

CURRENT SENSOR

PRODUCT SERIES: SHK-VBS

PRODUCT PART NUMBER: SHK-VBS7-800-S2, SHK-VBS7-1000-S2,
SHK-VBS7-1100-S2, SHK-VBS7-1200-S2,
SHK-VBS7-1300-S2,
SHK-VBS7-1400-S2, SHK-VBS7-1500-S2,
SHK-VBS7-1600-S2, SHK-VBS7-1700-S2;
SHK-VBS7-2000-S2;

VERSION: Ver1.4



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Web site: www.sinomags.com

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1. Description

The SHK-VBS7-S2 series current sensor is based on HALL technology and open-loop design. It is suitable for DC, AC pulsed and any kind of irregular current measurement under the isolated conditions.

Typical applications

- Electrical Power Steering
- Battery Management
- Starter Generators
- Motor control unit for xEV

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	℃	-40 ~ 125
Storage temperature	T_stg	℃	-40 ~ 125
Mass	m	g	80

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	Vcc	V	8
ESD rating (HBM)	U_ESD	kV	8

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
RMS voltage for AC test 50Hz/1 min	Ud	kV	4	
Clearance distance (pri. -sec)	dCl	mm	10	
Creepage distance (pri. -sec)	dCp	mm	10	
Comparative tracking index	CTI		PLC3	
Case material			V0 according to UL 94	

Measuring current table

Product	Optimized Range I _{pm} (A)	Sensitivity, (mV/A)	T(℃)
SHK-VBS7-800-S2	± 800A	2.5	-40 ~ 105
SHK-VBS7-1000-S2	± 1000A	2	-40 ~ 105
SHK-VBS7-1100-S2	± 1100A	1.82	-40 ~ 105
SHK-VBS7-1200-S2	± 1200A	1.67	-40 ~ 105
SHK-VBS7-1300-S2	± 1300A	1.54	-40 ~ 105
SHK-VBS7-1400-S2	± 1400A	1.43	-40 ~ 105
SHK-VBS7-1500-S2	± 1500A	1.33	-40 ~ 105
SHK-VBS7-1600-S2	± 1600A	1.25	-40 ~ 105
SHK-VBS7-1700-S2	± 1700A	1.18	-40 ~ 105
SHK-VBS7-2000-S2	± 2000A	1.00	-40 ~ 105

2. Electrical data

Condition: $V_{CC} = 5.0\text{ V}$, $T_A = 25^\circ\text{C}$, unless specified.

