

Current Sensor

Product Series: SHK-VBS6

Part number: SHK-VBS6-100-S2, SHK-VBS6-200-S2,
SHK-VBS6-300-S2, SHK-VBS6-400-S2,
SHK-VBS6-500-S2, SHK-VBS6-600-S2,
SHK-VBS6-700-S2, SHK-VBS6-800-S2,
SHK-VBS6-900-S2, SHK-VBS6-1000-S2,
SHK-VBS6-1100-S2, SHK-VBS6-1200-S2,
SHK-VBS6-1500-S2;

Version: Ver 2.4



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1. Description

The SHK-VBS6 current sensor is based on Hall and open-loop design. It is suitable for DC, AC pulsed and any kind of irregular current measurement under the isolated conditions.

Typical applications

- Electrical Power Steering
- Battery Management
- Starter Generators
- Motor control unit for xEV

General parameter

Parameter	Symbol	Unit	Value
Working temperature	T_a	°C	-40 ~ 125
Storage temperature	T_{stg}	°C	-40 ~ 125
Mass	m	g	59

Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	V_{cc}	V	-0.5 ~ 8 (Not operating)
			6.5
Electrostatic discharge voltage	$U_{ESD\ HBM}$	kV	8
Maximum admissible vibration (random RMS)	γ_{max}	$m \cdot s^{-2}$	96.6 (10 to 2000 Hz, -40°C ~ 125°C)
Maximum output current	$I_{out\ max}$	mA	-10 ~ 10
Maximum output voltage	$U_{out\ max}$	V	-0.5 ~ $V_{cc} + 0.5$

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.

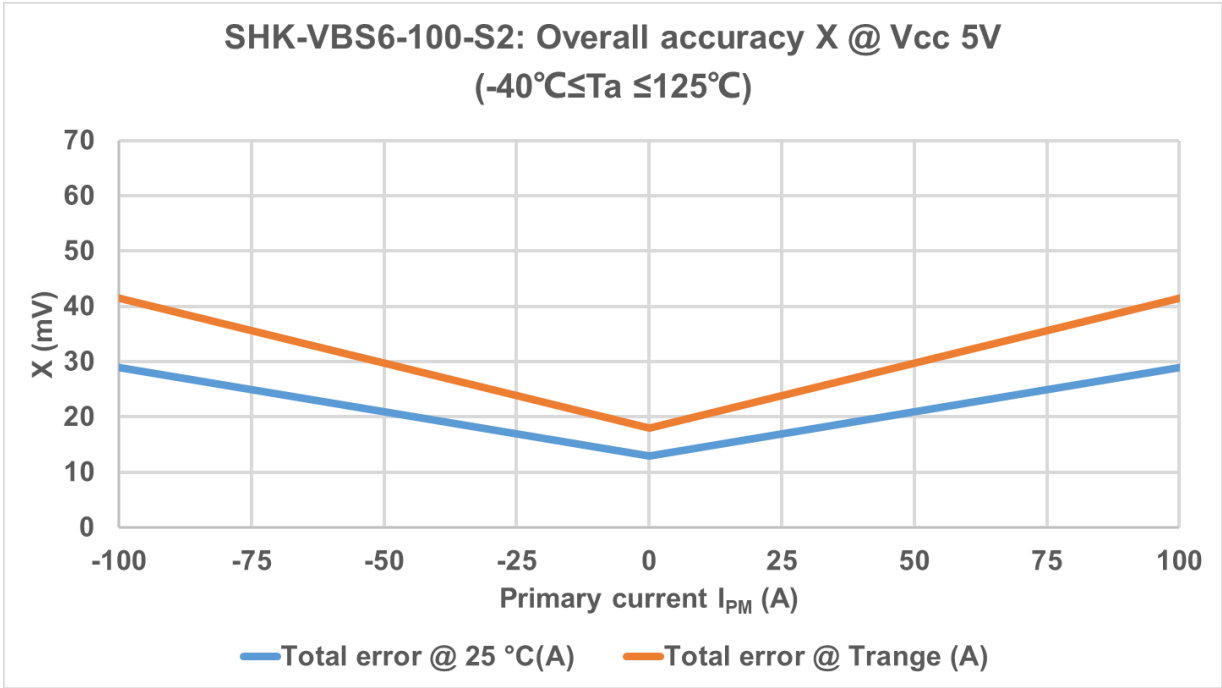
Isolation parameter

Parameter	Symbol	Unit	Value	Comment
Insulation voltage	U_d	kV	2.5	RMS voltage for AC test 50Hz/1 min
Clearance distance (pri. -sec)	d_{Cl}	mm	4.85	Shortest distance through air
Creepage distance (pri. -sec)	d_{Cp}	mm	4.85	Shortest path along device body
Comparative tracking index	CTI		PLC3	
Case material			V0 according to UL 94	

2. Electrical data of SHK-VBS6-100-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-100		100	SHK-VBS6-100-S2
Primary nominal RMS current	I_{PN}	A	-100		100	SHK-VBS6-100-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC}=5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		20		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

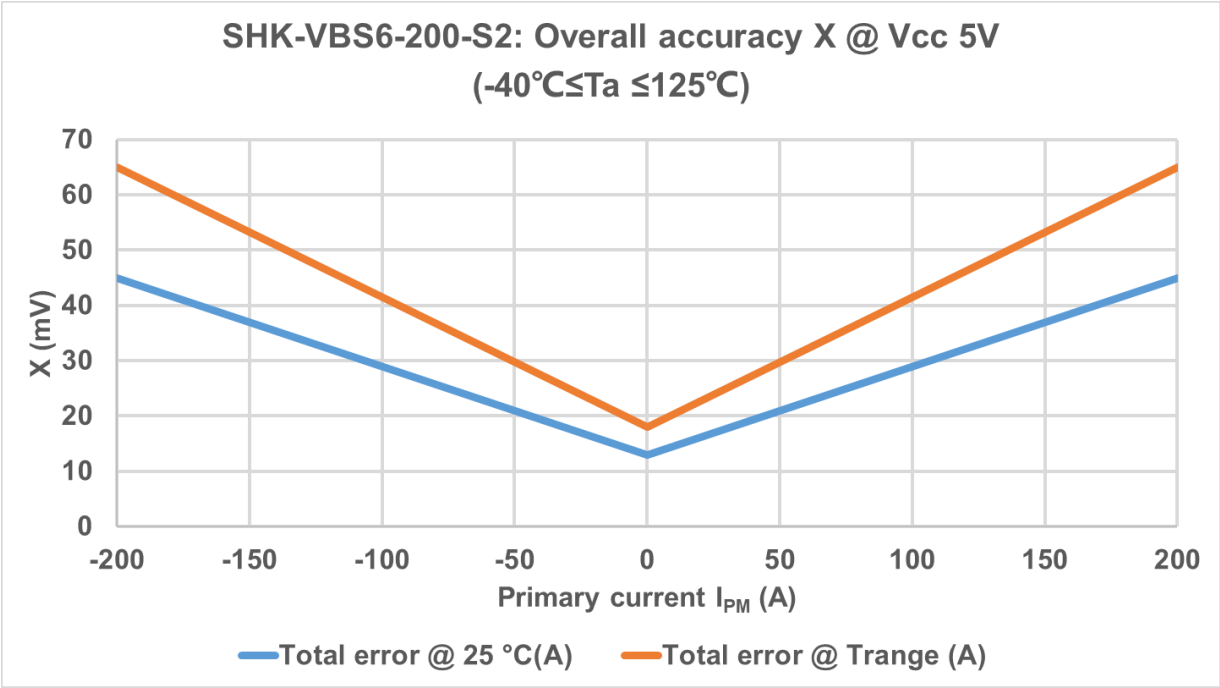
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-100	45 mV	2.25 A	2.25%	65 mV	3.25 A	3.25%
0	13 mV	0.65 A	0.65%	18 mV	0.90 A	0.90%
100	45 mV	2.25 A	2.25%	65 mV	3.25 A	3.25%



