HS51-A-P SERIES CURRENT SENSOR/TRANSDUCER

DESCRIPTION:

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

FEATURES:

- ◆ Open loop using the Hall ASIC effect
- ◆ Original side and side isolation
- ◆ 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 LISTS :

PRODUCT MODEL		
Model	**Rated input current I_{PN} (A)**	**Measuring range I_{PM} (A)**
HS51- 80A-P	80	±80
HS51-200A-P	200	±200
HS51-250A-P	250	±250

HS51-80A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary side rated current	I_{PN}	A	-	80	-	
Primary current measurement range	I_{PM}	A	-80	-	80	
Supply voltage	V_C	V	4.75	5	525	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@V_C=5V
Zero output voltage	V_{QOV}	V	2.47	2.5	2.53	@V_C=5V & I_P=0A
Theoretical gain	G_{th}	mV/	-	25	-	
Current consumption	I_C	mA	-	13.5	17	@V_C=5V
Load resistance	R_L	kΩ	2	-	-	@V_{OUT} to GND
Load capacitance	C_2	nF	4.7	-	47	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-2	±0.7	2	
Temperature Drift of Gain Error	T_{CG}	%/℃	-0.4	±0.025	0.4	@T_A -40℃~125℃
Zero point error	V_{OE}	mV	-13	±5	13	@V_C=5V &I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.48	-	0.48	@T_A -40℃~125℃
Magnetic offset voltage	V_{OM}	mV	-13	±9	13	
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1	±0.5	1	exclude zero V_{OE}
Response time	t_r	μs	-	15	20	
Bandwidth (-3dB)	BW	kHz	20	-	-	@-3dB
Phase shift	Δ∅	degree	-	-	-	
Output noise	$V_{no\,pp}$	mV	-	20	30	@TA=25℃;0Hz<f<1M
General Data						
Ambient operating temperature	T_A	℃	-40….+125			
Ambient storage temperature	T_S	℃	-40….+125			
Mass	m	g	7.5			

HS51-200A-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	-200	-	200	
Supply voltage	V_C	V	4.75	5	525	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@V_C=5V
Zero output voltage	V_{QOV}	V	2.47	2.5	2.53	@V_C=5 & I_P=0A
Theoretical gain	G_{th}	mV/A	-	10	-	
Current consumption	I_C	mA	-	13.5	17	
Load resistance	R_L	kΩ	2	-	-	@V_{OUT} to GND
Load capacitance	C_2	nF	4.7	-	47	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	ε_G	%	-2	±0.7	2	
Temperature Drift of Gain Error	T_{CG}	%/℃	-0.4	±0.025	0.4	@T_A -40℃~125℃
Zero point error	V_{OE}	mV	-13	±5	13	@V_C=5V &I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.12	-	0.12	@T_A -40℃~125℃
Magnetic offset voltage	V_{OM}	mV	-13	±9	13	
Nonlinear error	ε_L	% of I_{PN}	-1	±0.5	1	exclude zero V_{OE}
Response time	t_r	μs	-	15	20	
Bandwidth (-3dB)	BW	kHz	20	-	-	
Phase shift	$\Delta\varnothing$	degree	-	-	-	
Output noise	$V_{no\ pp}$	mV	-	20	30	@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+125			
Ambient storage temperature	T_S	℃	-40….+125			
Mass	m	g	7.5			

HS51-250A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary side rated current	I_{PN}	A	-	250	-	
Primary current measurement range	I_{PN}	A	-250	-	250	
Supply voltage	V_C	V	4.75	5	525	
The output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@V_C=5V
Zero output voltage	V_{QOV}	V	2.47	2.5	2.53	@V_C=5 & I_P=0A
Theoretical gain	G_{th}	mV/A	-	8	-	
Current consumption	I_C	mA	-	13.5	17	
Load resistance	R_L	kΩ	2	-	-	@V_{OUT} to GND
Load capacitance	C_2	nF	4.7	-	47	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-2	±0.7	2	
Temperature Drift of Gain Error	T_{CG}	%/℃	-0.4	±0.025	0.4	@T_A -40℃~125℃
Zero point error	V_{OE}	mV	-13	±5	13	@V_C=5V &I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.12	-	0.12	@T_A -40℃~125℃
Magnetic offset voltage	V_{OM}	mV	-13	±9	13	
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1	±0.5	1	exclude zero V_{OE}
Response time	t_r	μs	-	15	20	
Bandwidth (-3dB)	BW	kHz	20	-	-	
Phase shift	$\Delta\varnothing$	degree	-	-	-	
Output noise	$V_{no\ pp}$	mV	-	20	30	@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+125			
Ambient storage temperature	T_S	℃	-40….+125			
Mass	m	g	7.5			

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 it will cause the core and chip to overheat;

（3） Incorrect wiring may damage the sensor;

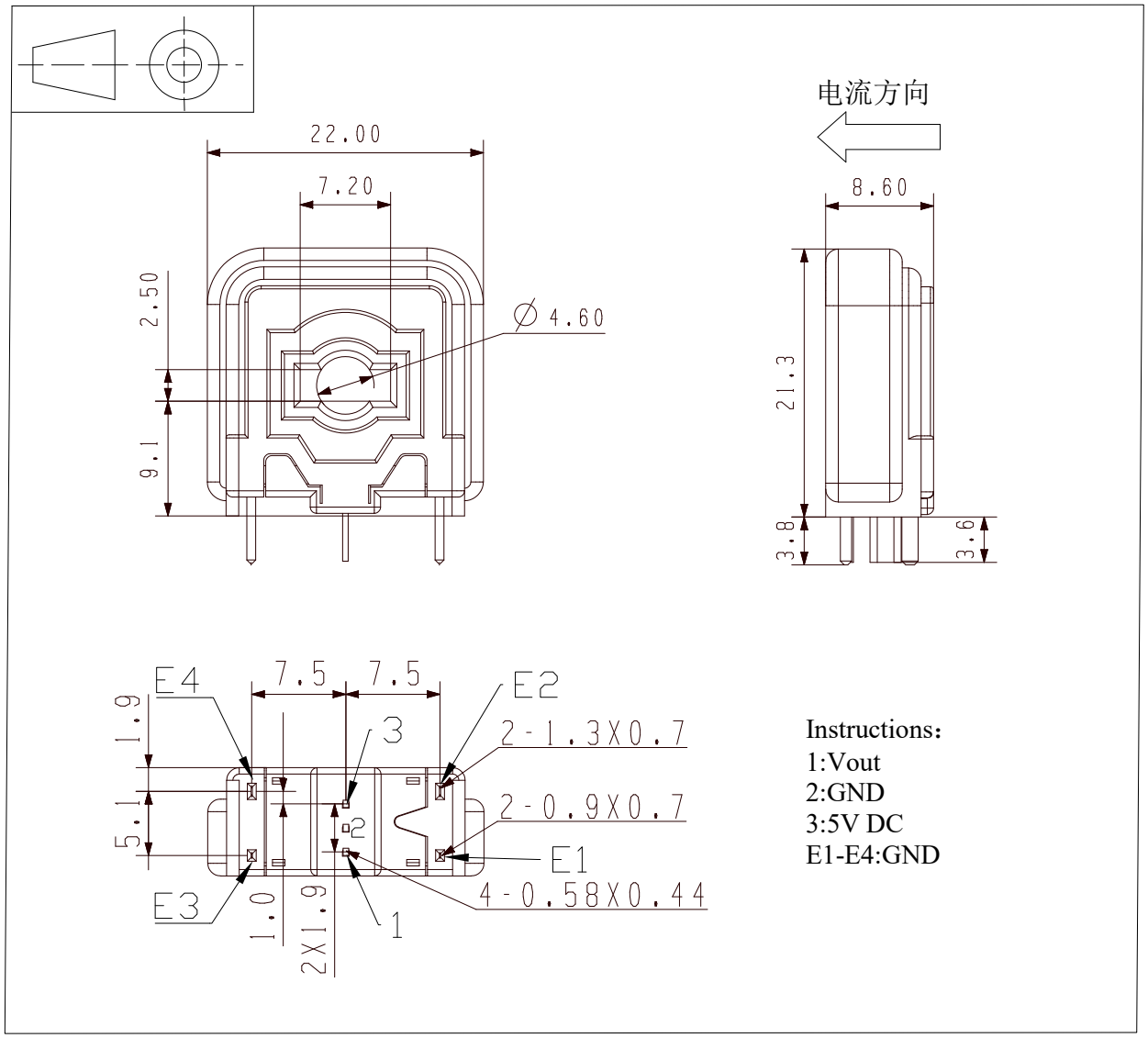
Insulation data:

Parameter	Symbol	Unit	Value	Comment
AC isolation withstand voltage test RMS @ 50Hz, 1min	U_D	KV	2	
Impulse withstand voltage 1.2/50uS	U_W	KV	-	
Shell material	-	-	UL94-V0	PBT+GF30
Relative tracking index	CTI	V	-	
Creepage distance	d_{CP}	mm	-	
Electrical clearance	d_{CI}	mm	-	

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	2

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