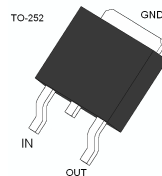


Description

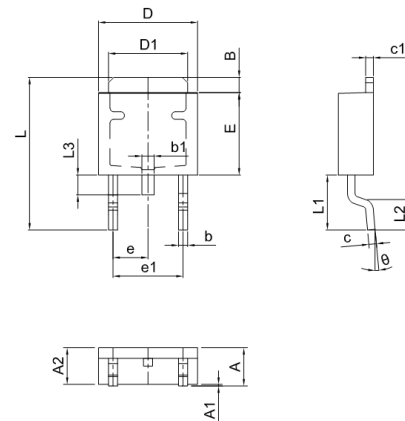
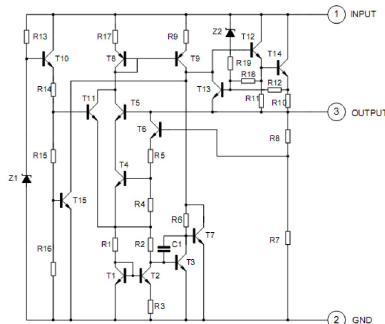
The 78M09 three-terminal positive regulators are available in the TO-252 package with several 9V fixed output voltages making it useful in a wide range of applications.

Features

- Output Current up to 1A
- Output Voltages of 9V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating area (SOA) Protection



Equivalent Circuit



Symbol	Min.	Typ	Max.
A	2.20	2.35	2.50
A1	0.00	0.05	0.12
A2	2.20	2.30	2.40
B	1.20	1.40	1.60
b	0.50	0.60	0.70
b1	0.70	0.80	0.90
c	0.40	0.50	0.60
c1	0.40	0.50	0.60
D	6.35	6.50	6.65
D1	5.20	5.30	5.40
E	5.40	5.50	5.70
e	2.20	2.30	2.40
e1	4.40	4.60	4.80
L	9.60	9.90	10.20
L1	2.70	2.90	3.10
L2	1.40	1.60	1.80
L3	0.90	1.20	1.50
θ	0°C	4°C	8°C

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	30	V
Out put Voltage	V_O	9	V
Continuous total dissipation	P_D	1.25	W
Operating Temperature Range	T_{OPR}	0 ~ + 125	°C
Storage Temperature Range	T_{STG}	-55 ~ + 150	°C

78M09

Electrical Characteristics

($V_I = 15V$, $I_O = 0.5A$, $C_I = 0.33\mu F$, $C_O = 0.1\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	$T_J = 25^\circ C$, $I_O = 5mA \sim 1A$	8.84	9	9.36	V
		$V_I = 11.5V \sim 24V$ $I_O = 5mA \sim 1A$	8.55	9	9.45	V
Line Regulation	ΔV_O	$T_J = 25^\circ C$ $I_O = 0.5A$			100	mV
		$V_I = 11.5V \sim 24V$			80	
Load Regulation	ΔV_O	$T_J = 25^\circ C$, $I_O = 5mA \sim 1A$			90	mV
		$I_O = 5mA \sim 0.75A$			45	
Quiescent Current	I_Q	$T_J = 25^\circ C$		4.0	8.0	mA
Quiescent Current Change	ΔI_Q	$I_O = 5mA \sim 1A$			0.5	mA
		$V_I = 11.5V \sim 24V$			1.0	
Output Voltage Drift	$\Delta V / \Delta T$	$I_O = 5mA$		-0.5		mV/ $^\circ C$
Output Noise Voltage	V_N	$10Hz \leq f \leq 100KHz$		58		μV
Ripple Rejection	RR	$f = 120Hz$, $I_O = 300mA$ $V_I = 12.5V \sim 22.5V$	55	75		dB
Short Circuit Current	I_{SC}	$T_J = 25^\circ C$, $V_I = 30V$		300		mA
Peak Out Current	I_{PK}	$T_J = 25^\circ C$		1.5		A
Dropout Voltage	V_d	$T_J = 25^\circ C$, $I_O = 500mA$	1.5	2.0		V

