

NACA.900L-S6/SP5VA 电流传感器 Current Transducer

The NACA.900L-S6/SP5VA family is for the electronic measurement of DC, AC or pulsed currents in high power and low voltage automotive applications with galvanic separation between the primary circuit (high power) and the secondary circuit (electronic circuit).


Absolute rating (not operating)

Parameter	Symbol	Unit	Specification			Conditions
			Min	Typical	Max	
Maximum supply voltage	U _C	V			6	
Max primary current peak	I _P	A	-900		900	Busbar temperature must be below 150°C
Ambient storage temperature	T _S	°C	-40		125	
Electrostatic discharge voltage	U _{ESD}	kV			2	ISO 10605
Maximum admissible vibration(random)		m·s ⁻²	96.6			
RMS voltage for AC insulation test, 50 Hz, 1 min	U _D	kV			2.5	ISO 16750-2
Isolation resistance	R _{IS}	MΩ	500			
Creepage distance	d _{CP}	mm	3.3			
Clearance	d _{CI}	mm	2.7			
Comparative tracking index	CTI	V	550			
Maximum reverse Supply Voltage	V _{RCC}	V			-0.1	
Maximum reverse output Voltage	V _{ROUT}	V			-0.1	

Operating characteristics in nominal range (I_{PN})

Parameter	Symbol	Unit	Specification			Conditions
			Min	Typical	Max	
Primary current, measuring range	I _{PN}	A	-900		900	
Primary nominal DC or rms current	I _{PM}	A	-900		900	
Supply voltage ¹⁾	U _C	V	4.75	5	5.25	
Ambient operating temperature	T _A	°C	-40		125	
output voltage (Analog)	V _{out}	V	$V_{out} = (U_c/5) \cdot (V_0 + G \cdot I_p)$			@U _C
Sensitivity	G	mV/A		2.22		@U _C =5V
Offset voltage	V _O	V		2.5		@U _C =5V
Current consumption	I _C	mA		13	15	@ U _C =5V, No load on V _{out}
Load resistance	R _L	KΩ	10			
Capacitive loading	C _L	nF		1	10	
Output internal resistance	R _{OUT}	Ω		<1		DC
Performance Data ¹⁾						
Ratiometricity error	ε _R	%		0.5		
Sensitivity error	ε _G	%		±0.6		@T _A =25°C
Electrical offset voltage	V _{OE}	mV		±2.5		@T _A =25°C, @U _C =5V
Magnetic offset voltage	V _{OM}	mV		±3		@T _A =25°C, @U _C =5V
Global accuracy @ 0A	X _G	mV	-13		13	@T _A =25°C, @U _C =5V
Average temperature coefficient of V _{OE}	TCV _{OE}	mV/°C	-0.1		0.1	@-40°C < T < 125°C
Average temperature coefficient of G	TCVG	%/°C	-0.05		0.05	@-40°C < T < 125°C
Linearity error	ε _L	%	-1		1	Of full range
Step response time to 90 % I _{PN}	t _r	μs		3	6	di/dt=100A/μs
Frequency bandwidth ²⁾	BW	kHz	40			@-3dB
Phase shift	ΔΦ	°	-4		0	@DC to 1kHz
Minimum output voltage	V _{SZ}	V			0.3	@U _C =5V
Maximum output voltage		V	4.7			
Output voltage noise peak-peak	V _{no p-p}	mV			12	DC to 1MHz

Global Absolute Error(mV)

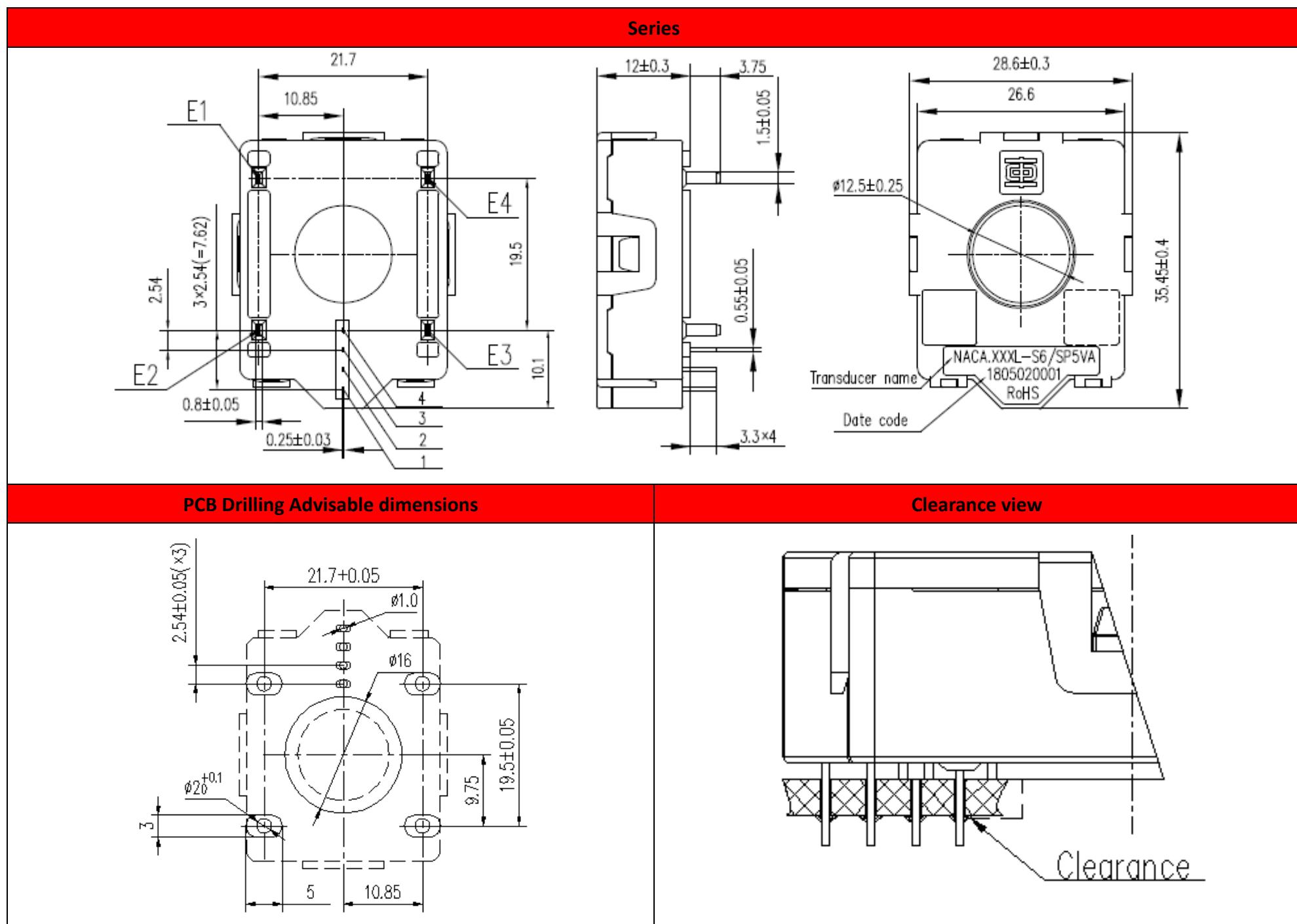
IP(A)	Accuracy @25°C(mV)	Accuracy @T°Range (mV)
-900	±50	±75
-800	±40	±60
0	±13	±18
800	±40	±60
900	±50	±75

Notes:

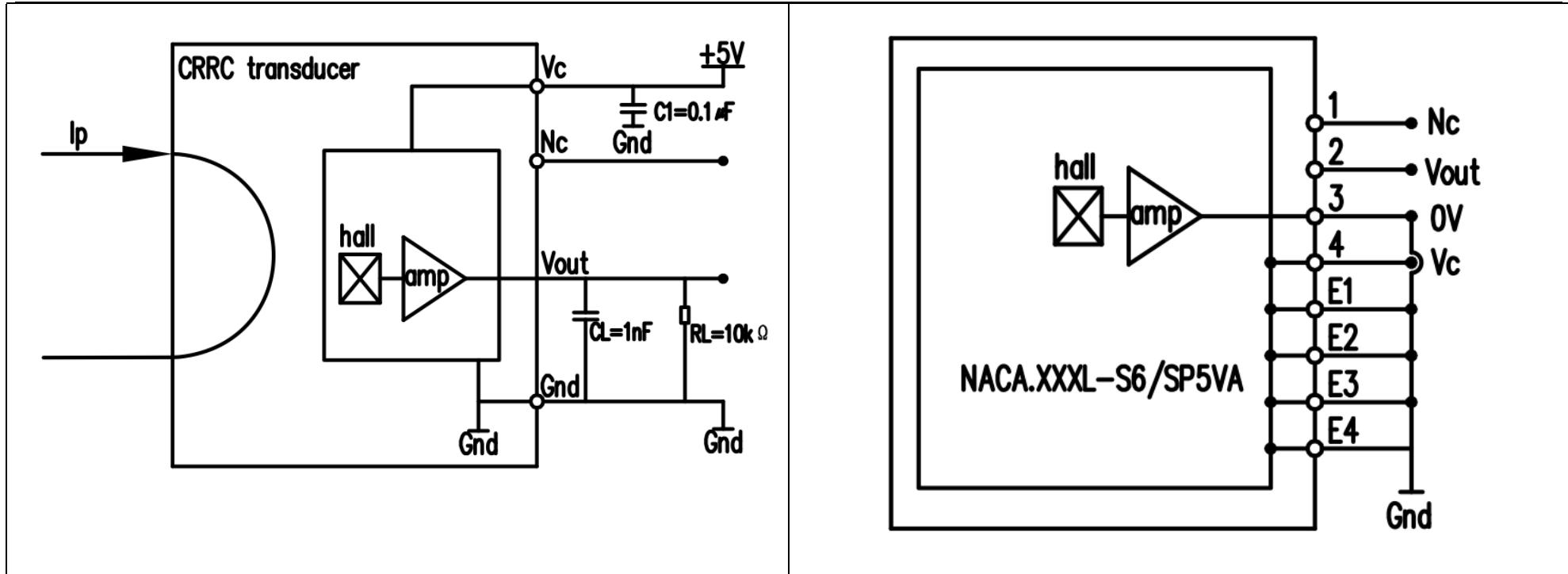
1) The output voltage V_{OUT} is fully ratiometric. The offset and sensitivity are dependent on the supply voltage U_C relative to the following formula.

$$I_P = \left(\frac{5}{U_C} \times V_{OUT} - V_0 \right) \times \frac{1}{G}$$

2) Small signal only to avoid excessive heating of the busbar, the magnetic core and the ASIC.

Dimensions NACA.900L-S6/SP5VA series(in mm)


Mechanical characteristics	Remarks
<ul style="list-style-type: none"> Plastic case PA 66 GF 25 Magnetic core FeSi alloy Mass 30g Electrical terminal coating Tin plated 	<ul style="list-style-type: none"> $I_P = \left(\frac{5}{U_C} \times V_{OUT} - V_0 \right) \times \frac{1}{G}$ $V_{OUT} > V_0$ when I_P flows in the positive direction (see arrow on drawing)
Electronic schematic	


PERFORMANCES PARAMETERS DEFINITIONS
Definition of typical, minimum and maximum values

Combined with SPC principle, the initial key characteristic of CRRC product gives the typical value, minimum value and maximum value of characteristic parameter measurement. To enable customers to have a more comprehensive understanding of the product's restrictions and permitted security conditions, as follow:

- 1.Typical value: the typical value (Typical) generally takes the mean of the measurement sample of the product characteristic parameter in the design and verification stage as a definite target value; If there is no clear average value, the mean range of the measurement sample in the product design validation phase is taken, and the mean range is defined as 68.27% when combined with the normal distribution. The probability interval corresponding to the interval level between $- \sigma$ and $+ \sigma$.
- 2.Minimum and maximum values: The range of feature elements measured is part of the statistical distribution (Unless otherwise specified, such as a full 100% inspection). Therefore, in combination with the principle of statistical probability distribution and the upper / lower limits of the measured value ,CRRC defines the probability interval between the minimum(Min) and maximum(Max) values to be 99.73%, corresponding to the interval level between -3σ and $+3 \sigma$.

Environment test specifications

Name	Standard
THERMAL FATIGUE	
Ageing 85°C/85% HR	IEC 60068-2-78
Thermal cycle test -40°C/125°C	IEC 60068-2-14, GMW3172
Thermal shocks-40°C /125°C	IEC 60068-2-14, GMW3172
High temperature storage at 125°C	IEC 60068-2-2
Low temperature storage at -50°C	IEC 60068-2-1
MECHANICAL FATIGUE	
Shocks test (50 m.s ² x 10 x 3 axis)	IEC 16750-3
Vibration test (random 10-2000 Hz/9.7g)	IEC 16750-3
ELECTRICAL TESTS	
Phase delay	--
Output noise	--
di/dt (100 A/us)	--
Withstand voltage (2500 Vrms-50 Hz/1 min)	ISO 16750-2
Insulation resistance (500 Vdc /1 min)	ISO 16750-2
EMC TESTS	
Radiated Immunity: Bulk Current Injection (BCI)	ISO 11452-4
Radiated Immunity: Anechoic chamber	ISO 11452-2
Resistance to Electrostatic Discharge Voltage	ISO 10605

Environmental test specifications

Meet the standard of RoHS2.0 and ELV.