500mA Low Dropout Linear Voltage Regulator   IL233-xx

Features

♦ Guaranteed 500 mA output current
♦ Line Regulation typically at 0.2% max
♦ Load Regulation typically at 0.4% max
♦ Current Limiting and Thermal Protection
♦ Three-terminal Adjustable Output Voltage 1.25V or
    Fixed 1.5V,1.8V, 2.5V, 2.85V, 3.3V, 5V
♦ Input voltage range up to 15V
♦ Dropout voltage 1.2v (Typ.)

General Description

  The IL233 is a series of low dropout voltage regulators which can provide 500mA of output current. The IL233 is available in seven fixed voltage,,1.25, 1.5, 1.8, 2.5, 2.85, 3.3 and 5.0V. Additionally it is also available in adjustable version. It includes output current-limiting and thermal-limiting curcuit
  The IL233 series is available in TO-92 , SOT-89, SOT-223 packages.
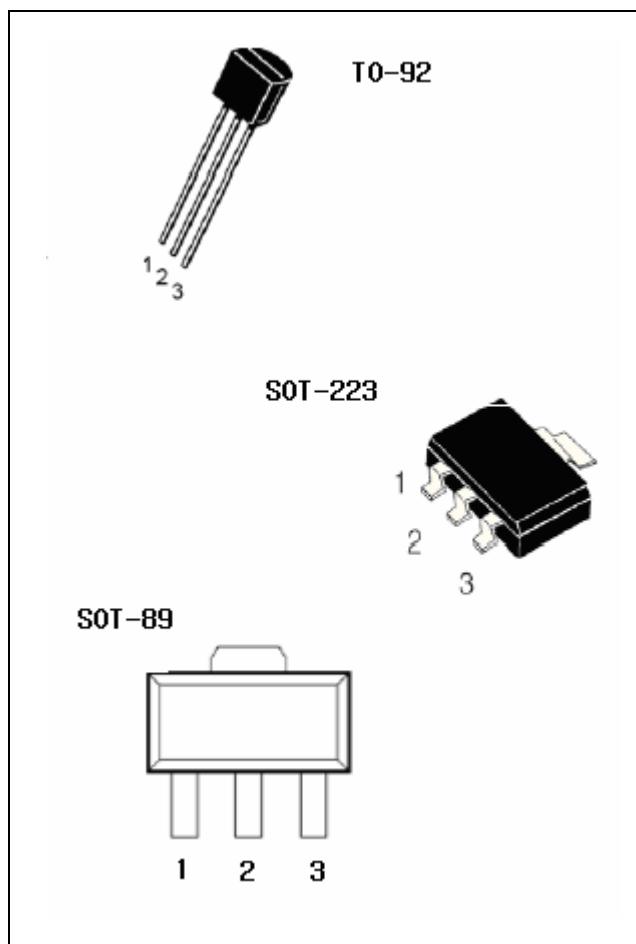
Applications

• Post Regulator for switching DC/DC Converter
• High Efficiency Linear Regulator
• Battery Chargers
• Wireless communication systems

Pin Assignment

Pin NO.	Funtion
1	GND
2	Output
3	Input

Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Unit
Input Voltage Vin			15	V
Operating Junction Temperature Range	-25		125	°C

