



AiP803/AiP809/AiP810

Microprocessor Reset Circuits

Product Specification

Specification Revision History:

Version	Date	Description
2020-08-A1	2020-08	New
2023-02-B1	2023-02	Replace the new template
2023-05-B2	2023-05	Modify the parameters
2023-11-B3	2023-11	Add the ordering information of AiP8xxZ and AiP8xxX
2024-08-B4	2024-08	Modify the content



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1、General Description

AiP803/AiP809/AiP810 series are microcontroller reset circuits that detect the supply voltage and provide a reset signal. The circuit provides power-on detection and power-off detection functions. During the power-on process, when the supply voltage is lower than the circuit's detection voltage, the reset port remains in the active state; when the supply voltage is higher than the circuit's detection voltage, an internal timer will start to work, and change the status of the reset port to the end of the reset state after a delay of 240ms (typical).

AiP803 provides an active-low reset signal (RESETN) which is a NMOS open-leakage output, requiring an external pull-up resistance.

AiP809 provides an active-low reset signal (RESETN) which is a push-pull output.

AiP810 provides an active-high reset signal (RESET) which is a push-pull output.

Features:

- RESETN/RESET port gives an effective output signal when $V_{DD} > 1V$
- Power-on reset delay time is typical 240ms
- Low Power Consumption
- ESD-HBM: 4000V
- Packaging information: SOT23/SOT23-3

Selection table:

Model number	Reset threshold voltage
AiP803L	4.63V
AiP803M	4.38V
AiP803J	4.00V
AiP803T	3.08V
AiP803S	2.93V
AiP803R	2.63V
AiP803Z	2.32V
AiP803X	1.63V
AiP809L	4.63V
AiP809M	4.38V
AiP809J	4.00V
AiP809T	3.08V
AiP809S	2.93V
AiP809R	2.63V
AiP809Z	2.32V
AiP809X	1.63V
AiP810L	4.63V
AiP810M	4.38V
AiP810J	4.00V
AiP810T	3.08V
AiP810S	2.93V
AiP810R	2.63V
AiP810Z	2.32V
AiP810X	1.63V



Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP803LGB233.TR	SOT23-3	803LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803MGB233.TR	SOT23-3	803MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803JGB233.TR	SOT23-3	803JXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803TGB233.TR	SOT23-3	803TXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803SGB233.TR	SOT23-3	803SXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803RGB233.TR	SOT23-3	803RXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803ZGB233.TR	SOT23-3	803ZXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803XGB233.TR	SOT23-3	803XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP809LGB233.TR	SOT23-3	809LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP809MGB233.TR	SOT23-3	809MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
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AiP809TGB233.TR	SOT23-3	809TXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP809SGB233.TR	SOT23-3	809SXX	3000PCS/reel	30000PCS/box	Dimensions of



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AiP809RGB233.TR	SOT23-3	809RXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
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AiP809XGB233.TR	SOT23-3	809XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
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AiP810XGB233.TR	SOT23-3	810XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP803LGA23.TR	SOT23	803LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP803MGA23.TR	SOT23	803MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm



					Pin spacing:0.95mm
AiP803JGA23.TR	SOT23	803JXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP803TGA23.TR	SOT23	803TXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP803SGA23.TR	SOT23	803SXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP803RGA23.TR	SOT23	803RXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP803ZGA23.TR	SOT23	803ZXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP803XGA23.TR	SOT23	803XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP809LGA23.TR	SOT23	809LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
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AiP809XGA23.TR	SOT23	809XXX	3000PCS/reel	30000PCS/box	Dimensions of



					plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP810LGA23.TR	SOT23	810LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP810MGA23.TR	SOT23	810MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
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AiP810ZGA23.TR	SOT23	810ZXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP810XGA23.TR	SOT23	810XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm

Note 1: “XX” refers to variable content, meaning year and package batch serial number.

Note 2: If the physical information is inconsistent with the ordering information, please refer to the actual product.



