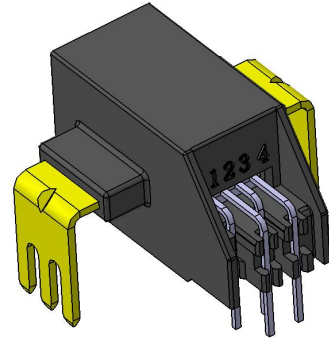


XGZC6201 CURRENT SENSOR

FEATURES

- $\pm 0.5\%$ linearity over full temperature range
- Fast output step response time: $1.8\mu\text{s}$
- 240kHz signal bandwidth
- 5.0V DC power supply
- -40°C to 105°C operating temperature
- Rated current detection range: (bidirectional)
--- $\pm 10\text{A} \sim \pm 120\text{A}$
- Detects AC and DC current signals
- Power-independent fixed output mode
- Extremely stable quiescent output voltage
- Built-in reference voltage output



RoHS compliant

APPLICATIONS

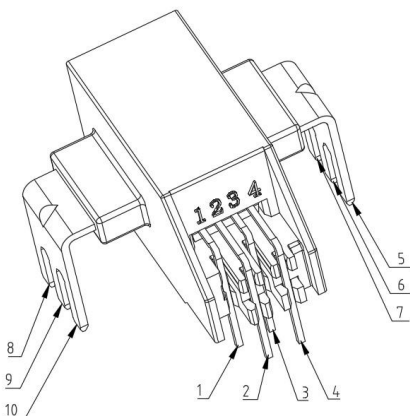
- Low and medium power inverter current detection
- Motor phase and rail current detection
- String PV inverter current detection.
- MPPT current detection
- Charger and converter
- DC power supply
- Overcurrent protection
- Uninterruptible Power Supply (UPS)

INTRODUCTION

The XGZC6201 product family is an open-loop current sensor based on the Hall effect principle that can be used in a wide range of industrial, commercial and communication systems for AC or DC current detection. Each XGZC6201 consists of a high precision, low temperature drift linear Hall IC, a magnetic core, and a built-in low insertion resistance current conductor path. The applied current flowing through this low resistance current conductor path creates a magnetic field, which the Hall IC converts into a voltage signal output proportional to the input current. The use of a magnetic core inside the product effectively suppresses interference from external common-mode magnetic fields and improves accuracy in magnetically noisy environments.

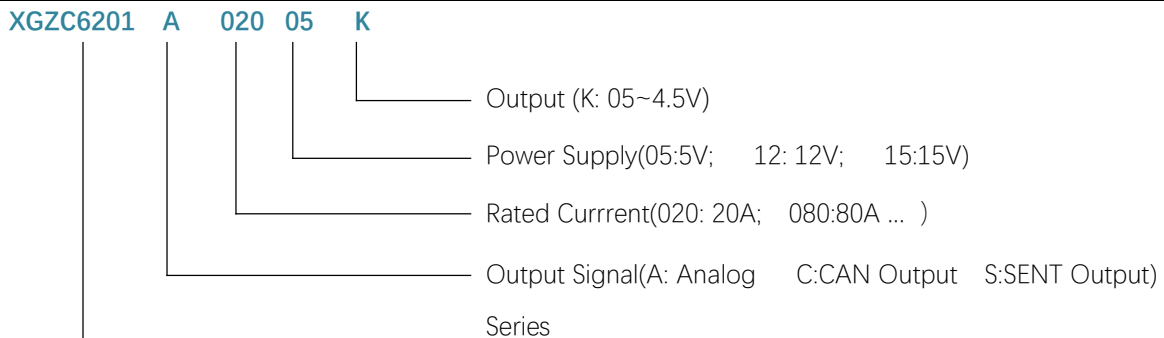
The XGZC6201 will precisely calibrate the output voltage within the factory according to the different requirements of the current range. The output of the chip has a positive slope ($>VOQ$) when the applied current flows through the internal current conduction path (from pins 5,6 and 7 to pins 8,9 and 10). The internal resistance of this conduction path is $0.21\text{ m}\Omega$ typical, allowing for low power dissipation. The terminals of the conductive path (pins 5 to 10) are electrically isolated from the signal lines (pins 1 to 4). This allows the XGZC6201 current sensor to be used in high-end current sensing applications without the need for other expensive isolation techniques.

