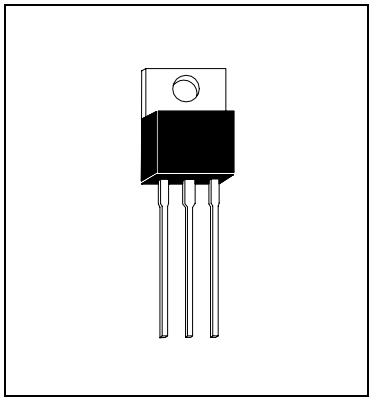
H1117E Series

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 uA
- 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.

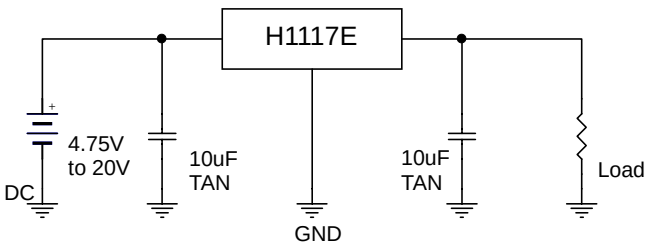
Device Selection Guide

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

Absolute Maximum Ratings

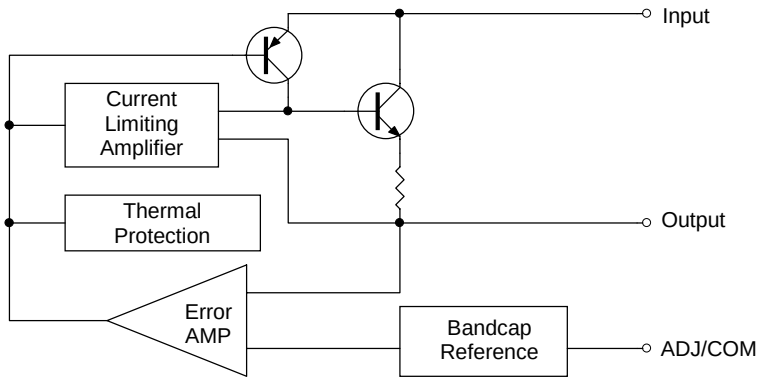
Parameter	Symbol	Maximum	Units
Input Voltage	V_{IN}	20	V
Power Dissipation	P_D	Internally Limited	W
Thermal Resistance Junction To Case TO-220AB	θ_{JC}	3	°C/W
Thermal Resistance Junction To Ambient TO-220AB	θ_{JA}	50	°C/W
Operating Junction Temperature Range	T_j	0 To 125	°C
Storage Temperature Range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

Typical Application



Input Range Depends On V_O
Please Refer To Electrical Characteristics.

Block Diagram



Electrical Characteristics

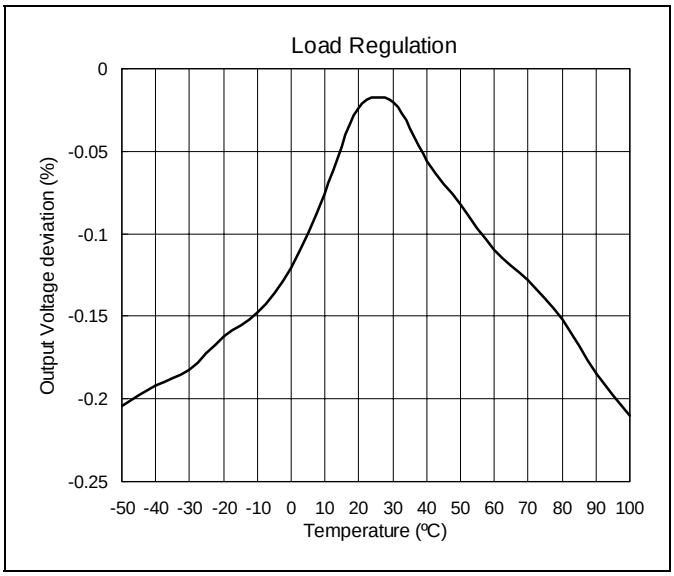
H1117E (adj version)

