1A Low Dropout Positive Voltage Regulator

LM1117-XXXJ3

Features

- Adjustable or Fixed Output
- Output Current of 1A
- Low Dropout, 1.4V max at 1A Output Current
- Good Noise Rejection
- Output Current Limiting
- Built-in Thermal Shutdown
- Fast Transient Response

Description

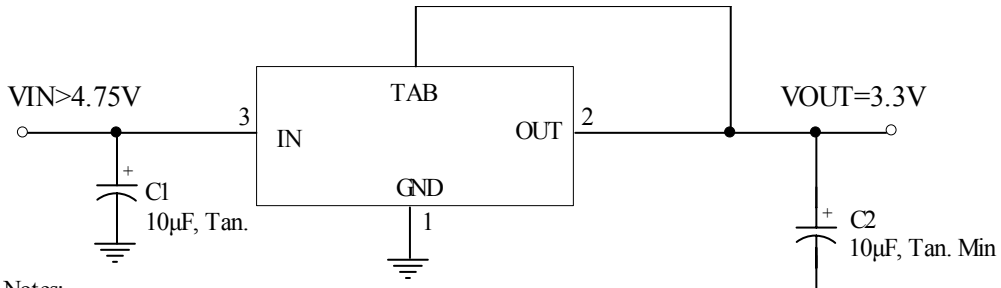
The LM1117 series of positive adjustable and fixed regulators are designed to provide 1A with high efficiency. All internal circuitry is designed to operate down to 1.4V input to output differential. The product is specifically designed to provide well-regulated supply for low-voltage IC application such as high-speed bus termination and low current 3.3V logic supply, and other applications such as VGA cards.

Applications

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

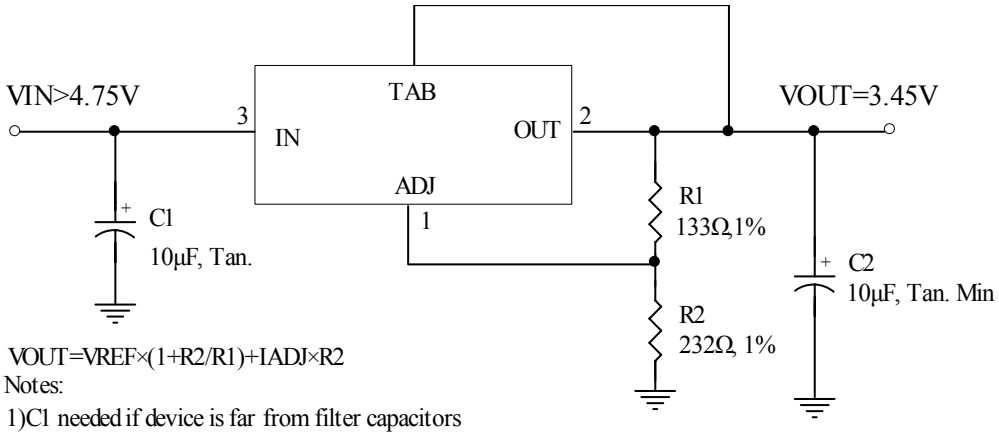
Typical Application Data

Fixed Voltage Regulator



Notes:
1)C1 needed if device is far from filter capacitors
2)C2 minimum value required for stability

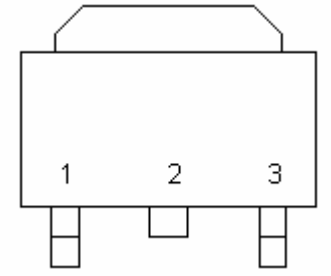
Adjustable Voltage Regulator



VOUT=VREF×(1+R2/R1)+IADJ×R2

Notes:
1)C1 needed if device is far from filter capacitors
2)C2 minimum value required for stability

