DESCRIPTION

A6500 series is a group of positive voltage output, low power consumption, low dropout voltage regulator. A6500 can provide output value in the range of 1.2V~4.5V every 0.1V step. It also can be customized on command.

A6500 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

A6500 has 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%.

A6500 is available in SOT-25 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-25	E5	A6500E5R-XX
		A6500E5VR-XX
Note	XX: Output Voltage 25=2.5V, 33=3.3V R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

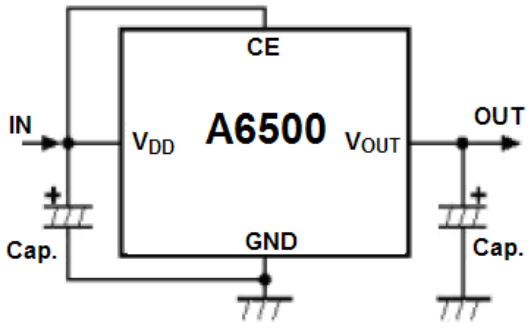
FEATURES

- Low Dropout Voltage: 0.46V@ 500mA(Typ.)
- Low Power Consumption: 75uA (Typ.)
- Low Output Noise (47uV$_{RMS}$)
- Standby Mode: 0.1uA
- High Ripple Rejection: 66dB@ 100Hz(Typ.)
- Low Temperature Coefficient: ±100ppm/℃
- Build-In chip enable and discharge circuit
- Excellent Line Regulation: 0.05%/V
- Output Voltage Range: 1.2V~4.5V
  (customized on command every 0.1V step)
- Highly accurate: ±2% (±1% customized)
- Output Current Limit
- Available in SOT-25 Package

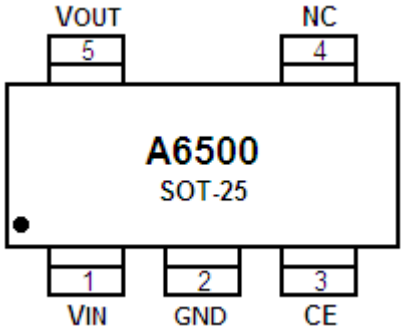
APPLICATION

- Power Source for Cellular Phone and Various Kind of PCSs
- Battery Powered Equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

TYPICAL APPLICATION



PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V_{IN}	Input Pin
2	GND	Ground Pin
3	CE	Chip Enable Pin
4	NC	No Connection
5	V_{OUT}	Output Pin

ABSOLUTE MAXIMUM RATINGS

Max Input Voltage	10V
T_J, Junction Temperature	125℃
Output Current	500mA
Power Dissipation	250mW
T_S, Storage Temperature	45℃~150℃

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.