PIN DEFINITION



No.	Name	Description
1	VREF	Reference Voltage Output
2	VOUT	Analog Voltage Output
3	GND	Power -
4	VCC	Power +
5, 6, 7	IP-	Input Current -
8, 9, 10	IP+	Input Current +

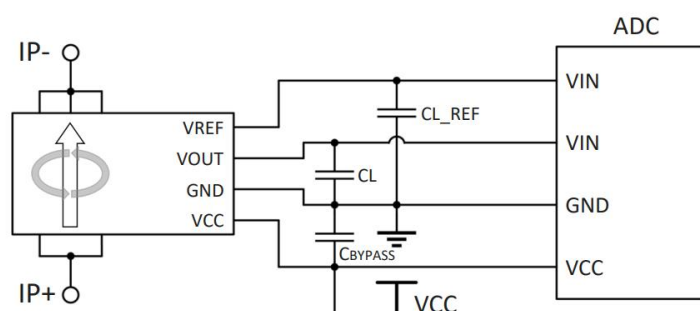
ORDER GUIDE



ROUTINE PRESSURE RANGE

Part Number	Output	Power Supply	Nominal Current(A)	Max Current Range	Sensitivity (mV/A)	Package (pcs)
XGZC6201A01005K	Analog Voltage	5V	±10	±25	80	500
XGZC6201A01605K			±16	±40	50	
XGZC6201A02005K			±20	±50	40	
XGZC6201A03205K			±32	±80	25	
XGZC6201A05005K			±50	±125	16	
XGZC6201A08005K			±80	±200	10	
XGZC6201A12005K			±120	±300	6.67	

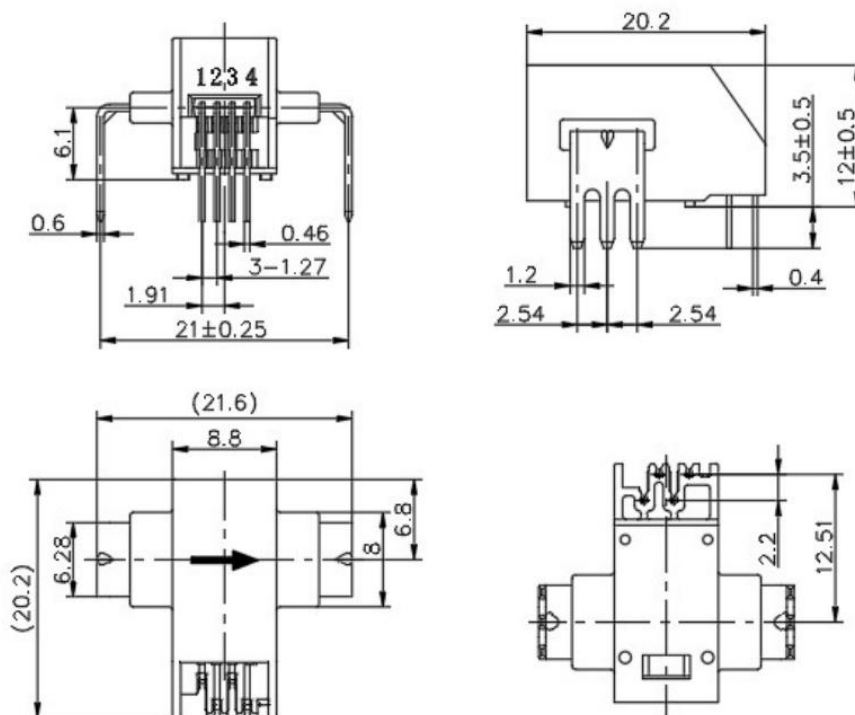
TYPICAL APPLICATION CIRCUIT



(1) CBYPASS=0.1uF bypass capacitor should be placed near the "power-ground" of XGZC6201. 100nF for CL_REF and 1nF for CL are recommended.

(2) The XGZC6201 has a "reference signal output" terminal, which can be used either as a single-ended output or as a differential output to interface with ADC or op-amp.

DIMENSION (Unit:mm)



ABSOLUTE MAX. RATING

Parameter	Description	Min.	Max.	Unit
VCC	Power Supply Voltage	-	15	V
VRCC	Power Supply Reverse Voltage	-0.5	-	V
VOUT	Output Voltage	-	15	V
VROUT	Output Reverse Voltage	-0.5	-	V
IOUT(source)	Constant Output Current (Primary Current)	-	2.8	mA
IOUT(sink)	Constant Output Current (Sink Current)	-	8.8	mA
TA	Working Temperature	-40	105	°C
TS	Storage Temperature	-40	125	°C
M	Weight (10A-50A)	-	5	g
	Weight (80A-120A)	-	7	g

