DESCRIPTION

A6250A series is a group of positive voltage output, low power consumption, low dropout voltage, three terminal regulator. It can provide 250mA output current when input / output voltage differential drops to 430mV (V_{OUT}=2.8V). The very low power consumption of A6250A (I_Q=1.0uA) can greatly improve natural life of batteries.

A6250A can provide output value in the range of 1.1V~5.5V in 0.1V steps. It also can customized on command.

A6250A includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

A6250A has well load transient response and good temperature characteristic, and it uses trimming technique to guarantee output voltage accuracy within±2%.

The A6250A is available in SOT-23 and SOT-89-3 packages.

FEATURES

- Low Power Consumption:1.0uA(Typ.)
- Maximum Output Current:250mA
- Small Dropout Voltage
  210mV@100mA (V_{OUT}=2.8V)
  430mV@250mA (V_{OUT}=2.8V)
- Input Voltage Range:1.5V~8V
- Output Voltage Range:1.1V~5.5V
  (customized on command in 0.1V steps)
- Highly Accurate:±2%(±1% customized)
- Output Current Limit
- Available in SOT-23 and SOT-89-3 Packages

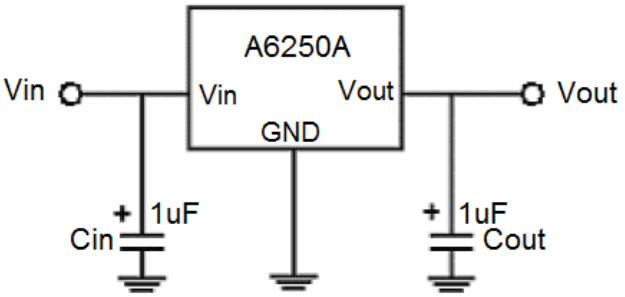
APPLICATION

- Battery Powered equipment
- Power Management of MP3、PDA、DSC、Mouse、PS2 Games
- Reference Voltage Source Regulation after Switching Power

ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	A6250AE3R-XX
		A6250AE3VR-XX
SOT-89-3	K3	A6250AK3R-XX
		A6250AK3VR-XX
Note	XX: Output Voltage 30=3.0V; 33 = 3.3V V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

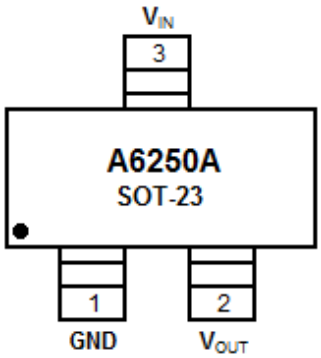
TYPICAL APPLICATION



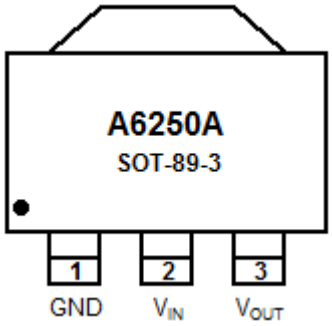
NOTE1: Input capacitor (C_{IN}=1uF) is recommended in all application circuit. Ceramic capacitor is recommended.

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

PIN DESCRIPTION



Top View



Top View

Pin #		Symbol	Function
SOT-23	SOT-89-3		
1	1	GND	Ground Pin
2	3	V_{OUT}	Output Voltage
3	2	V_{IN}	Supply Voltage Input

ABSOLUTE MAXIMUM RATINGS

Max Input Voltage		10V
T_J, Operating Junction Temperature		125°C
T_A, Ambient Temperature		-40°C ~85°C
Power Dissipation	SOT-23	250mW
	SOT-89-3	500mW
T_S, Storage Temperature		-40°C ~150°C
Lead Temperature & Time		260°C,10S

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications 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	85	°C

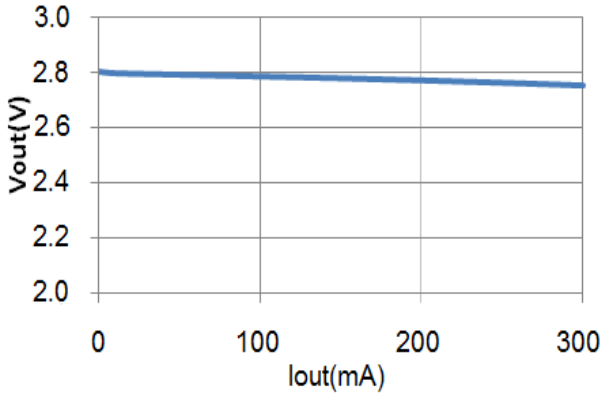
ELECTRICAL CHARACTERISTICS

Test Conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25°C, Unless Otherwise Specified

