

Current Sensor

Product Series: SHK-VBS/T4

Part number: SHK-545VBS/T4

Version: Ver 1.0



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1. Description

The SHK-VBS/T4 series 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	℃	-40 ~ 125
Storage temperature	T_stg	℃	-40 ~ 125
Mass	m	g	78

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	V _{cc}	V	6
ESD rating (HBM)	U_ESD	kV	4

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	U _d	kV	5.4	
Impulse withstand voltage 1.2/50 us	U _w	kV	9.6	
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
Case material			V0 according to UL 94	

Selection Guide

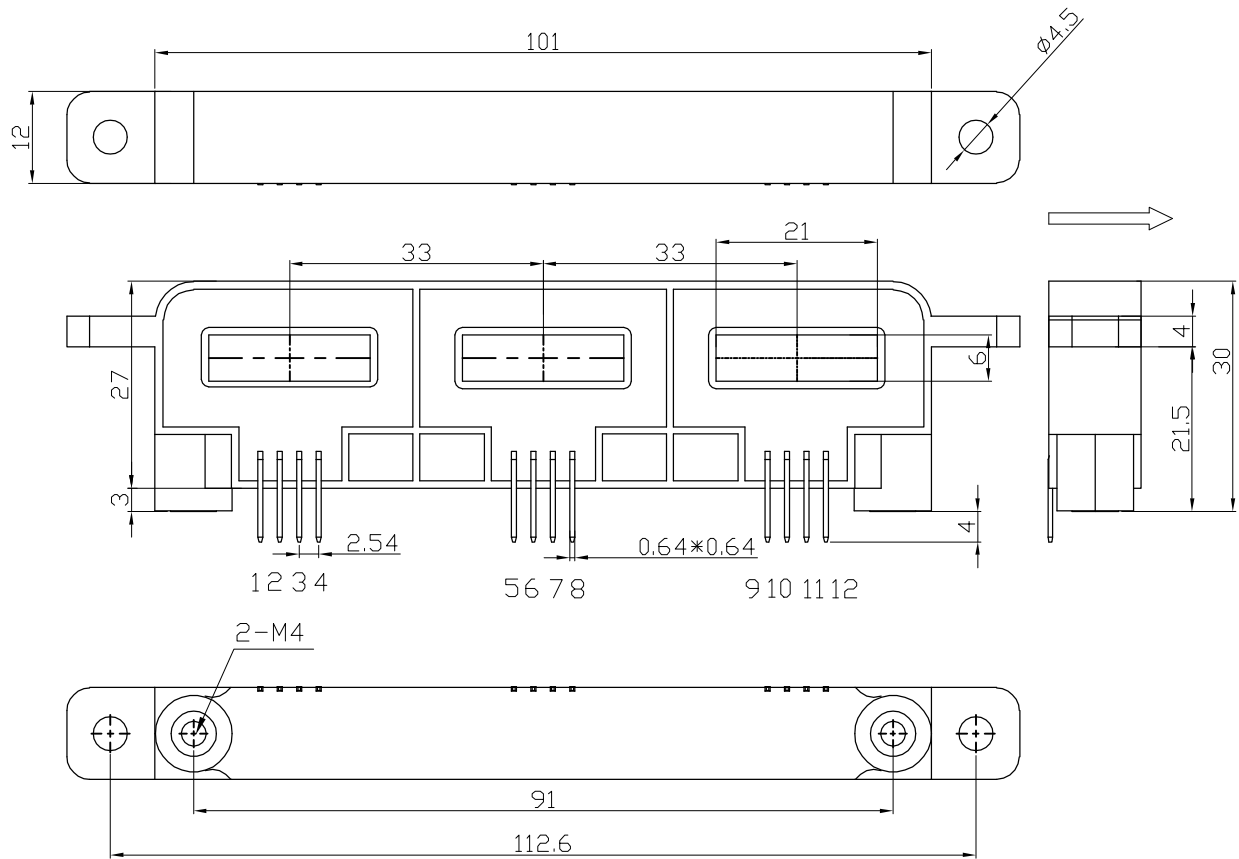
Product	Nominal current	Measuring range
SHK-545VBS/T4	545 A	1090 A

2. Electrical data

 Condition: $T_A = 25^{\circ}\text{C}$, $V_{CC} = 5\text{ V}$

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		545		SHK-545VBS/T4
Primary current measuring range	I_{PM}	A	-1090		1090	SHK-545VBS/T4
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		20	25	
Rated output voltage	V_{FS}	V		± 1		$(V_{out} @ \pm I_{PM}) - V_{off}$
Internal output resistance	R_{out}	Ω		5		V_{out}
Quiescent voltage	V_{off}	V	$V_{CC}/2 - 0.025$	$V_{CC}/2$	$V_{CC}/2 + 0.025$	$V_{out} @ 0\text{ A}$
Temperature coefficient of V_{off}	TCO_{Voff}	mV/K	-0.1		0.1	$-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
Theoretical gain	G_{th}	mV/A		1.83		$1V @ I_{pn}$
Rated linearity error	Non-L	% I_{PN}	-1.5		1.5	$\pm I_{PN}$
Overload linearity error	Non-L	% I_{PM}	-1.5		1.5	$\pm I_{PM}$
Delay time @ 90 % of I_{PN}	T_{res}	μs		3.5		@ 90% of I_{PN}
Frequency bandwidth (-3dB)	BW	kHz		100		No RC circuit
Output voltage noise	V_{noise}	mVpp				
DC ~ 10 kHz				20		
DC ~ 100 kHz				38		
Accuracy @ 25°C	X	% of I_{PN}	-1.5		1.5	@ 25°C
Accuracy @ $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	$X_{@105^{\circ}\text{C}}$		-2		2	@ 105°C
Accuracy @ $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$	$X_{@125^{\circ}\text{C}}$	% of I_{PN}	-2.5		2.5	@ 125°C

3. Dimension & Pin definitions



Terminals

1	TGND1	5	TGND2	9	TGND3
2	Vout1	6	Vout2	10	Vout3
3	GND1	7	GND2	11	GND3
4	VCC1	8	VCC2	12	VCC3

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