Remark: Long-time working on the absolute maximum ratings may cause the degradation on performance and reliability. The unrecoverable damage may occur when the product works on the conditions over the absolute maximum ratings

PACKAGE& ISOLATION

Parameter	Description	Test Condition	Value	Unit
VISO	Insulation strength voltage	t = 60 s 50/60Hz	4000	Vrms
DCL	Clearance distance	Shortest distance through air	>8	mm
DCR	Creepage distance	Shortest path along device body	>8	mm
CM	Case material	According to UL 94	V0	

ELECTRICAL SPECIFICATION

TA =25 °C, VCC=5V, CBYPASS=0.1uF (Except special instructions)

Parameter	Description	Test Condition	Min.	Typ.	Max.	Unit
NP	Turn Number(primary side)		-	1	-	
RIP	conductor resistance	TA=25°C	-	0.21	-	mΩ
		TA=105°C	-	0.29	-	mΩ
VCC	Power supply voltage		4.5	5	5.5	V
ICC	Consumption current		-	14	19	mA
VOUT-VREF	Output voltage range	IP=IPM	-2	-	2	V
CL	Output capacitance load	OUT-GND	-	1	10	nF
CL_REF	Reference capacitance Load	VREF-GND	-	100	470	nF
RL	Output load resistance	Pull down to GND	5	-	-	KΩ
		Pull up to VCC	50	-	-	KΩ
RL_REF	Reference load resistance	Pull down to GND	20	-	-	KΩ
		Pull up to VCC	20	-	-	KΩ
ELIN	Non-linearity error		-0.5	-	0.5	%
BW	Bandwide	-3 dB; CL=1nF	-	240	-	kHz
TPO	Power-up time	CL=1nF	-	80	-	us
TR	Rising edge time	IP=IPM, CL=1nF	-	2.1	-	us
TRES	Output response time	IP=IPM, CL=1nF	-	1.8	-	us
VOL	Analog output low level	RL>=5KΩ	-	-	0.25	V
VOH	Analog output high level	RL>=50KΩ	4.75	-	-	V

ACCURACY SPECIFICATION

XGZC6201A02005K (TA =25 °C, VCC=5V, Except special instructions)

Paramet	Description	Test Condition	Min.	Typ.	Max.	Unit
IPN	Primary nominal current	Effective Value	-20	-	20	A
IPM	Primary current measuring	Peak Value	-50	-	50	A
SNST	Sensitivity		-	40	-	mV/A
VREF	Reference voltage range		2.49	~	2.51	V
VOQ	Quiescent voltage Rrange		2.48	~	2.52	V
VOE	Electrical offset voltage VOQ-VREF	IP=0A,TA=25°C	-5	-	5	mV
		IP=0A,TA=25°C to 105°C	-15	-	15	mV
		IP=0A,TA=-40°C to 25°C	-20	-	20	mV
ESNST	Linearity error	IP=IPN ,TA=25°C	-	±0.5	-	%
		IP=IPN ,TA=25°C to 105°C	-	±1.5	-	%
		IP=IPN ,TA=-40°C to 25°C	-	±2.0	-	%
ETOT	Accuracy	IP=IPN ,TA=25°C	-1	-	1	%
		IP=IPN ,TA=25°C to 105°C	-2.5	-	2.5	%
		IP=IPN ,TA=-40°C to 25°C	-3.0	-	3.0	%

XGZC6201A03205K (TA =25 °C, VCC=5V, Except special instructions)

Paramet	Description	Test Condition	Min.	Typ.	Max.	Unit
IPN	Primary nominal current	Effective Value	-32	-	32	A
IPM	Primary current measuring	Peak Value	-80	-	80	A
SNST	Sensitivity		-	25	-	mV/A
VREF	Reference voltage range		2.49	~	2.51	V
VOQ	Quiescent voltage Rrange		2.48	~	2.52	V
VOE	Electrical offset voltage VOQ-VREF	IP=0A,TA=25°C	-5	-	5	mV
		IP=0A,TA=25°C to 105°C	-15	-	15	mV
		IP=0A,TA=-40°C to 25°C	-20	-	20	mV
ESNST	Linearity error	IP=IPN ,TA=25°C	-	±0.5	-	%
		IP=IPN ,TA=25°C to 105°C	-	±1.5	-	%
		IP=IPN ,TA=-40°C to 25°C	-	±2.0	-	%
ETOT	Accuracy	IP=IPN ,TA=25°C	-1	-	1	%
		IP=IPN ,TA=25°C to 105°C	-2.5	-	2.5	%
		IP=IPN ,TA=-40°C to 25°C	-3.0	-	3.0	%