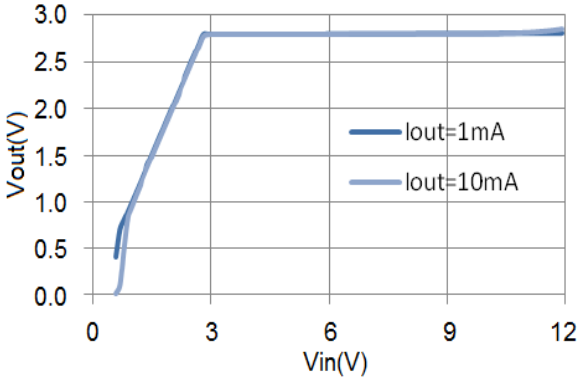
Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Input Voltage	V_{IN}					8	V
Output Voltage	V_{OUT}			V_{OUT} x0.98		V_{OUT} X1.02	V
Maximum Output Current	$I_{OUT(MAX.)}$	V_{IN}-V_{OUT}=1V		200			mV
Input-Output Voltage Differential	Dropout Voltage	I_{OUT}=100mA	V_{OUT} ≤1.8V		600	1000	mV
			V_{OUT} ≥1.8V		300	600	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT}=10mA 1.5V≤V_{IN}≤8V			0.2	0.3	%/V
Load Regulation	ΔV_{OUT}	V_{IN}=Set V_{OUT}+1V 1mA≤I_{OUT}≤100mA			20	40	mV
Quiescent Current	I_Q	V_{IN}=Set V_{OUT}+1V			1.0	5.0	uA
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT}=10mA			100		ppm/°C

TYPICAL PERFORMANCE CHARACTERISTICS

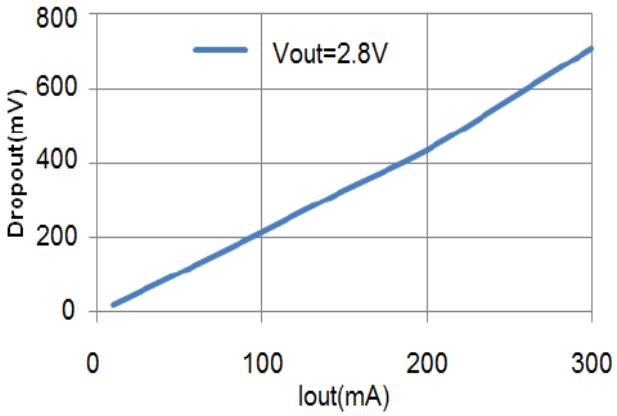
1. Load regulation (V_{IN}=4V)



