

CURRENT SENSOR

PRODUCT SERIES: SHK-VBS6

PRODUCT PART NUMBER: SHK-100VBS6, SHK-120VBS6,
SHK-200VBS6, SHK-300VBS6,
SHK-400VBS6, SHK-500VBS6,
SHK-600VBS6, SHK-700VBS6,
SHK-800VBS6, SHK-900VBS6,
SHK-1000VBS6, SHK-1100VBS6,
SHK-1200VBS6, SHK-1500VBS6;

VERSION: Ver1.7



CONTENTS

1. Description	2
2. Electrical data	3
3. Dimension & Pin definitions	5

1. Description

The SHK-VBS6 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
- Starter Generators
- Battery Management
- Motor control unit for xEV

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	°C	-40 ~ 125
Storage temperature	T_stg	°C	-40 ~ 125
Mass	m	g	59

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	2.5	
Clearance distance (pri. -sec)	dCl	mm	4.85	
Creepage distance (pri. -sec)	dCp	mm	4.85	
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(°C)
SHK-100VBS6	±100A	20	-40 ~ 125
SHK-120VBS6	±120A	16.67	-40 ~ 125
SHK-200VBS6	±200A	10	-40 ~ 125
SHK-300VBS6	±300A	6.67	-40 ~ 125
SHK-400VBS6	±400A	5	-40 ~ 125
SHK-500VBS6	±500A	4	-40 ~ 125
SHK-600VBS6	±600A	3.33	-40 ~ 125
SHK-700VBS6	±700A	2.86	-40 ~ 125
SHK-800VBS6	±800A	2.5	-40 ~ 125
SHK-900VBS6	±900A	2.22	-40 ~ 125
SHK-1000VBS6	±1000A	2	-40 ~ 125
SHK-1100VBS6	±1100A	1.82	-40 ~ 125
SHK-1200VBS6	±1200A	1.67	-40 ~ 125
SHK-1500VBS6	±1500A	1.33	-40 ~ 125

