DESCRIPTION

The A6250 is a series of low dropout regulators to provide fixed positive output from 1.2V~6.0V (0.1V increasing).

The A6250 offers low power consumption, low quiescent current (Iq=3.0uA) to have longer battery life.

The A6250 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

The A6250 has well load transient response and good temperature characteristic, which can assure the stability of chip and power system.

The A6250 is available in SOT-23 and SOT-89 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	A6250E3R-XX
		A6250E3VR-XX
SOT-89	K3	A6250K3R-XXZ
		A6250K3VR-XXZ
Note	XX: Output Type 25=2.5V, 33=3.3V Z: Pin Type A or B or C See Pin Description Table R: Tape & Reel	
AiT provides all RoHS products Suffix "V" means Halogen free Package		

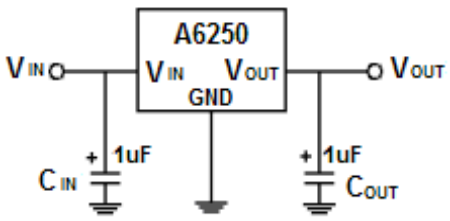
FEATURES

- Low Iq: 3.0uA (typ.)
- Max Output current: 250mA
- Min in/out voltage difference
  170mV@100mA (V_{OUT}=3.0V)
  400mV@250mA (V_{OUT}=3.0V)
- Input Range: 1.5V~10V
- Output Range: 1.2V~6V (0.1V increasing)
- Output voltage accuracy within ±2%
- Current Limit Protection
- Available in SOT-23 and SOT-89 package

APPLICATION

- Power Management for Battery Equipment
- MP3, PDA, DSC, Mouse, PS2 Games
- Voltage Reference
- Regulation after Switching Power

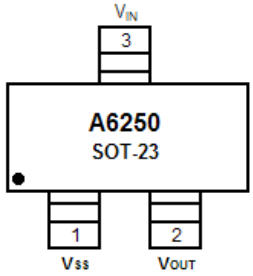
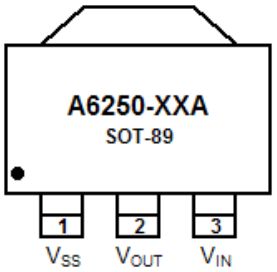
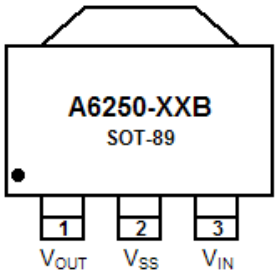
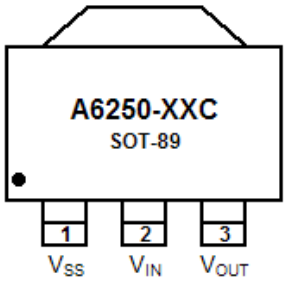
TYPICAL APPLICATION



NOTE1: Input capacitor (C_{IN}=1uF) is recommended in all application circuit. Tantalum capacitor is recommended.

NOTE2: Output capacitor (C_{OUT}=1uF) is recommended in all application to assure the stability of circuit. Tantalum capacitor is recommended.

PIN DESCRIPTION

 Top View	 Top View	 Top View	 Top View

Pin #				Symbol	Function
SOT-23	SOT-89A	SOT-89B	SOT-89C		
1	1	2	1	V_{SS}	Ground Pin
2	2	1	3	V_{OUT}	Output Pin
3	3	3	2	V_{IN}	Input Pin

ABSOLUTE MAXIMUM RATINGS

Max Input Voltage	10V
Junction Temperature(T_J)	125°C
Environment Temperature (T_A)	-40°C ~ 85°C
Power Dissipation (P_D)	
SOT-23	0.15W
SOT-89-3	0.50W
Storage Temperature (Ts)	-45°C~150°C
Lead Temperature and Time	260°C, 10S

Stresses beyond 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.

RECOMMENDED OPERATING CONDITIONS

Parameter	Min	Max	Unit
Input Voltage Range		8	V
Ambient Temperature	-40	+125	℃

ELECTRICAL CHARACTERISTICS

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

A6250-1.5V

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Input Voltage	V_{IN}				8	V
Output Voltage	V_{OUT}		1.47	1.5	1.53	V
Maximum Output Current	I_{OUT} (Max)	V_{IN}=2.5V V_{OUT}>1.47V	250			mA
Input-Output Voltage Differential	Dropout Voltage	I_{OUT}=100mA		270	400	mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT}=40mA 1.6V≤V_{IN}≤8V		0.2	0.3	%/V
Load Regulation	ΔV_{OUT}	V_{IN}=2.5V 1mA≤I_{OUT}≤100mA		20	40	mV
Quiescent Current	Iq	V_{IN}=2.5V		3.0	5.0	μA
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT}=10mA		50		ppm/℃

A6250-3.0V

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Input Voltage	V_{IN}				8	V
Output Voltage	V_{OUT}		2.94	3.0	3.06	V
Maximum Output Current	I_{OUT} (Max)	V_{IN}=4V V_{OUT}>2.94V	250			mA
Input-Output Voltage Differential	Dropout Voltage	I_{OUT}=100mA		170	300	mV
		I_{OUT}=200mA		320	500	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT}=40mA 3.2V≤V_{IN}≤8V		0.2	0.3	%/V
Load Regulation	ΔV_{OUT}	V_{IN}=4.0V 1mA≤I_{OUT}≤100mA		20	40	mV
Quiescent Current	Iq	V_{IN}=4V		3.0	5.0	μA
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT}=10mA		50		ppm/℃

TYPICAL PERFORMANCE CHARACTERISTICS

Load regulation

Figure1. Output Voltage VS. Output Current(V_{OUT}=1.5V)

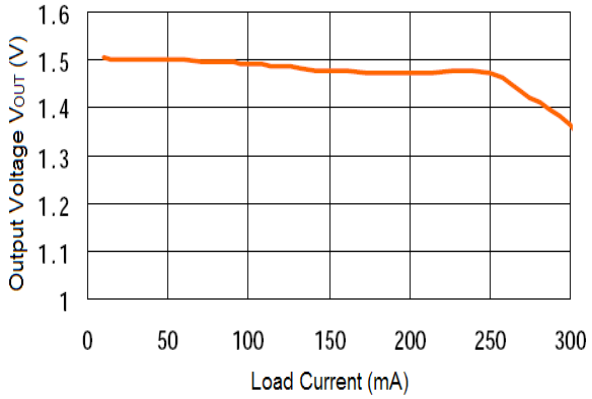
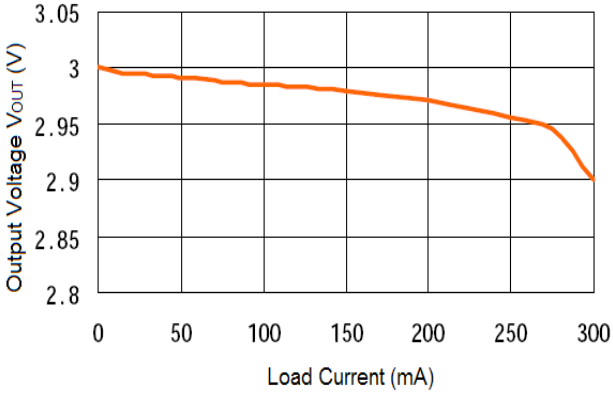


Figure2. Output Voltage VS Output Current(V_{OUT}=3.0V)



Line Regulation

Figure3. Line regulation (V_{OUT}=1.5V)

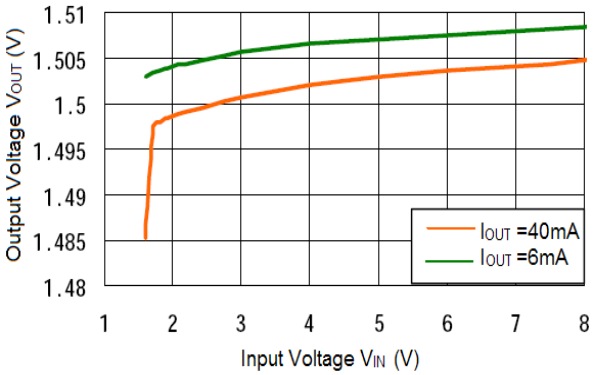
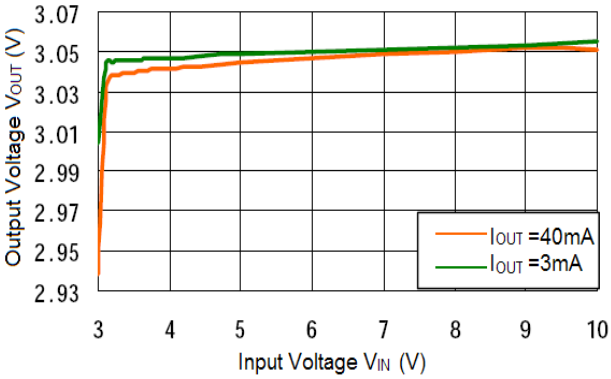


Figure4. Line regulation (V_{OUT}=3.0V)



Dropout Voltage

Figure5. Dropout Voltage (V_{OUT}=1.5V)

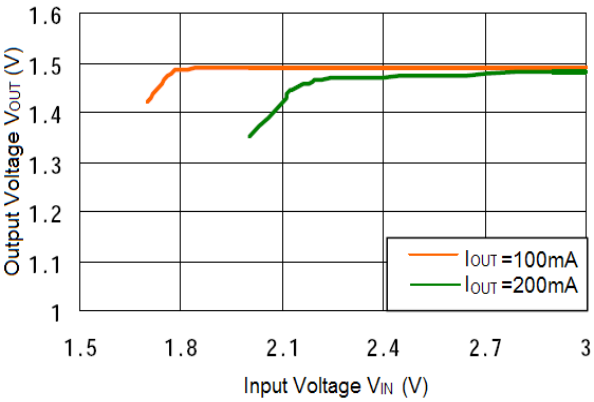
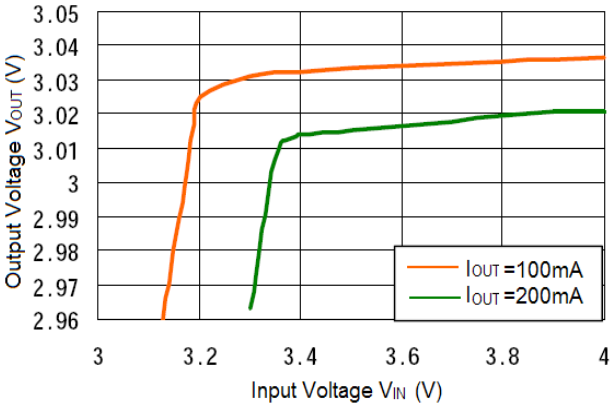
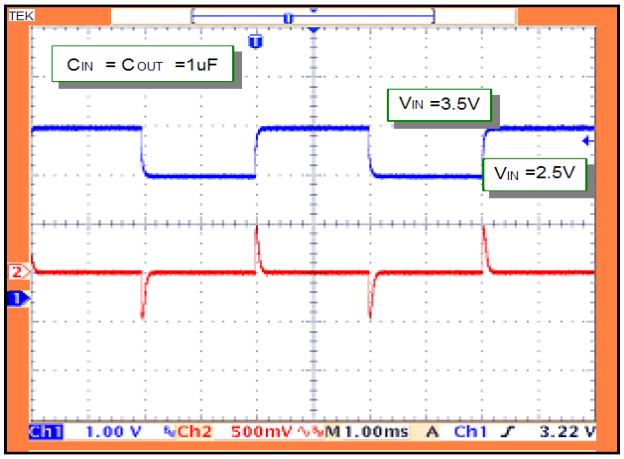


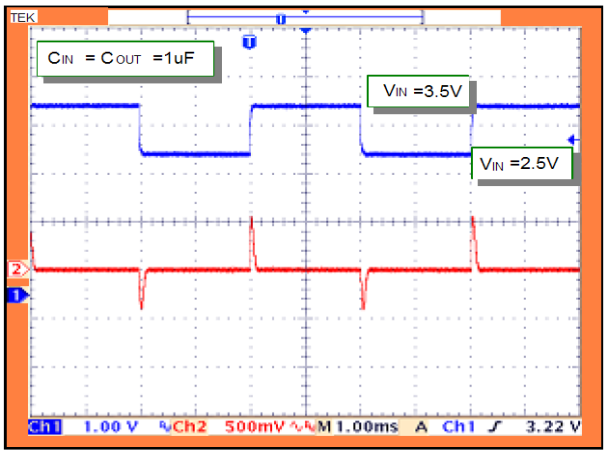
Figure6. Dropout Voltage (V_{OUT}=3.0V)



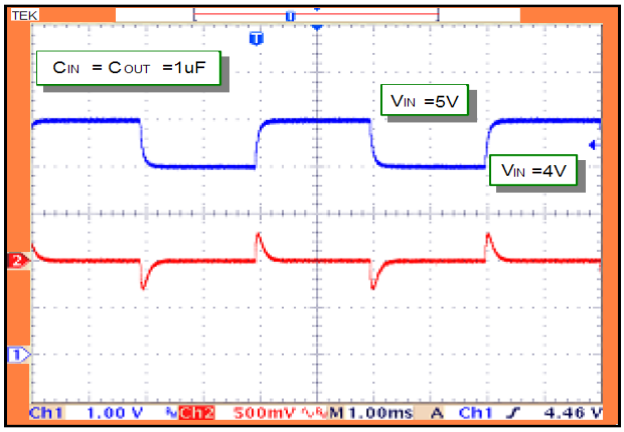
1. Input Voltage Transient Response
V_{OUT}=1.5V, I_{OUT}=10mA



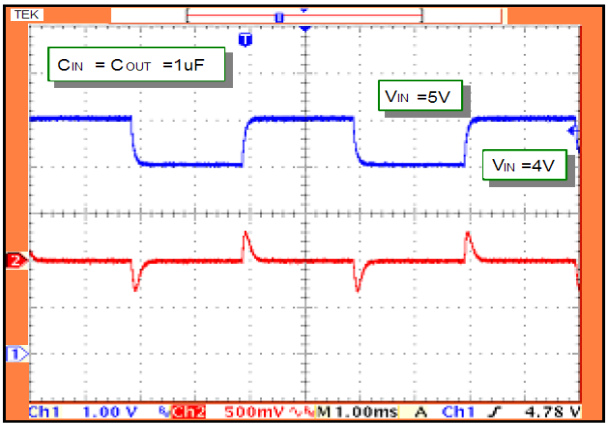
2. Input Voltage Transient Response
V_{OUT}=1.5V, I_{OUT}=1mA



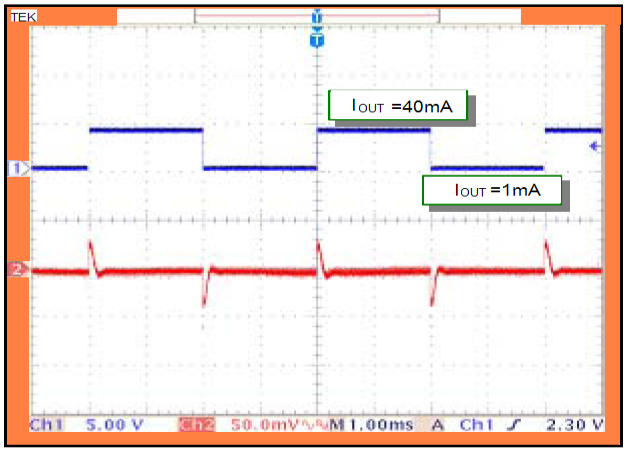
3. Input Voltage Transient Response
V_{OUT}=3.0V, I_{OUT}=10mA



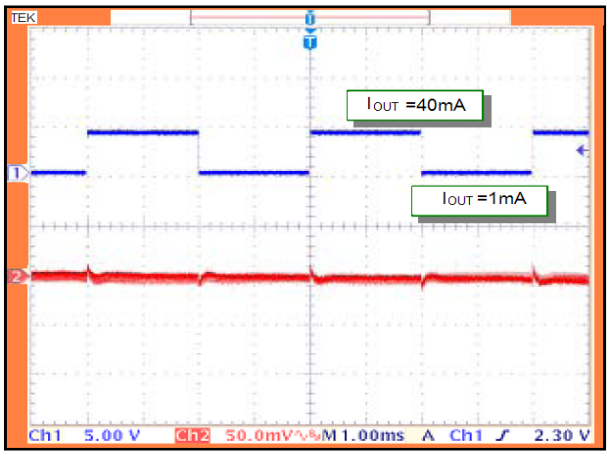
4. Input Voltage Transient Response
V_{OUT}=3.0V, I_{OUT}=1mA



