

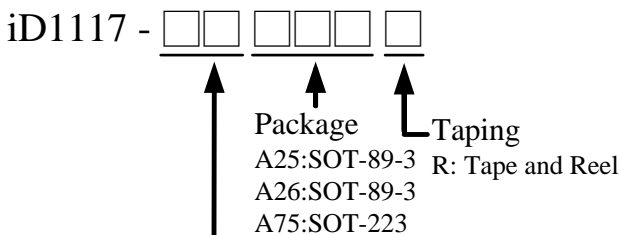
1A LDO Regulator

General Description

The iD1117 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.

Ordering Information



Output Voltage	Voltage Code
1.2	12
1.5	15
1.8	18
2.5	25
2.85	05
3.3	33
5.0	50
Adjustable	AD

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

Applications

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

Marking Information

For marking information, please contact our sales representative directly or through an iDesyn distributor around your location.

Typical Application Circuit

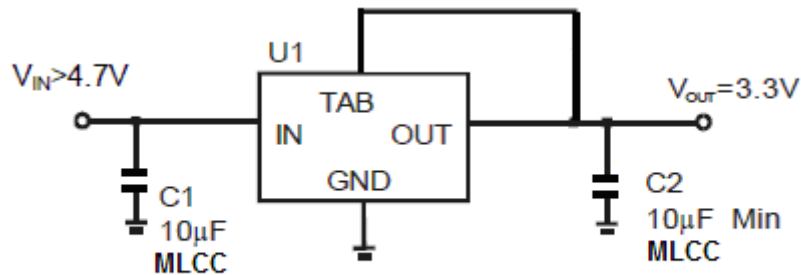
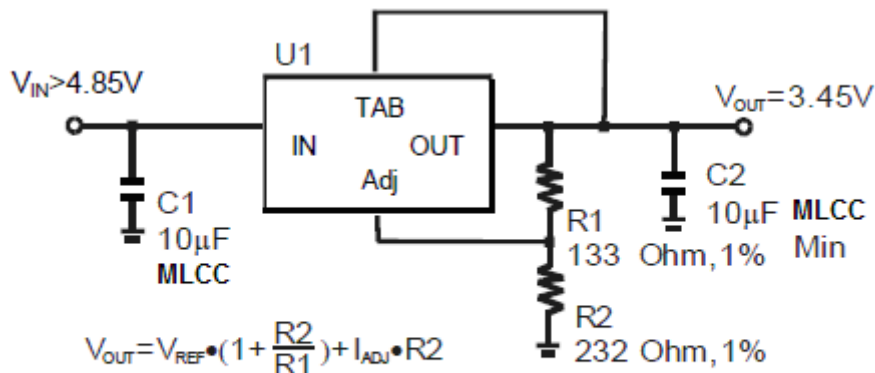


Figure1. Fixed Operation



Notes:

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

Figure2. Adjustable Operation

Absolute Maximum Ratings (Note 1)

Supply Voltage V_{IN}	20V
Power Dissipation, P_D @ $T_A=25^\circ\text{C}$	
SOT-89-3	570mW
SOT-223	1050mW
Thermal Resistance, θ_{ja}	
SOT-89-3	175°C/W
SOT-223	95°C/W
Lead Temperature	260 °C
Storage Temperature	-65°C to 150°C
ESD Susceptibility	
HBM (Human Body Mode)	2kV
MM (Machine Mode)	200V

Recommended Operating Conditions

Junction Temperature	-40°C to 125°C
Ambient Operating Temperature	-40°C to 85°C

Electrical Characteristics

Electrical Characteristics at $I_{LOAD} = 0\text{mA}$ and $T_J = +25^\circ\text{C}$ unless otherwise specified