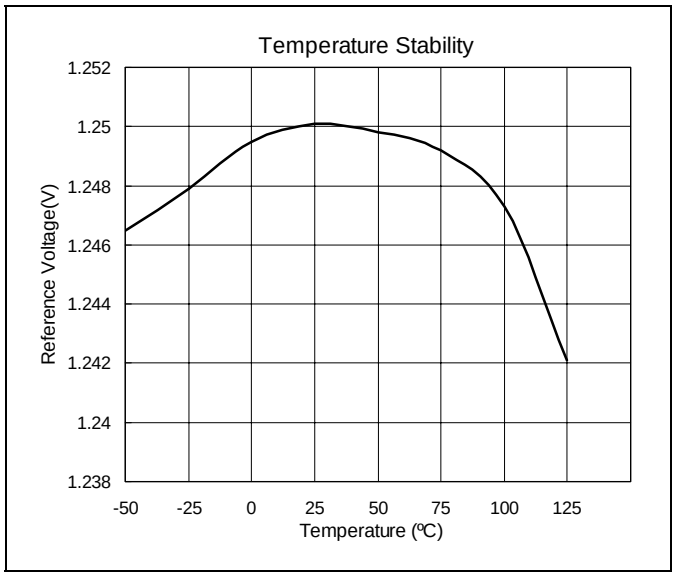
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reference Voltage	V_{REF}	V_{IN}=5V, I_O=10mA, T_j=25°C	1.238	1.25	1.262	V
		V_{IN}=5V, I_O=10mA, Over Temp.	1.225	1.25	1.275	
Line Regulation	Reg_{LINE}	V_{IN}=4.75~20V, I_O=10mA, T_j=25°C	-	-	0.3	%
		V_{IN}=4.75~20V, I_O=10mA, Over Temp.	-	-	0.45	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

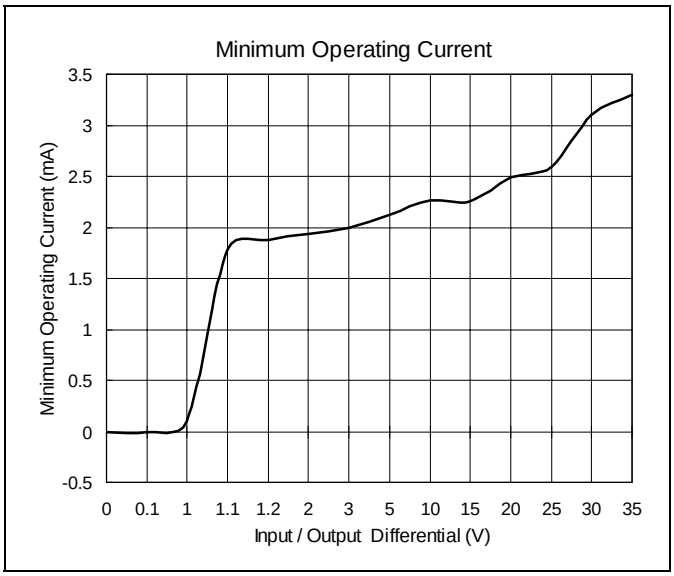
H1117-3.3E

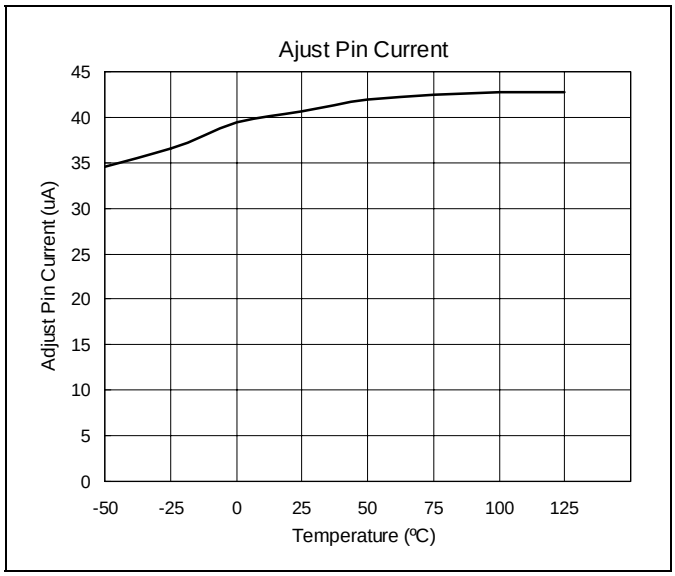
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Output Voltage	V_O	V_{IN}=5V, I_O=0A,T_j=25°C	3.270	3.3	3.333	V
		V_{IN}=5V, I_O=0A, Over Temp.	3.234	3.3	3.366	
Line Regulation	Reg_{LINE}	V_{IN}=4.75~20V, I_O=0A, T_j=25°C	-	-	0.3	%
		V_{IN}=4.75~20V, I_O=0A, Over Temp.	-	-	0.45	
Load Regulation	Reg_{LOAD}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

