AiT Semiconductor Inc.

DESCRIPTION

The A6150 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 A6150 can provide output value in the range of 1.2V~5.0V every 0.1V increasing. The A6150 also can be customized on request.

The A6150 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module, The A6150 has excellent load and line transient response and good temperature characteristics, when can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

The A6150 is available in SOT-25 and SC70-5 package

ORDERING INFORMATION

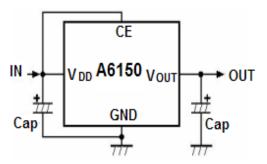
Package Type	Part Number		
SOT-25	E5	A6150E5R-XXZ	
		A6150E5VR-XXZ	
SC70-5	C5	A6150C5R-XX	
		A6150C5VR-XX	
	XX: Output Voltage		
Note	25=2.5V, 33=3.3V		
	Z: Output Type A & B		
	See Pin description		
	V: Green Package		
	R: Tape & Reel		
AiT provides all RoHS products			
Suffix " V " means Halogen free Package			

FEATURES

- Low Power Consumption: 25uA (Typ.)
- Low Output Noise (27uVRMS)
- Standby Mode: 0.1uA
- Low Dropout Voltage: 0.2V@100mA(Typ.)
- High Ripple Rejection: 65dB@1kHz(Typ.)
- Low Temperature Coefficient:±100ppm/°C
- Excellent Line Regulation: 0.05%/V
- Built-in chip Enable Circuit
- Output Voltage Range: 1.2V~5.0V
- Highly Accurate: ±2% (±1% customized)
- Output Current Limit
- Available in SOT-25 and SC70-5 package

APPLICATION

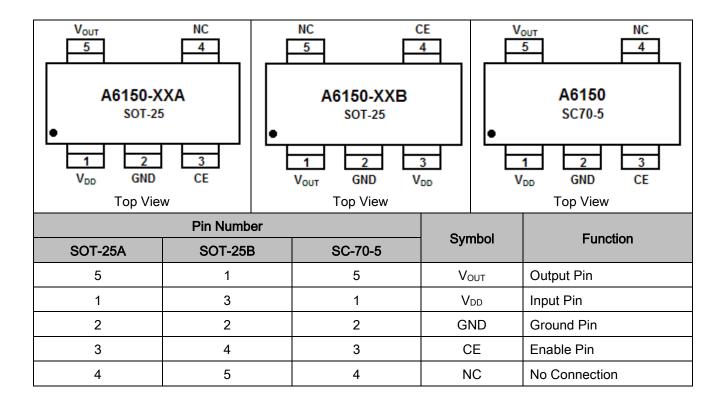
- Power Source for Cellular Phones and various kind of PCs
- Battery Powered Equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power



Typical Application



PIN DESCRIPTION





ABSOLUTE MAXIMUM RATINGS

Max Input Voltage	8V
Junction Temperature(T _J)	125°C
Output Current	200mA
Power Dissipation (SOT-25)	200mW
Power Dissipation (SC-70-5)	200mW
Storage Temperature (Ts)	-45°C~150°C
Lead Temperature and Time	260°C, 10S

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.

THERMAL RESISTANCE

Package	θյΑ	θлс
SOT-25	250°C/W	130°C/W
SC70-5	333°C/W	170°C/W

NOTE: Thermal Resistance is specified with approximately 1 square of 1 oz copper.



ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
V _{IN}	Input Voltage		1.8		8	V
Vout	Output Voltage	Vin=Set Vout+1V 1mA≦Iout≦30mA	V _{оит} x0.98		V _{оит} x1.02	V
I _{OUT} (Max)	Max Output Current	V _{IN} - V _{OUT} =1V	150			mA
Dropout Voltage	Input-Output Voltage Differential	Refer to the Electrical Characteristics by output voltage			voltage	
ΔV _{OUT} ΔV _{IN} x V _{OUT}	Line Regulation	Ι _{ουτ} =40mΑ 1.6V≦Vin≦8V		0.05	0.2	%/V
ΔVουτ /ΔΙουτ	Load Regulation	Vin=Set Vout+1V 1mA≦Iout≦80mA		12	40	mV
lss	Supply Current	Vin=Set Vout+1V		25	50	uA
ISTANDBY	Supply Current (Standby)	Vin=Set Vout+1V, V _{CE} =GND		0.1	1.0	uA
ΔVουτ	Output Voltage					
ΔT- V _{OUT}	Temperature Coefficiency	I _{OUT} =30mA		±100		ppm/∘C
PSRR	Ripple Rejection	F=1kHz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
ILIM	Short Current Limit	V _{OUT} =0V		20		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	mΩ
Vceh	CE Input Voltage "H"		1.5		Vin	V
Vcel	CE Input Voltage "L"		0		0.25	V
EN	Output Noise	BW=10Hz~100kHz		27		uV _{RMS}

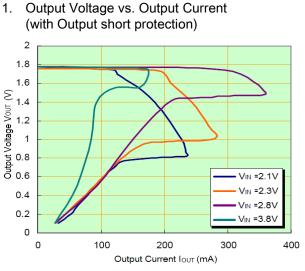
Test Conditions: C_{IN}=1uF, C_{OUT}=2.2uF, T_A=25°C, unless otherwise noted.

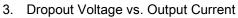
ELECTRICAL CHARACTERISTICS BY OUTPUT VOLTAGE

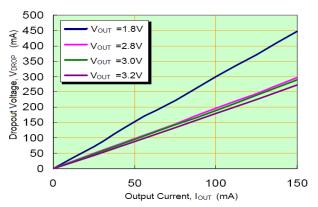
Output Voltage	Dropout Voltage, V _{DIF} (V)		
Vout (V)	Condition	Тур.	Max
Vout =1.5 V		0.38	0.70
Vout =1.6V		0.36	0.65
V _{OUT} =1.7V	I _{ОUT} =120mA	0.34	0.60
1.8V≦Vout≦2.0		0.32	0.55
2.1V≦Vout≦2.7		0.28	0.60
2.8V≦Vout≦4.0		0.22	0.35



