DESCRIPTION

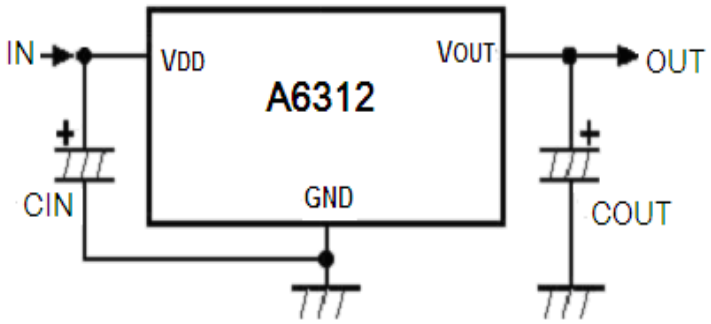
The A6312 series of fixed output low dropout linear regulators are designed for portable battery powered applications which require low noise operation, fast enable response time, and low dropout. The device achieves its low noise performance without the need of an external noise bypass capacitor.

The A6312 can provide output value in the range of 2.5V~5V every 0.1V increasing. The A6312 also can be customized on request.

The A6312 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability, The A6312 series have excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.

The A6312 is available in SOT-23, SOT-25, SOT-89-3 package.

Typical Application



FEATURES

- Low Power Consumption: 8uA (Typ.)at 5V
- Low Output Noise (44uVRMS)
- Low Dropout Voltage: 270mV@150mA(Typ.)load
- High Ripple Rejection: 60dB@10KHz(Typ.)
- Low Temperature Coefficient:±100ppm/°C
- Excellent Line Regulation: 0.05%/V
- Highly Accurate: ±2%
- Available in SOT-23, SOT-25, SOT-89-3 package.

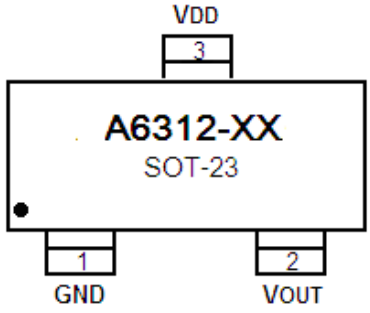
APPLICATION

- Battery Powered Equipment
- Reference Voltage Source
- Hand-Hold Equipment
- Wireless LAN
- GPS Receivers

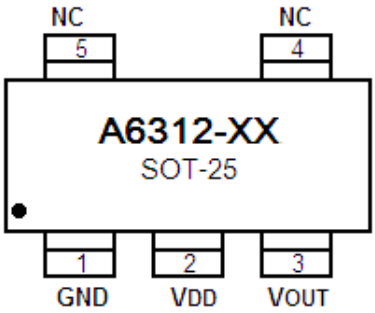
ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	A6312E3R-XX
		A6312E3VR-XX
SOT-25	E5	A6312E5R-XX
		A6312E5VR-XX
SOT-89	K3	A6312K3R-XXZ
		A6312K3VR-XXZ
Note	XX: Output Voltage 25=2.5V, 33=3.3V Z: Pin Type A and B See Pin Description Table V: Green Package R: Tape & Reel	
AiT provides all Pb free products Suffix " V " means Green Package		

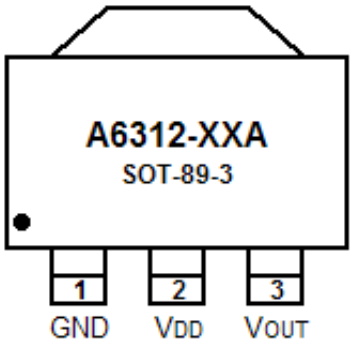
PIN DESCRIPTION



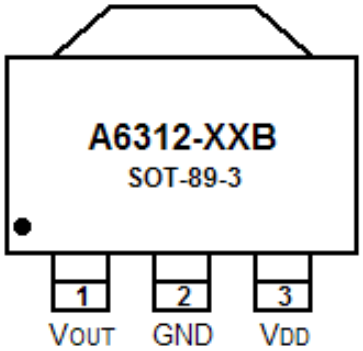
Top View



Top View



Top View



Top View

Pin Number				Symbol	Function
SOT-23	SOT-25	SOT-89-3A	SOT-89-3B		
2	3	3	1	V_{OUT}	Output Pin
3	2	2	3	V_{DD}	Input Pin
1	1	1	2	GND	Ground Pin
-	4、5	-	-	NC	No Connection

ABSOLUTE MAXIMUM RATINGS

Input Voltage	14V
Operating Junction Temperature (T_J)	125°C
Ambient Temperature (T_A)	-40°C~85°C
Power Dissipation	250mW
Storage Temperature (T_S)	-40°C~150°C
Lead Temperature & Time	260 °C, 10 Sec

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

Test Conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25°C, unless otherwise specified..

