# AN3V  PB50 SERIES

## Current Sensor

## Model Number:

AN3V 10 PB50
AN3V 16 PB50
AN3V 20 PB50
AN3V 32 PB50
AN3V 40 PB50
AN3V 50 PB50
AN3V 80 PB50
AN3V 100 PB50
AN3V 120 PB50
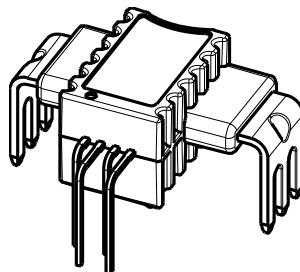
For the electronic measurement of current: DC, AC, pulsed..., with galvanic separation between the primary and the secondary circuit.

## Features

- ✧ Open loop current sensor using the Hall effect.
- ✧ Galvanic separation between primary and secondary.
- ✧ Insulating plastic case recognized according to UL 94-V0.
- ✧ No insertion losses.
- ✧ Supply voltage：+5V
- ✧ Small size.
- ✧ h=8.7mm
- ✧ Standards:
  - ■ IEC 60664-1:2020
  - ■ IEC 61800-5-1:2022
  - ■ IEC 62109-1:2010

## Applications

- ✧ AC variable speed.
- ✧ Servo motor drives.
- ✧ Static converters for DC motor drives.
- ✧ Uninterruptible Power Supply  (UPS).
- ✧ Module power supply.
- ✧ Switch Mode Power Supplies  (SMPS).
- ✧ Combining manifolds.
- ✧ MPPT

## Safety

This sensor must be used according to IEC 61800-5-1 .

This sensor must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacture's operating instructions.

*Caution, risk of electrical shock!*

When operating the sensor,certain parts of the module can carry hazardous voltage (e.g.,Primary busbar, power supply). Ignore this warning can lead to injury and/or cause serious damage.

This sensor is a built-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.

Main supply must be able to be disconnected.

Doc Ref.:  1800 000 00254

# AN3V PB50 SERIES

## Absolute maximum ratings (not operating)

| Parameter | Symbol | Unit | Value |
|---|---|---|---|
| Supply voltage | $V_C$ | V | 6.5 |
| Primary conductor temperature | $T_B$ | ℃ | 120 |
| ESD rating, Human Body Model (HBM) | $V_{ESD}$ | V | 8000 |

※ Stresses above these ratings may cause permanent damage.

※ Exposure to absolute maximum ratings for extended periods may degrade reliability.

## Environmental and mechanical characteristics

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Ambient operating temperature | $T_A$ | ℃ | -40 | | 105 | |
| Ambient storage temperature | $T_S$ | ℃ | -40 | | 105 | |
| Mass | $m$ | g | | 3.35 | | |

## Insulation coordination

| Parameter | Symbol | Unit | Value | Comment |
|---|---|---|---|---|
| Rms voltage for AC insulation test, 50 Hz, 1 min | $V_d$ | kV | 4.3 | According to IEC 60664-1 |
| Impulse withstand voltage 1.2/50μs | $V_W$ | kV | 8 | According to IEC 60664-1 |
| Clearance (Pri.-sec.) | $d_{Cl}$ | mm | >8 | |
| Creepage distance  (Pri.-sec.) | $d_{Cp}$ | mm | >8 | |
| Plastic case | - | - | UL94-V0 | |
| Application example | - | - | 600V | Reinforced insulation, according to IEC 61800-5-1, IEC 62109-1CATⅢ PD2 |
| Application example | - | - | 1000V | Basic insulation, according to IEC 61800-5-1, IEC 62109-1CATⅢ PD2 |

## Electrical data

### AN3V 10 PB50

※ With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | −10 | | 10 | |
| Primary current, measuring range | $I_{PM}$ | A | −25 | | 25 | @ $V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$ =25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$ =105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT} - V_{REF}$ | V | −2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | −5 | | 5 | $V_{OUT} - V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @ $T_A$=−40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 80 | | |
| Temperature of G | $TCG$ | % | −1.6 | | 1.6 | @ $T_A$=−40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{OM}$ | mV | −5 | | 5 | @$V_C$=5V, after $±I_{PN}$ |
| Accuracy @ $I_{PN}$ | $X$ | % of $I_{PN}$ | −1 | | 1 | |
| Accuracy @ $I_{PN}$ | $X$ | % of $I_{PN}$ | −2.5 | | 2.5 | @ $T_A$=−40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(−3dB) | $BW$ | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | $Vno$ | mV$_{RMS}$ | | 9 | | @$C_L$=1.0nF |

## AN3V 16 PB50

※ With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | −16 | | 16 | |
| Primary current, measuring range | $I_{PM}$ | A | −40 | | 40 | @ $V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$=25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$=105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT} - V_{REF}$ | V | −2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | −5 | | 5 | $V_{OUT} - V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @ $T_A$=−40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 50 | | |
| Temperature of G | $TCG$ | % | −1.6 | | 1.6 | @ $T_A$=−40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{OM}$ | mV | −5 | | 5 | @$V_C$=5V, after $I_{PN}$ |
| Accuracy @$I_{PN}$ | $X$ | % of $I_{PN}$ | −1 | | 1 | |
| Accuracy @$I_{PN}$ | $X$ | % of $I_{PN}$ | −2.5 | | 2.5 | @ $T_A$=−40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(−3dB) | $BW$ | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | $Vno$ | mV$_{RMS}$ | | 6 | | @$C_L$=1.0nF |

## AN3V 20 PB50

※ With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | −20 | | 20 | |
| Primary current, measuring range | $I_{PM}$ | A | −50 | | 50 | @ $V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance @$T_A$=25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance @$T_A$=105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT} - V_{REF}$ | V | −2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | −5 | | 5 | $V_{OUT} - V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @ $T_A$=−40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 40 | | |
| Temperature of G | $TCG$ | % | −1.6 | | 1.6 | @ $T_A$=−40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{OM}$ | mV | −5 | | 5 | @ $V_C$=5V, after ±$I_{PN}$ |
| Accuracy @$I_{PN}$ | $X$ | % of $I_{PN}$ | −1 | | 1 | |
| Accuracy @$I_{PN}$ | $X$ | % of $I_{PN}$ | −2.5 | | 2.5 | @ $T_A$=−40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(−3dB) | $BW$ | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | $Vno$ | mV$_{RMS}$ | | 5 | | @$C_L$=1.0nF |

## AN3V 32 PB50

※ With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | −32 | | 32 | |
| Primary current, measuring range | $I_{PM}$ | A | −80 | | 80 | @ $V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$=25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$=105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT} - V_{REF}$ | V | −2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | −5 | | 5 | $V_{OUT} - V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @ $T_A$=−40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 25 | | |
| Temperature of G | $TCG$ | % | −1.6 | | 1.6 | @ $T_A$=−40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{OM}$ | mV | −5 | | 5 | @ $V_C$=5V, after ± $I_{PN}$ |
| Accuracy @ $I_{PN}$ | $X$ | % of $I_{PN}$ | −1 | | 1 | |
| Accuracy @ $I_{PN}$ | $X$ | % of $I_{PN}$ | −2.5 | | 2.5 | @ $T_A$=−40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(−3dB) | $BW$ | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | $Vno$ | mV$_{RMS}$ | | 2 | | @$C_L$=1.0nF |

### AN3V 40 PB50

※ With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | −40 | | 40 | |
| Primary current, measuring range | $I_{PM}$ | A | −100 | | 100 | @$V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$ =25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$ =105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT}-V_{REF}$ | V | −2 | | 2 | |
| Electrical offset voltage | $V_{0E}$ | mV | −5 | | 5 | $V_{OUT}-V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{0E}$ | mV | 0.4 | | 6 | @$T_A$=−40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 20 | | |
| Temperature of G | $TCG$ | % | −1.6 | | 1.6 | @$T_A$=−40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | −0.5 | | 0.5 | Exclusive of $V_{0E}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | −0.5 | | 0.5 | Exclusive of $V_{0E}$ |
| Hysteresis offset voltage | $V_{0M}$ | mV | −5 | | 5 | @$V_C$=5V, after ±$I_{PN}$ |
| Accuracy @$I_{PN}$ | X | % of $I_{PN}$ | −1 | | 1 | |
| Accuracy @$I_{PN}$ | X | % of $I_{PN}$ | −2.5 | | 2.5 | @$T_A$=−40℃~105℃ |
| Response time@ 90%of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(−3dB) | BW | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | Vno | mV$_{RMS}$ | | 2.7 | | @$C_L$=1.0nF |

## AN3V 50 PB50

※  With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | –50 | | 50 | |
| Primary current, measuring range | $I_{PM}$ | A | –125 | | 125 | @ $V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$ =25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$ =105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT}$ – $V_{REF}$ | V | –2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | –5 | | 5 | $V_{OUT}$ – $V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @ $T_A$=–40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 16 | | |
| Temperature of G | $TCG$ | % | –1.6 | | 1.6 | @ $T_A$=–40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | –0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | –0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{0M}$ | mV | –5 | | 5 | @ $V_C$=5V, after ± $I_{PN}$ |
| Accuracy @$I_{PN}$ | X | % of $I_{PN}$ | –1 | | 1 | |
| Accuracy @$I_{PN}$ | X | % of $I_{PN}$ | –2.5 | | 2.5 | @ $T_A$=–40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(-3dB) | BW | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | Vno | mV$_{RMS}$ | | 1.7 | | @$C_L$=1.0nF |

# AN3V  PB50 SERIES

## AN3V 80 PB50

※ With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | −80 | | 80 | |
| Primary current, measuring range | $I_{PM}$ | A | −200 | | 200 | @ $V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$ =25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$ =105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT} - V_{REF}$ | V | −2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | −5 | | 5 | $V_{OUT} - V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @ $T_A$=−40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 10 | | |
| Temperature of G | $TCG$ | % | −1.6 | | 1.6 | @ $T_A$=−40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | −0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{OM}$ | mV | −5 | | 5 | @ $V_C$=5V, after ±$I_{PN}$ |
| Accuracy  @ $I_{PN}$ | $X$ | % of $I_{PN}$ | −1 | | 1 | |
| Accuracy  @ $I_{PN}$ | $X$ | % of $I_{PN}$ | −2.5 | | 2.5 | @ $T_A$=−40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(-3dB) | $BW$ | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | $Vno$ | mV$_{RMS}$ | | 1.4 | | @$C_L$=1.0nF |

## AN3V 100 PB50

※ With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | –100 | | 100 | |
| Primary current, measuring range | $I_{PM}$ | A | –250 | | 250 | @ $V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$ =25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$ =105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load capacitor $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT} - V_{REF}$ | V | –2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | –5 | | 5 | $V_{OUT} - V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @ $T_A$=–40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 8 | | |
| Temperature of G | $TCG$ | % | –1.6 | | 1.6 | @ $T_A$=–40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | –0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | –0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{OM}$ | mV | –5 | | 5 | @ $V_C$=5V, after ±$I_{PN}$ |
| Accuracy @ $I_{PN}$ | $X$ | % of $I_{PN}$ | –1 | | 1 | |
| Accuracy @ $I_{PN}$ | $X$ | % of $I_{PN}$ | –2.5 | | 2.5 | @ $T_A$=–40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(-3dB) | $BW$ | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | $Vno$ | mV$_{RMS}$ | | 1.1 | | @$C_L$=1.0nF |
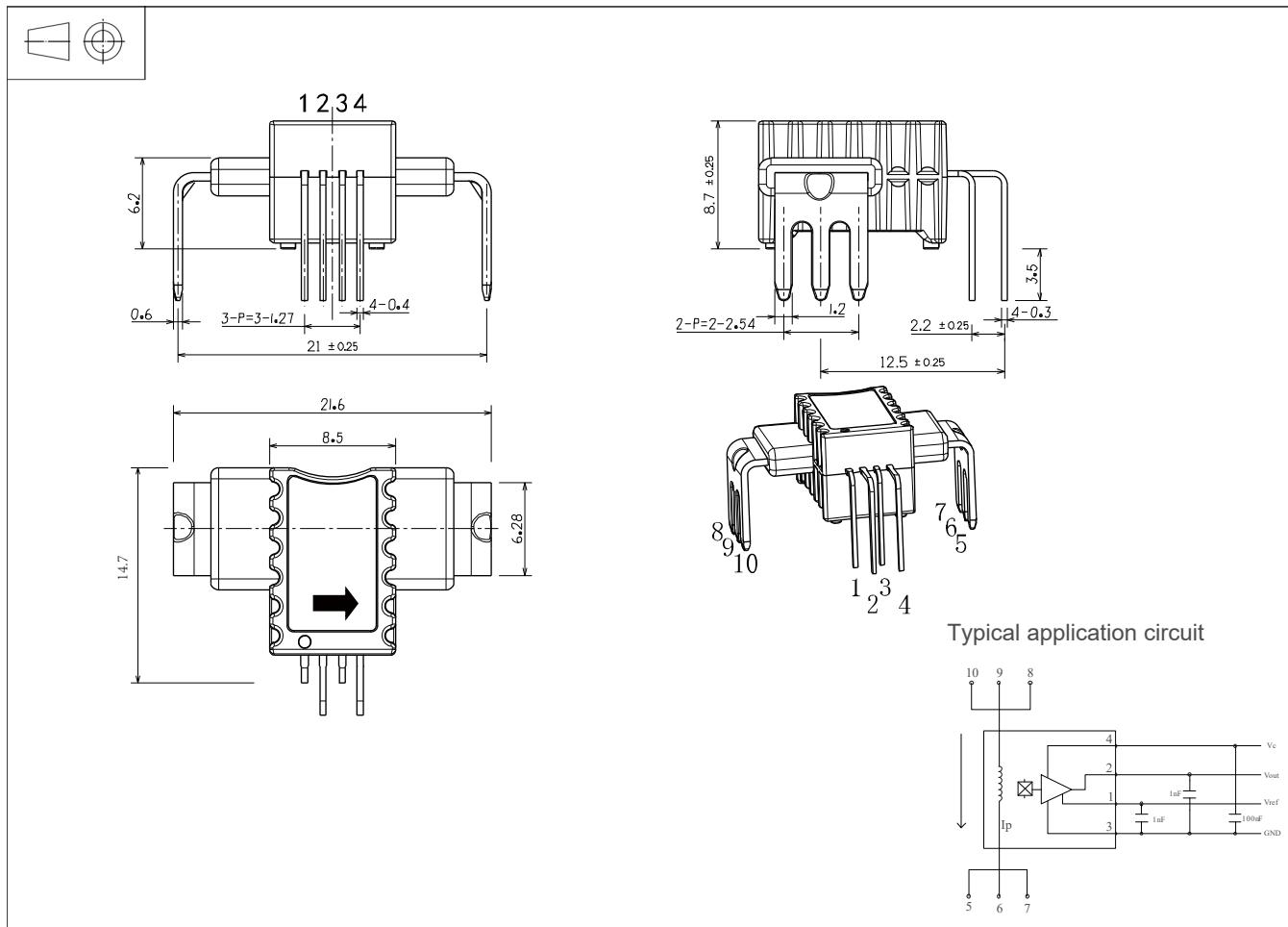
### AN3V 120 PB50

※  With $T_A$ = 25℃, $V_C$ = +5V, $R_L$ = 10kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | –120 | | 120 | |
| Primary current, measuring range | $I_{PM}$ | A | –300 | | 300 | @$V_C$>4.7V |
| Supply voltage | $V_C$ | V | 4.5 | 5.0 | 5.5 | |
| Current consumption | $I_C$ | mA | | 6.5 | 11 | |
| Primary coil resistance@$T_A$=25℃ | $R_P$ | mΩ | | 0.21 | | |
| Primary coil resistance@$T_A$=105℃ | $R_P$ | mΩ | | 0.29 | | |
| Load resistance $V_{OUT}$ | $R_L$ | kΩ | 5.1 | | | |
| Load resistance $V_{REF}$ | $R_{REF}$ | kΩ | 5.1 | | | |
| Load capacitor $V_{OUT}$ | $C_L$ | nF | | 1.0 | 10 | |
| Load resistance $V_{REF}$ | $C_{REF}$ | nF | | | 1 | |
| Reference voltage | $V_{REF}$ | V | 2.48 | 2.5 | 2.52 | |
| Output voltage range | $V_{OUT} - V_{REF}$ | V | –2 | | 2 | |
| Electrical offset voltage | $V_{OE}$ | mV | –5 | | 5 | $V_{OUT} - V_{REF}$@ $V_{REF}$=2.5V |
| Temperature coefficient of $V_{OE}$ | $TCV_{OE}$ | mV | 0.4 | | 6 | @$T_A$=–40℃~105℃ |
| Theoretical sensitivity | $G_{th}$ | mV/A | | 6.667 | | |
| Temperature of G | $TCG$ | % | –1.6 | | 1.6 | @$T_A$=–40℃~105℃ |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | –0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Linearity error | $\varepsilon_L$ | % of $I_{PM}$ | –0.5 | | 0.5 | Exclusive of $V_{OE}$ |
| Hysteresis offset voltage | $V_{OM}$ | mV | –5 | | 5 | @$V_C$=5V, after±$I_{PN}$ |
| Accuracy @$I_{PN}$ | $X$ | % of $I_{PN}$ | –1 | | 1 | |
| Accuracy @$I_{PN}$ | $X$ | % of $I_{PN}$ | –2.5 | | 2.5 | @$T_A$=–40℃~105℃ |
| Response time@ 90% of $I_{PN}$ | $t_r$ | μs | | 2.5 | | @$C_L$=1.0nF |
| Frequency bandwidth(-3dB) | $BW$ | kHz | | 250 | | @$C_L$=1.0nF |
| Output noise | $Vno$ | mV$_{RMS}$ | | 0.9 | | @$C_L$=1.0nF |

# AN3V PB50 SERIES

## Dimensions（in mm. 1 mm = 0.0394 inch）



Typical application circuit

## Mechanical characteristics

✧ General tolerance    ±0.3 mm
✧ Primary coil    Red copper with tin plating

## Remarks

✧ When $I_P$ flows in the direction of the arrow, $V_{OUT}$ - $V_{REF} > 0$.