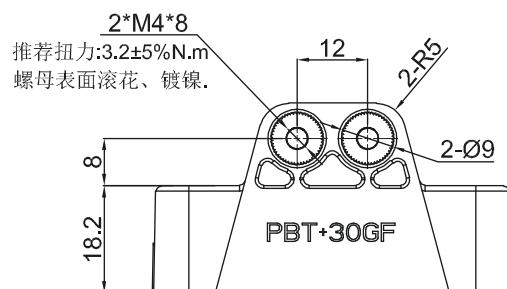
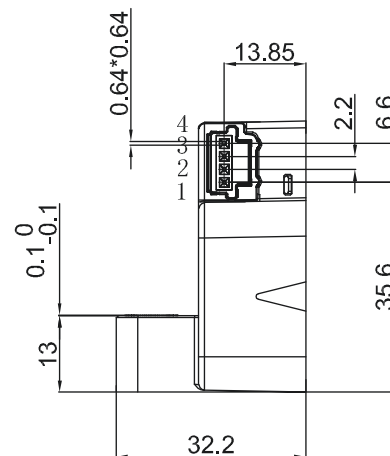
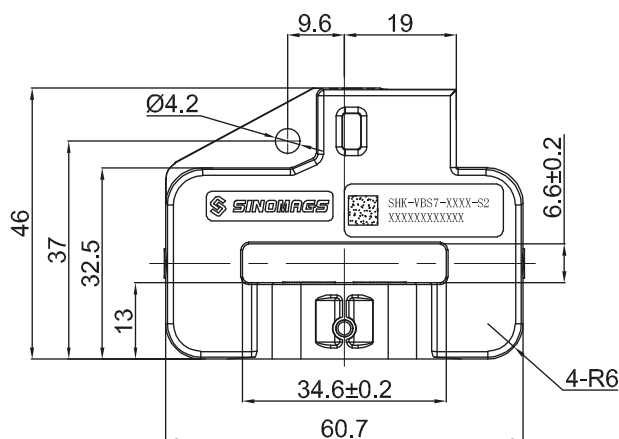
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary current	I_{pn}	A	-800		800	SHK-VBS7-800-S2
			-1000		1000	SHK-VBS7-1000-S2
			-1100		1100	SHK-VBS7-1100-S2
			-1200		1200	SHK-VBS7-1200-S2
			-1300		1300	SHK-VBS7-1300-S2
			-1400		1400	SHK-VBS7-1400-S2
			-1500		1500	SHK-VBS7-1500-S2
			-1600		1600	SHK-VBS7-1600-S2
			-1700		1700	SHK-VBS7-1700-S2
			-2000		2000	SHK-VBS7-2000-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Consumption current	I_{CC}	mA		12	18	
Full-scale output	V_{FS}	V		± 2		$(V_{out} @ \pm I_{pn}) - V_{off}$
Output resistance	R_{out}	Ω		5		@ V_{out}
Quiescent voltage	V_{off}	V		2.5		@ $T_A = 25^\circ\text{C}$ $V_{CC} = 5\text{V}$
Output voltage	V_{out}	V	$(V_{CC}/5) \times (V_{off} + G \times I_p)$			@ $T_A = 25^\circ\text{C}$
Sensitivity	G_{th}	mV/A		2.5		SHK-VBS7-800-S2
				2		SHK-VBS7-1000-S2
				1.82		SHK-VBS7-1100-S2
				1.67		SHK-VBS7-1200-S2
				1.54		SHK-VBS7-1300-S2
				1.43		SHK-VBS7-1400-S2
				1.33		SHK-VBS7-1500-S2
				1.25		SHK-VBS7-1600-S2
				1.18		SHK-VBS7-1700-S2
				1.00		SHK-VBS7-2000-S2
Non-linearity	Non-L	% I_{pn}	-1.5		1.5	$\pm I_{pn}$
Step response time	t_{res}	μs		2	6	@90% of I_{PN}
Frequency bandwidth (-3 dB)	BW	kHz	40			Back-end non-RC circuit
Noise	V_{noise}	mVpp		20		
DC ~ 10 kHz						
DC ~ 100 kHz						

Accuracy @ 25°C	X	% of I _{PN}	-1 -2		1 2	-1700 A < I _p < 1700 A -2000 A < I _p < 2000 A
Accuracy @ -40°C ~105°C	X_@105°C		-3.5		3.5	@ -40°C~105°C

Note:

1. Accuracy @ RT, $X = ((V_{out} @ I_n @ 25^{\circ}C) - (G_{fit} * I_n + V_{off} @ 25^{\circ}C)) / V_{FS}$, Here I_n is the current test current. G_{fit} is the normal temperature fitting gain.
2. Accuracy, $X_{TRange} = ((V_{out} @ I_n @ T_x) - (G_{fit@25^{\circ}C} * I_n + V_{off} @ 25^{\circ}C)) / V_{FS}$, The fitting gain of the product at $G_{fit@25^{\circ}C}$ is $25^{\circ}C$.

3. Dimension & Pin definitions



Terminals:

1	V _{out}
2	GND
3	V _{cc}
4	GND

Material: Fit UL94V-0 & RoHS requirements ;

General tolerance: ± 0.5

Unit:mm

Connector type: TYC0 connector P/N 1473672-1