SINOMAGS 希磁科技

Current Sensor

Product Series:	STK-LBS/S2
Part number:	STK-400LBS/S2 STK-500LBS/S2 STK-600LBS/S2 STK-800LBS/S2 STK-1000LBS/S2 STK-1500LBS/S2
Version:	Ver1.4

Sinomags Technology Co., Ltd

Web site: www.sinomags.com

CONTENT

1. Description

The STK-LBS/S2 series current sensor is based on TMR (tunnel magnetoresistance) technology 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 driver
- Converter
- Uninterrupted Power Supply (UPS)
- Electric welder power supply
- Switched model power supply (SMPS)
- DC/DC power supply

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	℃	-40 ~ 125
Storage temperature	T_stg	℃	-40 ~ 125
Mass	m	g	10

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	Vcc	V	6.5
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	Ud	kV	1	
Clearance distance (pri. -sec)	dCl	mm	1	Shortest distance through air
Creepage distance (pri. -sec)	dCp	mm	1	Shortest path along device body

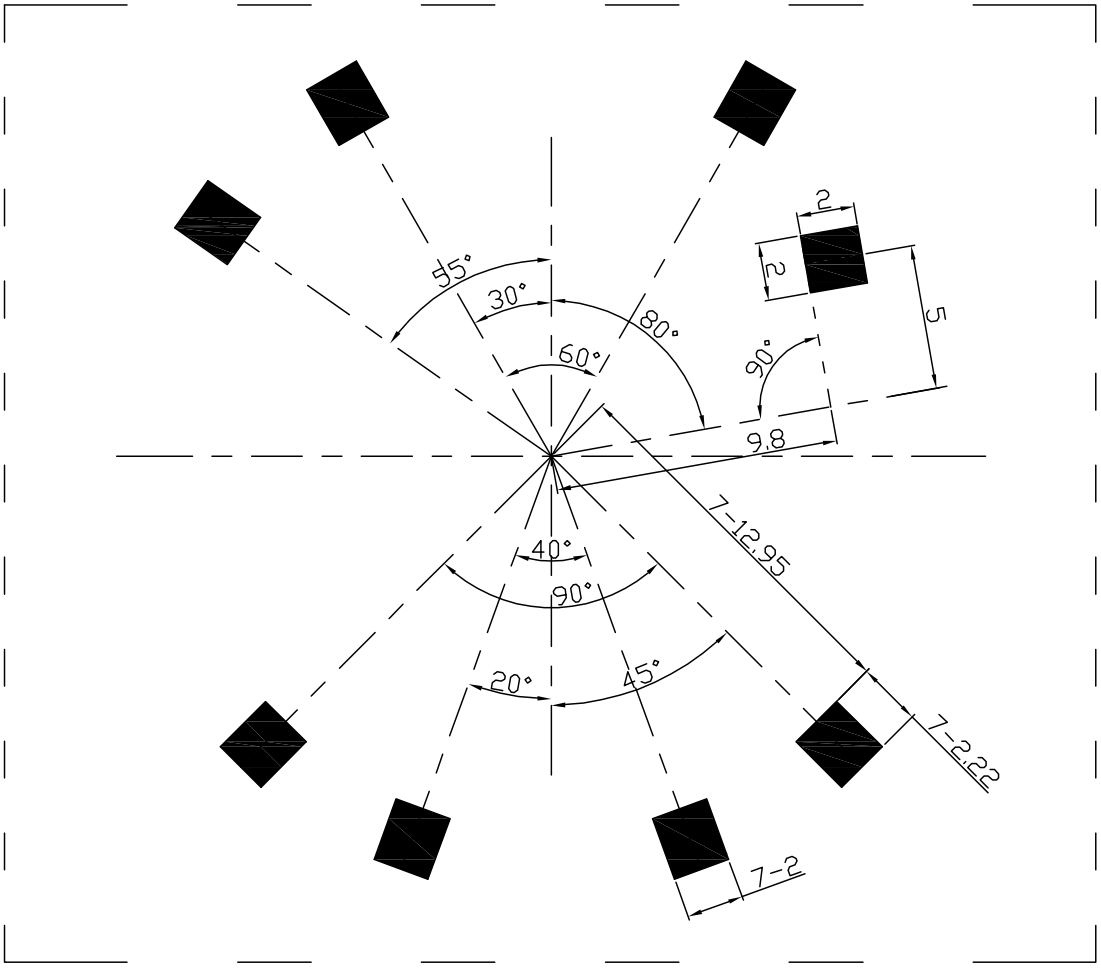
2. Electrical data

Condition：T_A = 25℃, Vcc = 5 V (unless specified)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_pm	A	-400		400	STK-400LBS/S2
			-500		500	STK-500LBS/S2
			-600		600	STK-600LBS/S2
			-800		800	STK-800LBS/S2
			-1000		1000	STK-1000LBS/S2
			-1500		1500	STK-1500LBS/S2
Supply voltage	Vcc	V		5±5%		
Current consumption	Icc	mA		10		
Quiescent voltage	Voff	V	2.45	2.5	2.55	Vout @ 0 A
Rated output voltage	V_FS	V		2		(Vout @ ±I_pm) – Voff
Internal output resistance	R_out	Ω		2		