RECOMMENDED OPERATING CONDITIONS

Input Voltage Range	8V
Ambient Temperature	-40°C to 85°C

THERMAL RESISTANCE

Package	θ_{JA}	θ_{JC}
SOT-25	250°C/W	130°C/W

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

ELECTRICAL CHARACTERISTICS

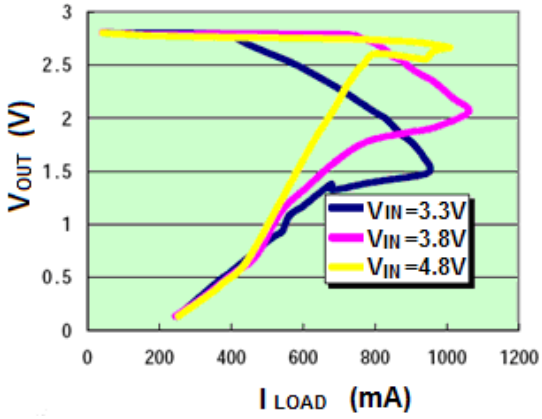
(Test Condition: C_{IN} = 1uF, C_{OUT} = 3.4uF, T_A =25℃, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Input Voltage	V_{IN}				8	V
Output Voltage	V_{OUT}	V_{IN} = Set V_{OUT} + 1V 1mA≦ I_{OUT} ≦ 30mA	V_{OUT}x0.98	V_{OUT1}	V_{OUT}x1.02	V
Maximum Output Current	I_{OUT} (Max.)	V_{IN} – V_{OUT} = 1V	500			mA
Dropout Voltage V_{OUT}≧2.8V	V_{DROP}Note1	I_{OUT} = 100mA		88	120	mV
		I_{OUT} = 300mA		270	350	
		I_{OUT} = 500mA		460	600	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT} = 40mA 2.8V ≦ V_{IN} ≦ 8V		0.05	0.2	%/V
Load Regulation	ΔV_{OUT} / ΔI_{OUT}	V_{IN} = Set V_{OUT} + 1V 1mA ≦ I_{OUT} ≦ 500mA		20	40	mV
Supply Current	I_{SS}	V_{IN} = Set V_{OUT} + 1V		75	90	uA
Supply Current (Standby)	$I_{STANDBY}$	V_{IN} =Set V_{OUT} + 1V V_{CE} =GND		0.1	1.0	uA
Output Voltage Temperature Coefficiency	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT} = 30mA		±100		ppm/℃
Ripple Rejection	PSRR	F = 100Hz Ripple = 0.5V_{P-P} V_{IN} = Set V_{OUT} + 1V		65		dB
Short Current Limit	I_{LIM}	V_{OUT} = 0V		200		mA
CE Pull down Resistance	Rpd		2.0	5.0	10.0	MΩ
CE Input Voltage “H”	V_{CEH}		1.5		V_{IN}	V
CE Input Voltage “L”	V_{CEL}		0		0.25	V
Output Noise	EN	BW=10Hz~100kHz		47		uV_{RMS}

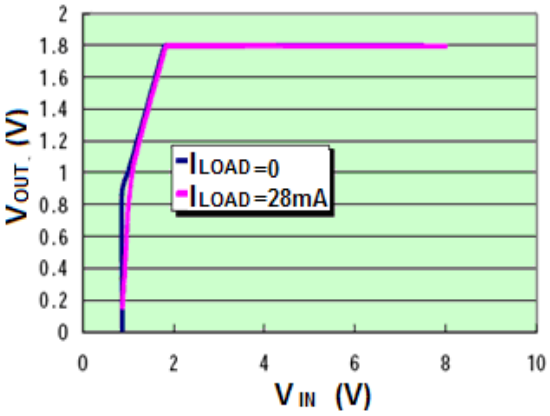
NOTE1: V_{DROP}=V_{IN}1-(V_{OUT}2*0.98) V_{OUT}2 is the output voltage when V_{IN}=V_{OUT}1+1.0V and I_{OUT}=300mA or I_{OUT}=500mA.
V_{IN}1 is the input voltage at which the output voltage becomes 98% of V_{OUT}1 after gradually decreasing the input voltage.

TYPICAL PERFORMANCE CHARACTERISTICS

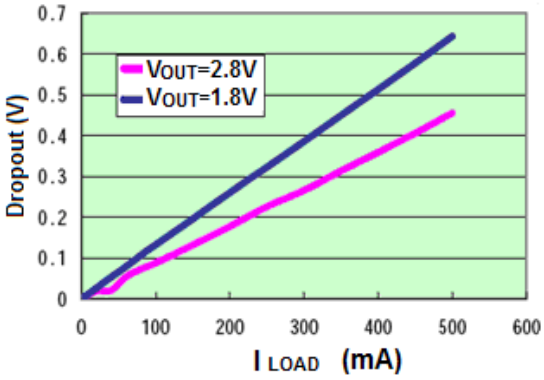
1. Output Voltage vs. Output Current
with output short protection



