2010-version 2

FEATURES

- Adjustable or Fixed Output
- Output Current of 1A
- Low Dropout, 1.3 V typ. at 1A Output Current
- 0.04% Line Regulation
- 0.2 % Load Regulation
- 100% Thermal Limit Burn-In
- Fast Transient Response

DESCRIPTION

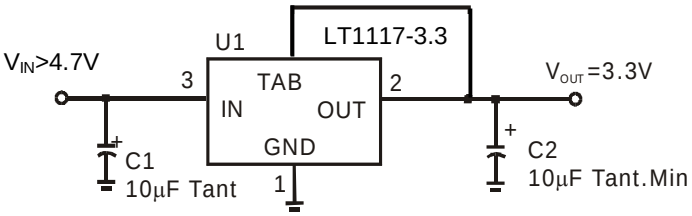
The LT1117 series of positive adjustable and fixed regulators are designed to provide 1A with high efficiency. All internal circuitry is designed to operate down to 1.4V input to output differential. On-chip trimming adjusts the reference voltage to 1%. Current limit the typical value of 1.5A allows to minimize the stress on both the regulator and the power source circuitry under overload conditions.

APPLICATIONS

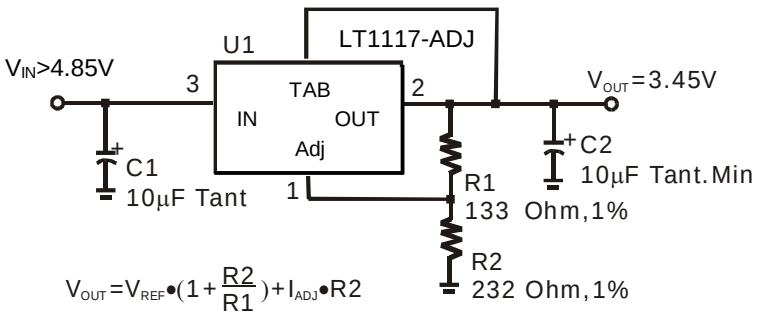
- High Efficiency Linear Regulators
- Post Regulators for Switching Supplies
- Adjustable Power Supply

TYPICAL APPLICATION DATA

Fixed Voltage Regulator



Adjustable Voltage Regulator

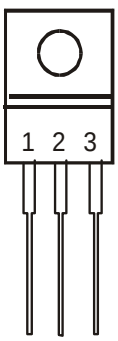


Notes:

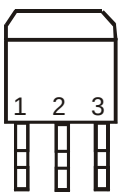
1) C1 needed if device is far from filter capacitors

2) C2 minimum value required for stability

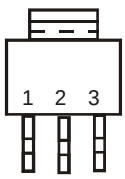
PACKAGE INFORMATION



TO-220



TO-263



SOT-223

PIN	FUNCTION
1	ADJ/GND
2	OUTPUT
3	INPUT

TAB IS OUTPUT

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Maximum	Units
P_D	Power Dissipation	Internally Limited	W
V_{IN}	Input Voltage	13	V
V_{IN}-V_{OUT}	Voltage Difference	10	V
T_J	Operating Junction Temperature Range	-40 to 125	°C
T_{STG}	Storage Temperature	-65 to 150	°C
T_{LEAD}	Lead Temperature (Soldering, 10 sec)	300	°C
V_{ESD}	Minimum ESD Rating (HBM)	2	kV

DEVICE SELECTION GUIDE

Device	Output Voltage
LT1117-ADJ	ADJ
LT1117 -1.5	1.5V
LT1117 -1.8	1.8V
LT1117 -2.5	2.5V
LT1117 -2.85	2.85V
LT1117 -3.0	3.0V
LT1117 -3.3	3.3V
LT1117 -3.5	3.5V
LT1117 -5.0	5.0V

Other fixed versions are available Vout = 1.5V to 5.0V

ELECTRICAL CHARACTERISTICS

Electrical Characteristics at I_{LOAD} = 0 mA and T_J = +25°C unless otherwise specified.

Parameter	Device	Test Conditions		Min	Typ	Max	Units
Reference Voltage Note 1	LT1117-ADJ	V_{IN} = 5V, I_{LOAD} = 10mA		1.232	1.250	1.268	V
		V_{IN} = 2.65V to 13V, V_{IN}-V_{OUT} ≤ 10V, I_{LOAD}=10mA to 1A	*	1.225	1.250	1.275	
Output Voltage Note 1	All fixed versions	V_{IN} = V_{OUT} +1.5V, Variator from nominal V_{OUT}		-1.5		+1.5	%
		V_{IN} = (V_{OUT} +1.5V)to 13V, V_{IN}-V_{OUT} ≤ 10V I_{LOAD}=0mA to 1A,	*	-2		+2	
	V_{out} = 1,2V	Variator from nominal V_{OUT}		-3		+2	
Line Regulation	All	I_{LOAD} = 10mA, 1.5V≤ V_{IN}-V_{OUT}≤ 10V	*		0.04	0.20	%
Load Regulation Note1	All	V_{IN} = V_{OUT} +1.5V I_{LOAD}=10mA to 1A	*		0.2	0.40	
Minimum Load Current	LT1117-ADJ	V_{IN} = 5V, V_{ADJ} = 0V	*		2	7	mA
Ground Pin Current	All fixed versions	V_{IN} = V_{OUT} +1.5V, I_{LOAD} = 10mA to 1A	*		3.5	10	mA
Adjust Pin Current	LT1117-ADJ	1.5V≤ V_{IN}-V_{OUT}≤ 10V I_{LOAD}=10mA	*		35	60	μA
Current Limit	All	(V_{IN} - V_{OUT}) = 1.5V	*	1	1.5	2	A
Ripple Rejection Note2	All	V_{IN} -V_{OUT} = 1.5V I_{LOAD} = 1A		60			dB
Dropout Voltage Note 1,3	All	I_{LOAD} = 1A	*		1.30	1.40	V
Temperature coefficient	All	V_{IN}–V_{OUT}=1.5V, I_{LOAD}=10mA	*			0.015	%/°C

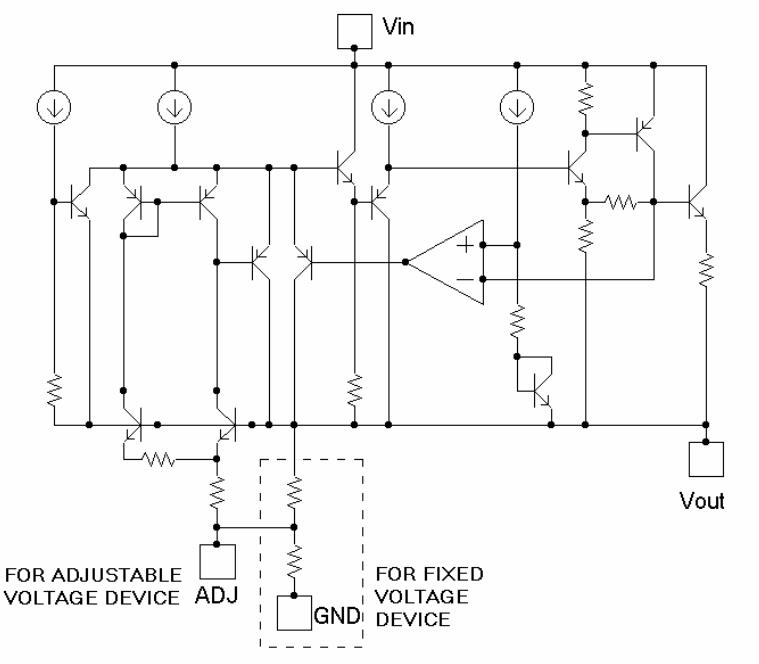
The * denotes the specifications which apply over the full temperature range.

Note 1: Low duty pulse testing with Kelvin connections required.

Note 2: 120Hz input ripple (C_{ADJ} for ADJ=25μF)

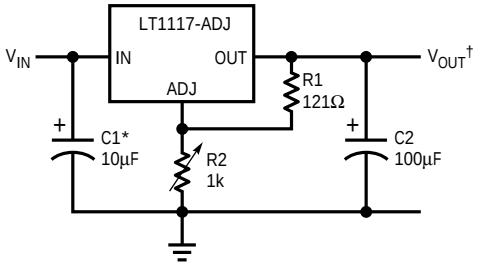
Note 3: ΔV_{OUT}, ΔV_{REF}=1%

BLOCK DIAGRAM



TYPICAL APPLICATION CIRCUITS

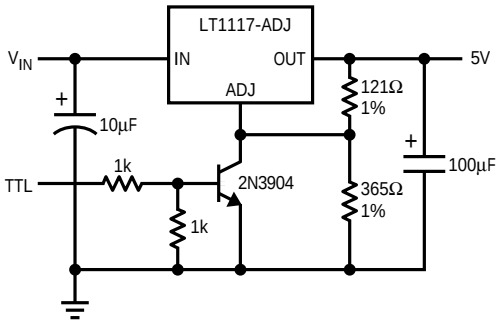
1.2V to 10V Adjustable Regulator



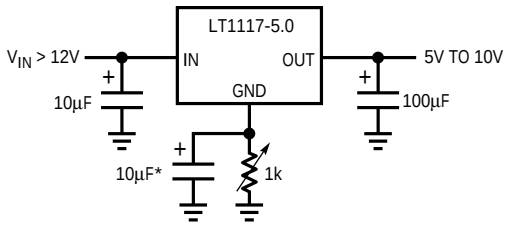
* NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS

† $V_{OUT} = 1.25V\left(1 + \frac{R2}{R1}\right)$

5V Regulator with Shutdown

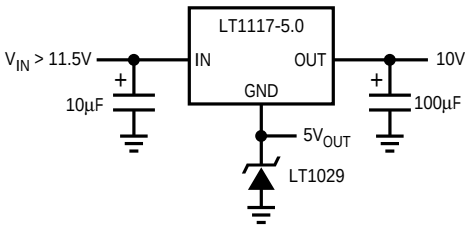


Adjusting Output Voltage of Fixed Regulators

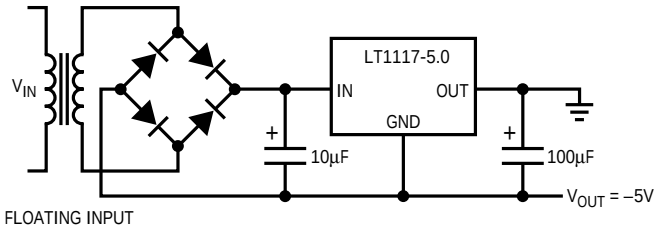


* OPTIONAL IMPROVES RIPPLE REJECTION

Regulator with Reference



Low Dropout Negative Supply



FLOATING INPUT