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Electrical Characteristics

At Tj= +25°C, unless otherwise noted.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
OUTPUT VOLTAGE	Tj = -25°C to +125°C				
IL 233 (Adjustable)	Io = 10mA to 0.5A, Vin = 2.8V to 12V	1.225	1.250	1.275	
IL 233 -1.5	Io = 10mA to 0.5A, Vin = 3.0V to 12V	1.470	1.500	1.530	
IL 233 -1.8	Io = 10mA to 0.5A, Vin = 3.3V to 12V	1.764	1.800	1.836	V
IL 233 -2.5	Io = 10mA to 0.5A, Vin = 4.0V to 12V	2.450	2.500	2.550	
IL 233 -2.85	Io = 10mA to 0.5A, Vin = 4.4V to 12V	2.790	2.850	2.910	
IL 233 -3.3	Io = 10mA to 0.5A, Vin = 4.8V to 12V	3.235	3.300	3.365	
IL 233 -5.0	Io = 10mA to 0.5A, Vin = 6.5V to 15V	4.900	5.000	5.100	
LINE REGULATION	Tj = -25°C to +125°C				
IL 233 (Adjustable)	Io = 10mA, Vin = 2.8V to 12V	-	-	0.2	%
IL 233 -1.5	Io = 10mA, Vin = 3.0V to 12V	-	-	7	mV
IL 233 -1.8	Io = 10mA, Vin = 3.3V to 12V	-	-	7	mV
IL 233 -2.5	Io = 10mA, Vin = 4.0V to 12V	-	-	7	mV
IL 233 -2.85	Io = 10mA, Vin = 4.4V to 12V	-	-	7	mV
IL 233 -3.3	Io = 10mA, Vin = 4.8V to 12V	-	-	7	mV
IL 233 -5.0	Io = 10mA, Vin = 6.5V to 15V	-	-	10	mV
LOAD REGULATION	Tj = -25°C to +125°C				
IL 233 (Adjustable)[1]	Io = 10mA to 0.5A, Vin = 2.8V	-	-	0.4	%
IL 233 -1.5	Io = 10mA to 0.5A, Vin = 3.0V	-	-	10	mV
IL 233 -1.8	Io = 10mA to 0.5A, Vin = 3.3V	-	-	10	mV
IL 233 -2.5	Io = 10mA to 0.5A, Vin = 4.0V	-	-	10	mV
IL 233 -2.85	Io = 10mA to 0.5A, Vin = 4.4V	-	-	10	mV
IL 233 -3.3	Io = 10mA to 0.5A, Vin = 4.8V	-	-	10	mV
IL 233 -5.0	Io = 10mA to 0.5A, Vin = 6.5V	-	-	15	mV

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
DROPOUT VOLTAGE[2]	Io=0.5A		1.2	1.30	
All Models	Io=0.5A (Tj = -25°C to +125°C.)		1.2	1.5	V
OUTPUT CRRENT	Vin -Vo = 5V	500			mA
MINIMUMLOAD CURRENT					
Adjustable Models	Vin = 13.5V			10	mA
QUIESCENT CURRENT	Vin = 5V		5.2	10	mA
Adjust Pin Current	Io = 10mA, Vin = 1.4 to 10V		50	120	uA
Vs Load Current, IL 233	Io = 10mA to 0.5A, Vin = 1.4 to 10V		0.5	5	uA
TEMPERATURE DRIFT	Tj= -25°C to +125°C		0.5		%

NOTES: (1) IL 233 adjustable versions require a minimum load current for ±3% regulation. (2) The dropout voltage is the input/output differential at which the circuit ceases to regulate against further reduction in input voltage. It is measured when the output voltage has dropped 100 mV from the nominal value obtained at Vin=Vout+1.5V.

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Block Diagram
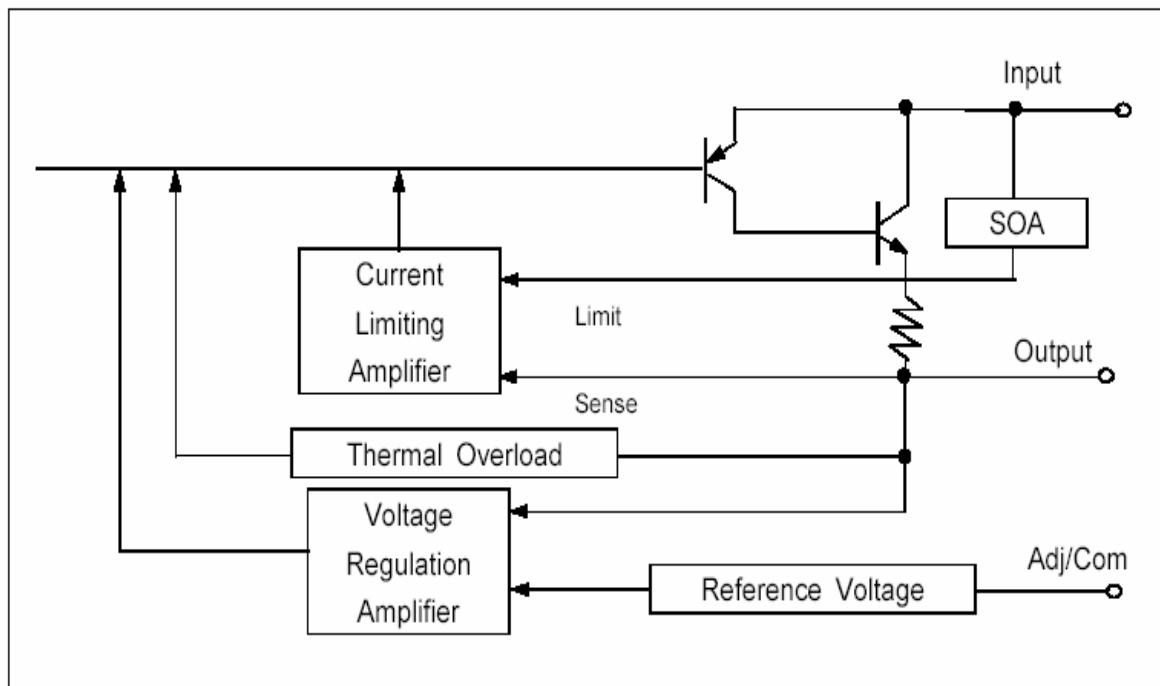

Application Information
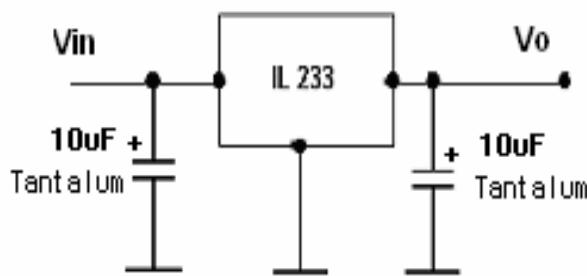

**FIGURE 1. Fixed-Voltage Model
—Basic Connections.**
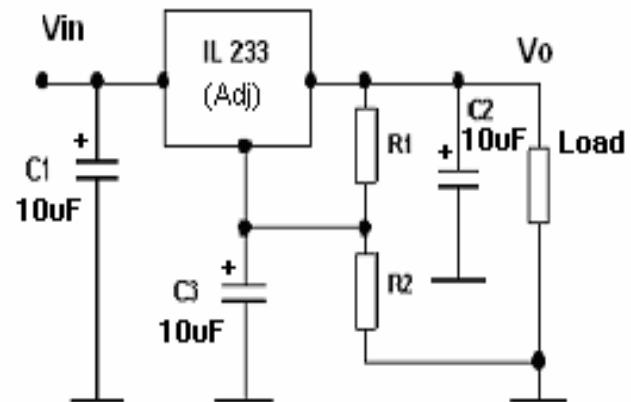
**FIGURE 2. Adjustable-Voltage Model
—Basic Connections.**

PACKAGE OUTLINE

[TO-92]

Taping Specification
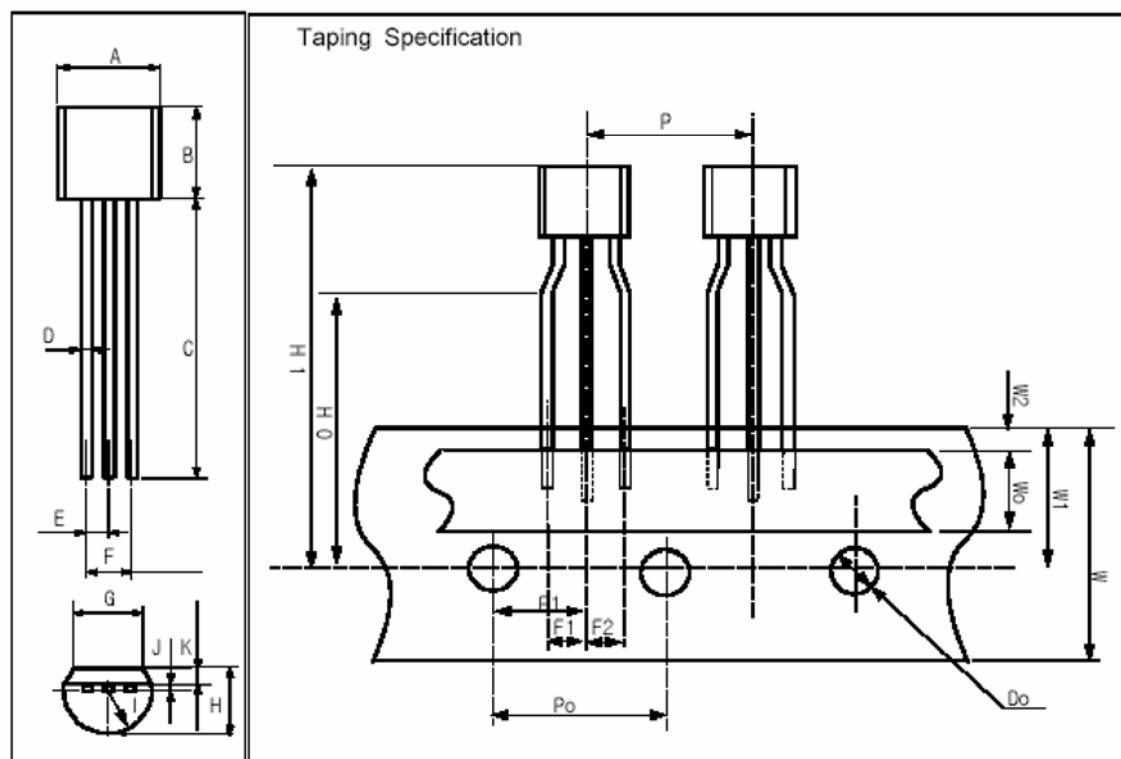
Package Dimension(unit:mm)				Taping Dimension(unit:mm)			
Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	4.43	4.58	4.83	P	12.2	12.7	13.2
B	4.38	4.58	4.78	PO	12.5	12.7	12.9
C	14.07	14.47	14.87	P1	5.85	6.35	6.85
D	0.36	0.46	0.56	F1,F2	2.4	2.5	2.9
E	1.07	1.27	1.47	W	17.5	18.0	19.0
F	2.34	2.54	2.74	WO	5.5	6.0	6.5
G	3.40	3.60	3.80	W1	8.5	9.0	9.5
H	-	-	3.86	W2	-	-	1.0
I	-	[R2.29]	-	HO	15.5	16.0	16.5
J	0.33	0.38	0.39	H1	-	-	27.0
K	0.92	1.02	1.12	DO	3.8	4.0	4.2

SOT-89-3L PACKAGE OUTLINE DIMENSIONS
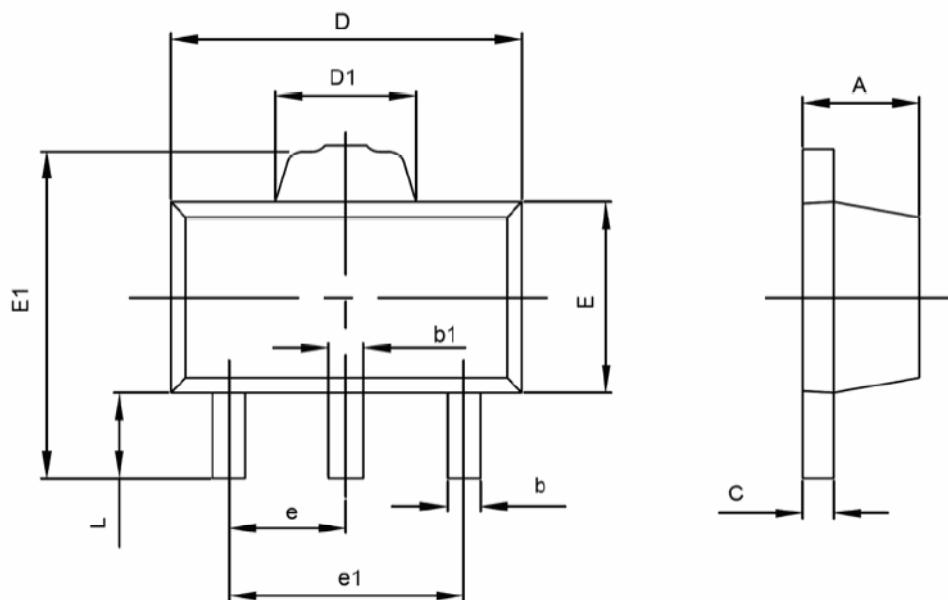
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043

