



H1117E Series

1A LOW DROPOUT POSITIVE VOLTAGE REGULATOR

Features

- Low Dropout Voltage 1.2V at 1A
- Adjustable or Fixed Voltage
- Maximum Line Regulation 0.45%
- Maximum Load Regulation 0.4%
- Adjust Pin Current Less Than 90 μ A
- Over Current Protection
- Thermal Protection

Applications

- High Efficiency Linear Regulators
- 5V to 3.3V Voltage Converter
- Battery Charger

General Description

The H1117E is a 1A low-dropout positive voltage regulator. It is available in fixed and adjustable output voltage versions. Over current and thermal protection are integrated onto the chip. Output current will decrease while it reaches the pre-set current or temperature limit. The dropout voltage is specified at 1.2V Maximum at full rated output current. H1117E Series provides excellent regulation over variations due to changes in line, load and temperature. H1117E is three terminal regulator and available in popular packages.

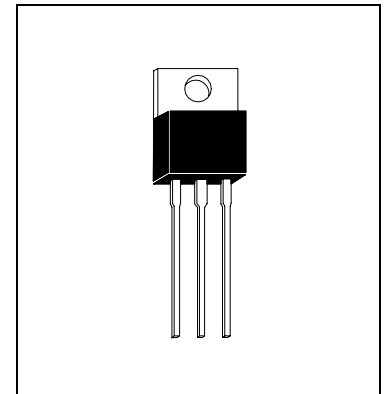
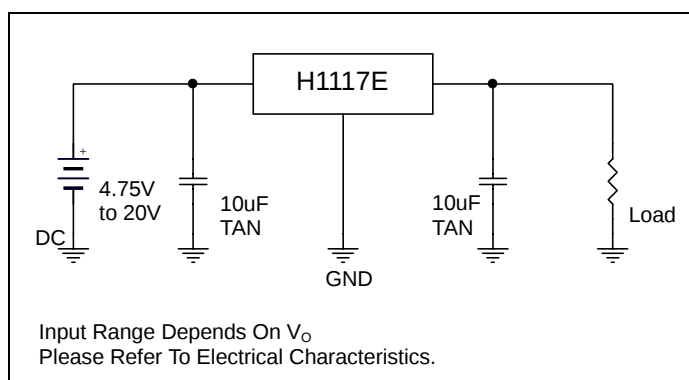
Device Selection Guide

Device	Output Voltage	Package
H1117E(Adj)	1.3V to 4V	TO-220AB
H1117-3.3E	3.3	

Absolute Maximum Ratings

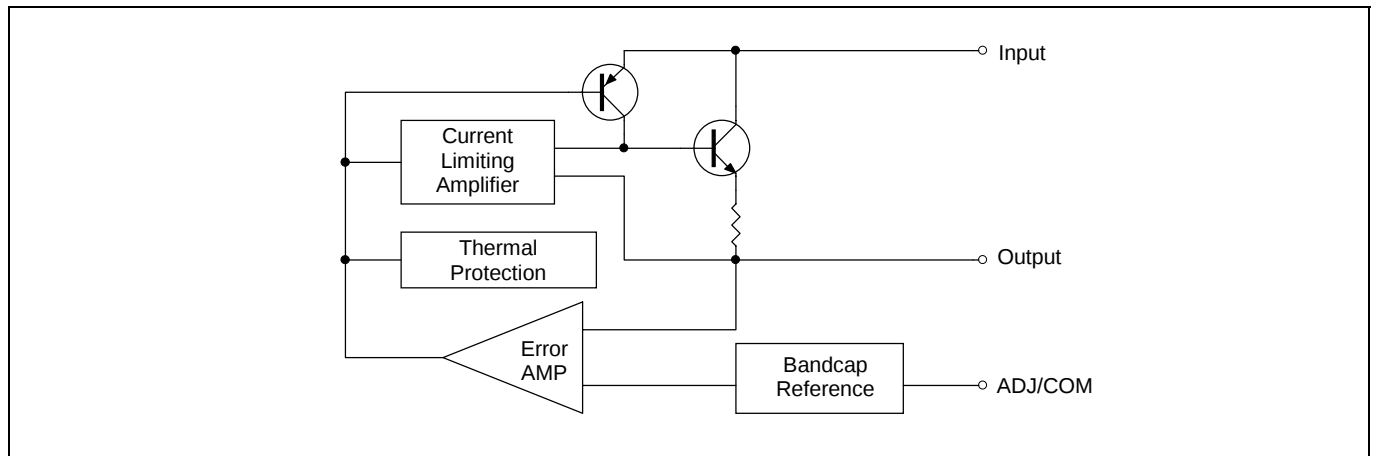
Parameter	Symbol	Maximum	Units
Input Voltage	V_{IN}	20	V
Power Dissipation	P_D	Internally Limited	W
Thermal Resistance Junction To Case TO-220AB	θ_{JC}	3	$^{\circ}\text{C/W}$
Thermal Resistance Junction To Ambient TO-220AB	θ_{JA}	50	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_j	0 To 125	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-65 To 150	$^{\circ}\text{C}$
Lead Temperature (Soldering) 10 Sec	T_{LEAD}	260	$^{\circ}\text{C}$