Theoretical gain	G_th	mV/A		5		STK-400LBS/S2
				4		STK-500LBS/S2
				3.33		STK-600LBS/S2
				2.5		STK-800LBS/S2
				2		STK-1000LBS/S2
				1.33		STK-1500LBS/S2
Rated linearity error	Non-L	%I_pm		±1		Within ±I_pm
Step response time	t_res	μs		3		@90% of I_pm
Frequency bandwidth (-3dB)	BW	kHz		250		No RC circuit
Output voltage noise DC ~ 10 kHz DC ~ 250 kHz	Vnoise	mVpp		 20 30		
Accuracy	X	% of I_pm		±1.5		@ 25℃
Accuracy	X	% of I_pm		±3.5		@ -40℃~105℃

3. Recommended PCB layout

Installation of view: overlooking (unit: mm)



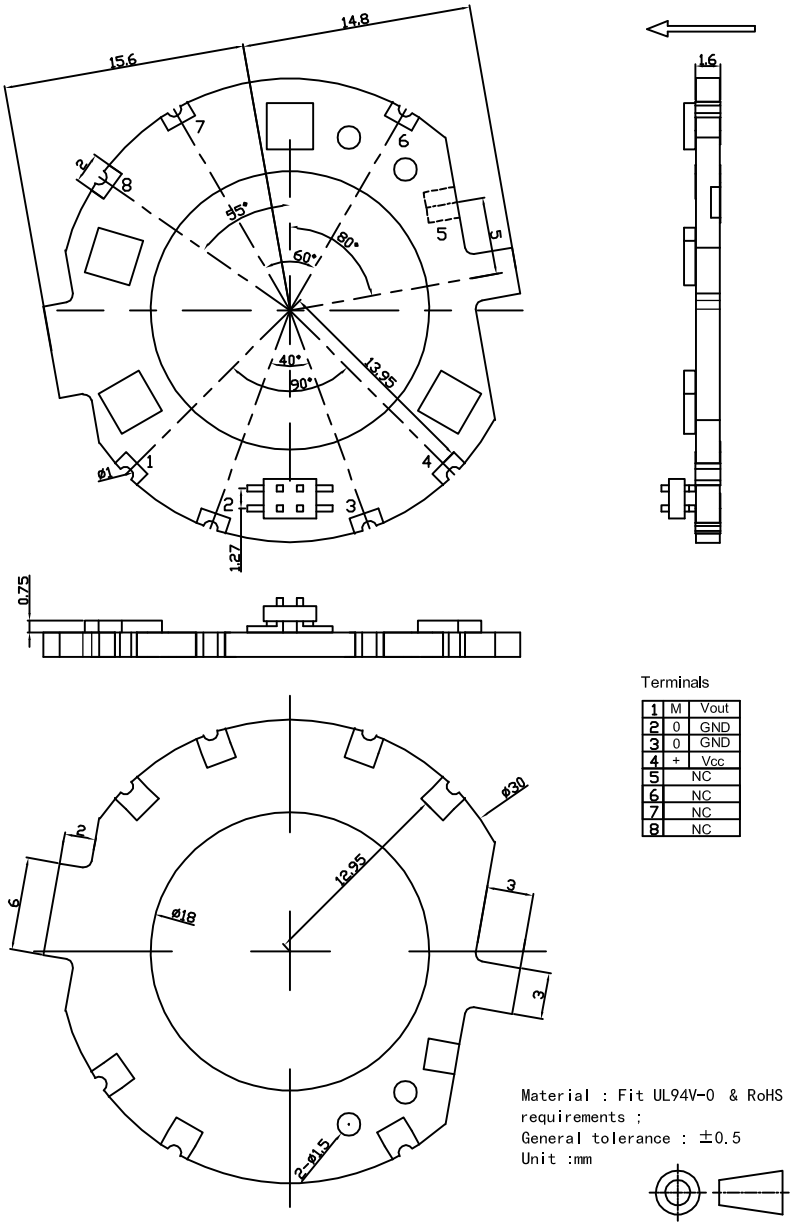
1. Installing angle：Overlook (observe from the side of installing transducer)
2. Welding method: reflow soldering

Security：

This current sensor must be used in limited-energy secondary circuit according to IEC 61010-1.

- This current sensor must be used in electric/electronic equipment with respect to appliance standards and safety requirement in accordance with the manufacture's operating instructions;
- When operating the current sensor, certain parts of the module can carry hazardous voltage;
- Failure to wiring as shown in the diagram will damage the current sensor;
- Ignoring this warning can lead to serious consequences.
- A protective housing or a additional shield could be used.
- Main supply must be able to disconnected.

4. Dimension & Pin definitions



Terminals

1	M	Vout
2	0	GND
3	0	GND
4	+	Vcc
5		NC
6		NC
7		NC
8		NC

5. Finished product packaging