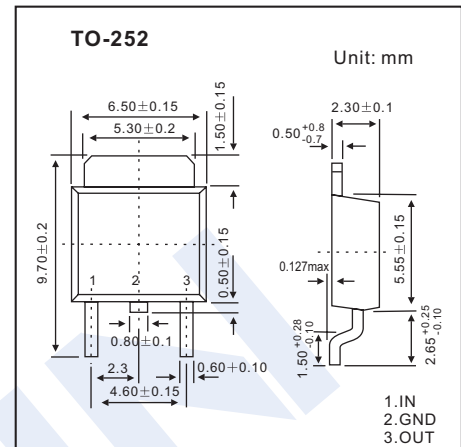


## Three-Terminal Positive Voltage Regulator

## LM78M09



### ■ Features

- Maximum Output current  $I_{oM}$ : 0.5A
- Output Voltage  $V_o$ : 9V
- Continuous Total Dissipation  $P_d$ : 1.25W ( $T_A = 25^\circ\text{C}$ )

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

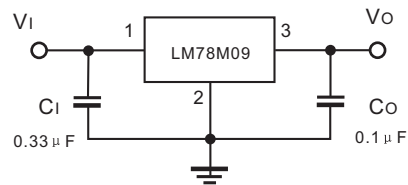
Parameter	Symbol	Rating	Unit
Input Voltage	$V_i$	35	V
Operating Junction Temperature Range	$T_{opr}$	-55 ~ +125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 ~ +150	$^\circ\text{C}$

### ■ Electrical Characteristics ( $V_i=16\text{V}$ , $I_o=350\text{mA}$ , $C_i=0.33\ \mu\text{F}$ , $C_o=0.1\ \mu\text{F}$ , unless otherwise specified)

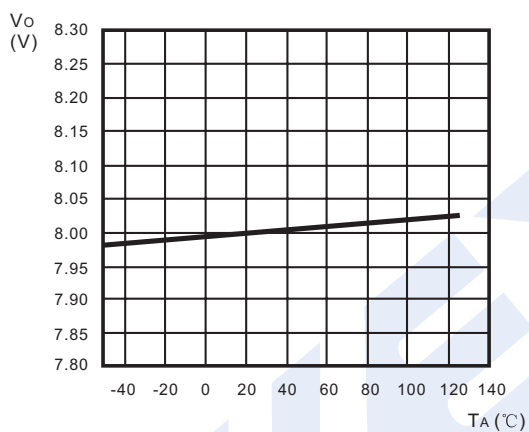
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Output Voltage	$V_o$	$T_J = 25^\circ\text{C}$	8.65	9	9.35	V
		$T_J = 0 \sim 125^\circ\text{C}$ , $11.5\text{V} \leq V_i \leq 24\text{V}$ , $I_o = 5\text{mA} \sim 350\text{mA}$ , $P_o \leq 15\text{W}$	8.55	9	9.45	V
Load Regulation	$\Delta V_o$	$T_J = 25^\circ\text{C}$ , $I_o = 5\text{mA} \sim 0.5\text{A}$		20	180	mV
		$T_J = 25^\circ\text{C}$ , $I_o = 5\text{mA} \sim 200\text{mA}$		10	90	mV
Line Regulation	$\Delta V_o$	$T_J = 25^\circ\text{C}$ , $11.5\text{V} \leq V_i \leq 26\text{V}$ , $I_o = 200\text{mA}$		6	100	mV
		$T_J = 25^\circ\text{C}$ , $12\text{V} \leq V_i \leq 26\text{V}$ , $I_o = 200\text{mA}$		2	50	mV
Quiescent Current	$I_q$	$T_J = 25^\circ\text{C}$		4.6	6	mA
Quiescent current Change	$\Delta I_q$	$T_J = 0 \sim 125^\circ\text{C}$ , $11.5\text{V} \leq V_i \leq 26\text{V}$ , $I_o = 200\text{mA}$			0.8	mA
		$T_J = 0 \sim 125^\circ\text{C}$ , $5\text{mA} \leq I_o \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_N$	$T_J = 25^\circ\text{C}$ , $10\text{Hz} \leq f \leq 100\text{kHz}$		60		$\mu\text{V}$
Ripple Rejection	RR	$T_J = 0 \sim 125^\circ\text{C}$ , $13\text{V} \leq V_i \leq 23\text{V}$ , $f = 120\text{Hz}$ , $I_o = 300\text{mA}$	56	80		dB
Dropout Voltage	$V_D$	$T_J = 25^\circ\text{C}$ , $I_o = 350\text{mA}$		2		V
Short Circuit Current	$I_{sc}$	$T_J = 25^\circ\text{C}$ , $V_i = 16\text{V}$		250		mA
Peak Current	$I_{PK}$	$T_J = 25^\circ\text{C}$		0.7		A

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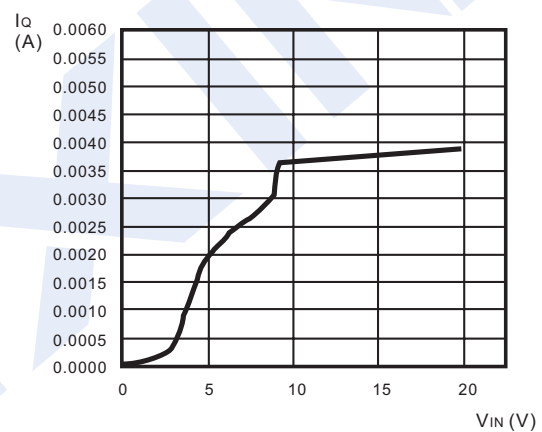
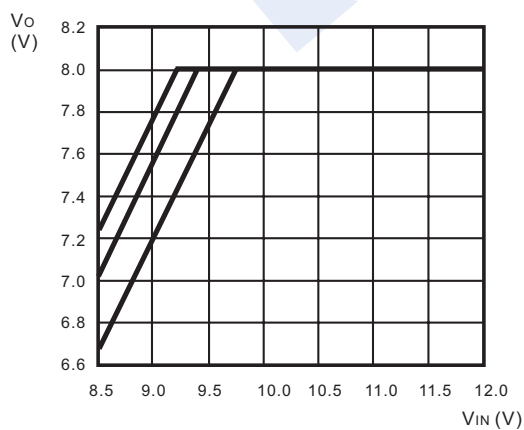
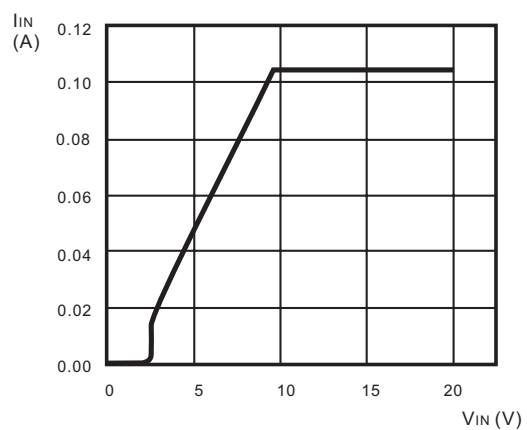
## ■ Typical Application



## ■ Typical Characteristics



Ambient Temperature vs Output Voltage

Input Voltage vs Quiescent Current (T<sub>J</sub> = 25°C)Input Voltage vs Output Voltage (T<sub>J</sub> = 25°C)Input Voltage vs Input Current (T<sub>J</sub> = 25°C)