XGZC6201A05005K (TA =25 °C, VCC=5V, Except special instructions)

Paramet	Description	Test Condition	Min.	Typ.	Max.	Unit
IPN	Primary nominal current	Effective Value	-50	-	50	A
IPM	Primary current measuring	Peak Value	-125	-	125	A
SNST	Sensitivity		-	16	-	mV/A
VREF	Reference voltage range		2.49	~	2.51	V
VOQ	Quiescent voltage Rrange		2.48	~	2.52	V
VOE	Electrical offset voltage VOQ-VREF	IP=0A,TA=25°C	-5	-	5	mV
		IP=0A,TA=25°C to 105°C	-15	-	15	mV
		IP=0A,TA=-40°C to 25°C	-20	-	20	mV
ESNST	Linearity error	IP=IPN ,TA=25°C	-	±0.5	-	%
		IP=IPN ,TA=25°C to 105°C	-	±1.5	-	%
		IP=IPN ,TA=-40°C to 25°C	-	±2.0	-	%
ETOT	Accuracy	IP=IPN ,TA=25°C	-1	-	1	%
		IP=IPN ,TA=25°C to 105°C	-2.5	-	2.5	%
		IP=IPN ,TA=-40°C to 25°C	-3.0	-	3.0	%

XGZC6201A08005K (TA =25 °C, VCC=5V, Except special instructions)

Paramet	Description	Test Condition	Min.	Typ.	Max.	Unit
IPN	Primary nominal current	Effective Value	-80	-	80	A
IPM	Primary current measuring	Peak Value	-200	-	200	A
SNST	Sensitivity		-	10	-	mV/A
VREF	Reference voltage range		2.49	~	2.51	V
VOQ	Quiescent voltage Rrange		2.48	~	2.52	V
VOE	Electrical offset voltage VOQ-VREF	IP=0A,TA=25°C	-5	-	5	mV
		IP=0A,TA=25°C to 105°C	-15	-	15	mV
		IP=0A,TA=-40°C to 25°C	-20	-	20	mV
ESNST	Linearity error	IP=IPN ,TA=25°C	-	±0.5	-	%
		IP=IPN ,TA=25°C to 105°C	-	±1.5	-	%
		IP=IPN ,TA=-40°C to 25°C	-	±2.0	-	%
ETOT	Accuracy	IP=IPN ,TA=25°C	-1	-	1	%
		IP=IPN ,TA=25°C to 105°C	-2.5	-	2.5	%
		IP=IPN ,TA=-40°C to 25°C	-3.0	-	3.0	%

XGZC6201A12005K (TA =25 °C, VCC=5V, Except special instructions)

Paramet	Description	Test Condition	Min.	Typ.	Max.	Unit
IPN	Primary nominal current	Effective Value	-120	-	120	A
IPM	Primary current measuring	Peak Value	-300	-	300	A
SNST	Sensitivity		-	6.67	-	mV/A
VREF	Reference voltage range		2.49	~	2.51	V
VOQ	Quiescent voltage Rrange		2.48	~	2.52	V
VOE	Electrical offset voltage VOQ-VREF	IP=0A,TA=25°C	-5	-	5	mV
		IP=0A,TA=25°C to 105°C	-15	-	15	mV
		IP=0A,TA=-40°C to 25°C	-20	-	20	mV
ESNST	Linearity error	IP=IPN ,TA=25°C	-	±0.5	-	%
		IP=IPN ,TA=25°C to 105°C	-	±1.5	-	%
		IP=IPN ,TA=-40°C to 25°C	-	±2.0	-	%
ETOT	Accuracy	IP=IPN ,TA=25°C	-1	-	1	%
		IP=IPN ,TA=25°C to 105°C	-2.5	-	2.5	%
		IP=IPN ,TA=-40°C to 25°C	-3.0	-	3.0	%

APPLICATION NOTE

1) When the copper current IP direction is the same as the product arrow mark, $V_{OUT} = 2.5V + IP \times S$; conversely, $V_{OUT} = 2.5V - IP \times S$.

2) incorrect wiring and supply voltage not in accordance with this manual may result in damage to the sensor.

(3) When the product is installed, the power supply must be disconnected and no other devices should be set in the projection area directly below the product.

(4) The sensor can be customized according to customer requirements, including power supply voltage, measuring current range, sensitivity, installation size, operating temperature range, etc.

(5) If you have any questions, please contact us.

【 WARRANTY 】

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