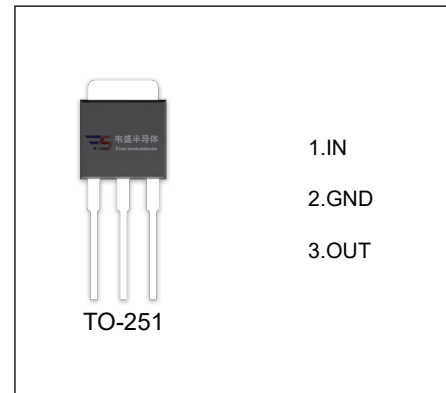


VS78M09 Three-terminal positive voltage regulator

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)

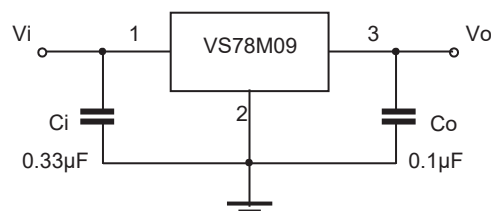
Parameter	Symbol	Value	Unit
Input Voltage	V_i	35	V
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	80	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	T_{OPR}	-40~+125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65~+150	$^\circ\text{C}$

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	$T_J=25^\circ\text{C}$	8.73	9	9.27	V
		$11.5 \leq V_i \leq 24\text{V}$, $I_o=5\text{mA}-350\text{mA}$	8.55	9	9.45	V
Load Regulation	ΔV_o	$I_o=5\text{mA}-500\text{mA}$, $T_J=25^\circ\text{C}$		20	180	mV
		$I_o=5\text{mA}-200\text{mA}$, $T_J=25^\circ\text{C}$		10	90	mV
Line Regulation	ΔV_o	$11.5\text{V} \leq V_i \leq 26\text{V}$, $I_o=200\text{mA}$, $T_J=25^\circ\text{C}$		6	100	mV
		$12\text{V} \leq V_i \leq 26\text{V}$, $I_o=200\text{mA}$, $T_J=25^\circ\text{C}$		2	50	mV
Quiescent Current	I_q	$T_J=25^\circ\text{C}$		4.6	6	mA
Quiescent Current Change	ΔI_q	$11.5\text{V} \leq V_i \leq 26\text{V}$, $I_o=200\text{mA}$			0.8	mA
	ΔI_q	$5\text{mA} \leq I_o \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_N	$10\text{Hz} \leq f \leq 100\text{KHz}$, $T_J=25^\circ\text{C}$		60		$\mu\text{V}/V_o$
Ripple Rejection	RR	$13 \leq V_i \leq 23\text{V}$, $f=120\text{Hz}$, $I_o=300\text{mA}$	56	80		dB
Dropout Voltage	V_d	$I_o=350\text{mA}$, $T_J=25^\circ\text{C}$		2		V
Short Circuit Current	I_{sc}	$V_i=16\text{V}$, $T_J=25^\circ\text{C}$		250		mA
Peak Current	I_{pk}	$T_J=25^\circ\text{C}$		0.5		A

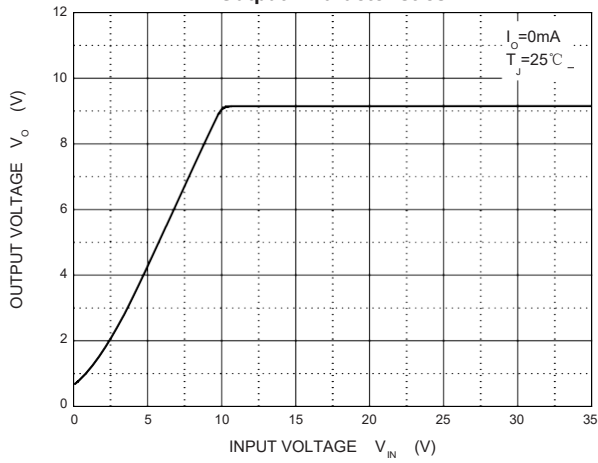
* Pulse test.

