SINOMAGS 希磁科技

Current Sensor

Product Series: SHK-VBS-T

Part number:
SHK-VBS-T8-300-S2
SHK-VBS-T8-400-S2
SHK-VBS-T8-500-S2
SHK-VBS-T8-600-S2
SHK-VBS-T8-700-S2
SHK-VBS-T8-800-S2
SHK-VBS-T8-900-S2
SHK-VBS-T8-1000-S2
SHK-VBS-T8-1100-S2
SHK-VBS-T8-1200-S2

Version: Ver 1.5

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Web site: www.sinomags.com

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1. Description

The SHK-VBS-T8 current sensor is based on Hall and open-loop design. It is suitable for DC, AC pulsed and any kind of irregular current measurement under the isolated conditions.

Typical applications

- AC Variable speed drives
- Inverter
- Electric welder power supply
- Switched model power supplies (SMPS)

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_a	℃	-40 ~ 125
Storage temperature	T_{stg}	℃	-40 ~ 125
Mass	m	g	111

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	Vcc	V	-0.5 ~ 8 (Not operating)
			6.5
Electrostatic discharge voltage	$U_{ESD\ HBM}$	kV	2

Remark: the unrecoverable damage may occur when the product works on the conditions over the absolute maximum ratings. Long-time working on the absolute maximum ratings may cause the degradation on performance and reliability.

Isolation parameter

Parameter	Symbol	Unit	Value	Comment
Insulation voltage	U_d	kV	2.5	RMS voltage for AC test 50Hz-1 min
Insulation resistance	R_{INS}	MΩ	500	DC 500V，ISO 16750
Clearance distance (pri. -sec)	d_{Cl}	mm	5.08	Shortest distance through air
Creepage distance (pri. -sec)	d_{Cp}	mm	5.08	Shortest path along device body
Comparative trraking index	CTI		PLC 3	
Case material			V0 according to UL 94	

