HS49-AP SERIES CURRENT SENSOR/TRANSDUCER

DESCRIPTION :

The primary and secondary sides of this series of sensors are insulated, used for DC, AC and pulse current measurement.

FEATURES:

- Open loop using the Hall ASIC effect
- The primary side and the secondary side are isolated
- Low power consumption
- Wide range
- No insertion loss
- Raw materials recognized according to UL 94-V0

APPLICATIONS:

- Motor Controller
- Uninterruptible Power Supplies (UPS)
- Static converters for DC motor drives
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications

MODEL LIST :

PRODUCT MODEL		
Model	**Rated input current I_{PN} (A)**	**Measuring range I_{PM} (A)**
HS49-200A-P	200	±300
HS49-400A-P	400	±600
HS49-600A-P	600	±900
HS49-800A-P	800	±1200

HS49-200A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary side rated current	I_{PN}	A	-	200	-	
Primary current measurement range	I_{PM}	A	-300	-	300	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/2)\pm(1.25 \times I_P/I_{PN})$			@V_C=5V
Reference output voltage	Vref	V	$V_C/2$			@V_C=5V
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5V & I_P=0A
Theoretical gain	G_{th}	mV/A	-	6.25	-	
Current consumption	I_C	mA	-	19	25	@V_C=5V
Load Resistance	R_L	kΩ	2	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	4.7	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	ε_G	%	-1.5	-	1.5	
Temperature drift of gain error	T_{CG}	PPM/K	-420	-	420	@T_A -40℃~+125℃
Zero offset voltage	V_{OE}	mV	-	±20		@V_C=5V &I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.1	-	0.1	@T_A -40℃~+125℃
Magnetic offset voltage	V_{OM}	mV	-	±10	-	@I_{PN}=0A,load 3 times of I_{PN}
Nonlinear error	ε_L	% of I_{PN}	-0.5	-	0.5	exclude zeroV_{OE}
Response time	t_r	μs	-	-	7	90% of IPN
Bandwidth (-3dB)	BW	kHz	-	50	-	
Phase shift	Δ∅	degree	-	-	-	
Output noise	$V_{no\ pp}$	mV	-	-	40	@DC to 20MHZ
General Data						
Ambient operating temperature	T_A	℃	-40~+125			
Ambient storage temperature	T_S	℃	-40~+125			
Mass	m	g	60			

HS49-400A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary side rated current	I_{PN}	A	-	400	-	
Primary current measurement range	I_{PM}	A	-600	-	600	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/2)\pm(1.25 \times I_P/I_{PN})$			@ V_C=5V
Reference output voltage	Vref	V	$V_C/2$			@V_C=5V
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5V & I_P=0A
Theoretical gain	G_{th}	mV/A	-	3.125	-	
Current consumption	I_C	mA	-	19	25	
Load Resistance	R_L	kΩ	2	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	4.7	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	ε_G	%	-1.5	-	1.5	
Temperature drift of gain error	T_{CG}	PPM/K	-420	-	420	@T_A -40℃~+125℃
Zero offset voltage	V_{OE}	mV	-	±20		@V_C=5V &I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.1	-	0.1	@T_A -40℃~+125℃
Magnetic offset voltage	V_{OM}	mV	-	±10	-	@I_{PN}=0A,load 3 times of I_{PN}
Nonlinear error	ε_L	% of I_{PN}	-0.5	-	0.5	exclude zeroV_{OE}
Response time	t_r	μs	-	-	7	90% of IPN
Bandwidth (-3dB)	BW	kHz	-	50	-	
Phase shift	Δ∅	degree	-	-	-	
Output noise	$V_{no\ pp}$	mV	-	-	40	@DC to 20MHZ
General Data						
Ambient operating temperature	T_A	℃	-40~+125			
Ambient storage temperature	T_S	℃	-40~+125			
Mass	m	g	60			