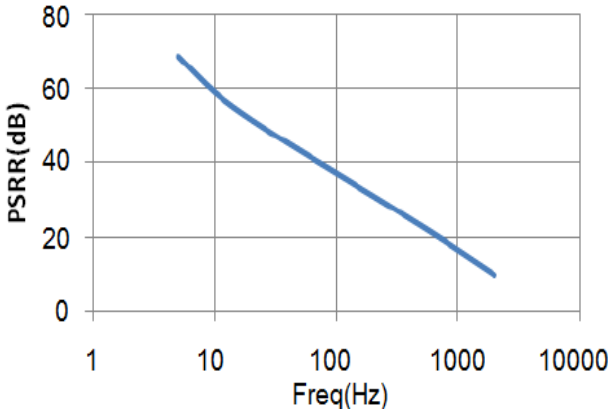
2. Line regulation



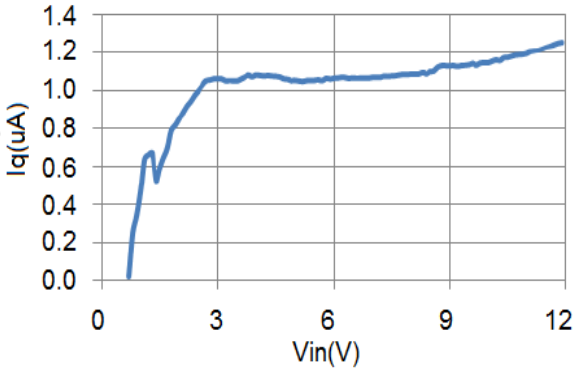
3. Dropout Voltage



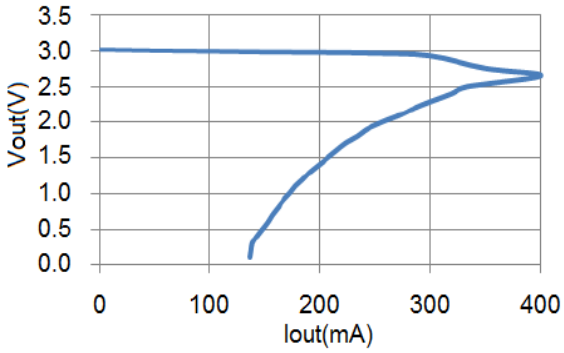
4. PSRR



5. I_Q (V_{OUT}=2.8V)

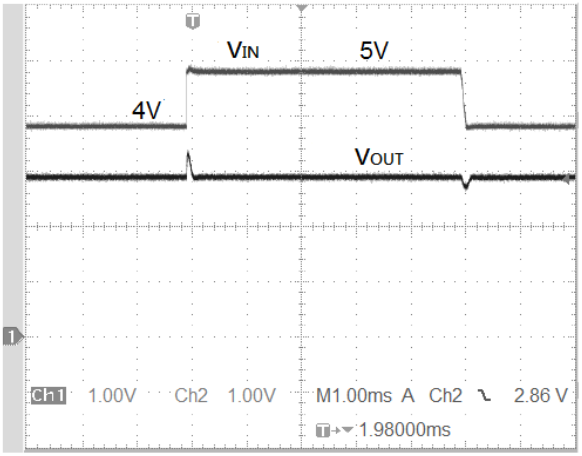


6. Current limit



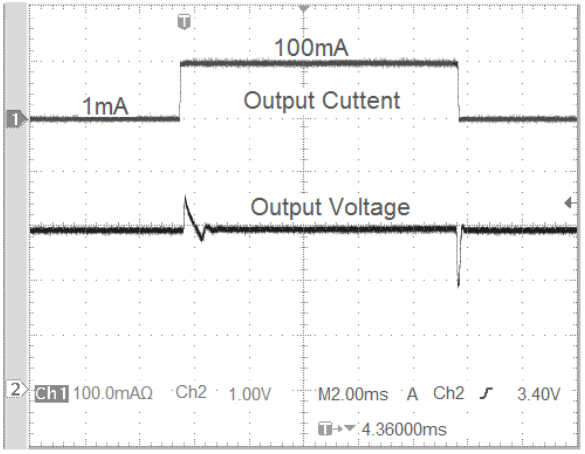
7. Line transient response

C_{IN}=C_{OUT}=1uF, I_{OUT}=10mA, V_{OUT}=2.8V

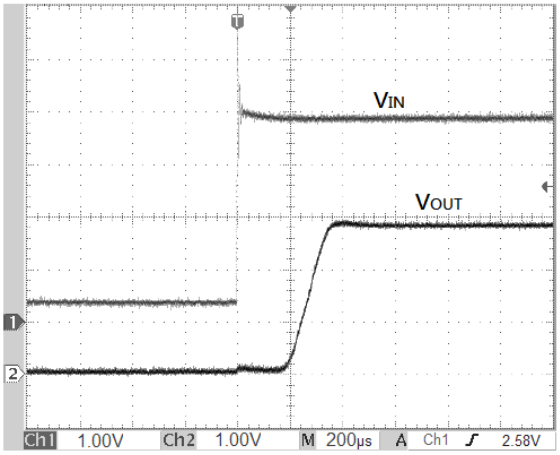


8. Load transient response

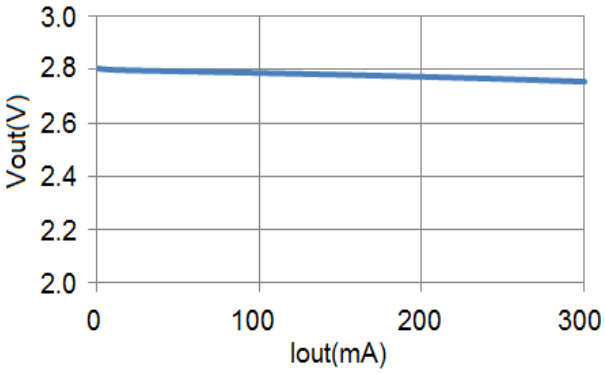
C_{IN}=C_{OUT}=1uF, V_{IN}=4V, V_{OUT}=2.8V



