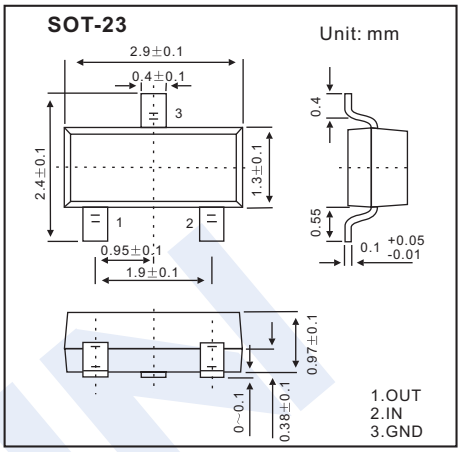
# Three-Terminal Positive Voltage Regulator

# LM78L09




## Features

- Maximum Output current $I_O$: 0.1A
- Output Voltage $V_O$: 9V
- Continuous Total Dissipation $P_D$: 0.35W ($T_a$ = 25℃)

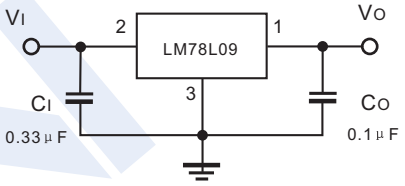
## Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Input Voltage | $V_I$ | 30 | V |
| Operating Junction Temperature Range | $T_{OPR}$ | -55 ~ +125 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55 ~ +150 | ℃ |

## Electrical Characteristics ($V_I$=16V, $I_O$=40mA,$C_I$=0.33μF,$C_O$=0.1μF, unless otherwise specified)

| Parameter | Symbol | Testconditons | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ = 25℃ | 8.64 | 9.0 | 9.36 | V |
| | | $T_J$ = 0~125℃, 12V≤$V_I$≤24V, $I_O$=1mA~40mA | 8.55 | 9.0 | 9.45 | V |
| | | $T_J$ = 0~125℃, $I_O$=1mA~70mA | 8.55 | 9.0 | 9.45 | V |
| Load Regulation | $\triangle V_O$ | $T_J$ = 25℃, $I_O$=1mA~100mA | | 19 | 90 | mV |
| | | $T_J$ = 25℃, $I_O$=1mA~40mA | | 11 | 40 | mV |
| Line Regulation | $\triangle V_O$ | $T_J$ = 25℃, 12V≤$V_I$≤24V | | 45 | 175 | mV |
| | | $T_J$ = 25℃, 13V≤$V_I$≤24V | | 40 | 125 | mV |
| Quiescent Current | $I_Q$ | $T_J$ = 25℃ | | 4.1 | 6.0 | mA |
| Quiescent current Change | $\triangle I_Q$ | $T_J$ = 0~125℃, 13V≤$V_I$≤24V | | | 1.5 | mA |
| | | $T_J$ = 0~125℃, 1mA≤$I_O$≤40mA | | | 0.1 | |
| Output Noise Voltage | $V_N$ | $T_J$ = 25℃, 10Hz≤f≤100KHz | | 58 | | μV |
| Ripple Rejection | RR | $T_J$ = 0~125℃, 15V≤$V_I$≤25V, f = 120Hz | | 45 | | dB |
| Dropout Voltage | $V_D$ | $T_J$ = 25℃ | | 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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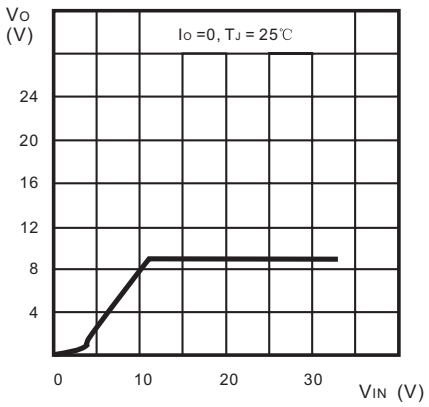
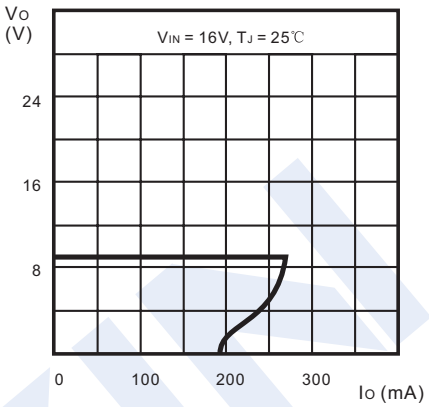
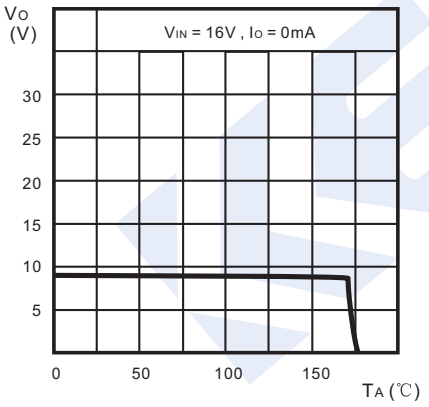
## ■ Typical Characteristics



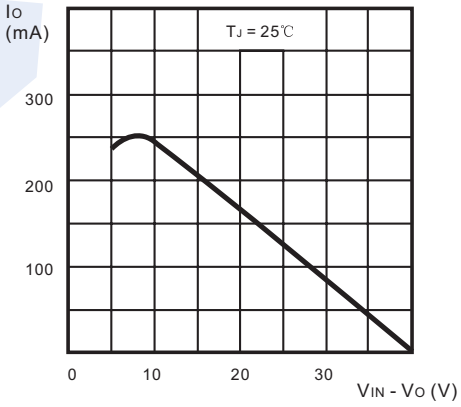

Output Characteristics




Load Characteristics




Thermal Shutdown




Short Circuit Output Current