

## Dual 0.8A Low Dropout Linear Regulator

### ➤ Description

The AF1118A is a dual low dropout linear regulator that can independently output 0.8A of current with a dropout voltage as small as 1.3V. The output voltage has a fixed voltage of 1.8V, 3.3V and an adjustable output voltage of 1.25V~12V. The AF1118A has internal thermal protection and current limiting protection to ensure effective protection of both the product and the load. The AF1118A is packaged in an ESOP8 package to provide better heat dissipation and a custom-made pin package.

### ➤ Applications

- Power Management for Computer
- Mother Board , Graphic Card
- LCD Monitor and LCD TV
- DVD Decode Board
- Post Regulators for Switching Supplies

### ➤ Ordering Information

Device	Package	Shipping
AF1118A-1833E	ESOP8	3000/Reel
AF1118A-ADJ33E		
AF1118A-33ADJE		

AF1118A – XX XX E  
 ①      ②   ③   ④

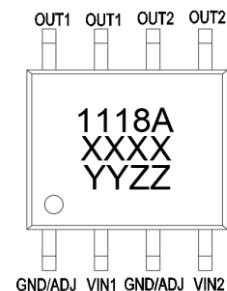
Notes:

- ① : Product Code
- ② : OUT1 Voltage
- ③ : OUT2 Voltage
- ④ : Package ESOP8

### ➤ Features

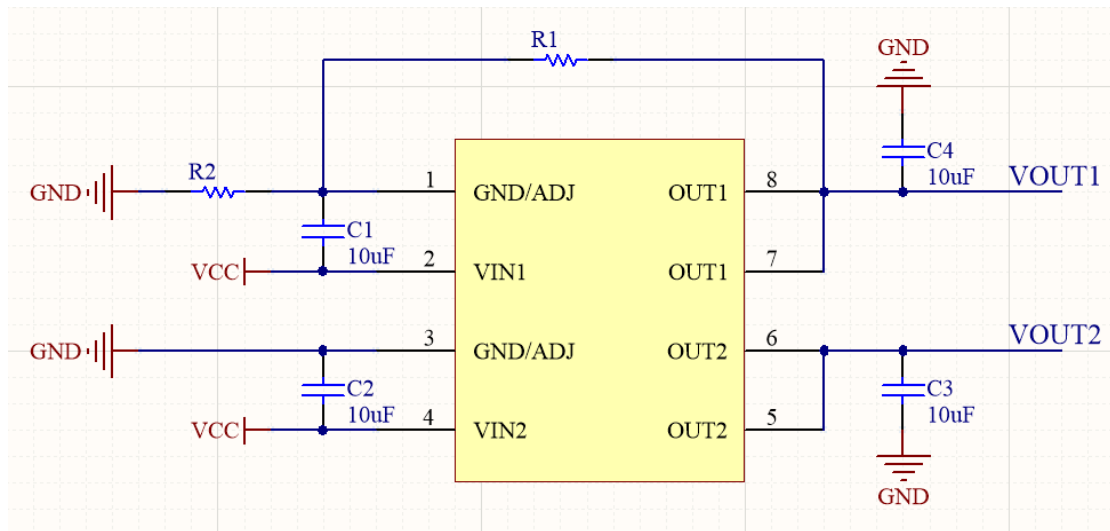
- Dual channel output with each individual output can be either fixed output version or adjustable version
- Maximum output current for each channel is 0.8A
- Range of operation input voltage : Max 18V
- Standby current of each output : 2mA (typ.)
- Line regulation : 0.1%/V(typ.)
- Load regulation : 10mV (typ.)

