Sinomags Product Datasheet

CURRENT SENSOR

PRODUCT SERIES: STB-HA

PRODUCT PART NUMBER: STB-03HA, STB-05HA, STB-10HA
STB-15HA, STB-20HA, STB-25HA
STB-30HA, STB-40HA, STB-50HA

REVISION: Ver 4.1

CONTENT

1. Description

STB-HA series current sensors are based on close loop principle with TMR technology. The sensor can detect those current with DC, AC, pulse and irregular wave shape.

Typical application

- Variable frequency converter
- Uninterruptible Power Supplies (UPS)
- Solar inverters.
- Direct-current dynamo
- Switched model power supplies (SMPS)

General parameters

Parameter	Symbol	Unit	Value
Working temperature	T_A	℃	-40 ~ 85
Storage temperature	T_stg	℃	-40 ~ 105
Mass	m	g	13

Absolute parameters

Parameters	Symbol	Unit	Value
Supply voltage	V_C	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.

Electrical data

Primary nominal rms current I_{PN} (A)	Primary current measuring rang I_{PM} (A)	Primary conductor diameter x turns（mm）	Type
3	±9	0.6d x 6T	STB-03-HA
5	±15	0.8d x 4T	STB-05-HA
10	±30	1.1d x 2T	STB-10-HA
15	±45	1.6d x 2T	STB-15-HA
20	±60	1.8d x 1T	STB-20-HA
25	±75	1.8d x 1T	STB-25-HA
30	±90	1.8d x 1T	STB-30-HA
40	±120	1.8d x 1T	STB-40-HA
50	±150	1.5 x 1.6 x 1T	STB-50-HA

2. STB-xxHA parameters

Condition: Vcc = ±15.0 V, N_P = 1,R_L = 10 kΩ, T_A = 25℃, unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Output Voltage	V_{out}	V	3.96	4	4.04	All series
Supply Voltage	V_C	V		±15 ± 5%		All series
Current consumption	I_C	mA		18 + I_P*N_P/N_S		STB-03-HA N_S：750 STB-05-HA N_S：1000 STB-10-HA N_S：1000 STB-15-HA N_S：1500 STB-20-HA N_S：1000 STB-25-HA N_S：1250 STB-30-HA N_S：1500 STB-40-HA N_S：2000
Linearity （0…±IPN)	ε_L	% of I_{PN}		±0.5		All series
Electrical offset voltage	V_{OE}	mV	-40	0	40	I_{PN} = 0A
Themal drift of offset	TCV_{OE}	% of I_{PN}		±1		All series
Themal drift of gain	TCV_O	% of I_{PN}		1.5		All series
Step response time	t_r	μs		1.5		All series
Frequency bandwidth (-3dB)	BW	kHz		150		All series

