

NACA.XXXT1-P6/VN 电流传感器 Current Transducer

$I_{PN} = 80, 100, 120, 150A, 180A$

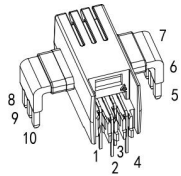
NACA.XXXT1-P6/VN Current Transducer is for the electronic measurement of DC, AC or pulsed currents, with galvanic separation between the primary circuit and the secondary circuit.

Features

- Open loop multi-range current transducer
- Voltage output
- Single supply voltage.

Standards

- IEC 62109-1: 2010
- IEC 61010-1: 2010
- EN 50178: 2017



Typical application

- Solar inverter
- MPPT
- Uninterruptible Power Supplies (UPS)
- Switched model power supplies (SMPS)
- Frequency converter
- Combiner box
- Battery supplied application
- Static converter for DC motor drives

Absolute rating

Parameter	Symbol	Unit	Specification			Conditions
			Min	Typical	Max	
Maximum supply voltage ¹⁾	$U_{C\ max}$	V			6	
Maximum primary current	$I_{P\ max}$	A			$5 \times I_{PN}$	
Ambient storage temperature	T_S	°C	-40		105	
Ambient operating temperature	T_A	°C	-40		105	
Electrostatic discharge voltage	V_{ESD}	kV			2	HBM
Primary busbar temperature	$T_{B\ max}$	°C			110	

Notes:

- 1) Power decoupling requires a capacitor of at least 100-nF.
- 2) Stresses above these ratings may cause permanent damage.
- 3) Exposure to absolute maximum ratings for extended periods may degrade reliability.

Insulation coordination

Parameter	Symbol	Unit	Specification			Conditions
			Min	Typical	Max	
Dielectric withstand voltage	V_D	kV			4.3	RMS voltage for AC test 50Hz, 1min
Impulse withstand voltage	V_{Ni}	kV			8	1.2/50 μ s
Impulse withstand current	I_{Ni}	kA			20	8/20 μ s
Insulation resistance	R_{INS}	M Ω	500			
Clearance distance	d_{CI}	mm	8			Shortest distance through air
Creepage distance	d_{CP}	mm	8			Shortest path along device body
Comparative tracking index	CTI	V		600		
Case material	-	-		V0		According to UL 94

Electrical parameters

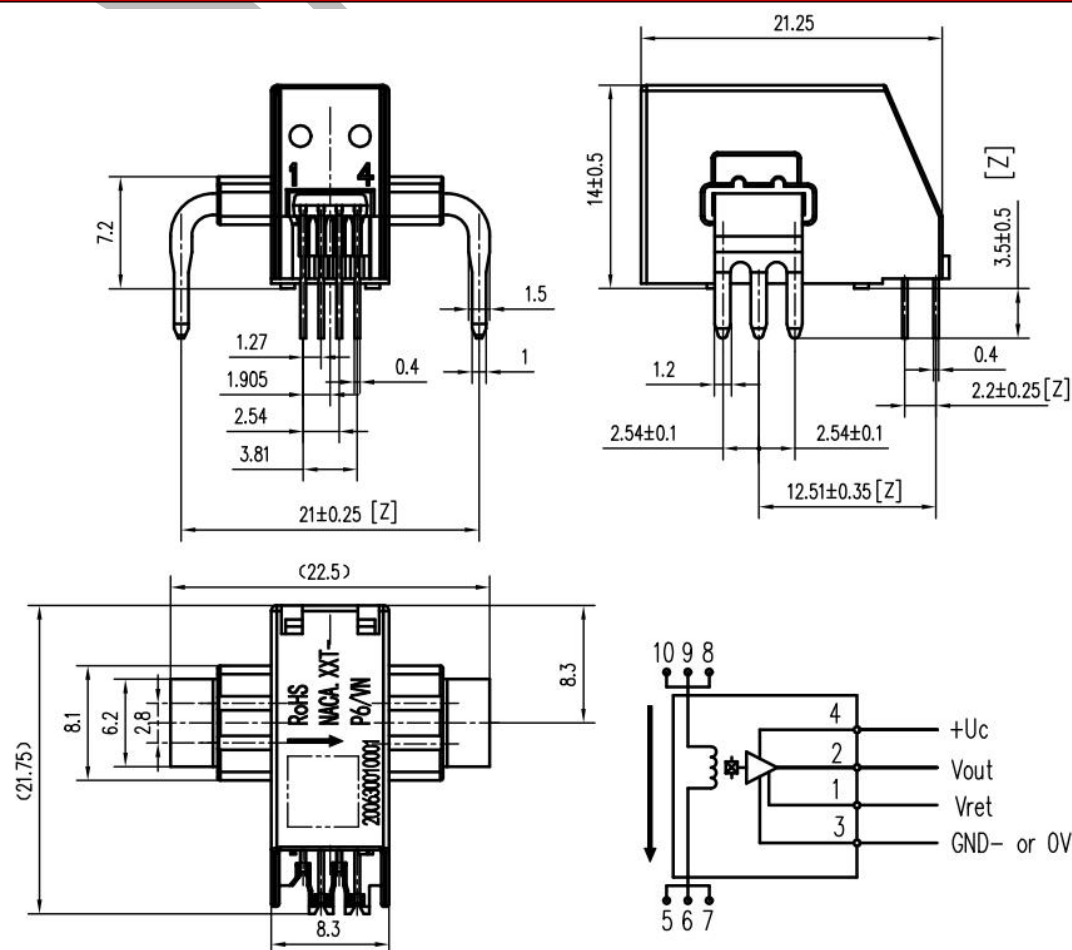
At $T_A = 25^\circ\text{C}$, $U_C = +5\text{ V}$, $R_L = 10\text{ k}\Omega$, internal reference unless otherwise noted.