Package Information



TO-252

Pin	Name
1	ADJ/GND
2	OUTPUT
3	INPUT

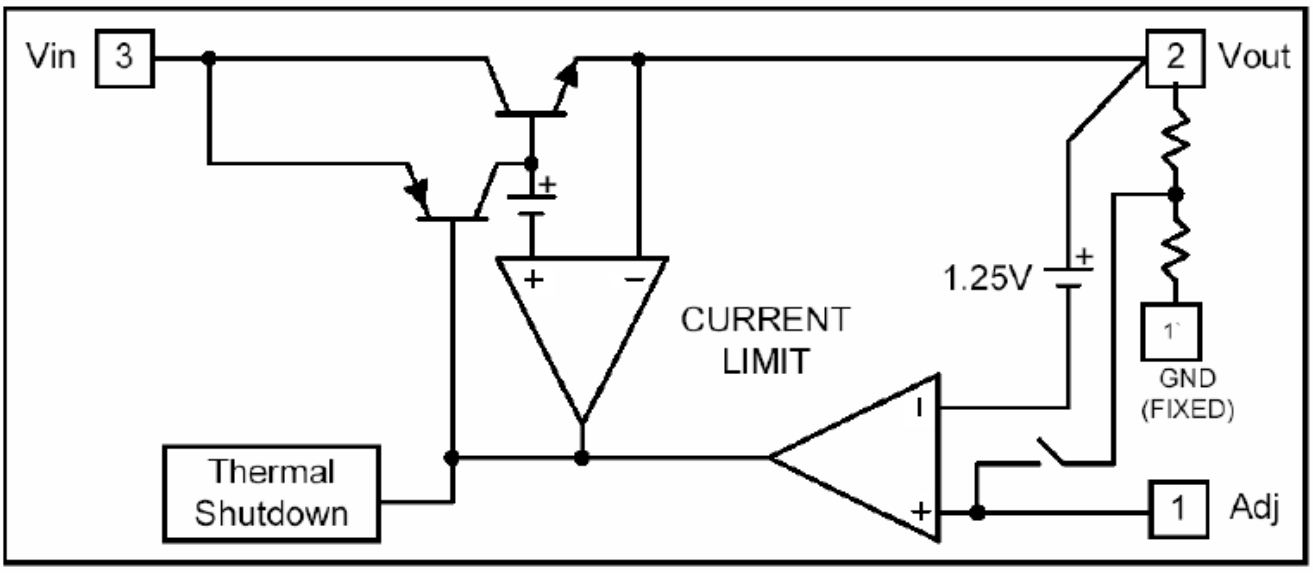
Absolute Maximum Ratings

Symbol	Parameter	Maximum	Units
P_D	Power Dissipation	1050	mW
V_{IN}	Input Voltage	-0.3 ~ +15	V
T_{OPR}	Operating Junction Temperature Range	0 ~ +125	℃
T_{STG}	Storage Temperature	-65 ~ +150	℃
T_{MJ}	Maximum Junction Temperature	150	℃

Device Selection Guide

Device	Output Voltage
LM1117-ADJ	Adjustable
LM1117-1.5	1.5V
LM1117-1.8	1.8V
LM1117-2.5	2.5V
LM1117-3.3	3.3V
LM1117-5.0	5.0V

Block Diagram



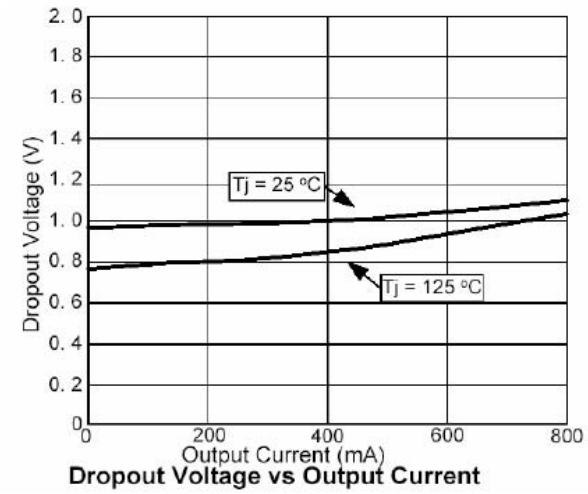
Electrical Characteristics @ I_O=10mA,T_J=25℃, unless otherwise specified