3. Electrical data of SHK-VBS6-200-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-200		200	SHK-VBS6-200-S2
Primary nominal RMS current	I_{PN}	A	-200		200	SHK-VBS6-200-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		10		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

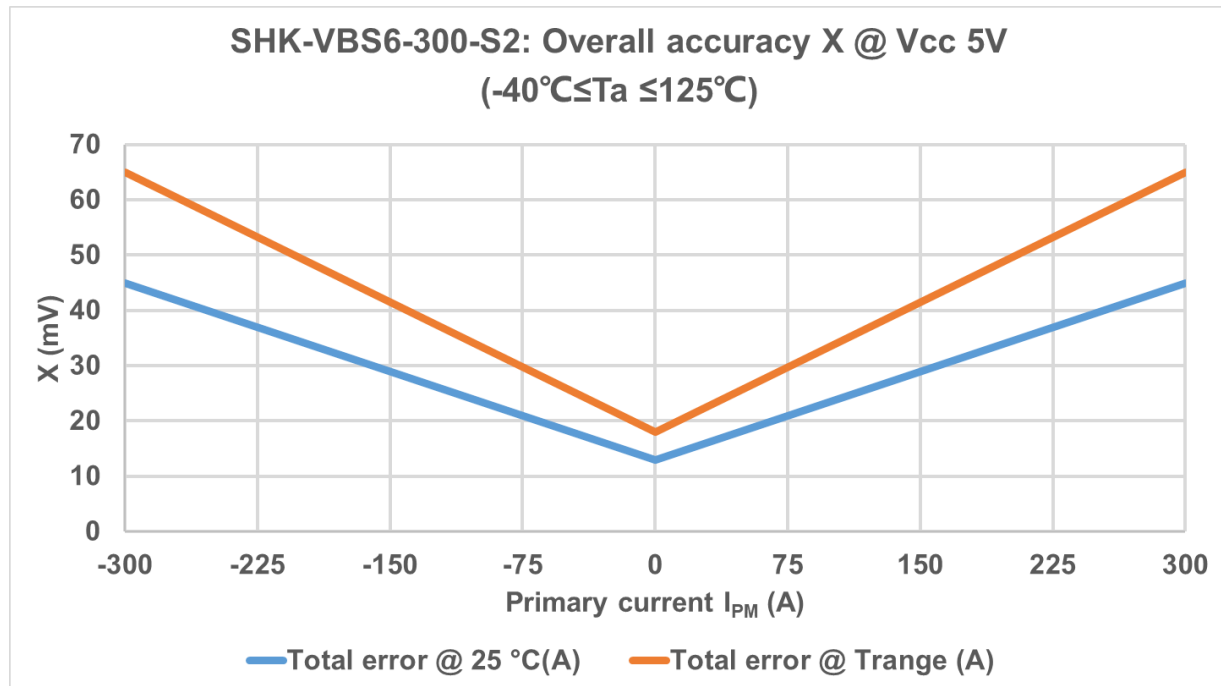
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-200	45 mV	4.50 A	2.25%	65 mV	6.50 A	3.25%
0	13 mV	1.30 A	0.65%	18 mV	1.80 A	0.90%
200	45 mV	4.50 A	2.25%	65 mV	6.50 A	3.25%



4. Electrical data of SHK-VBS6-300-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-300		300	SHK-VBS6-300-S2
Primary nominal RMS current	I_{PN}	A	-300		300	SHK-VBS6-300-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		6.667		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

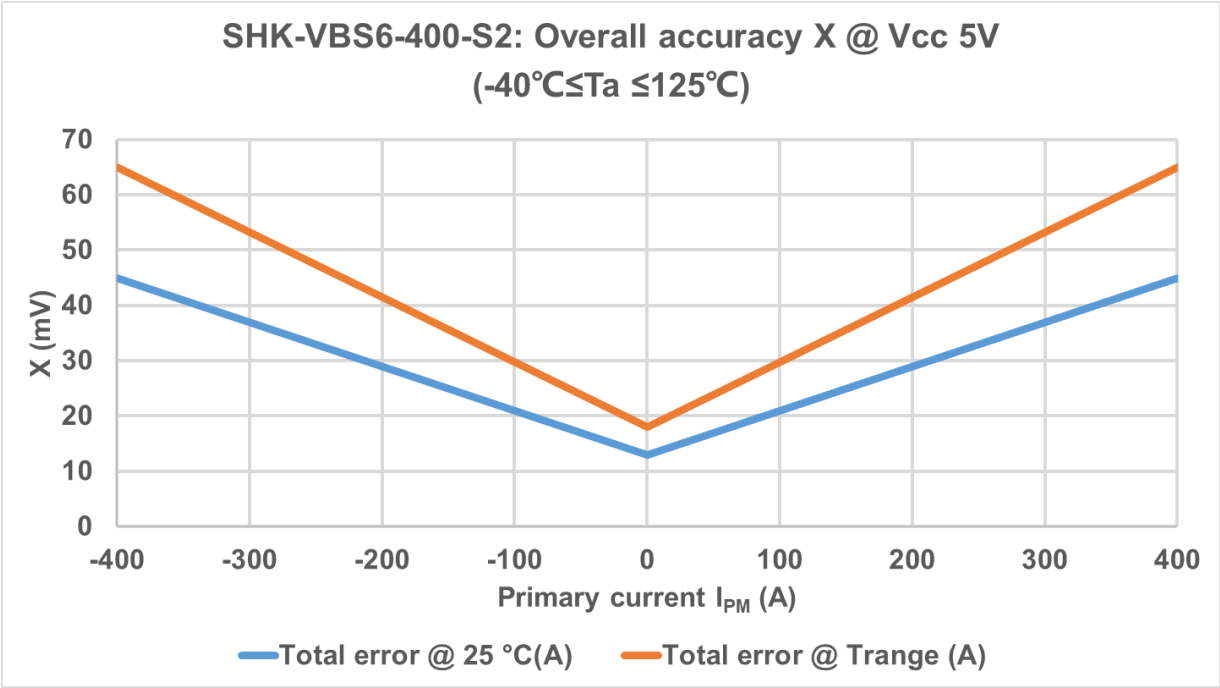
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-300	45 mV	6.75 A	2.25%	65 mV	9.75 A	3.25%
0	13 mV	1.95 A	0.65%	18 mV	2.70 A	0.90%
300	45 mV	6.75 A	2.25%	65 mV	9.75 A	3.25%



5. Electrical data of SHK-VBS6-400-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-400		400	SHK-VBS6-400-S2
Primary nominal RMS current	I_{PN}	A	-400		400	SHK-VBS6-400-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

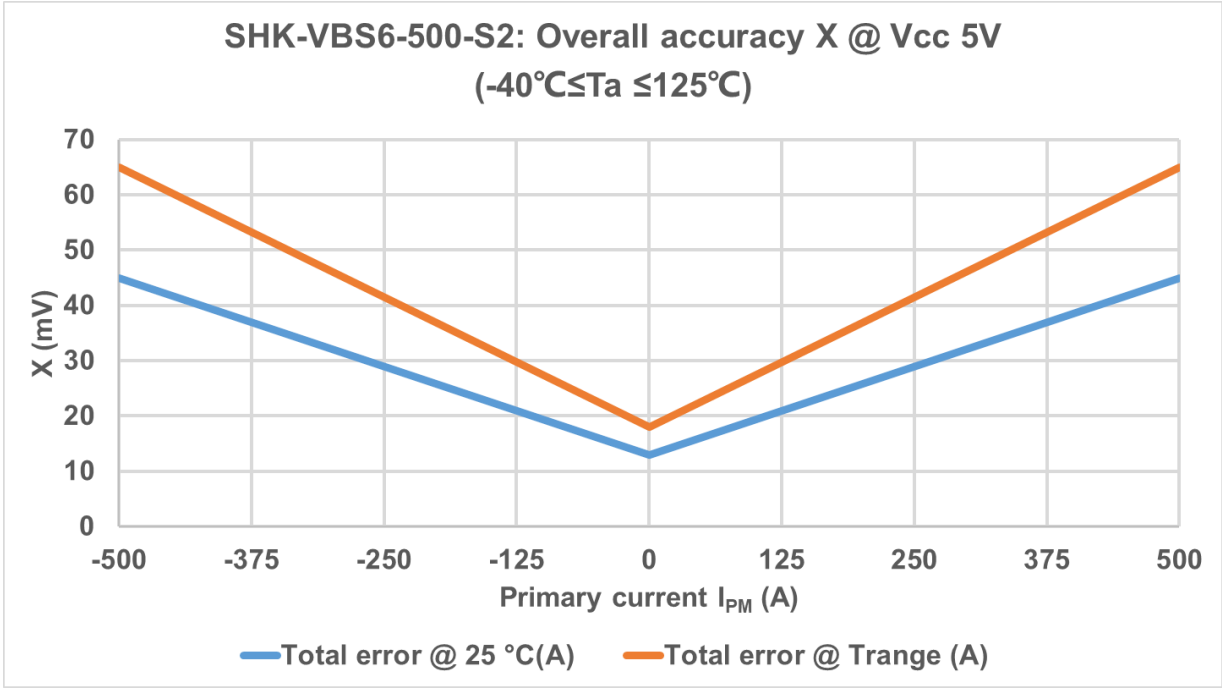
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-400	45 mV	9.00 A	2.25%	65 mV	13.00 A	3.25%
0	13 mV	2.60 A	0.65%	18 mV	3.60 A	0.90%
400	45 mV	9.00 A	2.25%	65 mV	13.00 A	3.25%



6. Electrical data of SHK-VBS6-500-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-500		500	SHK-VBS6-500-S2
Primary nominal RMS current	I_{PN}	A	-500		500	SHK-VBS6-500-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		4		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

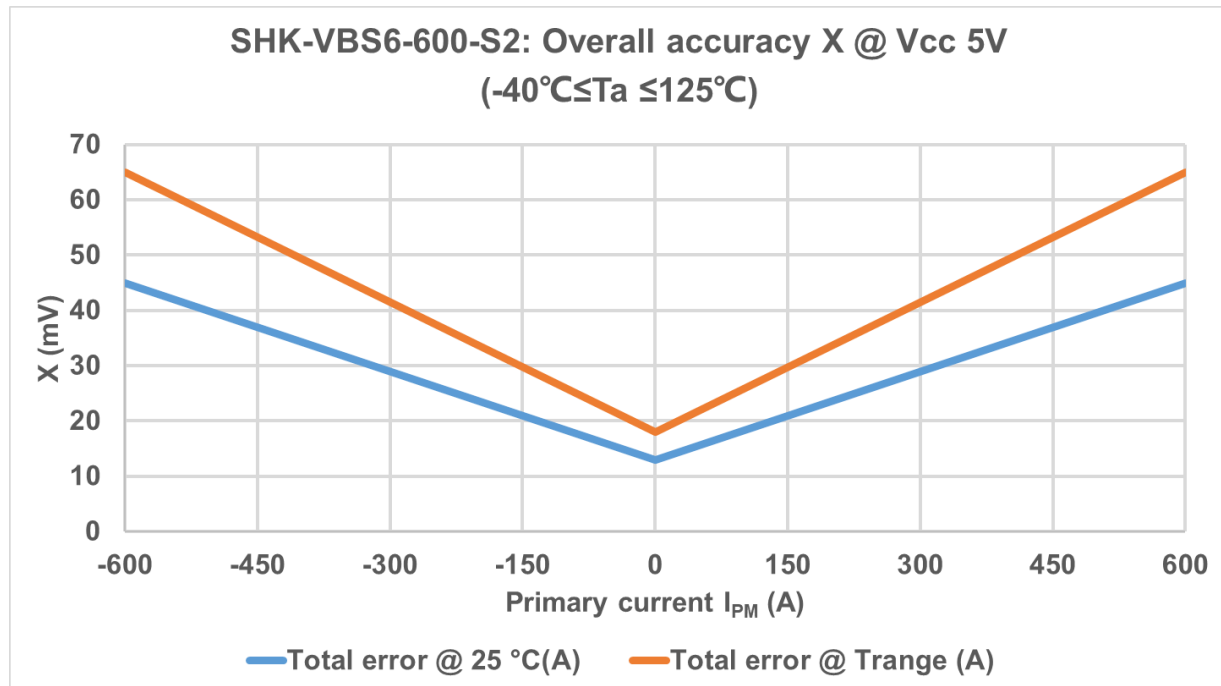
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-500	45 mV	11.25 A	2.25%	65 mV	16.25 A	3.25%
0	13 mV	3.25 A	0.65%	18 mV	4.50 A	0.90%
500	45 mV	11.25 A	2.25%	65 mV	16.25 A	3.25%



7. Electrical data of SHK-VBS6-600-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-600		600	SHK-VBS6-600-S2
Primary nominal RMS current	I_{PN}	A	-600		600	SHK-VBS6-600-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		3.333		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

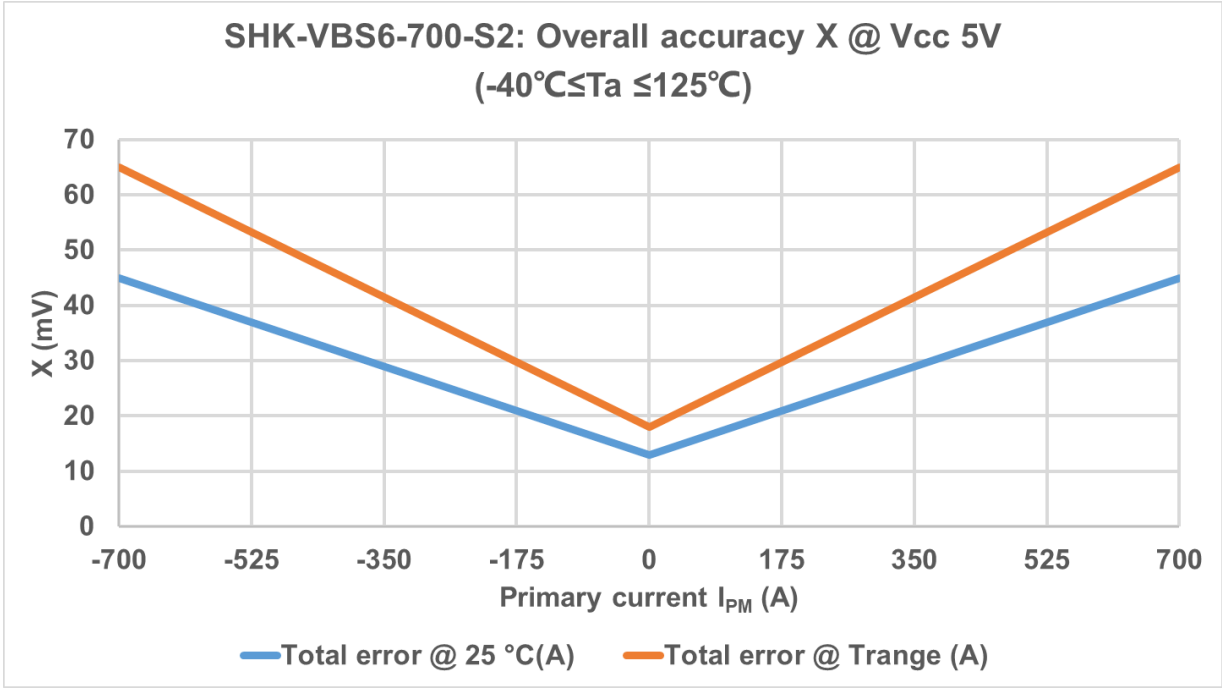
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-600	45 mV	13.5 A	2.25%	65 mV	19.5 A	3.25%
0	13 mV	3.90 A	0.65%	18 mV	5.40 A	0.90%
600	45 mV	13.5 A	2.25%	65 mV	19.5 A	3.25%



8. Electrical data of SHK-VBS6-700-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-700		700	SHK-VBS6-700-S2
Primary nominal RMS current	I_{PN}	A	-700		700	SHK-VBS6-700-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		2.857		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

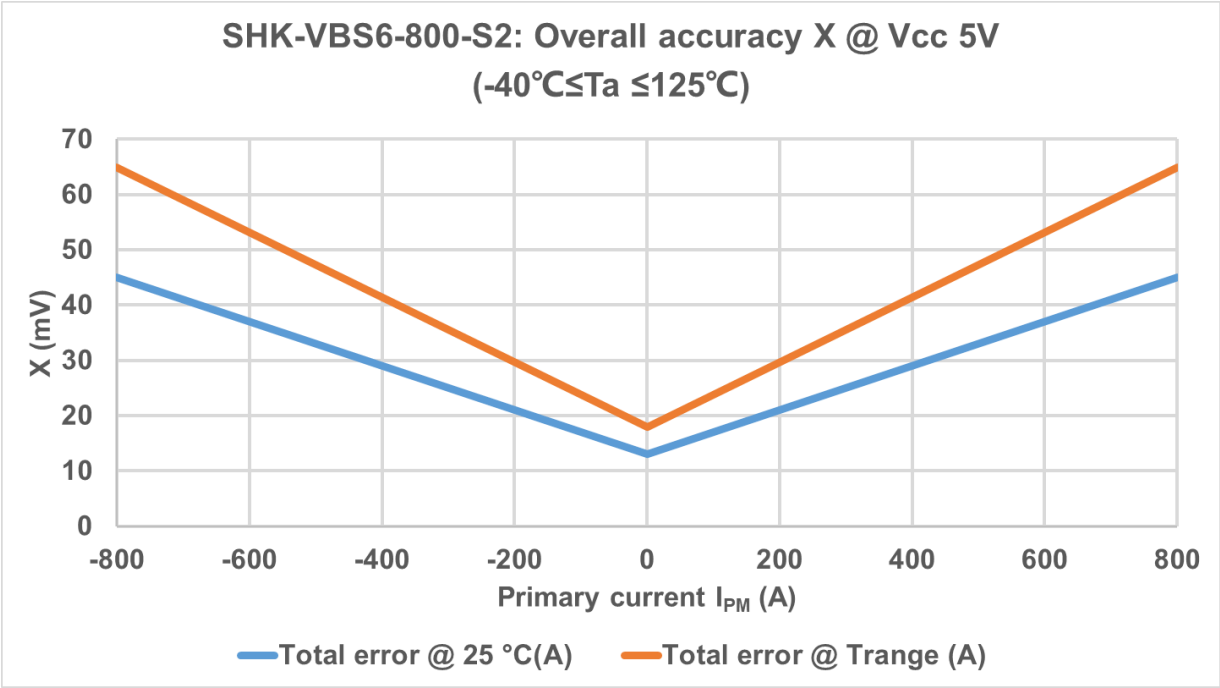
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-700	45 mV	15.75 A	2.25%	65 mV	22.75 A	3.25%
0	13 mV	4.55 A	0.65%	18 mV	6.30 A	0.90%
700	45 mV	15.75 A	2.25%	65 mV	22.75 A	3.25%