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{DD}	Input Voltage				12	V
V_{OUT}	Output Voltage	V_{DD} =Set V_{OUT}+1V 1mA≦I_{OUT}≦10mA	V_{OUT} x0.98	V_{OUT} x1.0	V_{OUT} x1.02	V
I_{OUT} (max)Note1	Max Output Current	V_{DD} - V_{OUT} =1V	300			mA
V_{DROP}	Dropout Voltage	I_{OUT}=150mA		270		mV
$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	Line Regulation	I_{OUT}=10mA 4V≦V_{DD}≦6V		0.05	0.2	%/V
ΔV_{OUT}	Load Regulation	V_{DD} =Set V_{OUT} +1V 1mA≦I_{OUT}≦300mA		60		mV
Is	Supply Current	V_{DD} =Set V_{OUT} +1V V_{OUT} Floating		8	15	uA
$\frac{\Delta V_{OUT}}{\Delta T * V_{OUT}}$	Output Voltage Temperature Coefficient	I_{OUT}=10mA		±100		ppm/°C
PSRR	Ripple Rejection	f=100Hz, Ripple=0.5Vp-p V_{DD} =Set V_{OUT} +1V		60		dB
en	Output Noise	BW=10Hz~100KHz		44		uV_{rms}

*Dropout Voltage=V_{IN1}-(V_{OUT2}*0.98)

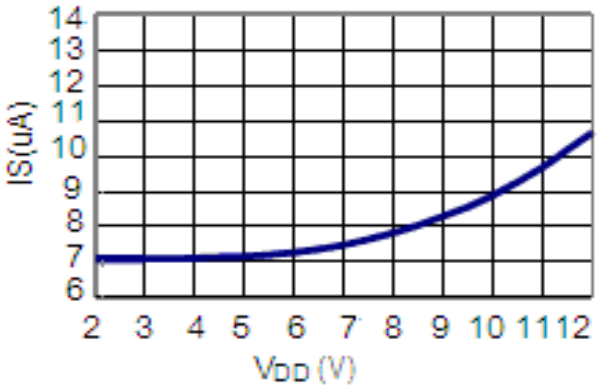
V_{OUT2} is the output voltage when V_{IN}=V_{OUT1}+1.0V and I_{OUT}=300mA.

V_{IN1} is the input voltage at which the output voltage becomes 98% of V_{OUT1} after gradually decreasing the input voltage.

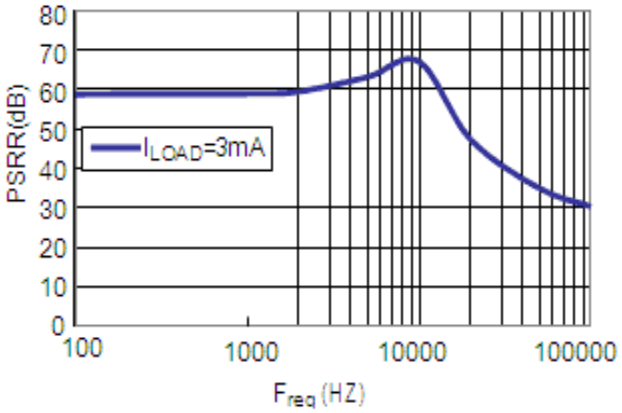
* Note 1: The maximum power rating of each package is a constant, so along with the change of I_{LOAD}, the V_{DD}-V_{OUT} should be controlled to a certain range to ensure the normal operation.

