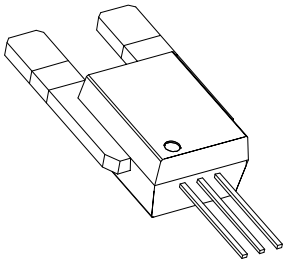
AN1V PB21

Current Sensor

Model Number:

AN1V 50 PB21
AN1V 100 PB21
AN1V 150 PB21
AN1V 200 PB21



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
- 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.

CHIPSENSE reserves the right to carry out modifications on sensor,in order to improve them without prior notice.

Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	²	²	": '
ESD rating, Human Body Model (HBM)	²₈z2	²	' ı ı ı

※ 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	¢	℃	ı y ı ı y ı ı y ı ı y ı		ɻ ' ı ɻ ' ı ɻʁ ' ' '	AN1V 50 PB21 AN1V 100 PB21 AN1V 150 PB21 AN1V 200 PB21
Ambient storge temperature	¢z	℃	ı ' '		ɻ ' ı	
Primary resistance value	vs	, Ω		ɻ ı ı		
Mass	ÿ	ç		'		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test, @50Hz,1min	²₀	÷²	y : '	Accordingto Ⅷ8 - " ı "" y ı ɻ
Plastic case	ı	ı	¦Z ' y ı 2 ı	
Comparative traking index	- ¢///	sZ -	ʁ	
Application example	ı	ı	y ‘ ' ²v_z	Reinforced insulation,according to Ⅷ8 - "ɻ ' ı ı ' ı ɻ ` Ⅷ8 - "ʁɻ ı ' ı ɻ - ¢Ⅲ, PD2
Application example	ı	ı	' " ı ²v_z	Basic insulation,according to Ⅷ8 - "ɻ ' ı ı ' ı ɻ ` Ⅷ8 - "ʁɻ ı ' ı ɻ - ¢Ⅲ, PD2

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Electrical data

AN1V 50 PB21

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

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-50		50	
Primary current measuring range	I_{PM}	A	-50		50	
Supply voltage	V_C	V	4.5	5.0	5.5	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/5)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		40		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_2	nF		1	10	
Power filter capacitor	C_1	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=5V 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=5V, 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_2=1nF
Frequency bandwidth(-3dB)	BW	kHz		250		@C_2=1nF
Output noise	Vno	mV		5		@C_2=1nF

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Electrical data

AN1V 100 PB21

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Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-100		100	
Primary current measuring range	I_{PM}	A	-100		100	
Supply voltage	V_C	V	4.5	5.0	5.5	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/5)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		20		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_2	nF		1	10	
Power filter capacitor	C_1	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=5V 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=5V, 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_2=1nF
Frequency bandwidth(-3dB)	BW	kHz		250		@C_2=1nF
Output noise	Vno	mV		2.7		@C_2=1nF

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Electrical data

AN1V 150 PB20

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

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-150		150	
Primary current measuring range	I_{PM}	A	-150		150	
Supply voltage	V_C	V	4.5	5.0	5.5	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/5)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		13.33		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_2	nF		1	10	
Power filter capacitor	C_1	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=5V 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=5V, 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_2=1nF
Frequency bandwidth(-3dB)	BW	kHz		250		@C_2=1nF
Output noise	Vno	mV		1.8		@C_2=1nF

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Electrical data

AN1V 200 PB21

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

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data						
Primary nominal rms current	I_{PN}	A	-200		200	
Primary current measuring range	I_{PM}	A	-200		200	
Supply voltage	V_C	V	4.5	5.0	5.5	
Output voltage	V_{OUT}	V	$V_{OUT}= V_{QOV} + G_{th} \times I_P \times (V_C/5)$			
Electrical offset voltage	V_{QOV}	V		$V_{CC}/2$		
Theoretical sensitivity	G_{th}	mV/A		10		
Current consumption	I_C	mA		8	11	
Load resistance	R_L	kΩ	5.1			
Load capacitor	C_2	nF		1	10	
Power filter capacitor	C_1	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=5V 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=5V, 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_2=1nF
Frequency bandwidth(-3dB)	BW	kHz		250		@C_2=1nF
Output noise	Vno	mV		1.4		@C_2=1nF