Typical Application





Block Diagram



Electrical Characteristics

H1117E (adj version)

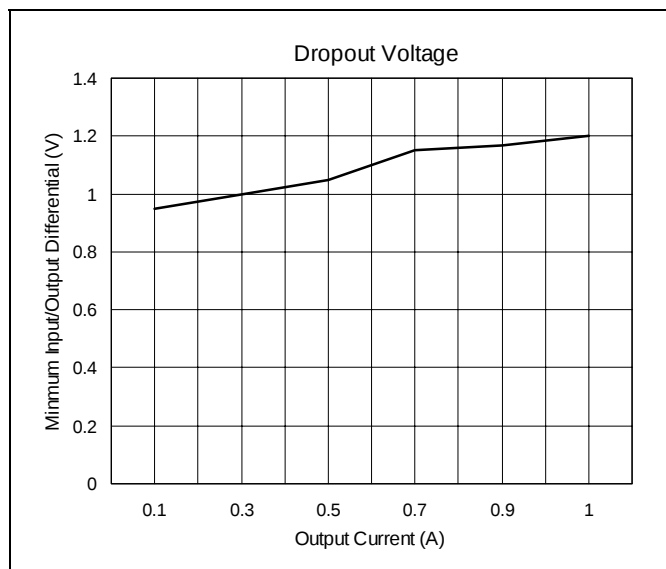
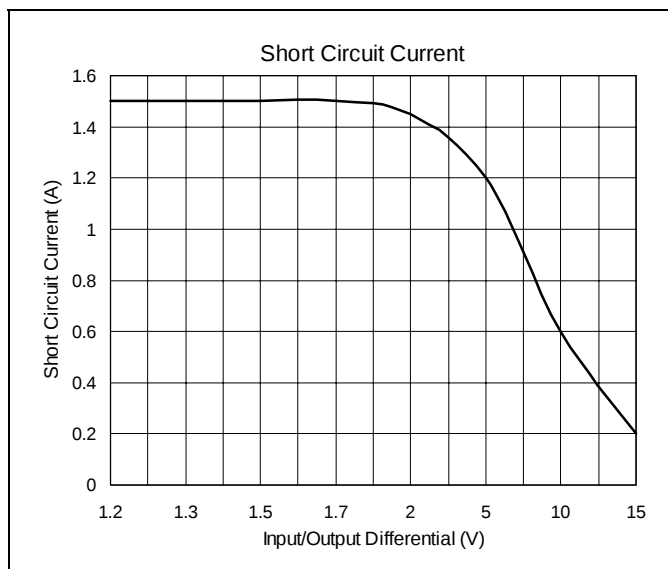
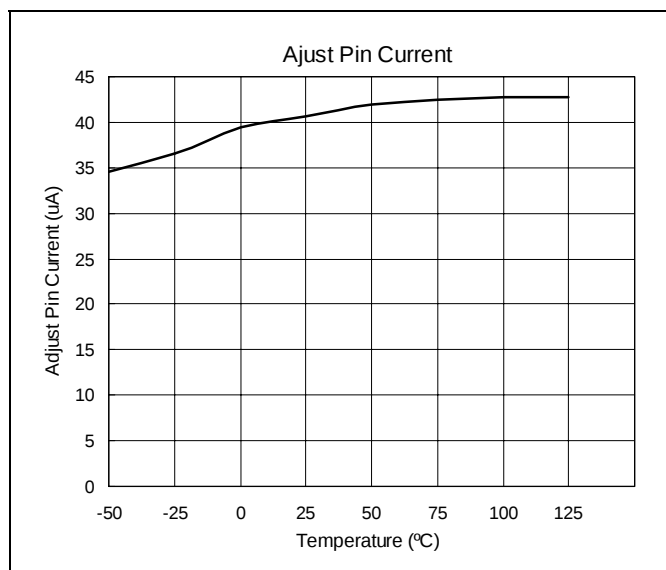
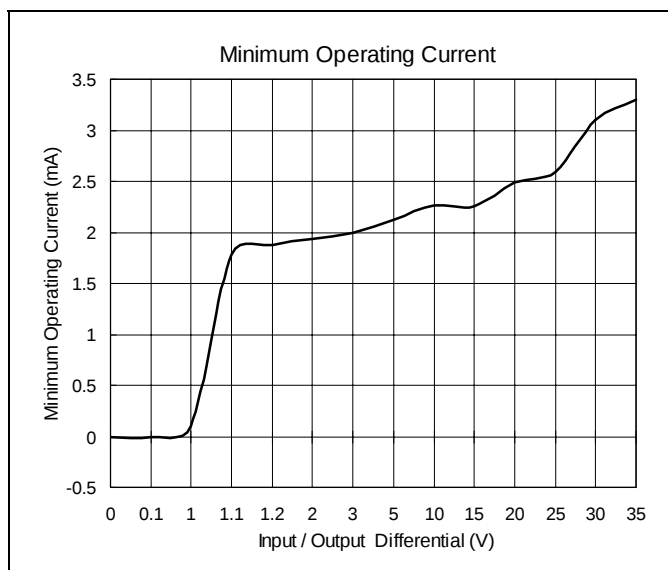
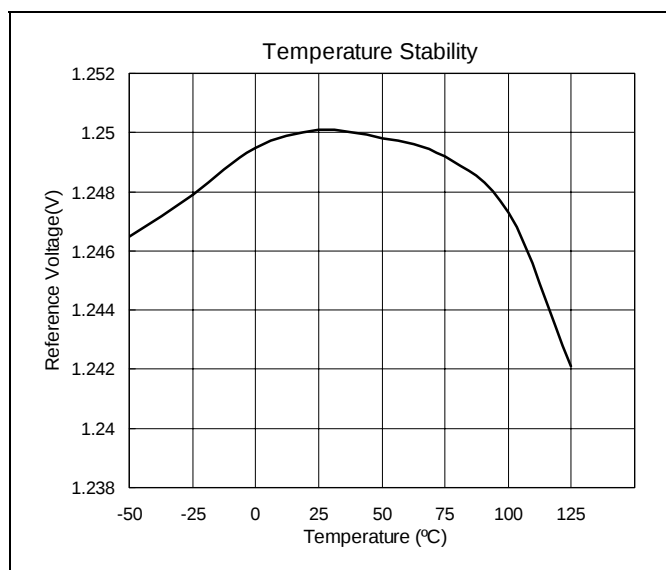
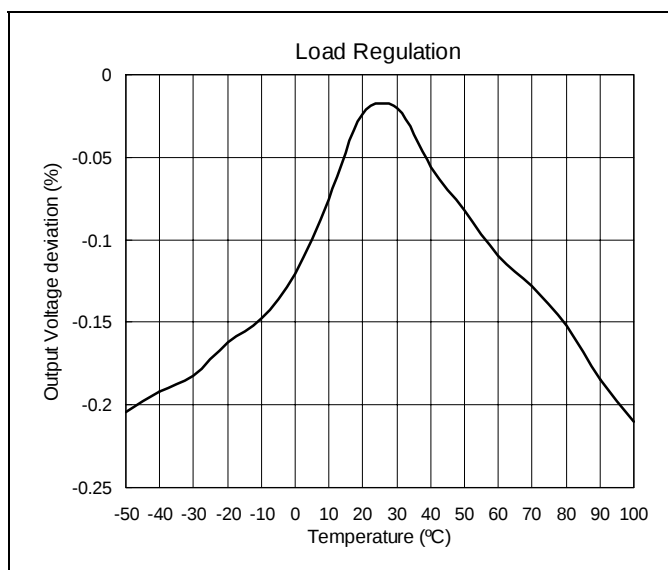
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reference Voltage	V_{REF}	$V_{IN}=5V, I_O=10mA, T_j=25^{\circ}C$	1.238	1.25	1.262	V
		$V_{IN}=5V, I_O=10mA, \text{Over Temp.}$	1.225	1.25	1.275	