### ➤ Marking Rule



<b>1118A</b>	Product Name
<b>XXXX(X)</b>	Output Voltage
1833	OUT1=1.8V OUT2=3.3V
ADJ33	OUT1= ADJ OUT2= 3.3V
<b>YYZZ</b>	Year Week
1911	Production in the 11th week of 2019

### ➤ Typical Application



### ➤ Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Value
Max Input Voltage	18V
Max Power Dissipation	1.05W
Max Output Current	0.8A
Max Operating Junction Temperature	125°C
Storage Temperature	-40°C~125°C
Lead Temperature & Time	260°C, 10s

### ➤ Thermal Resistance Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Typical	Maximum	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance		95	°C/W
$R_{\theta JC}$	Junction-to-Case Thermal Resistance		40	

### ➤ Recommended Work Conditions

Parameter	Value
Input Voltage Range	Max. 15V
Ambient Temperature	-20°C~85°C

**➤ Electronics Characteristics**( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

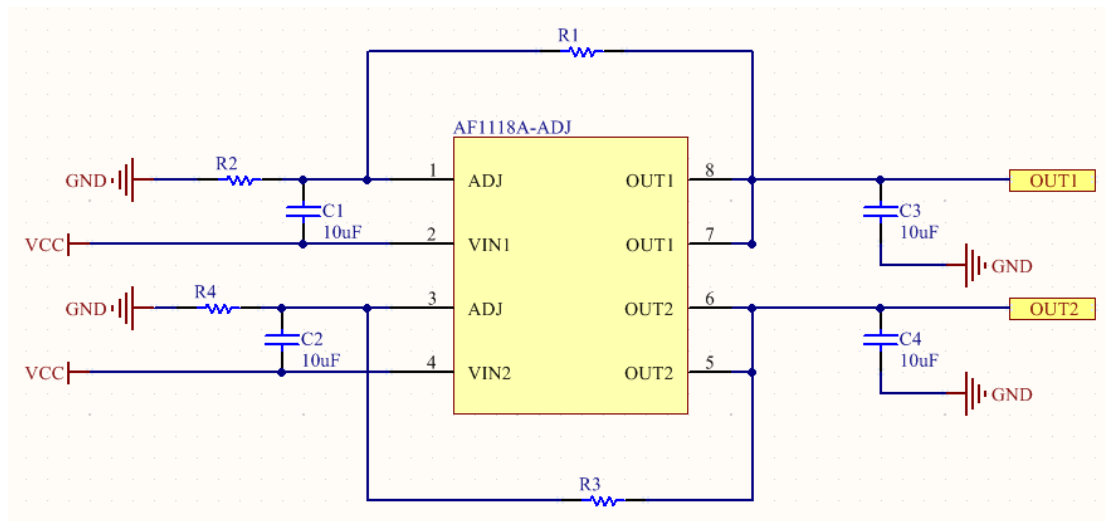
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vref	Reference voltage	AF1118A-ADJ $10\text{mA} \leq I_{\text{out}} \leq 0.8\text{A}$ , $V_{\text{in}}=3.25\text{V}$	1.225	1.25	1.275	V
Vout	Output Voltage	AF1118A-1.8V $0 \leq I_{\text{out}} \leq 0.8\text{A}$ , $V_{\text{in}}=3.8\text{V}$	1.76	1.8	1.836	V
		AF1118A-3.3V $0 \leq I_{\text{out}} \leq 0.8\text{A}$ , $V_{\text{in}}=5.3\text{V}$	3.234	3.3	3.366	
$\Delta V_{\text{out}}$	Line Regulation	AF1118A-ADJ $I_{\text{out}}=10\text{mA}$ $2.75\text{V} \leq V_{\text{in}} \leq 12\text{V}$		0.1	0.4	%V
