

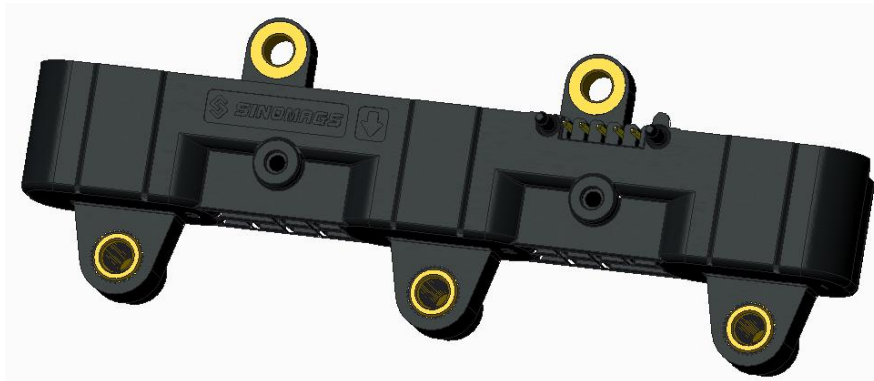
## Current Sensor

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Product Series: SHK-VBS-TL

Part number: SHK-VBS-TL-1200-S3

Version: Ver 1.3



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## 1. Description

The SHK-VBS-T 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

- Electrical Power Steering
- Motor drive application
- Converters
- Battery Management

### General parameter

Parameter	Symbol	Unit	Value
Working temperature	$T_a$	°C	-40 ~ 125
Storage temperature	$T_{stg}$	°C	-40 ~ 125
Mass	m	g	73

### Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	$V_{cc}$	V	-0.3 ~ 10 (Not operating)
			6.5
Electrostatic discharge voltage	$U_{ESD}$	kV	8 (HBM)

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	2.8	RMS voltage for AC test 50Hz/1 min
Insulation resistance	$R_{is}$	MΩ	500	DC 1kV/1 min
Clearance distance (pri. -sec)	$d_{cl}$	mm	9	Shortest distance through air
Creepage distance (pri. -sec)	$d_{cp}$	mm	9	Shortest path along device body
Comparative tracking index	CTI	V	600	IEC60112
Case material			V0 according to UL 94	

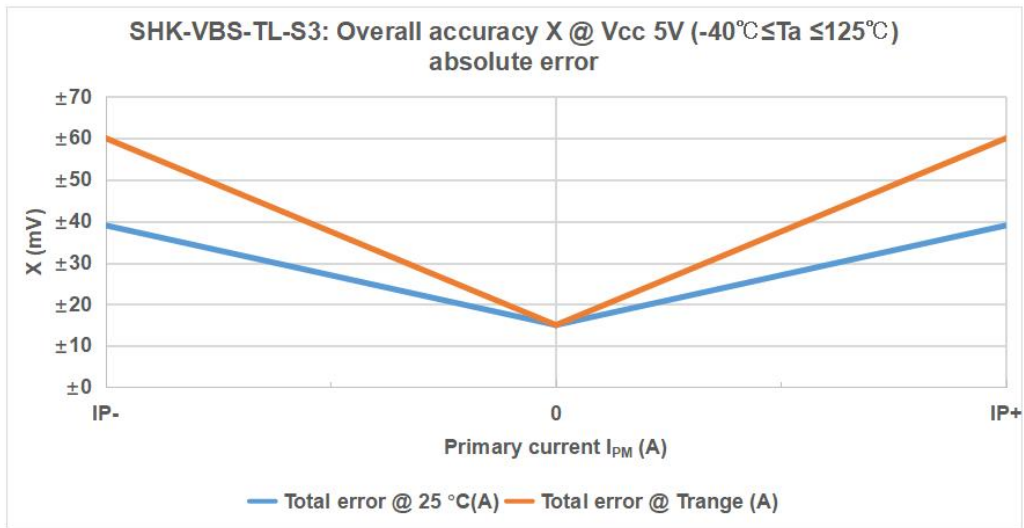
### Selection Guide

Product	Nominal current	Measuring range
SHK-VBS-TL-1200-S3	1200 A	1200 A

## 2. Electrical data

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	$I_{PM}$	A	-1200		1200	SHK-VBS-TL-1200-S3
Supply voltage	$V_{CC}$	V	4.75	5	5.25	
Current consumption	$I_{CC}$	mA		28	35	@ $V_{CC} = 5.0\text{ V}$
Output voltage	$V_{OUT}$	V	$(V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	$V_{off}$	V		2.5		@ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$
Sensitivity	$G$	mV/A		1.67		SHK-VBS-TL-1200-S3
Load resistance	$R_L$	k $\Omega$	10			
Ratiometricity error	$\epsilon_r$	%		$\pm 0.5$		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	$\epsilon_G$	%		$\pm 0.6$		@ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	$V_{OE}$	mV		$\pm 4$		@ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	$V_{OM}$	mV		$\pm 3$		@ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$ , after $\pm I_{PM}$
Ave. Temp. coefficient of $V_{OE}$	$TCV_{OEAV}$	mV/ $^\circ\text{C}$		$\pm 0.05$		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of $G$	$TCG_{AV}$	%/ $^\circ\text{C}$		$\pm 0.03$		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	$\epsilon_L$	%		$\pm 1$		@ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$ , $-1000\text{ A} < I_P < 1000\text{ A}$
Response time	$T_r$	$\mu\text{s}$		2	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  $\leq 1200A$



$I_{PM}$	Total error specification	
	@Ta=25°C, VCC=5.0V	@-40°C ≤ Ta ≤ 125°C, VCC=5.0V
(A)	(mv)	(mv)
1200	±40	±60
0	±15	±15
-1200	±40	±60

### 3. Dimension & Pin definitions