TYPICAL PERFORMANCE CHARACTERISTICS

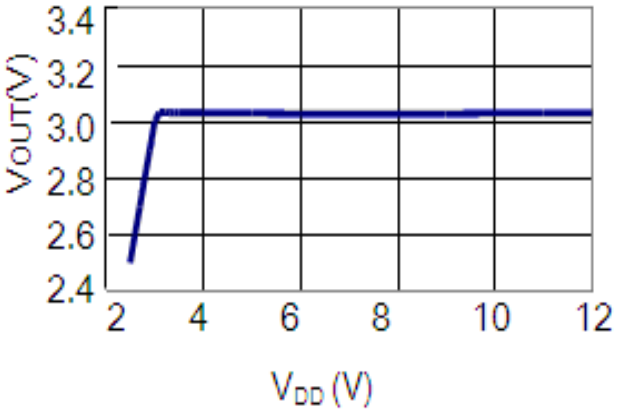
1. Supply Current vs. Input Voltage



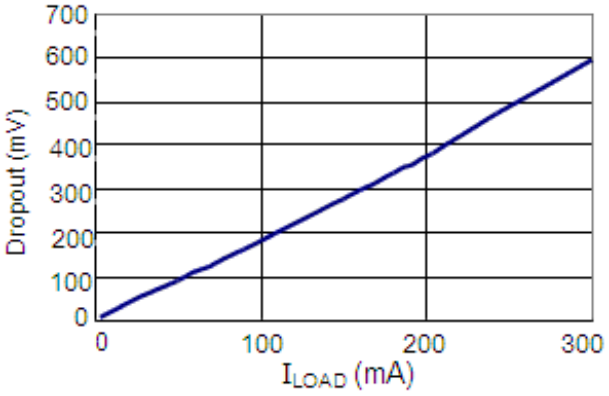
2. Ripple Rejection vs. Frequency



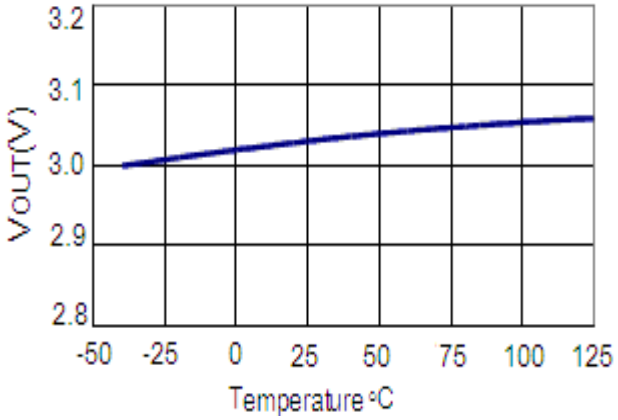
3. Output Voltage vs. Input Voltage



4. Dropout Voltage vs. Output Current

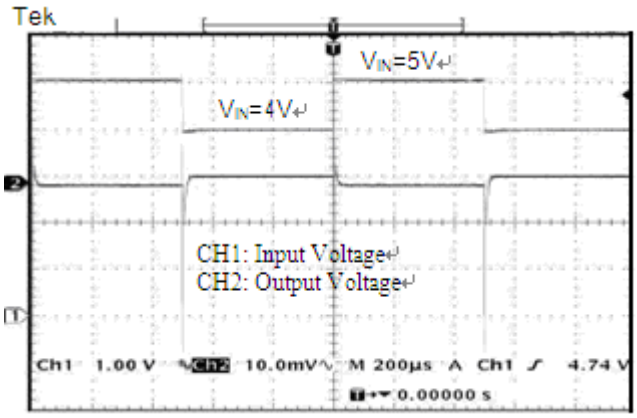


5. Output Voltage vs. Temperature

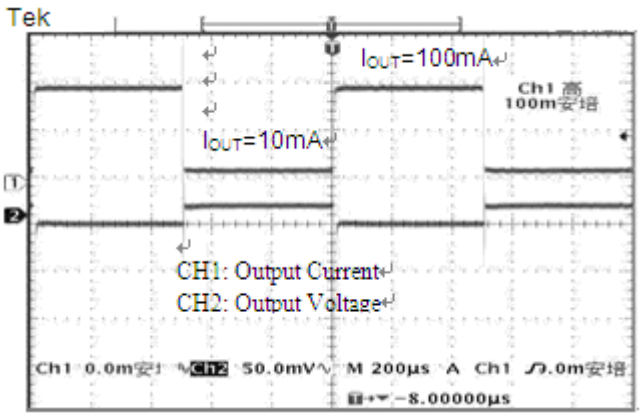


TEST WAVEFORMS

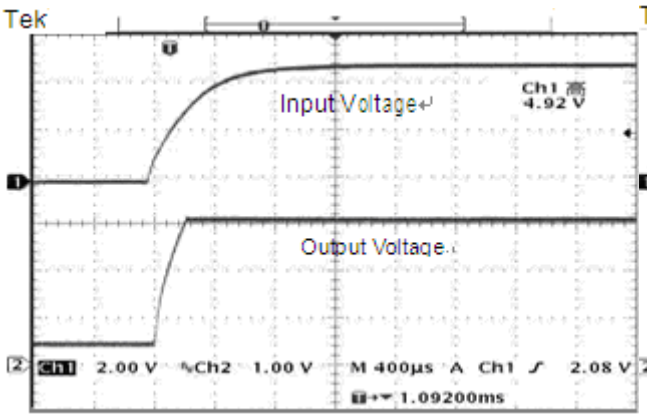
1. Line Transient Response
   C_{IN}=C_{OUT}=1uF, V_{IN}=4↔5V, V_{OUT}=3V



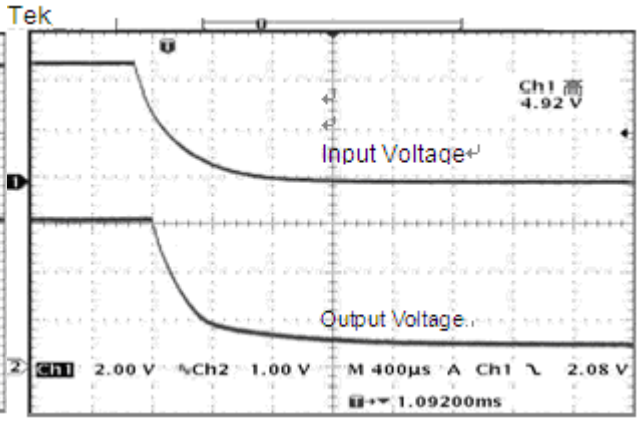
2. Load Transient Response
   C_{IN}=C_{OUT}=1uF, I_{OUT}=10↔100mA, V_{OUT}=3V



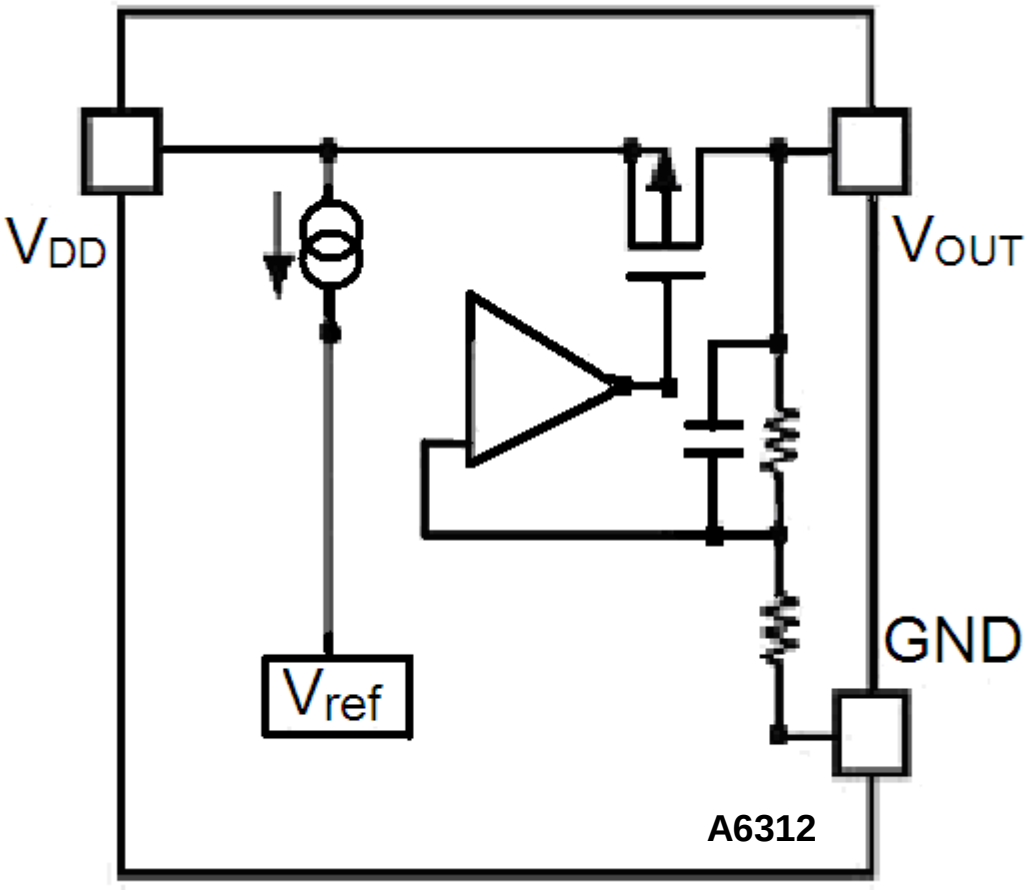
3 Power On Sequence (VIN: 0→5V)
   C_{IN}=C_{OUT}=1uF, I_{OUT}=10↔100mA, V_{OUT}=3V



4. Power Off Sequence (VIN: 5→0V)
   C_{IN}=C_{OUT}=1uF, I_{OUT}=10↔100mA, V_{OUT}=3V



BLOCK DIAGRAM

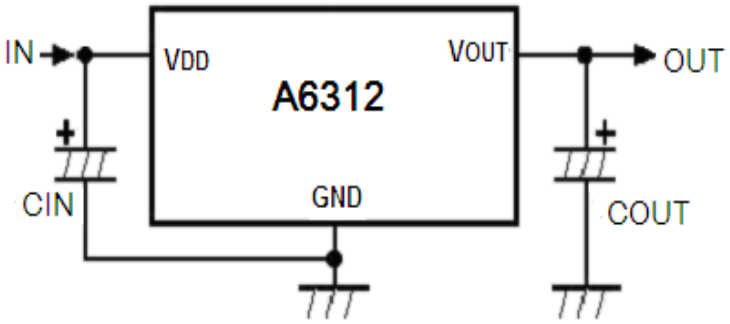


DETAILED INFORMATION

A6312 series is a group of positive voltage output, low noise, fast response, low power consumption, low dropout voltage regulator.

Typical Circuit

A6312 typical circuit as follows:



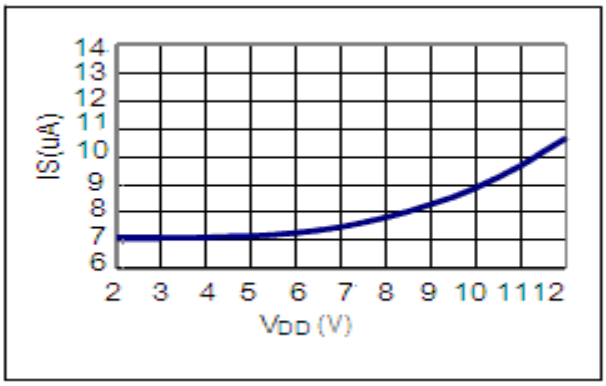
Input Capacitor (C_{IN})

Input capacitor (C_{IN}=1uF) is recommended in all applications.

Output Capacitor (C_{OUT})

