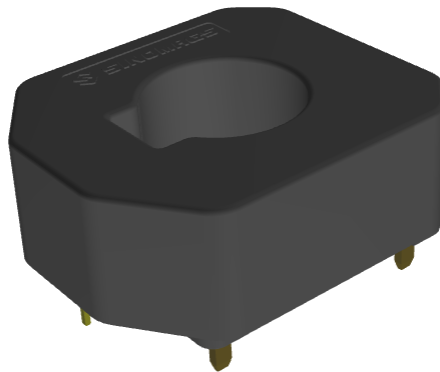


Current Sensor

Product Series: STK-VBS3

Part number: STK-100VBS3 & STK-200VBS3 &
STK-300VBS3 & STK-400VBS3 &
STK-500VBS3 & STK-600VBS3 &
STK-700VBS3 & STK-800VBS3 &
STK-900VBS3

VERSION: Ver 2.4



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1. Introduction

The STK-VBS3 series current sensor is based on TMR (tunnel magnetoresistance) technology, and it has an 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
- Motor driver
- Electric welder power supply

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T _A	°C	-40 ~ 105
Storage temperature	T _{stg}	°C	-40 ~ 125
Mass	m	g	20

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage (not-destructive)	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	4	
Clearance distance (pri. -sec)	d _{Cl}	mm	8	Shortest distance through air
Creepage distance (pri. -sec)	d _{Cp}	mm	8	Shortest path along device body
Case material			V0 according to UL 94	

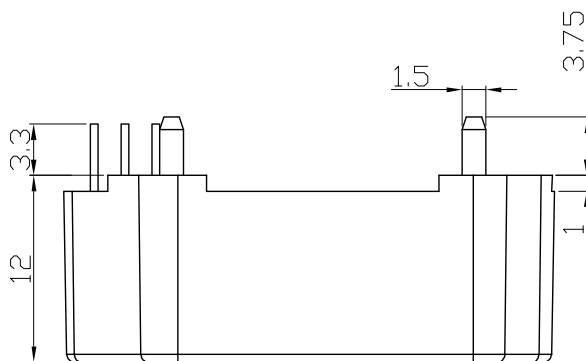
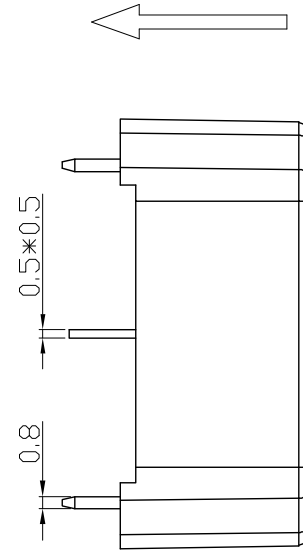
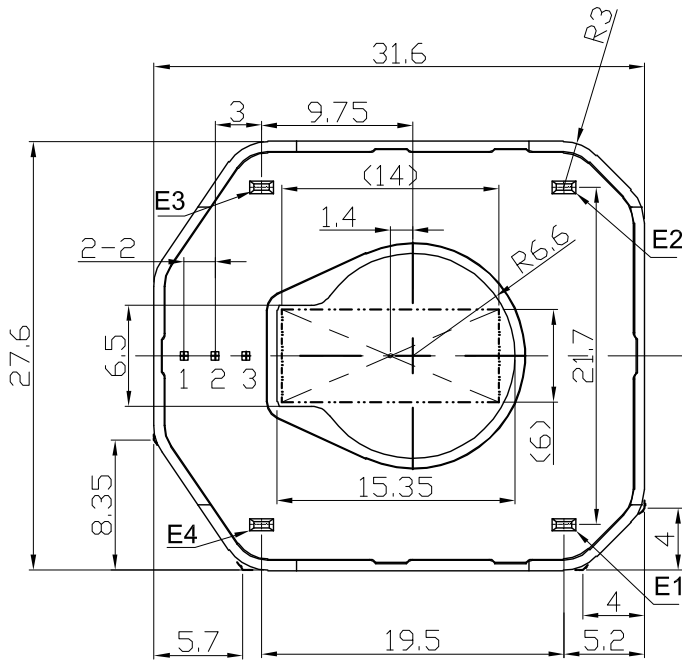
2. Electrical Data

 Condition: $T_A = 25^{\circ}\text{C}$, $V_{CC} = 3.3\text{ V OR }5\text{V}$

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		100		STK-100VBS3
				200		STK-200VBS3
				300		STK-300VBS3
				400		STK-400VBS3
				500		STK-500VBS3
				600		STK-600VBS3
				700		STK-700VBS3
				800		STK-800VBS3
				900		STK-900VBS3
Current range (refer remark)	I_{PM}	A	-100		100	STK-100VBS3
			-200		200	STK-200VBS3
			-300		300	STK-300VBS3
			-400		400	STK-400VBS3
			-500		500	STK-500VBS3
			-600		600	STK-600VBS3
			-700		700	STK-700VBS3
			-800		800	STK-800VBS3
			-900		900	STK-900VBS3
Supply voltage	V_{CC}	V		$5 \pm 5\%$		STK-100VBS3 STK-200VBS3 STK-300VBS3 STK-400VBS3 STK-500VBS3 STK-600VBS3 STK-700VBS3 STK-800VBS3 STK-900VBS3
Current consumption	I_{CC}	mA		10		All
Quiescent voltage $V_{out} @ 0\text{ A}$	V_{off}	V	2.45	2.5	2.55	STK-100VBS3 STK-200VBS3 STK-300VBS3 STK-400VBS3 STK-500VBS3 STK-600VBS3 STK-700VBS3 STK-800VBS3

						STK-900VBS3
Peak output voltage (Vout @ $\pm I_{PM}$) – Voff	V_FS	V		± 2		STK-100VBS3 STK-200VBS3 STK-300VBS3 STK-400VBS3 STK-500VBS3 STK-600VBS3 STK-700VBS3 STK-800VBS3 STK-900VBS3
Internal output resistance	R_out	Ω		2		Vout
Theoretical gain (Typ)	G_th	mV/A		20		STK-100VBS3
				10		STK-200VBS3
				6.66		STK-300VBS3
				5		STK-400VBS3
				4		STK-500VBS3
				3.33		STK-600VBS3
				2.85		STK-700VBS3
				2.5		STK-800VBS3
	2.22		STK-900VBS3			
Rated linearity error	Non-L	% I _{PN}		± 1		$\pm I_{PN}$
Step response time	t_res	μs		2.5		@90% of I _{PN}
Frequency bandwidth (-3dB)	BW	kHz		250		No RC circuit
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 30		STK-300VBS3 STK-400VBS3 STK-500VBS3 STK-600VBS3 STK-700VBS3 STK-800VBS3 STK-900VBS3
				30 40		STK-100VBS3 STK-200VBS3
Accuracy @ 25°C	X	% of I _{PM}	-2	± 1	2	All
Accuracy @ -40°C ~ 105°C	X_TRange	% of I _{PM}	-3.5		3.5	All

3. Dimension & Pin Definitions



Terminals

1	Vout
2	GND
3	+5V
E1-E4	GND

Material : Fit UL94V-0 & RoHS requirements ;

General tolerance : ± 0.5

Unit :mm