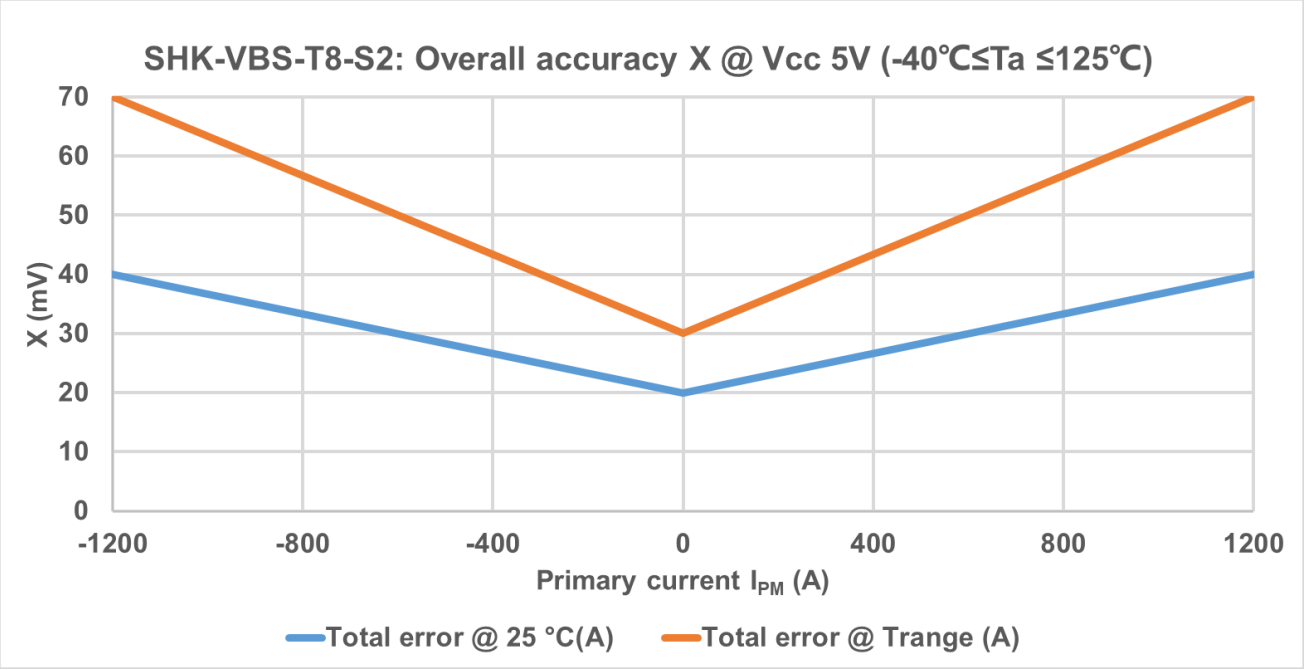
2. Electrical data

Condition：T_a = 25℃， V_{CC} = 5.0 V

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-300		300	SHK-VBS-T8-300-S2
			-400		400	SHK-VBS-T8-400-S2
			-500		500	SHK-VBS-T8-500-S2
			-600		600	SHK-VBS-T8-600-S2
			-700		700	SHK-VBS-T8-700-S2
			-800		800	SHK-VBS-T8-800-S2
			-900		900	SHK-VBS-T8-900-S2
			-1000		1000	SHK-VBS-T8-1000-S2
			-1100		1100	SHK-VBS-T8-1100-S2
			-1200		1200	SHK-VBS-T8-1200-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	All
Current consumption	I_{CC}	mA		45	60	@ V_{CC}= 5.0 V
Output voltage	V_{OUT}	V	$(V_{CC}/5)\times(V_{off}+G\times I_P)$			@ T_a = 25℃
Quiescent voltage	V_{off}	V		2.5		@ T_a = 25℃, V_{CC} = 5.0 V
Sensitivity	G	mV/A		6.67		SHK-VBS-T8-300-S2
				5.00		SHK-VBS-T8-400-S2
				4.00		SHK-VBS-T8-500-S2
				3.33		SHK-VBS-T8-600-S2
				2.86		SHK-VBS-T8-700-S2
				2.50		SHK-VBS-T8-800-S2
				2.22		SHK-VBS-T8-900-S2
				2.00		SHK-VBS-T8-1000-S2
				1.82		SHK-VBS-T8-1100-S2
				1.67		SHK-VBS-T8-1200-S2
Load resistance	R_L	kΩ	10			
Ratiometricity error	ε_r	%		±0.5		@ 4.75V ≤ V_{CC} ≤ 5.25V
Sensitivity error	ε_G	%		±1		@ T_a = 25 °C
Electrical offset voltage error	V_{OE}	mV		±4.0		@ T_a = 25℃, V_{CC} = 5.0 V

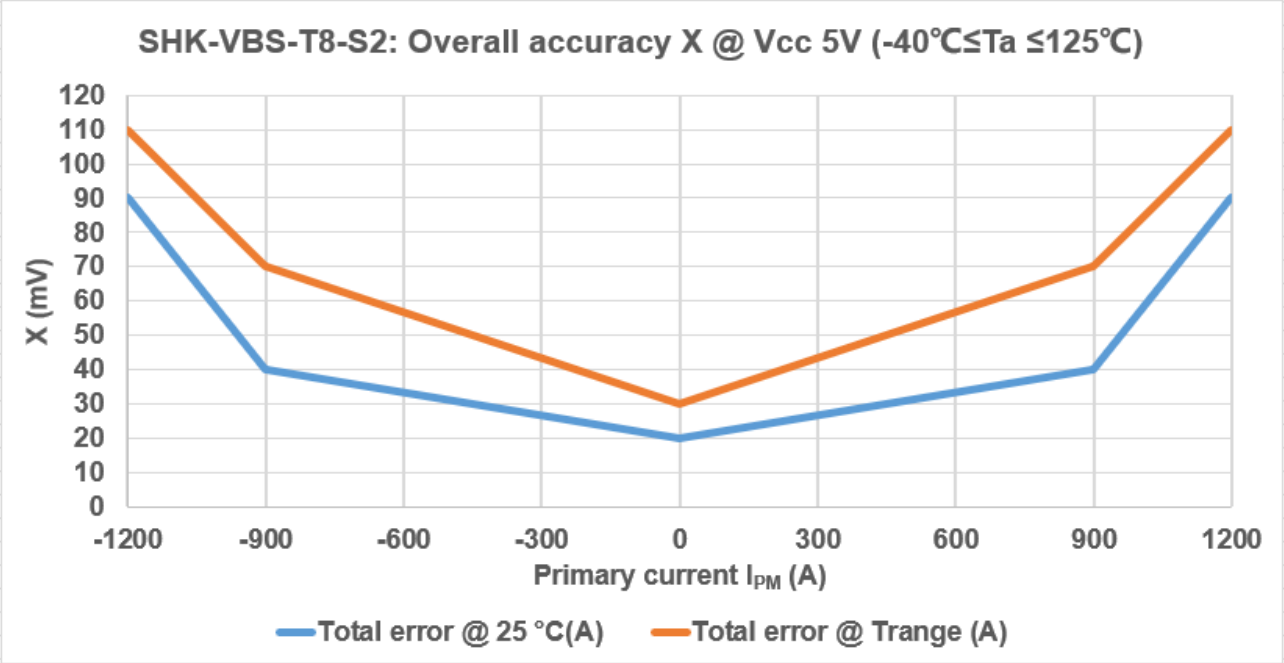
Magnetic offset voltage error	V_{OM}	mV	-7.5		7.5	@ T_a = 25℃, V_{CC} = 5.0 V
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/℃	-0.08		0.08	@ -40℃<T_a <125℃
Ave. Temp. coefficient of S	TCS_{AV}	%/℃	-0.03	±0.01	0.03	@ -40℃<T_a <125℃
Linearity error	ε_L	% I_P	-3		3	of Full range, I_P > 900 A or < −900 A @ T_a = 25℃, V_{CC} = 5.0 V
			-1		1	of Full range, −900 A ≤ I_P ≤ 900 A @ T_a = 25℃, V_{CC} = 5.0 V
Response time	T_r	μs		4	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

