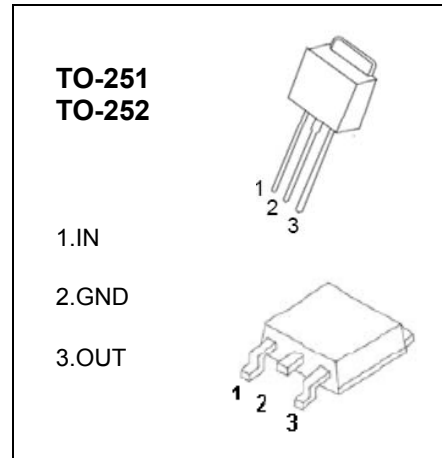


## HM78M09 Three-terminal positive voltage regulator

### FEATURES

- Maximum output current  $I_{OM}$ : 0.5 A
- Output voltage  $V_o$ : 9V
- Continuous total dissipation  
 $P_D$ : 1.25 W ( $T_a = 25^\circ\text{C}$ )



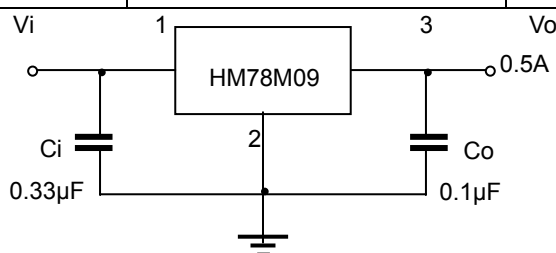
### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	$V_i$	25	V
Operating Junction Temperature Range	$T_{OPR}$	0-+125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65-+150	$^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE ( $V_i=16\text{V}$ , $I_o=350\text{mA}$ , $C_i=0.33\mu\text{F}$ , $C_o=0.1\mu\text{F}$ , unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit	
Output Voltage	$V_o$	$25^\circ\text{C}$	8.65	9	9.35	V	
		$11.5\text{V} \leq V_i \leq 24\text{V}$ , $I_o=5\text{mA}-350\text{mA}$ , $P_o \leq 15\text{W}$	0-125 $^\circ\text{C}$	8.55	9	9.45	V
Load Regulation	$\Delta V_o$	$I_o=5\text{mA}-500\text{mA}$	25 $^\circ\text{C}$		20	180	mV
		$I_o=5\text{mA}-200\text{mA}$	25 $^\circ\text{C}$		10	90	mV
Line Regulation	$\Delta V_o$	$11.5\text{V} \leq V_i \leq 26\text{V}$ , $I_o=200\text{mA}$	25 $^\circ\text{C}$		6	100	mV
		$12\text{V} \leq V_i \leq 26\text{V}$ , $I_o=200\text{mA}$	25 $^\circ\text{C}$		2	50	mV
Quiescent Current	$I_q$		25 $^\circ\text{C}$		4.6	6	mA
Quiescent Current Change	$\Delta I_q$	$11.5\text{V} \leq V_i \leq 26\text{V}$ , $I_o=200\text{mA}$	0-125 $^\circ\text{C}$			0.8	mA
	$\Delta I_q$	$5\text{mA} \leq I_o \leq 350\text{mA}$	0-125 $^\circ\text{C}$			0.5	mA
Output Noise Voltage	$V_N$	$10\text{Hz} \leq f \leq 100\text{KHz}$	25 $^\circ\text{C}$		60	$\mu\text{V}$	
Ripple Rejection	RR	$13 \leq V_i \leq 23\text{V}$ , $f=120\text{Hz}$ , $I_o=300\text{mA}$	0-125 $^\circ\text{C}$	56	80	dB	
Dropout Voltage	$V_d$	$I_o=350\text{mA}$	25 $^\circ\text{C}$		2	V	
Short Circuit Current	$I_{sc}$	$V_i=16\text{V}$	25 $^\circ\text{C}$		250	mA	
Peak Current	$I_{pk}$		25 $^\circ\text{C}$		0.5	A	