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SOT-223 PACKAGE OUTLINE DIMENSIONS
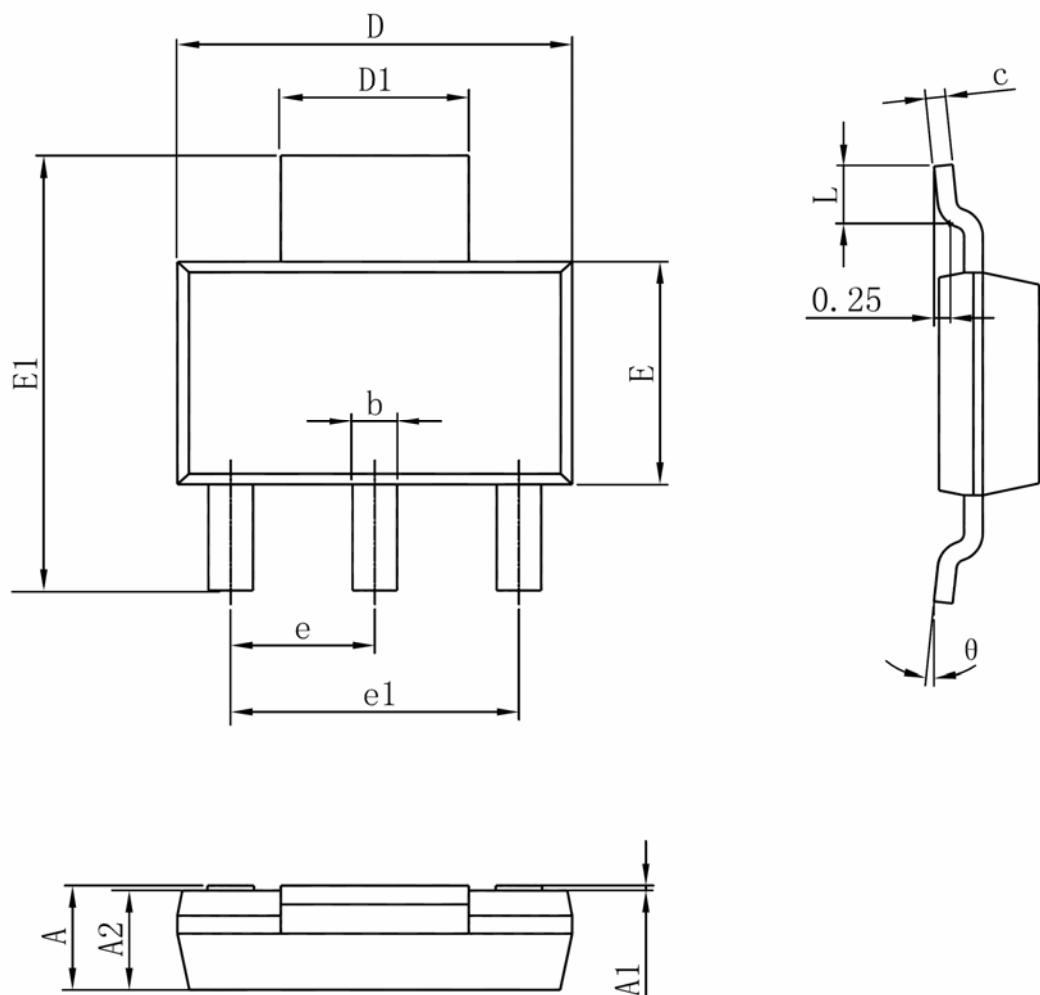
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

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