9. Electrical data of SHK-VBS6-800-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-800		800	SHK-VBS6-800-S2
Primary nominal RMS current	I_{PN}	A	-800		800	SHK-VBS6-800-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

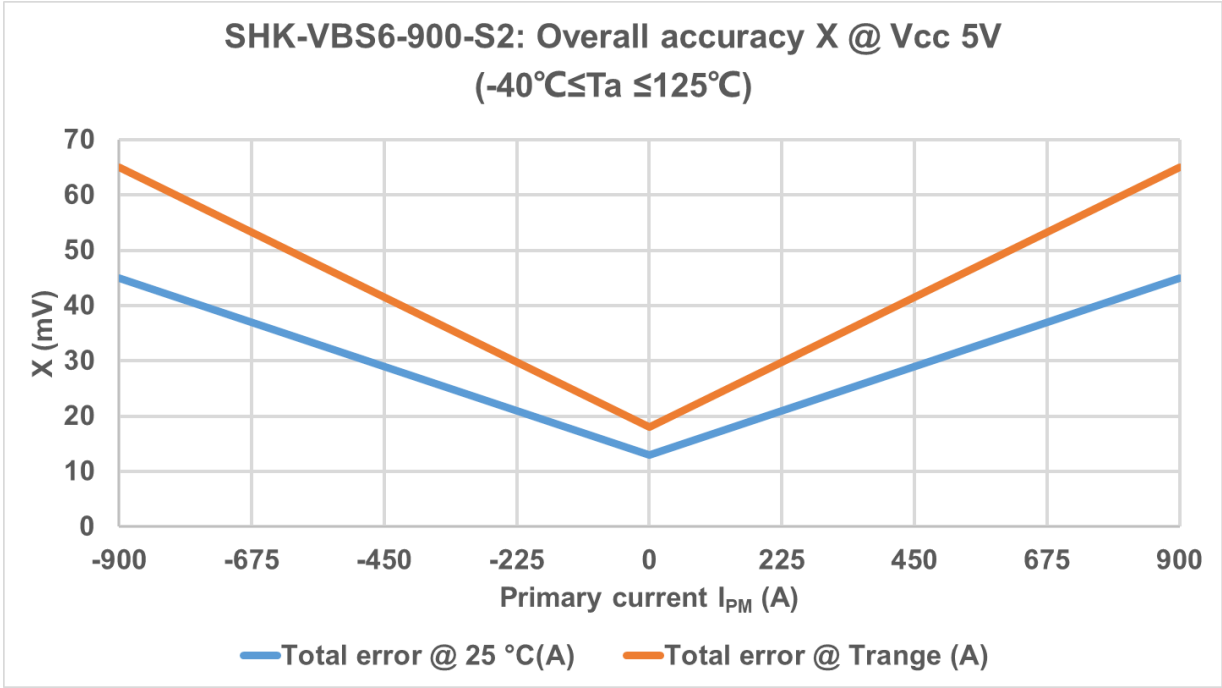
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-800	45 mV	18.00 A	2.25%	65 mV	26.00 A	3.25%
0	13 mV	5.20 A	0.65%	18 mV	7.20 A	0.90%
800	45 mV	18.00 A	2.25%	65 mV	26.00 A	3.25%



10. Electrical data of SHK-VBS6-900-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-900		900	SHK-VBS6-900-S2
Primary nominal RMS current	I_{PN}	A	-900		900	SHK-VBS6-900-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		2.222		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.6		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

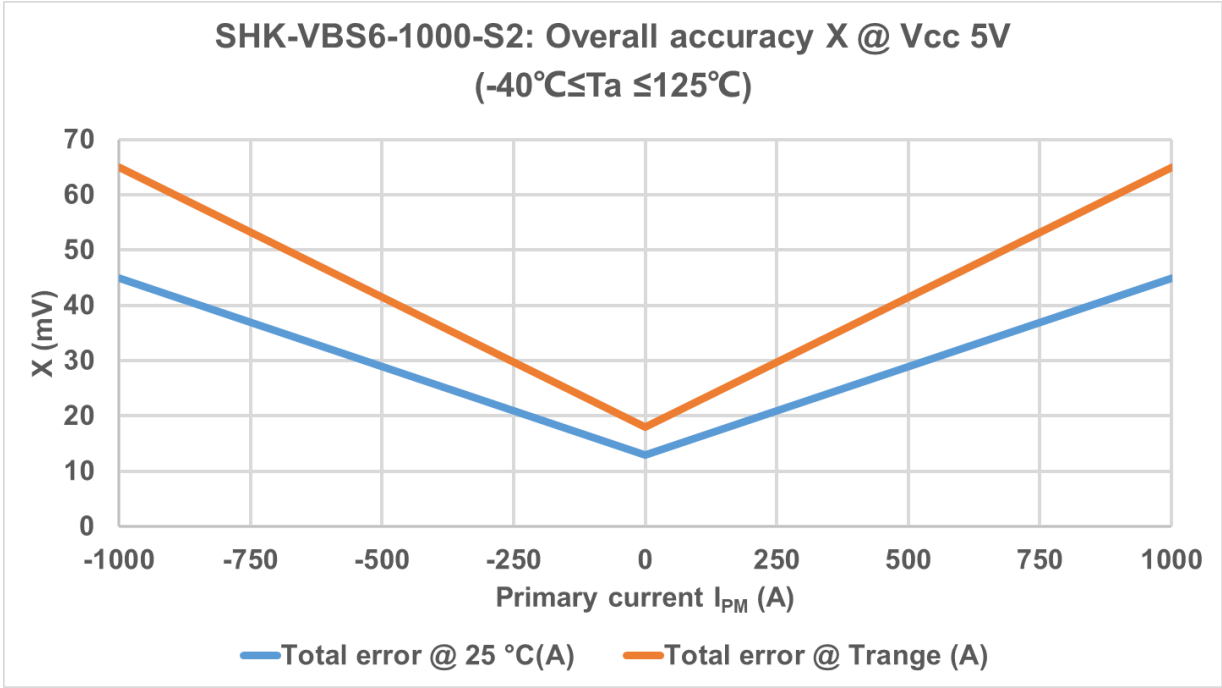
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-900	45 mV	20.25 A	2.25%	65 mV	29.25 A	3.25%
0	13 mV	5.85 A	0.65%	18 mV	8.10 A	0.90%
900	45 mV	20.25 A	2.25%	65 mV	20.25 A	3.25%



