



## HIGH-PRECISION VOLTAGE DETECTOR

### DESCRIPTION

High-precision voltage detector developed using CMOS process. The detection voltage fixed internally with an accuracy of  $\pm 2\%$ . Two output forms, n-channel open-drain and CMOS output are available. Ultra-low current consumption can meet demand from the portable device applications.

### FEATURES

- Ultra-low current consumption: 0.8  $\mu\text{A}$  typically (at  $V_{\text{IN}} = 1.5 \text{ V}$ );
- High-accuracy detection voltage:  $\pm 2\%$ ;
- Operating voltage range: 1.2 V to 6.0 V;
- Detection voltage: 1.5 V to 5.5 V (0.1 V step);
- Hysteresis characteristics: 5% typically;
- Output form: n-channel open-drain (An6861-XXXN) and CMOS (An6861-XXXX).

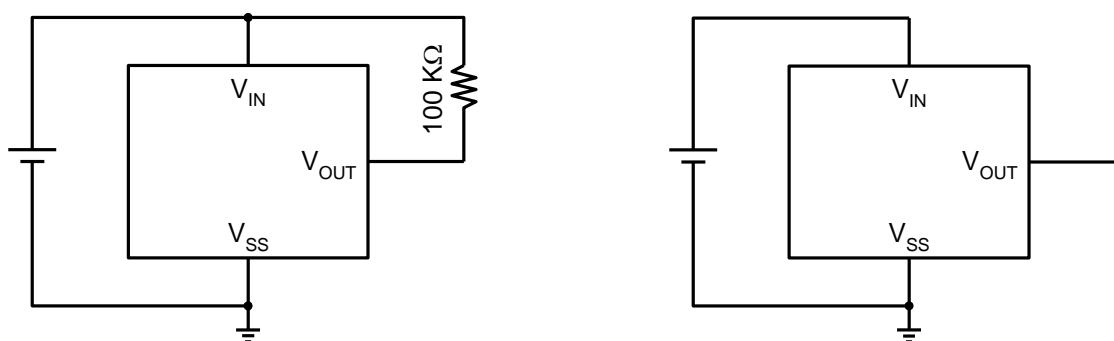
### APPLICATIONS

- Power monitor for portable equipment such as notebooks, digital cameras, PDA;
- Constant voltage power monitor for cameras, video equipment and communication devices;
- Detection of power failure;
- Power monitor for microcomputers and reset for CPUs.

### PIN CONFIGURATION

Pad number	Pin number		Symbol	Pin description
	Chip	SOT23		
1	1	1	$V_{\text{OUT}}$	Voltage detection output pin
2	2	3	$V_{\text{SS}}$	Ground pin
3	3	2	$V_{\text{IN}}$	Input voltage pin

### STANDARD CIRCUITS



n-channel open-drain output products (An6861-XXXN). CMOS output products (An6861-XXXX).



**ABSOLUTE MAXIMUM RATINGS**

Ta = 25 °C

Parameter	Symbol	Ratings	Units
Power supply voltage	V <sub>IN</sub>	6	V
Output current	I <sub>OUT</sub>	50	mA
Operating temperature	T <sub>opr</sub>	-40 to +85	°C
Storage temperature	T <sub>stg</sub>	-60 to +100	°C

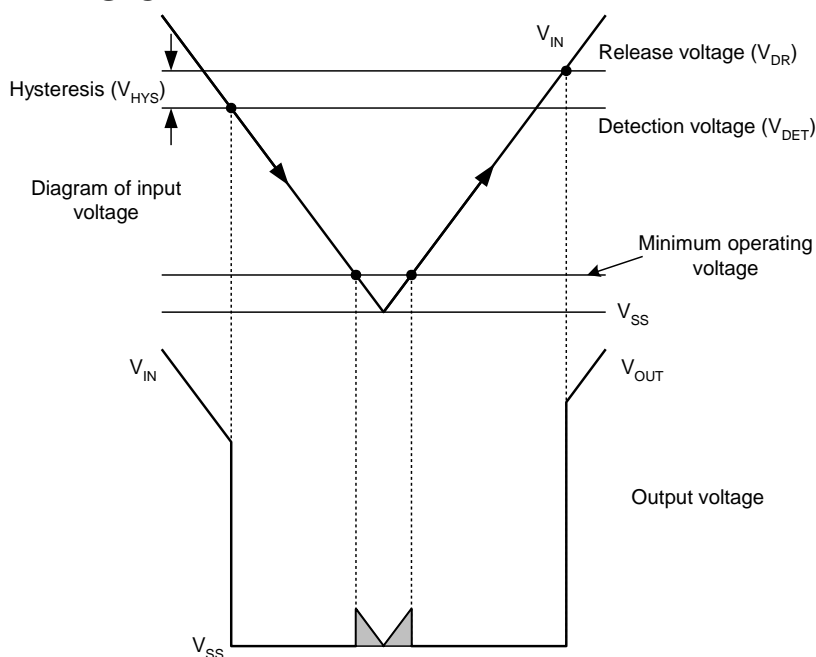
**Caution:** The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. Therefore these values must not be exceeded under any conditions.