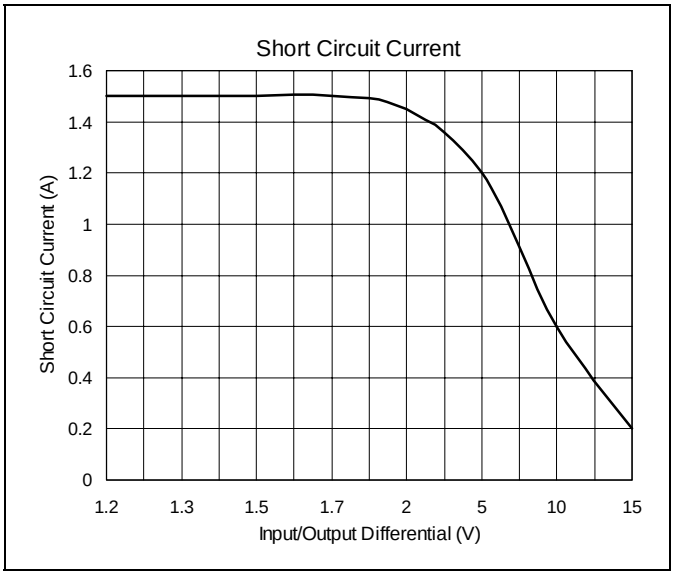
Characteristics Curve

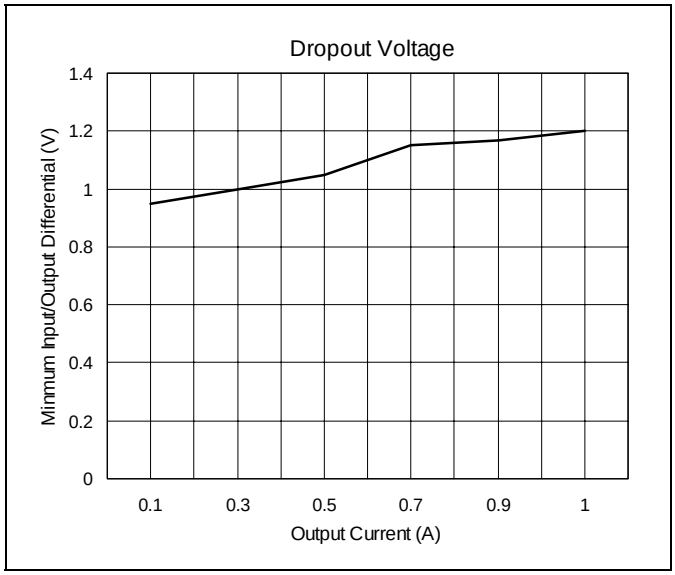




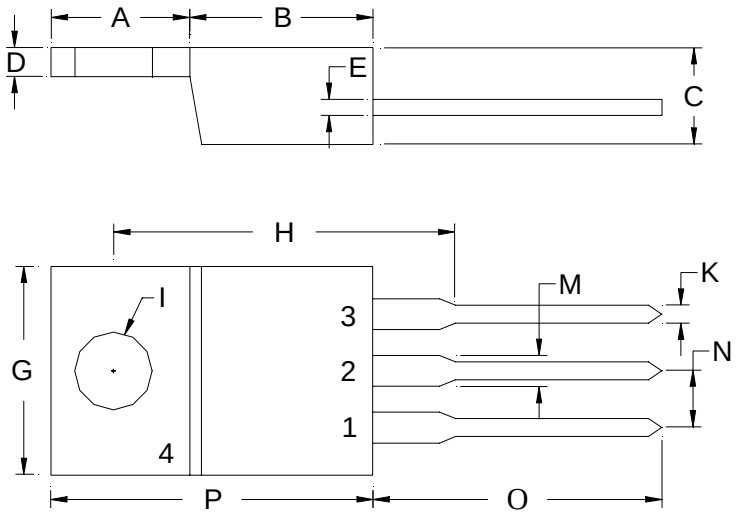




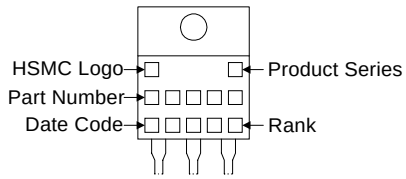




TO-220AB Dimension



Marking :



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

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

*: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

Head Office And Factory :

- **Head Office** (Hi-Sincerity Microelectronics Corp.) : 10F.,No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
  Tel : 886-2-25212056 Fax : 886-2-25632712, 25368454
- **Factory 1 :** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
  Tel : 886-3-5983621~5 Fax : 886-3-5982931
- **Factory 2 :** No. 17-1, Ta-Tung Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
  Tel : 886-3-5977061 Fax : 886-3-5979220