



# GOA1-xxxB 系列电流传感器 Current Transducer

$I_{PN} = 200 \dots 900 \text{ A}$

Ref: GOA1-200B, GOA1-300B, GOA1-400B,  
 GOA1-500B, GOA1-600B, GOA1-700B,  
 GOA1-800B, GOA1-900B

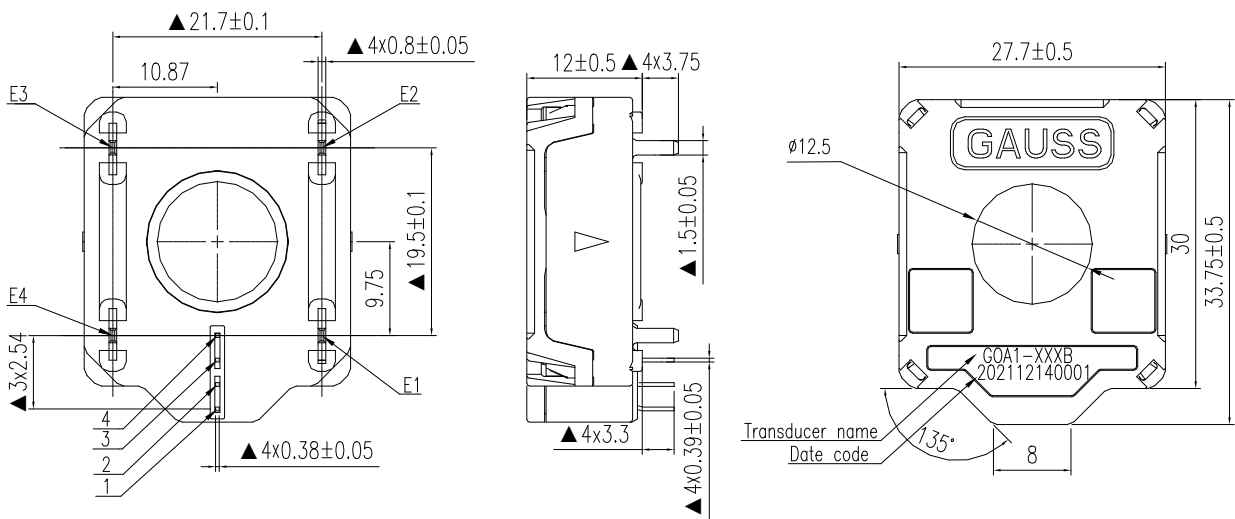


## 介绍 Introduction

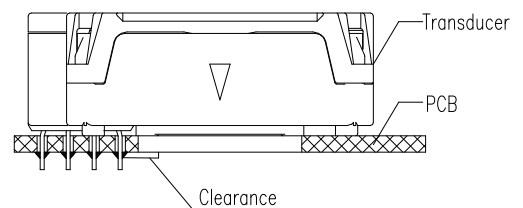
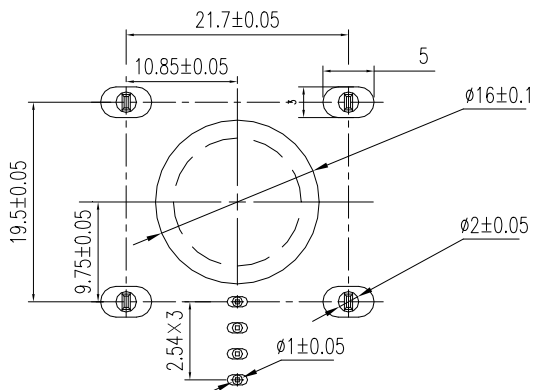
GOA1-xxxB 系列适用于对交流、直流、脉冲电流的隔离精确测量，应用在高功率汽车电流测量时一次侧（高功率）与二次侧（电子电路）完全绝缘。

The GOA1-xxxB family is for the electronic measurement of DC, AC or pulsed..., currents in high power automotive applications with galvanic separation between the primary circuit (high power) and the secondary circuit (electronic circuit).

