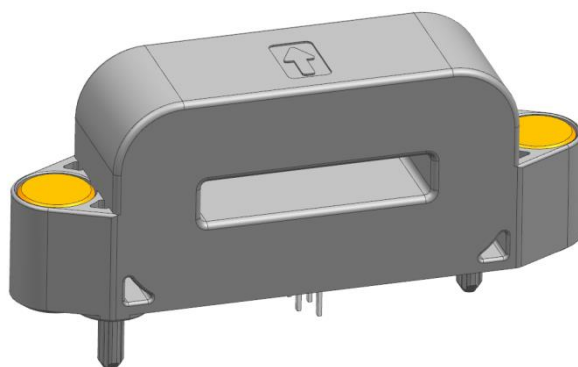


Current Sensor

Product Series: SHK-VBS-T

Part number: SHK-VBS-TE-1100-SA

Version: Ver 1.0



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1. Description

The SHK-VBS-TE-S5 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	30

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	V_{cc}	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.

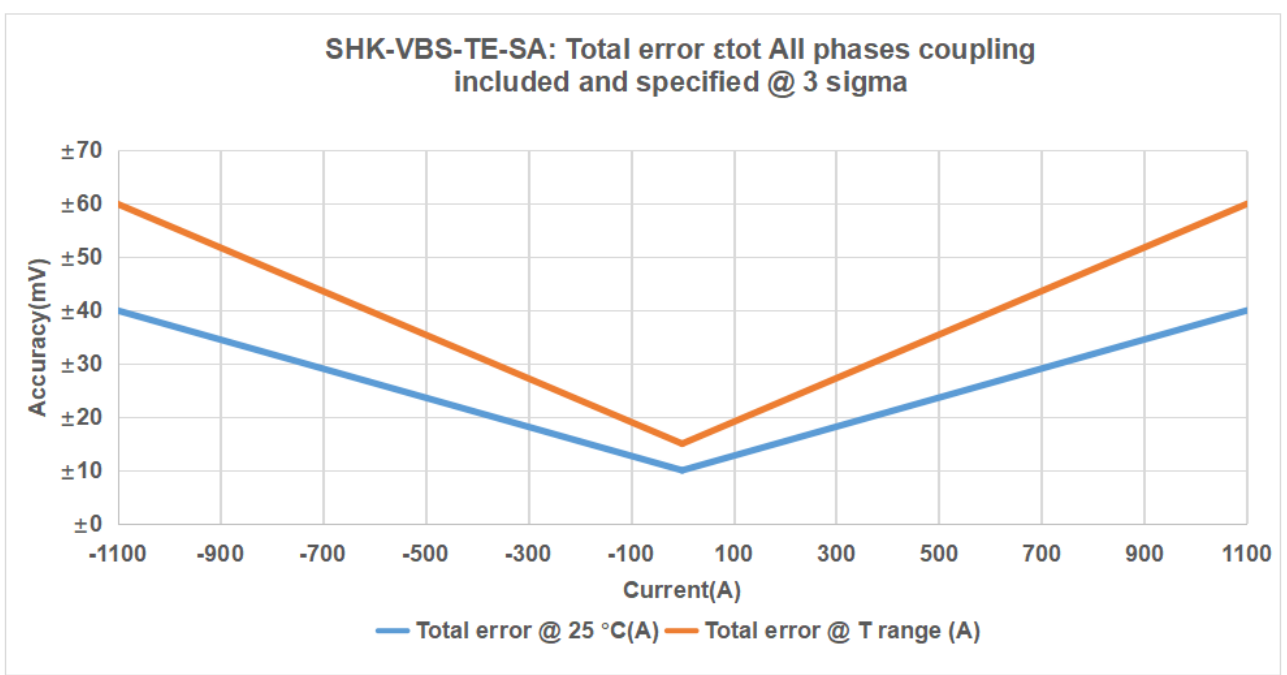
Isolation parameter

Parameter	Symbol	Unit	Value	Comment
Insulation voltage	U_d	kV	2.5	RMS voltage for AC test 50Hz-1 min
Clearance distance (pri. -sec)	d_{Cl}	mm	10	Shortest distance through air
Creepage distance (pri. -sec)	d_{Cp}	mm	10	Shortest path along device body
Comparative tracking index	CTI		PLC 3	
Case material			V0 according to UL 94	

