



DESCRIPTION

The A6318A series are highly precise, low noise, positive voltage LDO regulators manufactured using CMOS processes. The series achieves high ripple rejection and low dropout and consists of a standard voltage source, an error correction, current limiter and a phase compensation circuit plus a driver transistor. External output feedback, customers can easily get the required voltage. In order to make the load current does not exceed the current capacity of the output transistor, built-in over-current protection, over temperature protection and short circuit protection.

The A6318A is available in SOT-25 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-25 SPQ: 3,000pcs/Reel	E5	A6318AE5R-ADJ
		A6318AE5VR-ADJ
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

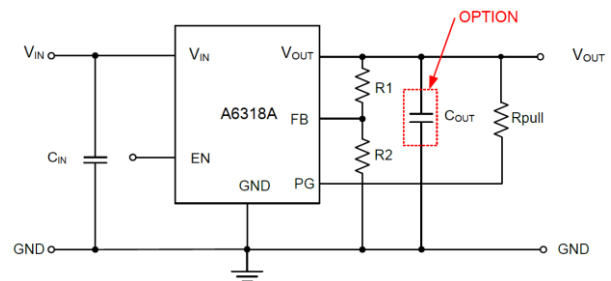
FEATURES

- programmable output: Minimum can go to 0.8V
- Highly Accurate: $\pm 1.5\%$
- Dropout Voltage: 300mV @ 100mA (3.0V type)
- High Ripple Rejection: 50dB (1kHz)
- Low Power Consumption: 30 μ A (TYP.)
- Maximum Output Current : 300mA
($V_{IN} \geq V_{OUT} + 1V$)
- Standby Current : less than 0.1 μ A
- Internal protector: current limiter ,short protector and over temperature protection
- Available in SOT-25 package

APPLICATION

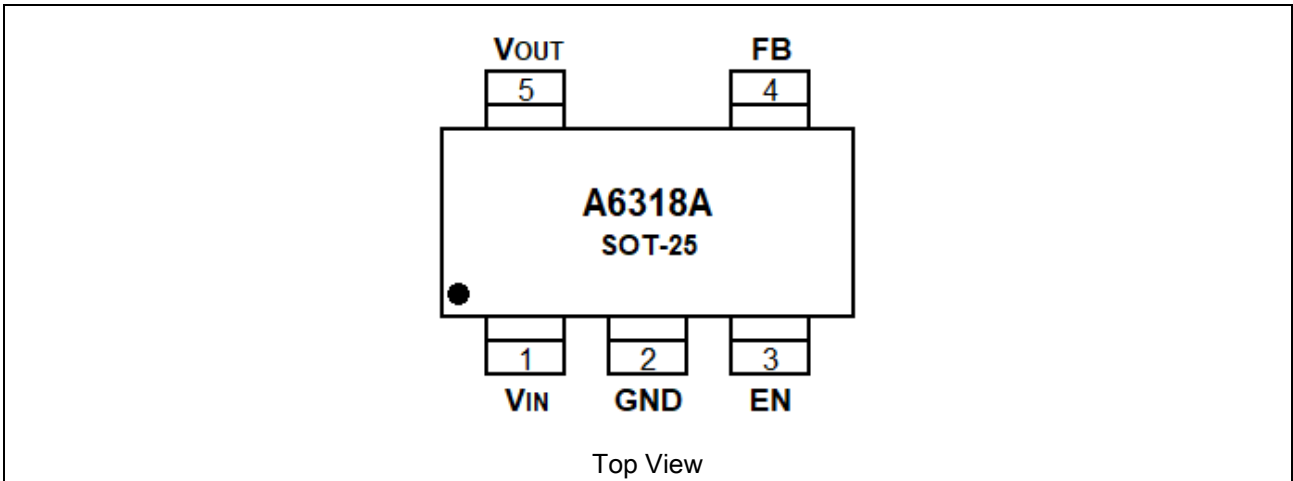
- Mobile phones
- Cordless phones
- Cameras, Video cameras
- Portable games
- Portable AV equipment
- Reference voltage
- Battery powered equipment

