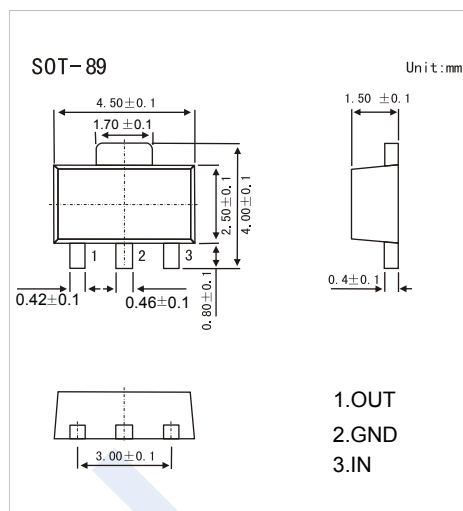


Three-Terminal Positive Voltage Regulator

LM78L09

■ Features

- Maximum Output current I_o : 0.1A
- Output Voltage V_o : 9V
- Continuous Total Dissipation P_d : 0.5W ($T_a = 25^\circ\text{C}$)



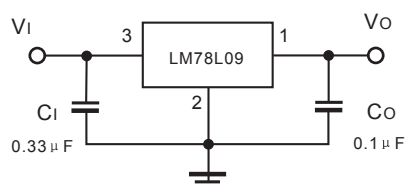
■ Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Rating	Unit
Input Voltage	V_i	30	V
Operating Junction Temperature Range	T_{opr}	$-55 \sim +125$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$

■ Electrical Characteristics ($V_i=16\text{V}$, $I_o=40\text{mA}$, $C_i=0.33 \mu\text{F}$, $C_o=0.1 \mu\text{F}$, unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Output Voltage	V_o	$T_J = 25^\circ\text{C}$	8.64	9.0	9.36	V
		$T_J = 0 \sim 125^\circ\text{C}$, $12\text{V} \leq V_i \leq 24\text{V}$, $I_o = 1\text{mA} \sim 40\text{mA}$	8.55	9.0	9.45	V
		$T_J = 0 \sim 125^\circ\text{C}$, $I_o = 1\text{mA} \sim 70\text{mA}$	8.55	9.0	9.45	V
Load Regulation	ΔV_o	$T_J = 25^\circ\text{C}$, $I_o = 1\text{mA} \sim 100\text{mA}$		19	90	mV
		$T_J = 25^\circ\text{C}$, $I_o = 1\text{mA} \sim 40\text{mA}$		11	40	mV
Line Regulation	ΔV_o	$T_J = 25^\circ\text{C}$, $12\text{V} \leq V_i \leq 24\text{V}$		45	175	mV
		$T_J = 25^\circ\text{C}$, $13\text{V} \leq V_i \leq 24\text{V}$		40	125	mV
Quiescent Current	I_q	$T_J = 25^\circ\text{C}$		4.1	6.0	mA
Quiescent current Change	ΔI_q	$T_J = 0 \sim 125^\circ\text{C}$, $13\text{V} \leq V_i \leq 24\text{V}$			1.5	mA
		$T_J = 0 \sim 125^\circ\text{C}$, $1\text{mA} \leq I_o \leq 40\text{mA}$			0.1	mA
Output Noise Voltage	V_N	$T_J = 25^\circ\text{C}$, $10\text{Hz} \leq f \leq 100\text{KHz}$		58		μV
Ripple Rejection	RR	$T_J = 0 \sim 125^\circ\text{C}$, $15\text{V} \leq V_i \leq 25\text{V}$, $f = 120\text{Hz}$		45		dB
Dropout Voltage	V_D	$T_J = 25^\circ\text{C}$		1.7		V

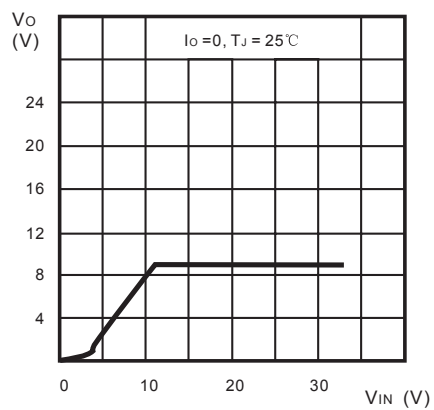
■ Typical Application



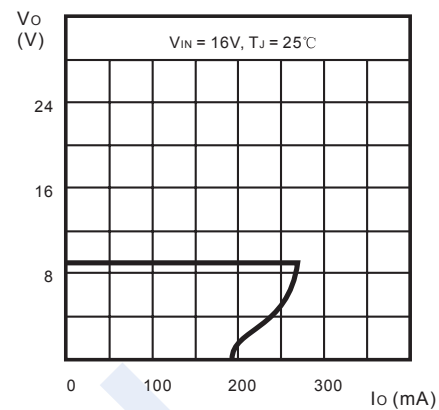
Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

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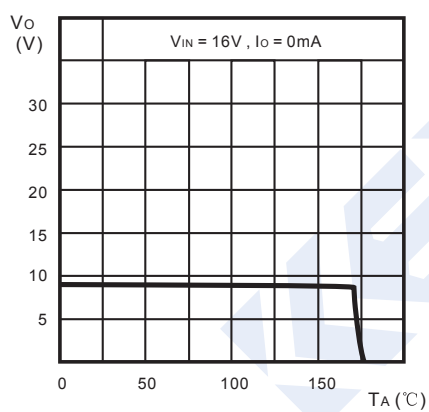
■ Typical Characteristics



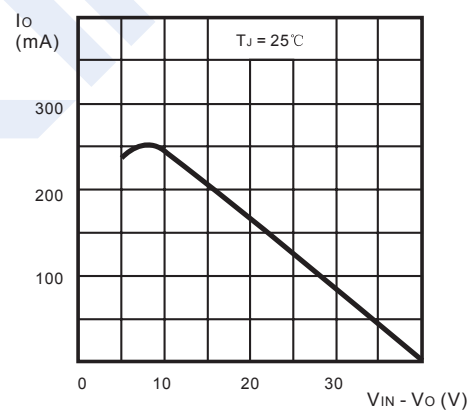
Output Characteristics



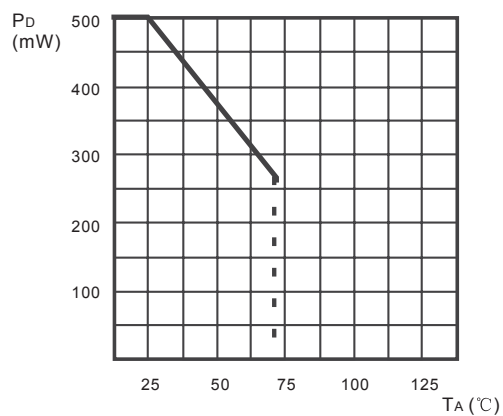
Load Characteristics



Thermal Shutdown



Short Circuit Output Current



Power Dissipation vs. Ambient Temperature