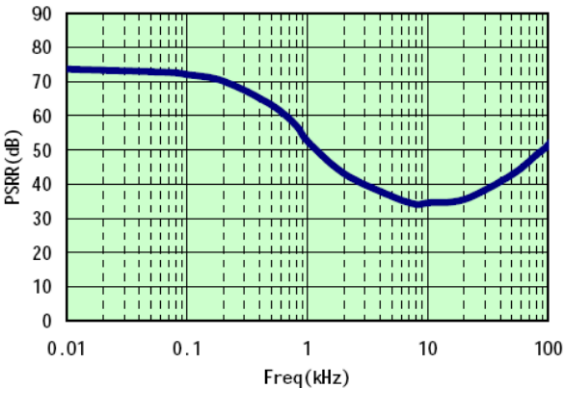
2. Output Voltage vs. Input Voltage



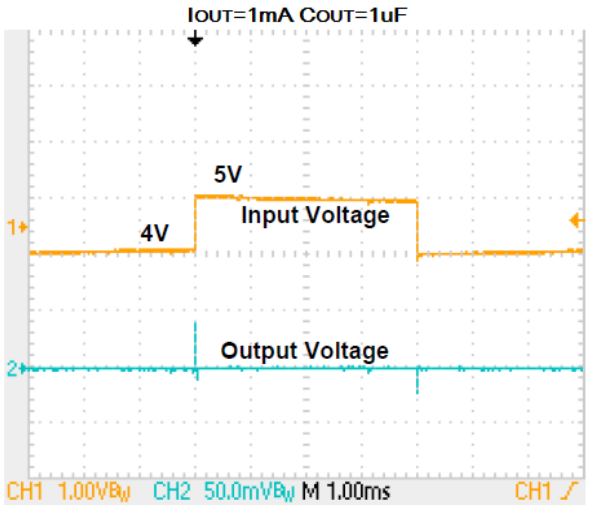
3. Dropout Voltage vs. Output Current

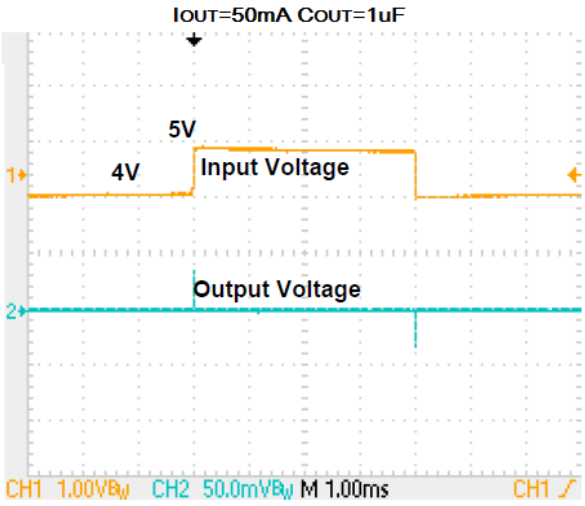


4. Ripple Rejection vs. Frequency

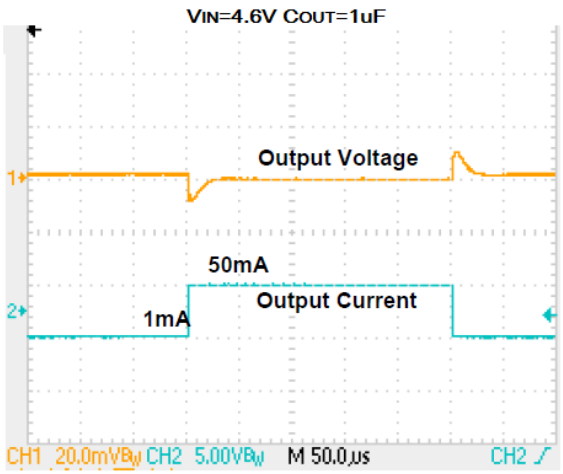


