DESCRIPTION

The A6318A is highly precise, low noise, positive voltage LDO regulators manufactured using CMOS processes.

The A6318A 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		

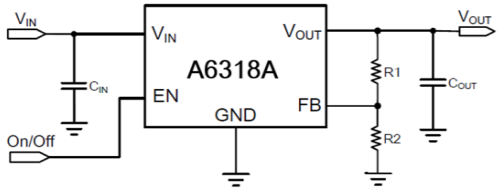
FEATURES

- Adjustable output voltage down to 0.8V
- Output voltage accuracy: ±1.5%
- Low dropout voltage: 300mV @ 100mA (3.0V)
- High ripple rejection: 50dB at 1kHz
- Low quiescent current: 30μA (Typ.)
- Maximum output current: 300mA (V_{IN} ≥ V_{OUT}+ 1V)
- Ultra-low shutdown current: 0.1μA (Typ.)
- Built-in protection functions: Current limiting, output short-circuit and thermal shutdown protection

APPLICATION

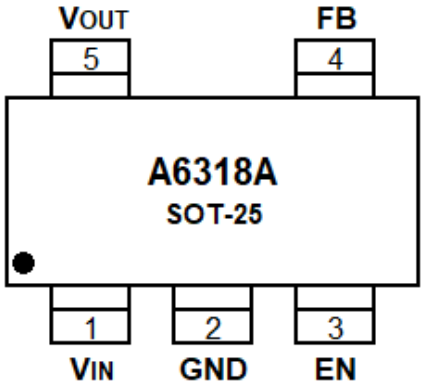
- Mobile phones
- Cameras, Video cameras
- Portable games
- Portable AV equipment
- Reference voltage
- Battery powered equipment

TYPICAL APPLICATION



The application circuit and component values shown above are provided for reference only and do not guarantee proper operation in all applications. The external component values should be selected and verified based on the actual operating conditions and application requirements.
The output voltage is determined by the external resistor divider according to the following equation: Vout=(1+R1/R2)×0.8
For optimum noise immunity and power consumption, R1 and R2 should each be greater than 100kΩ.

PIN DESCRIPTION



SOT-25, E5

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℃, unless otherwise noted

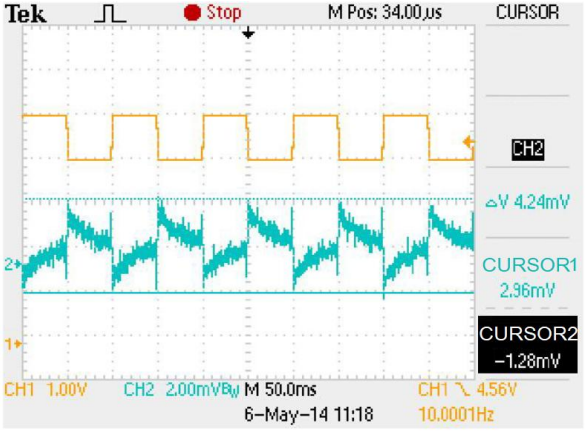
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Feedback Voltage	V_{FB}	V_{IN} =4.2V, V_{OUT}=3.3V, I_{OUT}=30mA	788	800	812	mV
Output Current	I_{OUT}	V_{IN}≥$V_{OUT(S)}$+1.0V	300	-	-	mA
Dropout Voltage	V_{DROP}	I_{OUT}=50mA	-	0.12	0.20	V
		I_{OUT}=100mA	-	0.30	0.45	
Line Regulations	ΔV_{OUT1} / $\Delta V_{IN} \times V_{OUT}$	$V_{OUT(S)}$+0.5V≤V_{IN}≤6V, I_{OUT}=30mA	-	0.10	0.20	%/V
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} / $\Delta T_A \times V_{OUT}$	V_{IN}=$V_{OUT(S)}$+1.0V, I_{OUT}=10mA, -40°C ≤T_A≤85°C	-	±100	-	ppm/℃
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	ILIM	V_{IN}= $V_{OUT(T)}$+1V	-	600	-	mA

