

Current Sensor

Product Series: STK-600/M

STK-600/M-050AB5, STK-600/M-100AB5
STK-600/M-150AB5, STK-600/M-166AB5
STK-600/M-200AB5, STK-600/M-250AB5
STK-600/M-300AB5, STK-600/M-400AB5
STK-600/M-050AB3, STK-600/M-100AB3
STK-600/M-150AB3, STK-600/M-200AB3
Part number: STK-600/M-250AB3, STK-600/M-300AB5
STK-600/M-400AB3, STK-600/M-200AC3
STK-600/M-250AC3, STK-600/M-050AU5
STK-600/M-100AU5, STK-600/M-150AU5
STK-600/M-200AU5, STK-600/M-250AU5
STK-600/M-300AU5, STK-600/M-400AU5
STK-600/M-100AU3, STK-600/M-150AU3

Version: Ver 1.5



Sinomags Technology Co., Ltd

Web site: www.sinomags.com

CONTENT

1.	Introduction	2
2.	Package: 5-pin package	2
3.	Features and Benefits	3
4.	Product Information	3
5.	Electrical Data	4
6.	Response Time	9
7.	Frequency Bandwidth	9
8.	Dimension & Pin Definitions	10

1. Introduction

The STK-600/M 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
- BMS

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T _A	°C	-40 ~ 125
Storage temperature	T _{stg}	°C	-40 ~ 125
Mass	m	g	4

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. Package: 5-pin package



PFF Leadform

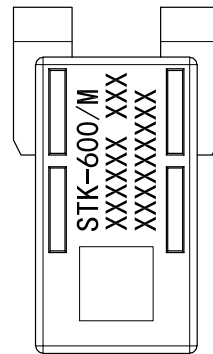
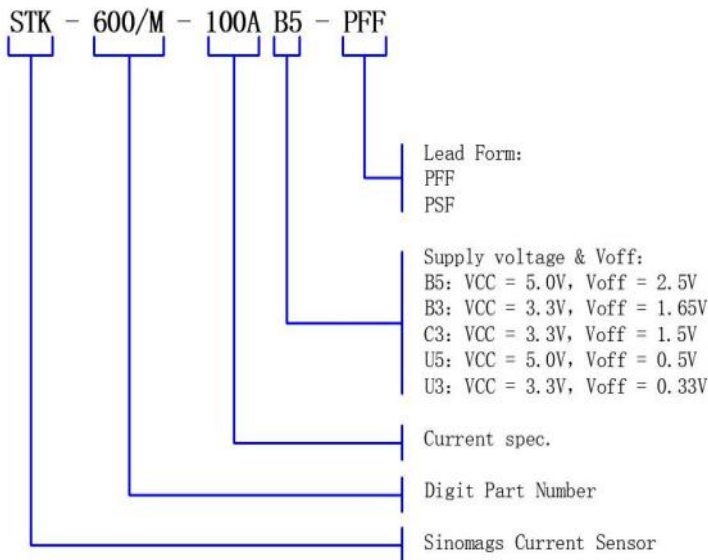


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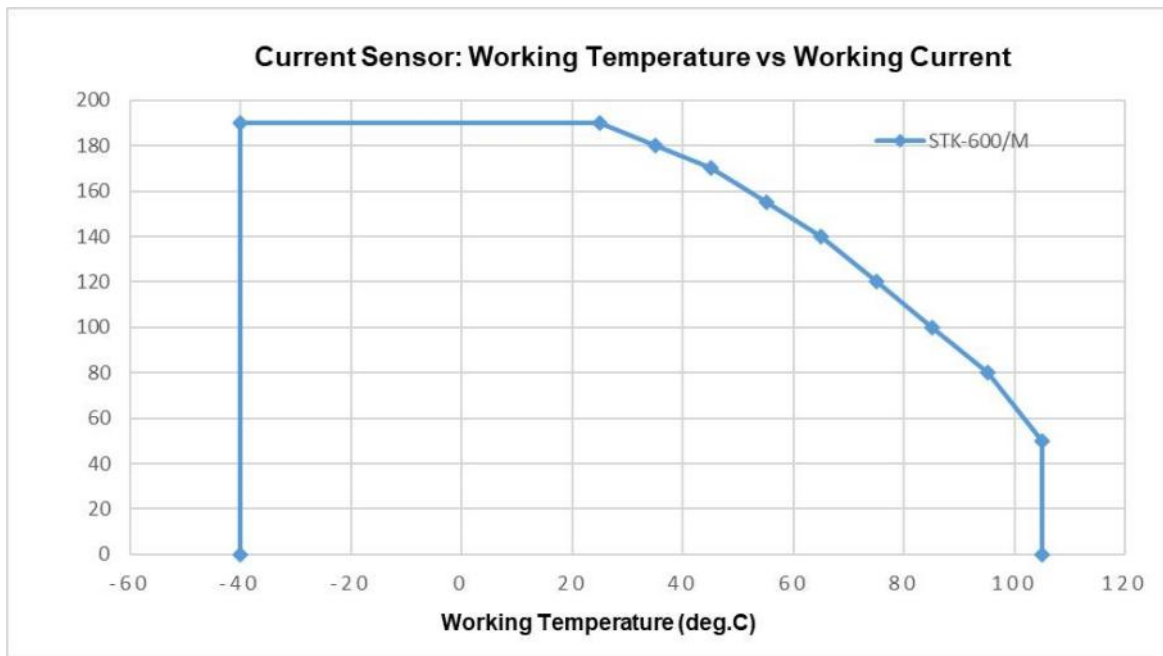
3. Features and Benefits

UL certified, File No. E507664.

4. Product Information



Production information is printed on the package surface by laser marking.



The relationship between working temperature & working current. It is suggested that the temperature of sensor not exceed 105 deg.C for better accuracy.

5. Electrical Data

 Condition: $T_A = 25^{\circ}\text{C}$, STK-600/M-XXXAB5

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		50		STK-600/M-050AB5
				100		others
Current range (refer remark)	I_{PM}	A	-50		50	STK-600/M-050AB5
			-100		100	STK-600/M-100AB5
			-150		150	STK-600/M-150AB5
			-166		166	STK-600/M-166AB5
			-200		200	STK-600/M-200AB5
			-250		250	STK-600/M-250AB5
			-300		300	STK-600/M-300AB5
			-400		400	STK-600/M-400AB5
Sensitivity	Sens	mV/A		40		STK-600/M-050AB5
				20		STK-600/M-100AB5
				13.33		STK-600/M-150AB5
				12		STK-600/M-166AB5
				10		STK-600/M-200AB5
				8		STK-600/M-250AB5
				6.66		STK-600/M-300AB5
				5		STK-600/M-400AB5
Supply voltage	V_{CC}	V		$5 \pm 5\%$		All
Current consumption	I_{CC}	mA		6		All
Quiescent voltage $V_{out} @ 0\text{ A}$	V_{off}	V	2.48	2.5	2.52	STK-600/M-XXXAB5
Peak output voltage ($V_{out} @ \pm I_{pm}$) - V_{off}	V_{FS}	V		± 2		STK-600/M-XXXAB5
Internal output resistance	R_{out}	Ω		2		All
Rated linearity error	E_{LIN}	% I_{PN}		± 1		$\pm I_{PN}$
Step response time @90% of I_{PM}	t_{res}	μs		4.6		STK-600/M-XXXAB5
Frequency bandwidth (-3dB)	BW	kHz		120		STK-600/M-XXXAB5
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		20		All
				30		
Accuracy @ 25°C	E_{TOT}	% of I_{PM}	-2.4	± 1	2.4	All
Accuracy @ $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	E_{TOT}	% of I_{PM}	-3.5		3.5	All

Condition: $T_A = 25^{\circ}\text{C}$, STK-600/M-XXXAB3

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		50		STK-600/M-050AB3
				100		others
Current range (refer remark)	I_{PM}	A	-50		50	STK-600/M-050AB3
			-100		100	STK-600/M-100AB3
			-150		150	STK-600/M-150AB3
			-200		200	STK-600/M-200AB3
			-250		250	STK-600/M-250AB3
			-300		300	STK-600/M-300AB3
			-400		400	STK-600/M-400AB3
Sensitivity	Sens	mV/A		26.4		STK-600/M-050AB3
				13.2		STK-600/M-100AB3
				8.8		STK-600/M-150AB3
				6.6		STK-600/M-200AB3
				5.28		STK-600/M-250AB3
				4.4		STK-600/M-300AB3
				3.3		STK-600/M-400AB3
Supply voltage	V_{CC}	V		$3.3 \pm 5\%$		All
Current consumption	I_{CC}	mA		6		All
Quiescent voltage $V_{out} @ 0\text{ A}$	V_{off}	V	1.63	1.65	1.67	STK-600/M-XXXAB3
Peak output voltage ($V_{out} @ \pm I_{PM}$) - V_{off}	V_{FS}	V		± 1.32		STK-600/M-XXXAB3
Internal output resistance	R_{out}	Ω		2		All
Rated linearity error	E_{LIN}	% I_{PN}		± 1		$\pm I_{PN}$
Step response time @90% of I_{PM}	t_{res}	μs		4.6		STK-600/M-XXXAB3
Frequency bandwidth (-3dB)	BW	kHz		120		STK-600/M-XXXAB3
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		20 30		All
Accuracy @ 25°C	E_{TOT}	% of I_{PM}	-2.4	± 1	2.4	All
Accuracy @ $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	E_{TOT}	% of I_{PM}	-3.5		3.5	All

Condition: $T_A = 25^{\circ}\text{C}$, STK-600/M-XXXAC3

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		100		All
Current range (refer remark)	I_{PM}	A	-200		200	STK-600/M-200AC3
			-250		250	STK-600/M-250AC3
Sensitivity	Sens	mV/A		6		STK-600/M-200AC3
				4.8		STK-600/M-250AC3
Supply voltage	V_{CC}	V		$3.3 \pm 5\%$		All
Current consumption	I_{CC}	mA		6		All
Quiescent voltage $V_{out} @ 0\text{ A}$	V_{off}	V	1.48	1.5	1.52	STK-600/M-XXXAC3
Peak output voltage ($V_{out} @ \pm I_{PM}$) - V_{off}	V_{FS}	V		± 1.2		STK-600/M-XXXAC3
Internal output resistance	R_{out}	Ω		2		All
Rated linearity error	E_{LIN}	% I_{PN}		± 1		$\pm I_{PN}$
Step response time @90% of I_{PM}	t_{res}	μs		4.6		STK-600/M-XXXAC3
Frequency bandwidth (-3dB)	BW	kHz		120		STK-600/M-XXXAC3
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		20 30		All
Accuracy @ 25°C	E_{TOT}	% of I_{PM}	-2.4	± 1	2.4	All
Accuracy @ $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	E_{TOT}	% of I_{PM}	-3.5		3.5	All

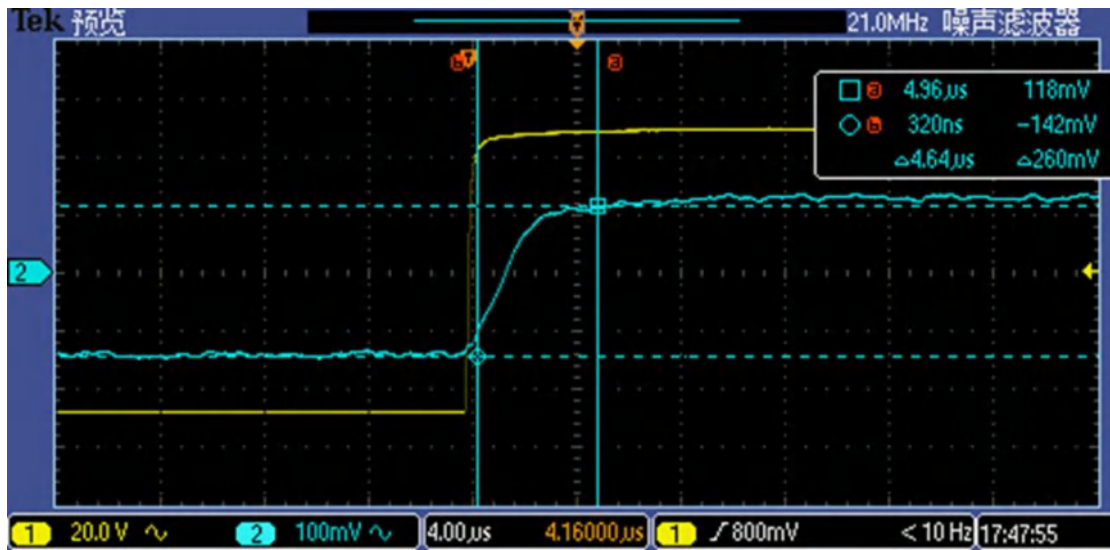
Condition: $T_A = 25^{\circ}\text{C}$, STK-600/M-XXXAU5

