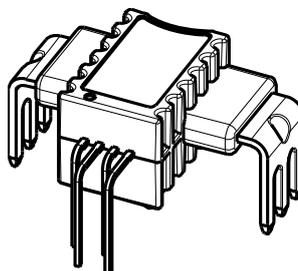


# AN3V PB30 SERIES

## Current sensor

### Model Number:

AN3V 10 PB30  
 AN3V 16 PB30  
 AN3V 20 PB30  
 AN3V 32 PB30  
 AN3V 40 PB30  
 AN3V 50 PB30



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: +3.3V
- ✧ 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

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

The 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 PB30 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, 50Hz, 1min	$V_d$	kV	4.3	According to IEC 60664-1
Impulse withstand voltage 1.2/50 $\mu$ s	$V_w$	kV	8	According to IEC 60664-1
Clearance (Pri.-sec.)	$d_{ci}$	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 62109-1 CAT III, PD2
Application example	-	-	1000V	Reinforced insulation, according to IEC 61800-5-1, IEC 62109-1 CAT III, PD2

# AN3V PB30 SERIES

## Electrical data

### AN3V 10 PB30

※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = 3.3\text{V}$ ,  $R_L = 10\text{k}\Omega$ , unless otherwise noted

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN}$	A	-10		10	
Primary current, measuring range	$I_{PM}$	A	-25		25	
Supply voltage	$V_C$	V	3.135	3.3	3.465	
Current consumption	$I_C$	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	$R_P$	m $\Omega$		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	$R_P$	m $\Omega$		0.29		
Load resistance $V_{OUT}$	$R_L$	k $\Omega$	5.1			
Load resistance $V_{REF}$	$R_{REF}$	k $\Omega$	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	1.63	1.65	1.67	
Output voltage range	$V_{OUT} - V_{REF}$	V	-1.15		1.15	
Electrical offset voltage	$V_{OE}$	mV	-5		5	$V_{OUT} - V_{REF} @ I_P = 0\text{A}$
Temperature coefficient of	$TCV_{OE}$	mV	0.4		6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Theoretical sensitivity	$G_{th}$	mV/A		46		
Temperature of G	$TCG$	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
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	@ $V_C = 3.3\text{V}$ , After $\pm I_{PN}$
Accuracy@ $I_{PN}$	$X$	% of $I_{PN}$	-1		1	
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-2.5		2.5	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Response time@ 90% of $I_{PN}$	$t_r$	$\mu\text{s}$		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 <sub>RMS</sub>		4.8		@ $C_L = 1.0\text{nF}$

# AN3V PB30 SERIES

## Electrical data

### AN3V 16 PB30

※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = 3.3\text{V}$ ,  $R_L = 10\text{k}\Omega$ , unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN}$	A	-16		16	
Primary current, measuring range	$I_{PM}$	A	-40		40	
Supply voltage	$V_C$	V	3.135	3.3	3.465	
Current consumption	$I_C$	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	$R_P$	m $\Omega$		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	$R_P$	m $\Omega$		0.29		
Load resistance $V_{OUT}$	$R_L$	k $\Omega$	5.1			
Load resistance $V_{REF}$	$R_{REF}$	k $\Omega$	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	1.63	1.65	1.67	
Reference voltage	$V_{OUT} - V_{REF}$	V	-1.15		1.15	
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		28.75		
Temperature of G	$TCG$	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity	$\varepsilon_L$	% of $I_{PN}$	-0.5		0.5	Exclusive of $V_{OE}$
Linearity	$\varepsilon_L$	% of $I_{PM}$	-0.5		0.5	Exclusive of $V_{OE}$
Hysteresis offset voltage	$V_{OM}$	mV	-5		5	@ $V_C = 3.3\text{V}$ , After $\pm I_{PN}$
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-1		1	
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-2.5		2.5	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Response time @ 90% of $I_{PN}$	$t_r$	$\mu\text{s}$		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 <sub>RMS</sub>		3		@ $C_L = 1.0\text{nF}$

# AN3V PB30 SERIES

## Electrical data

### AN3V 20 PB30

※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = 3.3\text{V}$ ,  $R_L = 10\text{k}\Omega$ , unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN}$	A	-20		20	
Primary current, measuring range	$I_{PM}$	A	-50		50	
Supply voltage	$V_C$	V	3.135	3.3	3.465	
Current consumption	$I_C$	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	$R_P$	m $\Omega$		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	$R_P$	m $\Omega$		0.29		
Load resistance $V_{OUT}$	$R_L$	k $\Omega$	5.1			
Load resistance $V_{REF}$	$R_{REF}$	k $\Omega$	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	1.63	1.65	1.67	
Reference voltage	$V_{OUT} - V_{REF}$	V	-1.15		1.15	
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		23		
Temperature of G	$TCG$	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity	$\varepsilon_L$	% of $I_{PN}$	-0.5		0.5	Exclusive of $V_{OE}$
Linearity	$\varepsilon_L$	% of $I_{PM}$	-0.5		0.5	Exclusive of $V_{OE}$
Hysteresis offset voltage	$V_{OM}$	mV	-5		5	@ $V_C = 3.3\text{V}$ , After $\pm I_{PN}$
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-1		1	
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-2.5		2.5	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Response time @ 90% of $I_{PN}$	$t_r$	$\mu\text{s}$		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 <sub>RMS</sub>		2		@ $C_L = 1.0\text{nF}$

# AN3V PB30 SERIES

## Electrical data

### AN3V 32 PB30

※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = 3.3\text{V}$ ,  $R_L = 10\text{k}\Omega$ , unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN}$	A	-32		32	
Primary current, measuring range	$I_{PM}$	A	-80		80	
Supply voltage	$V_C$	V	3.135	3.3	3.465	
Current consumption	$I_C$	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	$R_P$	m $\Omega$		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	$R_P$	m $\Omega$		0.29		
Load resistance $V_{OUT}$	$R_L$	k $\Omega$	5.1			
Load resistance $V_{REF}$	$R_{REF}$	k $\Omega$	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	1.63	1.65	1.67	
Reference voltage	$V_{OUT} - V_{REF}$	V	-1.15		1.15	
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		14.375		
Temperature of G	$TCG$	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity	$\varepsilon_L$	% of $I_{PN}$	-0.5		0.5	Exclusive of $V_{OE}$
Linearity	$\varepsilon_L$	% of $I_{PM}$	-0.5		0.5	Exclusive of $V_{OE}$
Hysteresis offset voltage	$V_{OM}$	mV	-5		5	@ $V_C = 3.3\text{V}$ , After $\pm I_{PN}$
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-1		1	
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-2.5		2.5	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Response time @ 90% of $I_{PN}$	$t_r$	$\mu\text{s}$		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 <sub>RMS</sub>		2		@ $C_L = 1.0\text{nF}$

# AN3V PB30 SERIES

## Electrical data

### AN3V 40 PB30

※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = 3.3\text{V}$ ,  $R_L = 10\text{k}\Omega$ , unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN}$	A	-40		40	
Primary current, measuring range	$I_{PM}$	A	-100		100	
Supply voltage	$V_C$	V	3.135	3.3	3.465	
Current consumption	$I_C$	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	$R_P$	m $\Omega$		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	$R_P$	m $\Omega$		0.29		
Load resistance $V_{OUT}$	$R_L$	k $\Omega$	5.1			
Load resistance $V_{REF}$	$R_{REF}$	k $\Omega$	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	1.63	1.65	1.67	
Reference voltage	$V_{OUT} - V_{REF}$	V	-1.15		1.15	
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		11.5		
Temperature of G	$TCG$	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity	$\varepsilon_L$	% of $I_{PN}$	-0.5		0.5	Exclusive of $V_{OE}$
Linearity	$\varepsilon_L$	% of $I_{PM}$	-0.5		0.5	Exclusive of $V_{OE}$
Hysteresis offset voltage	$V_{OM}$	mV	-5		5	@ $V_C = 3.3\text{V}$ , After $\pm I_{PN}$
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-1		1	
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-2.5		2.5	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Response time @ 90% of $I_{PN}$	$t_r$	$\mu\text{s}$		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 <sub>RMS</sub>		1.5		@ $C_L = 1.0\text{nF}$

# AN3V PB30 SERIES

## Electrical data

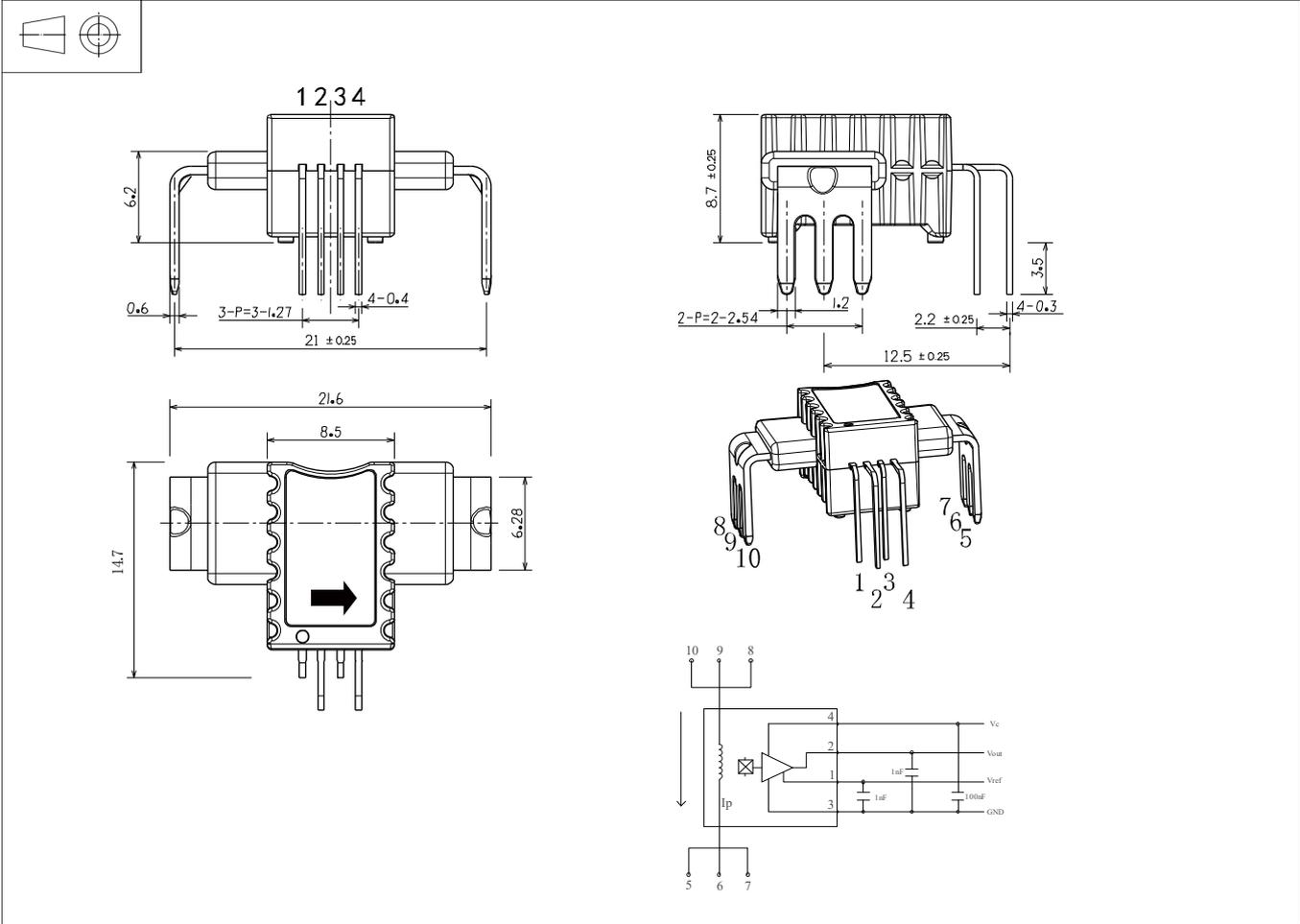
### AN3V 50 PB30

※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = 3.3\text{V}$ ,  $R_L = 10\text{k}\Omega$ , unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN}$	A	-50		50	
Primary current, measuring range	$I_{PM}$	A	-125		125	
Supply voltage	$V_C$	V	3.135	3.3	3.465	
Current consumption	$I_C$	mA		6.5	11	
Primary coil resistance@ $T_A = 25^\circ\text{C}$	$R_P$	m $\Omega$		0.21		
Primary coil resistance@ $T_A = 105^\circ\text{C}$	$R_P$	m $\Omega$		0.29		
Load resistance $V_{OUT}$	$R_L$	k $\Omega$	5.1			
Load resistance $V_{REF}$	$R_{REF}$	k $\Omega$	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	1.63	1.65	1.67	
Reference voltage	$V_{OUT} - V_{REF}$	V	-1.15		1.15	
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		9.2		
Temperature of G	$TCG$	%	-1.6		1.6	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity	$\varepsilon_L$	% of $I_{PN}$	-0.5		0.5	Exclusive of $V_{OE}$
Linearity	$\varepsilon_L$	% of $I_{PM}$	-0.5		0.5	Exclusive of $V_{OE}$
Hysteresis offset voltage	$V_{OM}$	mV	-5		5	@ $V_C = 3.3\text{V}$ , After $\pm I_{PN}$
Accuracy @ $I_{PN}$	$X$	% of $I_{PN}$	-1		1	
Accuracy @ $I_{PM}$	$X$	% of $I_{PM}$	-2.5		2.5	@ $T_A = -40^\circ\text{C} \sim 105^\circ\text{C}$
Response time @ 90% of $I_{PN}$	$t_r$	$\mu\text{s}$		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 <sub>RMS</sub>		1.3		@ $C_L = 1.0\text{nF}$

# AN3V PB30 SERIES

Dimensions (in mm. 1 mm = 0.0394 inch)



## Mechanical characteristics

- ◇ General tolerance  $\pm 0.3$  mm
- ◇ Primary coil Red copper with tin plating

## Remarks

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