TYPICAL APPLICATION





PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V _{IN}	Supply Power
2	GND	Ground
3	EN	Enable Pin
4	FB	Feedback
5	V _{OUT}	Voltage Output



ABSOLUTE MAXIMUM RATINGS

V _{IN} , Input Voltage	GND-0.3V ~ GND+6V	
V _{EN} , Enable Voltage	GND-0.3V ~ V _{IN} +0.3V	
V _{FB} , Feedback Voltage	GND-0.3V ~ V _{IN} +0.3V	
V _{OUT} , Output Voltage	GND-0.3V ~ V _{IN} +0.3V	
P _D , Power Dissipation	SOT-25	350mW
T _{OPR} , Operating Ambient Temperature	-40°C ~ +85°C	
T _{STG} , Storage Temperature	-40°C ~ +125°C	

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.



ELECTRICAL CHARACTERISTICS

T_A=25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Feedback Voltage	V _{FB}	V _{IN} =4.2V, V _{OUT} =3.3V, I _{OUT} =30mA	788	800	812	mV
Output Current	I _{OUT}	V _{IN} ≥V _{OUT(S)} +1.0V	300	-	-	mA
Dropout Voltage	V _{DROP}	I _{OUT} =50mA	-	0.12	0.20	V
		I _{OUT} =100mA	-	0.30	0.45	
Line Regulations	ΔV _{OUT1}	V _{OUT(S)} +0.5V≤V _{IN} ≤6V	-	0.10	0.20	%V
	ΔV _{IN} × V _{OUT}	I _{OUT} =30mA				
Load Regulation	ΔV _{OUT2}	V _{IN} =V _{OUT(S)} +1.0V 1.0mA ≤I _{OUT} ≤100mA	-	50	100	mV
Output Voltage Temperature Characteristics	ΔV _{OUT}	V _{IN} =V _{OUT(S)} +1.0V, I _{OUT} =10mA	-	±100	-	ppm/ °C
	ΔT _A × V _{OUT}	-40°C ≤T _A ≤85°C				
Supply Current	I _{SS1}	V _{IN} =V _{OUT(S)} +1.0V	-	30	40	μA
Shutdown Current	I _{SHUT}	V _{IN} =5 V, V _{EN} =0	-	-	0.1	μA
Input Voltage	V _{IN}		2.0	-	6.0	V
Ripple-Rejection	PSRR	V _{IN} =V _{OUT(S)} +1.0V, f=1kHz V _{RIP} =0.5V _{RMS} , I _{OUT} =50mA	-	50	-	dB
Short-Circuit Current	I _{SHORT}	V _{IN} =V _{OUT(S)} +1.0V, ON/OFF Terminal is ON, V _{OUT} =0V	-	30	-	mA
EN "High Voltage	V _{ENH}		0.8	-	-	V
EN "Low" Voltage	V _{ENL}		-	-	0.75	V
EN "High Current	I _{ENH}	V _{IN} =V _{EN} =V _{OUT(T)} +1V	-0.1	-	0.1	μA
EN "Low" Current	I _{ENL}	V _{IN} = V _{OUT(T)} +1V, V _{EN} =GND	-0.1	-	0.1	μA
Current Limit	I _{LIM}	V _{IN} = V _{OUT(T)} +1V	-	600	-	mA