Line Regulation	Reg_{LINE}	$V_{IN}=4.75\sim 20V, I_O=10mA, T_j=25^{\circ}C$	-	-	0.3	%
		$V_{IN}=4.75\sim 20V, I_O=10mA, \text{Over Temp.}$	-	-	0.45	
Load Regulation	Reg_{LOAD}	$V_{IN}=5V, I_O=10mA\sim 1A, T_j=25^{\circ}C$	-	0.05	0.3	%
		$V_{IN}=5V, I_O=10mA\sim 1A, \text{Over Temp.}$	-	0.2	0.4	
Dropout Voltage	V_D	$I_O=10mA\sim 1A, \text{Over Temp.}, \Delta V_O=\pm 1\%$	-	1	1.2	V
Current Limit	I_S	$V_{IN}=2.75\sim 7V, \text{Over Temp.}$	1	-	-	A
Temperature Coeff.	T_C	$V_{IN}=2.75\sim 7V, I_O=10mA\sim 1A$	-	0.005	-	$\%/^{\circ}C$
Adjust Pin Current	I_{adj}	$V_{IN}=2.75\sim 7V, I_O=10mA\sim 1A, T_j=25^{\circ}C$	-	55	-	μA
		$V_{IN}=2.75\sim 7V, I_O=10mA\sim 1A, \text{Over Temp.}$	-	-	90	
Adjust Pin Current Change	ΔI_{adj}	$V_{IN}=2.75\sim 7V, I_O=10mA\sim 1A, \text{Over Temp.}$	-	0.2	5	
Temperature Stability	T_S	$V_{IN}=5V, I_O=100mA, \text{Over Temp.}$	-	0.5	-	%
Minimum Load Current	I_O	$V_{IN}=5V$	-	5	10	mA
RMS Output Noise	V_N	$T_j=25^{\circ}C$	-	0.003	-	%
Ripple Rejection Ratio	R_A	$V_{IN}=5V, I_O=1A, \text{Over Temp.}$	60	72	-	dB