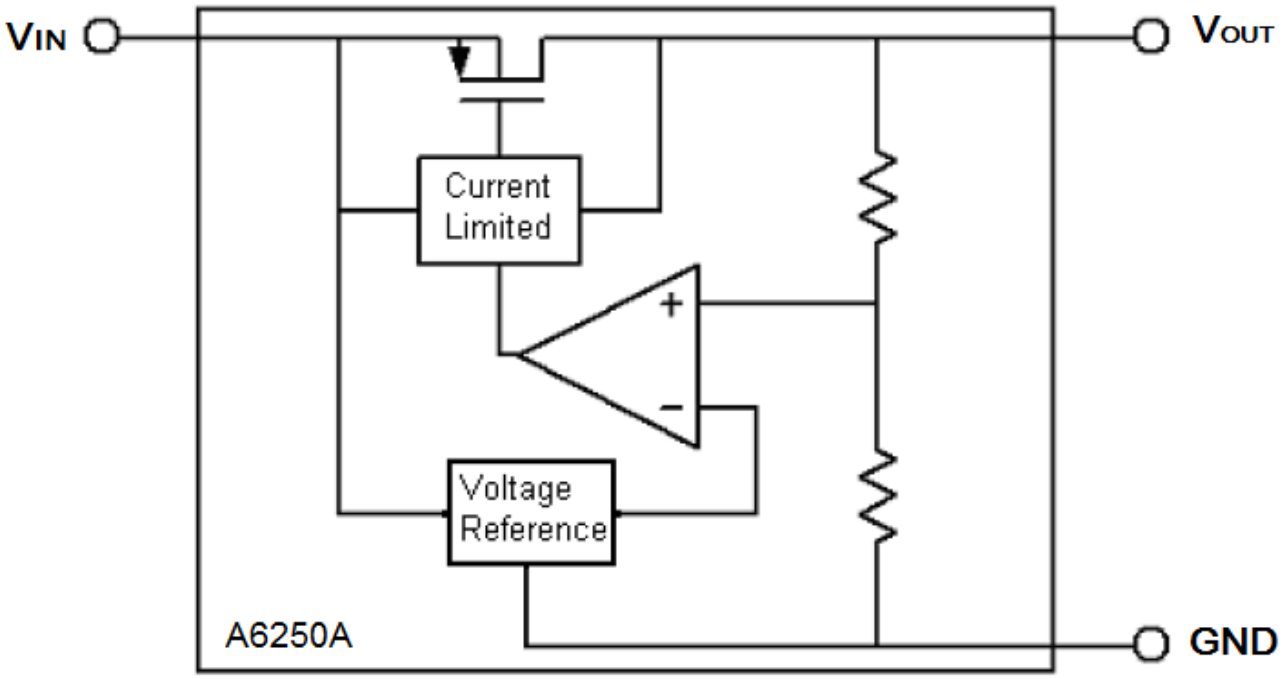
9. Start up



10. Output Voltage VS. Output Current V_{OUT}=2.8V



BLOCK DIAGRAM



DETAILED INFORMATION

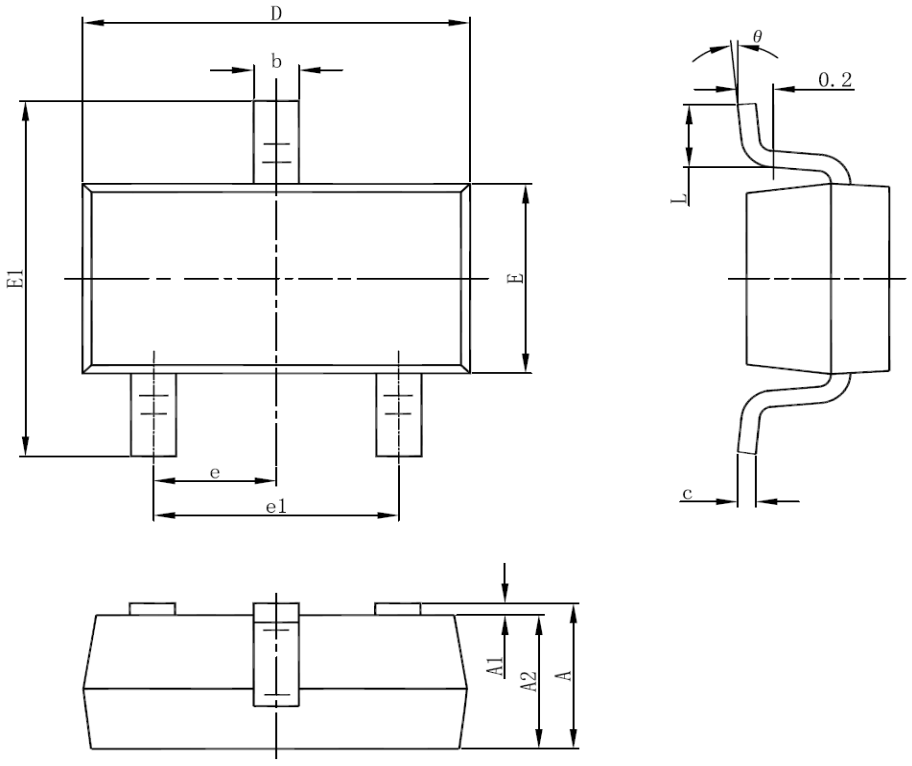
A6250A is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