TYPICAL PERFORMANCE CHARACTERISTICS

Output 3.3V

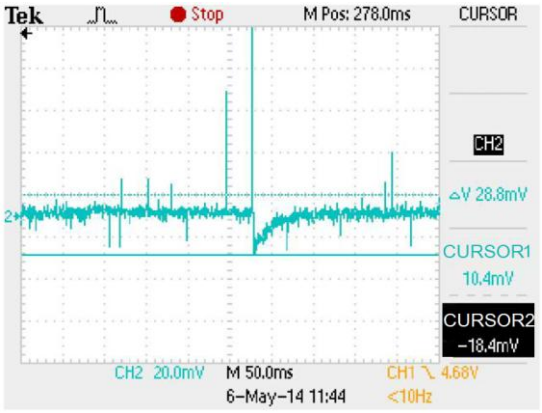
1. The input voltage transient response

V_{IN}=4.2V-5.2V, V_{OUT}=3.2V, I_{OUT}=10mA, C_{IN}=C_{OUT}=1uF



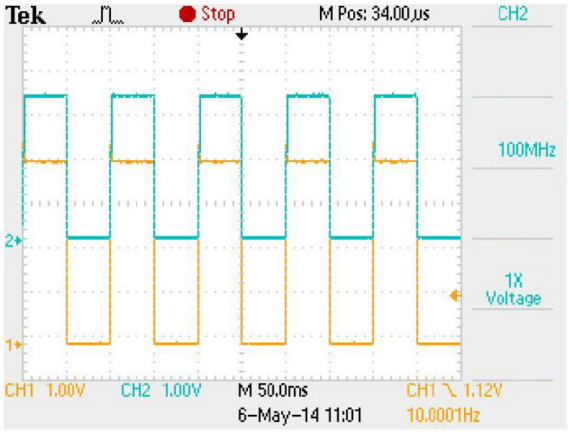
2. Load Transient Response

V_{IN}=EN=4.2V, V_{OUT}=3.2V, C_{IN}=C_{OUT}=1uF, I_{OUT}=0-200-0mA



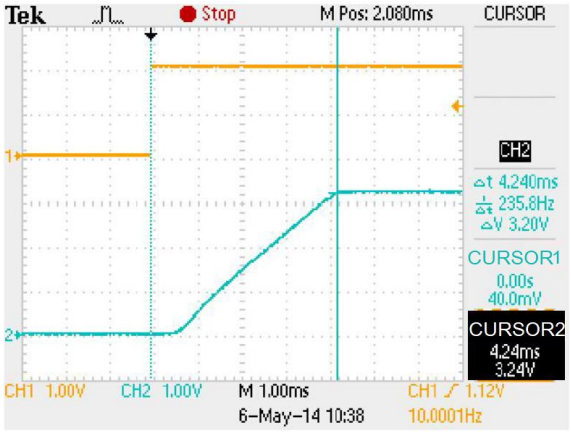
3. Output Voltage Overshoot

V_{IN}=0V-4.2V, I_{OUT}=0mA, C_{IN}=C_{OUT}=1uF



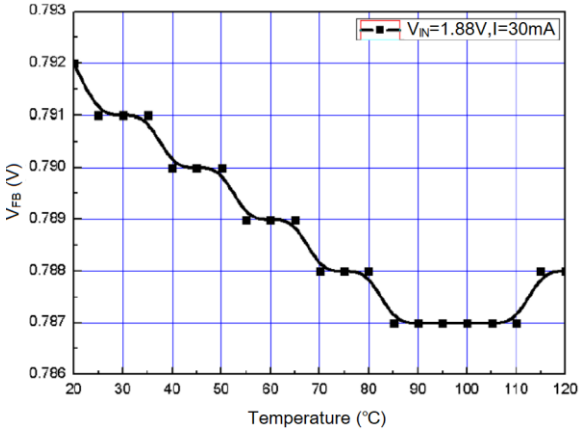
4. Start-up Time

V_{IN}=4.2V, ,I_{OUT}=10mA, C_{IN}=C_{OUT}=1uF

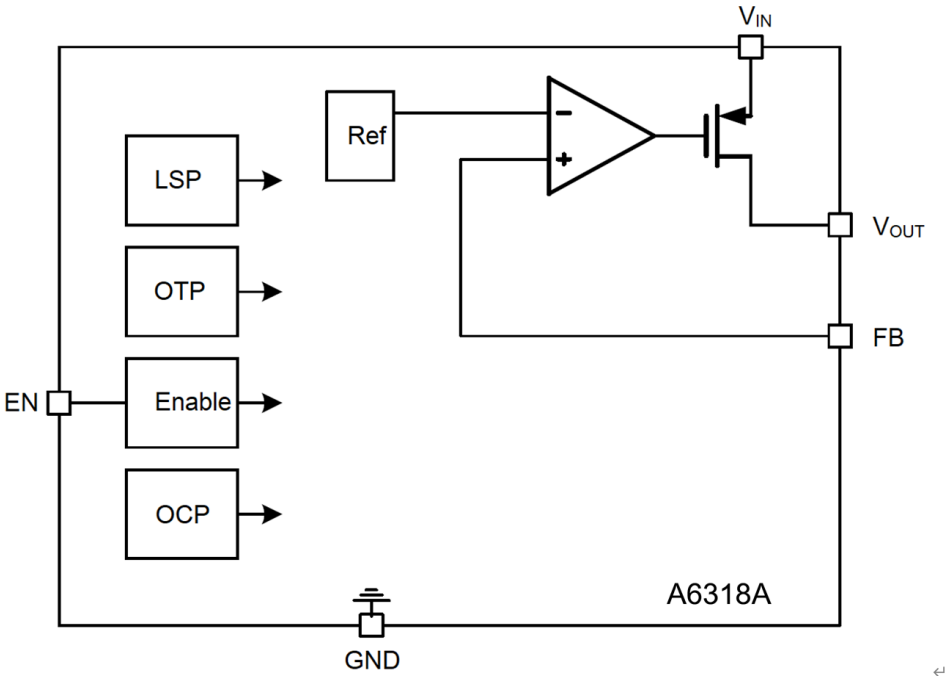


5. Output Voltage Temperature Characteristics

V_{IN}=EN=1.88V, C_{IN}=C_{OUT}=1uF, I_{OUT}=30mA



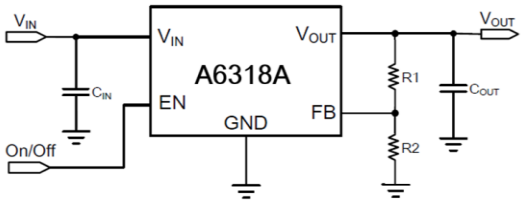
BLOCK DIAGRAM



APPLICATION INFORMATION

Input and Output Capacitance

Input (C_{IN}) and output (C_{OUT}) capacitors are recommended to use more than 1uF, which can ensure the stability of the system



Output Voltage Calculation

V_{OUT}=(1+R1/R2) * 0.8, then R1 and R2, for optimum noise immunity and power consumption, R1, R2 should each be greater than 100kΩ.

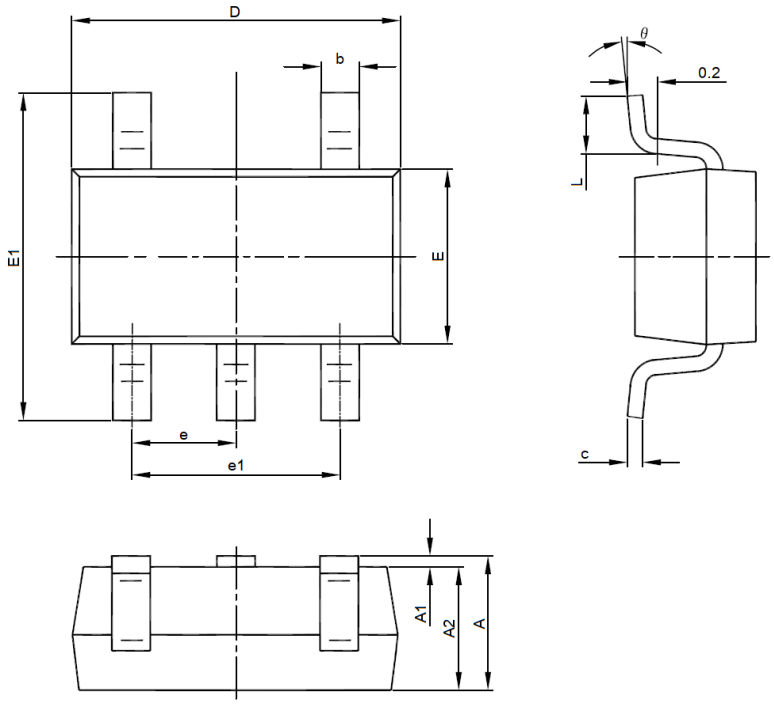
PCB Layout

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	
	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950 BSC	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

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