Parameter	Device	Test Conditions	Min	Typ	Max	Units
Reference voltage	Adj version	V_{IN}-V_{OUT}=1.5V	1.225	1.250	1.275	V
Output Voltage	LM1117-1.5	3.0V≤V_{IN}≤12V	1.470	1.500	1.530	V
	LM1117-1.8	3.3V≤V_{IN}≤12V	1.764	1.800	1.836	V
	LM1117-2.5	4.0V≤V_{IN}≤12V	2.450	2.500	2.550	V
	LM1117-3.3	4.8V≤V_{IN}≤12V	3.235	3.300	3.365	V
	LM1117-5.0	6.5V≤V_{IN}≤12V	4.900	5.000	5.100	V
Line Regulation	All version	V_{OUT}+1.5V≤V_{IN}≤12V	-	-	0.2	%
Load Regulation (Note 1, 2)	LM1117-ADJ	V_{IN}=3.3V, Vadj=0, 10mA≤I_O≤1A	-	-	1	%
	LM1117-1.5	V_{IN}=3.0V, 0mA≤I_O≤1A	-	12	15	mV
	LM1117-1.8	V_{IN}=3.3V, 0mA≤I_O≤1A	-	15	18	mV
	LM1117-2.5	V_{IN}=4.0V, 0mA≤I_O≤1A	-	20	25	mV
	LM1117-3.3	V_{IN}=5.0V, 0mA≤I_O≤1A	-	26	33	mV
	LM1117-5.0	V_{IN}=8.0V, 0mA≤I_O≤1A	-	40	50	mV
Dropout Voltage (V_{IN}-V_{OUT})	All version	I_O=1A (ΔV_{OUT}=1%V_{OUT})	-	1.3	1.4	V
Current Limit	All version	V_{IN}-V_{OUT}=5V	1.1	-	-	A
Minimum Load Current	Adj version	V_{IN}=5V	-	5	10	mA
Adjust Pin Current	Adj version	V_{IN}=12V, I_O=10mA	-	50	100	μA
Quiescent Current	Fixed version	V_{IN}=12V, I_O=0mA	-	-	12	mA
Thermal Regulation	All version	T_A=25℃, 30ms pulse	-	0.008	0.04	%/W
Ripple Rejection	All version	f=120Hz, V_{IN}=V_{OUT}+3V, I_O= 1A, C_{OUT}=25μF tantalum	-	60	70	dB
Temperature Stability	All version	I_O= 10mA	-	0.5	-	%
Thermal Resistance, Junction to Ambient(No heat sink, no air flow)	All version		-	117	-	℃/W
Thermal Resistance, Junction to Case	All version	Control Circuitry/ Power transistor	-	15	-	℃/W

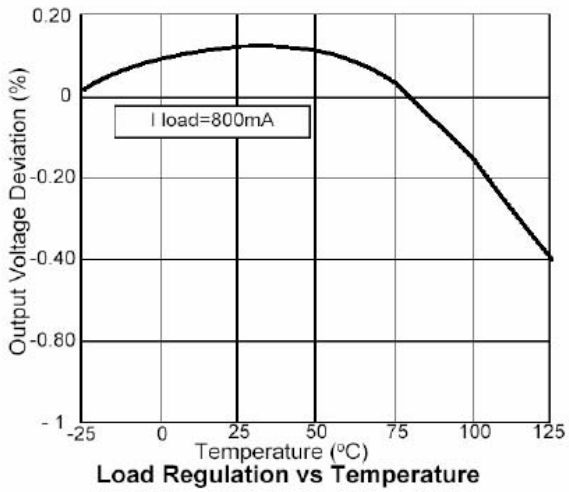
Note : 1.See thermal regulation specifications for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead 1/18" from the package.

2. Line and load regulation are guaranteed up to the maximum power dissipation of 15W. Power dissipation is determined by the difference in input and output and the output current. Guaranteed maximum power dissipation will not be available over the full input/output range.