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		50		STK-600/M-050AU5
				100		others
Current range (refer remark)	I_{PM}	A	0		50	STK-600/M-050AU5
			0		100	STK-600/M-100AU5
			0		150	STK-600/M-150AU5
			0		200	STK-600/M-200AU5
			0		250	STK-600/M-250AU5
			0		300	STK-600/M-300AU5
			0		400	STK-600/M-400AU5
Sensitivity	Sens	mV/A		80		STK-600/M-050AU5
				40		STK-600/M-100AU5
				26.67		STK-600/M-150AU5
				20		STK-600/M-200AU5
				16		STK-600/M-250AU5
				13.33		STK-600/M-300AU5
				10		STK-600/M-400AU5
Supply voltage	V_{CC}	V		$5 \pm 5\%$		All
Current consumption	I_{CC}	mA		6		All
Quiescent voltage $V_{out} @ 0\text{ A}$	V_{off}	V	0.48	0.5	0.52	STK-600/M-XXXAU5
Peak output voltage ($V_{out} @ \pm I_{PM}$) - V_{off}	V_{FS}	V		4		STK-600/M-XXXAU5
Internal output resistance	R_{out}	Ω		2		All
Rated linearity error	E_{LIN}	% I_{PN}		± 1		$\pm I_{PN}$
Step response time @90% of I_{PM}	t_{res}	μs		4.6		STK-600/M-XXXAU5
Frequency bandwidth (-3dB)	BW	kHz		120		STK-600/M-XXXAU5
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		20		All
				30		
Accuracy @ 25°C	E_{TOT}	% of I_{PM}	-2.4	± 1	2.4	All
Accuracy @ $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	E_{TOT}	% of I_{PM}	-3.5		3.5	All

Condition: $T_A = 25^{\circ}\text{C}$, STK-600/M-XXXAU3

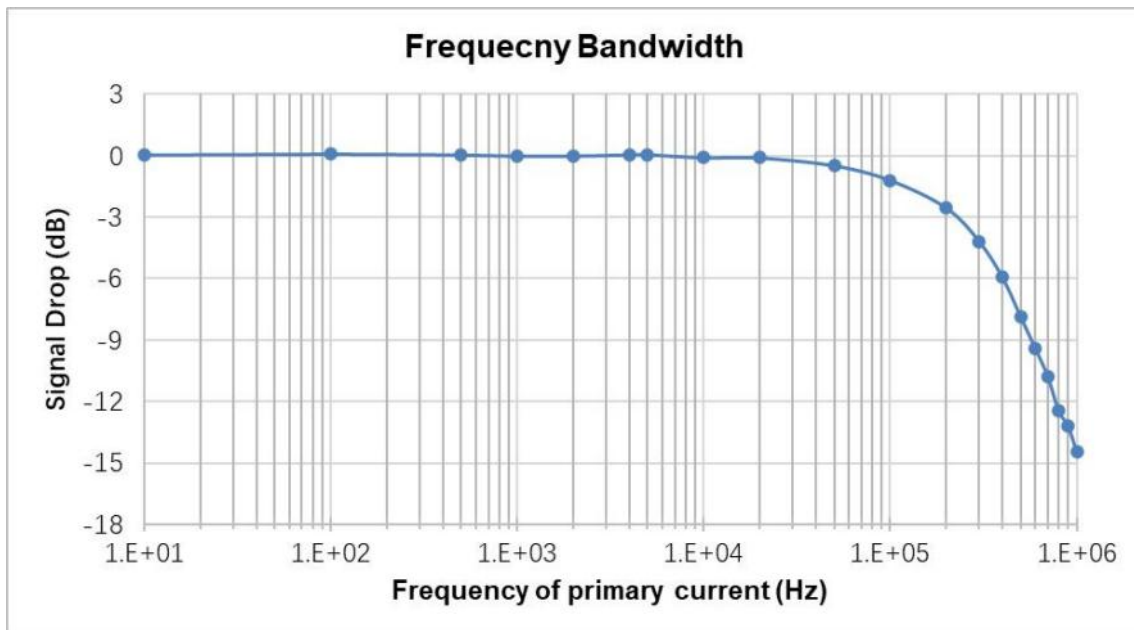
Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		100		All
Current range (refer remark)	I_{PM}	A	0		100	STK-600/M-100AU3
			0		150	STK-600/M-150AU3
Sensitivity	Sens	mV/A		26.4		STK-600/M-100AU3
				17.6		STK-600/M-150AU3
Supply voltage	V_{CC}	V		$3.3 \pm 5\%$		All
Current consumption	I_{CC}	mA		6		All
Quiescent voltage $V_{out} @ 0\text{A}$	V_{off}	V	0.31	0.33	0.35	STK-600/M-XXXAU3
Peak output voltage ($V_{out} @ \pm I_{PM}$) - V_{off}	V_{FS}	V		2.64		STK-600/M-XXXAU3
Internal output resistance	R_{out}	Ω		2		All
Rated linearity error	E_{LIN}	% I_{PN}		± 1		$\pm I_{PN}$
Step response time @90% of I_{PM}	t_{res}	μs		4.6		STK-600/M-XXXAU3
Frequency bandwidth (-3dB)	BW	kHz		120		STK-600/M-XXXAU3
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		20		All
				30		
Accuracy @ 25°C	E_{TOT}	% of I_{PM}	-2.4	± 1	2.4	All
Accuracy @ $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	E_{TOT}	% of I_{PM}	-3.5		3.5	All

