



AiP811/AiP812 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
2023-10-B3	2023-10	Modify the content
2023-10-B4	2023-10	Modify the parameters
2025-04-B5	2025-04	Add model number: AiP811Z/X and AiP812Z/X
2025-06-B6	2025-06	Add V_{OHRSTN} and V_{OLRSTN} in the Electrical Characteristics
2025-09-B7	2025-09	Add SOT343 package form for AiP811X
2026-09-B8	2026-09	Add SOT343 package form for AiP811L/M/J/T/S/R/Z



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1、General Description

AiP811/AiP812 series are microcontroller reset circuits that detect the supply voltage and provide a reset signal. The circuit provides hardware reset, power-on detection and power-off detection functions. When the hardware reset is effective, the reset port remains in the active state. After the hardware reset, 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).

AiP811 provides an active-low reset signal (RESETN) which is a push-pull output.

AiP812 provides an active-high reset signal (RESET) which is a push-pull output.

Features:

- MRN is active-low input and built-in pull-up resistor
- RESETN/RESET port gives an effective output signal when VDD>1V
- Power-on reset delay time is typical 240ms
- Low Power Consumption
- ESD-HBM: 4000V
- Packaging information: SOT23-5/SOT143/SOT343

Selection table:

Model number	Reset threshold voltage
AiP811L	4.63V
AiP811M	4.38V
AiP811J	4.00V
AiP811T	3.08V
AiP811S	2.93V
AiP811R	2.63V
AiP811Z	2.32V
AiP811X	1.63V
AiP812L	4.63V
AiP812M	4.38V
AiP812J	4.00V
AiP812T	3.08V
AiP812S	2.93V
AiP812R	2.63V
AiP812Z	2.32V
AiP812X	1.63V



Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP811LGB235.TR	SOT23-5	811LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811MGB235.TR	SOT23-5	811MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811JGB235.TR	SOT23-5	811JXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811TGB235.TR	SOT23-5	811TXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811SGB235.TR	SOT23-5	811SXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811RGB235.TR	SOT23-5	811RXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811ZGB235.TR	SOT23-5	811ZXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811XGB235.TR	SOT23-5	811XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812LGB235.TR	SOT23-5	812LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812MGB235.TR	SOT23-5	812MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812JGB235.TR	SOT23-5	812JXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812TGB235.TR	SOT23-5	812TXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812SGB235.TR	SOT23-5	812SXX	3000PCS/reel	30000PCS/box	Dimensions of



					plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812RGB235.TR	SOT23-5	812RXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812ZGB235.TR	SOT23-5	812ZXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP812XGB235.TR	SOT23-5	812XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing:0.95mm
AiP811LGJ143.TR	SOT143	11LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811MGJ143.TR	SOT143	11MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811JGJ143.TR	SOT143	11JXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811TGJ143.TR	SOT143	11TXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811SGJ143.TR	SOT143	11SXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811RGJ143.TR	SOT143	11RXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811ZGJ143.TR	SOT143	11ZXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811XGJ143.TR	SOT143	11XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP812LGJ143.TR	SOT143	12LXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP812MGJ143.TR	SOT143	12MXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm



					Pin spacing:0.95mm
AiP812JGJ143.TR	SOT143	12JXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP812TGJ143.TR	SOT143	12TXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP812SGJ143.TR	SOT143	12SXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP812RGJ143.TR	SOT143	12RXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP812ZGJ143.TR	SOT143	12ZXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP812XGJ143.TR	SOT143	12XXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.9mm×1.3mm Pin spacing:0.95mm
AiP811LGK343.TR	SOT343	MDXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
AiP811MGK343.TR	SOT343	MEXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
AiP811JGK343.TR	SOT343	MFXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
AiP811TGK343.TR	SOT343	MGXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
AiP811SGK343.TR	SOT343	MHXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
AiP811RGK343.TR	SOT343	MIXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
AiP811ZGK343.TR	SOT343	MJXX	3000PCS/reel	30000PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
AiP811XGK343.TR	SOT343	GXXX	3000PCS/reel	30000PCS/box	Dimensions of



					plastic enclosure: 2.1mm×1.3mm Pin spacing:0.65mm
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Note 1: “XX” refers to variable content, meaning package batch serial number.

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

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2、Block Diagram And Pin Description

2.1、Block Diagram

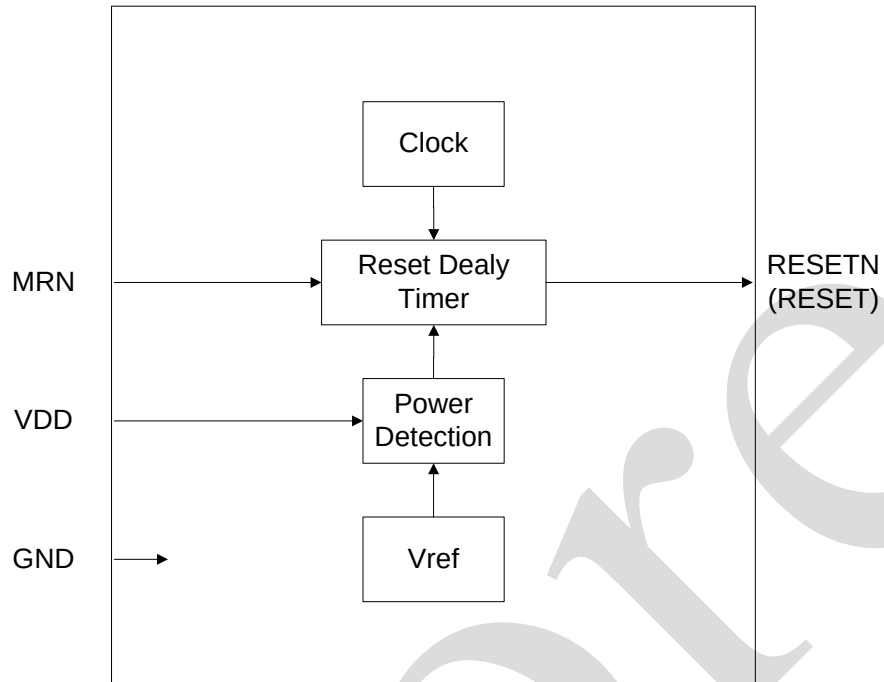


Figure 1. Block Diagram

2.2、Pin Configurations

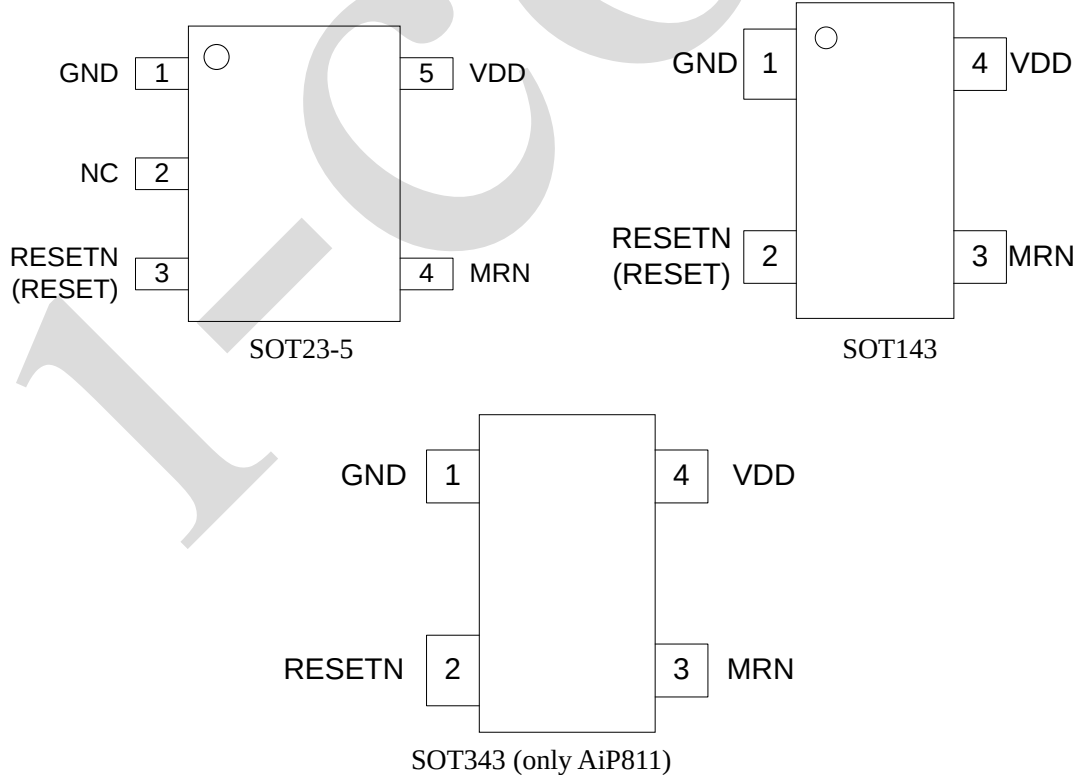


Figure2. Pin Configurations



2.3、Pin Description

Pin No.			Pin Name	Input/ output	Description
SOT23-5	SOT143	SOT343			
1	1	1	GND	Power	Ground
2	-	-	NC	-	No Connect
3	2	-	RESETN (RESET)	O	Power supply detection reset output
-	-	2	RESETN	O	Power supply detection reset output
4	3	3	MRN	I	Hardware reset signal input, active low.
5	4	4	VDD	Power	Power Supply

3、Electrical Parameter

3.1、Absolute Maximum Ratings

(T_{amb}=25℃, unless otherwise specified)

Characteristic	Symbol	Conditions	Value	Unit
Power Supply Voltage	VDD	-	-0.3 to 6.0	V
Input Voltage	VIN	-	-0.3 to VDD+0.3	V
Storage Temperature	T _{stg}	-	-65 to +150	℃
Soldering Temperature	T _L	10s	260	℃

Note:

- 1) 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.
- 2) 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	℃



3.3、Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Supply Voltage	VDD	-	1	-	5.5	V
Supply Current	IDD	AiP81_L	-	17	30	μA
		AiP81_M	-	17	30	μA
		AiP81_J	-	17	30	μA
		AiP81_T	-	17	30	μA
		AiP81_S	-	17	30	μA
		AiP81_R	-	17	30	μA
		AiP81_Z	—	17	30	μA
		AiP81_X	—	17	30	μA
Reset Threshold	V_T	AiP81_L	4.530	4.63	4.730	V
		AiP81_M	4.285	4.38	4.475	V
		AiP81_J	3.914	4	4.086	V
		AiP81_T	3.013	3.08	3.147	V
		AiP81_S	2.867	2.93	2.993	V
		AiP81_R	2.573	2.63	2.687	V
		AiP81_Z	2.268	2.32	2.372	V
		AiP81_X	1.594	1.63	1.666	V
Reset Threshold Tempco	V_{hys}	-	-	40	-	mV
Reset Threshold Tempco	T_{RST}	-	120	240	600	ms
MRN input current	I_{MRN}	MRN=0V	100	250	600	μA
RESETN (RESET) HIGH-level output voltage	V_{OHRSTN}	$I_{LOAD}=800\mu\text{A}$	3.5	-	-	V
RESETN (RESET) LOW-level output voltage	V_{OLRSTN}	$I_{LOAD}=3.2\text{mA}$	-	-	0.4	V
MRN HIGH-level input voltage	V_{IHMRN}	AiP81_L/M/J VDD =5V	2	-	-	V
		AiP81_T/S/R/Z/X VDD =3.3V	$0.7 \times V_{DD}$	-	-	V
MRN LOW-level input voltage	V_{ILMRN}	AiP81_L/M/J VDD =5V	-	-	0.8	V
		AiP81_T/S/R/Z/X VDD =3.3V	-	-	$0.2 \times V_{DD}$	V

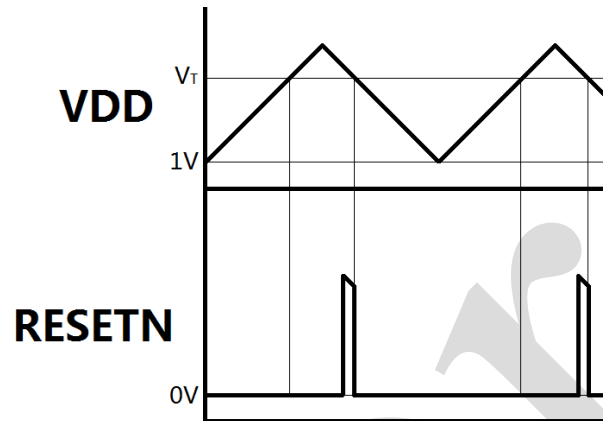


4、Function Description

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."



4.2、External reset function

External reset function is provided by AiP811/AiP812, controlled by the MRN port. When the MRN port receives a low-level input, the RESETN port will maintain a low-level output.

When the power supply voltage exceeds the "power detection voltage (V_T)", if the MRN port changes from a low-level to a high-level input, there will be a fixed delay time, typically 240ms, before the RESETN port outputs a high-level signal.

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



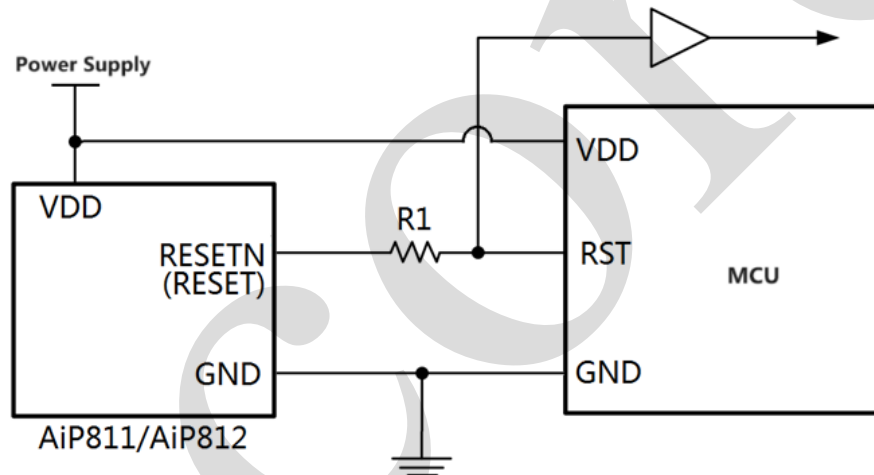
5、Application Note

5.1、Ensure a reliable reset signal

When the power supply voltage is below 1V, the RESETN (RESET) port of AiP811/AiP812 cannot guarantee a stable and effective low-level 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 AiP811/AiP812 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 AiP811/AiP812 and the RST (IO property) of the controller, this functionality can be achieved.

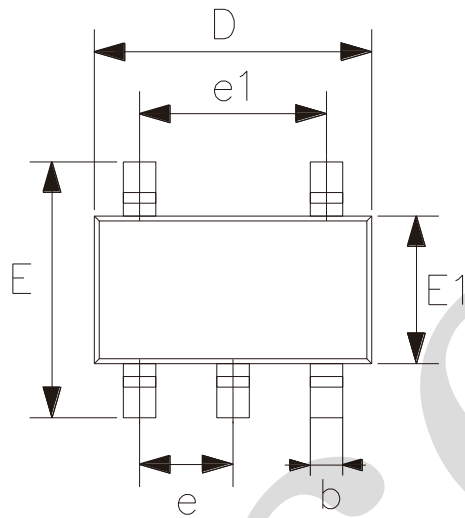
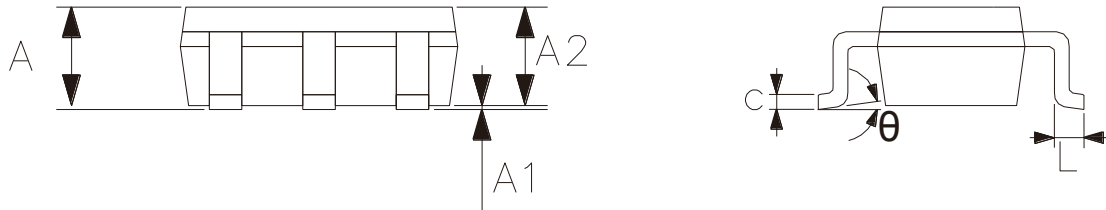


In designing the value of R1, it is necessary to consider the output driving capability of the microcontroller's RST port. It is recommended to use 4.7K Ω , as this value can meet the requirements for most conditions.



6、Package Information

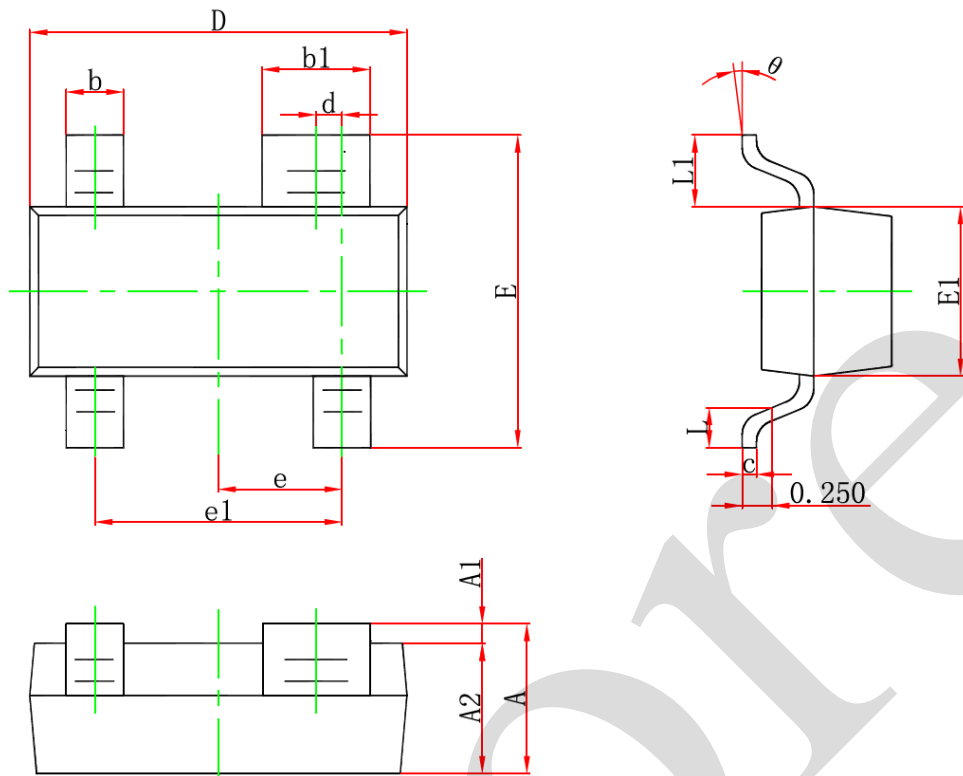
6.1、SOT23-5



2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	—	1.26
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
θ	0°	8°



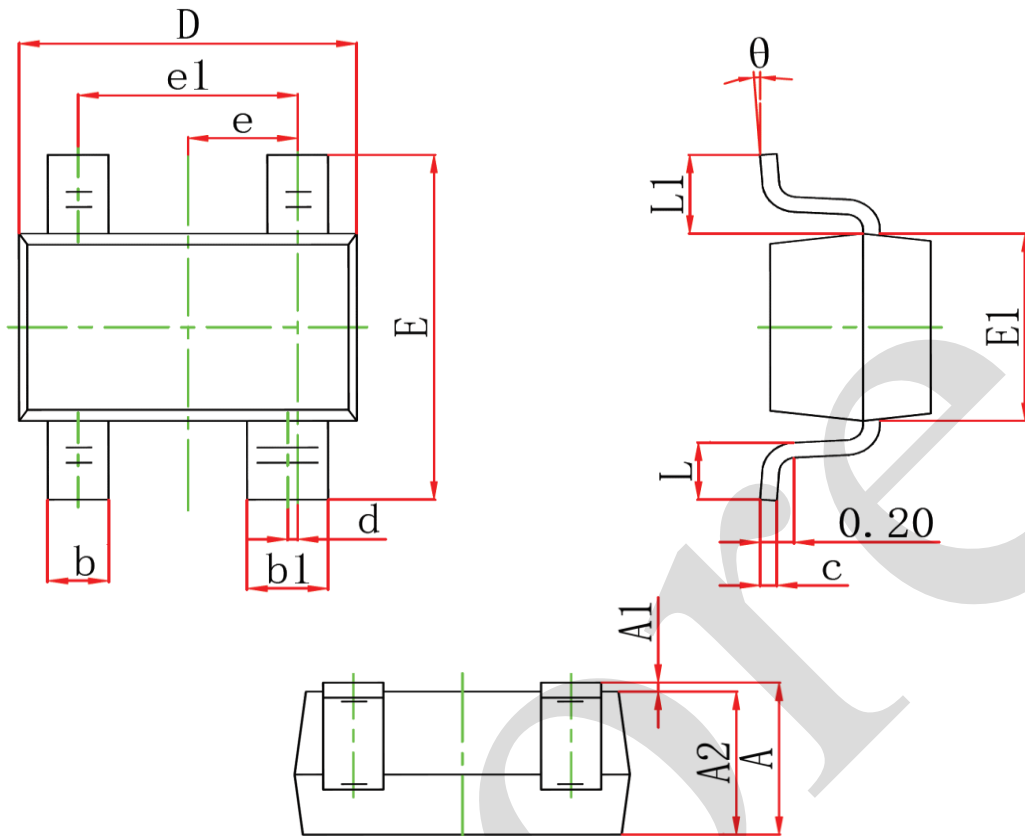
6.2、SOT143



2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	0.90	1.15
A1	0	0.10
A2	0.90	1.05
b	0.30	0.50
b1	0.75	0.90
c	0.08	0.15
d	0.20	
D	2.80	3.00
E	2.25	2.55
E1	1.20	1.40
e	0.95	
e1	1.80	2.00
L	0.30	0.50
L1	0.55	
θ	0°	8°



6.3、SOT343



2024/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	0.90	1.10
A1	0	0.10
A2	0.80	1.00
b	0.25	0.40
b1	0.35	0.50
c	0.08	0.15
d	0.05 TYP	
D	2.00	2.20
E	2.00	2.45
E1	1.15	1.35
e	0.65 TYP	
e1	1.20	1.40
L	0.26	0.46
L1	0.525 REF	
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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