## 尺寸 Dimensions (in mm)



PCB Drilling (advisable dimensions)





## 绝对额定值（非工作状态） Absolute ratings (not operating)

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
最大供电电压 Maximum supply voltage	$U_C$	V			15	
存储温度 Ambient storage temperature	$T_S$	°C	-40		125	
静电放电电压 Electrostatic discharge voltage	$U_{ESD\ HBM}$	KV			2	ISO 10605
最大随机振动 Maximum admissible vibration(random)	Y	$M \cdot S^{-2}$	96.6			
耐压 RMS voltage for AC insulation test, 50Hz, 1 min	$U_d$	KV			2.5	IEC 60664 part1
绝缘电阻 Isolation resistance	$R_{IS}$	$m\Omega$	500			
爬电距离 Creepage distance	$d_{CP}$	mm	4			
电气间隙 Clearance	$d_{CI}$	mm	3.3			
漏电气痕指数 Comparative tracking index	CTI	V	600			IEC 60112
反向电源电压 Reverse supply voltage	$U_{RCC}$	V			-0.5	

## 额定电流范围内运行特性 Operating characteristics in nominal range ( $I_{PN}$ )

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
<b>电气参数 Electrical data</b>						
电源电压 Supply voltage	$U_C$	V	4.75	5	5.25	
工作温度 Ambient operating temperature	$T_A$	°C	-40		125	
输出电压（模拟） Output voltage(Analog)	$U_{out}$	V	$U_{out} = U_O + S \times I_P$			@ $U_C$
零点电压 Offset voltage	$U_O$	V		2.5		
电流消耗 Current consumption	$I_C$	mA		14	17	$U_{out}$ 无负载 No load on $U_{out}$
负载电阻 Load resistance	$R_L$	K $\Omega$	5			
负载电容 Load capacitance	$C_L$	nF		1	10	
输出内阻 DC Output internal resistance	$R_{out}$	$\Omega$		<1		
<b>性能参数 Performance data<sup>1)</sup></b>						
增益误差 Sensitivity error	$\epsilon_S$	%		±0.6		
电零点 Electrical offset voltage	$U_{OE}$	mV		±2.5		
磁零点 Magnetic offset voltage	$U_{OM}$	mV		±2		
整体精度 Global accuracy @ 0A	$X_G$	mV		±13		
平均零点温漂 Average temperature coefficient of $U_{OE}$	$TCU_{OE\ AV}$	mV/°C		±0.08		
平均增益温漂 Average temperature coefficient of S	$TCS_{AV}$	%/°C		±0.03		
线性度误差 Linearity error	$\epsilon_L$	%	-1		1	全范围 of full range
响应时间 Step response time to 90% $I_{PN}$	$t_r$	$\mu s$		2	6	
带宽 Frequency bandwidth <sup>2)</sup>	BW	KHz	40			@ -3dB
相位偏移 Phase shift	$\Delta\phi$	°	-4		0	@DC to 1kHz
最小输出电压 Minimum output voltage	$U_{SZ}$	V			0.2	@ $U_C=5V$
最大输出电压 Maximum output voltage			4.8			
输出电压噪声峰值 Output voltage noise peak-peak	$U_{no\ p-p}$	mV			15	



### GOA1-200B

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-200		200	
灵敏度 Sensitivity	S	mV/A		10		

### GOA1-300B

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-300		300	
灵敏度 Sensitivity	S	mV/A		6.667		

### GOA1-400B

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-400		400	
灵敏度 Sensitivity	S	mV/A		5		

### GOA1-500B

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-500		500	
灵敏度 Sensitivity	S	mV/A		4		

### GOA1-600B

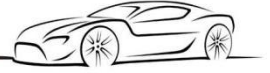
参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-600		600	
灵敏度 Sensitivity	S	mV/A		3.333		

### GOA1-700B

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-700		700	
灵敏度 Sensitivity	S	mV/A		2.857		

### GOA1-800B

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-800		800	
灵敏度 Sensitivity	S	mV/A		2.5		



## GOA1-900B

参数 Parameter	符号 Symbol	单位 Unit	规格 Specification			环境 Conditions
			最小值 Min	典型值 Typical	最大值 Max	
额定电流 Primary current, measuring range	$I_{PM}$	A	-900		900	
灵敏度 Sensitivity	S	mV/A		2.222		