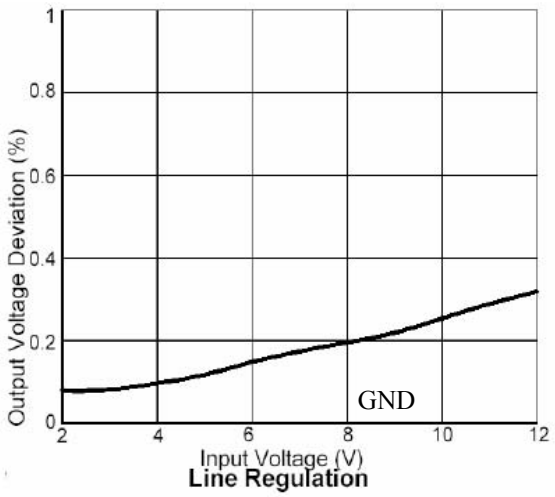
Characteristic Curves



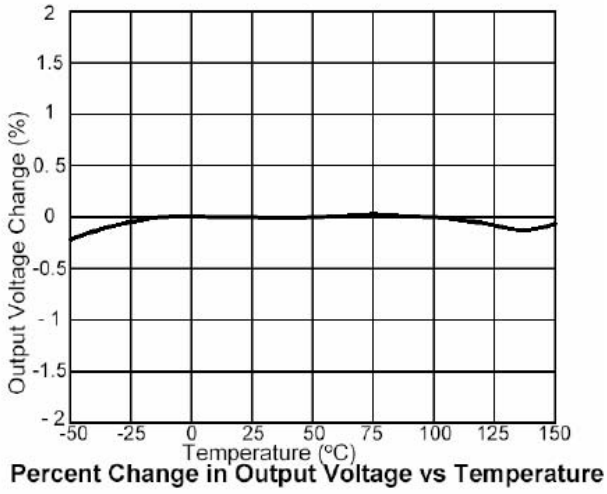
Dropout Voltage vs Output Current



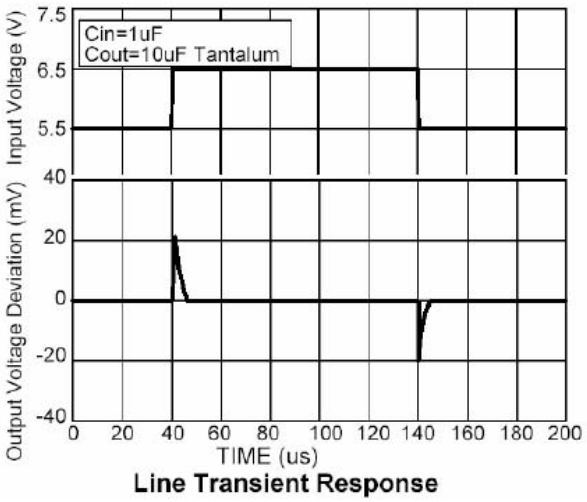
Load Regulation vs Temperature



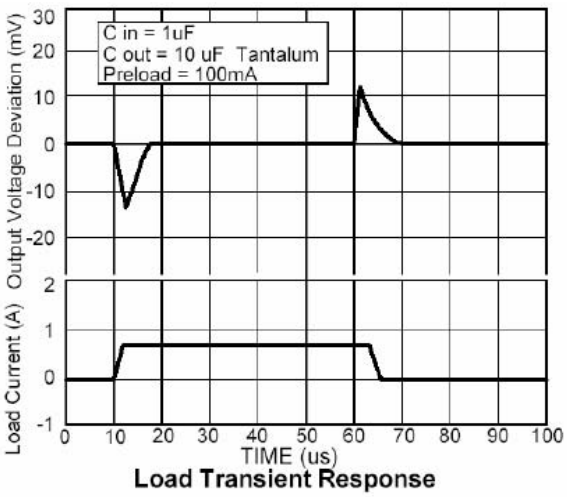
Line Regulation



Percent Change in Output Voltage vs Temperature

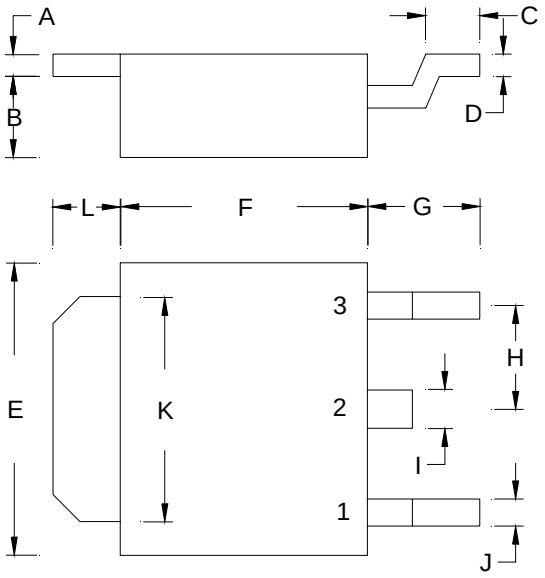


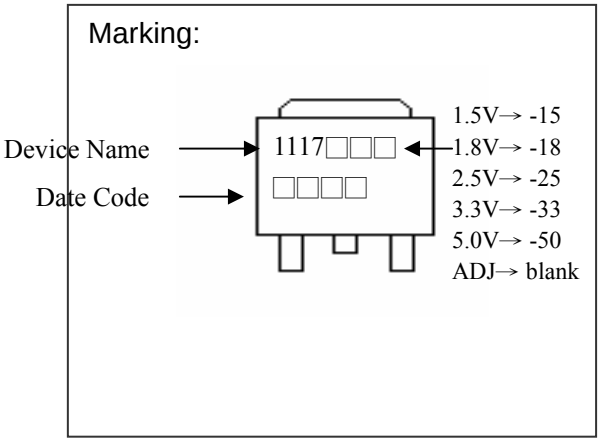
Line Transient Response



Load Transient Response

TO-252 Dimension





Style: Pin 1.Adj(GND) 2.Vout(TAB) 3.Vin

3-Lead TO-252 Plastic Surface Mount Package
CYStek Package Code: J3

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0177	0.0217	0.45	0.55	G	0.0866	0.1102	2.20	2.80
B	0.0650	0.0768	1.65	1.95	H	-	*0.0906	-	*2.30
C	0.0354	0.0591	0.90	1.50	I	-	0.0354	-	0.90
D	0.0177	0.0236	0.45	0.60	J	-	0.0315	-	0.80
E	0.2520	0.2677	6.40	6.80	K	0.2047	0.2165	5.20	5.50
F	0.2125	0.2283	5.40	5.80	L	0.0551	0.0630	1.40	1.60

Notes: 1.Controlling dimension: millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: 42 Alloy; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0