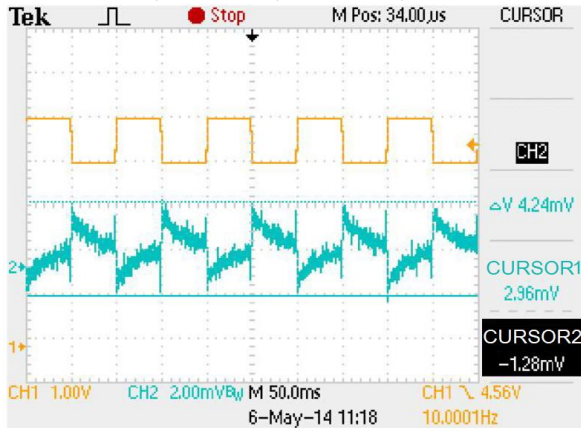


TYPICAL PERFORMANCE CHARACTERISTICS

Output 3.3V

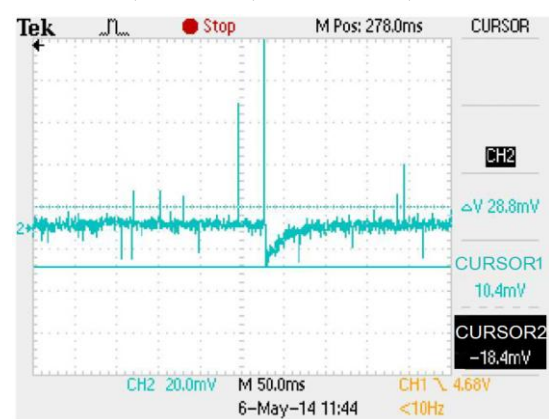
1. The input voltage transient response

$V_{IN}=4.2V-5.2V$, $V_{OUT}=3.2V$, $I_{OUT}=10mA$, $C_{IN}=C_{OUT}=1\mu F$



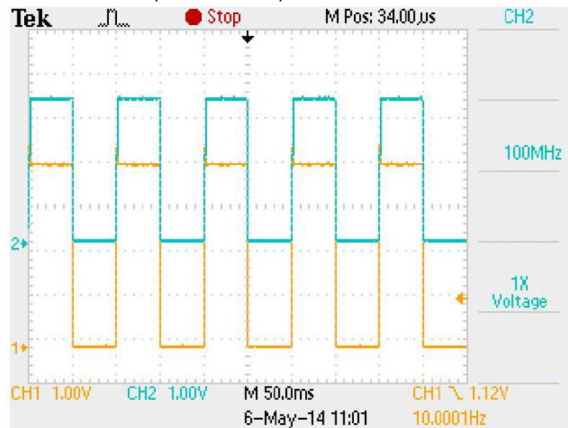
2. Load Transient Response

$V_{IN}=EN=4.2V$, $V_{OUT}=3.2V$, $C_{IN}=C_{OUT}=1\mu F$, $I_{OUT}=0-200-0mA$