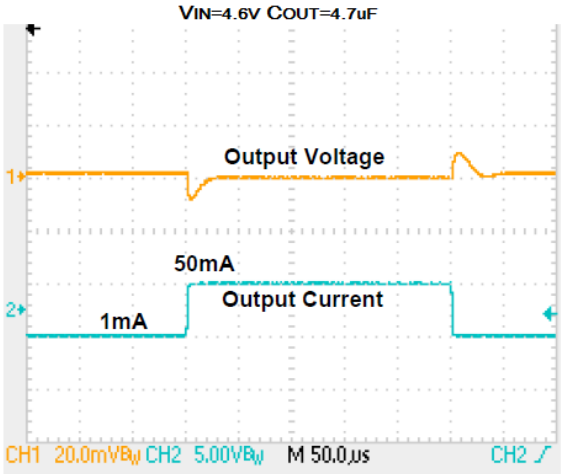
5. Line Transient Response

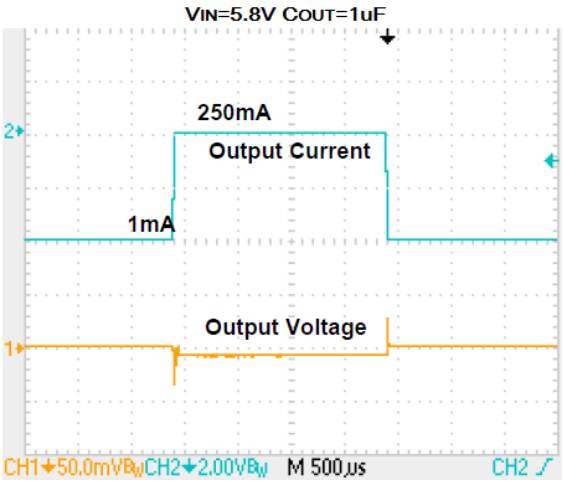


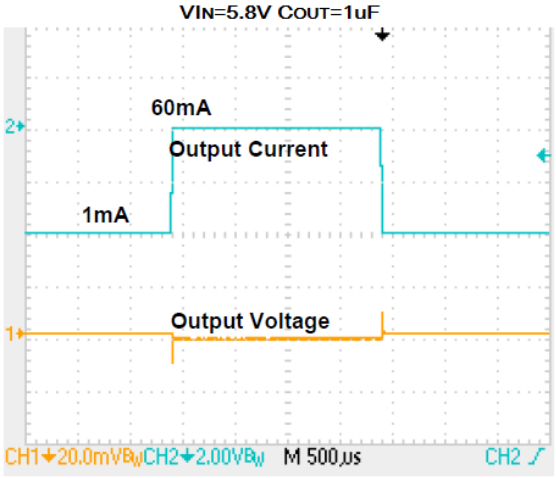


6. Load Transient Response

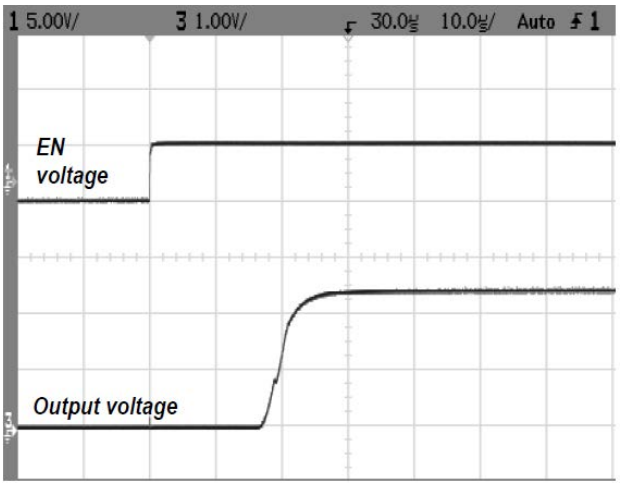




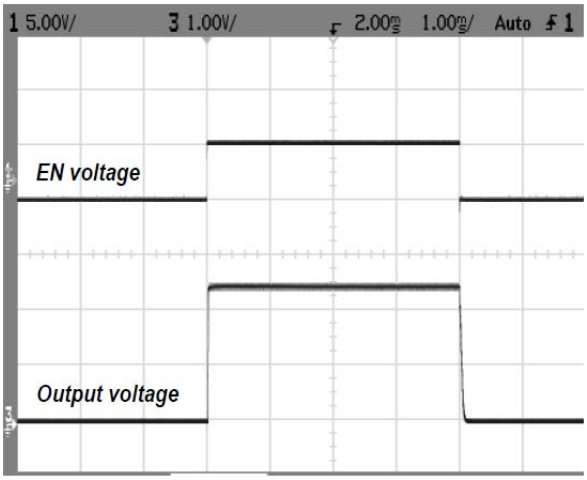




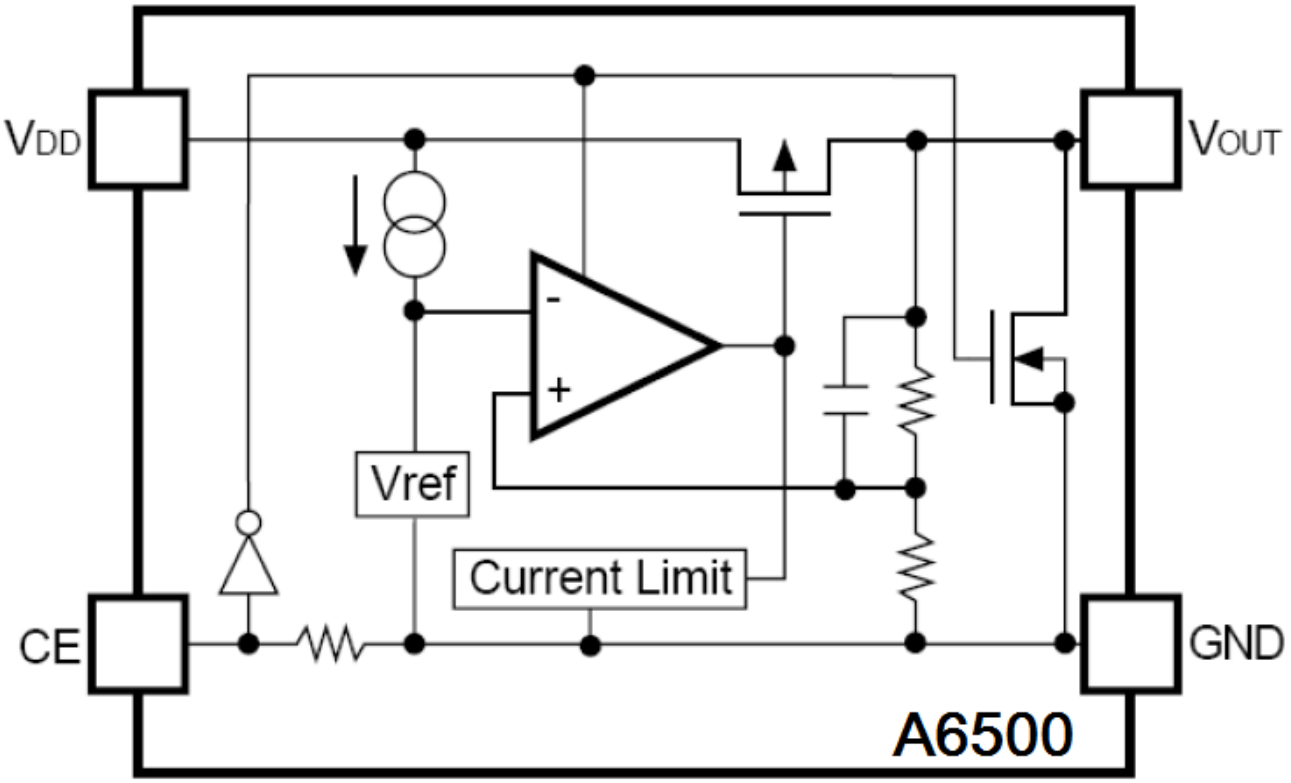
7. Startup response



8. Shutdown response



BLOCK DIAGRAM



DETAILED INFORMATION

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A6500 can provide output value in the range of 1.2V~4.5V every 0.1V step. It also can be customized on command.