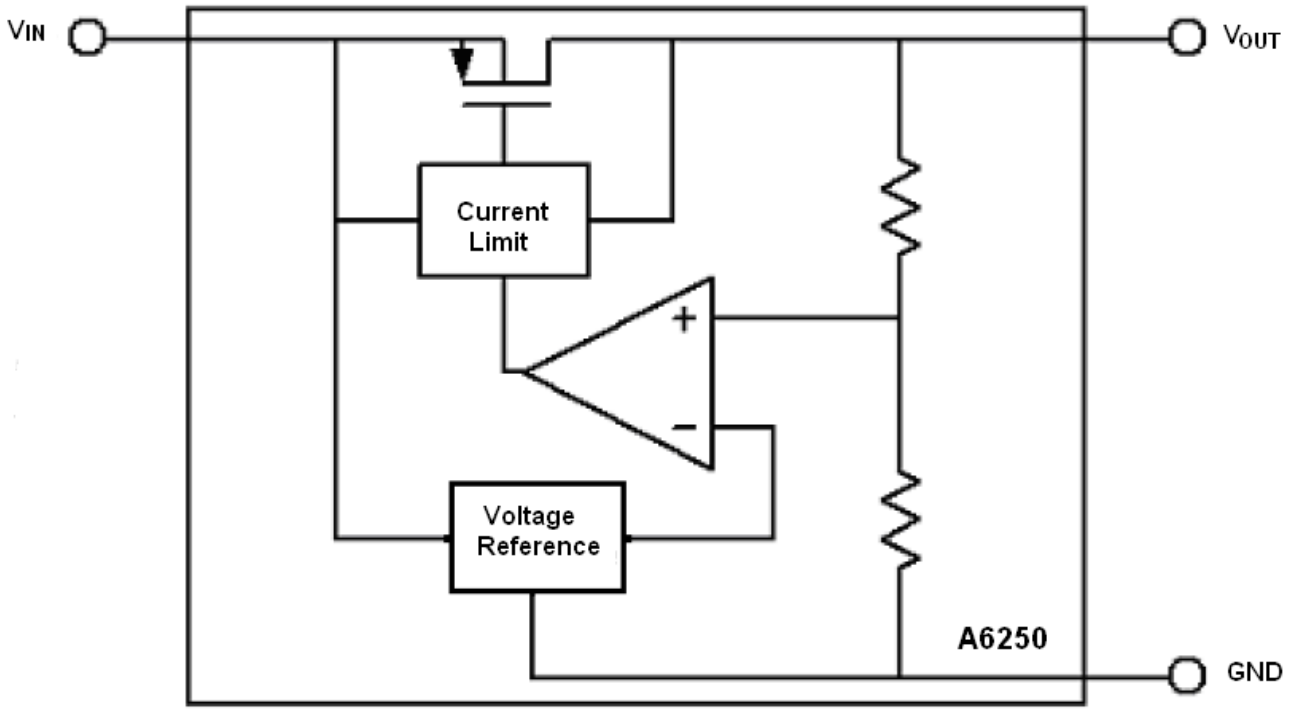
5. Load Transient Response V_{OUT}=1.5V



6. Load Transient Response V_{OUT}=3.0V



BLOCK DIAGRAM



DETAILED INFORMATION

Explanation

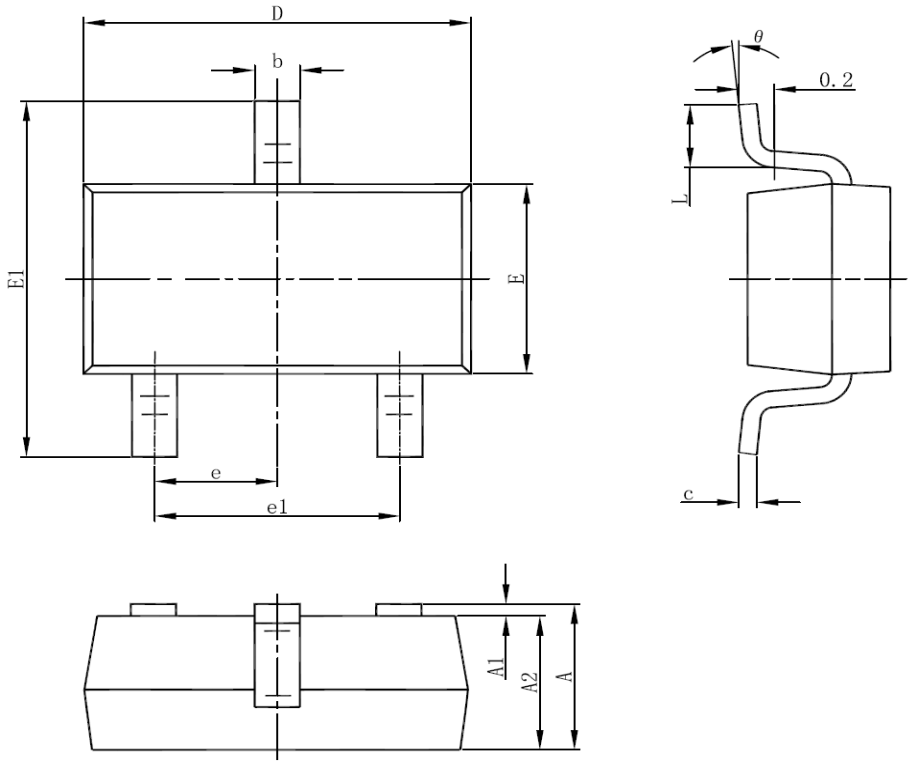
A6250 is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

Current Limit module can keep chip and power system away from danger when load current is more than 250mA.

A6250 uses trimming technique to assure the accuracy of output value within±2%,at the same time, temperature compensated is elaborately considered in this chip, which makes A6250's temperature coefficient within 50ppm/℃.

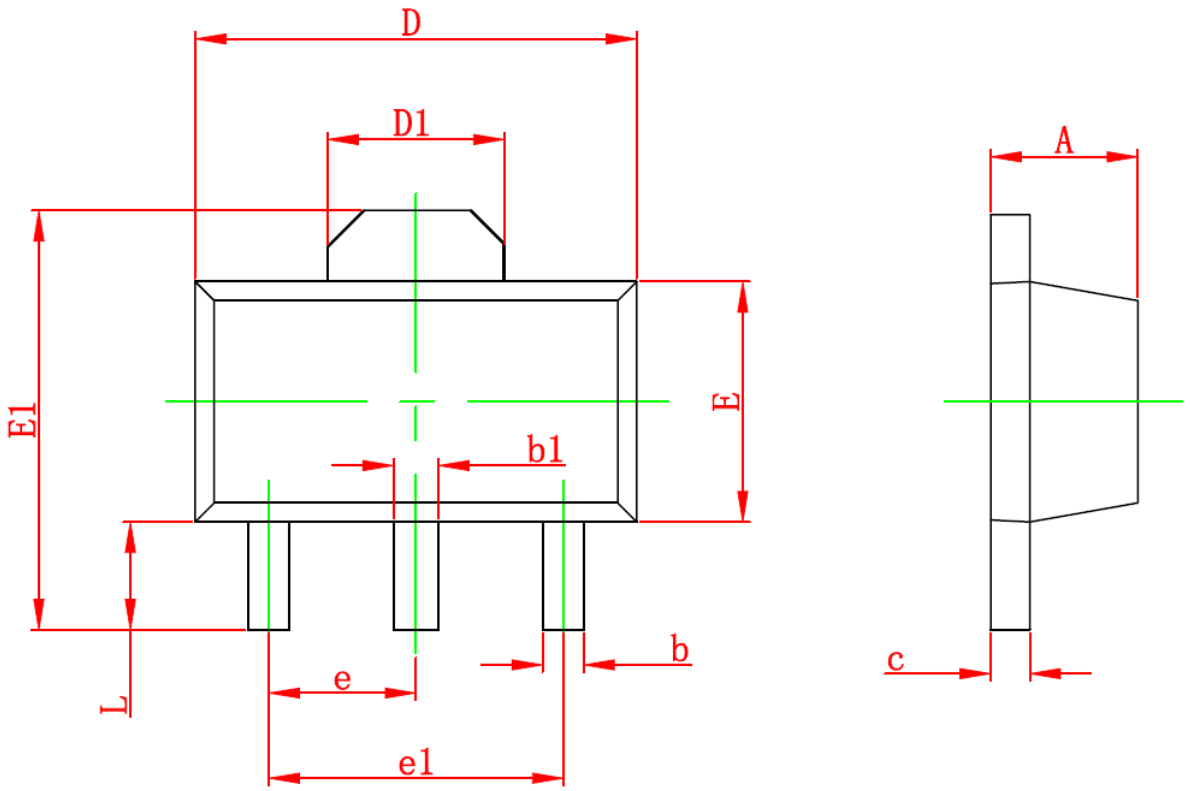
PACKAGE INFORMATION

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-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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