AUK Semiconductor

S1117API/S1117-xxPI

Adjustable and Fixed LDO Voltage Regulator

Descriptions

The S1117 series of positive adjustable and fixed regulators are designed to provide 1A with high efficiency. All internal circuitry is designed to operate down to 1.3V input to output differential. On-chip trimming adjusts reference voltage to 2%.

Features

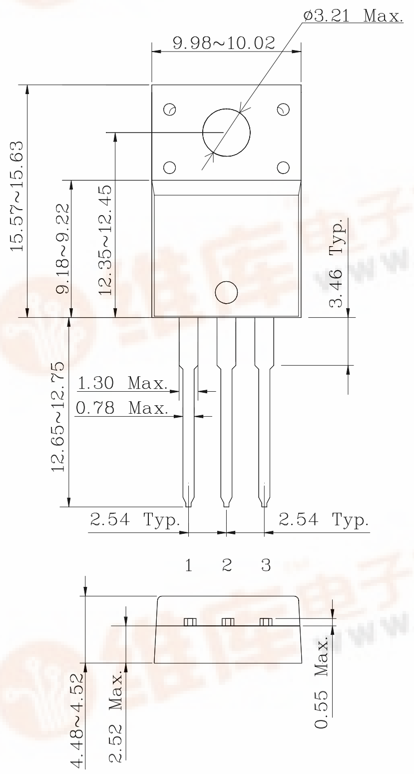
- Adjustable or Fixed output
- Output Current of 1A
- Low Dropout, 1.3V maximum at 1A Output Current
- Thermal Shutdown Protection
- Fast Transient Response

Ordering Information

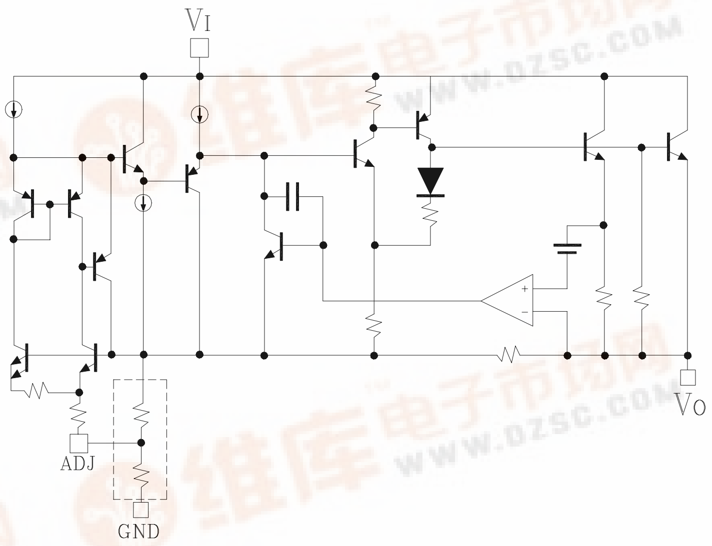
Type NO.	Marking	Package Code
S1117API/S1117xxPI	S1117□□PI/ S1117□□□PI	TO-220F

□□:Voltage Code (Aj : 1.25V, 15:1.5V,:18: 1.8V, 25:2.5V, 33:3.3V, 50:5.0V)
□□□:Voltage Code (285:2.85V)

Outline Dimensions (Unit : mm)



BLOCK DIAGRAM



PIN Connections
1. GND/Adj
2. Output voltage
3. Input voltage

Absolute Maximum Ratings

Ta=25°C

Characteristic	Symbol	Rating	Unit
Input voltage	V_I	16	V
Power Dissipation	P_D	2.0	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C

Device Selection Guide (NOTE1)

Device	Output Voltage
S1117API	Adjustable
S1117-15PI	1.5V
S1117-18PI	1.8V
S1117-25PI	2.5V
S1117-285PI	2.85V
S1117-33PI	3.3V
S1117-50PI	5.0V

Note 1 : Other fixed versions are available V_O=1.5V to 5V

Electrical Characteristics

(Electrical Characteristics at T_J = 25℃ and V_I=(V_O+1.5V), I_L=10 ㎃, C_O=10 ㎌ unless otherwise specified.)

