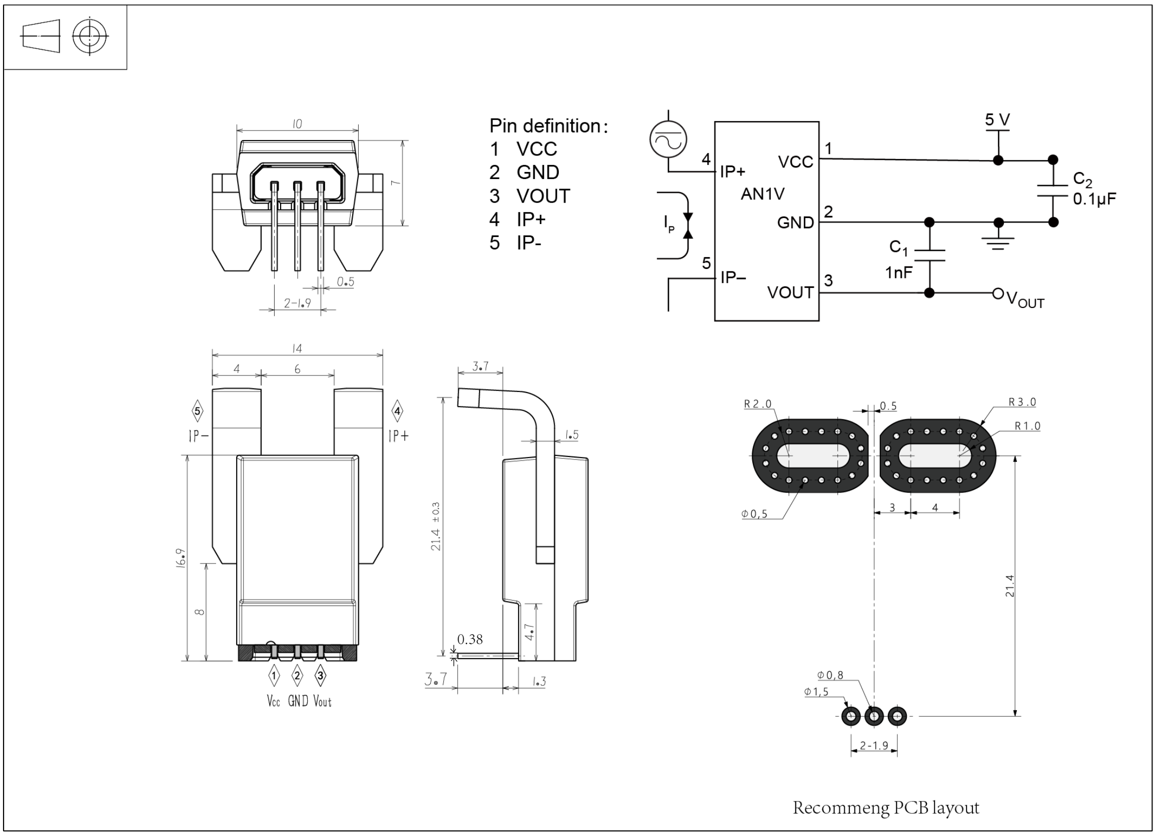
Dimensions(Unit mm)



Mechanical characteristics

✧ General tolerance	±0.3 mm
✧ Conductor and pin material	Red copper with tin plating

Remarks

✧ When I_P flows in the direction of pin4 to pin5， V_{out} increase.