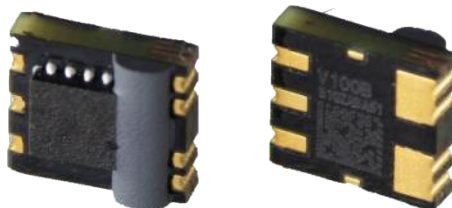


Current Sensor

Product Series: STK-616V

Part number: STK-616V-50AB
STK-616V-100AB
STK-616V-150AB
STK-616V-50AC
STK-616V-100AC
STK-616V-150AC

Version: Ver 1.6



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1. Description

The STK-616V 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 drives
- Inverter
- Power supply

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	°C	-40 ~ 125
Storage temperature	T_stg	°C	-40 ~ 125
Mass	m	g	0.5

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	V _{cc}	V	6
ESD rating (HBM)	U_ESD	kV	2
Junction temperature	T_J	°C	150

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 50 Hz, 1 min	U _d	kV	1	
Clearance distance (pri. -sec)	d _{Cl}	mm	1.2	Refer the PCB layout recommendation
Creepage distance (pri. -sec)	d _{Cp}	mm	1.2	

Measuring current table

Part number	Current Range	Sensitivity (mV/A)	T (°C)
STK-616V-50AB	±50 A	40	-40 ~ 125
STK-616V-100AB	±100 A	20	-40 ~ 125
STK-616V-150AB	±150 A	13.33	-40 ~ 125
STK-616V-50AC	±50 A	26.4	-40 ~ 125
STK-616V-100AC	±100 A	13.2	-40 ~ 125
STK-616V-150AC	±150 A	8.8	-40 ~ 125

2. Electrical data STK-616V-xxAB

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

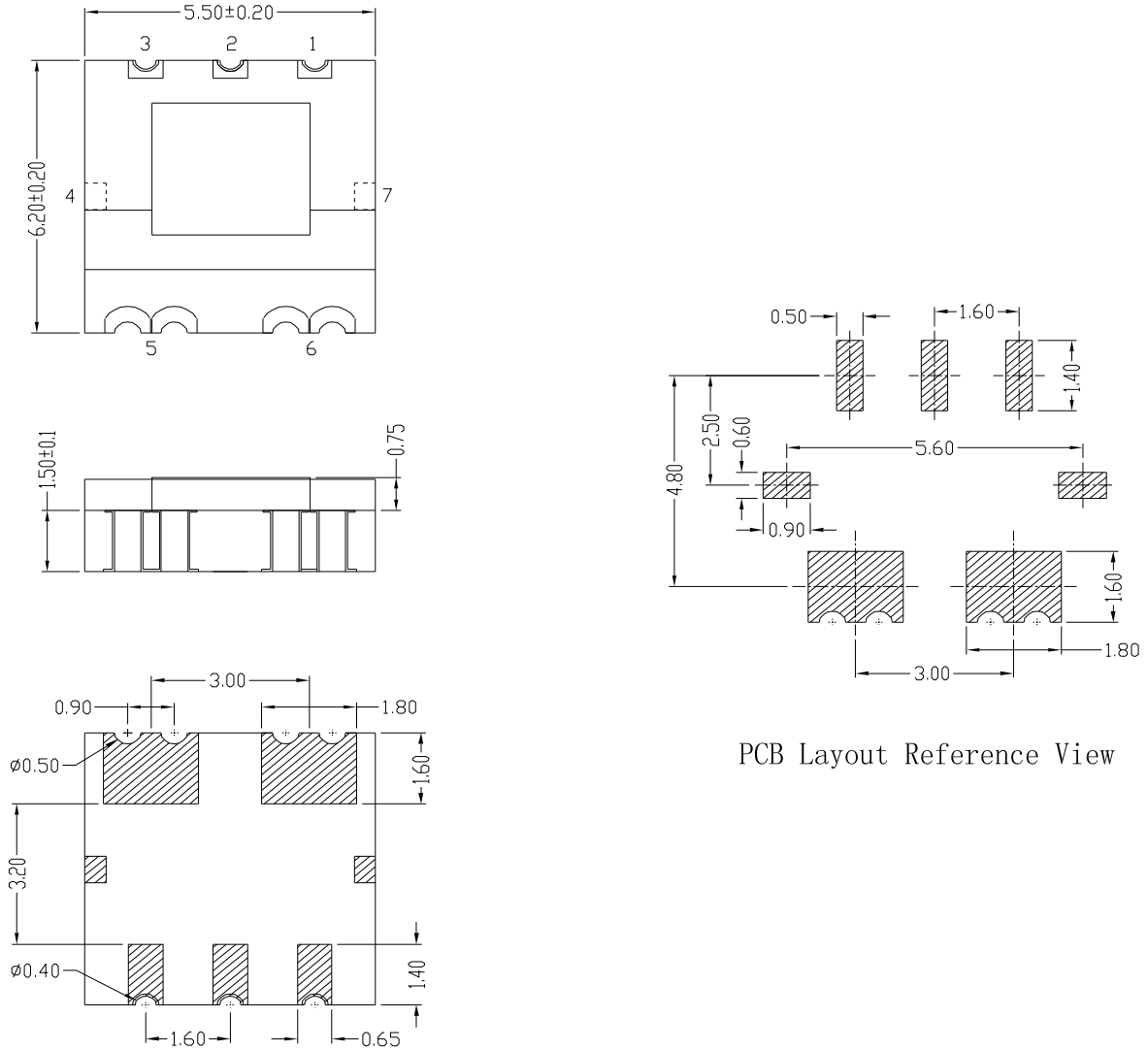
Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{pn}	A	-50		50	STK-616V-50AB
			-100		100	STK-616V-100AB
			-150		150	STK-616V-150AB
Supply voltage	V_{cc}	V	4.75	5	5.25	
Current consumption	I_{cc}	mA		6		
Quiescent voltage	V_{off}	V	2.45	2.5	2.55	$V_{out} @ I_{pn} = 0\text{ A}$
Internal output resistance	R_{out}	Ω	1		30	
GAIN	G_{th}	mV/A		40		STK-616V-50AB
				20		STK-616V-100AB
				13.33		STK-616V-150AB
Step response time	t_{res}	μs		3.5		@90% of I_{pn}
Frequency bandwidth (-3dB)	BW	kHz		150		No RC circuit
Noise	I_{noise}	mArms		40		DC ~ 100 kHz
Non-linearity @ 25°C	ξ	% of I_{pn}		± 1.5		@ 25°C
Thermal drift of G_{th} @ -40°C~85°C	GAIN_T	% of G_{th}		± 1.5		Drift value related to the value @ 25°C
Thermal drift of V_{off} @ -40°C~105°C	V_{off_T}	mV		± 20		
Total Accuracy @ -40°C~105°C	X_T	% of I_{pn}		± 3.5		

3. Electrical data STK-616V-xxAC

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

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{pn}	A	-50		50	STK-616V-50AC
			-100		100	STK-616V-100AC
			-150		150	STK-616V-150AC
Supply voltage	V_{cc}	V	3.135	3.3	3.465	
Current consumption	I_{cc}	mA		6		
Quiescent voltage	V_{off}	V	1.6	1.65	1.7	$V_{out} @ I_{pn} = 0\text{ A}$
Internal output resistance	R_{out}	Ω	1		30	
GAIN	G_{th}	mV / A		26.4		STK-616V-50AC
				13.2		STK-616V-100AC
				8.8		STK-616V-150AC
Step response time	t_{res}	μs		3.5		@90% of I_{pn}
Frequency bandwidth (-3Db)	BW	kHz		150		No RC circuit
Noise	I_{noise}	mArms		40		DC ~ 100 kHz
Non-linearity @ 25°C	ξ	% of I_{pn}		± 1.5		@ 25°C
Thermal drift of G_{th} @ -40°C~85°C	$GAIN_T$	% of G_{th}		± 1.5		Drift value related to the value @ 25°C
Thermal drift of V_{off} @ -40°C~105°C	V_{off_T}	mV		± 20		
Total Accuracy @ -40°C~105°C	X_T	% of I_{pn}		± 3.5		

4. Dimensions



PCB Layout Reference View

5. Pin definitions

PIN	Symbol	Description
1	VCC	Power supply pin
2	GND	Ground pin (GND)
3	VOUT	Sensor output pin
4	NC	NC
5	IP+	Primary conductor pin (+)
6	IP-	Primary conductor pin (-)
7	NC	NC