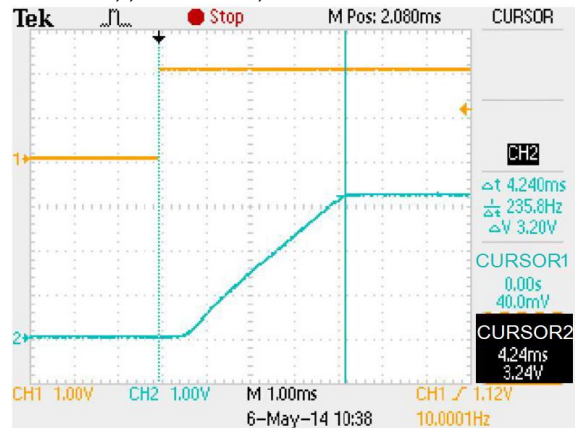
3. Output Voltage Overshoot

$V_{IN}=0V-4.2V$, $I_{OUT}=0mA$, $C_{IN}=C_{OUT}=1\mu F$



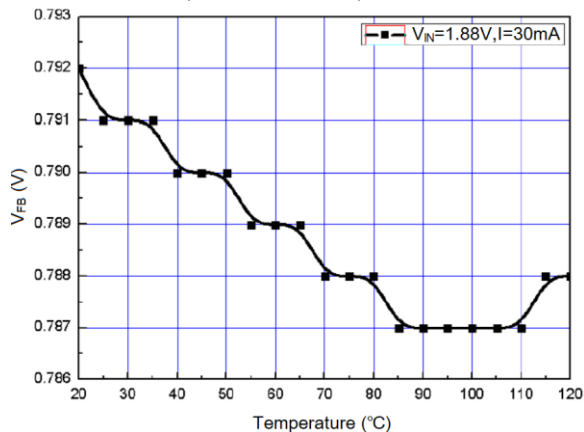
4. Start-up Time

$V_{IN}=4.2V$, $I_{OUT}=10mA$, $C_{IN}=C_{OUT}=1\mu F$



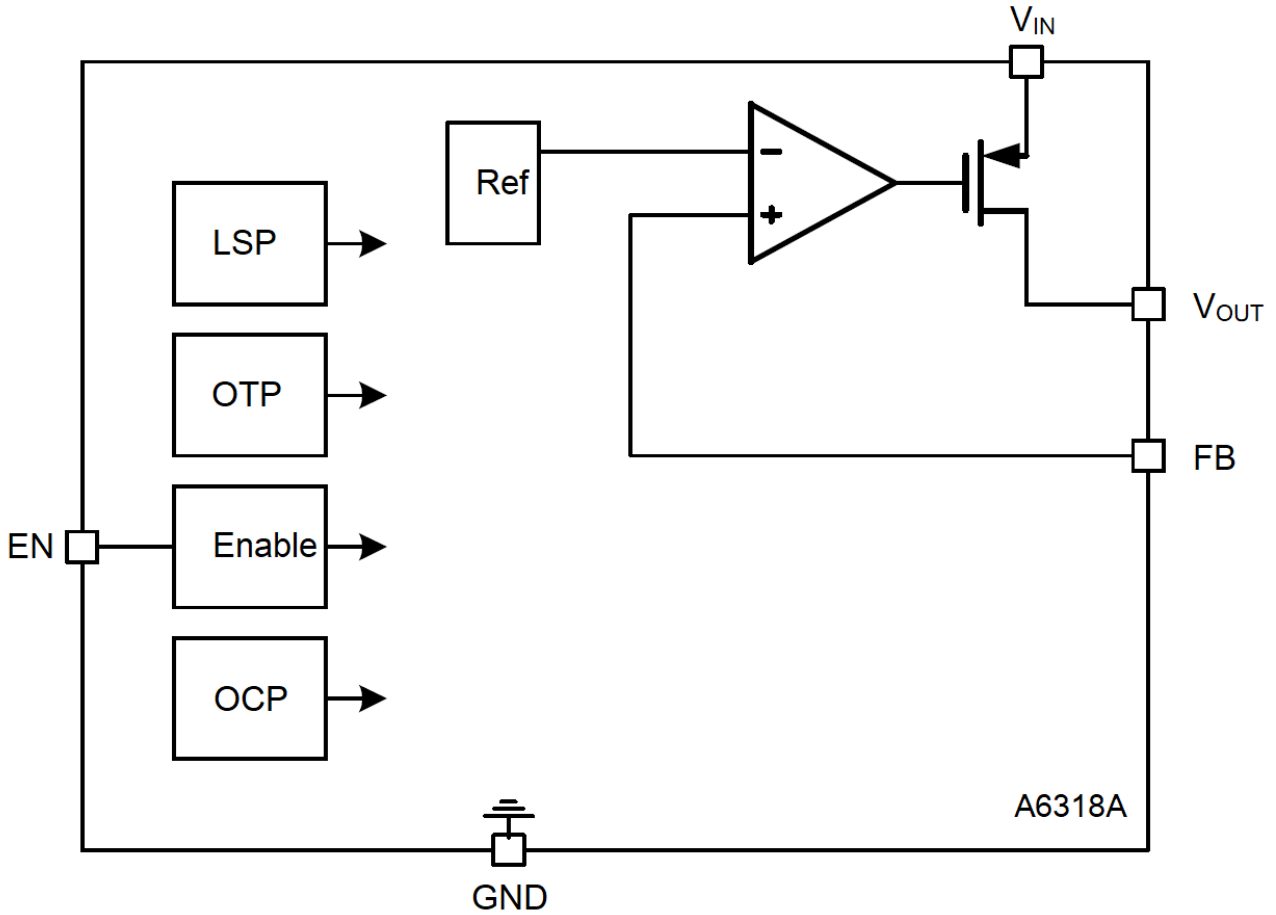
5. Output Voltage Temperature Characteristics

$V_{IN}=EN=1.88V$, $C_{IN}=C_{OUT}=1\mu F$, $I_{OUT}=30mA$



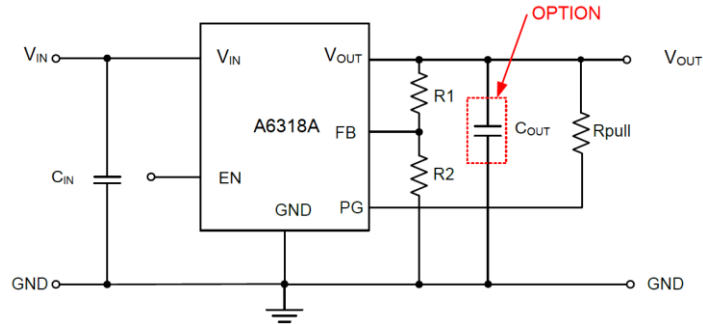


BLOCK DIAGRAM





APPLICATION INFORMATION



Input and Output Capacitance

Input and output capacitors are recommended to use more than 1 μ F, which can ensure the stability of the system

Output Voltage Calculation

$V_{OUT} = (1 + R1/R2) * 0.8$, R1, R2, please use resistors above 100k Ω

PCB Layout

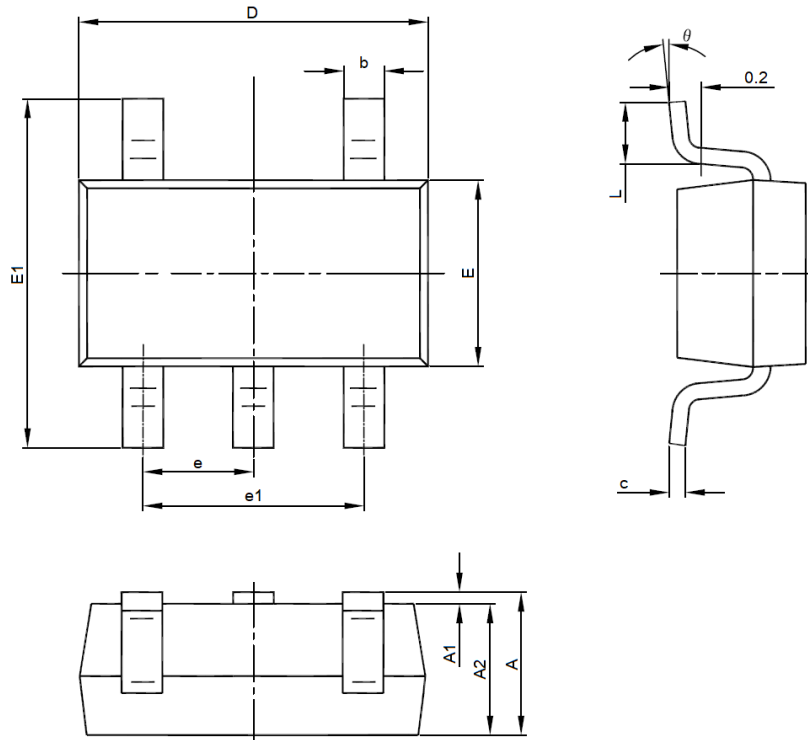
In order to get better use effect, the main points for attention of PCB layout are as follows:

1. The input and output capacitors are as close as possible to the chip pins.
2. Use thick trace between V_{IN} and V_{OUT} as much as possible to reduce tracing resistance and improve load performance



PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or severe property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.