11. Electrical data of SHK-VBS6-1000-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-1000		1000	SHK-VBS6-1000-S2
Primary nominal RMS current	I_{PN}	A	-1000		1000	SHK-VBS6-1000-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		2		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.7		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

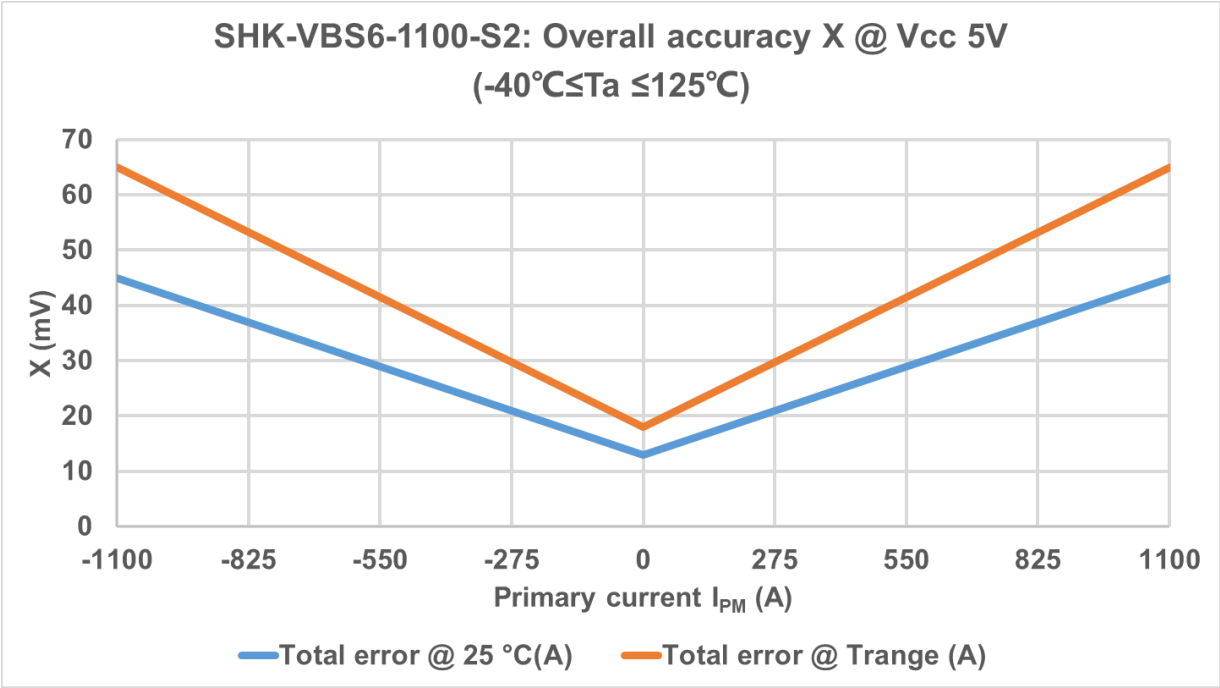
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-1000	45 mV	22.5 A	2.25%	65 mV	32.5 A	3.25%
0	13 mV	6.50 A	0.65%	18 mV	9.00 A	0.90%
1000	45 mV	22.5 A	2.25%	65 mV	32.5 A	3.25%



12. Electrical data of SHK-VBS6-1100-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-1100		1100	SHK-VBS6-1100-S2
Primary nominal RMS current	I_{PN}	A	-1100		1100	SHK-VBS6-1100-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		1.818		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.7		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

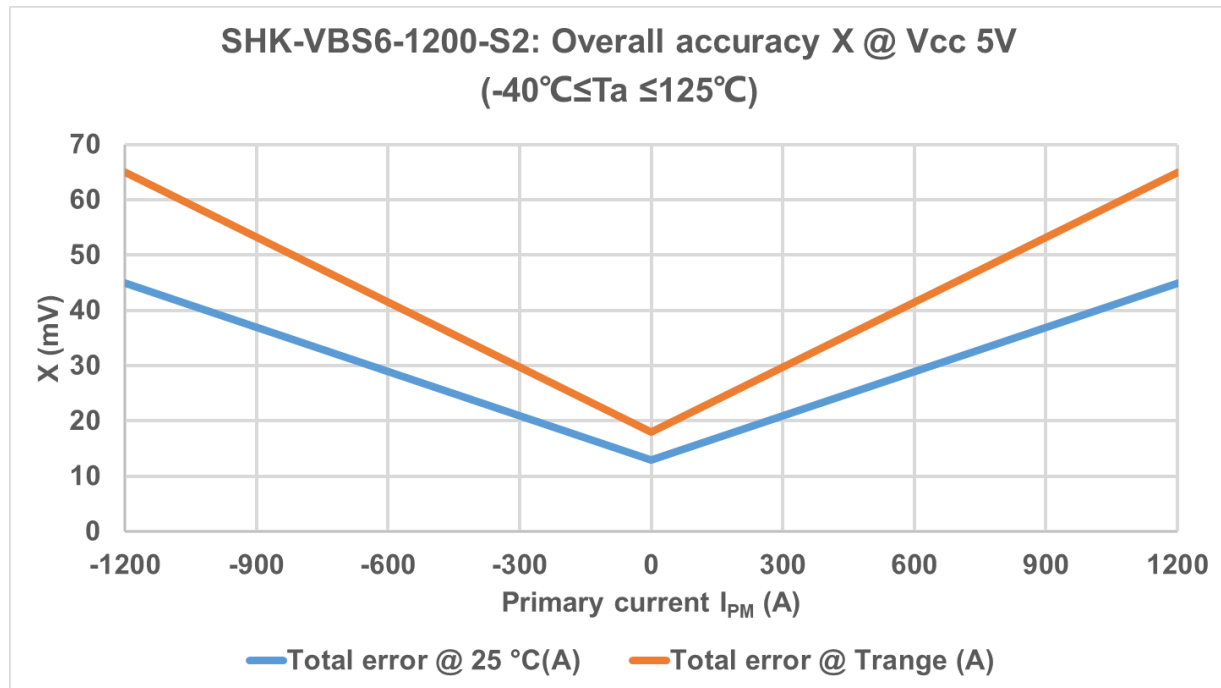
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-1100	45 mV	24.75 A	2.25%	65 mV	35.75 A	3.25%
0	13 mV	7.15 A	0.65%	18 mV	9.90 A	0.90%
1100	45 mV	24.75 A	2.25%	65 mV	35.75 A	3.25%