### TYPICAL APPLICATION



## Typical Characteristics

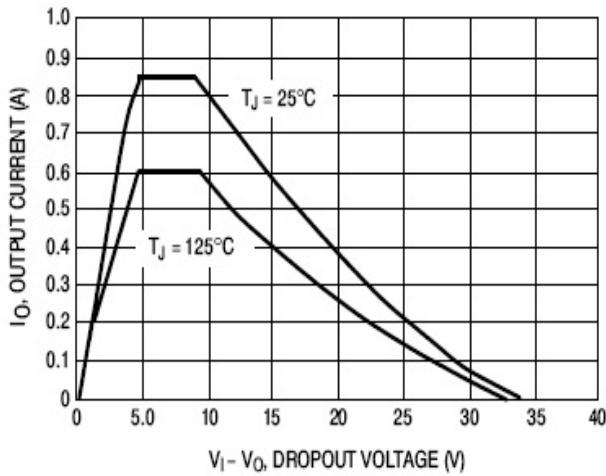


Figure 1. Peak Output Current versus Dropout Voltage

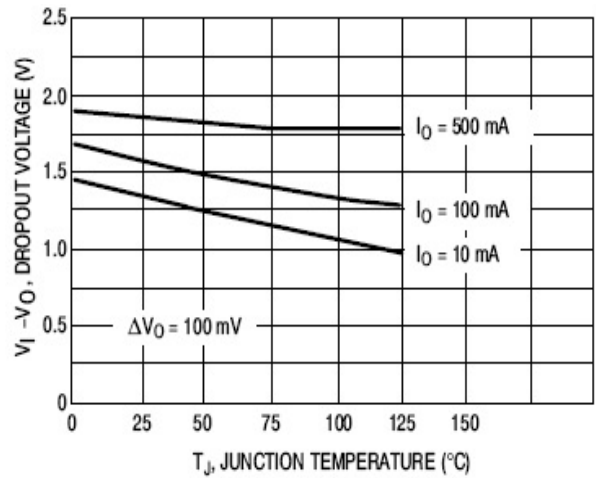


Figure 2. Dropout Voltage versus Junction Temperature

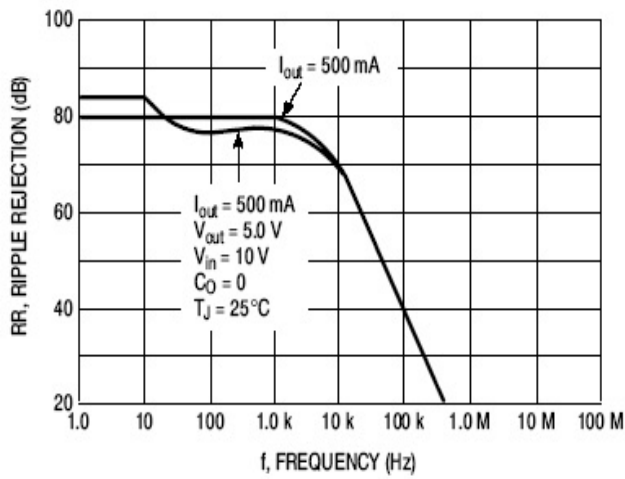


Figure 3. Ripple Rejection versus Frequency

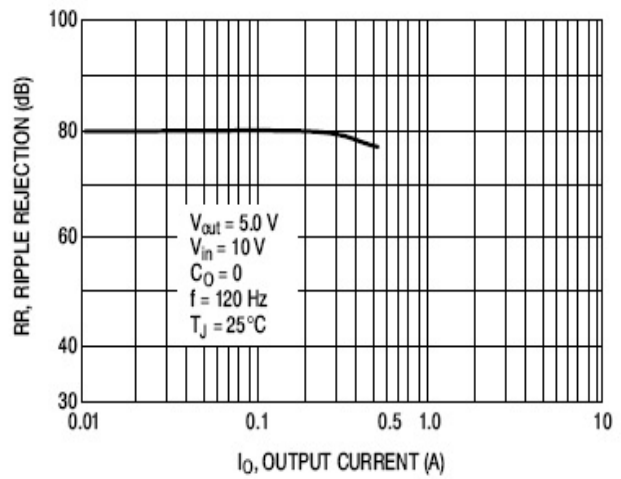


Figure 4. Ripple Rejection versus Output Current

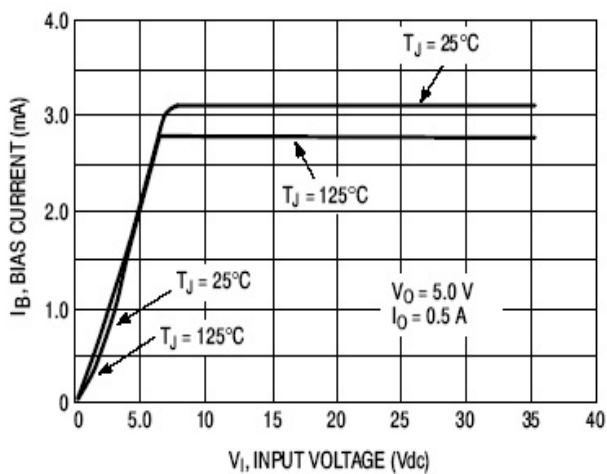


Figure 5. Bias Current versus Input Voltage

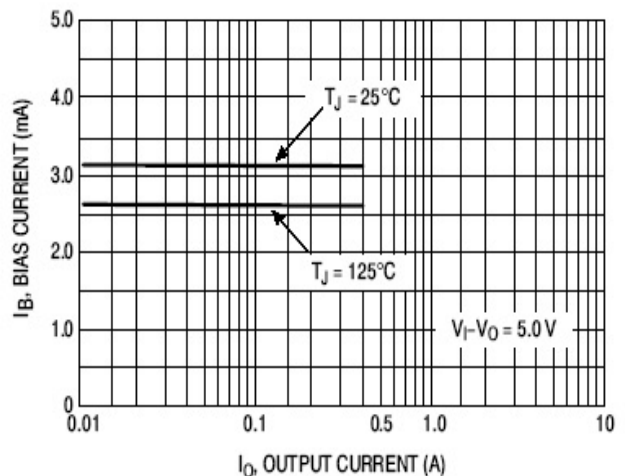


Figure 6. Bias Current versus Output Current