		AF1118A-1.8V $I_{\text{out}}=10\text{mA}$ $3.3\text{V} \leq V_{\text{in}} \leq 12\text{V}$		0.1	0.4	
		AF1118A-3.3V $I_{\text{out}}=10\text{mA}$ $4.8\text{V} \leq V_{\text{in}} \leq 12\text{V}$		0.1	0.4	
Vdrop	Dropout voltage	$I_{\text{out}}=0.1\text{A}$		1.2	1.3	V
		$I_{\text{out}}=0.8\text{A}$		1.3	1.5	V
$\Delta V_{\text{out}}$	Load Regulation	AF1118A-ADJ $V_{\text{in}}=2.75\text{V}$ , $10\text{mA} \leq I_{\text{out}} \leq 0.8\text{A}$		10	32	mV
		AF1118A-1.8V $V_{\text{in}}=3.3\text{V}$ , $10\text{mA} \leq I_{\text{out}} \leq 0.8\text{A}$		10	32	
		AF1118A-3.3V $V_{\text{in}}=4.8\text{V}$ , $10\text{mA} \leq I_{\text{out}} \leq 0.8\text{A}$		10	32	
IQ	Quiescent Current	AF1118A-ADJ, $V_{\text{in}}=12\text{V}$		2	5	mA
		AF1118A-1.8V, $V_{\text{in}}=12\text{V}$		2	5	
		AF1118A-3.3V, $V_{\text{in}}=12\text{V}$		2	5	
PSRR	Power Supply Rejection Ratio	$f=100\text{Hz}$ , $C_{\text{out}}=10\mu\text{F}$		-65		dB
		$f=1\text{KHz}$ , $C_{\text{out}}=10\mu\text{F}$		-65		
		$f=10\text{KHz}$ , $C_{\text{out}}=10\mu\text{F}$		-60		
Iadj	Adjust pin current	AF1118A-ADJ $V_{\text{in}}=5\text{V}$ , $10\text{mA} \leq I_{\text{out}} \leq 0.8\text{A}$		55	120	$\mu\text{A}$
Ichange	Change current	AF1118A-ADJ $V_{\text{in}}=5\text{V}$ , $10\text{mA} \leq I_{\text{out}} \leq 0.8\text{A}$		0.2	10	$\mu\text{A}$
Ilim	Output Limit Current	$V_{\text{in}}-V_{\text{out}}=2\text{V}$	0.8			A
Imin	Minimum load current	AF1118A-ADJ		2	10	mA
$\Delta V/\Delta T$	Temperature Coefficient	$I_{\text{out}}=40\text{mA}$		$\pm 100$		ppm/ $^{\circ}\text{C}$