Notes:

*Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Test Circuits

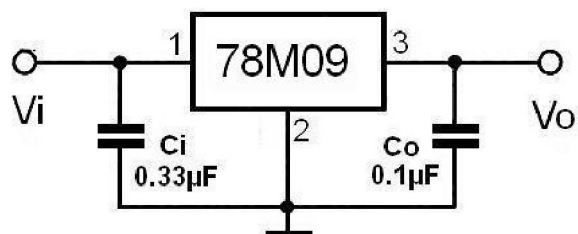


Figure1. DC Parameter

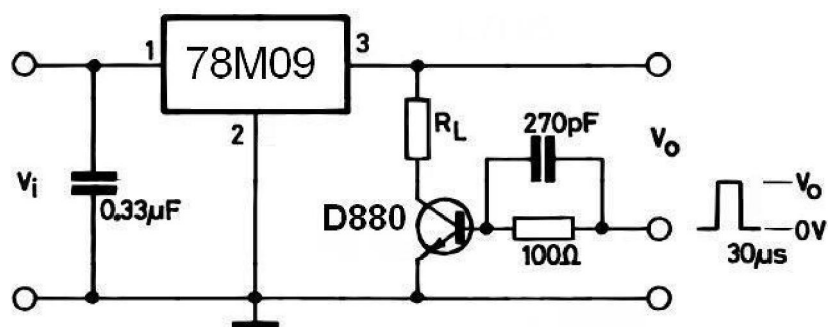


Figure2. Load Regulation

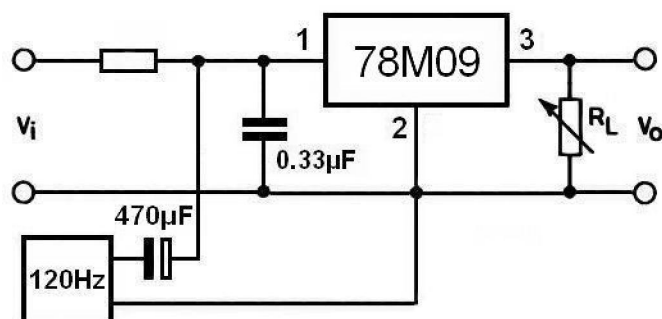


Figure3. Ripple Rejection

RATING AND CHARACTERISTIC CURVES (78M09)

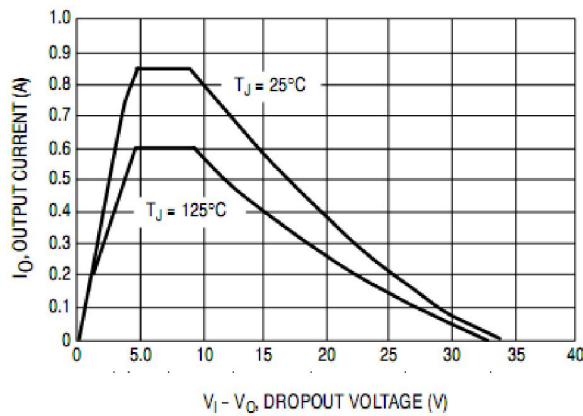


Figure 4. Peak Output Current versus Dropout Voltage

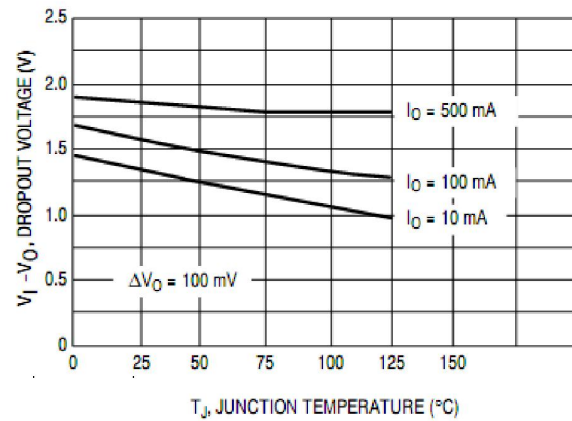


Figure 5. Dropout Voltage versus Junction Temperature

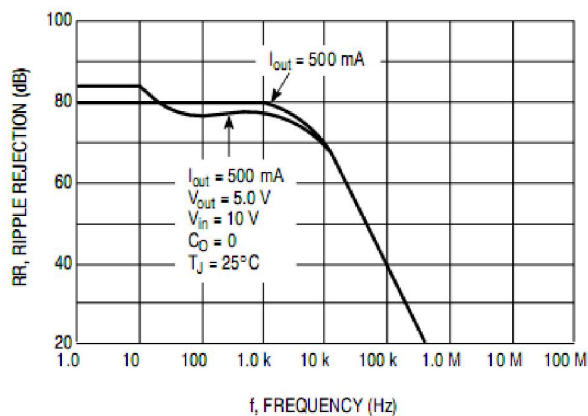


Figure 6. Ripple Rejection versus Frequency

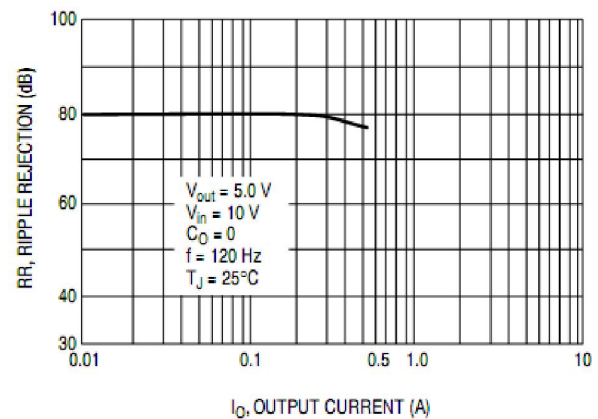


Figure 7. Ripple Rejection versus Output Current

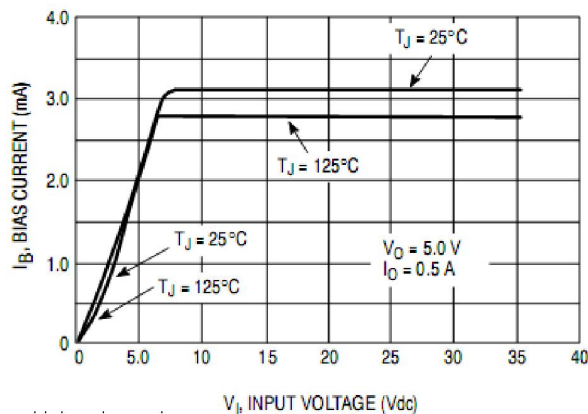


Figure 8. Bias Current versus Input Voltage

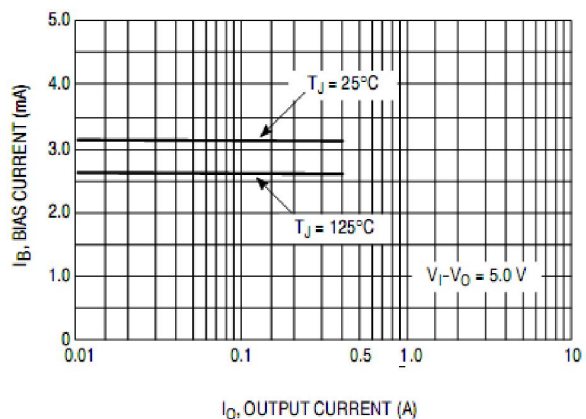


Figure 9. Bias Current versus Output Current