Total error(mV) for ⩽900A



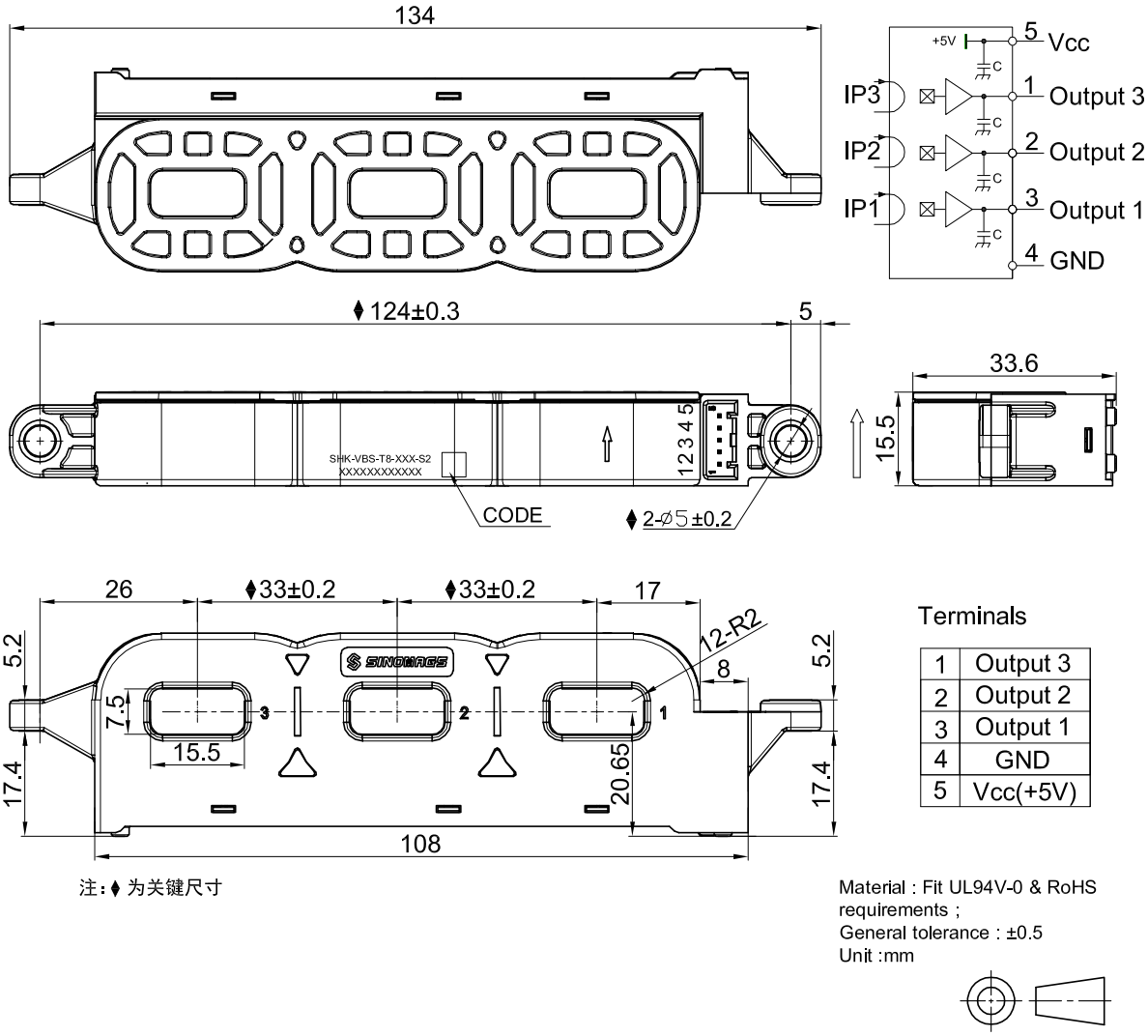
Overall accuracy X specification						
I_{PM}(A)	@Ta=25C°, VCC=5.0V			@-40C°≤Ta≤125C°, VCC=5.0V		
-900	40mV	18A	2.00%	70mV	31.5A	3.50%
-100	22.22mV	10A	---	34.44mV	15.5A	---
0	20mV	9A	1.00%	30mV	13.5A	1.50%
100	22.22mV	10A	---	34.44mV	15.5A	---
900	40mV	18A	2.00%	70mV	31.5A	3.50%

Total error(mV) for I_{PM} > 900A



Overall accuracy X specification						
I_{PM}(A)	@Ta=25C°, VCC=5.0V			@-40C°≤Ta≤125C°, VCC=5.0V		
-1200	90mV	54A	4.50%	110mV	66A	5.50%
-900	40mV	24A	2.00%	70mV	42A	3.50%
-100	22.22mV	13.33A	---	34.44mV	20.66A	---
0	20mV	12A	1.00%	30mV	18A	1.50%
100	22.22mV	13.33A	---	34.44mV	20.66A	---
900	40mV	30A	2.00%	70mV	42A	3.50%
1200	90mV	54A	4.50%	110mV	66A	5.50%

3. ension & Pin definitions



Terminals

1	Output 3
2	Output 2
3	Output 1
4	GND
5	Vcc(+5V)

注：⧫ 为关键尺寸

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm