



DESCRIPTION

A6516 series are high precise, low power consumption, high voltage input, positive voltage regulators manufactured using CMOS and laser trimming technologies. The A6516 consists of a current limiter circuit, a driver transistor, a precision reference voltage and a correction circuit.

Output voltage is selectable in 0.1V steps from 1.2V to 5.0V. The series are also compatible with low ESR ceramic capacitors which give added output stability.

Since the current limiter circuit is built-in, the IC is protected against overshoot currents at such times of output shorts etc.

The A6516 is available in SOT-25 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-25 SPQ: 3,000pcs/Reel	E5	A6516E5R-XX
		A6516E5VR-XX
Note	XX: Output Voltage V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

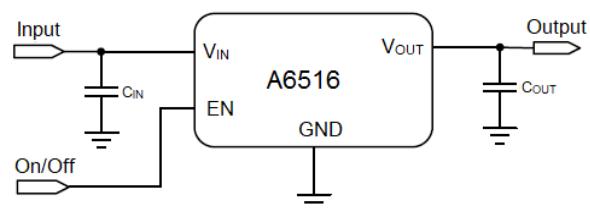
FEATURES

- Maximum Output Current: 500mA
- Input Voltage Range: 3V~16V
- Output Voltage Range: 1.2V~5.0V
(customized on command in 0.1V steps)
- Highly Accurate: $\pm 2\%$ ($\pm 1\%$ customized)
- Low Power Consumption: 10uA(Typ.)
- Dropout Voltage
1.2V@500mA ($V_{OUT}=3.3V$)
600mV@300mA ($V_{OUT}=3.3V$)
- Output Current Limit: 500mA
- Available in SOT-25 package

APPLICATION

- Multi-Function Power Supply
- Note PCs/Tablet PCs
- Battery Powered Equipment
- Reference Voltage Source

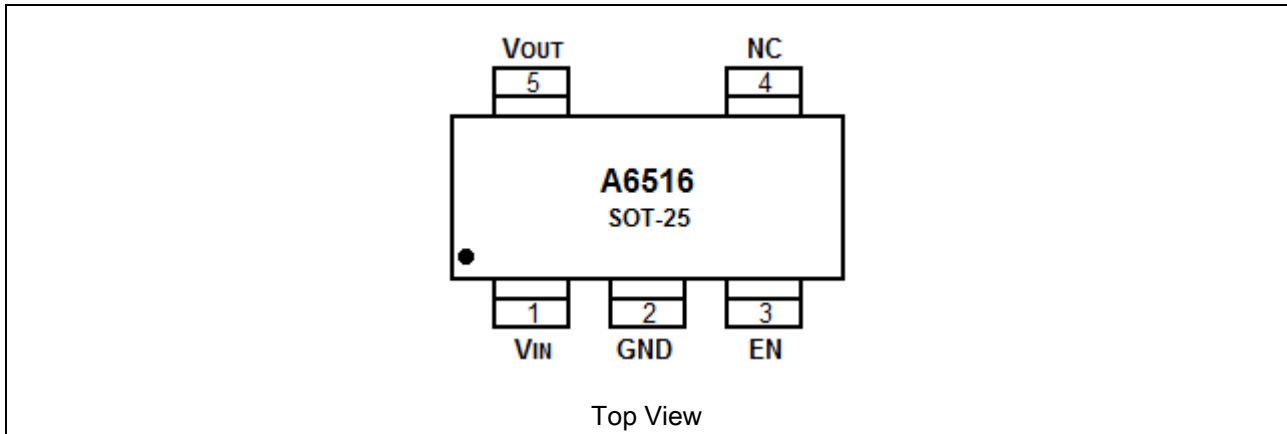
TYPICAL APPLICATION



NOTE: Input capacitor ($C_{IN}=1\mu F$) and Output capacitor ($C_{OUT}=1\mu F$) are recommended in all application circuit. Ceramic capacitor is recommended.



PIN DESCRIPTION



Pin #	Symbol	Function
1	V _{IN}	Voltage Input
2	GND	Ground
3	EN	Enable Input
4	NC	No Connection
5	V _{OUT}	Voltage Output



ABSOLUTE MAXIMUM RATINGS

Max Input Voltage	20V
T _J , Operating Junction Temperature	125°C
T _A , Ambient Temperature	-40°C~ 85°C
Power Dissipation(P _D @T _A =25°C)	SOT-25 400mW
T _S , Storage Temperature	-40°C ~ 150°C
Lead Temperature & Time	260°C, 10sec

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.	Recommended	Max.	Units
Input Voltage Range			16	V
Ambient Temperature	-40		85	°C



ELECTRICAL CHARACTERISTICS

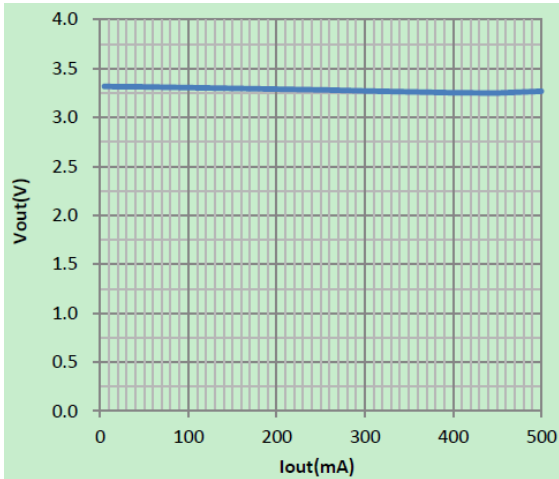
Test Conditions: $C_{IN}=1\mu F$, $C_{OUT}=1\mu F$, $T_A=25^\circ C$, unless Otherwise Specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage	V_{IN}		-	-	16	V
Output Voltage	V_{OUT}		V_{OUT} $\times 0.98$	-	V_{OUT} $\times 1.02$	V
Maximum Output Current	$I_{OUT(Max.)}$	$V_{IN}-V_{OUT}=1V$	500	-	-	mA
Input-Output Voltage Differential	Dropout Voltage	$I_{OUT}=300mA$, $V_{OUT} = 3.3V$	-	600	-	mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=10mA$, $4V \leq V_{IN} \leq 16V$	-	0.2	0.3	%/V
Load Regulation	ΔV_{OUT}	$V_{IN} = \text{Set } V_{OUT} + 1V$ $1mA \leq I_{OUT} \leq 100mA$	-	20	40	mV
Quiescent Current	I_Q	$V_{IN} = \text{Set } V_{OUT} + 1V$	-	10	20	μA
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	$I_{OUT}=10mA$	-	± 100	-	ppm/ $^\circ C$
Thermal Shutdown			-	150	-	$^\circ C$

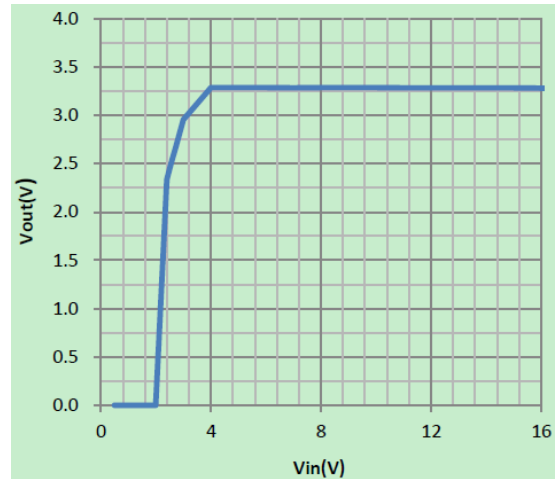


TYPICAL PERFORMANCE CHARACTERISTICS

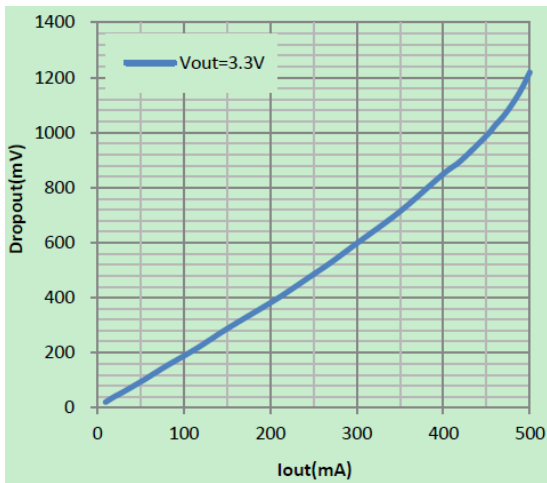
1. Load Regulation



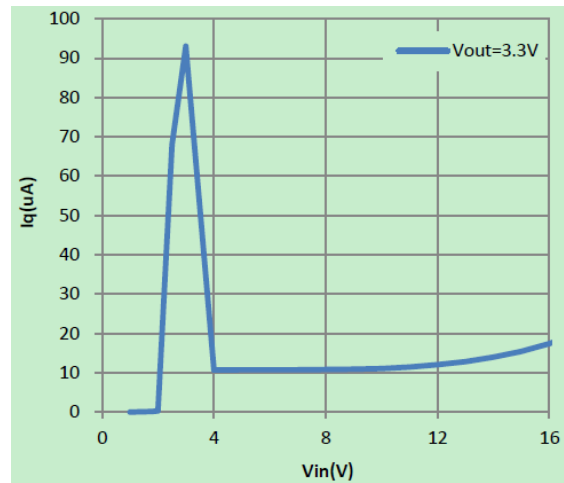
2. Line Regulation



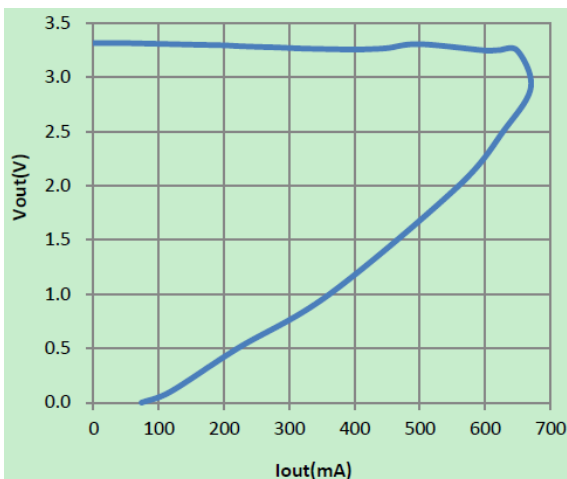
3. Dropout



4. IQ



5. Current Limit

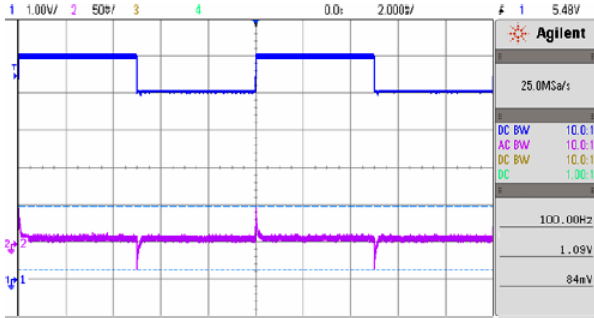




6. Line transient response

$V_{IN}=5V\sim 6V$, $I_{OUT}=10mA$

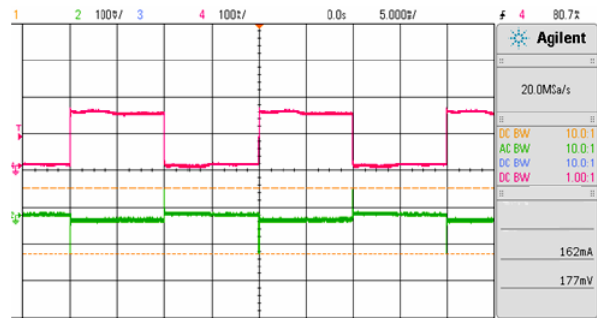
Ch1— V_{IN} , Ch2— V_{OUT}



7. Load transient response

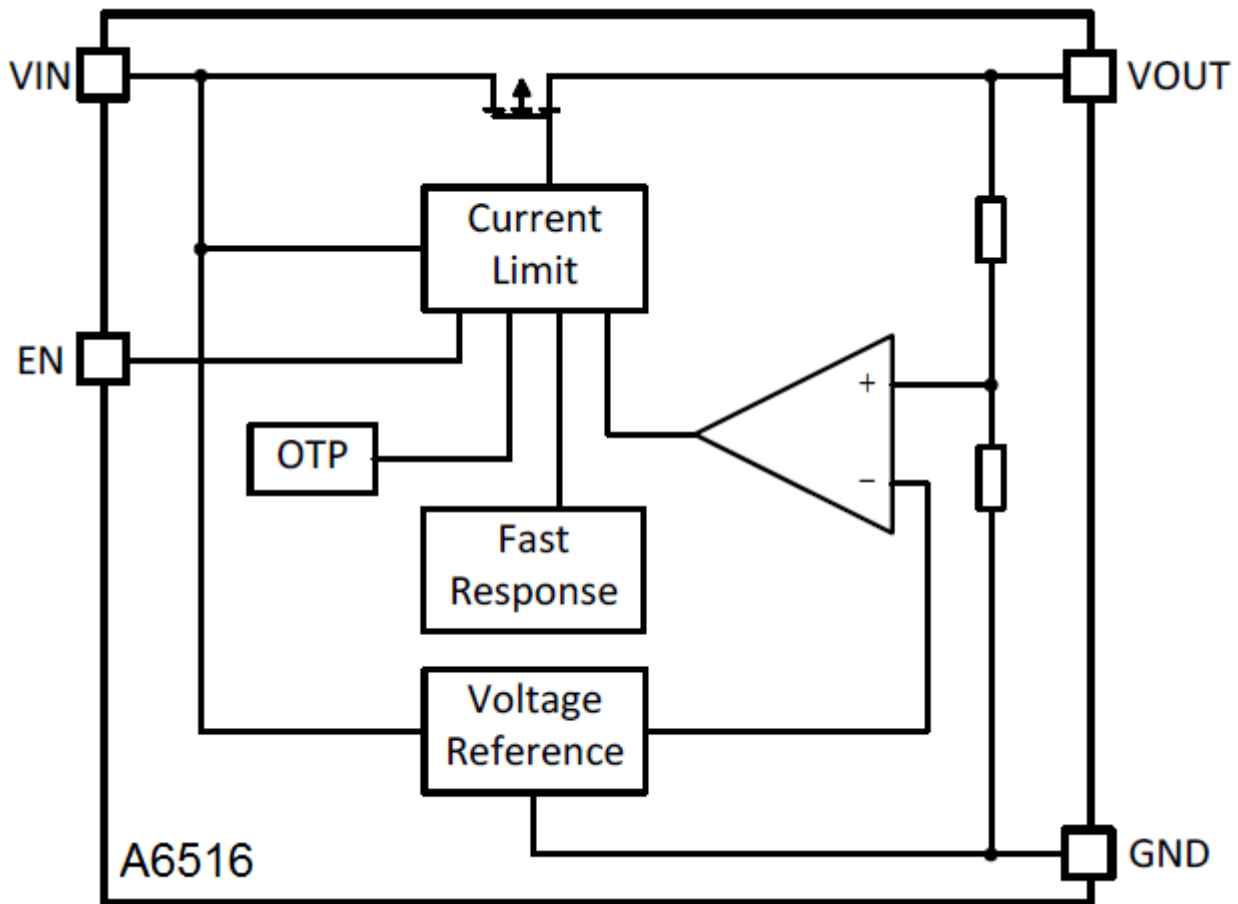
$V_{IN}=5V$, $I_{OUT}=5mA\sim 150mA$

Ch2— V_{OUT} , Ch4— I_{OUT}





BLOCK DIAGRAM



EXPLANATION

A6516 is a series of low dropout voltage and low power consumption 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.

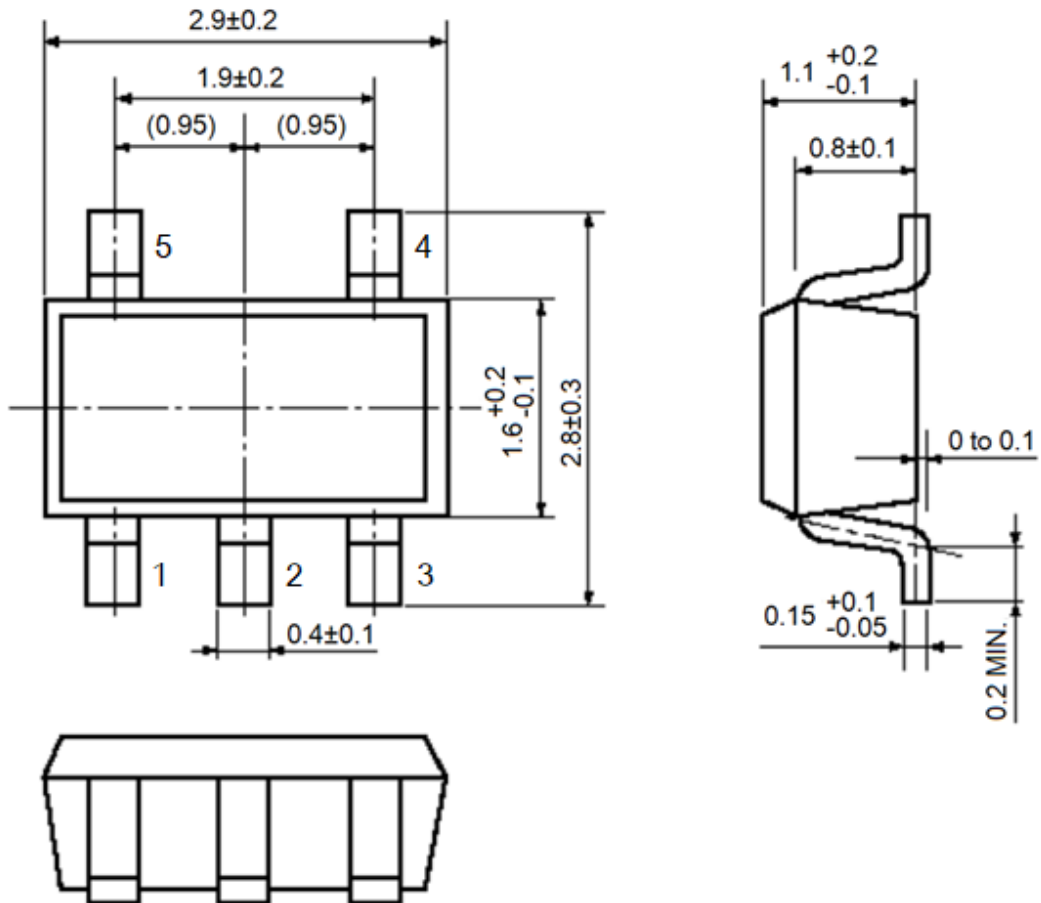
Current Limit module can keep chip and power system away from danger when load current is more than 500mA.

A6516 uses trimming technique to assure the accuracy of output value within $\pm 2\%$, at the same time, temperature compensation is elaborately considered in this chip, which makes A6516's temperature coefficient within $\pm 100\text{ppm}/^\circ\text{C}$.



PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)





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