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

A6250A uses trimming technique to assure the accuracy of output value within ±2%, at the same time, temperature compensation is elaborately considered in this chip, which makes A6250A's temperature coefficient within 100ppm/℃

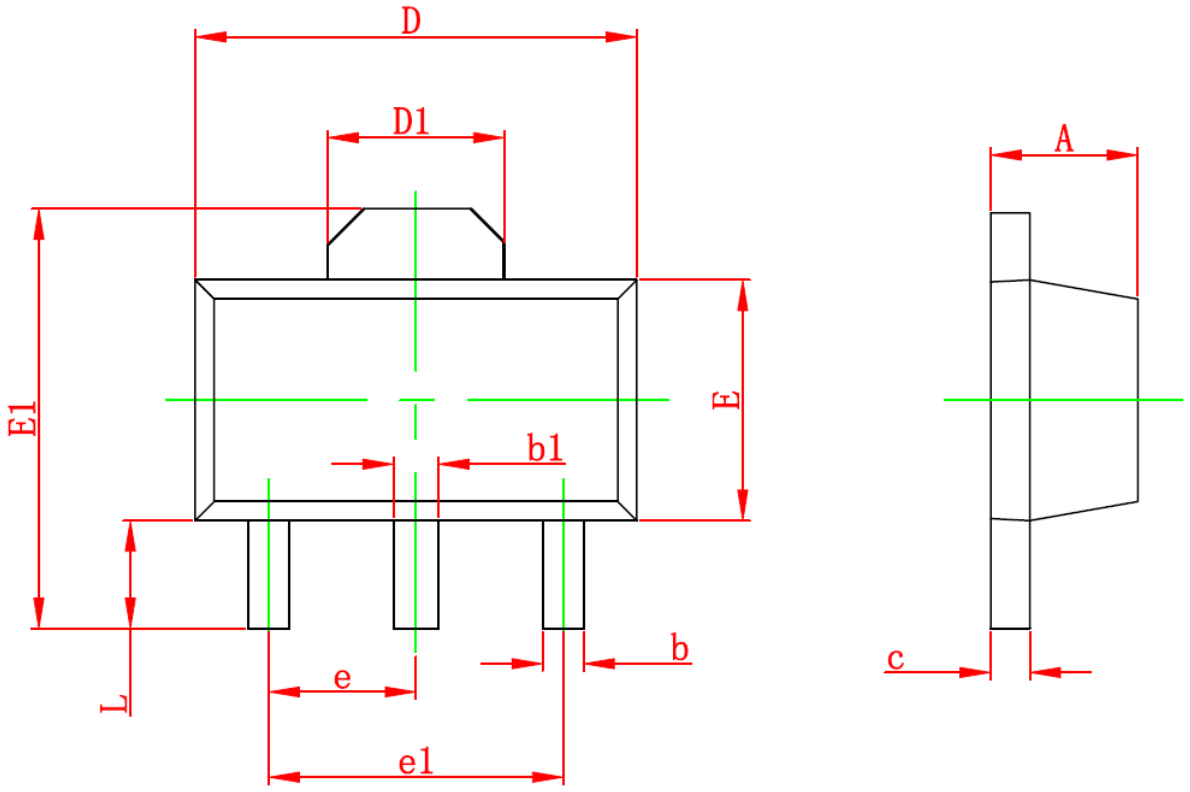
PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



SYMBOL	MIN	MAX
A	-	1.400
A1	0.000	0.100
A2	1.000	1.300
b	0.030	0.050
c	0.100	0.260
D	2.700	3.100
E	1.400	1.800
E1	2.500	3.100
e	0.950(BSC)	
e1	1.700	2.100
L	0.200	-
θ	0°	8°

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



Symbol	Min	Max
A	1.400	1.600
b	0.220	0.620
b1	0.370	0.570
c	0.300	0.500
D	4.400	4.600
D1	1.400	1.800
E	2.400	2.600
E1	-	4.250
e	1.400	1.600
e1	2.900	3.100
L	0.800	-

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