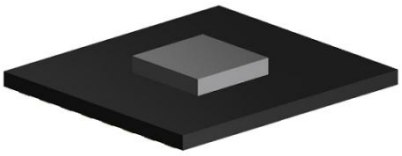
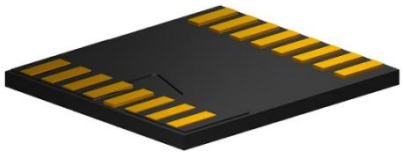
Current Sensor

Product Series: STK-616

Part number: STK-616C-50AB
Version: Ver 2.1
Revision: 2018-09-17





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CONTENT

1. Description

The STK-616 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
- Electric welder power supply
- Switched model power supplies (SMPS)

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	℃	-40 ~ 105
Storage temperature	T_stg	℃	-40 ~ 105
Mass	m	g	10

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	Vcc	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	Ud	kV	4	
Impulse withstand voltage 1.2/50μs	Ûw	kV	6	
Clearance distance (pri. -sec)	dCl	mm	4	Determined by customer's layout
Creepage distance (pri. -sec)	dCp	mm	4.5	

2. Electrical data STK-616C-50AB

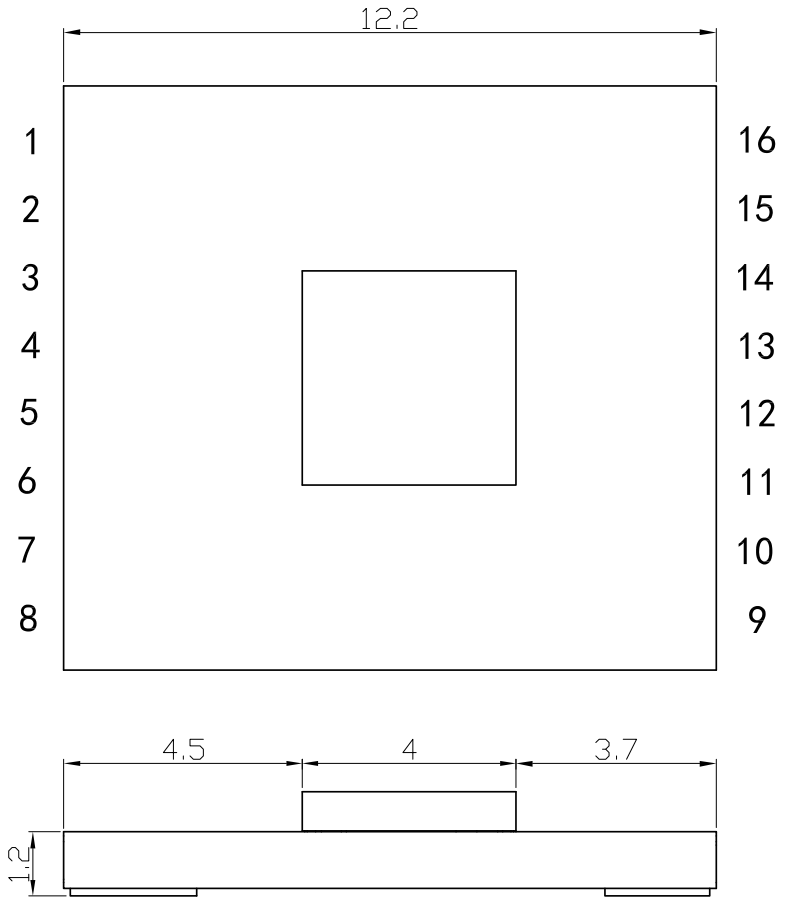
Condition：T_A = 25℃，Vcc = 5 V

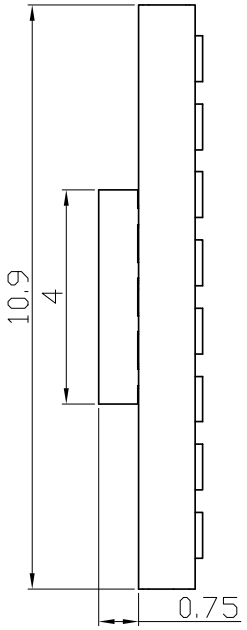
Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_pn	A	-50		50	Note 1)
Primary current measuring range	I_pm	A	-50		50	Note 1)
Supply voltage	Vcc	V		5		+/-5%
Current consumption	Icc	mA		5	10	
Quiescent voltage	Voff	V		2.5		Vout @ 0 A
Rated output voltage	V_FS	V		±2		(Vout @ ±I_pn) – Voff
Internal output resistance	R_out	Ω		1		Vout
Theoretical gain	G_th	mV/A		40		2V @ I_pm
Error of gain	Err_G	%G_th	-0.5		0.5	Trimmed in the factory @ 25℃ Note 2)
Rated linearity error	Non-L	%I_pn		±1		±I_pn
Step response time	t_res	µs		3		@90% of I_pn
Frequency bandwidth (-3dB)	BW	kHz	100			No RC circuit
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		 30 40		
Accuracy @ 25℃	X	% of I_pn		±1		@ 25℃
Accuracy @ -40℃~105℃	X_TRange	% of I_pn	-3.5		3.5	-40℃ ~ 105℃

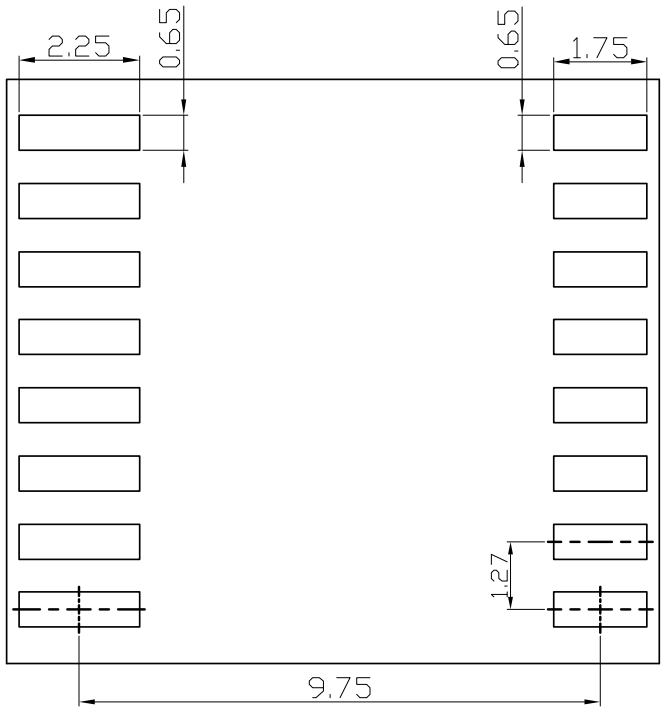
Note

1) The current range can be defined per request, and the gain of the sensor is trimmed in factory.
2) Voff can be defined as 1.65 V or 2.5 V.

3. Dimension & Pin definitions of STK-616C-50AB



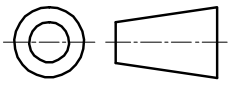




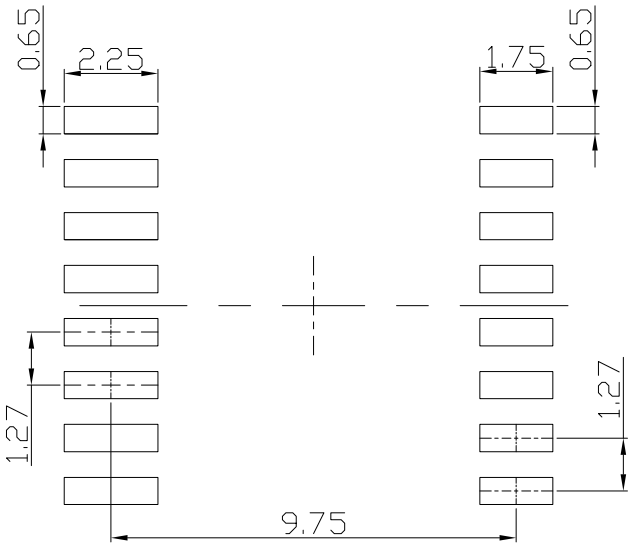
Terminals

1	IP+	9	NC
2	IP+	10	VCC
3	IP+	11	NC
4	IP+	12	VIOUT
5	IP-	13	NC
6	IP-	14	NC
7	IP-	15	GND
8	IP-	16	NC

General tolerance : ±0.2
Unit :mm



4. STK-616C-50AB PCB Layout



PCB Layout Reference View

5. Typical Application of STK-616C-50AB