6. Response Time



STK-600/M response time

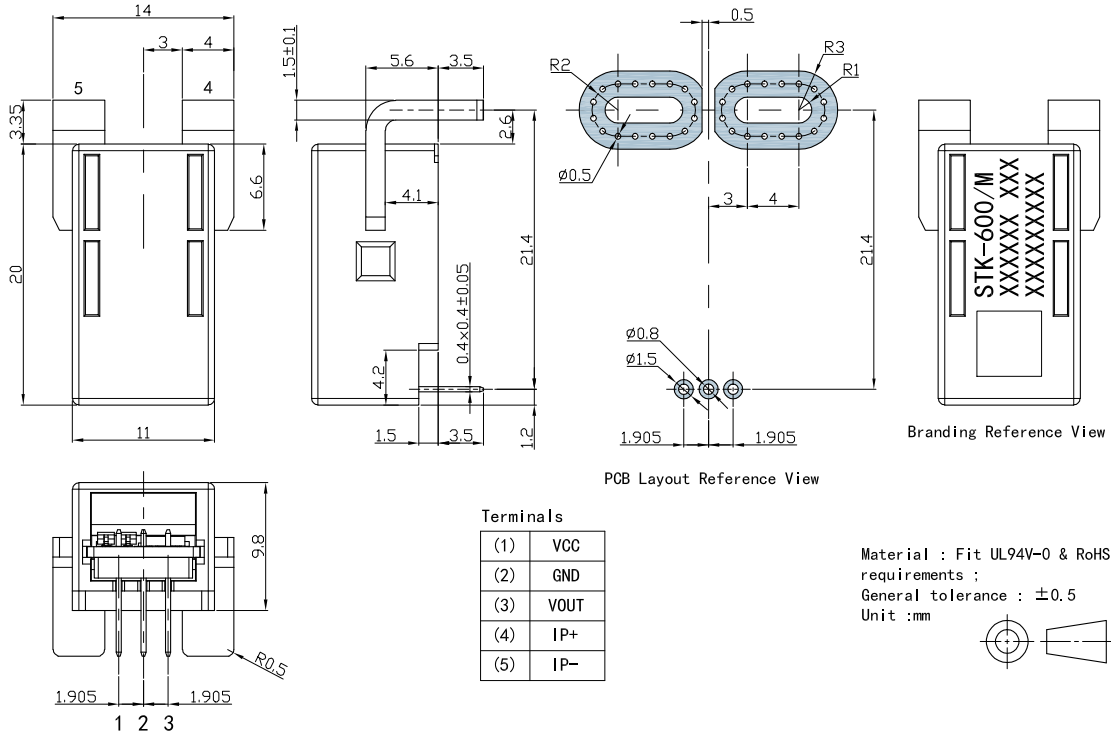
7. Frequency Bandwidth



STK-600/M bandwidth

8. Dimension & Pin Definitions

Package, Leadform PFF



Package, Leadform PSF