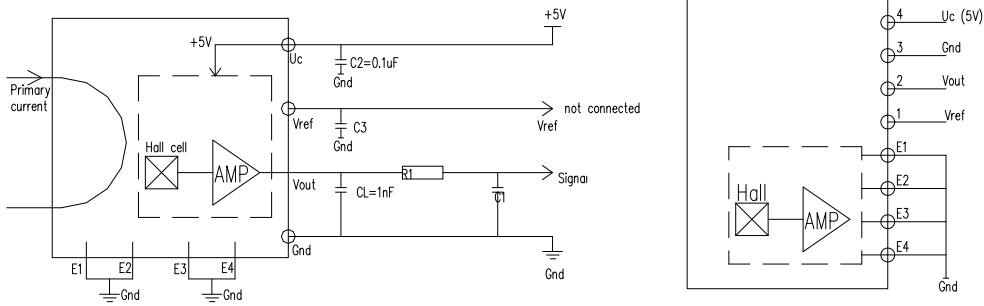
### 备注 Remarks

- √ 偏移量和灵敏度由此公式计算。The offset and sensitivity are relative to the following formula.  $I_p = (U_{out} - U_o) \times \frac{1}{G}$
- √ 使用小电流测试避免母排、铁芯和 ASIC 发热。Small signal only to avoid excessive heating of the busbar, the magnetic core and the ASIC.
- √ 母排温度不能超过 150°C。Busbar temperature must below 150°C.
- √ 电流朝箭头方向时  $U_{out} > U_o$ 。  $U_{out} > U_o$  when  $I_p$  flows in the positive direction.

### 机械特性 Mechanical characteristics

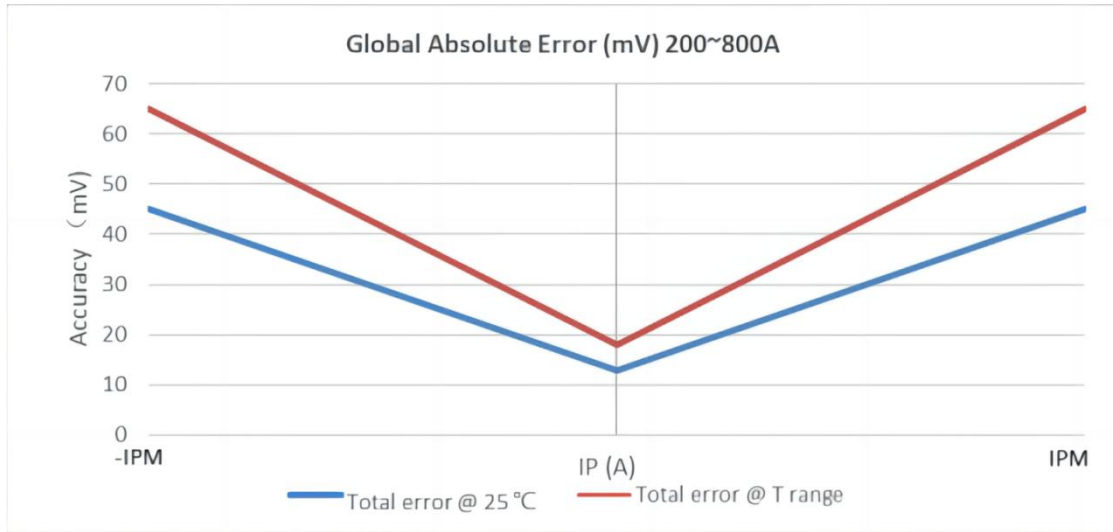
- √ 塑料外壳 Plastic case PA66 GF30
- √ 磁芯 Magnetic core 硅钢合金 FeSi alloy
- √ 质量 Mass 25g±5%
- √ 电气端子涂层 Electrical terminal coatings 镀锡 Tin plated