TYPICAL APPLICATION

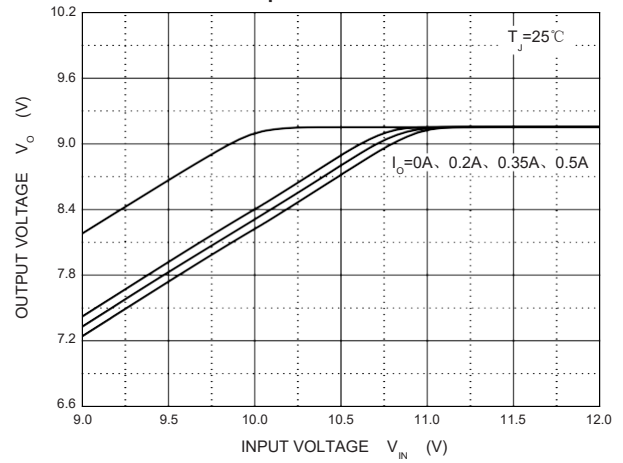


Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

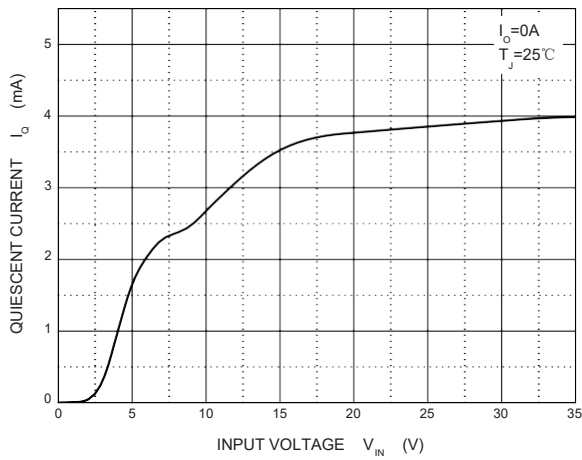
Output Characteristics



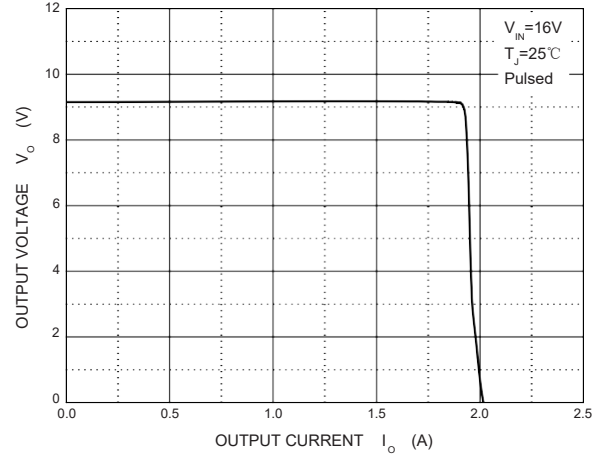
Dropout Characteristics



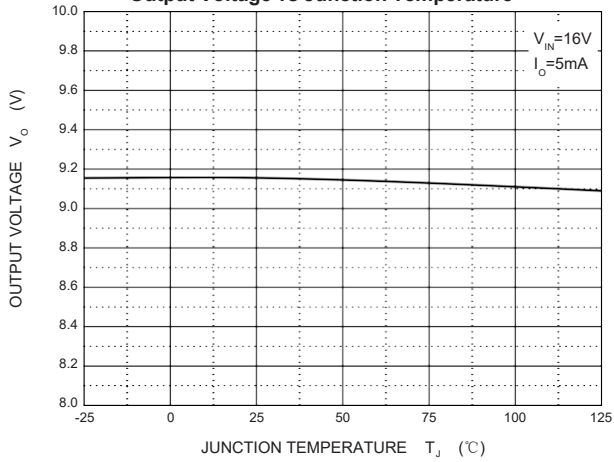
Quiescent Current



Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