2. Electrical data

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

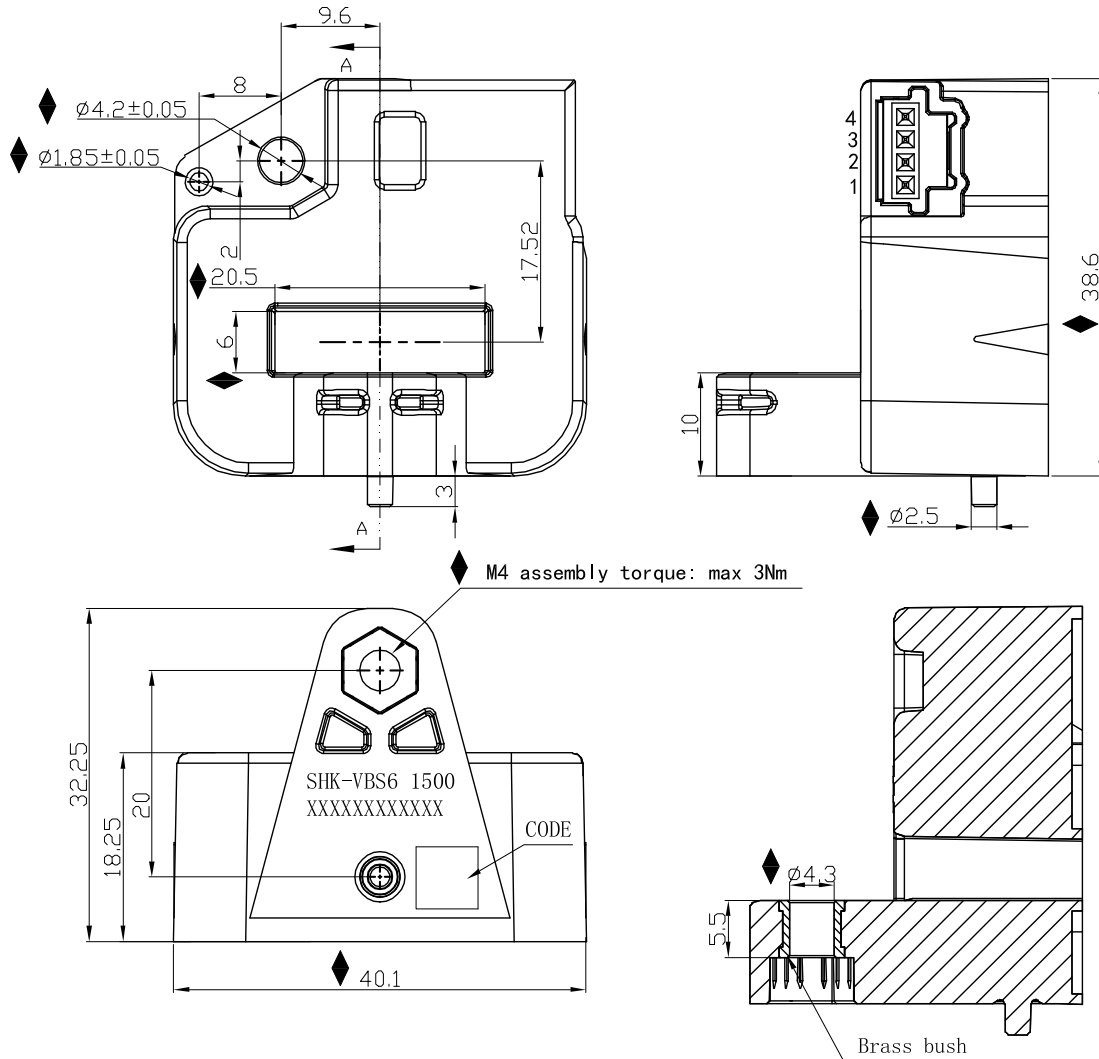
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary current	I_{pn}	A	-100		100	SHK-100VBS6
			-120		120	SHK-120VBS6
			-200		200	SHK-200VBS6
			-300		300	SHK-300VBS6
			-400		400	SHK-400VBS6
			-500		500	SHK-500VBS6
			-600		600	SHK-600VBS6
			-700		700	SHK-700VBS6
			-800		800	SHK-800VBS6
			-900		900	SHK-900VBS6
			-1000		1000	SHK-1000VBS6
			-1100		1100	SHK-1100VBS6
			-1200		1200	SHK-1200VBS6
			-1500		1500	SHK-1500VBS6
Supply voltage	V_{CC}	V	4.75	5	5.25	
Consumption current	I_{CC}	mA		10		
Full-scale output	V_{FS}	V		± 2		$(V_{out} @ \pm I_{pn}) - V_{off}$
Output resistance	R_{out}	Ω		5		@ V_{out}
Offset voltage	V_{off}	V	$V_{CC}/2 - 0.025$	$V_{CC}/2$	$V_{CC}/2 + 0.025$	$V_{out} @ 0\text{ A}$
Theoretical gain	G_{th}	mV/A		20		SHK-100VBS6
				16.67		SHK-120VBS6
				10		SHK-200VBS6
				6.67		SHK-300VBS6
				5		SHK-400VBS6
				4		SHK-500VBS6
				3.33		SHK-600VBS6
				2.86		SHK-700VBS6
				2.5		SHK-800VBS6
				2.22		SHK-900VBS6
				2		SHK-1000VBS6
				1.82		SHK-1100VBS6
				1.67		SHK-1200VBS6
				1.33		SHK-1500VBS6
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}
-3dB band width	BW	kHz		40		Back-end non-RC circuit
Noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 38		
Accuracy @ 25°C	X	% of I _{PN}	-1.5		1.5	@ 25°C
Accuracy @ -40°C ~105°C	X_@105°C		-2		2	@105°C
Accuracy @ -40°C ~125°C	X_@125°C	% of I _{pn}	-2.5		2.5	@125°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 °C} is 25 °C.

3. Dimension & Pin definitions



Mechanical characteristics

1. Connector type: TYCO connector P/N 1473672-1
2. Plastic housing material: PA66+GF30%
3. Installation distance 20mm do not have objects that can produce magnetic field.
4. ◆ Critical dimension

SECTION A-A

Terminals:

1	Vout
2	GND
3	Vcc
4	GND

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

