3-Terminal 100mA Positive Voltage Regulator **78L00 Series**

General Description

The 78L00 Series of positive voltage Regulators are inexpensive, easy-to-use devices suitable for a multitude of applications that require a regulated supply of up to 100mA. Like their higher power 7800 and 78M00 Series cousins, these regulators feature internal current limiting and thermal shutdown making them remarkably rugged. No external components are required with the 78L00 devices in many applications.

These devices offer a substantial performance advantage over the traditional zener diode-resistor combination, as output impedance and quiescent current are substantially reduced.

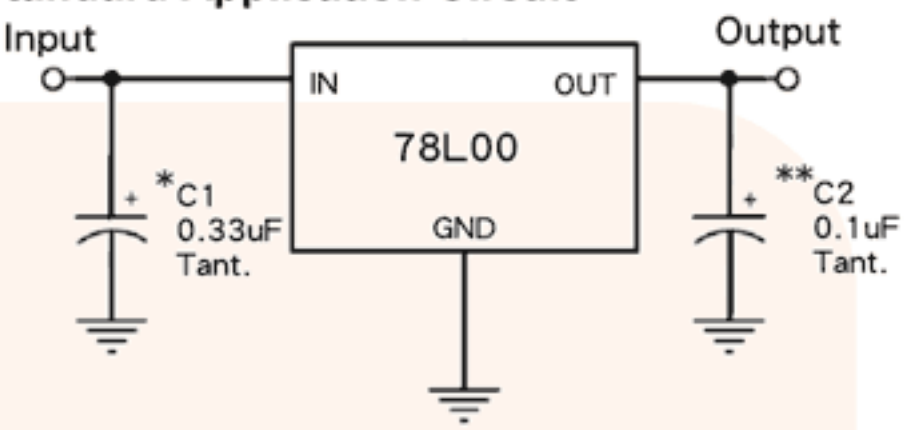
Features

- Output Voltage Range 3.3 to 24V
- Output current up to 100mA
- No external components required
- Internal thermal overload protection
- Internal short-circuit current limiting
- Output transistor safe-area compensation
- Output voltage offered in 4% tolerance

TO-92

Pin Definition:
1. Output
2. Ground
3. Input

Standard Application Circuit



A common ground is required between the input and the output voltages. The input voltage must remain typically 2.0V above the output voltage even during the low point on the Input ripple voltage.

XX = these two digits of the type number indicate voltage.

* = Cin is required if regulator is located an appreciable distance from power supply filter.

** = Co is not needed for stability; however, it does improve transient response.

Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
DC Input Voltage	78L03	V_{IN}	30	V
	78L05 ~ 78L18		35	
	78L24		40	
Power Dissipation		P_D	Internal Limited	W
Operating Junction Temperature		T_J	0 ~ +125	°C
Storage Temperature Range		T_{STG}	-65~+150	°C

78L09 Electrical Characteristics

Vin=15V, Iout=40mA, 0°C≤Tj≤125°C, Cin=0.33uF, Cout=0.1uF; unless otherwise specified.)

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Output voltage	Vout	Tj=25°C		8.65	9	9.36	V
		11.5V≤Vin≤23V, 5mA≤Iout≤100mA		8.57	9	9.45	
Line Regulation	REGline	Tj=25°C	11.5V≤Vin≤23V Iout=40mA	--	90	180	mV
Load Regulation	REGload	Tj=25°C	5mA≤Iout≤100mA	--	30	90	
			5mA≤Iout≤40mA	--	15	45	
Quiescent Current	Iq	Iout=0, Tj=25°C		--	3	6	mA
Quiescent Current Change	ΔIq	11.5V≤Vin≤23V		--	--	1.5	
		5mA≤Iout≤40mA		--	--	0.1	
Output Noise Voltage	Vn	10Hz≤f≤100KHz, Tj=25°C		--	60	--	μV
Ripple Rejection Ratio	RR	f=120Hz, 11.5V≤Vin≤23V		37	57	--	dB
Voltage Drop	Vdrop	Iout=100mA, Tj=25°C		--	1.7	--	V
Peak Output Current	Io peak	Tj=25°C		--	0.15	--	A
Temperature Coefficient of Output Voltage	ΔVout/ ΔTj	Iout=5mA, 0°C≤Tj≤125°C		--	-0.9	--	mV/°C