3. Frequency band width

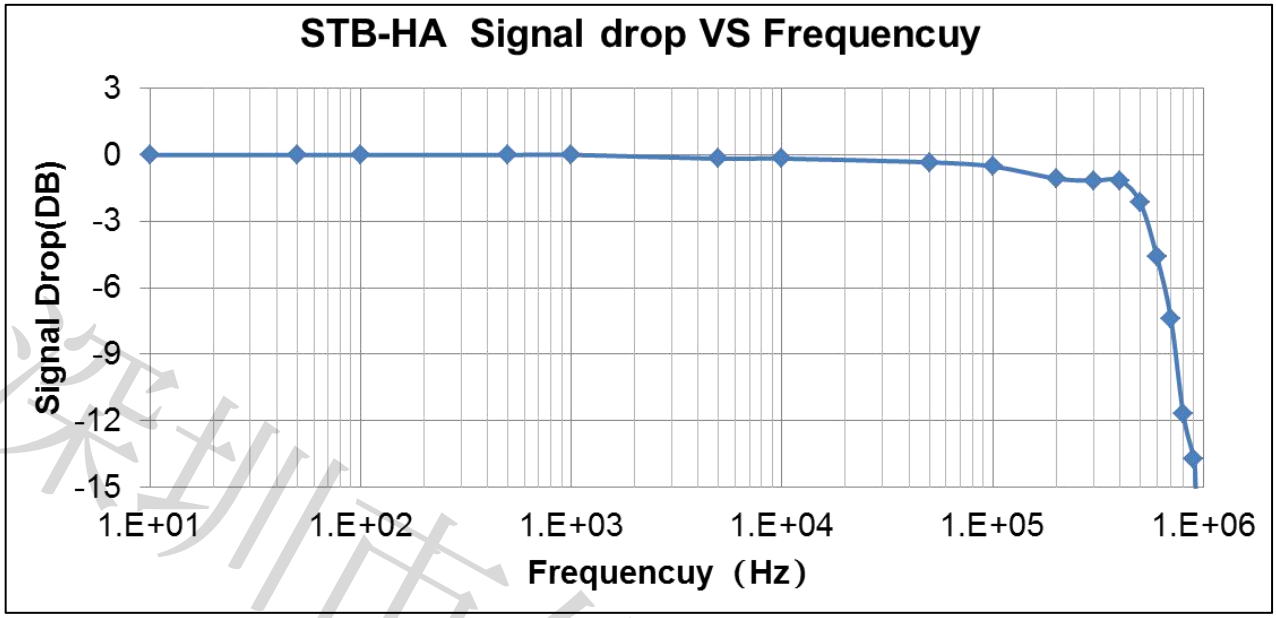


Fig.1 the band width of STB-xxHA series current sensors.

4. Step response time

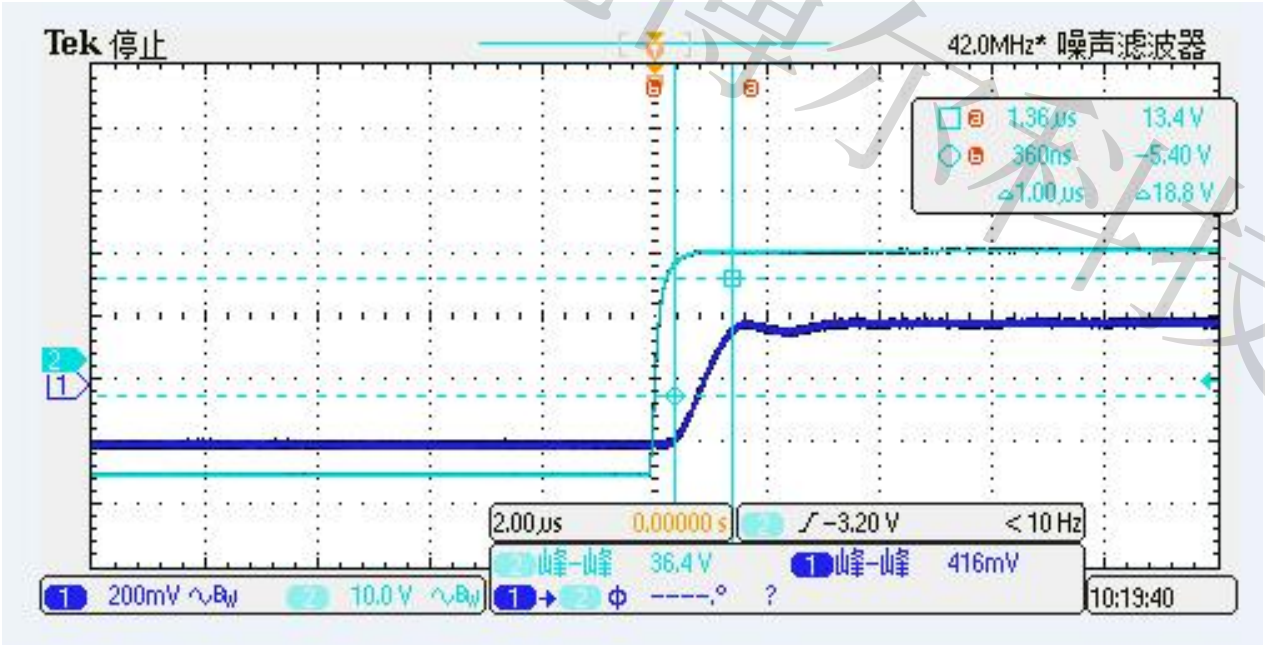
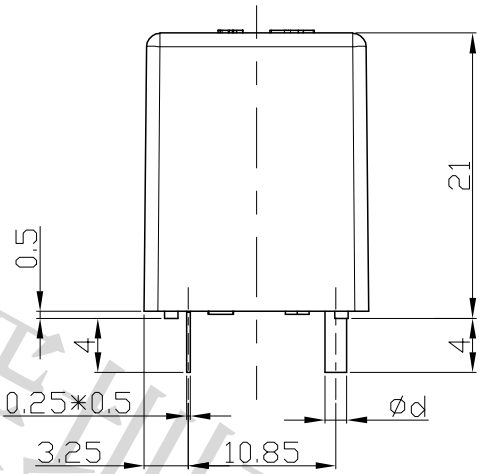
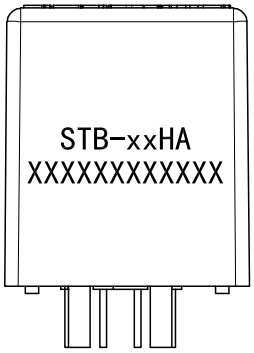


