

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

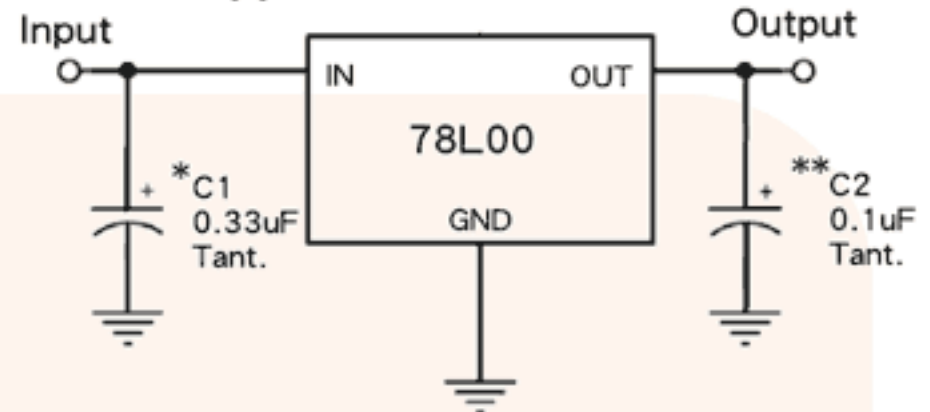
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Pin Definition:

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.

* = C_{in} is required if regulator is located an appreciable distance from power supply filter.

** = C_o 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	V_{IN}	78L03	30
		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

78L08 Electrical Characteristics

$V_{in}=14V$, $I_{out}=40mA$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$, $C_{in}=0.33\mu F$, $C_{out}=0.1\mu F$; unless otherwise specified.)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output voltage	V_{out}	$T_J=25^{\circ}C$	7.69	8	8.32	V
		$10.5V \leq V_{in} \leq 23V$, $5mA \leq I_{out} \leq 100mA$	7.61	8	8.40	
Line Regulation	REGline	$T_J=25^{\circ}C$ $10.5V \leq V_{in} \leq 23V$ $I_{out}=40mA$	--	80	160	mV
			5mA \leq Iout \leq 100mA	--	25	
Load Regulation	REGload	$T_J=25^{\circ}C$ 5mA \leq Iout \leq 40mA	--	10	40	mV
Quiescent Current	I_q	$I_{out}=0$, $T_J=25^{\circ}C$	--	3	6	mA
Quiescent Current Change	ΔI_q	$10.5V \leq V_{in} \leq 23V$	--	--	1.5	
		$5mA \leq I_{out} \leq 40mA$	--	--	0.1	
Output Noise Voltage	V_n	$10Hz \leq f \leq 100KHz$, $T_J=25^{\circ}C$	--	60	--	μV
Ripple Rejection Ratio	RR	$f=120Hz$, $10.5V \leq V_{in} \leq 23V$	37	57	--	dB
Voltage Drop	V_{drop}	$I_{out}=100mA$, $T_J=25^{\circ}C$	--	1.7	--	V
Peak Output Current	$I_{o\ peak}$	$T_J=25^{\circ}C$	--	0.15	--	A
Temperature Coefficient of Output Voltage	$\Delta V_{out} / \Delta T_J$	$I_{out}=5mA$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$	--	-0.8	--	mV/°C