HS49-600A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary side rated current	I_{PN}	A	-	600	-	
Primary current measurement range	I_{PM}	A	-900	-	900	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/2)\pm(1.25 \times I_P/I_{PN})$			@ V_C=5V
Reference output voltage	Vref	V	$V_C/2$			@V_C=5V
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5V & I_P=0A
Theoretical gain	G_{th}	mV/A	-	2.083	-	
Current consumption	I_C	mA	-	19	25	
Load Resistance	R_L	kΩ	2	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	4.7	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	ε_G	%	-1.5	-	1.5	
Temperature drift of gain error	T_{CG}	PPM/K	-420	-	420	@T_A -40℃~+125℃
Zero offset voltage	V_{OE}	mV	-	±20		@V_C=5V &I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.1	-	0.1	@T_A -40℃~+125℃
Magnetic offset voltage	V_{OM}	mV	-	±10	-	@I_{PN}=0A,load 3 times of I_{PN}
Nonlinear error	ε_L	% of I_{PN}	-0.5	-	0.5	exclude zeroV_{OE}
Response time	t_r	μs	-	-	7	90% of IPN
Bandwidth (-3dB)	BW	kHz	-	50	-	
Phase shift	Δ∅	degree	-	-	-	
Output noise	$V_{no\ pp}$	mV	-	-	40	@DC to 20MHZ
General Data						
Ambient operating temperature	T_A	℃	-40~+125			
Ambient storage temperature	T_S	℃	-40~+125			
Mass	m	g	60			

HS49-800A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary side rated current	I_{PN}	A	-	800	-	
Primary current measurement range	I_{PM}	A	-1200	-	1200	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/2)\pm(1.25 \times I_P/I_{PN})$			@V_C=5V
Reference output voltage	Vref	V	$V_C/2$			@V_C=5V
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5V & I_P=0A
Theoretical gain	G_{th}	mV/A	-	1.562	-	
Current consumption	I_C	mA	-	19	25	
Load Resistance	R_L	kΩ	2	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	4.7	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	ε_G	%	-1.5	-	1.5	
Temperature drift of gain error	T_{CG}	PPM/K	-420	-	420	@T_A -40℃~+125℃
Zero offset voltage	V_{OE}	mV	-	±20		@V_C=5V &I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.1	-	0.1	@T_A -40℃~+125℃
Magnetic offset voltage	V_{OM}	mV	-	±10	-	@I_{PN}=0A,load 3 times of I_{PN}
Nonlinear error	ε_L	% of I_{PN}	-0.5	-	0.5	exclude zeroV_{OE}
Response time	t_r	μs	-	-	7	90% of IPN
Bandwidth (-3dB)	BW	kHz	-	50	-	
Phase shift	Δ∅	degree	-	-	-	
Output noise	$V_{no\ pp}$	mV	-	-	40	@DC to 20MHZ
General Data						
Ambient operating temperature	T_A	℃	-40~+125			
Ambient storage temperature	T_S	℃	-40~+125			
Mass	m	g	60			

Note :

（1） The output voltage U_{out} , the offset voltage U_{QOV} , and the sensitivity G_{th} are completely proportional to the power supply Vc ;

（2） The frequency of the current to be measured needs to be limited within the frequency band of the sensor, otherwise the core and chip will be overheated;

（3） Incorrect wiring may damage the sensor ;