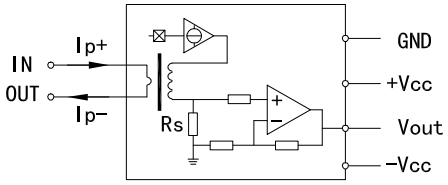
Fig.2 the step response time of STB-xxHA current sensors. The light blue is primary current, while the dark blue is output signal of current sensor. The step response time is less than 0.3 µs.

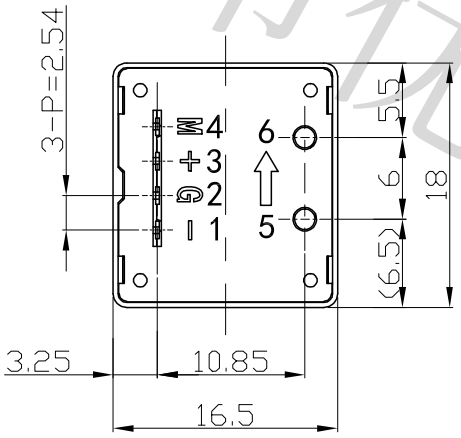
5. STB-03HA~STB-40HA: Dimensions & Pins & Footprint





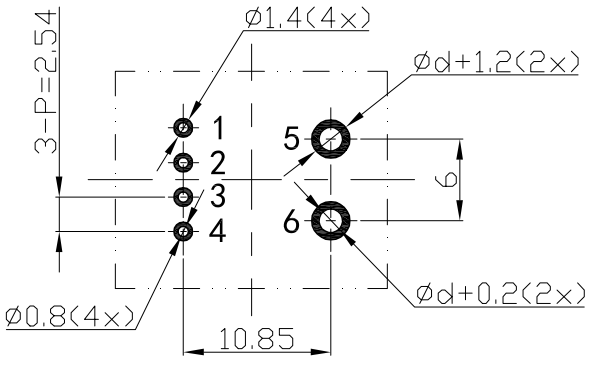
Electrical diagrams:





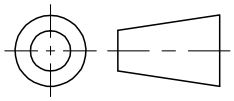
Terminal:

STB	03HA	05HA	10HA	15HA
d	0.6	0.8	1.1	1.6
STB	20HA	25HA	30HA	40HA
d	1.8	1.8	1.8	1.8

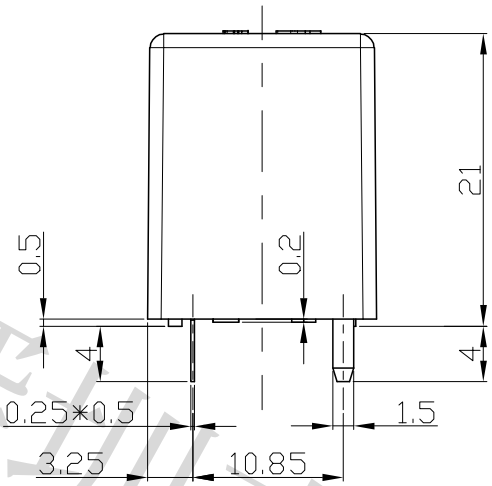


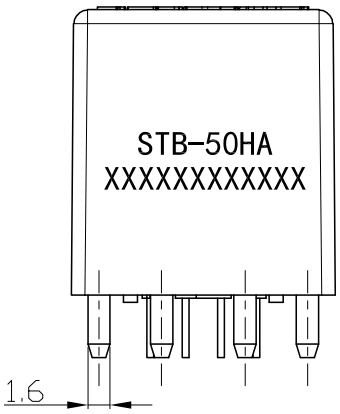
03HA~40HA Terminals:
1: -Vcc (-15V)
2: GND (0V)
3: +Vcc (+15V)
4: Vout
5: Primary input Current (+)
6: Primary input Current (-)

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

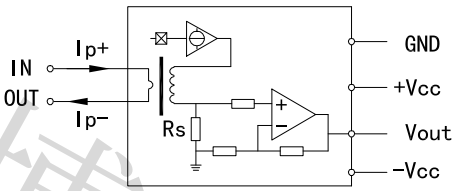


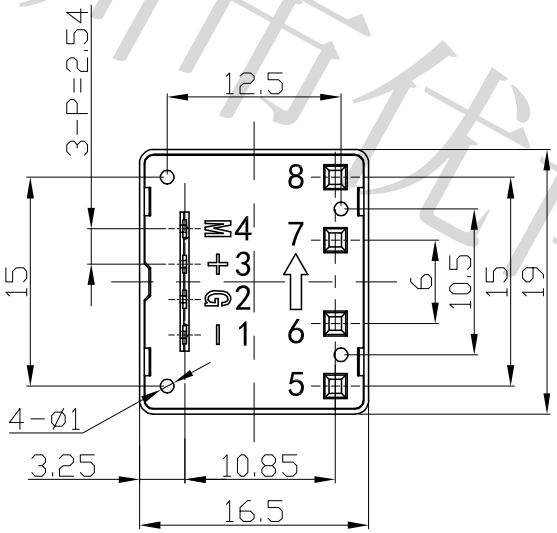
6. STB-50HA: Dimensions & Pins & Footprint



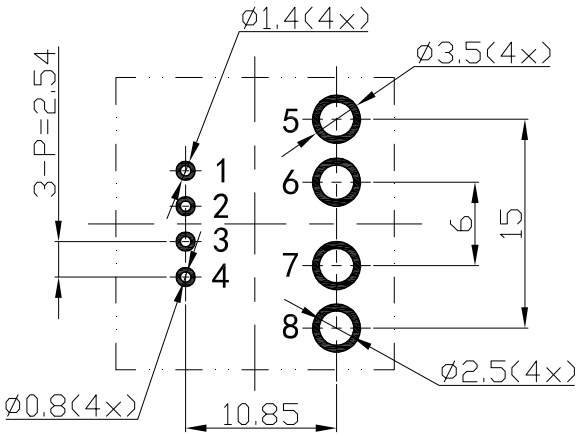


Electrical diagrams:





50HA Terminals:
1: -Vcc (-15V)
2: GND (0V)
3: +Vcc (+15V)
4: Vout
5/6: Primary input Current (+)
7/8: Primary input Current (-)



Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm