

# 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 1.6



---

## CONTENT

1.	Description .....	2
2.	Electrical data .....	3
3.	Dimension & Pin definitions.....	6

## 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
- Electric welder power supply
- Inverter
- Switched model power supplies (SMPS)

### General parameter

Parameter	Symbol	Unit	Value
Working temperature	$T_a$	°C	-40 ~ 125
Storage temperature	$T_{stg}$	°C	-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 tracking index	CTI		PLC 3	
Case material			V0 according to UL 94	

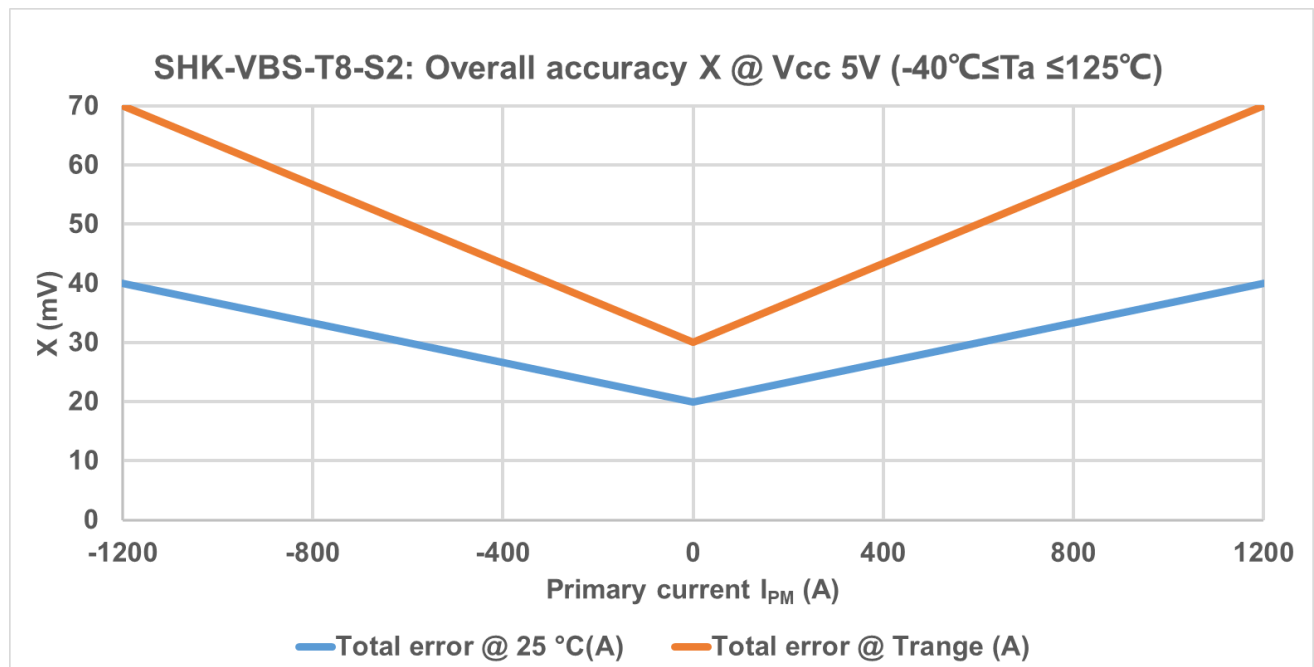
## 2. Electrical data

Condition :  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 5.0\text{ V}$

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		39	60	@ $V_{CC} = 5.0\text{ V}$
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		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	$R_L$	k $\Omega$	10			
Ratiometricity error	$\epsilon_r$	%		$\pm 0.5$		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	$\epsilon_G$	%		$\pm 1$		@ $T_a = 25^\circ\text{C}$
Electrical offset voltage error	$V_{OE}$	mV		$\pm 4.0$		@ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$

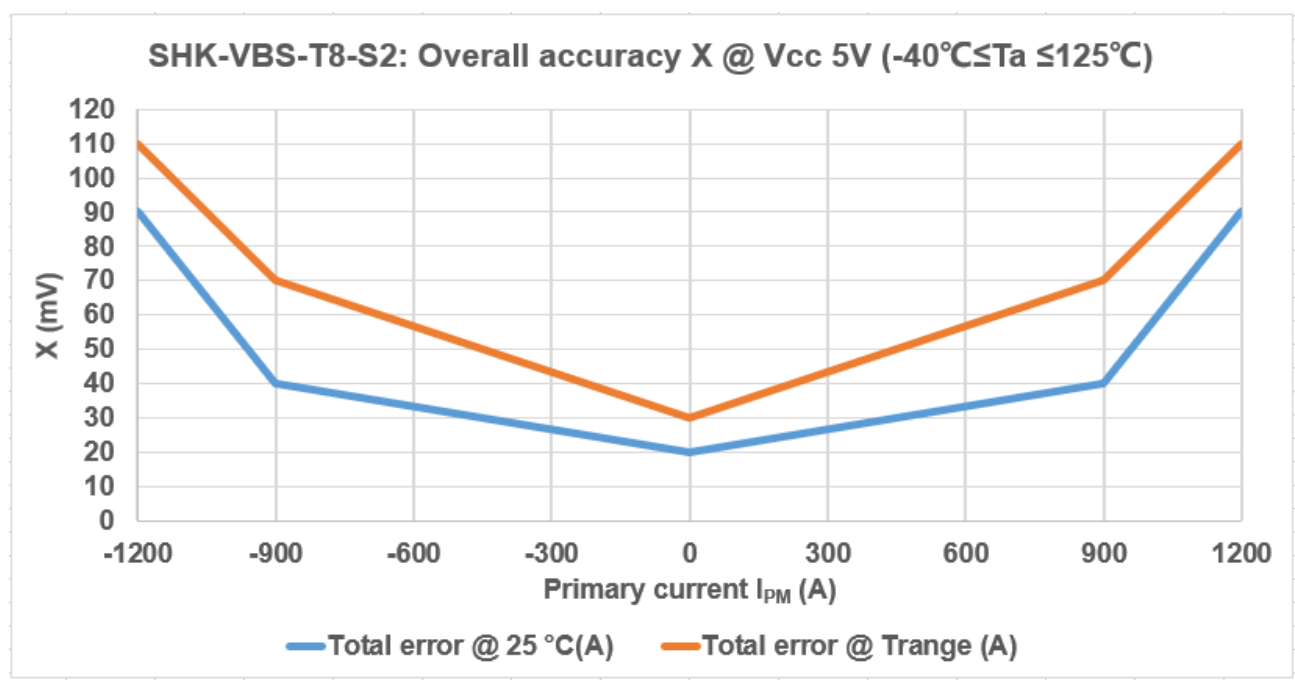
Magnetic offset voltage error	$V_{OM}$	mV	-7.5		7.5	@ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$
Ave. Temp. coefficient of $V_{OE}$	$TCV_{OEAV}$	$\text{mV}/^\circ\text{C}$	-0.08		0.08	@ $-40^\circ\text{C} < T_a < 125^\circ\text{C}$
Ave. Temp. coefficient of S	$TCS_{AV}$	$\%/^\circ\text{C}$	-0.03	$\pm 0.01$	0.03	@ $-40^\circ\text{C} < T_a < 125^\circ\text{C}$
Linearity error	$\epsilon_L$	$\% I_P$	-3		3	of Full range, $I_P > 900\text{ A}$ or $< -900\text{ A}$ @ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$
			-1		1	of Full range, $-900\text{ A} \leq I_P \leq 900\text{ A}$ @ $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$
Response time	$T_r$	$\mu\text{s}$		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  $\leq 900\text{A}$



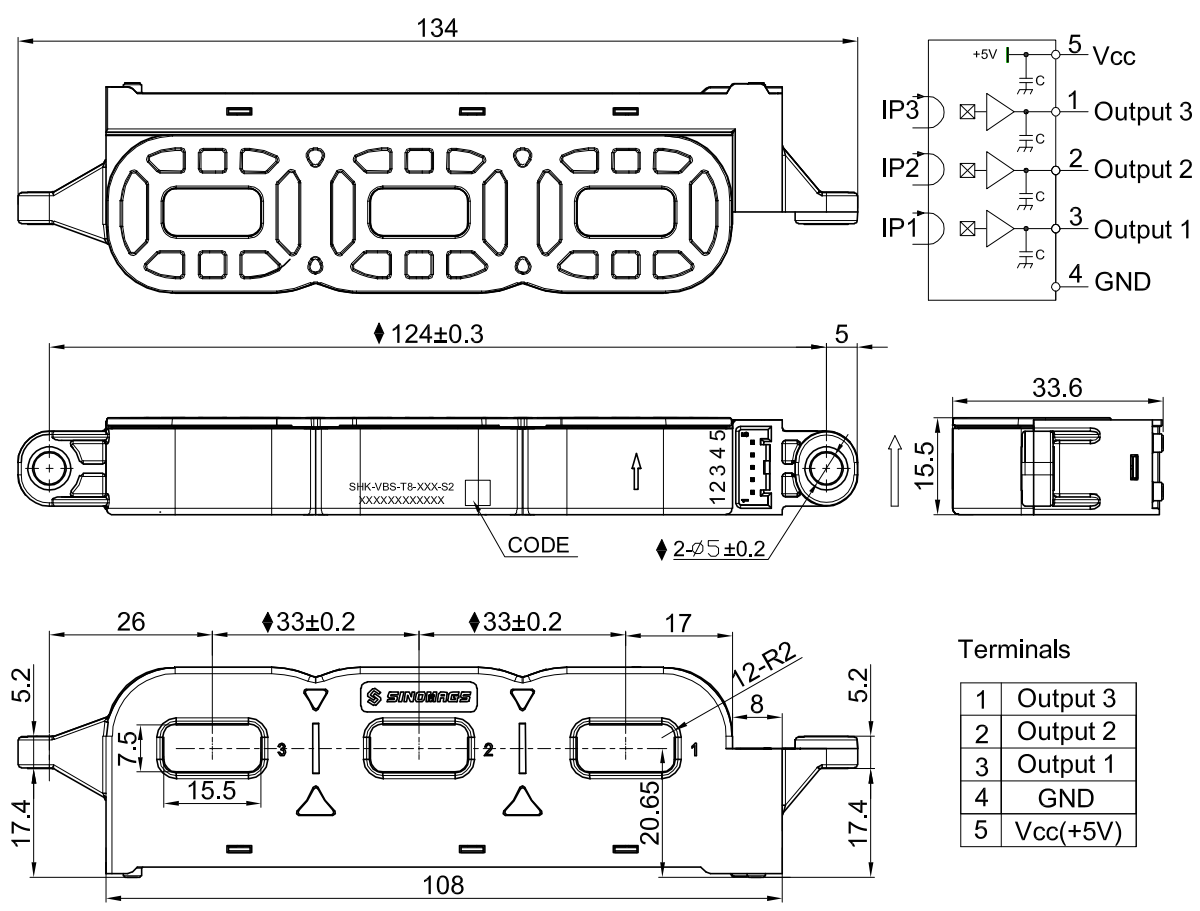
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a=25^{\circ}C$ , $V_{CC}=5.0V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C$ , $V_{CC}=5.0V$		
-900	40mV	18A	2.00%	70mV	31.5A	3.50%
-100	22.22mV	10A	---	34.44mV	15.5A	---
0	20mV	9A	1.00%	30mV	13.5A	1.50%
100	22.22mV	10A	---	34.44mV	15.5A	---
900	40mV	18A	2.00%	70mV	31.5A	3.50%

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



Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a=25^{\circ}C$ , $V_{CC}=5.0V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C$ , $V_{CC}=5.0V$		
-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



注: ◆ 为关键尺寸

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