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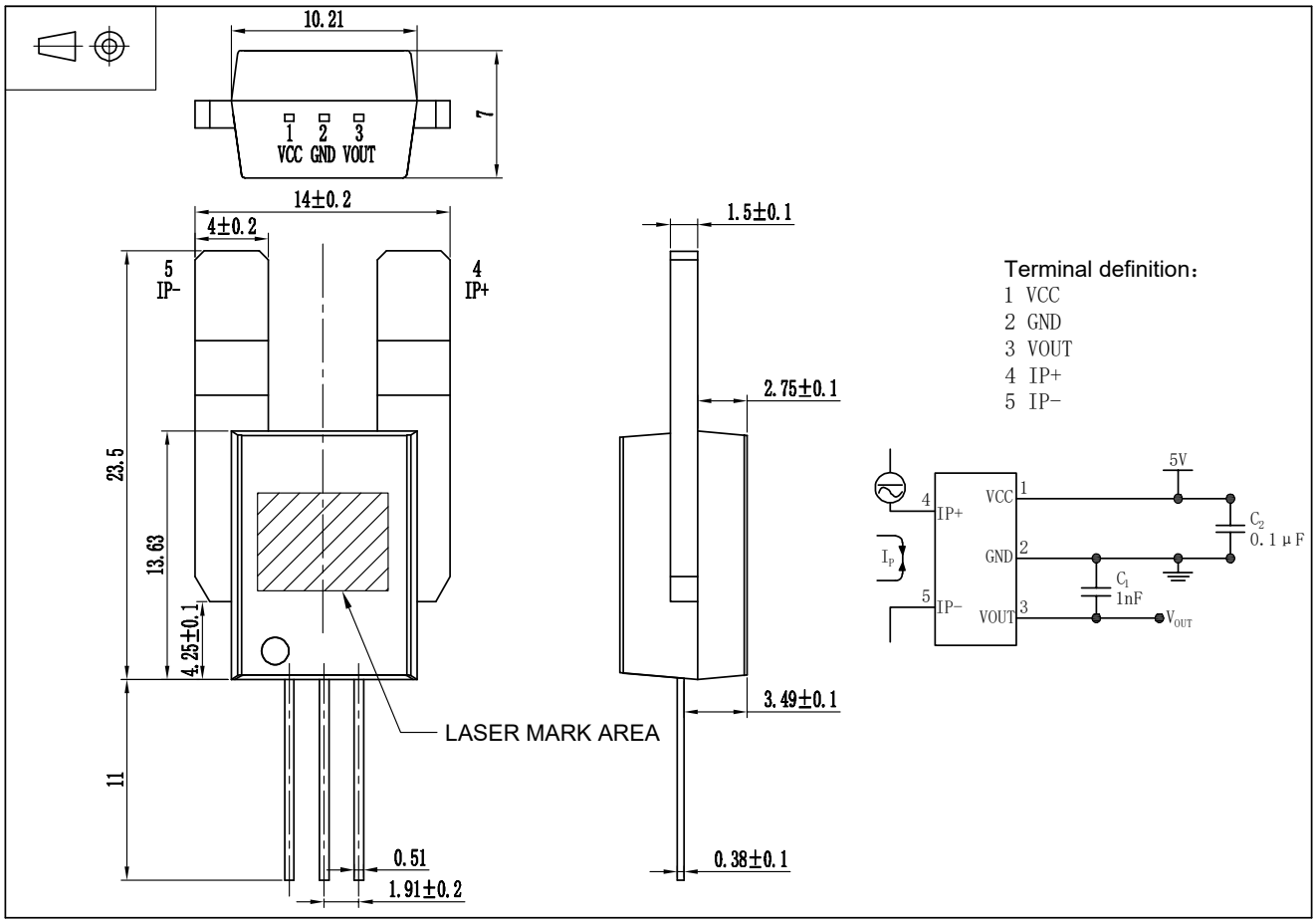
Dimensions(Unit mm)



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.

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