Parameters	Symbol	Condition	Min	Typ	Max	Units
Reference Voltage Note1	V_{REF}	$V_{IN}=5\text{V}, I_{LOAD}=10\text{mA}$	1.232	1.250	1.268	V
		$1.5\text{V} \leq V_{IN} - V_{OUT} \leq 10\text{V}$ $I_{LOAD}=10\text{mA to } 1\text{A}$	*	1.225	1.250	
Output Voltage Note 1	ΔV_{OUT}	$V_{IN} = V_{OUT} + 1.5\text{V}$, Variator from nominal V_{OUT}	-1.5		+1.5	%
		$1.5\text{V} \leq V_{IN} - V_{OUT} \leq 10\text{V}$ $I_{LOAD}=0\text{mA to } 1\text{A}$, Variator from nominal V_{OUT}	*	-2	+2	
Accuracy output Voltage, at wafer testing		$V_{IN} = V_{OUT} + 1.5\text{V}$ $I_{LOAD}=10\text{mA}$	-0.6	0	+0.6	%
Line regulation	ΔV_{LINE}	$I_{LOAD}=10\text{mA}$, $1.5\text{V} \leq V_{IN} - V_{OUT} \leq 10\text{V}$	*	0.04	0.20	%
Load Regulation Note 1	ΔV_{LOAD}	$V_{IN} = V_{OUT} + 1.5\text{V}$ $I_{LOAD}=10\text{mA to } 1\text{A}$	*	0.2	0.40	%
Minimum Load Current	$I_{LOAD(MIN)}$	$V_{IN} = 5\text{V}$, $V_{ADJ} = 0\text{V}$	*	2	7	mA
Ground Pin Current	I_{GND}	$V_{IN} = V_{OUT} + 1.5\text{V}$ $I_{LOAD}=10\text{mA to } 1\text{A}$	*	3.5	10	mA
Adjust Pin Current	I_{ADJ}	$1.5\text{V} \leq V_{IN} - V_{OUT} \leq 10\text{V}$ $I_{LOAD}=10\text{mA}$	*	35	60	μA
Current Limit	I_{LIMIT}	$(V_{IN} - V_{OUT}) = 1.5\text{V}$	*	1	1.5	A
Ripple Rejection Note 2	PSRR	$V_{IN} - V_{OUT} = 2.5\text{V}$ $I_{LOAD} = 1\text{A}$		60		dB
Dropout Voltage Note 1,3	V_{DROOP}	$I_{LOAD} = 1\text{A}$	*	1.20	1.40	V
Temperature coefficient		$V_{IN} - V_{OUT} = 1.5\text{V}$, $I_{LOAD}=10\text{mA}$	*		0.015	%/ $^\circ\text{C}$

The * denotes the specifications which apply over the full temperature range $-40^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$

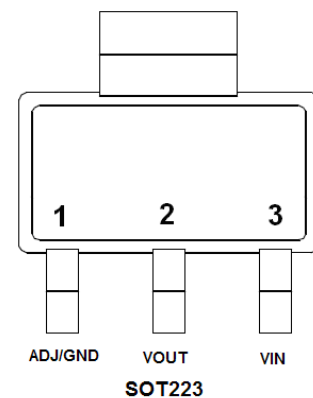
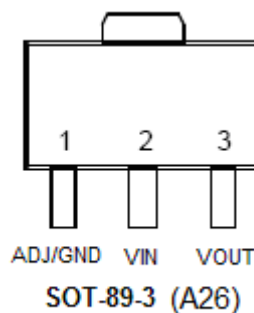
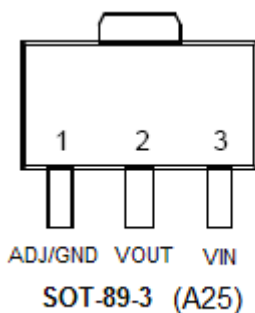
Note 1: Low duty pulse testing with Kelvin connections required.

Note 2: 120Hz input ripple (C_{ADJ} for $ADJ=25\mu\text{F}$)