2、Block Diagram And Pin Description

2.1、Block Diagram

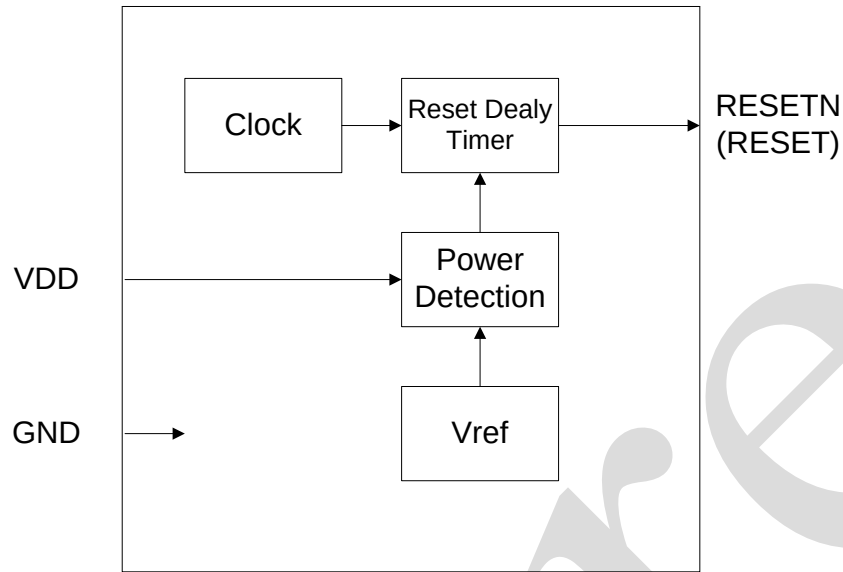


Figure 1. Block Diagram

2.2、Pin Configurations

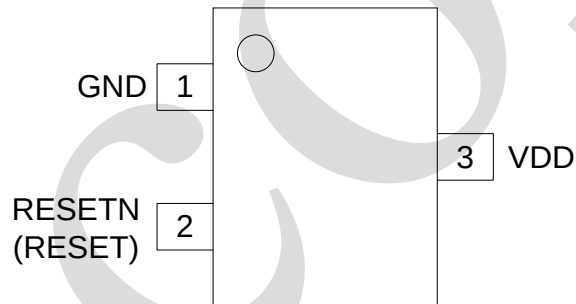


Figure2. Pin Configurations

Note:

RESETN: AiP803/AiP809

RESET: AiP810

2.3、Pin Description

Pin No.	Pin Name	Input/output	Description
1	GND	Power	Ground
2	RESETN (RESET)	O	Power supply detection reset output
3	VDD	Power	Power Supply



3、Electrical Parameter

3.1、Absolute Maximum Ratings

($T_{amb}=25^{\circ}\text{C}$, unless otherwise specified)

Characteristic	Symbol	Conditions	Value	Unit
Power Supply Voltage	VDD	-	-0.3~6.0	V
Input Voltage	VIN	-	-0.3~VDD+0.3	V
Storage Temperature	T_{stg}	-	-65~+150	$^{\circ}\text{C}$
Soldering Temperature	T_L	10s	260	$^{\circ}\text{C}$

Note:

- Operating above these specified values may cause permanent damage to the components. Extending the operation period under the absolute maximum condition may reduce the reliability of the component. These are only part of the specified values, and functional operations under other conditions outside the specifications are not supported.
- All voltage values are based on the ground terminal as a reference point.

3.2、Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	VDD	1	-	5.5	V
Operating Temperature	T_{amb}	-40	-	+125	$^{\circ}\text{C}$

3.3、Electrical Characteristics

($T_{amb}=25^{\circ}\text{C}$, VDD=5V, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Supply Voltage	VDD	-	1	-	5.5	V
Supply Current	IDD	AiP8 __L	-	17	30	μA
		AiP8 __M	-	17	30	μA
		AiP8 __J	-	17	30	μA
		AiP8 __T	-	17	30	μA
		AiP8 __S	-	17	30	μA
		AiP8 __R	-	17	30	μA
		AiP8 __Z	-	17	30	μA
		AiP8 __X	-	17	30	μA
Reset Threshold	V_T	AiP8 __L	4.530	4.63	4.730	V
		AiP8 __M	4.285	4.38	4.475	V
		AiP8 __J	3.914	4	4.086	V
		AiP8 __T	3.013	3.08	3.147	V
		AiP8 __S	2.867	2.93	2.993	V
		AiP8 __R	2.573	2.63	2.687	V
		AiP8 __Z	2.268	2.32	2.372	V
		AiP8 __X	1.594	1.63	1.666	V
Reset Threshold Tempco	V_{hys}	-	-	40	-	mV
Reset Threshold Tempco	T_{RST}	-	120	240	600	ms
RESET(N) HIGH-level	$VO_{RESET(N)}$	Iload=800 μA	3.5	-	-	V