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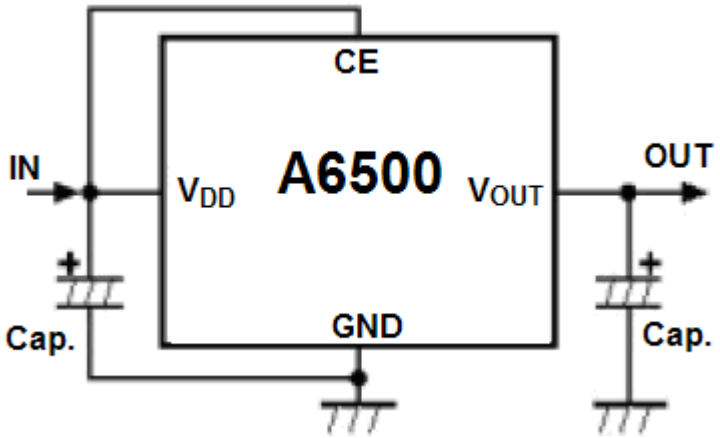
Typical Application Circuit

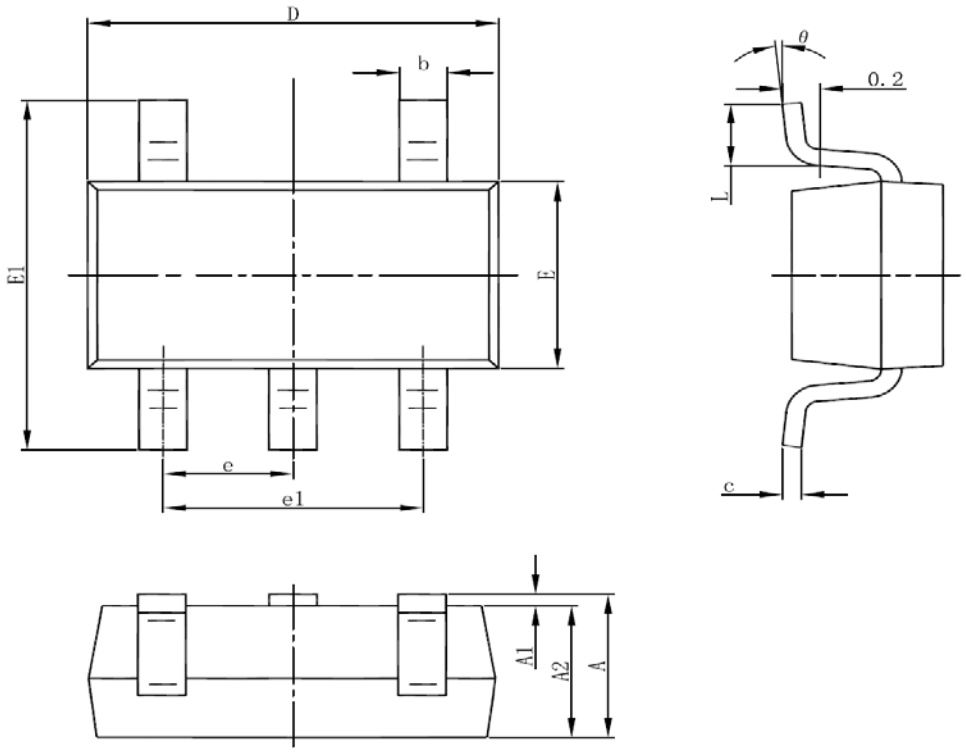
Input capacitor (C_{IN} = 1uF) is recommended in all application circuit.

Output capacitor (C_{OUT} = 3.3uF/4.7uF) is recommended in all application to assure the stability of circuit



PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)



Symbol	Min	Max
A	1.000	1.300
A1	0.100	0.250
A2	0.800	0.900
b	0.300	0.500
c	0.100	0.200
D	2.700	3.100
E	1.500	1.800
E1	3.100	2.500
e	0.950(BSC)	
e1	1.700	2.100
L	0.300	0.600
θ	0°	8°

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