Note 3: ΔV_{OUT} , $\Delta V_{REF}=1\%$

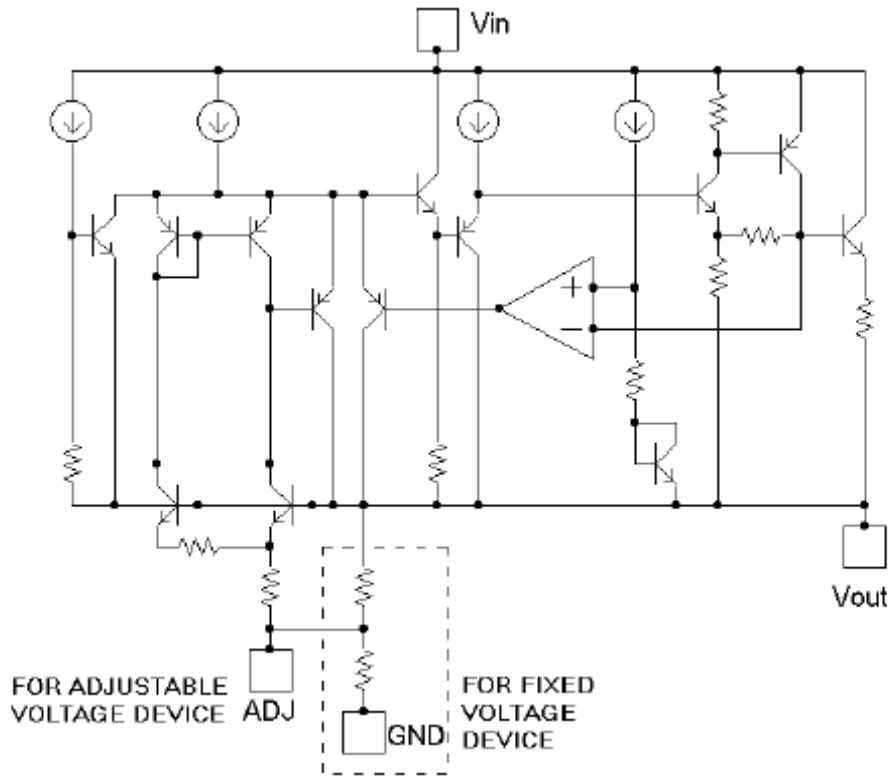
Pin Configurations

(Top View)



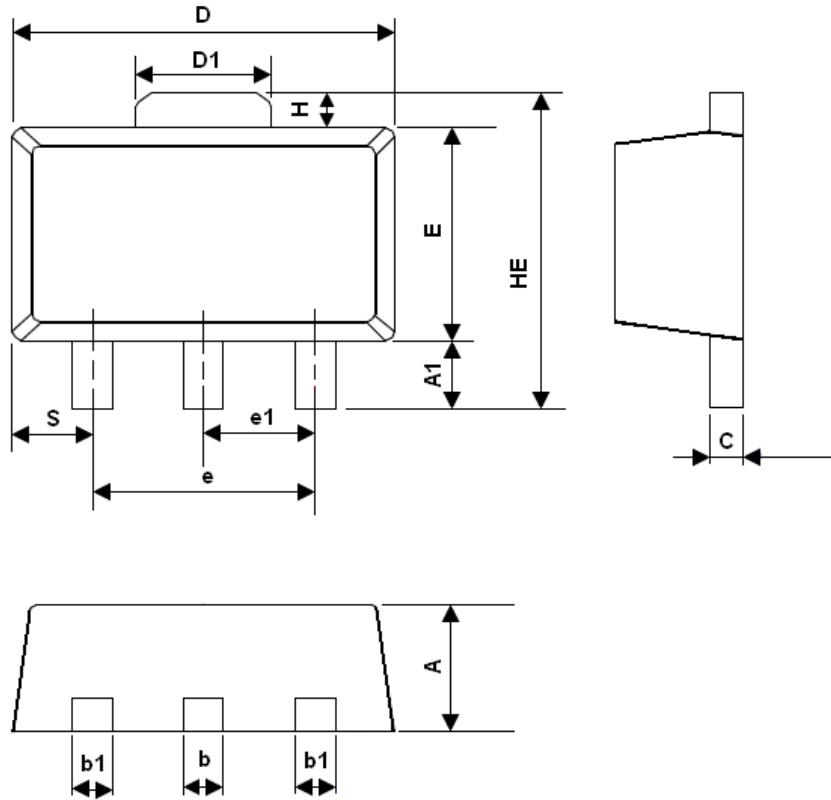
Pin Description

Pin Name	Pin Function
GND	Ground
VOUT	Output Voltage
VIN	Input Voltage
ADJ	Adjust Output Voltage