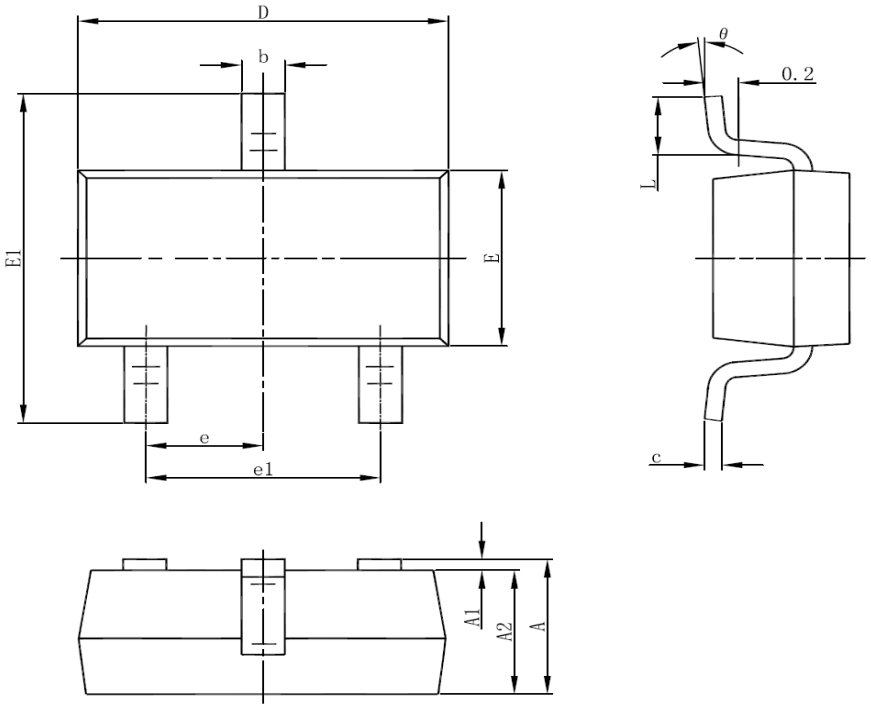
Output Capacitor (C_{OUT} = 1uF / 6.8uF) is recommended in all application to assure the stability of circuit. 1uF Tantalum capacitot or 6.8uF ceramic capacitor is recommended.

Supply Current vs. Input Voltage



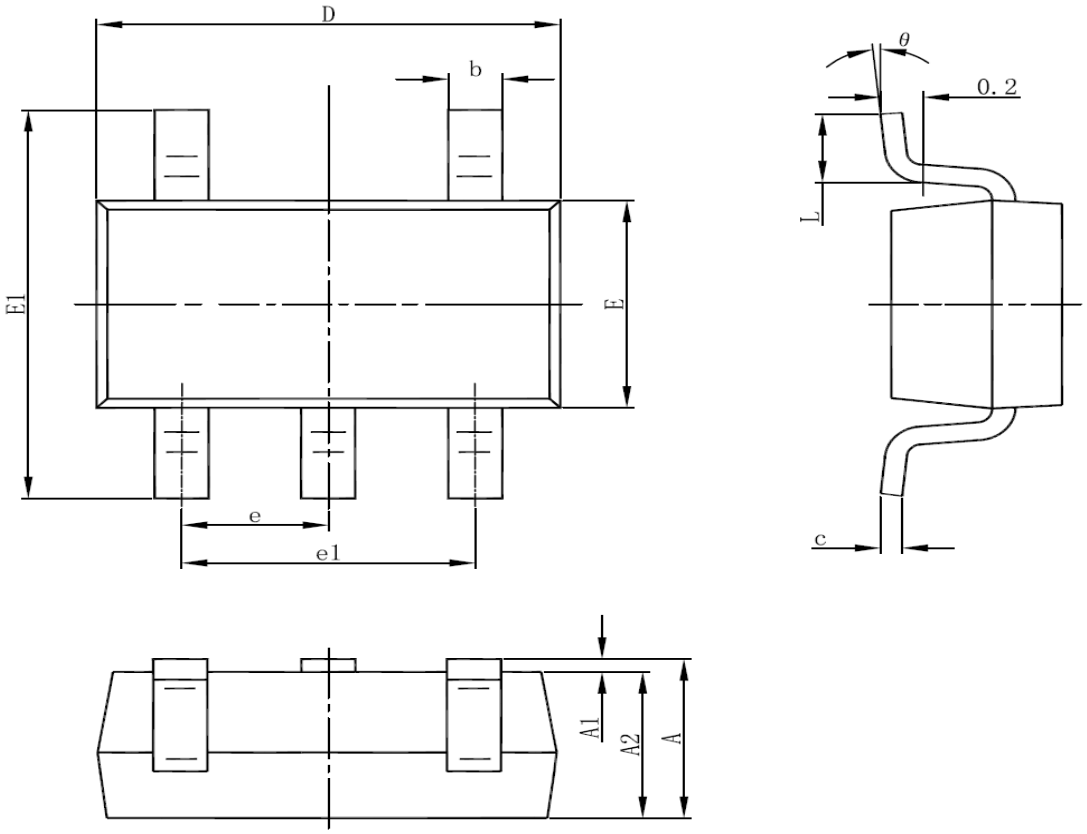
PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)