13. Electrical data of SHK-VBS6-1200-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-1200		1200	SHK-VBS6-1200-S2
Primary nominal RMS current	I_{PN}	A	-1200		1200	SHK-VBS6-1200-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		1.67		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.7		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	V_{OE}	mV		± 3.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	V_{OM}	mV		± 2.0		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of G	TCG_{AV}	%/ $^\circ\text{C}$		± 0.02		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

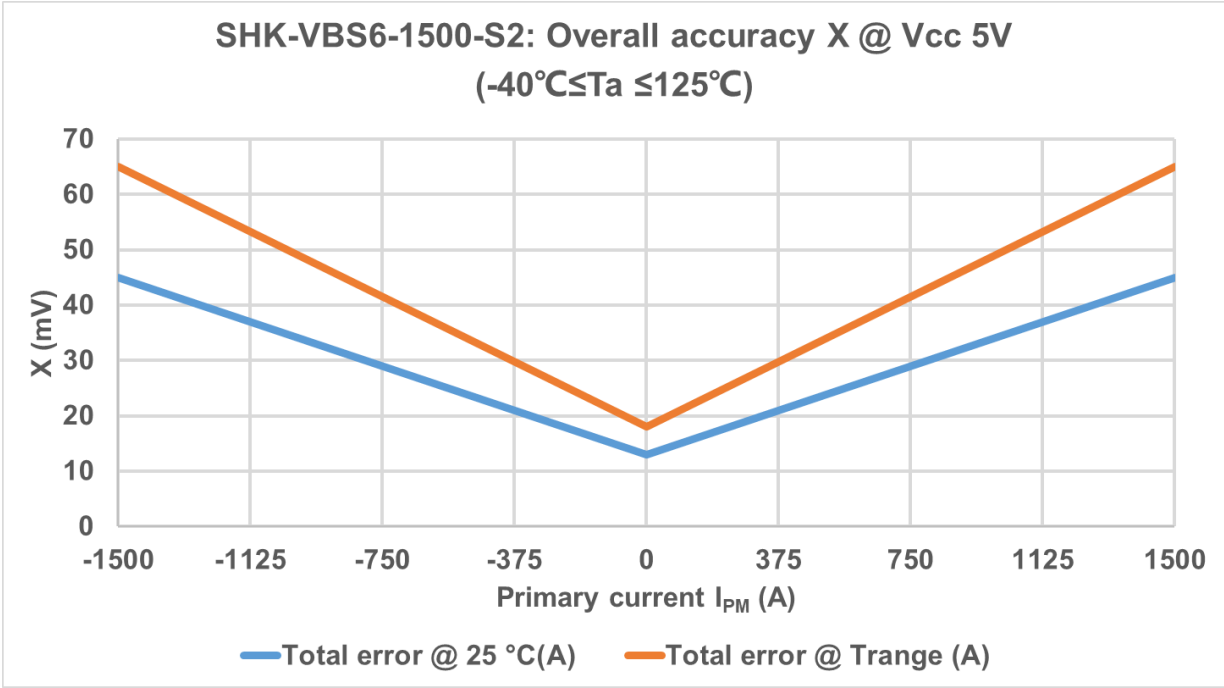
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V,$		
-1200	45 mV	27.00 A	2.25%	65 mV	39.00 A	3.25%
0	13 mV	7.80 A	0.65%	18 mV	10.80 A	0.90%
1200	45 mV	27.00 A	2.25%	65 mV	39.00 A	3.25%



