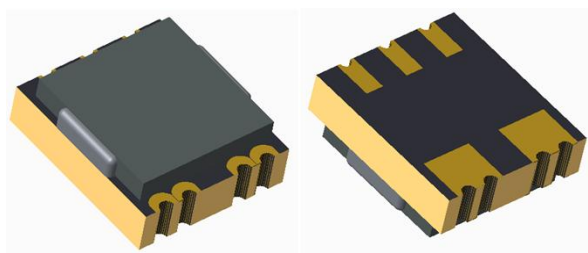


Current Sensor

Product Series: STK-616V

Part number: STK-616V-50GB
STK-616V-100GB
STK-616V-150GB
STK-616V-50GC
STK-616V-100GC
STK-616V-150GC
STK-616V-100GW

Version: Ver 1.2



Sinomags Technology Co., Ltd

Web site: www.sinomags.com

CONTENT

1.	Introduction	2
2.	Package: SOIC8 compatible	2
3.	Selection Guide	3
4.	Production Information	3
5.	Electrical data STK-616V-xxGB	4
6.	Electrical data STK-616V-xxGC	5
7.	Electrical data STK-616V-xxGW	6
8.	Typical Application Circuit	7
9.	Characteristic Definitions	7
10.	Dimension & Pin Definitions	8
11.	Frequency band width	9
12.	Step response time	9
13.	Dimension & Pin Definitions	10

1. Introduction

STK-616V 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
- Switching power supply
- Motor control

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T _A	°C	-40 ~ 105
Storage temperature	T _{stg}	°C	-40 ~ 125
Mass	m	g	0.2

Absolute maximum rating

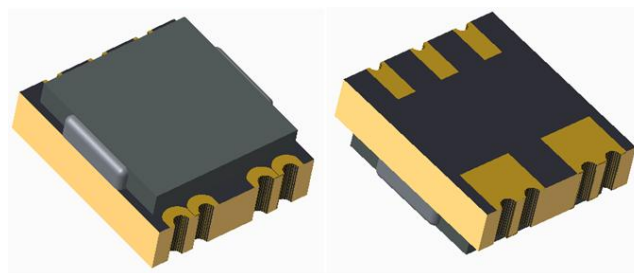
Parameter	Symbol	Unit	Value
Supply voltage	V _{CC}	V	6
ESD rating (HBM)	U _{ESD}	kV	4

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	2.4	All
Clearance distance (Shortest distance through air)	d _{Cl}	mm	3.5	All
Creepage distance (Shortest path along device body)	d _{Cp}	mm	3.5	All

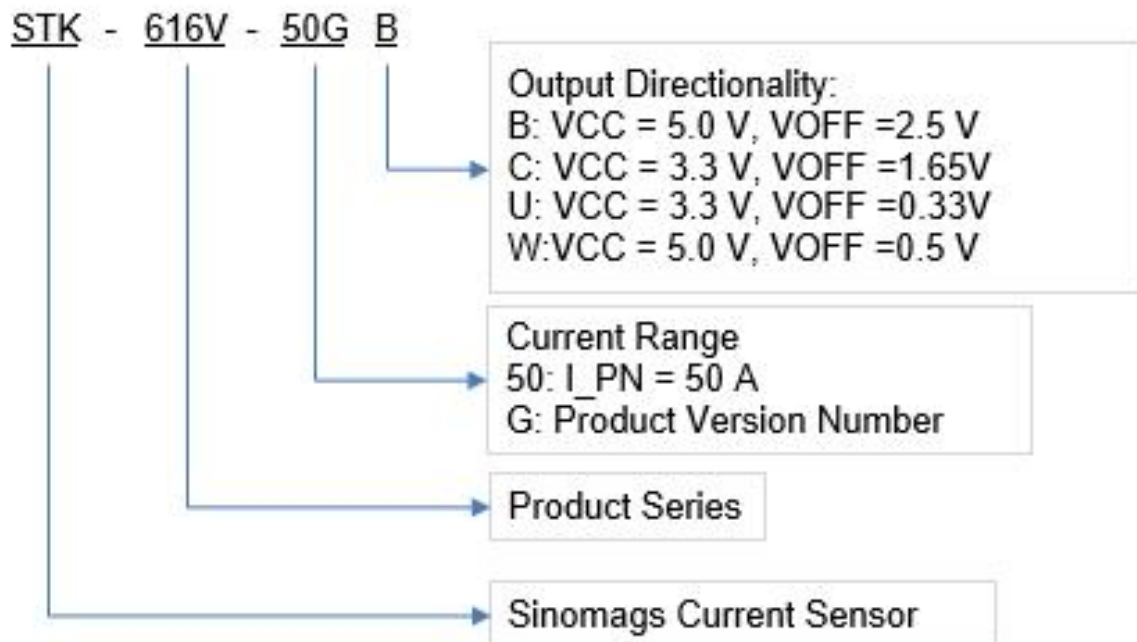
2. Package: SOIC8 compatible



3. Selection Guide

Part Number	Vcc(V)	Current Range (A)	Sensitivity (mV/A)	Offset (V)	Current Directionality	Top(°C)
STK-616V-50GB	5	±50 A	40	2.5	Bidirectional	40 ~ 125
STK-616V-100GB	5	±100 A	20	2.5	Bidirectional	40 ~ 125
STK-616V-150GB	5	±150 A	13.33	2.5	Bidirectional	40 ~ 125
STK-616V-50GC	3.3	±50 A	26.4	1.65	Bidirectional	-40 ~ 125
STK-616V-100GC	3.3	±100 A	13.2	1.65	Bidirectional	-40 ~ 125
STK-616V-150GC	3.3	±150 A	8.8	1.65	Bidirectional	-40 ~ 125
STK-616V-100GW	5	+100 A	40	0.5	Unidirectional	-40 ~ 125

4. Production Information



5. Electrical data STK-616V-xxGB

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

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Supply voltage	V_{CC}	V		5±5%		STK-616V-XXGB
Current consumption	I_{CC}	mA		6		STK-616V-XXGB
Primary conductor resistance	R_{pr}	mΩ		0.4		STK-616V-XXGB
Quiescent voltage Vout @ 0 A	$V_{IOUT(Q)}$	V		2.5±0.05		STK-616V-XXGB
Peak output voltage (Vout @ $\pm I_{pm}$) - $V_{IOUT(Q)}$	V_{FS}	V		±2		STK-616V-XXGB
Internal output resistance	R_{out}	Ω		2		STK-616V-XXGB
Rated linearity error	E_{LIN}	% I_{PN}		±1		± I_{PN}
Step response time	t_{res}	μs		2.5		All
Frequency bandwidth (-3dB)	BW	kHz		150		All
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		20 40		All
Accuracy @ 25°C	E_{TOT}	% of I_{PN}		±1.5		All
Accuracy @ -40°C ~ 105°C	E_{TOT}	% of I_{PN}		±3.5		All

6. Electrical data STK-616V-xxGC

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

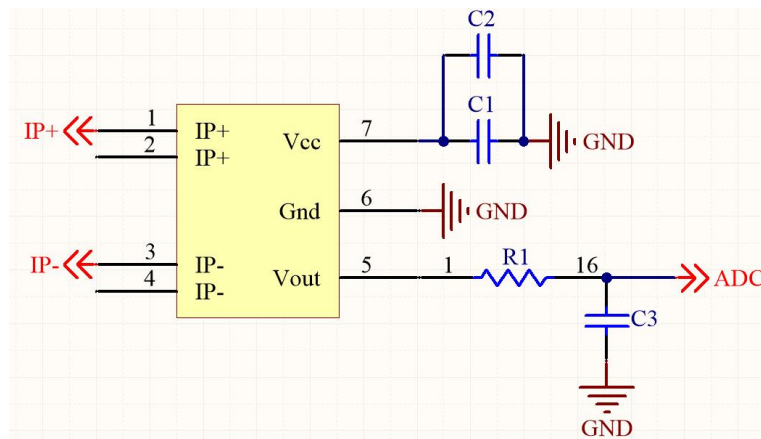
Parameter	Symbol	Unit	Min	Typ	Max	Comment
Supply voltage	V_{CC}	V		3.3±5%		STK-616V-XXGC
Current consumption	I_{CC}	mA		6		STK-616V-XXGC
Primary conductor resistance	R_{pr}	mΩ		0.4		STK-616V-XXGC
Quiescent voltage Vout @ 0 A	$V_{IOUT(Q)}$	V		1.65±0.05		STK-616V-XXGC
Peak output voltage (Vout @ ±I _{pm}) - $V_{IOUT(Q)}$	V_{FS}	V		±2		STK-616V-XXGC
Internal output resistance	R_{out}	Ω		2		STK-616V-XXGC
Rated linearity error	E_{LIN}	% I _{PN}		±1		±I _{PN}
Step response time	t_{res}	μs		2.5		All
Frequency bandwidth (-3dB)	BW	kHz		150		All
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 40		All
Accuracy @ 25°C	E_{TOT}	% of I _{PN}		±1.5		All
Accuracy @ -40°C ~ 105°C	E_{TOT}	% of I _{PN}		±3.5		All

7. Electrical data STK-616V-xxGW

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

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Supply voltage	V_{CC}	V		5±5%		STK-616V-XXGW
Current consumption	I_{CC}	mA		6		STK-616V-XXGW
Primary conductor resistance	R_{pr}	mΩ		0.4		STK-616V-XXGW
Quiescent voltage Vout @ 0 A	$V_{IOUT(Q)}$	V		0.5±0.05		STK-616V-XXGW
Peak output voltage (Vout @ ±I _{pm}) - $V_{IOUT(Q)}$	V_{FS}	V		+4		STK-616V-XXGW
Internal output resistance	R_{out}	Ω		2		STK-616V-XXGW
Rated linearity error	E_{LIN}	% I _{PN}		±1		±I _{PN}
Step response time	t_{res}	μs		2.5		All
Frequency bandwidth (-3dB)	BW	kHz		150		All
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 40		All
Accuracy @ 25°C	E_{TOT}	% of I _{PN}		±1.5		All
Accuracy @ -40°C ~ 105°C	E_{TOT}	% of I _{PN}		±3.5		All

8. Typical Application Circuit



9. Characteristic Definitions

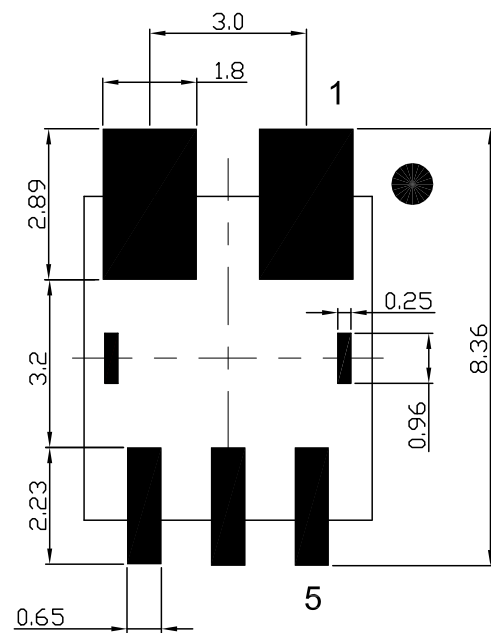
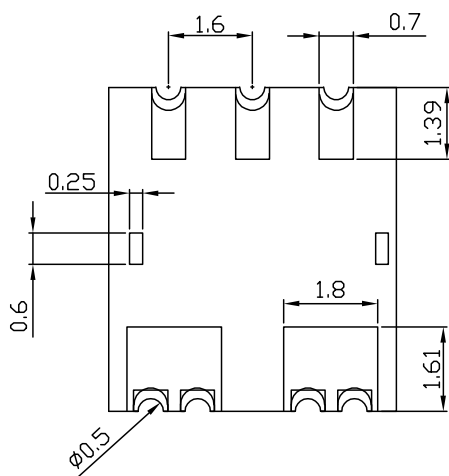
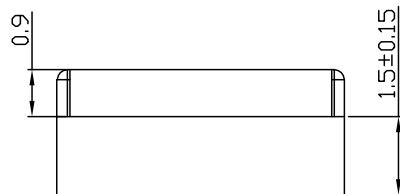
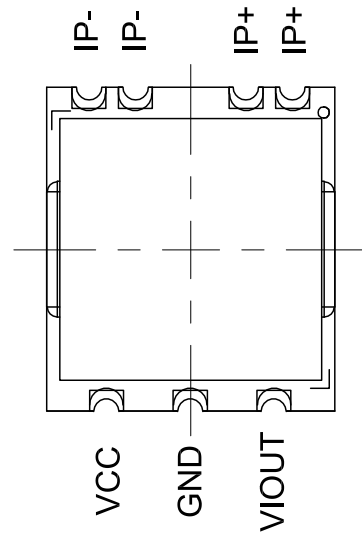
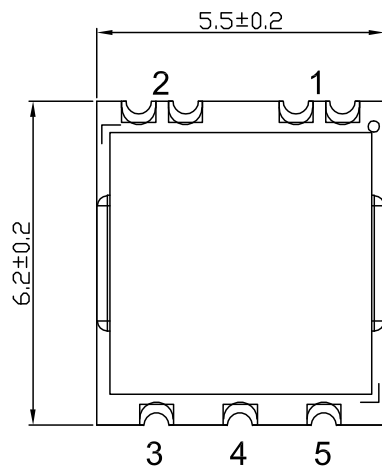
SENSITIVITY (Sens)

The change in sensor output in response to a 1 A change through the primary conductor. The sensitivity is the sensor gain (mV/A) for the full-scale current of the device. The sensitivity is fixed and does not change with the supply voltage.

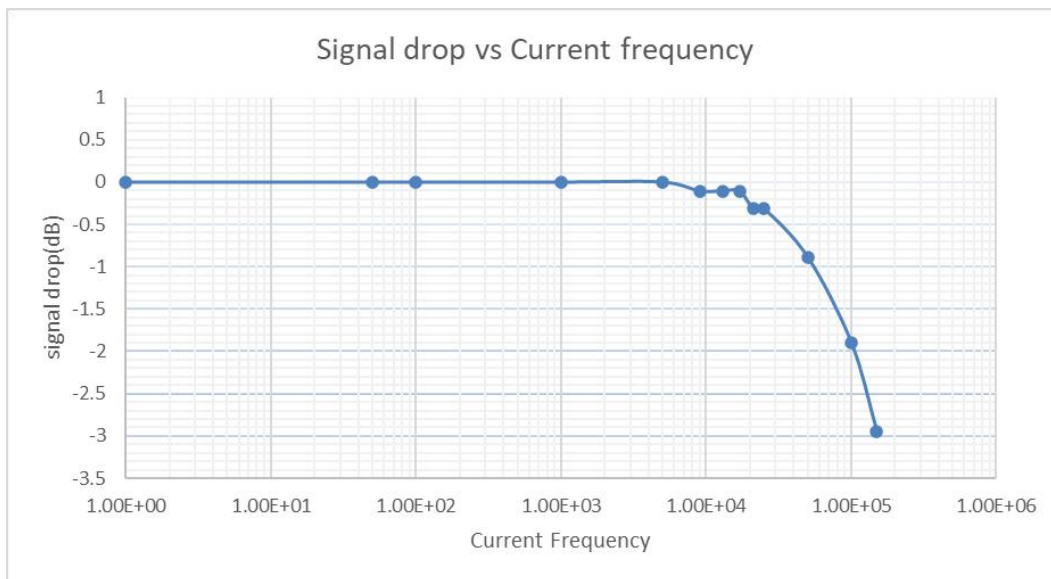
ZERO CURRENT OUTPUT VOLTAGE (V_{IOUT(Q)})

The output of the sensor when the primary current is zero. When the power supply is 5 V, it nominally remains at 2.5 V for a bidirectional device. When the power supply is 3.3 V, it nominally remains at 1.65 V for a bidirectional device.

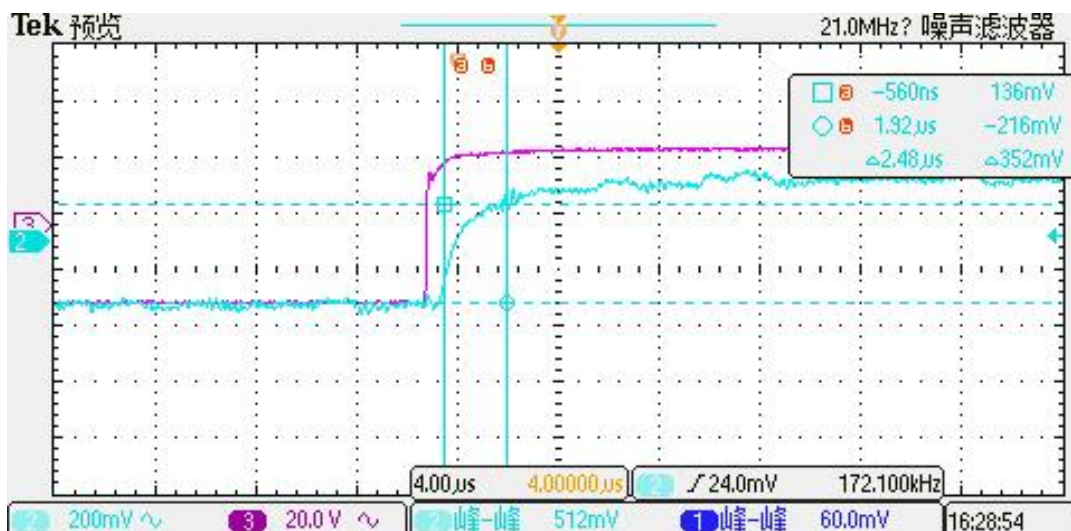
10. Dimension & Pin Definitions



11. Frequency band width



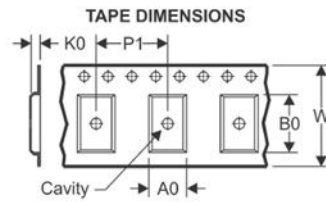
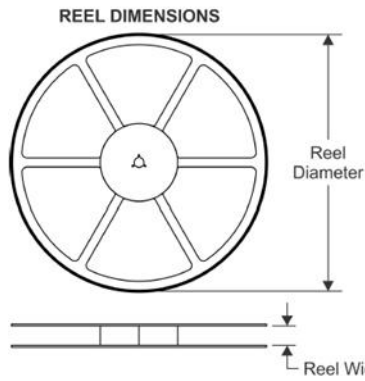
12. Step response time



The typical frequency response of STK-616V current sensor. The response time from 90% of the primary current (pink) to 90% of the secondary output (blue) is 2.48 μ s.

13. Dimension & Pin Definitions

TAPE AND REEL INFORMATION



A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE

