HS29S-A-P SERIES CURRENT SENSOR/TRANSDUCER

DESCRIPTION:

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

FEATURES:

- Open loop using the Hall 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_M (A)**
HS29S-10A-P	10	±10
HS29S-15A-P	15	±15
HS29S-20A-P	20	±20
HS29S-25A-P	25	±25
HS29S-30A-P	30	±30
HS29S-50A-P	50	±50

HS29S-10A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary current measurement range	I_{PN}	A	-10		10	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@ V_C
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5& I_P=0A
Theoretical gain	G_{th}	mV/A		200		
Current consumption	I_C	mA	3	5	8	
Load Resistance	R_L	kΩ	5	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	-	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-1		1	
Temperature drift of gain error	TC_G	%/℃	-0.06		0.06	@T_A -40℃~85℃
Zero point error	V_{OE}	mV		±2.5		@V_C=5V&I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.08		0.08	@T_A -40℃~85℃
Magnetic offset voltage	V_{OM}	mV		±2		@T_A=25@V_C=5V after±I_P
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1		1	exclude zero V_{OE}
Response time	t_r	μs		8	10	
Bandwidth (-3dB)	BW	kHz		30		
Phase shift	Δ∅	degree		3.6	5	@DC to 1KHZ
Output noise	$V_{no\ pp}$	mV		10		@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+85			
Ambient storage temperature	T_S	℃	-40….+85			
Mass	m	g	approx 15			

HS29S-15A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary current measurement range	I_{PN}	A	-15		15	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@ V_C
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5& I_P=0A
Theoretical gain	G_{th}	mV/A		133.333		
Current consumption	I_C	mA	3	5	8	
Load Resistance	R_L	kΩ	5	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	-	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-1		1	
Temperature drift of gain error	T_{CG}	%/℃	-0.06		0.06	@T_A -40℃~85℃
Zero point error	V_{OE}	mV		±2.5		@V_C=5V&I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.08		0.08	@T_A -40℃~85℃
Magnetic offset voltage	V_{OM}	mV		±2		@T_A=25@V_C=5V after±I_P
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1		1	exclude zero V_{OE}
Response time	t_r	μs		8	10	
Bandwidth (-3dB)	BW	kHz		30		
Phase shift	Δ∅	degree		3.6	5	@DC to 1KHZ
Output noise	$V_{no\ pp}$	mV		10		@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+85			
Ambient storage temperature	T_S	℃	-40….+85			
Mass	m	g	approx 15			

HS29S-20A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary current measurement range	I_{PN}	A	-20		20	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@ V_C
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5& I_P=0A
Theoretical gain	G_{th}	mV/A		100		
Current consumption	I_C	mA	3	5	8	
Load Resistance	R_L	kΩ	5	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	-	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-1		1	
Temperature drift of gain error	T_{CG}	%/℃	-0.06		0.06	@T_A -40℃~85℃
Zero point error	V_{OE}	mV		±2.5		@V_C=5V&I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.08		0.08	@T_A -40℃~85℃
Magnetic offset voltage	V_{OM}	mV		±2		@T_A=25@V_C=5V after±I_P
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1		1	exclude zero V_{OE}
Response time	t_r	μs		8	10	
Bandwidth (-3dB)	BW	kHz		30		
Phase shift	Δ∅	degree		3.6	5	@DC to 1KHZ
Output noise	$V_{no\ pp}$	mV		10		@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+85			
Ambient storage temperature	T_S	℃	-40….+85			
Mass	m	g	approx 15			

HS29S-25A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary current measurement range	I_{PN}	A	-25		25	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@ V_C
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5& I_P=0A
Theoretical gain	G_{th}	mV/A		80		
Current consumption	I_C	mA	3	5	8	
Load Resistance	R_L	kΩ	5	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	-	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-1		1	
Temperature drift of gain error	T_{CG}	%/℃	-0.06		0.06	@T_A -40℃~85℃
Zero point error	V_{OE}	mV		±2.5		@V_C=5V&I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.08		0.08	@T_A -40℃~85℃
Magnetic offset voltage	V_{OM}	mV		±2		@T_A=25@V_C=5V after±I_P
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1		1	exclude zero V_{OE}
Response time	t_r	μs		8	10	
Bandwidth (-3dB)	BW	kHz		30		
Phase shift	Δ∅	degree		3.6	5	@DC to 1KHZ
Output noise	$V_{no\ pp}$	mV		10		@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+85			
Ambient storage temperature	T_S	℃	-40….+85			
Mass	m	g	approx 15			