### 电路图 Electronic schematic

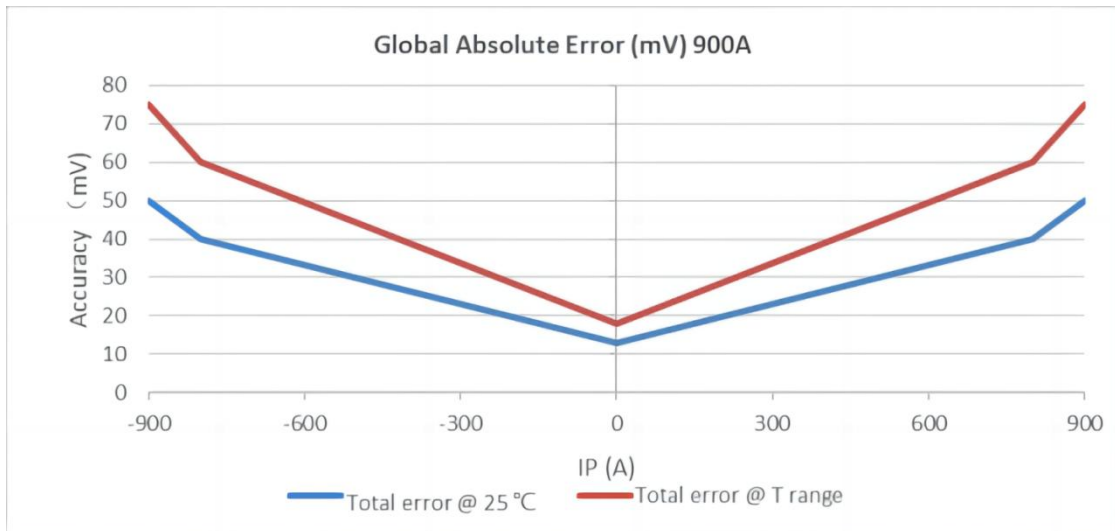




### 总误差 Total error



原边电流 Primary current $I_{PN}$	$I_p$ (A)	精度 Accuracy @25°C (mV)	精度 Accuracy @T°C range (mV)
$200A \leq I_{PM} \leq 800A$	$-I_{PM}$	±45	±65
	0	±13	±18
	$I_{PM}$	±45	±65



原边电流 Primary current $I_{PN}$	$I_p$ (A)	精度 Accuracy @25°C (mV)	精度 Accuracy @T°C range (mV)
$I_{PM}=900A$	-900	±50	±75
	-800	±40	±60
	0	±13	±18
	800	±40	±60
	900	±50	±75



## 环境试验规范 Environmental test specifications

试验项 Name	标准 Standard	条件 Conditions
<b>电气试验 Electrical tests</b>		
噪声测量 Noise measurement	GAUSS-ELEC Procedure	Sweep from DC to 20 MHz
di/dt 延时 Delay time di/dt	GAUSS-ELEC Procedure	100A / $\mu$ s, I pulse = $I_{p\ Max}$
绝缘耐压 Dielectric Withstand Voltage test	ISO 16750-2 4.11	2.5KV AC / 1 min / 50 Hz
绝缘电阻 Insulation resistance	ISO 16750-2 4.12	500 V DC, time = 60s $R_{INS} \geq 500 M\Omega$ minimum
带宽 Frequency bandwidth ( -3dB)	GAUSS-ELEC Procedure	1-50 KHz
<b>环境试验 Environmental tests</b>		
高温高湿试验 High T °C, High Humidity, Electrical connection	GB/T28046.4-2011 5.7.2	1000 hours +85°C/85% RH $U_C = 5 V$ DC, $I_p = 0 A$
温度冲击试验 Thermal Shock	GB/T28046.4-2011 5.3.2 ISO 16750-4 §5.3.2	1000 cycles , 30 min @ -40°C , 30 min @ +125°C $U_C$ not connected, $I_p = 0 A$
高温存储 High T °C Storage	GB/T28046.4-2011 5.1.2.1 ISO 16750-4 §5.1.2.1	Storage: 125°C for 1000 hours, $U_C$ not connected, $I_p = 0$ for both tests
低温存储 Low T °C Storage	GB/T28046.4-2011 5.1.1.1 ISO 16750-4 §5.1.1.1	Storage: -40°C for 1000 hours $U_C$ not connected, $I_p = 0$ for both tests
随机振动 Random Vibration	GB/T28046.3-2011 4.1.2.2.2.2	96.6 m/s <sup>2</sup> , 22 h/axe, 10 Hz - 2000 Hz
机械冲击 Shock	GB/T28046.3-2011 4.2.2.2	50 g/ 6 ms Half Sine @ 25 °C 10 shocks of each direction (Total: 60)
<b>电磁兼容性试验 EMC tests</b>		
大电流注入 BCI	ISO 11452-1 § -4 Level 2	FPSC   $\Delta V_{offset\ voltage} \leq 100mV$ , $U_C = 5 V$
静电放电抗扰度试验 ESD Test	ISO 10605:2008	150 pF /2k $\Omega$ Contact: $\pm 4kV$ , Air: $\pm 8kV$