Characteristic	Symbol	Device	Test Condition		Min	Typ	Max	Unit
Output Voltage	V_O	S1117A	V_I = (V_O+1.5V),I_O = 10 ㎃		1.225	1.25	1.275	V
			V_I = (V_O+1.5V) to 7V I_O = 0 to 1000 ㎃	*	1.200		1.300	
		S1117-15	V_I = (V_O+1.5V),I_O = 10 ㎃		1.470	1.5	1.530	
			V_I = (V_O+1.5V) to 7V I_O = 0 to 1000 ㎃	*	1.440		1.560	
		S1117-18	V_I = (V_O+1.5V),I_O = 10 ㎃		1.764	1.8	1.836	
			V_I = (V_O+1.5V) to 7V I_O = 0 to 1000 ㎃	*	1.728		1.872	
		S1117-25	V_I = (V_O+1.5V),I_O = 10 ㎃		2.450	2.5	2.550	
			V_I = (V_O+1.5V) to 7V I_O = 0 to 1000 ㎃	*	2.400		2.600	
		S1117-285	V_I = (V_O+1.5V),I_O = 10 ㎃		2.793	2.85	2.907	
			V_I = (V_O+1.5V) to 7V I_O = 0 to 1000 ㎃	*	2.736		2.964	
		S1117-33	V_I = (V_O+1.5V),I_O = 10 ㎃		3.234	3.3	3.366	
			V_I = (V_O+1.5V) to 7V I_O = 0 to 1000 ㎃	*	3.168		3.432	
		S1117-50	V_I = (V_O+1.5V),I_O = 10 ㎃		4.900	5.0	5.100	
			V_I = (V_O+1.5V) to 7V I_O = 0 to 1000 ㎃	*	4.800		5.200	
Line Regulation (Note2)	$\triangle V_{O(\triangle VI)}$	All	1.5V≤ V_I-V_O≤7V I_O=10 ㎃		-	5	10	㎷
Load Regulation (Note2)	$\triangle V_{O(\triangle IL)}$	All	V_I=(V_O+1.5V) I_O=10 ㎃ ~ 1000 ㎃		-	10	30	㎷
Quiescent Current	I_{QC}	All	V_I= V_O + 1.5V V_{ADJ}=0V	*	-	7	13	㎃
Minimum Load Current	$I_{L(MIN)}$	S1117A	V_I=(V_O+1.5V), V_O=0V	*		3	7	㎃
Adjust Pin Current	I_{ADJ}	S1117A	V_I = (V_O+1.5V) to 7V I_O = 10 ㎃	*		55	90	㎂
Dropout Voltage (Note4)	V_{DROP}	All	I_O =1000 ㎃	*	-	1.2	1.3	V
Ripple Rejection (Note3)	RR	All	V_I-V_O=1.5V, I_O=1000 ㎃ V_{Ripple}=1V_{P-P} , f=120 ㎐		60	72	-	dB
Current Limit	I_{LIMIT}	All	(V_I-V_O)=1.5V	*	1			A

The * denotes the specifications which apply over the full temperature range.

Note 2: Low duty pulse testing with Kelvin connections required.