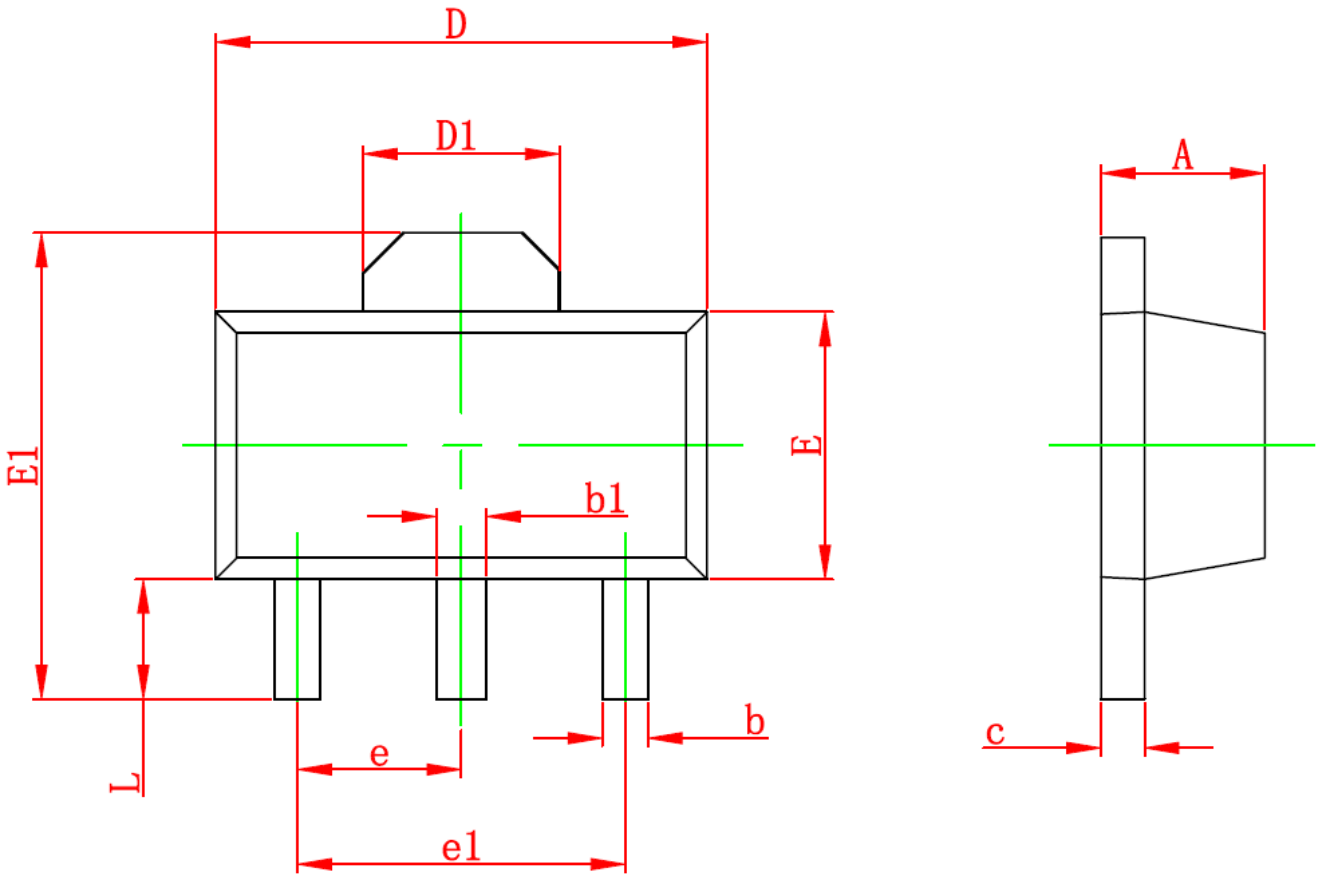
SYMBOL	MIN	MAX
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950(BSC)	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

Dimension in SOT-25 (Unit: mm)



Symbol	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950(BSC)	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

Dimension in SOT-89-3 (Unit: mm)



Symbol	Min	Max
A	1.400	1.600
b	0.320	0.520
b1	0.400	0.580
c	0.350	0.440
D	4.400	4.600
D1	1.550 REF	
E	2.300	2.600
E1	3.940	4.250
e	1.500 TYP	
e1	3.000 TYP	
L	0.900	1.200

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