**ELECTRICAL CHARACTERISTICS**

Ta = 25 °C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Detection voltage	V <sub>DET</sub>		V <sub>DET</sub> ×0.98	V <sub>DET</sub>	V <sub>DET</sub> ×1.02	V
Hysteresis voltage range	V <sub>HYS</sub>		V <sub>DET</sub> ×0.02	V <sub>DET</sub> ×0.05	V <sub>DET</sub> ×0.09	V
Supply current	I <sub>SS</sub>	V <sub>in</sub> = 1.5 V	–	0.8	2.4	uA
		V <sub>in</sub> = 2.0 V	–	0.9	2.4	
		V <sub>in</sub> = 3.0 V	–	1.0	2.4	
		V <sub>in</sub> = 4.0 V	–	1.1	2.4	
		V <sub>in</sub> = 5.0 V	–	1.2	2.4	
Operating voltage	V <sub>IN</sub>		1.2	–	6	V
Output current (n-channel open-drain output (An6861-XXXN))	I <sub>OUT</sub>	V <sub>DS</sub> = 0.5 V; V <sub>IN</sub> = 1.5 V	2.0	2.8	50	mA
Output current (CMOS output (An6861-XXXX))	I <sub>OUT</sub>	V <sub>DS</sub> = 2.1 V; V <sub>in</sub> = 6 V	1.5	8	50	mA
Response time	t <sub>DLY</sub>		–	100	200	us
Detection voltage temperature coefficient	$\frac{\Delta V_{DET}}{\Delta Ta}$	T = -40°C to 85°C	–	±100	±350	ppm/°C

**TIMING CHART**



**Notice:** For voltage V<sub>IN</sub> less than minimum operating voltage (shaded region on the diagram), voltage of output terminal is undefined for CMOS output product.

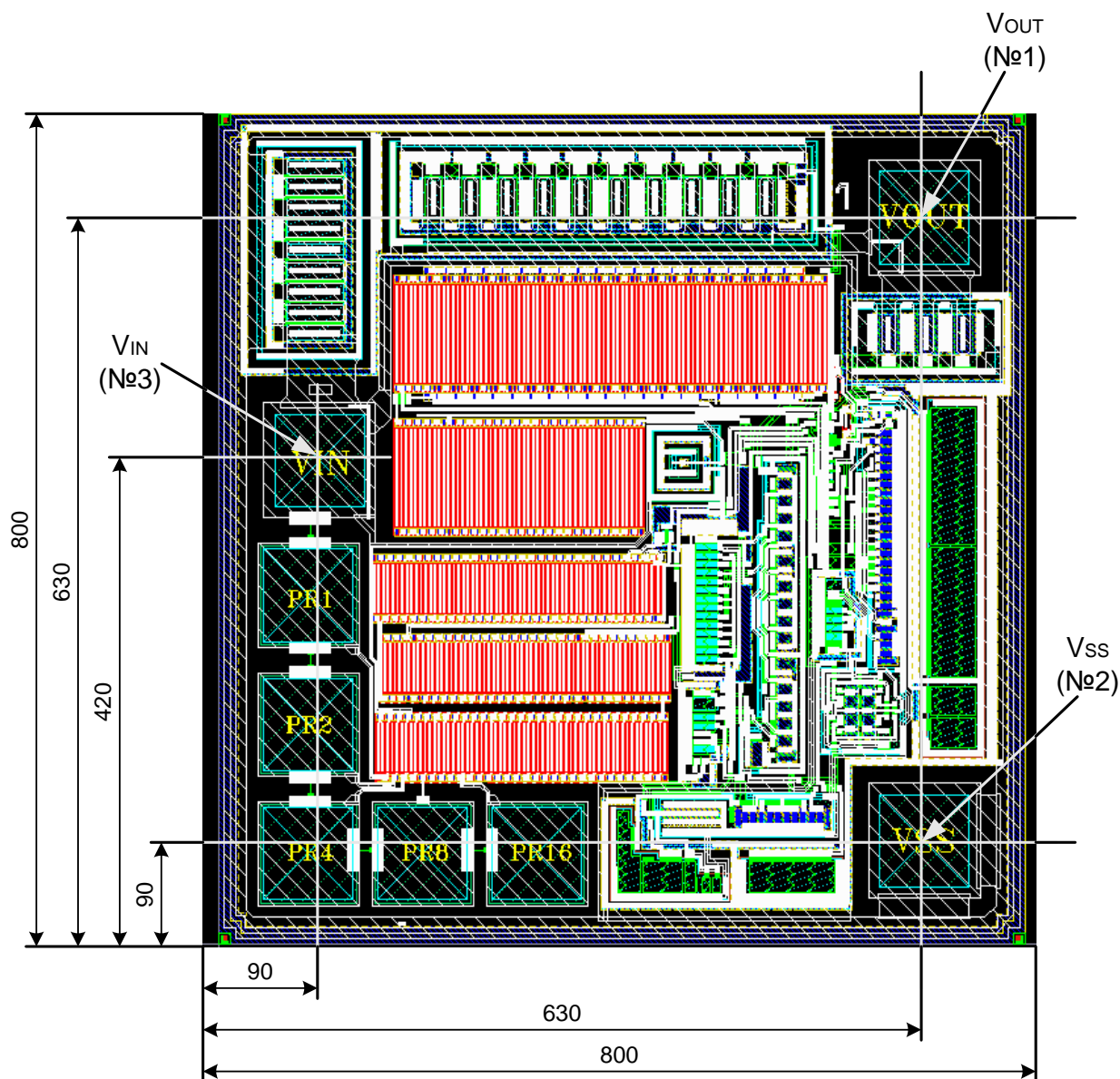


### PAD DIAGRAM

Chip size: 800 x 800

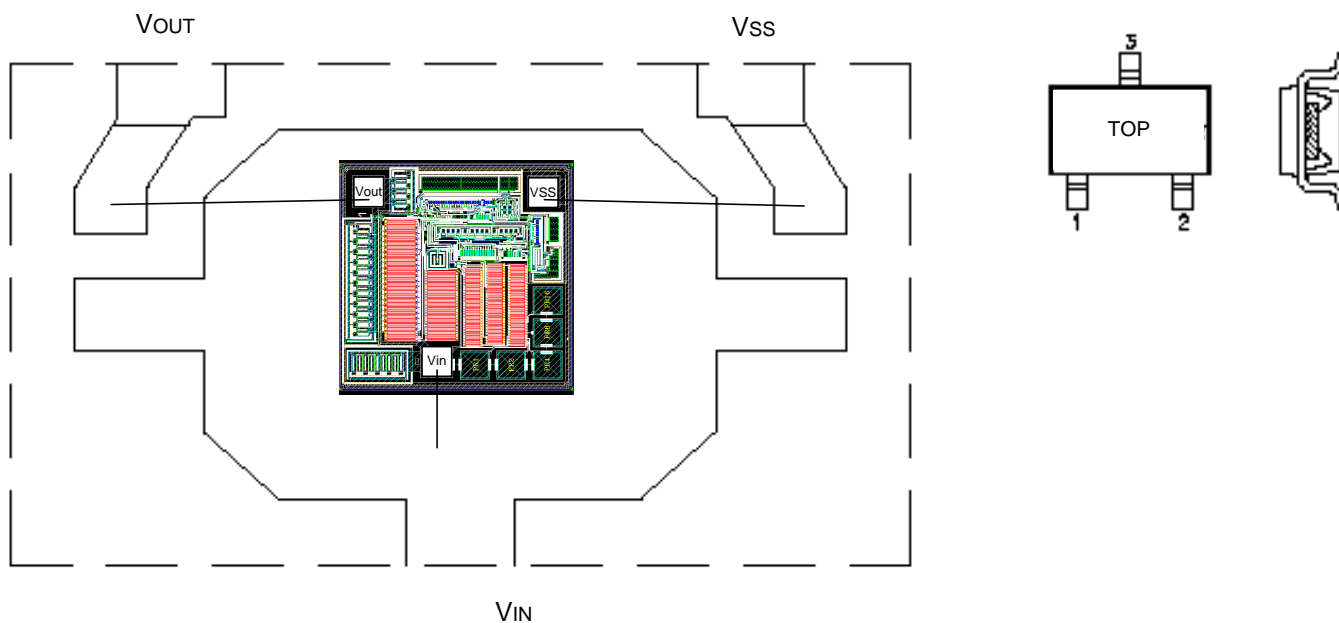
Pad size: 80 x 80

Unit: mkm



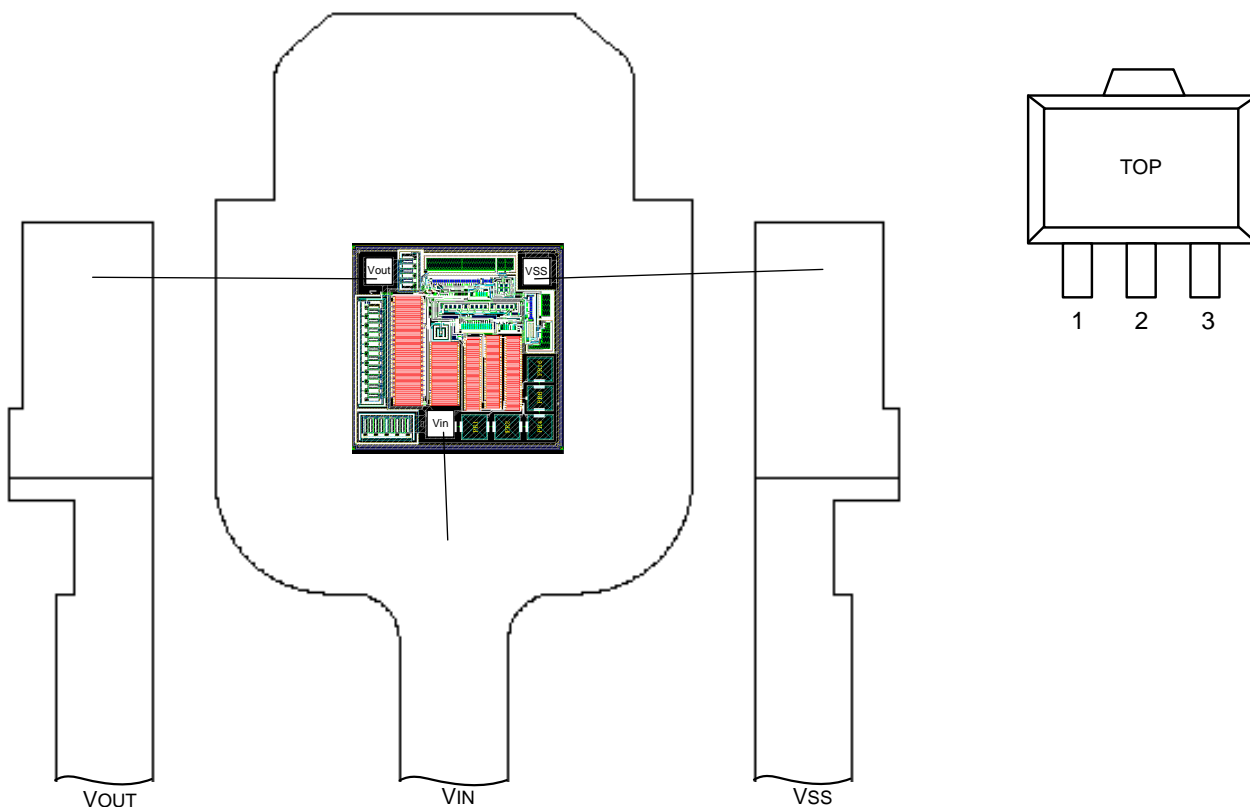
### PAD LOCATION

Pad number	Pad name	X	Y
1	V <sub>OUT</sub>	630	630
2	V <sub>SS</sub>	630	90
3	V <sub>IN</sub>	90	420

**PACKAGE TYPE: SOT23**
**BOTTOM VIEW**


**NOTE:** die attach using non conductive glue only

**PACKAGE TYPE: SOT89**
**TOP VIEW**



**NOTE:** die attach using non conductive glue only

## ORDERING INFORMATION

**An6861-XXXZ**

**XXX** –  $V_{DET} \times 100$

**NOTE 1:** 170, 180, 240, 270, 300, 330, 420, 450 available up to date.

**NOTE 2:**  $V_{DET}$  can be trimmed down, of its basic value  $V_{DET} - 5\%$ .

- Z** – **N** n-channel open-drain output  
– **K** CMOS output