

# Current Sensor

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Product Series: SHK-616VM

SHK-616VM-50MLB5

Part number: SHK-616VM-100MLB5  
SHK-616VM-150MLB5

Version: Ver 1.0



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## CONTENT

1.	Description .....	2
2.	Electrical data .....	3
3.	Frequency band width .....	4
4.	Step response time .....	4
5.	Dimensions & Pin Definition .....	5

## 1. Description

The SHK-616VM series current sensor is based on HALL 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

- Motor driver unit
- 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	0.1

### Absolute maximum rating

Parameter	Symbol	Unit	Value
Supply voltage	Vcc	V	5
ESD rating (HBM)	U_ESD	kV	2

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	Ud	V	200	Pollution degree 2
Clearance distance (pri. -sec)	dCl	mm	0.5	After soldered on
Creepage distance (pri. -sec)	dCp	mm	0.5	PCB

### Measuring current table

Part number	Meas. Range I_pn(A)	Sensitivity (mV/A)	Vcc (V)	T (°C)
SHK-616V-50MLB5	±50A	40	5	-40 ~ 105
SHK-616V-100MLB5	±100A	20	5	-40 ~ 105
SHK-616V-150MLB5	±150A	13.33	5	-40 ~ 105

## 2. Electrical data

Condition: T\_A = 25°C, Vcc = 5 V

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_pn	A	-50		50	SHK-616V-50MLB5
			-100		100	SHK-616V-100MLB5
			-150		150	SHK-616V-150MLB5
Supply voltage	Vcc	V	4.75	5	5.25	
Current consumption	Icc	mA		7	12	
Full scale voltage	V_FS	V		1.5		Output @ I_pm
Theoretical gain	G	mV/A		40		SHK-616V-50MLB5
				20		SHK-616V-100MLB5
				13.33		SHK-616V-150MLB5
Gain Error @ 25°C	G_error	% of Gain	-1		1	@ 25°C
Gain Error @ -40°C~105°C	G_error_T	% of Gain	-1.5		1.5	@ -40°C~105°C
Primary conductor resistance	R_IP	mΩ		0.25		
Offset voltage	Voff	V	2.45	2.5	2.55	
Internal output resistance	R_out	Ω	1	15	30	
Step response time	t_res	μs		3		TBD
Frequency bandwidth (-3dB)	BW	kHz		120		TBD
Noise (r.m.s)	I_noise	%I_pm		1		10 ~ 120 kHz
Non-linearity @ 25°C	ξ	%		±1.5		% of I_pm
Accuracy @ 25°C	X	% of I_pn	-2		2	@ 25°C
Accuracy @ -40°C~105°C	X_TRang	% of I_pn	-3		3	@ -40°C~105°C
Thermal drift of Gain	Gain_T	% of Gain	-1.5		1.5	Drift value related to R.T. over -40°C ~105°C
Thermal drift of Voff	Voff_T	mV	-15		15	

Remarks: ②.the accuracy @ -40°C~105°C, X\_TRang = (((Vout - Vref)@ In @ T\_x) - Voe@ 25°C - G\_th \* In) / V\_FS, where T\_x represents present temperature, G\_th is fitted gain at room temperature.

### 3. Frequency band width

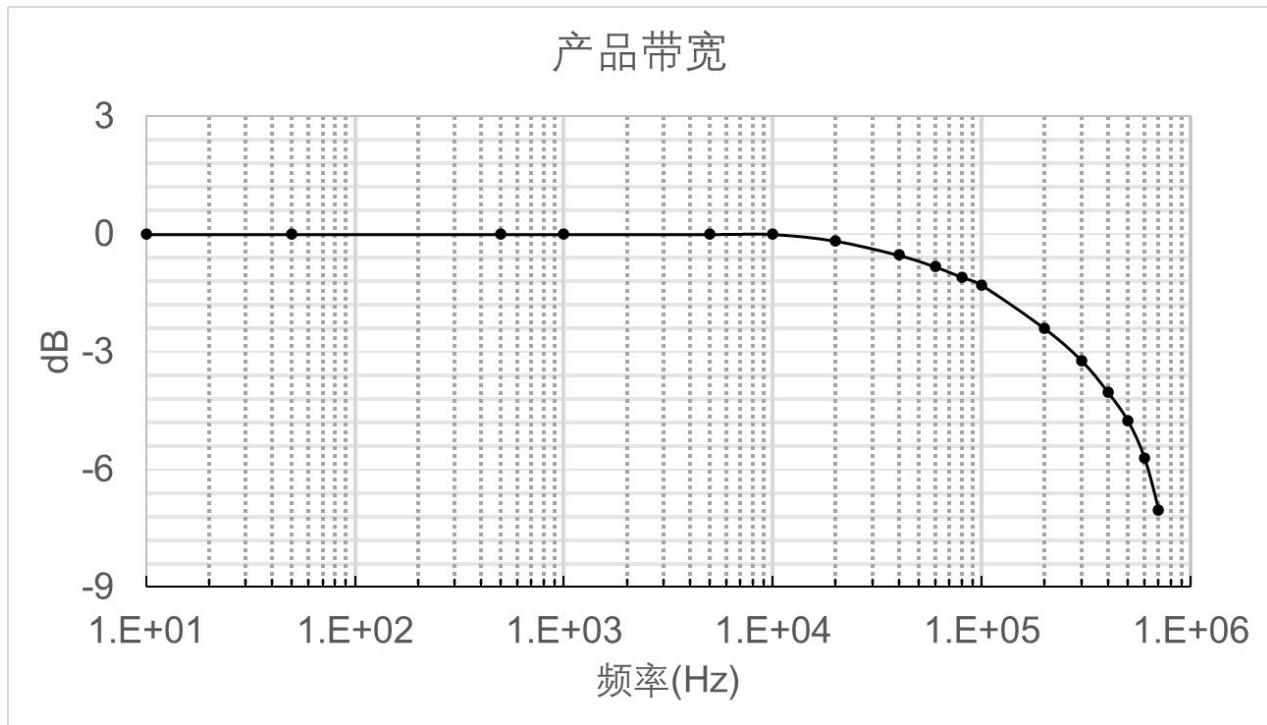


Fig.3 The frequency band width of SHK-616VM series current sensors.

### 4. Step response time

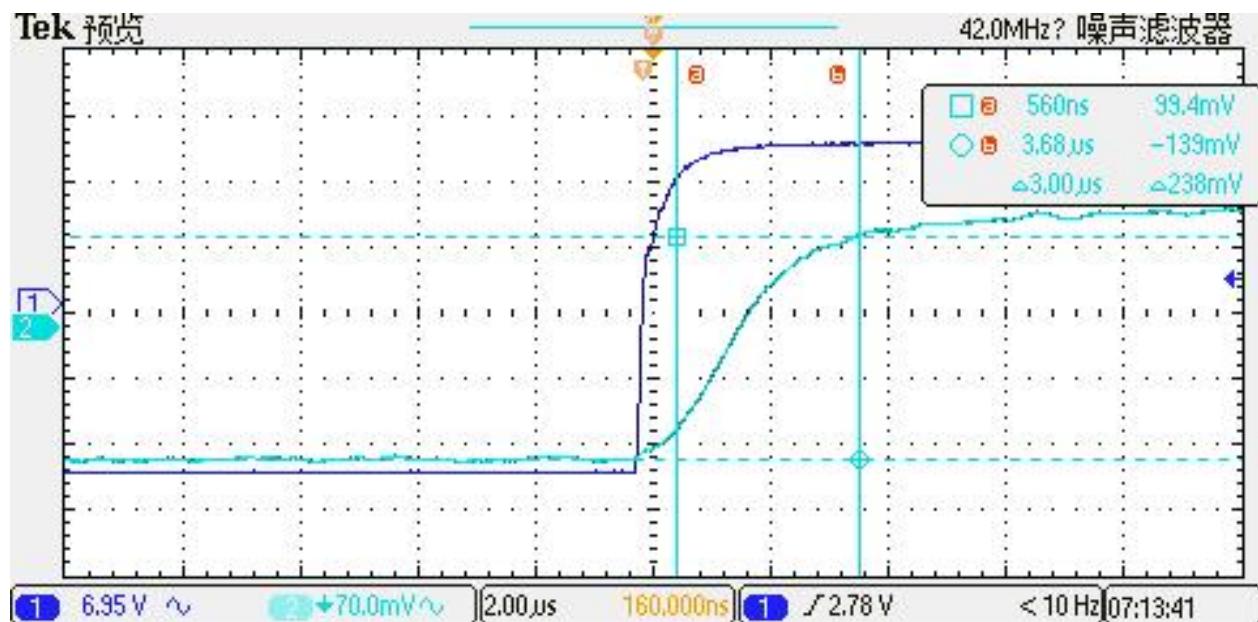


Fig.4 The step response time of SHK-616VM current sensors. The dark light blue is primary current, while the light blue is output signal of current sensor. The step response time is about 3μs.

## 5. Dimensions & Pin Definition