Function Block Diagram


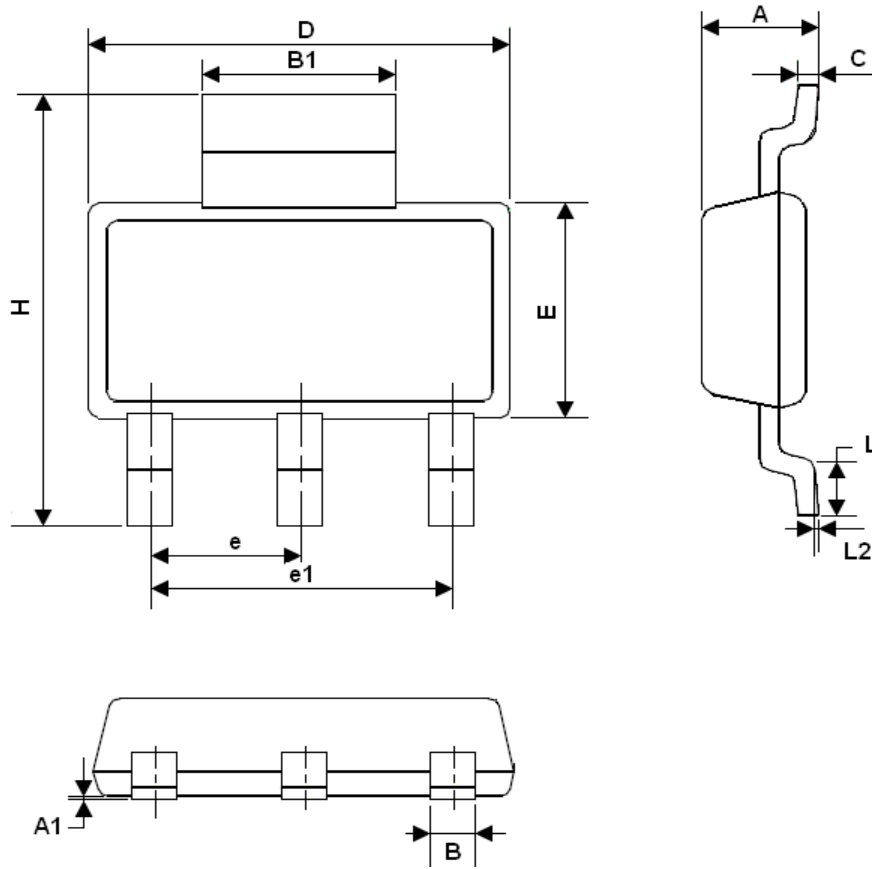
Packaging

SOT-89-3



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.40	1.50	1.60	0.055	0.059	0.063
A1	0.80	1.04-	---	0.031	0.041	---
b	0.36	0.42	0.48	0.014	0.016	0.018
b1	0.41	0.47	0.53	0.016	0.18	0.020
C	0.38	0.40	0.43	0.014	0.015	0.017
D	4.40	4.50	4.600	0.173	0.177	0.181
D1	1.40	1.60	1.75	0.055	0.062	0.069
HE	---	---	4.25	---	---	0.167
E	2.40	2.50	2.60	0.094	0.098	0.102
e	2.90	3.00	3.10	0.114	0.118	0.122
H	0.35	0.40	0.45	0.014	0.016	0.018
S	0.65	0.75	0.85	0.026	0.030	0.034
e1	1.40	1.50	1.60	0.054	0.059	0.063

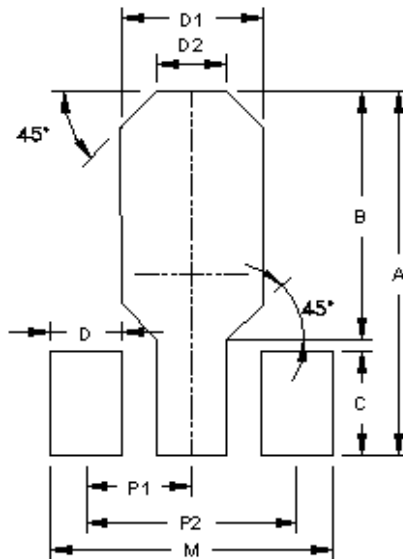
SOT-223



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.52	---	1.80	0.061	---	0.071
A1	0.02	---	0.10	0.0008	---	0.004
B	0.60	---	0.8	0.024	---	0.031
B1	2.90	---	3.10	0.114	---	0.122
C	0.24	---	0.32	0.009	---	0.013
D	6.30	---	6.80	0.248	---	0.268
E	3.30	---	3.70	0.13	---	0.146
e	2.30 BSC			0.090 BSC		
e1	4.60 BSC			0.181 BSC		
H	6.70		7.30	0.264		0.287
L	0.90 MIN			0.036 MIN		
L2	0.06 BSC			0.0024 BSC		

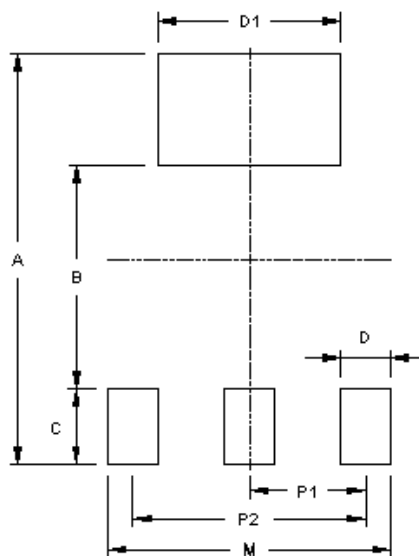
Footprints

SOT-89-3



Package	Number of Pin	Footprint Dimension (mm)										Tolerance
		P1	P2	A	B	B1	C	D	D1	D2	M	
SOT-89-3	3	1.50	3.00	5.10	3.40	--	1.50	1.00	2.20	1.00	4.00	± 0.10

SOT-223



Package	Number of Pin	Footprint Dimension (mm)								Tolerance
		P1	P2	A	B	C	D	D1	M	
SOT-223	4	2.30	4.60	8.00	4.60	1.60	1.00	3.30	5.60	± 0.10