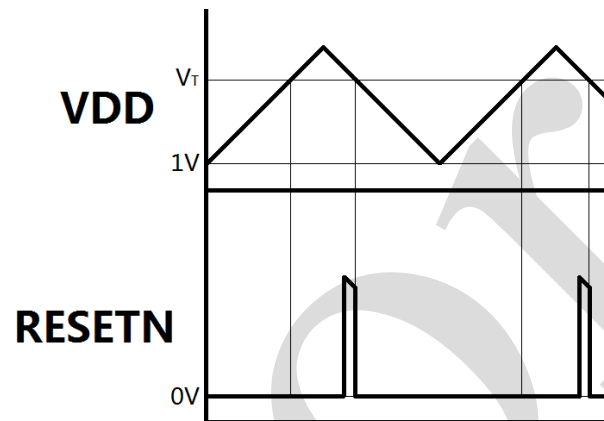
output voltage						
RESET(N) LOW-level output voltage		Iload=3.2mA	-	-	0.4	V

4、Function Description

4.1、Power Supply Detect

When the power supply voltage is lower than the power supply detection voltage (V_T), the RESETN port outputs a low level. When the power supply voltage exceeds V_T , after a fixed delay time from when it surpasses V_T , typically 240ms, the RESETN port outputs a high level. There is a certain hysteresis voltage during the rise and fall process of the power supply voltage near V_T , typically around 40mV.

The output level state of the RESET port is opposite to that of RESETN."





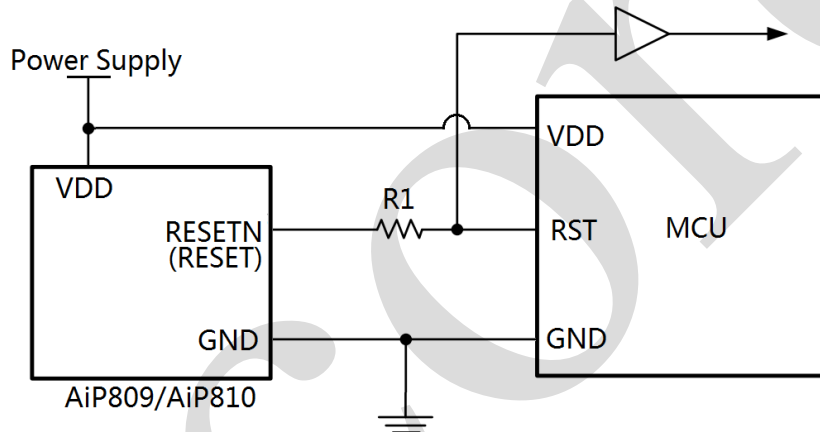
5、Application Note

5.1、Ensure a reliable reset signal

When the power supply voltage is below 1V, the RESETN (RESET) port of the circuit cannot guarantee a stable and effective signal output. When there is a clear reset signal requirement within the range of 0-1V for users, it is strongly recommended to add a pull-down resistor to ground on the RESETN port (or a pull-up resistor to the power supply on the RESET port). The resistance value of the resistor needs to be determined according to the requirements of the entire system's operating environment. It is recommended to use 100K Ω , as this value can meet most conditions.

5.2、Match controllers with bidirectional reset ports

Partial microcontrollers' hardware reset pins have bidirectional properties (can output signals under certain conditions). When using AiP809/AiP810 to provide a hardware reset signal to these devices, additional design is required on the interface. As shown in the diagram below, by connecting a resistor between the RESETN port of the circuit and the RST (IO property) of the controller, this functionality can be achieved.

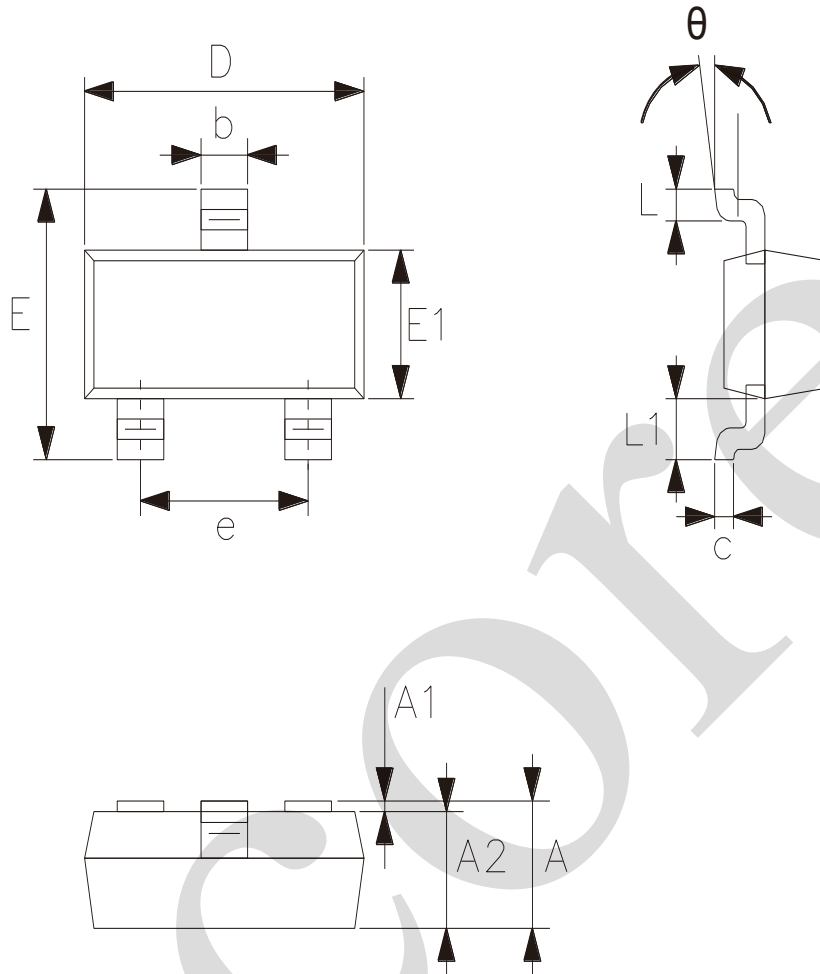


In designing the value of R1, it is necessary to consider the output driving capability of the microcontroller's RST port. It is recommended to use 4.7K Ω , as this value can meet the requirements for most conditions.



6、Package Information

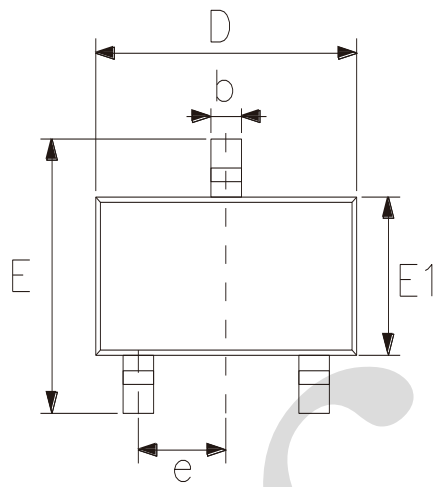
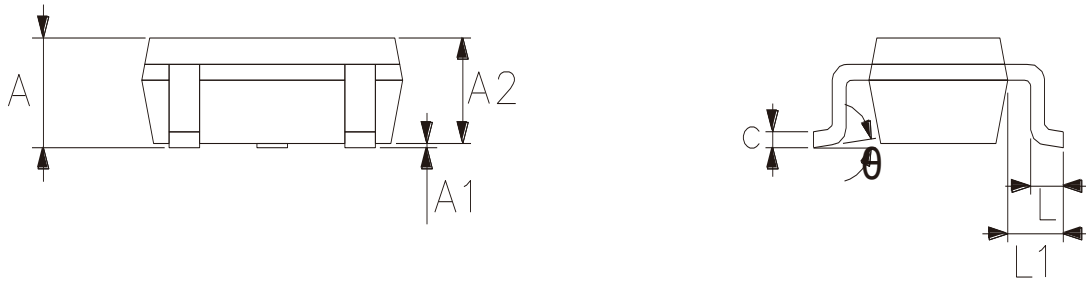
6.1、SOT23



2023/12/A	Dimensions In Millimeters	
	Symbol	Min. Max.
	A	— 1.15
	A1	0.00 0.10
	A2	0.90 1.10
	b	0.30 0.50
	c	0.132 0.202
	D	2.80 3.00
	E	2.25 2.55
	E1	1.20 1.40
	e	1.80 2.00
	L	0.30 0.50
	L1	0.55
	θ	0° 8°



6.2、SOT23-3



2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	—	1.25
A1	0.00	0.12
A2	1.00	1.20
b	0.30	0.50
c	0.10	0.20
D	2.82	3.02
E	2.60	3.00
E1	1.50	1.70
e	0.95	
e1	1.80	2.00
L	0.30	0.60
L1	0.60	
θ	0°	8°



7、Statements And Notes

7.1、The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements									
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers	Dibutyl phthalate	Butylbenzyl phthalate	Di-2-ethylhexyl phthalate	Diisobutyl phthalate
Lead frame	○	○	○	○	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
The lead	○	○	○	○	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○	○	○	○	○
explanation	○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

7.2、Notes

We recommend you to read this chapter carefully before using this product.

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