H1117-3.3E

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Output Voltage	V_O	$V_{IN}=5V, I_O=0A, T_j=25^{\circ}C$	3.270	3.3	3.333	V
		$V_{IN}=5V, I_O=0A, \text{Over Temp.}$	3.234	3.3	3.366	
Line Regulation	Reg_{LINE}	$V_{IN}=4.75\sim 20V, I_O=0A, T_j=25^{\circ}C$	-	-	0.3	%
		$V_{IN}=4.75\sim 20V, I_O=0A, \text{Over Temp.}$	-	-	0.45	
Load Regulation	Reg_{LOAD}	$V_{IN}=5V, I_O=0A\sim 1A, T_j=25^{\circ}C$	-	0.05	0.3	%
		$V_{IN}=5V, I_O=0A\sim 1A, \text{Over Temp.}$	-	0.2	0.4	
Dropout Voltage	V_D	$I_O=0A\sim 1A, \text{Over Temp.}, \Delta V_O=\pm 1\%$	-	1	1.2	V
Current Limit	I_S	$V_{IN}=4.75\sim 7V, \text{Over Temp.}$	1	-	-	A
Quiescent Current	I_Q	$V_{IN}=5V, I_O=0A\sim 1A, \text{Over Temp.}$	-	12	13	mA
Temperature Coeff.	T_C	$V_{IN}=4.75\sim 7V, I_O=0A\sim 1A$	-	0.005	-	$\%/^{\circ}C$
Temperature Stability	T_S	$V_{IN}=5V, I_O=100mA, \text{Over Temp.}$	-	0.5	-	%
RMS Output Noise	V_N	$T_j=25^{\circ}C$	-	0.003	-	%
Ripple Rejection Ratio	R_A	$V_{IN}=5V, I_O=1A, \text{Over Temp.}$	60	72	-	dB

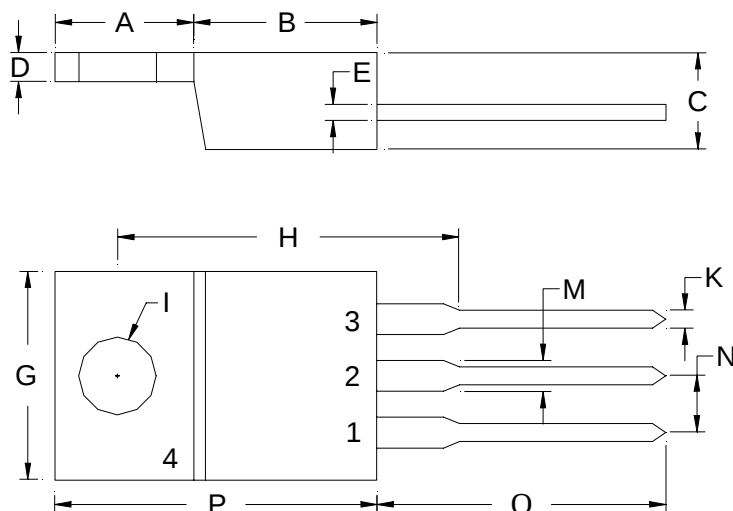


Characteristics Curve



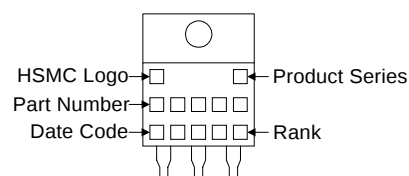


TO-220AB Dimension



3-Lead TO-220AB Plastic Package
HSMC Package Code : E

Marking :



Style : Pin 1.ADJ/COM 2.Vout 3.Vin
4.Vout

*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.2197	0.2949	5.58	7.49	I	-	*0.1508	-	*3.83
B	0.3299	0.3504	8.38	8.90	K	0.0295	0.0374	0.75	0.95
C	0.1732	0.185	4.40	4.70	M	0.0449	0.0551	1.14	1.40
D	0.0453	0.0547	1.15	1.39	N	-	*0.1000	-	*2.54
E	0.0138	0.0236	0.35	0.60	O	0.5000	0.5618	12.70	14.27
G	0.3803	0.4047	9.66	10.28	P	0.5701	0.6248	14.48	15.87
H	-	*0.6398	-	*16.25					

Notes : 1.Dimension and tolerance based on our Spec. dated Sep. 07,1997.

2.Controlling dimension : millimeters.

3.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

4.If there is any question with packing specification or packing method, please contact your local HSMC sales office.

Material :

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

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