Note1: All test are conducted under ambient temperature  $25^{\circ}\text{C}$  and within a short period of time 20ms

Note2: Load current smaller than minimum load current of AF1118A-ADJ will lead to unstable or oscillation output.



AF1118A has an adjustable version and two fixed versions (1.8V, 3.3V)



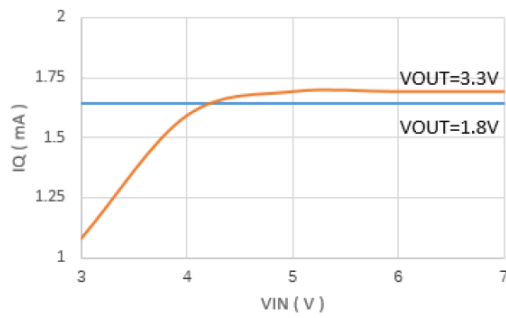
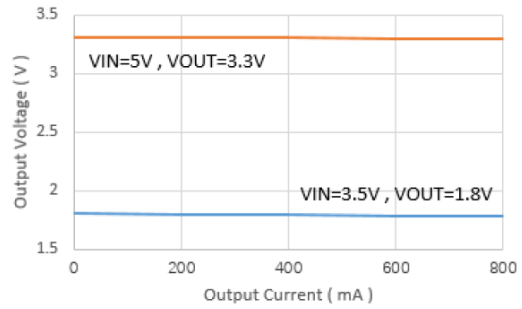
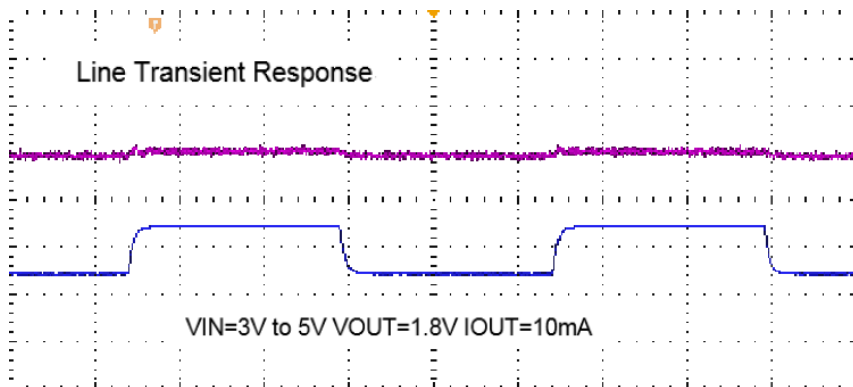
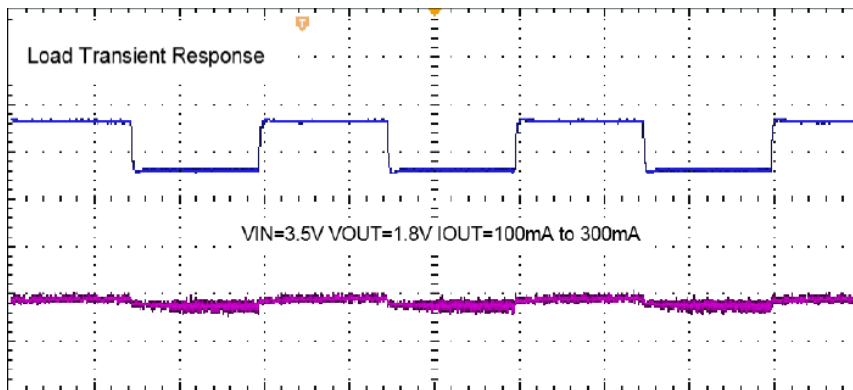
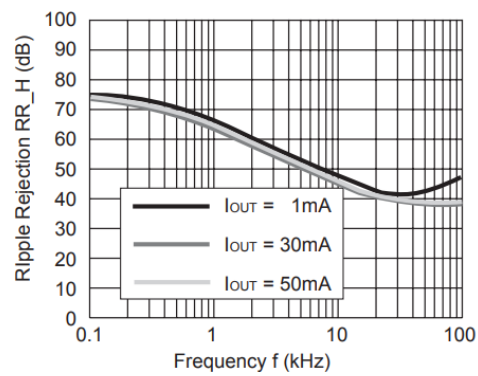
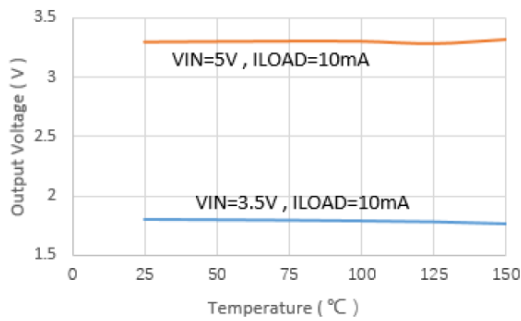
Adjustable Output Voltage Version

The output voltage of adjustable version follows the equation:  
 $V_{out} = 1.25 \times (1 + R2/R1) + I_{Adj} \times R2$ .

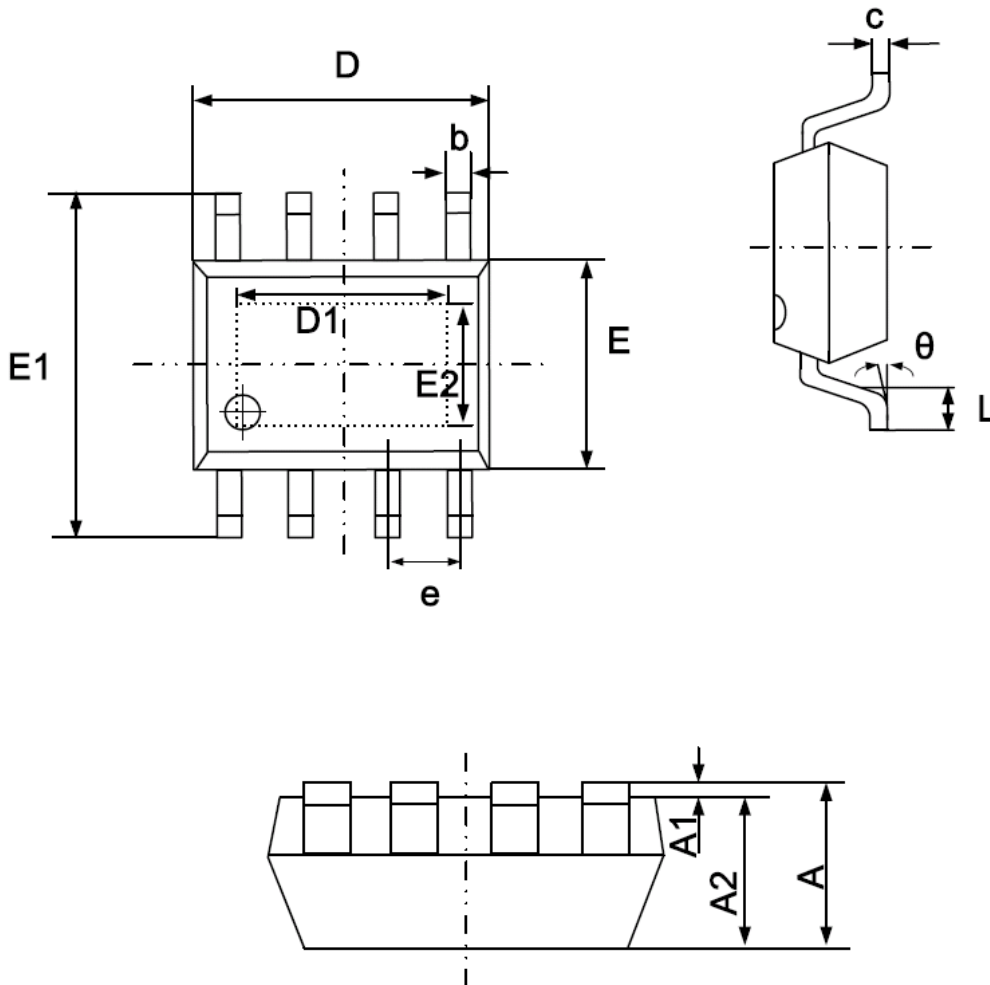
We can ignore  $I_{Adj}$  because  $I_{Adj}$  (about 50uA) is much less than the current of R1 (about 2~10mA).

- 1) To meet the minimum load current (>10mA) requirement, R1 is recommended to be 125ohm or lower. As AF1118A-ADJ can keep itself stable at load current about 2mA, R1 is not allowed to be higher than 625ohm.
- 2) Using a bypass capacitor ( $C_{ADJ}$ ) between the ADJ pin and ground can improve ripple rejection. This bypass capacitor prevents ripple from being amplified as the output voltage is increased. The impedance of  $C_{ADJ}$  should be less than R1 to prevent ripple from being amplified. As R1 is normally in the range of 100Ω~500Ω, the value of  $C_{ADJ}$  should satisfy this equation:  $1/(2\pi \times f_{ripple} \times C_{ADJ}) < R1$ .

**➤ Typical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

**Quiescent Current vs. Input Voltage**

**Output Voltage vs. Load Current**

**Output Voltage vs. Temperature**


### ➤ Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
D1	3.100	3.500	0.122	0.137
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.200	2.600	0.086	0.102
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

**➤ History Version**

V1.0	Product datasheet	2019-04-15
V1.5	Update typical application diagram	2020-08-25

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