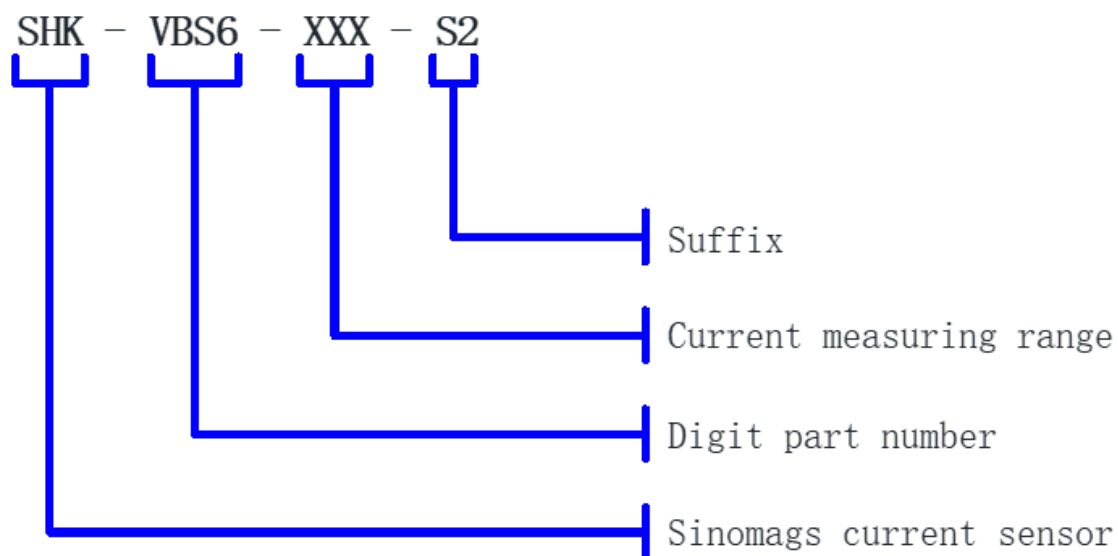
14. Electrical data of SHK-VBS6-1500-S2

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary current measuring range	I_{PM}	A	-1500		1500	SHK-VBS6-1500-S2
Primary nominal RMS current	I_{PN}	A	-1500		1500	SHK-VBS6-1500-S2
Supply voltage	V_{CC}	V	4.75	5	5.25	
Current consumption	I_{CC}	mA		12		@ $V_{CC} = 5.0\text{ V}$
Output voltage	V_{OUT}	V	$V_{OUT} = (V_{CC}/5) \times (V_{off} + G \times I_P)$			@ $T_a = 25^\circ\text{C}$
Quiescent voltage	V_{off}	V		2.5		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Sensitivity	G	mV/A		1.33		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Load resistance	R_L	k Ω	10			
Output internal resistance	R_{out}	Ω		1	10	
Ratiometricity error	ε_r	%		± 0.5		@ $4.75\text{ V} \leq V_{CC} \leq 5.25\text{ V}$
Sensitivity error	ε_G	%		± 0.9		@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$
Electrical offset voltage error	I_{OE}	mA		2706		@ $T_a = 25^\circ\text{C}$,
	V_{OE}	mV		± 3.6		$V_{CC} = 5.0\text{ V}$
Magnetic offset voltage error	I_{OM}	mA		1503		@ $T_a = 25^\circ\text{C}$,
	V_{OM}	mV		± 2.0		$V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Ave. Temp. coefficient of I_{OE}	TCI_{OEAV}	mA/ $^\circ\text{C}$		± 30		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Ave. Temp. coefficient of V_{OE}	TCV_{OEAV}	mV/ $^\circ\text{C}$		± 0.04		@ $-40^\circ\text{C} \leq T_a \leq 125^\circ\text{C}$
Linearity	ε_L	%	-1		1	@ $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$, $I = I_{PM}$
Response time	T_r	μs		3	6	@ 90% of I_{PM}
Frequency bandwidth (-3 dB)	BW	kHz	40			No RC circuit
Output voltage noise	V_{no}	mVpp		20		@ DC ~ 10 kHz

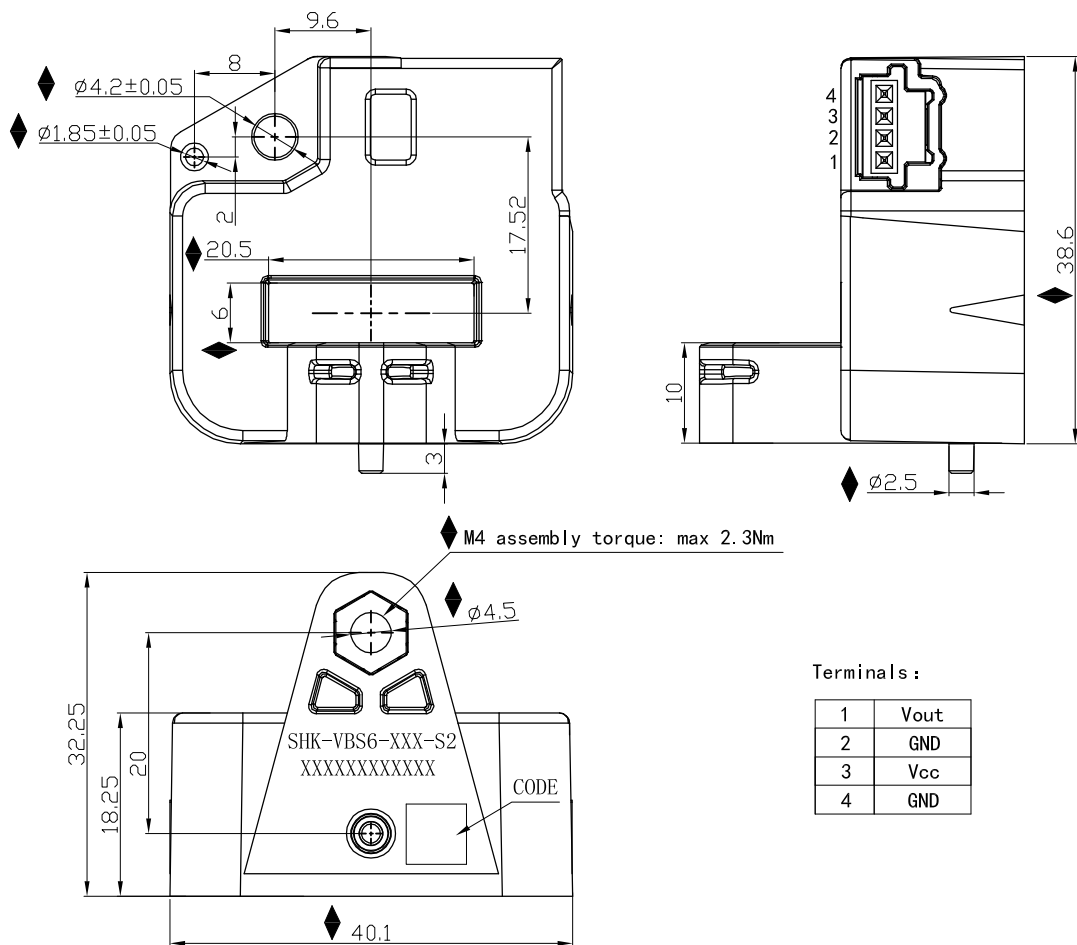
Overall accuracy X specification						
$I_{PM}(A)$	@ $T_a = 25^{\circ}C, V_{CC} = 5.0 V$			@ $-40^{\circ}C \leq T_a \leq 125^{\circ}C, V_{CC} = 5.0 V$		
-1500	45 mV	33.75 A	2.25%	65 mV	48.75 A	3.25%
0	13 mV	9.75 A	0.65%	18 mV	13.50 A	0.90%
1500	45 mV	33.75 A	2.25%	65 mV	48.75 A	3.25%



15. Product definition statement



16.Dimension & Pin definitions



M4 assembly torque: max 2.3Nm

Terminals:

1	Vout
2	GND
3	Vcc
4	GND

Mechanical characteristics

1. Connector type: TYCO connector P/N 1473672-1
2. Plastic housing material: P A66+GF30%
3. Installation distance 20mm do not have objects that can produce magnetic field.
4. Critical dimension

Material: Fit UL94V-0 & RoHS requirements;

General tolerance: ± 0.5

Unit: mm