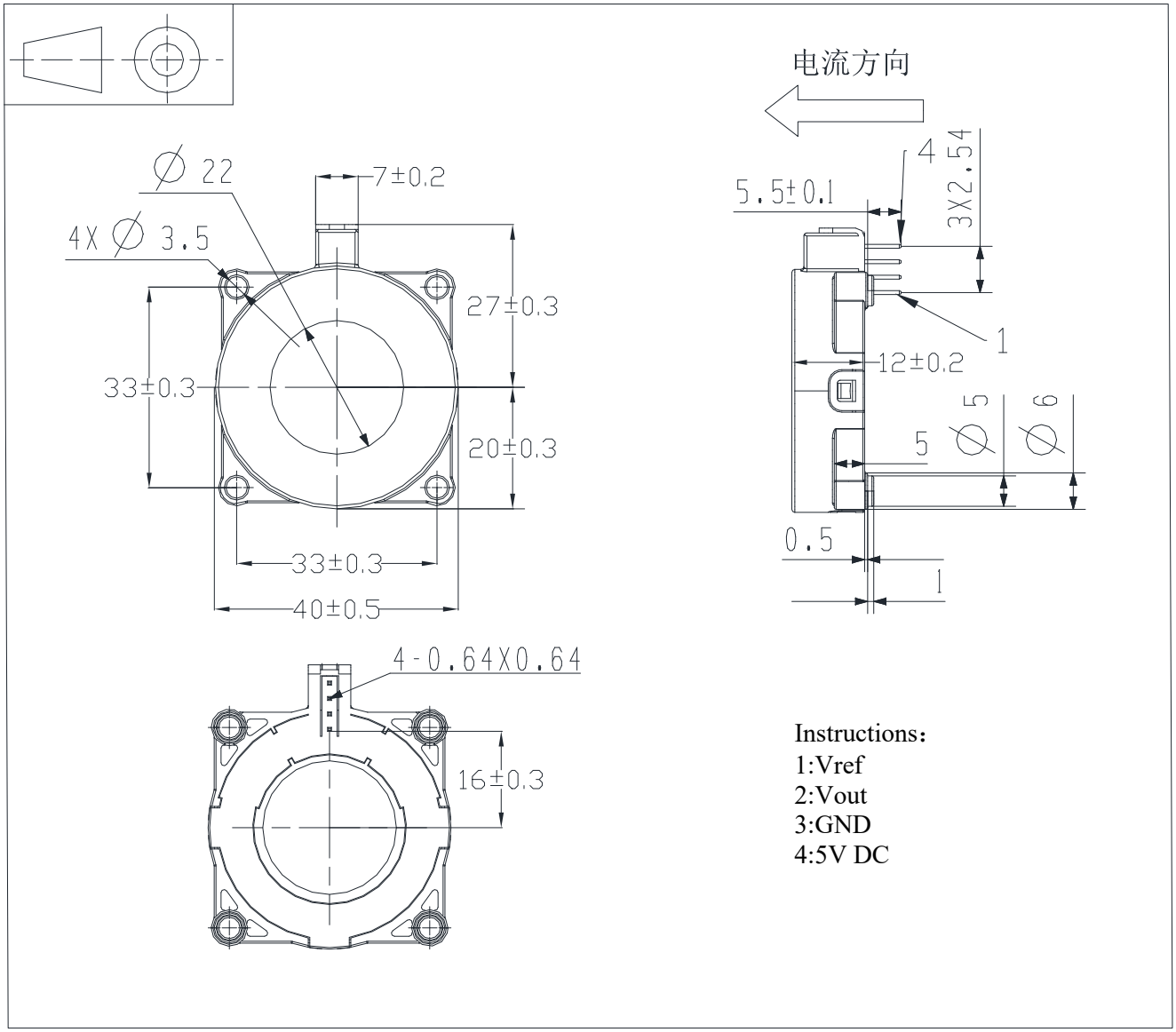
Insulation data :

Parameter	Symbol	Unit	Value	Remark
AC isolation withstand voltage test RMS @ 50Hz, 1min	U_D	KV	2.5	
Impulse withstand voltage 1.2/50uS	U_W	KV	4	
Shell material	-	-	UL94-V0	PBT 30 GF
Relative tracking index	CTI	V	220	
Creepage distance	d_{CP}	mm	＞4	
electrical clearance	d_{CI}	mm	＞4	

Maximum limit :

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	7
Continuous output current	I_{out}	mA	-
Electrostatic discharge - contact discharge	V_{ESD}	KV	1

Mechanical Dimensions :



Safety

This device must be used according to IEC61010-1.

This device must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the operating instructions.

Caution, risk of electrical shock.

When operating the device, certain parts can carry hazardous voltage (eg. primary busbar, power supply).
Ignoring this warning can lead to injury and/or cause serious damage.
This is a built-in device, whose conducting parts must be inaccessible after installation.
A protective housing or additional shield can be used.
Main supply must be able to be disconnected.