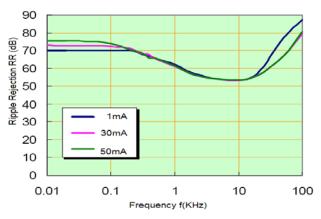
TYPICAL PERFORMANCE CHARACTERISTICS

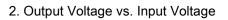


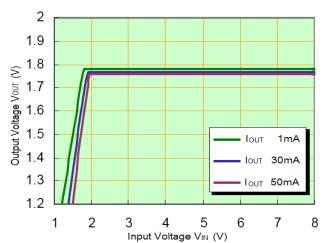


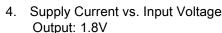


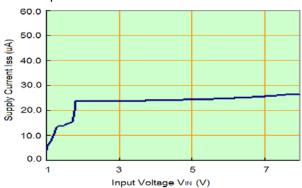




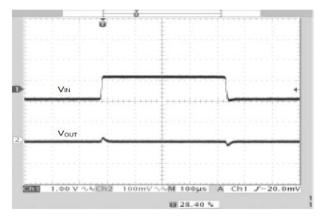






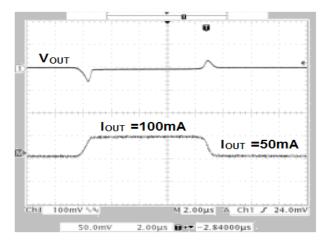


6. Line Transient Response



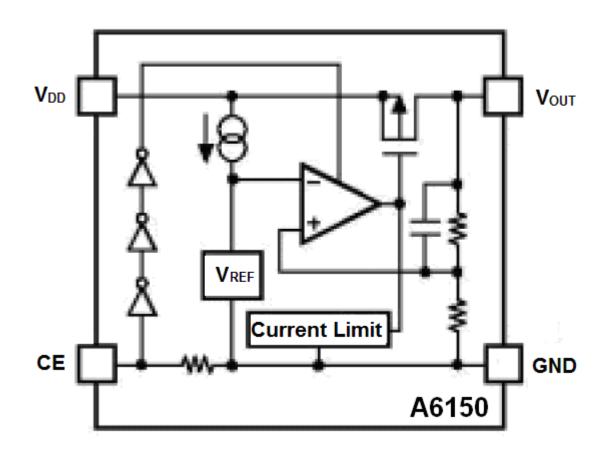


7. Load Transient Response





BLOCK DIAGRAM



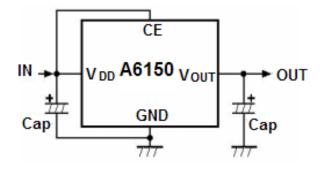


DETAILED INFORMATION

A6150 series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

Typical Circuit

A6150 typical circuit as follows:



Input Capacitor (CIN)

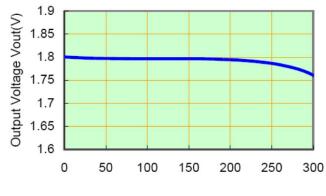
Input capacitor (C_{IN}=1uF) is recommended in all application circuit.

Output Capacitor (COUT)

Output Capacitor (C_{OUT} = 1uF / 2.2uF) is recommended in all application to assure the stability of circuit.

Output Voltage vs. Output Current

Example: A6150-18 (1.8V output)

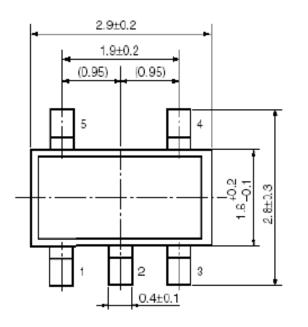


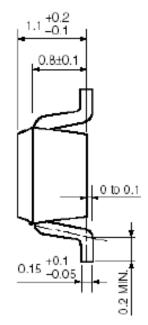
Output Current lout(mA)

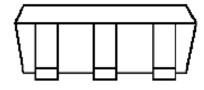


PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)

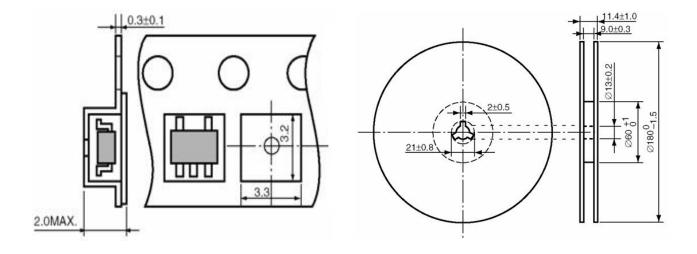






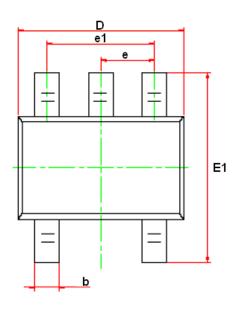
Tape Dimension

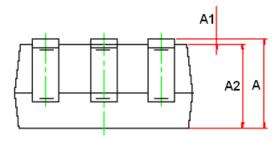
Reel Dimension

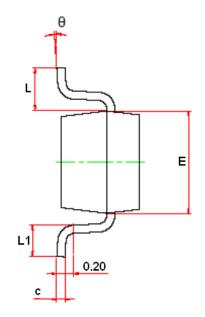




Dimension in SC70-5 (Unit: mm)







Symbol	Dimensions in Millimeters		
	Min	Max	
A	0.900	1.100	
A1	0.000	0.100	
A2	0.900	1.000	
b	0.150	0.350	
С	0.080	0.150	
D	2.000	2.200	
E	1.150	1.350	
E1	2.150	2.450	
e	0.065 TYP		
e1	1.200	1.400	
L	0.525 REF		
L1	0.260 0.460		
θ	0° 8°		



IMPORTANT NOTICE

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