HS29S-30A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary current measurement range	I_{PN}	A	-30		30	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@ V_C
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5& I_P=0A
Theoretical gain	G_{th}	mV/A		66.666		
Current consumption	I_C	mA	3	5	8	
Load Resistance	R_L	kΩ	5	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	-	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-1		1	
Temperature drift of gain error	T_{CG}	%/℃	-0.06		0.06	@T_A -40℃~85℃
Zero point error	V_{OE}	mV		±2.5		@V_C=5V&I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.08		0.08	@T_A -40℃~85℃
Magnetic offset voltage	V_{OM}	mV		±2		@T_A=25@V_C=5V after±I_P
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1		1	exclude zero V_{OE}
Response time	t_r	μs		8	10	
Bandwidth (-3dB)	BW	kHz		30		
Phase shift	$\Delta\varnothing$	degree		3.6	5	@DC to 1KHZ
Output noise	$V_{no\ pp}$	mV		10		@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+85			
Ambient storage temperature	T_S	℃	-40….+85			
Mass	m	g	approx 15			

HS29S-50A-P SPECIFICATION

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical Data						
Primary current measurement range	I_{PN}	A	-50		50	
Supply voltage	V_C	V	4.75	5.0	5.25	
Output voltage	V_{OUT}	V	$V_{OUT}=(V_C/5)$ x $(2.5+G_{th}$ x $I_P)$			@ V_C
Zero output voltage	V_{QOV}	V	2.475	2.5	2.525	@V_C=5& I_P=0A
Theoretical gain	G_{th}	mV/A		40		
Current consumption	I_C	mA	3	5	8	
Load Resistance	R_L	kΩ	5	-	unlimited	@V_{OUT} to GND
Load capacitance	C_2	nF	-	-	-	
Power filter capacitor	C_1	μF	-	-	-	
Performance Data						
Gain error	$\mathcal{E}_G$	%	-1		1	
Temperature drift of gain error	T_{CG}	%/℃	-0.06		0.06	@T_A -40℃~85℃
Zero point error	V_{OE}	mV		±2.5		@V_C=5V&I_P=0A
Temperature drift of zero error	TC_{VOE}	mV/℃	-0.08		0.08	@T_A -40℃~85℃
Magnetic offset voltage	V_{OM}	mV		±2		@T_A=25@V_C=5V after±I_P
Nonlinear error	$\mathcal{E}_L$	% of I_{PN}	-1		1	exclude zero V_{OE}
Response time	t_r	μs		8	10	
Bandwidth (-3dB)	BW	kHz		30		
Phase shift	Δ∅	degree		3.6	5	@DC to 1KHZ
Output noise	$V_{no\ pp}$	mV		10		@DC to 1MHZ
General Data						
Ambient operating temperature	T_A	℃	-40….+85			
Ambient storage temperature	T_S	℃	-40….+85			
Mass	m	g	approx 15			

Note :

（1） 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 ;

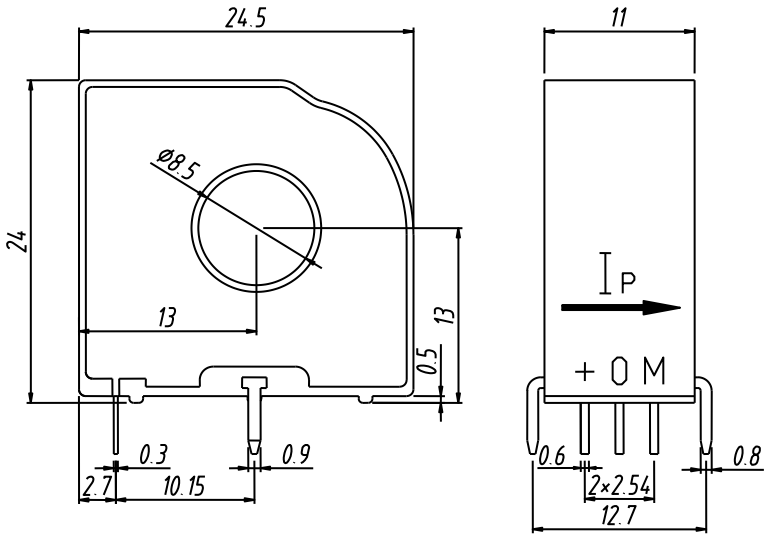
Insulation data:s :

Parameter	Symbol	Unit	Value	Comment
AC isolation withstand voltage test RMS @ 50Hz, 1min	U_D	KV	1.2	
Impulse withstand voltage 1.2/50uS	U_W	KV	-	
Shell material	-	-	UL94-V0	PPO
Relative tracking index	CTI	-	-	
Creepage distance	d_{CP}	mm	8.25	
Electrical clearance	d_{CI}	mm	8.25	

Maximum limit :

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	7
Output current (output shorted to ground)	I_{out}	mA	20
Electrostatic discharge - contact discharge	V_{ESD}	V	8000

Mechanical Dimensions:



Instructions:
+: +5V DC
O: GND
M: Output terminal

Safety

This device must be used according to IEC610101.

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 builtin 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.