Parameter		Symbol	Unit	Specification			Conditions
				Min	Typical	Max	
Primary current, nominal range	NACA.80T1-P6/VN	I_{PN}	A		80		RMS current
	NACA.100T1-P6/VN				100		
	NACA.120T1-P6/VN				120		
	NACA.150T1-P6/VN				150		
	NACA.180T1-P6/VN				180		
Primary current, measuring range	NACA.80T1-P6/VN	I_{PM}	A	-200		200	
	NACA.100T1-P6/VN			-250		250	
	NACA.120T1-P6/VN			-300		300	
	NACA.150T1-P6/VN			-375		375	
	NACA.180T1-P6/VN			-450		450	

Parameter		Symbol	Unit	Specification			Conditions
				Min	Typical	Max	
Supply voltage		U_C	V	4.75	5	5.25	
Current consumption		I_C	mA	16	19	23	
Differential output voltage @ I_{PN}		V_{SN}	mV		800		$V_{OUT}-V_{REF}$
Nominal sensitivity	NACA.80T1-P6/VN	G_{th}	mV/A		10		
	NACA.100T1-P6/VN				8		
	NACA.120T1-P6/VN				6.6667		
	NACA.150T1-P6/VN				5.3333		
	NACA.180T1-P6/VN				4.4444		
Output voltage range		V_{OUT}	V	0.5		4.5	$V_{ref}+I_P*S_N$
Reference voltage @ $I_P = 0A$		V_{REF}	V	2.48	2.5	2.52	Internal reference
Electrical offset voltage @ $I_P = 0A$		V_{OE}	mV	-5		5	$V_{OUT}-V_{REF}$
Sensitivity error		ϵ_S	% of I_{PN}	-0.8		0.8	
Linearity error		ϵ_L	% of I_{PN}	-0.5		0.5	
Step response time to 90 % I_{PN}		t_r	μs			2	$di/dt=50A/\mu s$
Frequency bandwidth ¹⁾	NACA.80T1-P6/VN	BW	kHz		170		-3 dB
	NACA.100T1-P6/VN				160		
	NACA.120T1-P6/VN				140		
	NACA.150T1-P6/VN				130		
	NACA.180T1-P6/VN				110		
Accuracy @25°C		$X_{25^\circ C}$	% of I_{PN}	-1		1	
Accuracy @85°C		$X_{85^\circ C}$	% of I_{PN}	-2.5		2.5	
Accuracy @105°C		$X_{105^\circ C}$	% of I_{PN}	-3.4		3.4	
Accuracy @-40°C		$X_{-40^\circ C}$	% of I_{PN}	-3.9		3.9	
Temperature coefficient of V_{OE}		TCV_{OE}	mV/°C	-0.075		0.075	@-40°C~+105°C
Temperature coefficient of Gain		TCG	PPM/°C	-250		250	@-40°C~+105°C
				-200		200	@-20°C~+105°C
Temperature coefficient of V_{REF}		TCV_{REF}	PPM/°C	-170		170	@ -40°C~+105°C
Load resistance		R_L	k Ω	10			
V_{out} capacitive Load		C_{Lout}	nF	0		6	
V_{ref} capacitive Load		C_{Lref}	nF	1		2.2	

Notes:

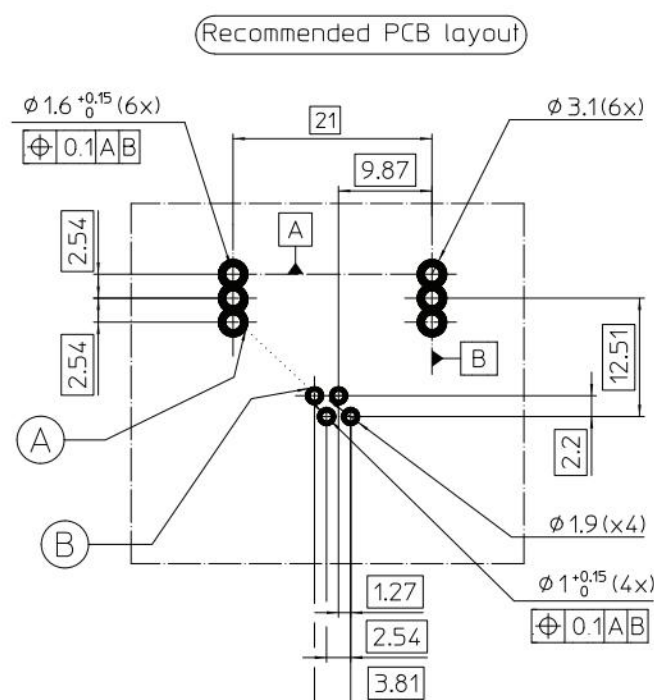
- 1) The frequency bandwidth test is for small signal.
- 2) Please contact CRRC if current transducer is applied in some extreme cases, for example: high frequency ripple, high temperature, larger operating frequency.....

Dimensions (in mm)


Mechanical characteristics

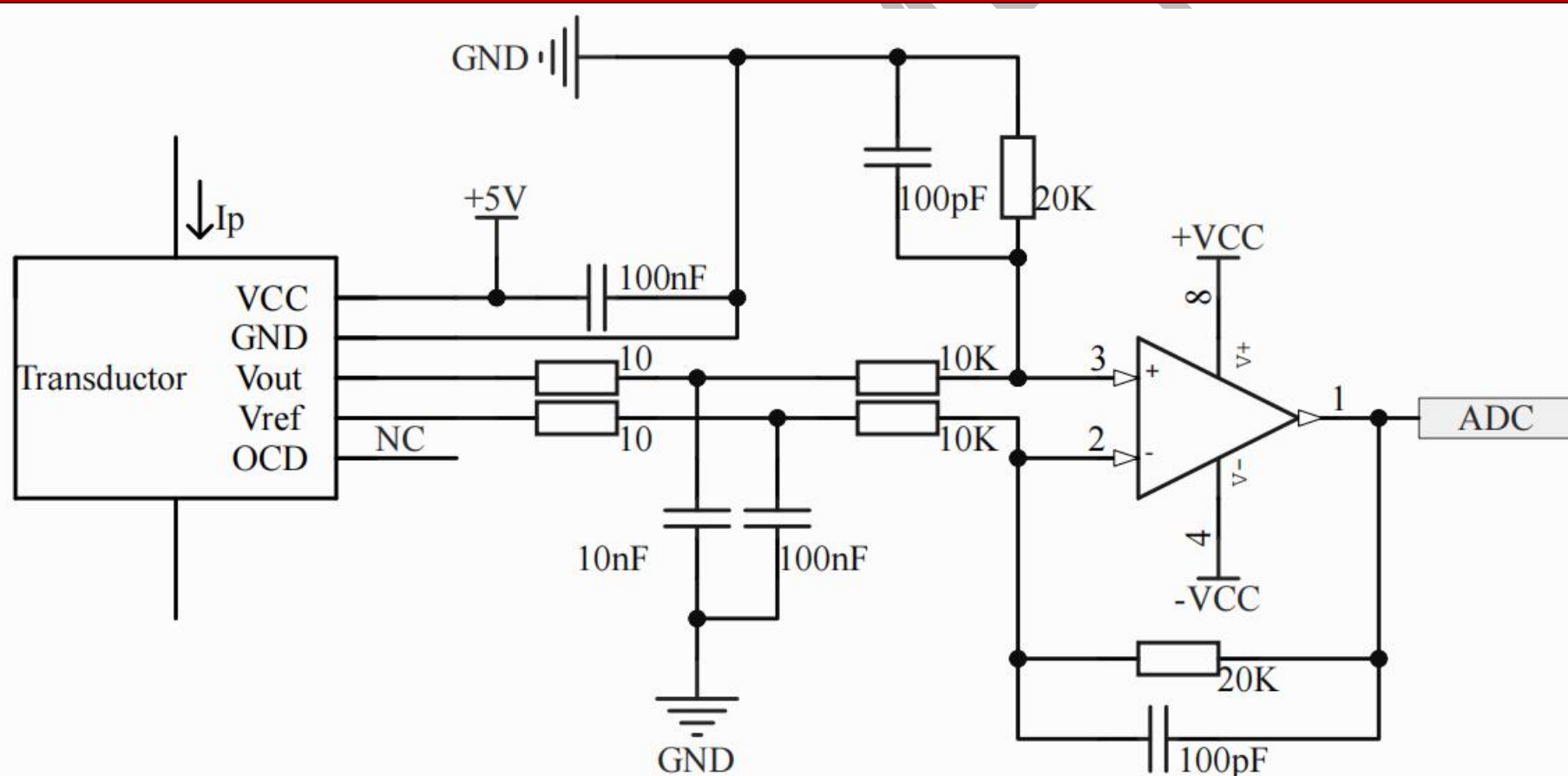
- Mass: 5g
- General tolerance: $\pm 0.2\text{mm}$

PCB footprint according to the product (in mm)



Note: Wave soldering profile: maximum 260°C for 10 seconds

Typical application circuits



Remarks

- It is advised to use a primary conductor (busbar) that fills transducer through-hole.
- Be aware of the influence of the external field if nearby transducers are too close (relay, capacitor, choke...).

Comments:

- Items with "*" in this datasheet are recommended value for reference only. The final value must be determined by customer.
- CRRC reserves the right to carry out modifications on its transducers, in order to improve them.