

NACA.80T-P6/VN 电流传感器 Current Transducer

NACA.80T-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 | $U_{C\ max}$ | V | | | 6.5 | |
| 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 | | | 4 | 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

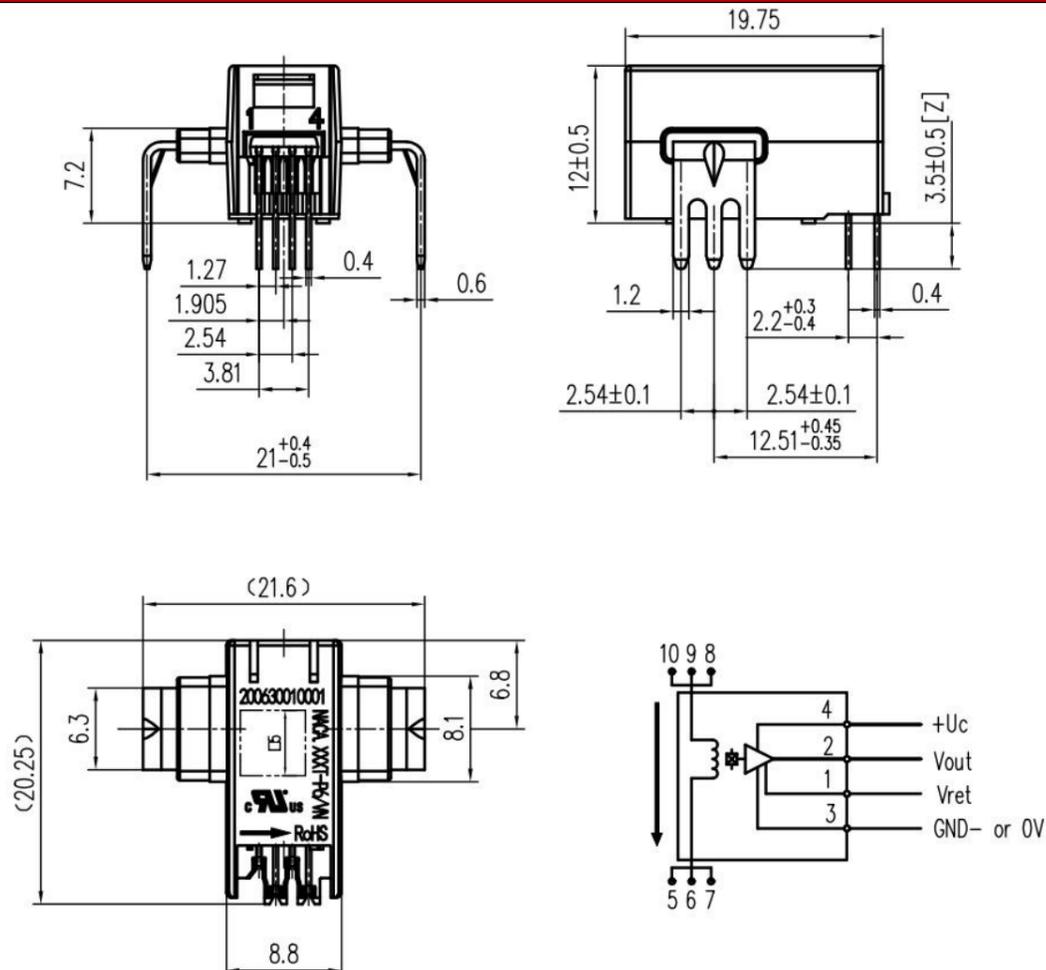
At $T_A = 25^\circ\text{C}$, $U_C = +5\text{ V}$, $R_L = 10\text{ k}\Omega$, internal reference unless otherwise noted.

| Parameter | Symbol | Unit | Specification | | | Conditions |
|--|-----------|------|---------------|---------|------|--------------------------|
| | | | Min | Typical | Max | |
| Primary current, nominal range | I_{PN} | A | | 80 | | RMS current |
| Primary current, measuring range | I_{PM} | A | -200 | | 200 | |
| Supply voltage | U_C | V | 4.75 | 5 | 5.25 | |
| Current consumption | I_C | mA | | 19 | 23 | |
| Differential output voltage @ I_{PN} | V_{SN} | mV | | 800 | | $V_{OUT} - V_{REF}$ |
| Nominal sensitivity | G_{th} | mV/A | | 10 | | |
| Output voltage range | V_{OUT} | V | 0.5 | | 4.5 | $V_{ref} + I_P * G_{th}$ |
| Reference voltage @ $I_P = 0\text{ A}$ | V_{REF} | V | 2.48 | 2.5 | 2.52 | Internal reference |
| Electrical offset voltage @ $I_P = 0\text{ A}$ | V_{OE} | mV | -5 | | 5 | $V_{OUT} - V_{REF}$ |

| Parameter | Symbol | Unit | Specification | | | Conditions |
|--------------------------------------|-------------------|---------------|---------------|---------|------------|--------------------------------|
| | | | Min | Typical | Max | |
| 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⁾ | BW | kHz | | 170 | | -3 dB |
| 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 -200 | | 250 200 | @-40°C~+105°C @-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 | | | 6 | |
| V_{ref} capacitive Load | C_{Lref} | nF | | | 2.2 | |

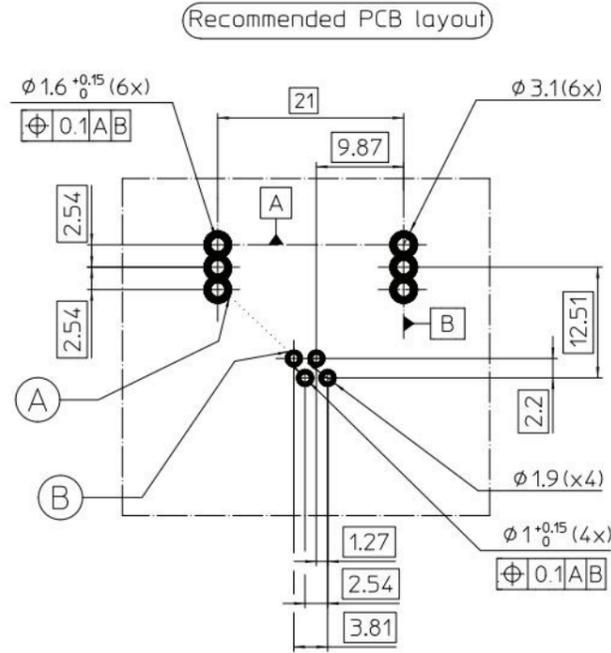
Notes:

- 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

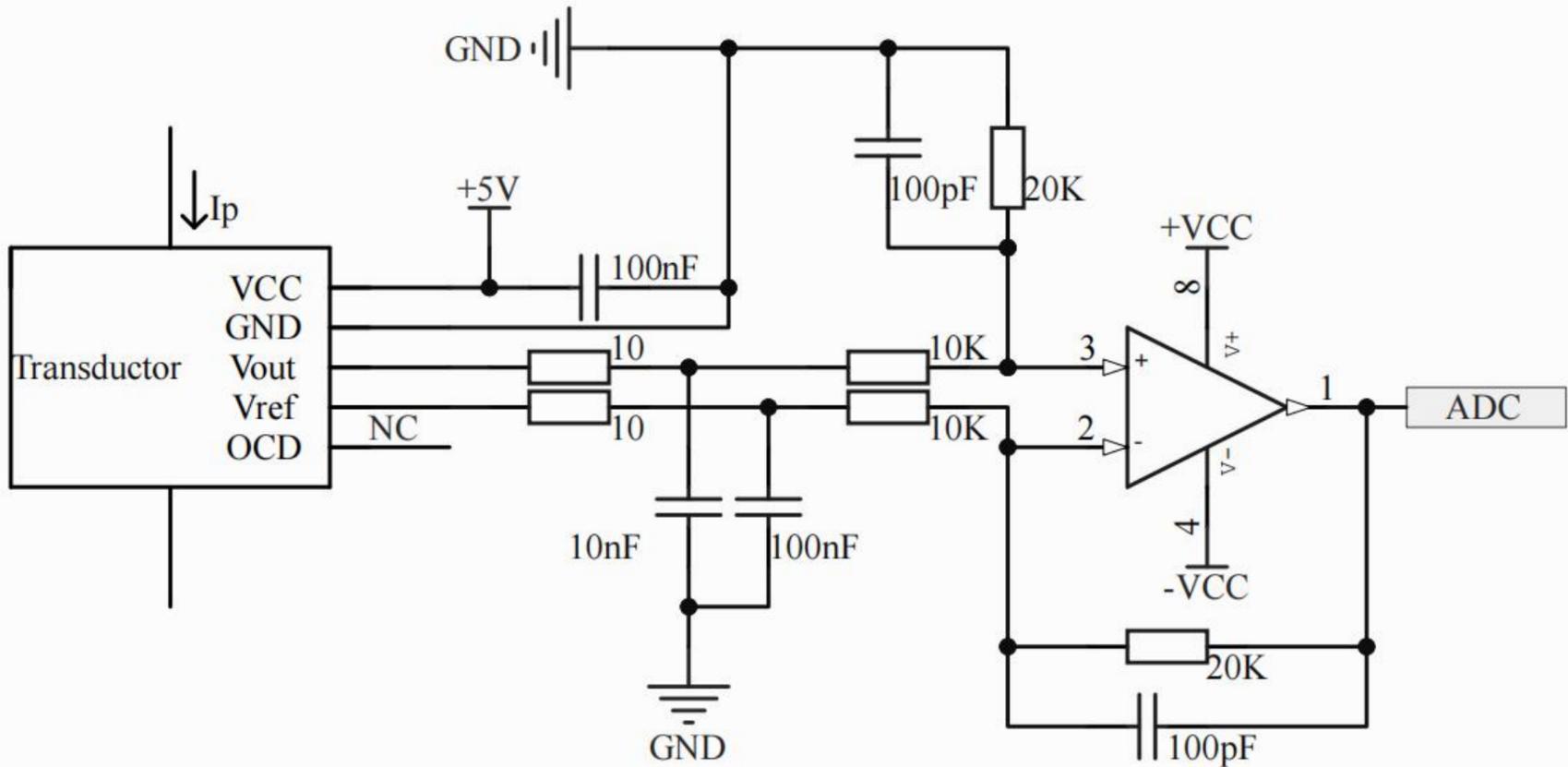
- Mass: 5g
- General tolerance: ± 0.2 mm

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.