Note 3: 120 ㎐ input ripple (C_{ADJ} for ADJ=25 ㎌)

Note 4: $\triangle V_O$ = 1%

■ Typical Applications

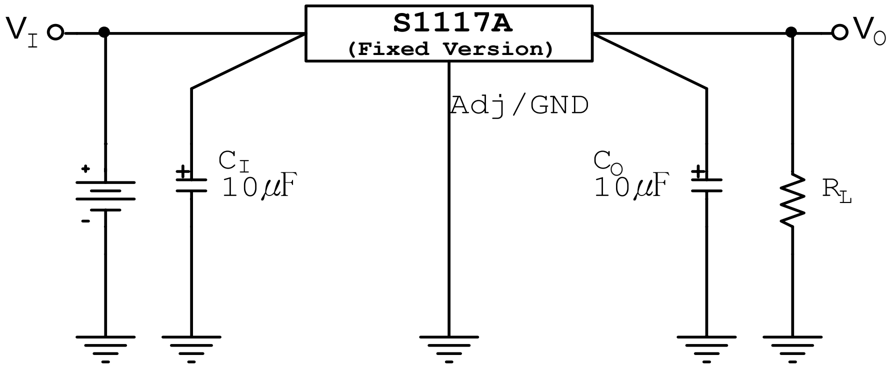
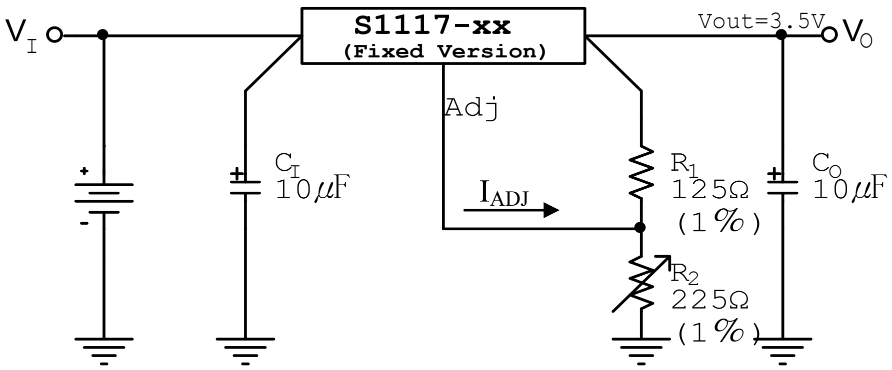


Fig. 1 Fixed Voltage Regulator



$V_O = V_{ADJ} * (1 + R_2/R_1) + I_{ADJ} * R_2$

Fig. 2 Adjustable Voltage Regulator

Notes:

1) C_I needed if device is far from filter capacitors

2) C_O minimum value required for stability

Electrical Characteristic Curves

Fig. 3 V_{DROP} vs. I_O

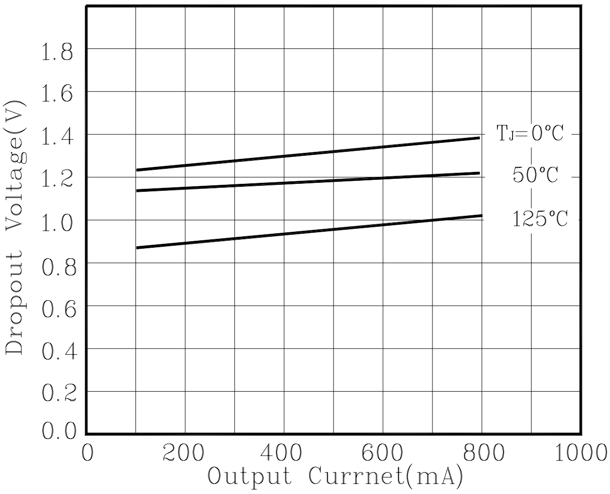


Fig. 4 ΔV_O vs. T_a

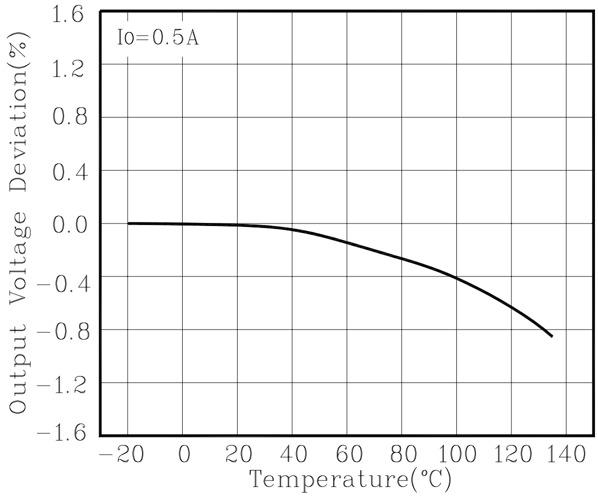


Fig. 5 RR vs. Frequency

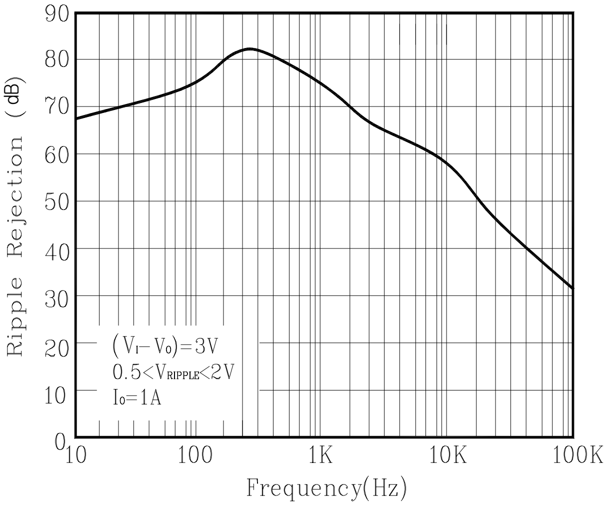


Fig. 6 Temperature Stability

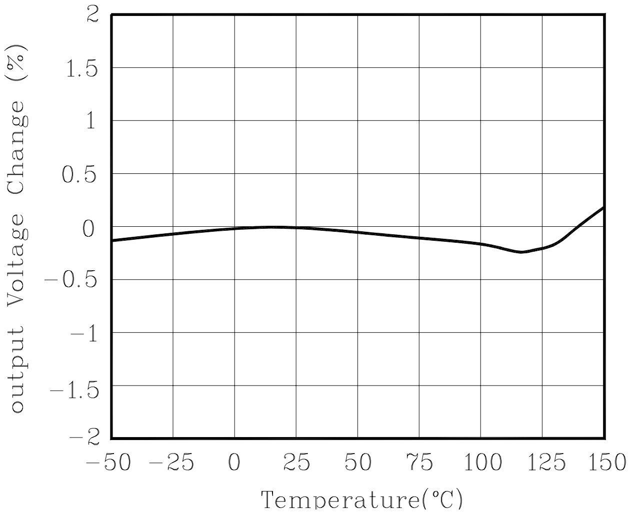


Fig. 7 I_{ADJ} vs. T_a

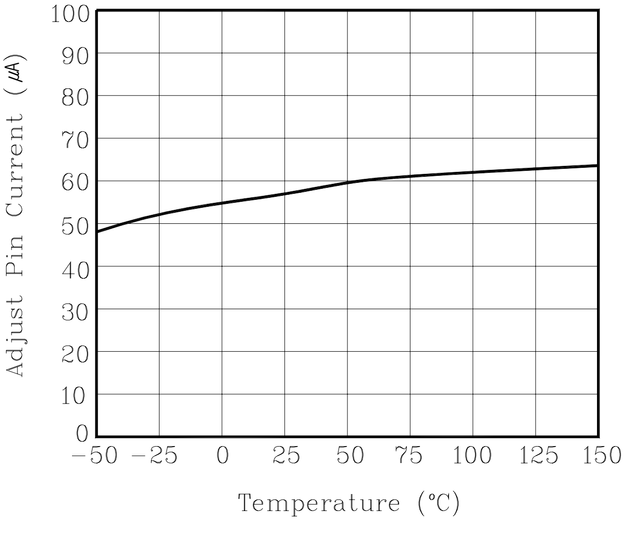


Fig. 8 P_D vs. T_a