

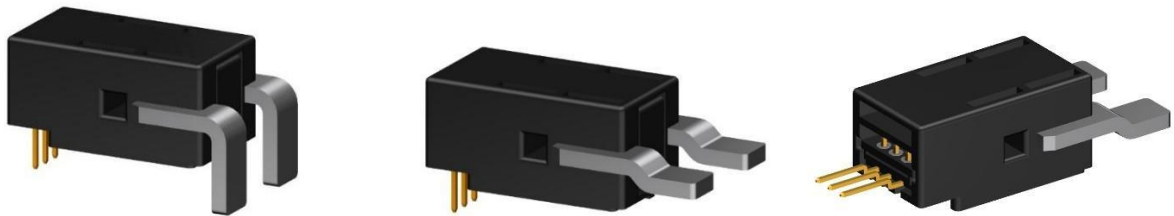
## Current Sensor

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 1.8



Sinomags Technology Co., Ltd

Web site: [www.sinomags.com](http://www.sinomags.com)

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## 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
- Electric welder power supply
- Motor driver
- BMS

### General parameter

Parameter	Symbol	Unit	Value
Working temperature	T <sub>A</sub>	°C	-40 ~ 125
Storage temperature	T <sub>stg</sub>	°C	-40 ~ 125
Mass	m	g	4
ROHS	/	/	conform
MSL	/	/	1

### Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage (not-destructive)	V <sub>CC</sub>	V	6
ESD rating (HBM)	U <sub>ESD</sub>	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.

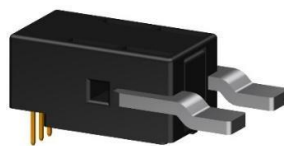
### Isolation parameter

Parameter	Symbol	Unit	Value	Comment
RMS voltage for AC test 50Hz/1 min	U <sub>d</sub>	kV	4	
Clearance distance (pri. -sec)	d <sub>Cl</sub>	mm	8	Shortest distance through air
Creepage distance (pri. -sec)	d <sub>Cp</sub>	mm	8	Shortest path along device body
Case material			V0 according to UL 94	

## 2. Package: 5-pin package



**PFF Leadform**



**PSF Leadform**

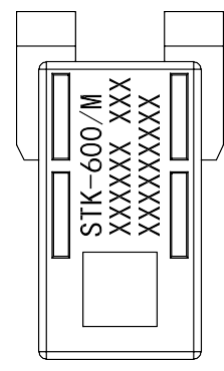
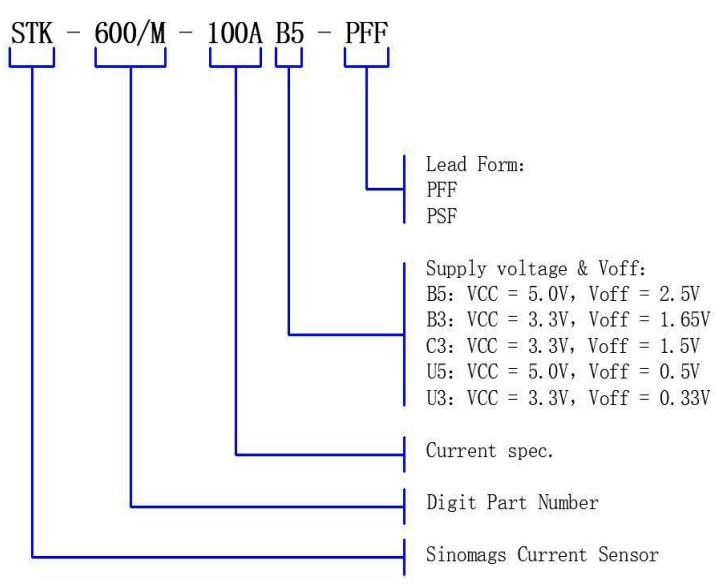