2. Electrical data

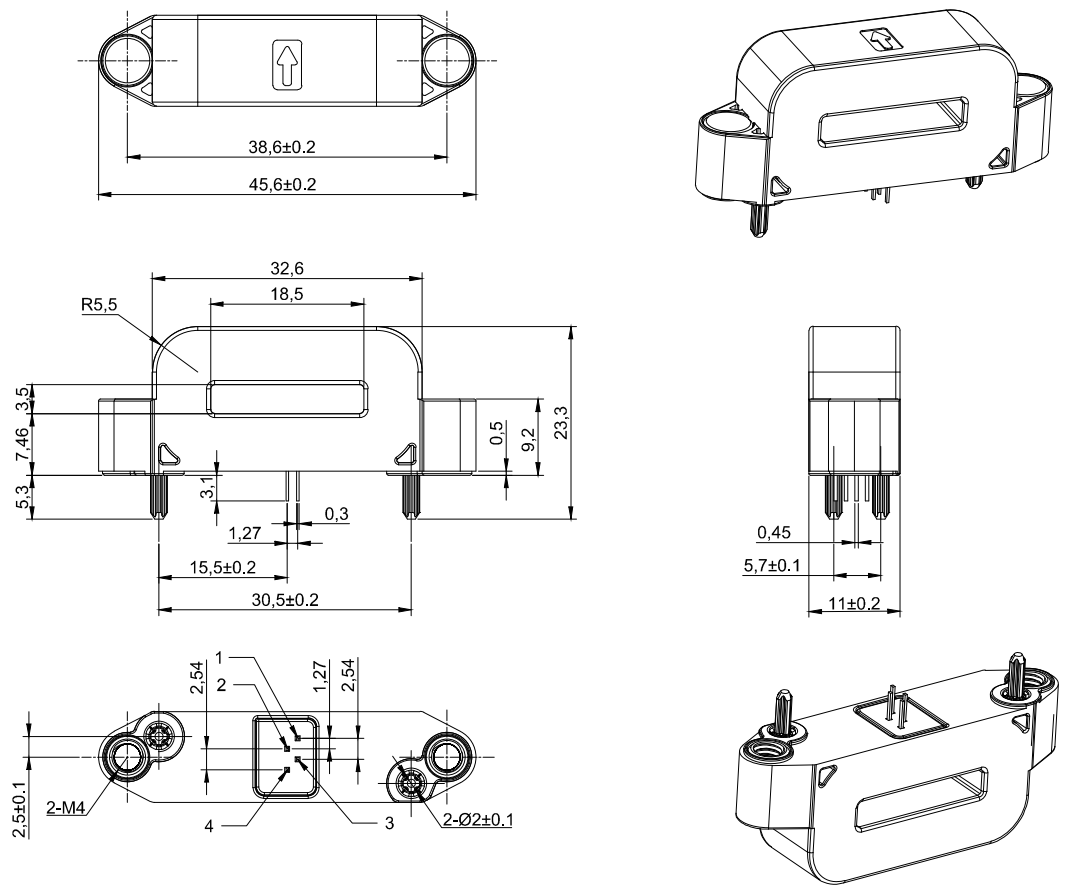
Condition : $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-1100		1100	SHK-VBS-TE-1100-SA
Supply voltage	V_{CC}	V	4.75	5	5.25	All
Current consumption	I_{CC}	mA		12	15	@ $V_{CC} = 5.0\text{ V}$
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		1.82		SHK-VBS-TE-1100-SA
Load resistance	R_L	k Ω	10			
Ratiometricity error	ϵ_r	%		± 1		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ϵ_G	%		± 1		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 4.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, after $\pm I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.05		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of S	TCS_{AV}	%/ $^\circ\text{C}$		± 0.03		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity error	ϵ_L	% I_P	-1		1	% of Full range, $-1100\text{ A} < I_P < 1100\text{ A}$
Response time	T_r	μs		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

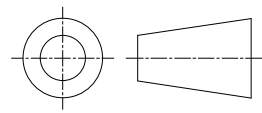


Total error specification				
$I_{PM}(A)$	@ $T_a=25^{\circ}C$, $V_{CC}=5.0V$		@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C$, $V_{CC}=5.0V$	
1100	±40mv	±2%	±60mv	±3%
0	±10mv	±0.5%	±15mv	±0.75%
-1100	40mv	±2%	±60mv	±3%

3. Dimension & Pin definitions



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



Terminals:

Pin1	GND
Pin2	GND
Pin3	Out
Pin4	Vcc

4. Environmental test

Name	Test condition
Electrical tests	
Humidity test	85°C/85%,1000hr
Thermal shock	-40°C/125°C, 1000cycles
High temperature test	125°C, 1000hr
Low temperature test	-40°C, 1000hr
Insulation voltage	2.5kV, 50Hz, 1min
Insulation resistance	DC500V, 1min
Mechanical tests	
Shocks	ISO16750-3
Vibration test	ISO16750-3
EMC tests	
Electrostatic discharges	ISO10605(07/2008)
Bulk current injection	ISO11452-4(12/2011)
Immunity to Radiated disturbances	ISO11452-2(11/2004), ALSE
Emission radiated	CISPR25(03/2008), ALSE
Immunity power line magnetic fields	ISO11452-8(06/2015)

5. Important notice

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