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℃< T_A <+105℃
- Compact design for through-hole PCB mounting

Applications

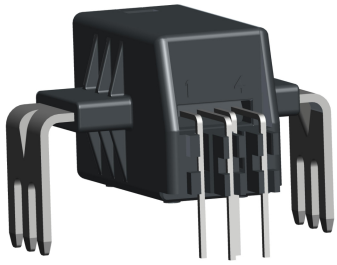
- AC variable speed and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications

Application Domain

- Industrial

Advantages

- High accuracy
- Excellent linearity
- Low temperature drift
- Wide frequency bandwith
- Very fast response time
- Over-drivable V_{ref}



TYPES OF PRODUCTS		
Type	**Primary nominal current I_{PN} (A)**	**Primary current measuring range I_{PM} (A)**
BSX7-10IOV1HA	±10	±25
BSX7-16IOV1HA	±16	±40
BSX7-20IOV1HA	±20	±50
BSX7-32IOV1HA	±32	±80
BSX7-40IOV1HA	±40	±100
BSX7-50IOV1HA	±50	±125
BSX7-80IOV1HA	±80	±200
BSX7-100IOV1HA	±100	±250
BSX7-120IOV1HA	±120	±300

Absolute maximum ratings

Parameter	Symbol	Unit	Value
Maximum supply voltage	Vc	V	8
Maximum primary conductor temperature	T	℃	110
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	℃	85
Primary current	I_P	A	According to series primary current
Secondary supply voltage	V_C	V DC	5
Output voltage	V_{out}	V	0.5 to 4.5

Isolation characteristics

Parameter	Symbol	Unit	Value	Comment
RMS voltage for AC isolation test 50/60Hz/1 min	V_d	KV	4.3	
Impulse withstand voltage 1.2/50 us	Vw	KV	8	
Clearance distance (pri.-sec.)	d_{Cl}	mm	＞8	Shortest distance through air
Creepage distance (pri..-sec.)	d_{CP}	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_A	℃	-40	-	105	
Ambient storage temperature	T_S	℃	-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_{PN}	A	-	10	-	
Primary current, measuring range	I_{PM}	A	-25	-	25	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-2.9	-	2.9	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.4	-	3.4	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-170	-	170	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	80	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-16IOV1HA

Parameters Table

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	16	-	
Primary current, measuring range	I_{PM}	A	-40	-	40	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-2.9	-	2.9	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.4	-	3.4	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-170	-	170	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	50	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-20IOV1HA

Parameters Table

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	20	-	
Primary current, measuring range	I_{PM}	A	-50	-	50	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-2.9	-	2.9	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.4	-	3.4	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-170	-	170	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	40	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	µS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-32IOV1HA

Parameters Table

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	32	-	
Primary current, measuring range	I_{PM}	A	-80	-	80	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-2.9	-	2.9	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.4	-	3.4	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-170	-	170	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	25	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-40IOV1HA

Parameters Table

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	40	-	
Primary current, measuring range	I_{PM}	A	-100	-	100	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-2.9	-	2.9	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.4	-	3.4	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-170	-	170	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	20	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-50IOV1HA

Parameters Table

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	50	-	
Primary current, measuring range	I_{PM}	A	-125	-	125	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-2.7	-	2.7	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.1	-	3.1	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-170	-	170	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.05	-	0.05	
Sensitivity (G)	G	mV/A	-	16	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-80IOV1HA

Parameters Table

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	80	-	
Primary current, measuring range	I_{PM}	A	-200	-	200	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-3.1	-	3.1	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.8	-	3.8	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-200	-	200	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	10	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-100IOV1HA

Parameters Table

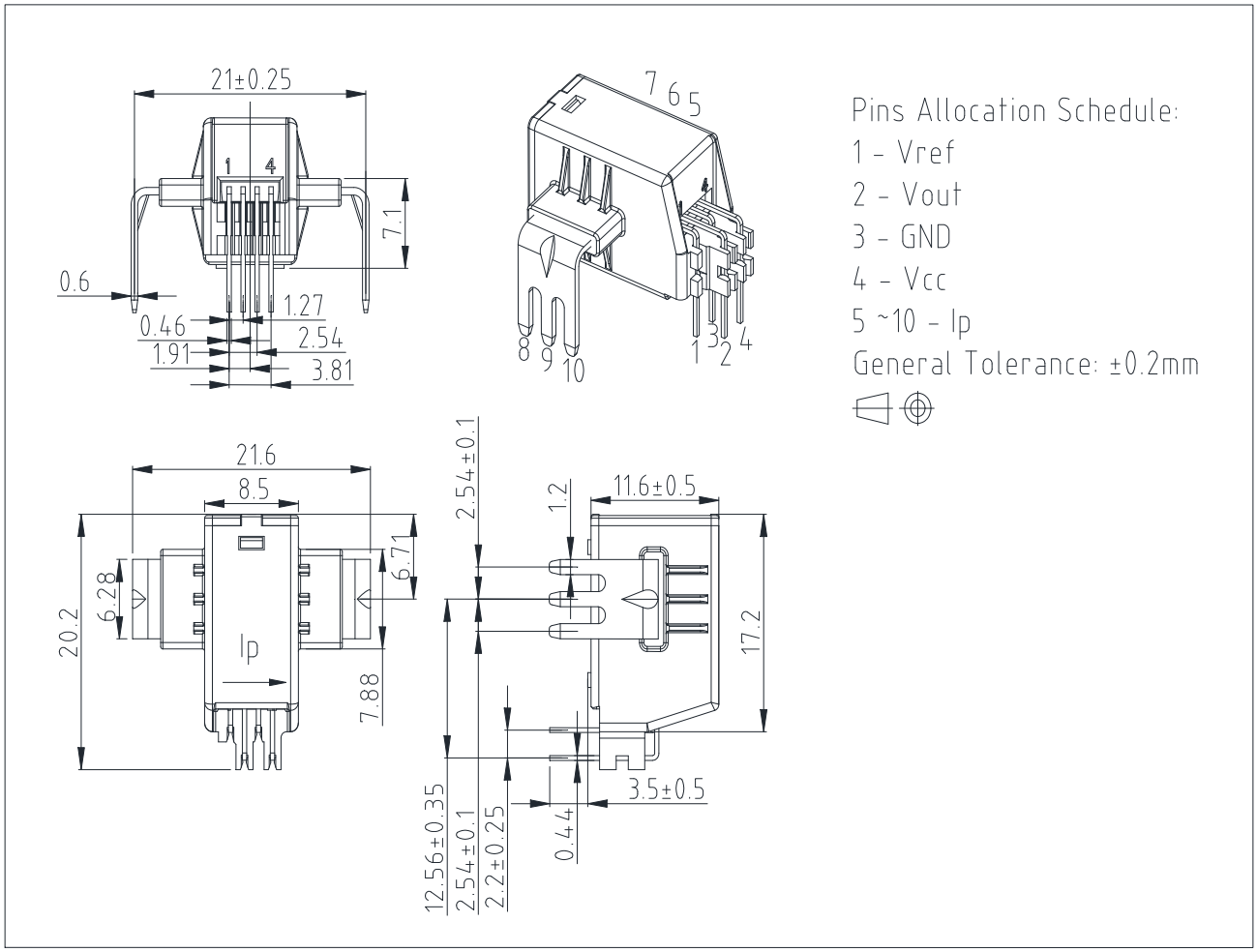
PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	100	-	
Primary current, measuring range	I_{PM}	A	-250	-	250	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-3.1	-	3.1	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.8	-	3.8	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-200	-	200	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	8	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°C	-40～+105			

Electrical data BSX7-120IOV1HA

Parameters Table

PARAMETERS	SYMBOL	UNIT	VALUE			CONDITIONS
			Min.	Typ.	Max.	
Electrical data						
Primary nominal rms current	I_{PN}	A	-	120	-	
Primary current, measuring range	I_{PM}	A	-300	-	300	
Supply voltage	Vcc	V	4.5	5	5.5	
Current consumption	Icc	mA	-	14	17	@Vcc=5V
Performance data						
Reference voltage(output)	V_{ref}	V	2.45	2.5	2.55	Internal reference
Output voltage range@ I_{PM}	V_{out} - V_{ref}	V	-2	-	2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	-	150	270	
Capacitive loading	C_L	nF	-	1	10	
V_{ref} output Capacitive loading	C_{REF}	nF	-	100	470	
Output Linearity	ε_L	%	-0.5	-	0.5	@T_A = 25°C
Accuracy	X	%	-1	-	1	@T_A = 25°C
Accuracy@T_A= +85℃	$X_{85℃}$	%	-3.1	-	3.1	
Accuracy@T_A= +105℃	$X_{105℃}$	%	-3.8	-	3.8	
Electrical offset current referred to primary	V_{OE}	mv	-5	-	5	V_{out} - V_{ref} @ V_{ref}=2.5V
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	-200	-	200	
Temperature coefficient of V_{out} - V_{ref} @ I_P=0	TCV_{OE}	mv/K	-0.075	-	0.075	
Sensitivity (G)	G	mV/A	-	6.67	-	800mV@T_A = 25°C
Step response time to 90% I_{PN}	t_r	μS	-	-	3	
Output Bandwidth	BW	kHz	-	120	-	@Small signal -3dB
Noise	V_N	mV_{p-p}	-	30	-	
General data						
Ambient operating temperature	T_A	°C	-40～+105			
Ambient storage temperature	T_S	°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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