**PSS Leadform**

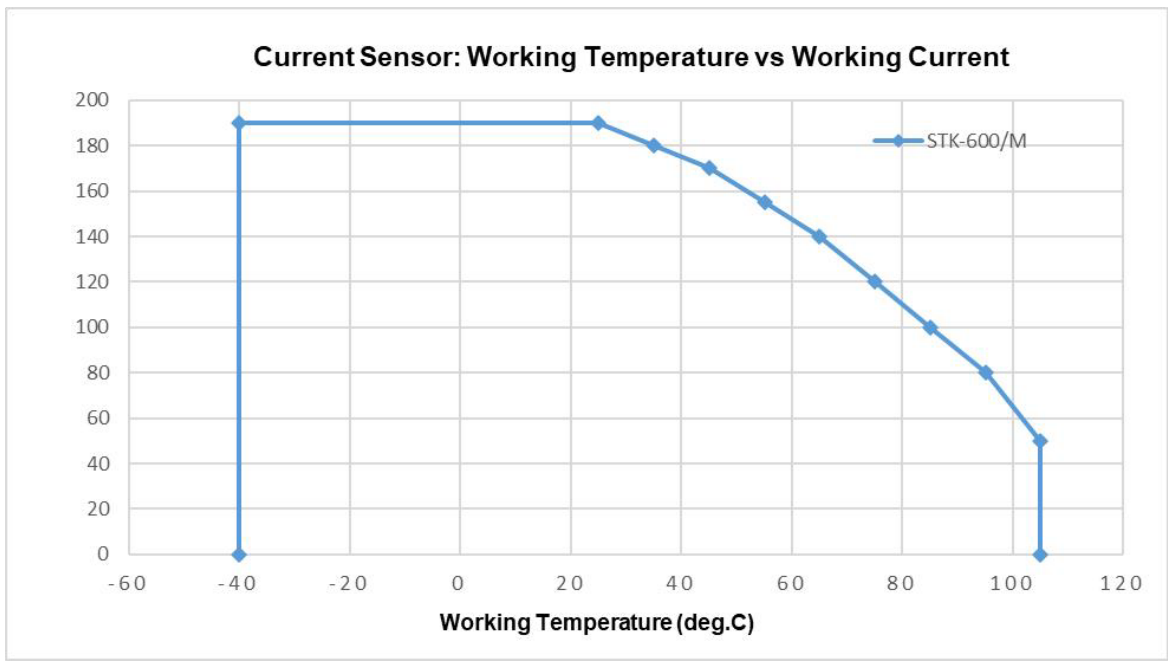
### 3. Features and Benefits

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
Power up Delay	$T_{\text{delay}}$	ms		80	120	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		$\pm 2$		STK-600/M-XXXAB5
Internal output resistance	$R_{out}$	$\Omega$		22		All
Rated linearity error	$E_{LIN}$	% $I_{PN}$		$\pm 1$		$\pm I_{PN}$
Step response time @90% of $I_{PM}$	$t_{res}$	$\mu\text{s}$		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 @ $25^{\circ}\text{C}$	$E_{TOT}$	% of $I_{PM}$	-2.4	$\pm 1$	2.4	All

Accuracy @ -40°C ~ 105°C	$E_{TOT}$	% of $I_{PM}$	-3.5		3.5	All
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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
Power up Delay	$T_{delay}$	ms		80	120	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		$\pm 1.32$		STK-600/M-XXXAB3
Internal output resistance	$R_{out}$	$\Omega$		22		All
Rated linearity error	$E_{LIN}$	% $I_{PN}$		$\pm 1$		$\pm I_{PN}$
Step response time @90% of $I_{PM}$	$t_{res}$	$\mu\text{s}$		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	$\pm 1$	2.4	All
Accuracy @ -40°C ~ 105°C	$E_{TOT}$	% of $I_{PM}$	-3.5		3.5	All

Condition: T<sub>A</sub> = 25°C, STK-600/M-XXXAC3

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I <sub>PN</sub>	A		100		All
Current range (refer remark)	I <sub>PM</sub>	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 <sub>CC</sub>	V		3.3 ± 5%		All
Power up Delay	T <sub>delay</sub>	ms		80	120	All
Current consumption	I <sub>CC</sub>	mA		6		All
Quiescent voltage V <sub>out</sub> @ 0 A	V <sub>off</sub>	V	1.48	1.5	1.52	STK-600/M-XXXAC3
Peak output voltage (V <sub>out</sub> @ ±I <sub>pm</sub> ) - V <sub>off</sub>	V <sub>FS</sub>	V		± 1.2		STK-600/M-XXXAC3
Internal output resistance	R <sub>out</sub>	Ω		22		All
Rated linearity error	E <sub>LIN</sub>	% I <sub>PN</sub>		± 1		± I <sub>PN</sub>
Step response time @90% of I <sub>PM</sub>	t <sub>res</sub>	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 <sub>noise</sub>	mVpp		20		All
				30		
Accuracy @ 25°C	E <sub>TOT</sub>	% of I <sub>PM</sub>	-2.4	±1	2.4	All
Accuracy @ -40°C ~ 105°C	E <sub>TOT</sub>	% of I <sub>PM</sub>	-3.5		3.5	All

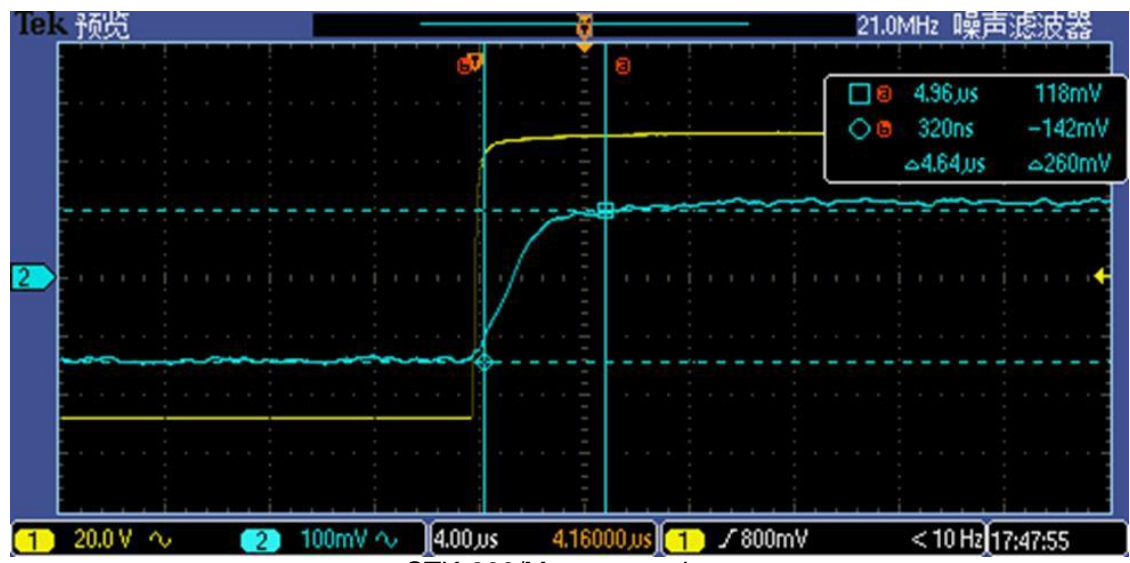
Condition: T<sub>A</sub> = 25°C, STK-600/M-XXXAU5

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I <sub>PN</sub>	A		50		STK-600/M-050AU5
				100		others
Current range (refer remark)	I <sub>PM</sub>	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 <sub>cc</sub>	V		5 ± 5%		All
Power up Delay	T <sub>delay</sub>	ms		80	120	All
Current consumption	I <sub>cc</sub>	mA		6		All
Quiescent voltage V <sub>out</sub> @ 0 A	V <sub>off</sub>	V	0.48	0.5	0.52	STK-600/M-XXXAU5
Peak output voltage (V <sub>out</sub> @ ±I <sub>pm</sub> ) – V <sub>off</sub>	V <sub>FS</sub>	V		4		STK-600/M-XXXAU5
Internal output resistance	R <sub>out</sub>	Ω		22		All
Rated linearity error	E <sub>LIN</sub>	% I <sub>PN</sub>		± 1		± I <sub>PN</sub>
Step response time @90% of I <sub>PM</sub>	t <sub>res</sub>	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 <sub>noise</sub>	mVpp		20 30		All
Accuracy @ 25°C	E <sub>TOT</sub>	% of I <sub>PM</sub>	-2.4	±1	2.4	All
Accuracy @ -40°C ~ 105°C	E <sub>TOT</sub>	% of I <sub>PM</sub>	-3.5		3.5	All

Condition: T<sub>A</sub> = 25°C, STK-600/M-XXXAU3

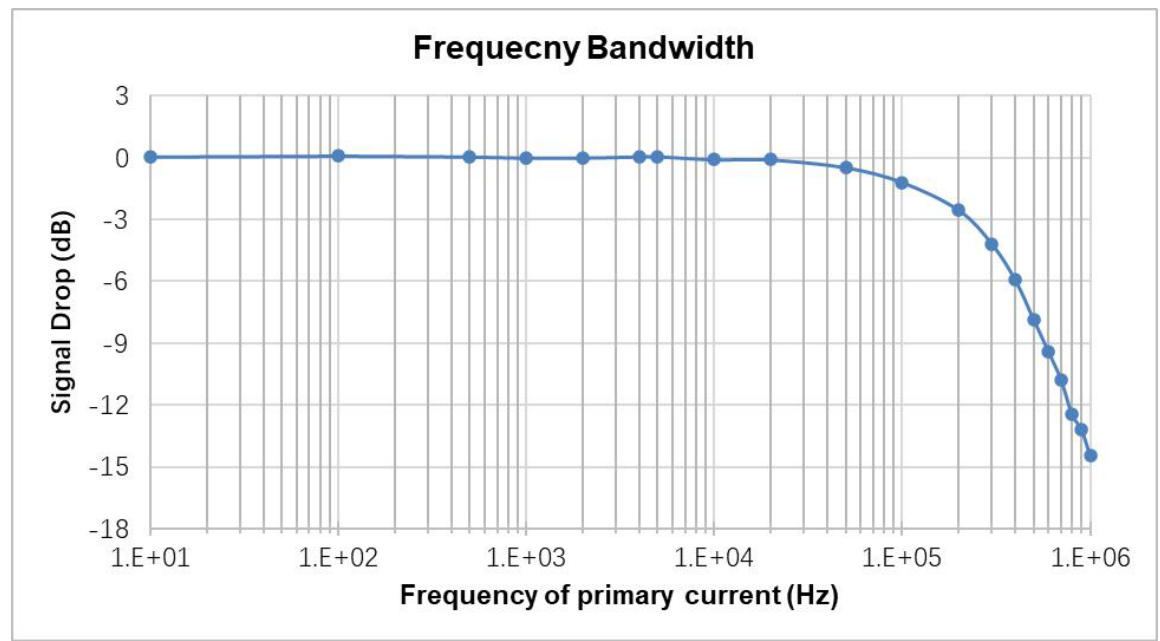
Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I <sub>PN</sub>	A		100		All
Current range (refer remark)	I <sub>PM</sub>	A	0		100	STK-600/M-100AU3
			0		150	STK-600/M-150AU3
Sensitivity	Sens	mV/A		26.4		STK-600/M-100AU3
				17.6		STK-600/M-150AU3
Supply voltage	V <sub>CC</sub>	V		3.3 ± 5%		All
Power up Delay	T <sub>delay</sub>	ms		80	120	All
Current consumption	I <sub>CC</sub>	mA		6		All
Quiescent voltage V <sub>out</sub> @ 0 A	V <sub>off</sub>	V	0.31	0.33	0.35	STK-600/M-XXXAU3
Peak output voltage (V <sub>out</sub> @ ±I <sub>pm</sub> ) -V <sub>off</sub>	V <sub>FS</sub>	V		2.64		STK-600/M-XXXAU3
Internal output resistance	R <sub>out</sub>	Ω		22		All
Rated linearity error	E <sub>LIN</sub>	% I <sub>PN</sub>		± 1		± I <sub>PN</sub>
Step response time @90% of I <sub>PM</sub>	t <sub>res</sub>	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 <sub>noise</sub>	mVpp		20		All
				30		
Accuracy @ 25°C	E <sub>TOT</sub>	% of I <sub>PM</sub>	-2.4	±1	2.4	All
Accuracy @ -40°C ~ 105°C	E <sub>TOT</sub>	% of I <sub>PM</sub>	-3.5		3.5	All

### 6. Response Time



STK-600/M response time

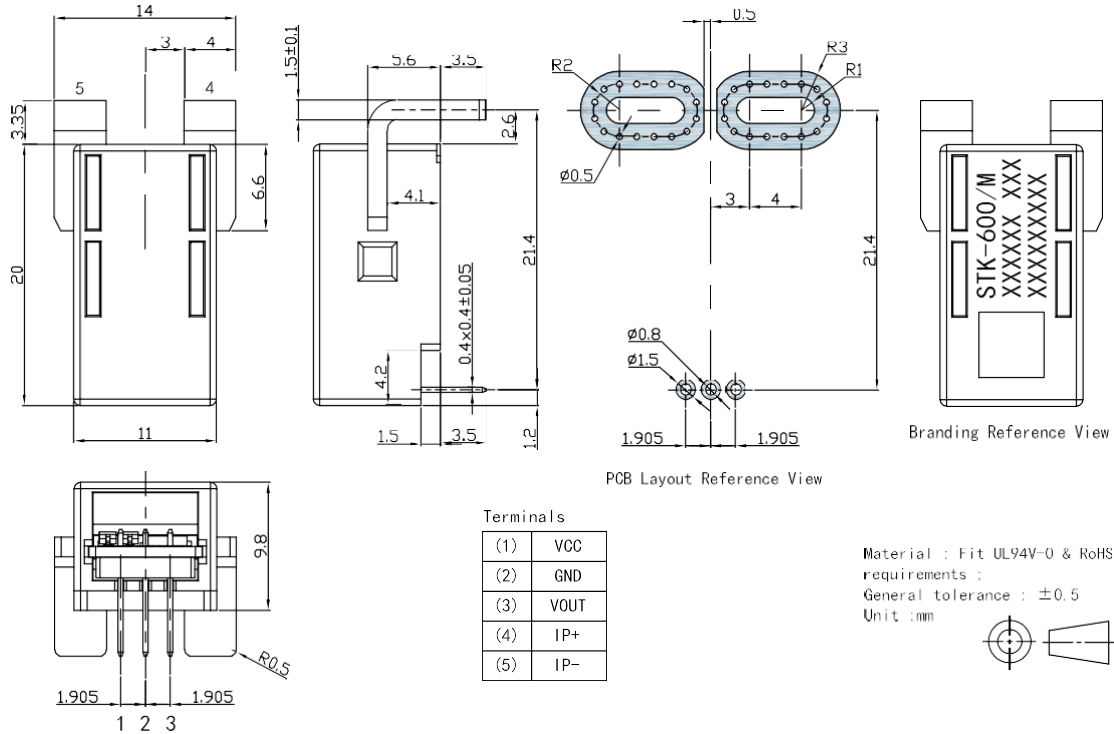
### 7. Frequency Bandwidth



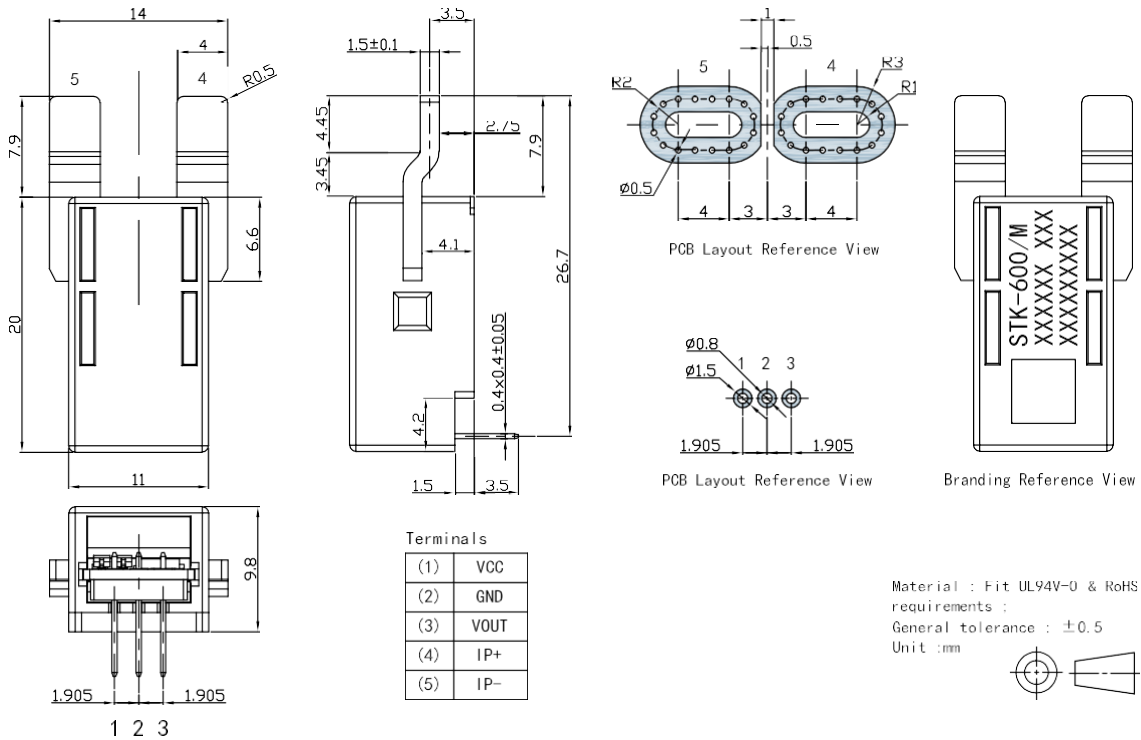
STK-600/M bandwidth

## 8. Dimension & Pin Definitions

### Package, Leadform PFF



### Package, Leadform PSF



**Package, Leadform PSS**

