

3-terminal positive voltage regulator

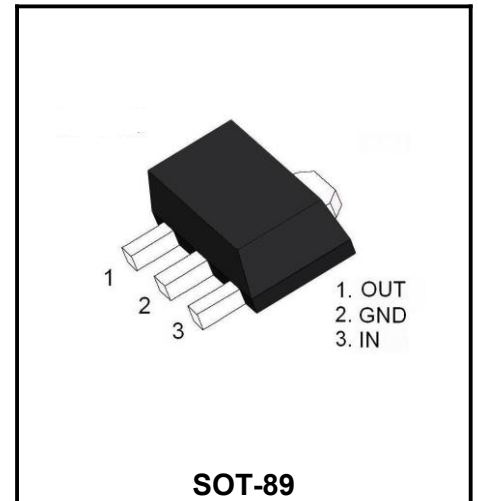
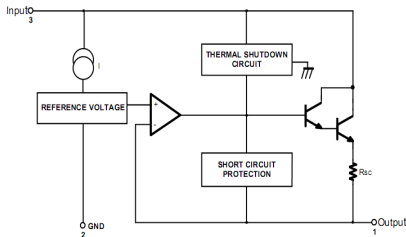
Features

- ◆Maximum Output Current of 100mA
- ◆Output Voltage of 3.3V
- ◆Thermal Overload Protection
- ◆Short Circuit Current Limiting
- ◆Output Voltage Offered in $\pm 5\%$ Tolerance

Description

The 78L33 of fixed voltage monolithic integrated circuit voltage regulators are suitable for application that required supply current up to 100mA.

Internal Block Diagram



Marking: 78L33

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	20	V
Operating Temperature Range	T_{OPR}	0 ~ +125	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics

($V_I = 8.3V$, $I_O = 40mA$, $0^\circ C \leq T_J \leq 125^\circ C$, $C_I = 0.33\mu F$, $C_O = 0.1\mu F$, unless otherwise specified. (Note))

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Output Voltage	V_O	$T_J = 25^\circ C$	3.168	3.3	3.432	V
		$V_I = 5.3 \sim 20V$ $I_O = 1 \sim 100mA$	3.135	3.3	3.465	
Line Regulation(Note)	ΔV_O	$V_I = 5.3 \sim 20V$, $T_J = 25^\circ C$			150	mV
		$V_I = 6.3 \sim 20V$, $T_J = 25^\circ C$			100	
Load Regulation(Note)	ΔV_O	$I_O = 1 \sim 100mA$, $T_J = 25^\circ C$			60	mV
		$I_O = 1 \sim 40mA$, $T_J = 25^\circ C$			30	
Quiescent Current	I_Q	$T_J = 25^\circ C$			6	mA
Quiescent Current Change	ΔI_Q	$I_O = 1 \sim 40mA$			0.1	mA
		$I_O = 40mA$, $V_I = 6.3 \sim 20V$			1.5	
Output Voltage Drift	$\Delta V / \Delta T$	$I_O = 5mA$, $T_J = 0$ to $+125$		0.45		mV/°C
Output Noise Voltage	V_N	$10Hz \leq f \leq 100KHz$		40		μV
Ripple Rejection	RR	$f = 120Hz$, $V_I = 6.3 - 1V$, $T_J = 25^\circ C$	40			dB
Dropout Voltage	V_d			1.7		V

Notes: The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

Typical characteristics

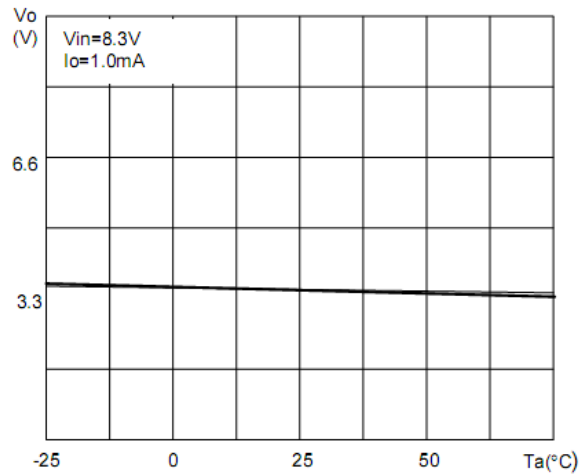


Fig1 .Output Voltage vs AmbientTemperature

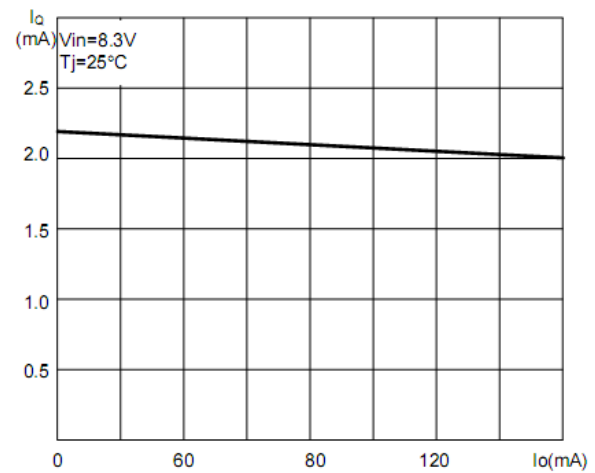


Figure 2. Quiescent Current vs Output Current

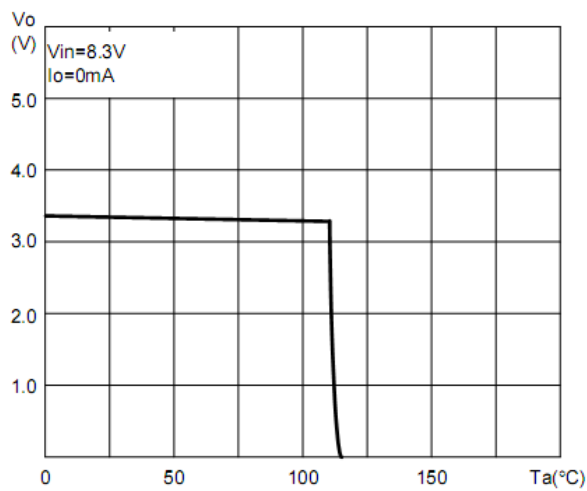


Figure 3 : Load Characteristics

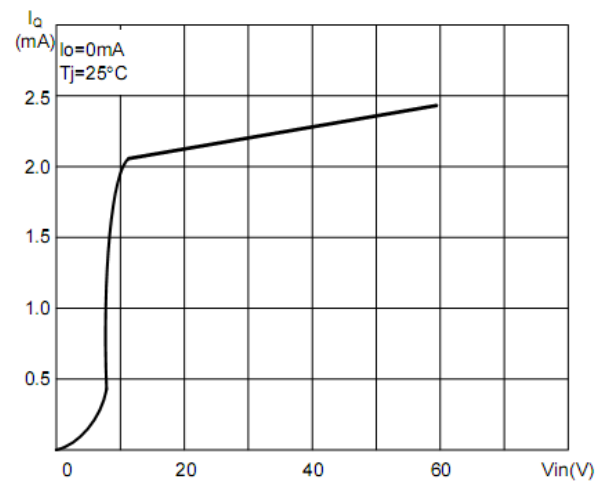


Figure 4 : Quiescent Current vs Input Voltage

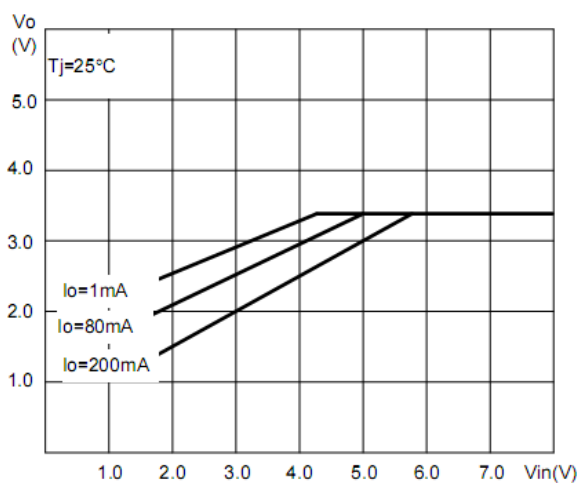


Figure5 : Thermal Shutdown

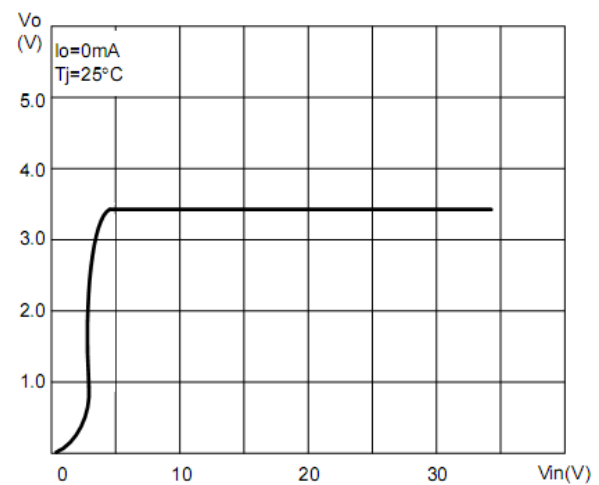


Figure 6 : Output Characteristics

Package Outline

SOT-89

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT-89	Tape/Reel, 7" reel	1000	EIA-481-1