

## Description

For the electronic measurement of currents: DC, AC, pulsed..., with a galvanic isolation between the primary circuit and the secondary circuit.

## Features

- ◆ Open loop multi-range current transducer
- ◆ Low power consumption
- ◆ Unipolar +5VDC power supply
- ◆ Galvanic separation between primary and secondary
- ◆ Operating temperature range:  
 $-40^{\circ}\text{C} < T_A < +105^{\circ}\text{C}$
- ◆ Compact design for through-hole PCB mounting

## Advantages

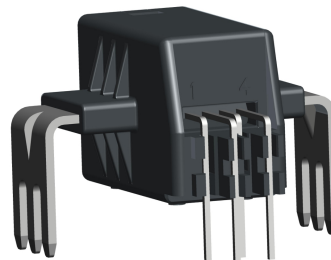
- ◆ High accuracy
- ◆ Excellent linearity
- ◆ Low temperature drift
- ◆ Wide frequency bandwidth
- ◆ Very fast response time
- ◆ Over-drivable  $V_{\text{ref}}$

## Applications

- ◆ AC variable speed and servo motor drives
- ◆ Static converters for DC motor drives
- ◆ Battery supplied applications
- ◆ Uninterruptible Power Supplies (UPS)
- ◆ Switched Mode Power Supplies (SMPS)
- ◆ Power supplies for welding applications

## Application Domain

- ◆ Industrial



**TYPES OF PRODUCTS**

| Type           | Primary nominal current<br>$I_{PN}$ (A) | Primary current measuring<br>range $I_{PM}$ (A) |
|----------------|---|---|
| BSX7-10IOV1HA  | $\pm 10$                                | $\pm 25$  |
| BSX7-16IOV1HA  | $\pm 16$                                | $\pm 40$  |
| BSX7-20IOV1HA  | $\pm 20$                                | $\pm 50$  |
| BSX7-32IOV1HA  | $\pm 32$                                | $\pm 80$  |
| BSX7-40IOV1HA  | $\pm 40$                                | $\pm 100$                                       |
| BSX7-50IOV1HA  | $\pm 50$                                | $\pm 125$                                       |
| BSX7-80IOV1HA  | $\pm 80$                                | $\pm 200$                                       |
| BSX7-100IOV1HA | $\pm 100$                               | $\pm 250$                                       |
| BSX7-120IOV1HA | $\pm 120$                               | $\pm 300$                                       |

**Absolute maximum ratings**

| Parameter                          | Symbol    | Unit | Value |
|------------------------------------|-----------|------|-------|
| Maximum supply voltage             | $V_C$     | V    | 8     |
| Jumper temperature                 | $T_B$     | °C   | 120   |
| ESD rating ,Human Body Model (HBM) | $V_{ESD}$ | KV   | 2     |

Stresses above these ratings may cause permanent damage .Exposure to absolute maximum ratings for extended periods may degrade reliability.

**Ratings**

| Parameter                       | Symbol    | Unit    | Value                                  |
|---------------------------------|-----------|---------|--|
| Primary involved potential      |           | V AC/DC | 600                                    |
| Max surrounding air temperature | $T_A$     | °C      | 105                                    |
| Primary current                 | $I_P$     | A       | According to series<br>primary current |
| Secondary supply voltage        | $V_C$     | V DC    | 5                                      |
| Output voltage                  | $V_{out}$ | V       | 0.4 to 4.6                             |

**Isolation characteristics**

| Parameter                                       | Symbol          | Unit | Value                 | Comment                                     |
|---|-----------------|------|-----------------------|---|
| RMS voltage for AC isolation test 50/60Hz/1 min | V <sub>d</sub>  | KV   | 4.3                   |   |
| Impulse withstand voltage 1.2/50 us             | V <sub>w</sub>  | KV   | 8                     |   |
| Clearance distance (pri.-sec.)                  | d <sub>Cl</sub> | mm   | >8                    | Shortest distance through air               |
| Creepage distance (pri.-sec.)                   | d <sub>CP</sub> | mm   | >8                    | Shortest path along device body             |
| Clearance                                       | -               | mm   | 8                     | When mounted on PCB with recommended layout |
| Case material                                   | -               | -    | V0 according to UL 94 |   |
| Comparative tracking index                      | CTI             | V    | 600                   |   |

**Environment and mechanical characteristics**

| Parameter                     | Symbol         | Unit | Min | Type | Max | Comment |
|-------------------------------|----------------|------|-----|------|-----|---------|
| Ambient operating temperature | T <sub>A</sub> | °C   | -40 | -    | 105 |         |
| Ambient storage temperature   | T <sub>S</sub> | °C   | -40 | -    | 105 |         |
| Mass                          | m              | g    | -   | 5.6  | -   |         |



## Electrical data BSX7-10IOV1HA

## Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 10   | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -25      | -    | 25    |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -2.9     | -    | 2.9   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.4     | -    | 3.4   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -170     | -    | 170   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>P</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 80   | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -200     | -    | 200   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | ℃                 | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | ℃                 | -40~+105 |      |       |   |



## Electrical data BSX7-16IOV1HA

## Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 16   | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -40      | -    | 40    |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -2.9     | -    | 2.9   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.4     | -    | 3.4   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -170     | -    | 170   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>p</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 50   | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -200     | -    | 200   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | °C                | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | °C                | -40~+105 |      |       |   |



## Electrical data BSX7-20IOV1HA

Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 20   | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -50      | -    | 50    |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -2.9     | -    | 2.9   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.4     | -    | 3.4   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -170     | -    | 170   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>P</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 40   | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -200     | -    | 200   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | ℃                 | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | ℃                 | -40~+105 |      |       |   |



## Electrical data BSX7-32IOV1HA

Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 32   | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -80      | -    | 80    |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -2.9     | -    | 2.9   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.4     | -    | 3.4   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -170     | -    | 170   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>P</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 25   | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -200     | -    | 200   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | ℃                 | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | ℃                 | -40~+105 |      |       |   |



## Electrical data BSX7-40IOV1HA

Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 40   | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -100     | -    | 100   |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -2.9     | -    | 2.9   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.4     | -    | 3.4   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -170     | -    | 170   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>p</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 20   | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -200     | -    | 200   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | ℃                 | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | ℃                 | -40~+105 |      |       |   |





## Electrical data BSX7-50IOV1HA

Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |      | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|------|---|
|  |                                     |                   | Min.     | Typ. | Max. |   |
| Electrical data  |                                     |                   |          |      |      |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 50   | -    |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -125     | -    | 125  |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5  |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17   | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |      |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52 | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2    | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270  |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10   |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470  |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5  | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1    | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -2.7     | -    | 2.7  |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.1     | -    | 3.1  |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5    | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -170     | -    | 170  |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>p</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.05    | -    | 0.05 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 16   | -    | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -200     | -    | 200  | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3    |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -    | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -    | @120KHz   |
| General data   |                                     |                   |          |      |      |   |
| Ambient operating temperature  | T <sub>A</sub>                      | °C                | -40~+105 |      |      |   |
| Ambient storage temperature  | T <sub>S</sub>                      | °C                | -40~+105 |      |      |   |



## Electrical data BSX7-80IOV1HA

## Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 80   | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -200     | -    | 200   |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -3.1     | -    | 3.1   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.8     | -    | 3.8   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -200     | -    | 200   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>p</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 10   | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -250     | -    | 250   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | °C                | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | °C                | -40~+105 |      |       |   |



## Electrical data BSX7-100IOV1HA

Parameters Table

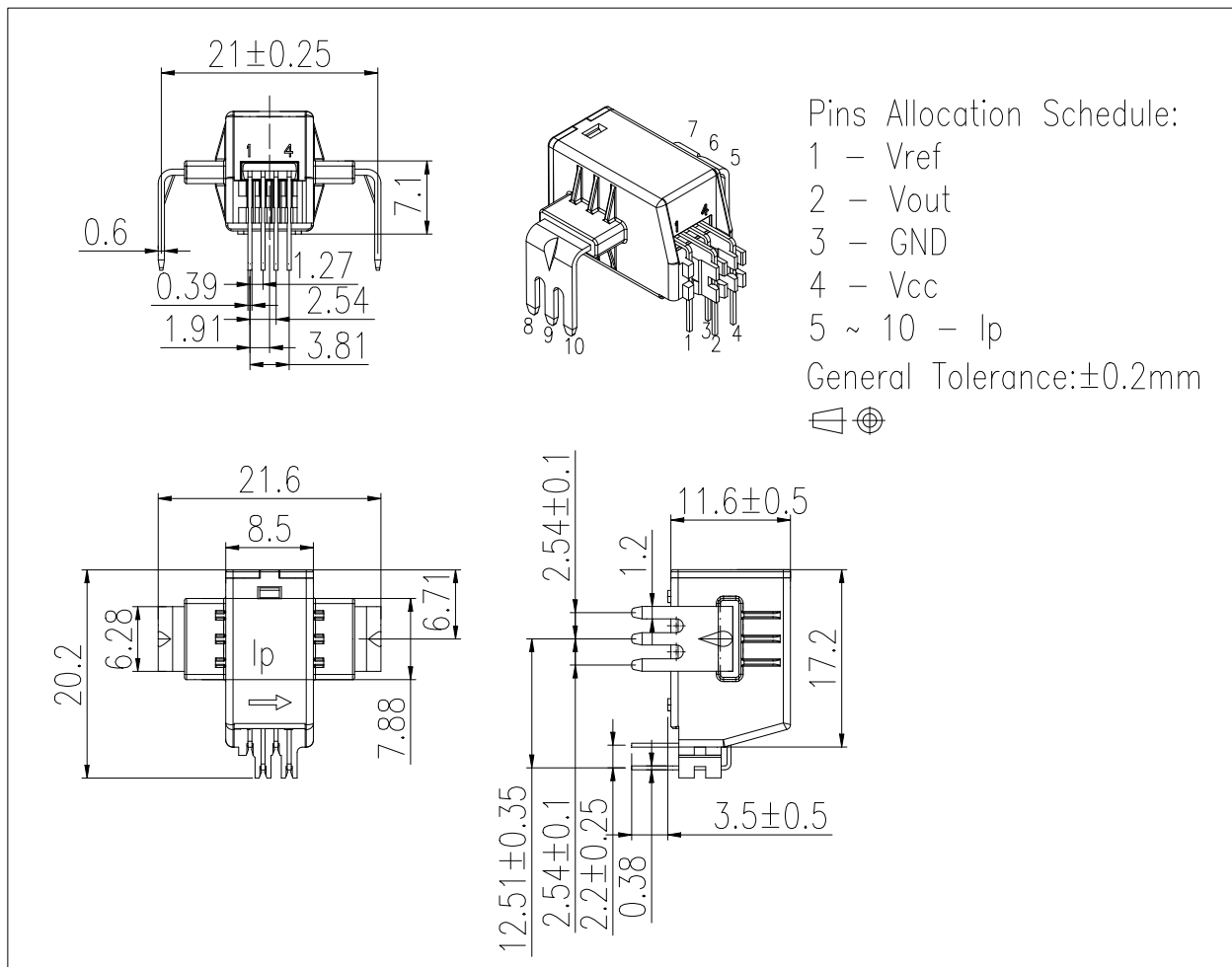
| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 100  | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -250     | -    | 250   |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -3.1     | -    | 3.1   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.8     | -    | 3.8   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -200     | -    | 200   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>P</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 8    | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -250     | -    | 250   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | ℃                 | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | ℃                 | -40~+105 |      |       |   |



## Electrical data BSX7-120IOV1HA

Parameters Table

| PARAMETERS   | SYMBOL                              | UNIT              | VALUE    |      |       | CONDITIONS  |
|--|-------------------------------------|-------------------|----------|------|-------|---|
|  |                                     |                   | Min.     | Typ. | Max.  |   |
| Electrical data  |                                     |                   |          |      |       |   |
| Primary nominal rms current  | I <sub>PN</sub>                     | A                 | -        | 120  | -     |   |
| Primary current, measuring range   | I <sub>PM</sub>                     | A                 | -300     | -    | 300   |   |
| Supply voltage   | V <sub>CC</sub>                     | V                 | 4.5      | 5    | 5.5   |   |
| Current consumption  | I <sub>CC</sub>                     | mA                | -        | 14   | 17    | @V <sub>CC</sub> =5V  |
| Performance data   |                                     |                   |          |      |       |   |
| Reference voltage(output)  | V <sub>ref</sub>                    | V                 | 2.48     | 2.5  | 2.52  | Internal reference  |
| Output voltage range@ I <sub>PM</sub>  | V <sub>out</sub> - V <sub>ref</sub> | V                 | -2       | -    | 2     | Over operating temperature range                                |
| V <sub>ref</sub> output resistance   | R <sub>ref</sub>                    | Ω                 | -        | 150  | 270   |   |
| Capacitive loading   | C <sub>L</sub>                      | nF                | -        | 1    | 10    |   |
| V <sub>ref</sub> output Capacitive loading   | C <sub>REF</sub>                    | nF                | -        | 100  | 470   |   |
| Output Linearity   | ε <sub>L</sub>                      | %                 | -0.5     | -    | 0.5   | @T <sub>A</sub> = 25°C  |
| Accuracy   | X                                   | %                 | -1       | -    | 1     | @T <sub>A</sub> = 25°C  |
| Accuracy@T <sub>A</sub> = +85°C  | X <sub>85℃</sub>                    | %                 | -3.1     | -    | 3.1   |   |
| Accuracy@T <sub>A</sub> = +105°C   | X <sub>105℃</sub>                   | %                 | -3.8     | -    | 3.8   |   |
| Electrical offset current referred to primary                                      | V <sub>OE</sub>                     | mv                | -5       | -    | 5     | V <sub>out</sub> - V <sub>ref</sub><br>@ V <sub>ref</sub> =2.5V |
| Temperature coefficient of V <sub>ref</sub>  | TCV <sub>ref</sub>                  | ppm/K             | -200     | -    | 200   |   |
| Temperature coefficient of V <sub>out</sub> - V <sub>ref</sub> @ I <sub>p</sub> =0 | TCV <sub>OE</sub>                   | mv/K              | -0.075   | -    | 0.075 |   |
| Sensitivity (G)  | G                                   | mV/A              | -        | 6.67 | -     | 800mV@T <sub>A</sub> = 25°C                                     |
| Temperature coefficient of G   | TCG                                 | ppm/K             | -250     | -    | 250   | @-40°C-105°C  |
| Step response time to 90% I <sub>PN</sub>  | t <sub>r</sub>                      | μS                | -        | -    | 3     |   |
| Output Bandwidth   | BW                                  | kHz               | -        | 120  | -     | @Small signal -3dB  |
| Noise  | V <sub>N</sub>                      | mV <sub>p-p</sub> | -        | 30   | -     | @120KHz   |
| General data   |                                     |                   |          |      |       |   |
| Ambient operating temperature  | T <sub>A</sub>                      | °C                | -40~+105 |      |       |   |
| Ambient storage temperature  | T <sub>S</sub>                      | °C                | -40~+105 |      |       |   |

**Dimensions BSX7-IOV1HA (in mm. 1 mm = 0.0394 inch)**

**◆ Instructions of use**

1. When the test current passes through the sensors, you can get the size of the output voltage. (Warning: wrong connection may lead to sensors damage).
2. Based on user needs, the output range of the sensors can be appropriately regulated.
3. According to user needs, different rated input currents and output voltages of the sensors can be customized.



## RESTRICTIONS ON PRODUCT USE

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