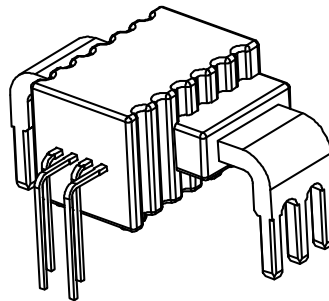


AN3V PB55 SERIES

Current Sensor

Model Number:

AN3V 80 PB55
AN3V 100 PB55
AN3V 120 PB55
AN3V 150 PB55
AN3V 180 PB55
AN3V 200 PB55



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
- ✧ 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.

AN3V PB55 SERIES

Absolute maximum ratings (not operating)

Parameter	Symbol	Unit	Value
Supply voltage	V_c	V	6.5
Primary conductor temperature	T_B	°C	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	°C	-40		105	
Ambient storage temperature	T_S	°C	-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 62109-1CAT III PD2
Application example	-	-	1000V	Basic insulation, according to IEC 61800-5-1, IEC 62109-1CAT III PD2

AN3V PB55 SERIES

Electrical data

AN3V 80 PB55

※ With $T_A = 25^\circ\text{C}$, $V_C = +5\text{V}$, $R_L = 10\text{k}\Omega$, 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	@ $V_C > 4.7\text{V}$
Supply voltage	V_C	V	4.5	5.0	5.5	
Current consumption	I_C	mA		6.5	11	
Primary coil resistance @ $T_A = 25^\circ\text{C}$	R_P	m Ω		0.21		
Primary coil resistance @ $T_A = 105^\circ\text{C}$	R_P	m Ω		0.29		
Load resistance V_{OUT}	R_L	k Ω	5.1			
Load resistance V_{REF}	R_{REF}	k Ω	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	$V_{OUT} - V_{REF} @ I_P = 0\text{A}$
Temperature coefficient of V_{OE}	TCV_{OE}	mV	0.4		6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Theoretical sensitivity	G_{th}	mV/A		10		
Temperature of G	TCG	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity error	$\mathcal{E}_L$	% of I_{PM}	-0.5		0.5	Exclusive of V_{OE}
Hysteresis offset voltage	V_{OM}	mV	-5		5	@ $V_C = 5\text{V}$, after I_{PN}
Accuracy @ I_{PN}	X	% of I_{PN}	-1		1	
Response time @ 90% of I_{PN}	t_r	μs		2.5		@ $C_L = 1.0\text{nF}$
Frequency bandwidth (-3dB)	BW	kHz		250		@ $C_L = 1.0\text{nF}$
Output noise	V_{no}	mV _{RMS}		9		@ $C_L = 1.0\text{nF}$

AN3V PB55 SERIES

Electrical data

AN3V100 PB55

※ With $T_A = 25^\circ\text{C}$, $V_C = +5\text{V}$, $R_L = 10\text{k}\Omega$, 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	@ $V_C > 4.7\text{V}$
Supply voltage	V_C	V	4.5	5.0	5.5	
Current consumption	I_C	mA		6.5	11	
Primary coil resistance @ $T_A = 25^\circ\text{C}$	R_P	m Ω		0.21		
Primary coil resistance @ $T_A = 105^\circ\text{C}$	R_P	m Ω		0.29		
Load resistance V_{OUT}	R_L	k Ω	5.1			
Load resistance V_{REF}	R_{REF}	k Ω	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	$V_{OUT} - V_{REF}$ @ $I_P = 0\text{A}$
Temperature coefficient of V_{OE}	TCV_{OE}	mV	0.4		6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Theoretical sensitivity	G_{th}	mV/A		8		
Temperature of G	TCG	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity error	ε_L	% of I_{PM}	-0.5		0.5	Exclusive of V_{OE}
Hysteresis offset voltage	V_{OM}	mV	-5		5	@ $V_C = 5\text{V}$, after $\neq I_{PN}$
Accuracy @ I_{PN}	X	% of I_{PN}	-1		1	
Response time @ 90% of I_{PN}	t_r	μs		2.5		@ $C_L = 1.0\text{nF}$
Frequency bandwidth (-3dB)	BW	kHz		250		@ $C_L = 1.0\text{nF}$
Output noise	V_{no}	mV _{RMS}		6		@ $C_L = 1.0\text{nF}$

AN3V PB55 SERIES

Electrical data

AN3V120 PB55

※ With $T_A = 25^\circ\text{C}$, $V_C = +5\text{V}$, $R_L = 10\text{k}\Omega$, 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	@ $V_C > 4.7\text{V}$
Supply voltage	V_C	V	4.5	5.0	5.5	
Current consumption	I_C	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	R_P	m Ω		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	R_P	m Ω		0.29		
Load resistance V_{OUT}	R_L	k Ω	5.1			
Load resistance V_{REF}	R_{REF}	k Ω	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	$V_{OUT} - V_{REF} @ I_P = 0\text{A}$
Temperature coefficient of V_{OE}	TCV_{OE}	mV	0.4		6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Theoretical sensitivity	G_{th}	mV/A		6.667		
Temperature of G	TCG	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity error	ε_L	% of I_{PM}	-0.5		0.5	Exclusive of V_{OE}
Hysteresis offset voltage	V_{OM}	mV	-5		5	@ $V_C = 5\text{V}$, after I_{PN}
Accuracy @ I_{PN}	X	% of I_{PN}	-1		1	
Response time@ 90% of I_{PN}	t_r	μs		2.5		@ $C_L = 1.0\text{nF}$
Frequency bandwidth(-3dB)	BW	kHz		250		@ $C_L = 1.0\text{nF}$
Output noise	V_{no}	mV _{RMS}		5		@ $C_L = 1.0\text{nF}$

AN3V PB55 SERIES

Electrical data

AN3V150 PB55

※ With $T_A = 25^\circ\text{C}$, $V_C = +5\text{V}$, $R_L = 10\text{k}\Omega$, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-150		150	
Primary current, measuring range	I_{PM}	A	-375		375	@ $V_C > 4.7\text{V}$
Supply voltage	V_C	V	4.5	5.0	5.5	
Current consumption	I_C	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	R_P	m Ω		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	R_P	m Ω		0.29		
Load resistance V_{OUT}	R_L	k Ω	5.1			
Load resistance V_{REF}	R_{REF}	k Ω	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	$V_{OUT} - V_{REF} @ I_P = 0\text{A}$
Temperature coefficient of V_{OE}	TCV_{OE}	mV	0.4		6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Theoretical sensitivity	G_{th}	mV/A		5.33		
Temperature of G	TCG	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity error	$\mathcal{E}_L$	% of I_{PM}	-0.5		0.5	Exclusive of V_{OE}
Hysteresis offset voltage	V_{OM}	mV	-5		5	@ $V_C = 5\text{V}$, after I_{PN}
Accuracy @ I_{PN}	X	% of I_{PN}	-1		1	
Response time@ 90% of I_{PN}	t_r	μs		2.5		@ $C_L = 1.0\text{nF}$
Frequency bandwidth(-3dB)	BW	kHz		250		@ $C_L = 1.0\text{nF}$
Output noise	V_{no}	mV _{RMS}		2		@ $C_L = 1.0\text{nF}$

AN3V PB55 SERIES

Electrical data

AN3V180 PB55

※ With $T_A = 25^\circ\text{C}$, $V_C = +5\text{V}$, $R_L = 10\text{k}\Omega$, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-180		180	
Primary current, measuring range	I_{PM}	A	-375		375	@ $V_C > 4.7\text{V}$
Supply voltage	V_C	V	4.5	5.0	5.5	
Current consumption	I_C	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	R_P	m Ω		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	R_P	m Ω		0.29		
Load resistance V_{OUT}	R_L	k Ω	5.1			
Load resistance V_{REF}	R_{REF}	k Ω	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	$V_{OUT} - V_{REF} @ I_P = 0\text{A}$
Temperature coefficient of V_{OE}	TCV_{OE}	mV	0.4		6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Theoretical sensitivity	G_{th}	mV/A		4.44		
Temperature of G	TCG	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity error	ε_L	% of I_{PM}	-0.5		0.5	Exclusive of V_{OE}
Hysteresis offset voltage	V_{OM}	mV	-5		5	@ $V_C = 5\text{V}$, after I_{PN}
Accuracy @ I_{PN}	X	% of I_{PN}	-1		1	
Response time@ 90% of I_{PN}	t_r	μs		2.5		@ $C_L = 1.0\text{nF}$
Frequency bandwidth(-3dB)	BW	kHz		250		@ $C_L = 1.0\text{nF}$
Output noise	V_{no}	mV _{RMS}		2.7		@ $C_L = 1.0\text{nF}$

AN3V PB55 SERIES

Electrical data

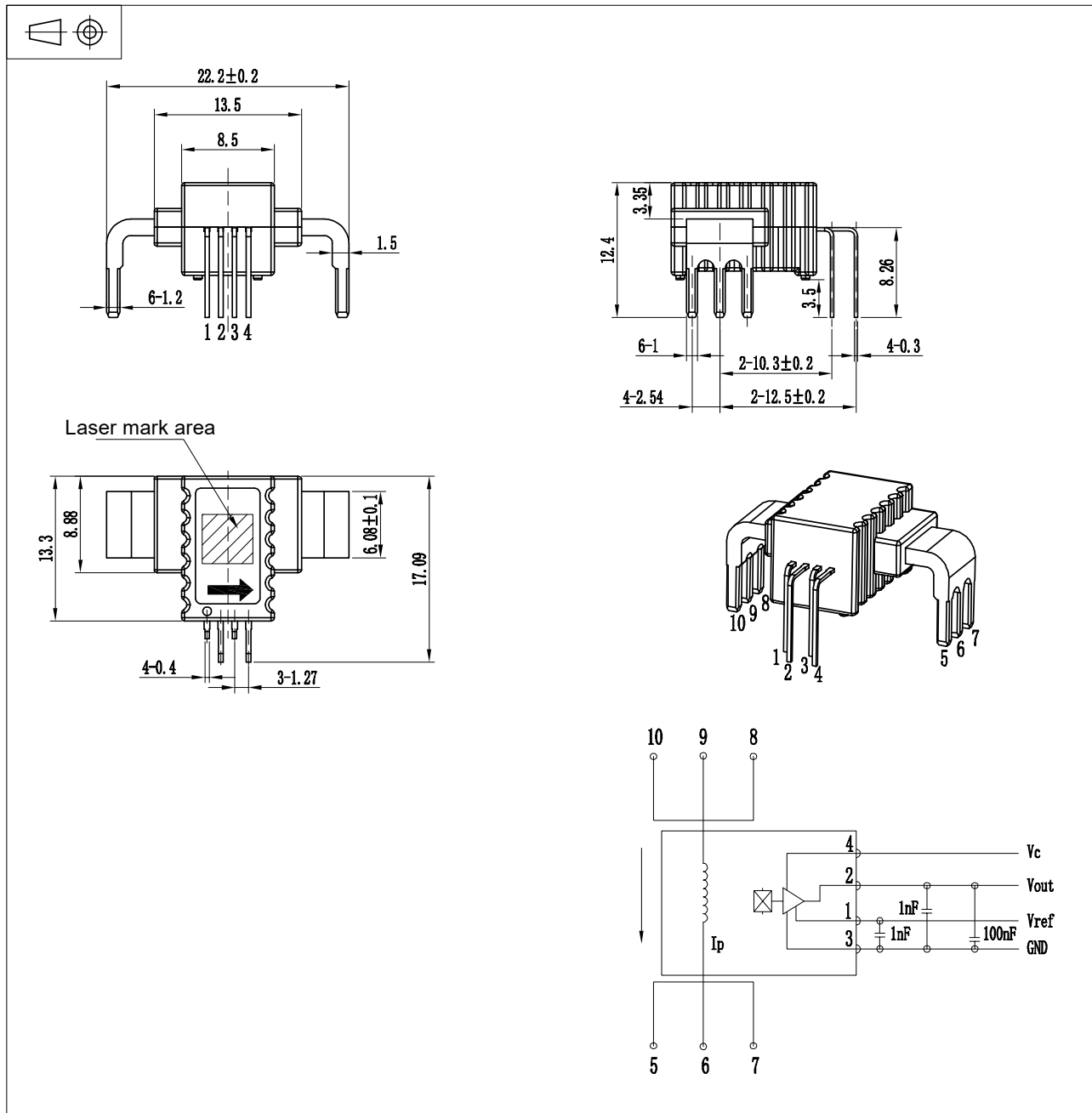
AN3V 200 PB55

※ With $T_A = 25^\circ\text{C}$, $V_C = +5\text{V}$, $R_L = 10\text{k}\Omega$, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-200		200	
Primary current, measuring range	I_{PM}	A	-375		375	@ $V_C > 4.7\text{V}$
Supply voltage	V_C	V	4.5	5.0	5.5	
Current consumption	I_C	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	R_P	m Ω		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	R_P	m Ω		0.29		
Load resistance V_{OUT}	R_L	k Ω	5.1			
Load resistance V_{REF}	R_{REF}	k Ω	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	$V_{OUT} - V_{REF} @ I_P = 0\text{A}$
Temperature coefficient of V_{OE}	TCV_{OE}	mV	0.4		6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Theoretical sensitivity	G_{th}	mV/A		4		
Temperature of G	TCG	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity error	ε_L	% of I_{PM}	-0.5		0.5	Exclusive of V_{OE}
Hysteresis offset voltage	V_{OM}	mV	-5		5	@ $V_C = 5\text{V}$, after I_{PN}
Accuracy @ I_{PN}	X	% of I_{PN}	-1		1	
Response time@ 90% of I_{PN}	t_r	μs		2.5		@ $C_L = 1.0\text{nF}$
Frequency bandwidth(-3dB)	BW	kHz		250		@ $C_L = 1.0\text{nF}$
Output noise	V_{no}	mV _{RMS}		1.7		@ $C_L = 1.0\text{nF}$

AN3V PB55 SERIES

Dimensions (in mm. 1 mm = 0.0394 inch)



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, $V_{OUT} - V_{REF} > 0$.