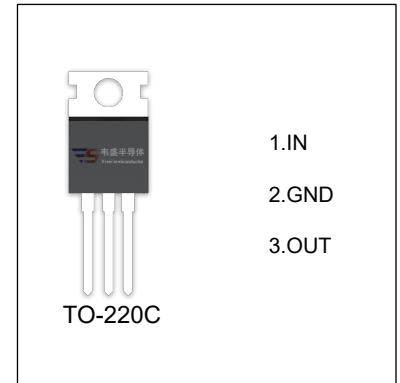


VS7809 Three-terminal positive voltage regulator

FEATURES

- Maximum output current
 $I_{OM}: 1.5\text{ A}$
- Output voltage
 $V_O: 9\text{ V}$
- Continuous total dissipation
 $P_D: 1.5\text{ W}$ ($T_a = 25^\circ\text{C}$)



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

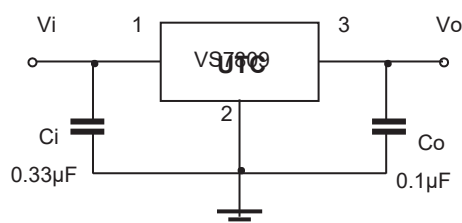
Parameter	Symbol	Value	Unit
Input Voltage	V_i	35	V
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	8.3	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_{OPR}	-40~+125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65~+150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE ($V_i=16\text{ V}$, $I_o=500\text{ mA}$, $C_i=0.33\mu\text{F}$, $C_o=0.1\mu\text{F}$, unless otherwise specified)

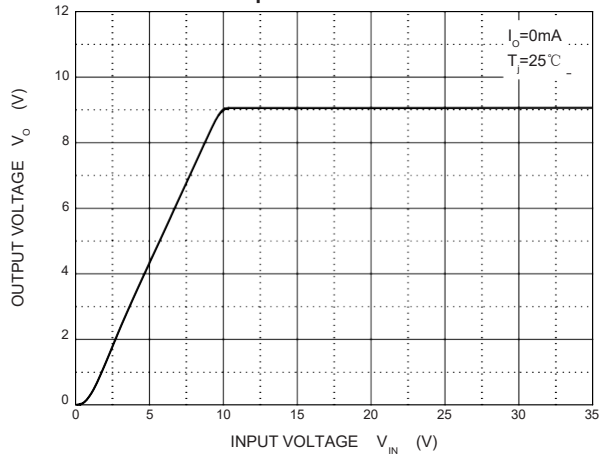
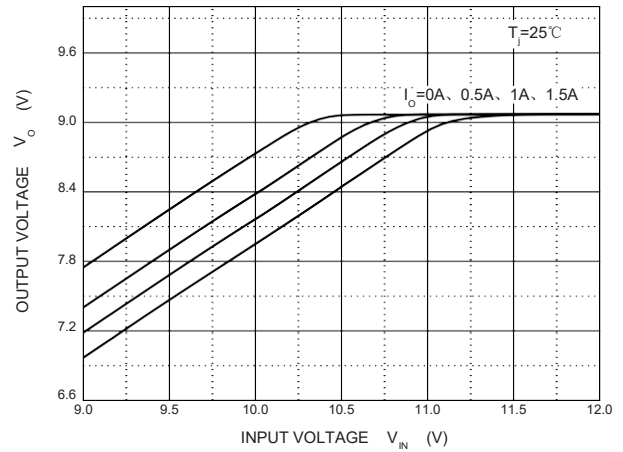
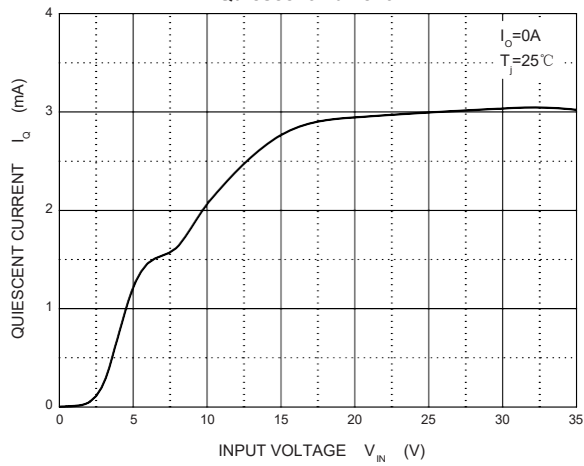
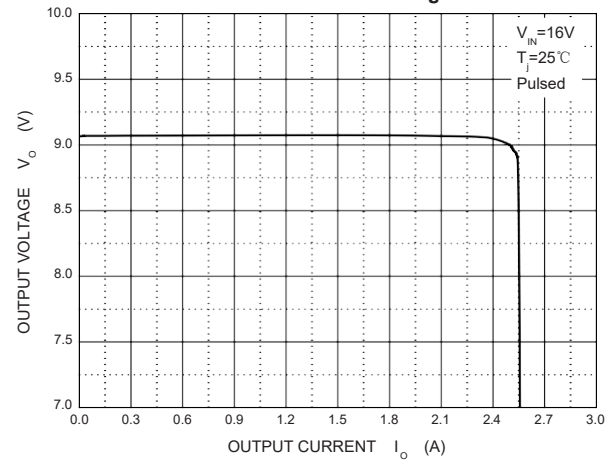
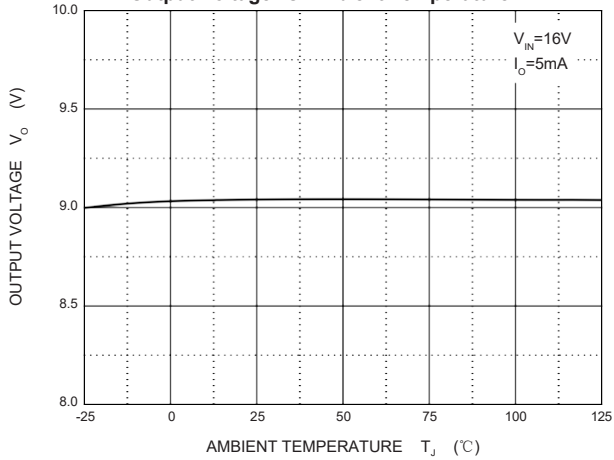
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output voltage	V_o	$T_J=25^\circ\text{C}$	8.73	9	9.27	V
		$11.5\text{ V} \leq V_i \leq 24\text{ V}$, $I_o = 5\text{ mA} - 1\text{ A}$, $P \leq 15\text{ W}$	8.55	9	9.45	V
Load Regulation	ΔV_o	$I_o = 5\text{ mA} - 1.5\text{ A}$, $T_J = 25^\circ\text{C}$		12	180	mV
		$I_o = 250\text{ mA} - 750\text{ mA}$, $T_J = 25^\circ\text{C}$		4	90	mV
Line regulation	ΔV_o	$11.5\text{ V} \leq V_i \leq 27\text{ V}$, $T_J = 25^\circ\text{C}$		7	180	mV
		$13\text{ V} \leq V_i \leq 19\text{ V}$, $T_J = 25^\circ\text{C}$		2	90	mV
Quiescent Current	I_q	$T_J = 25^\circ\text{C}$		4.3	8	mA
Quiescent Current Change	ΔI_q	$11.5\text{ V} \leq V_i \leq 27\text{ V}$			1	mA
		$5\text{ mA} \leq I_o \leq 1\text{ A}$			0.5	mA
Output voltage drift	$\Delta V_o / \Delta T$	$I_o = 5\text{ mA}$		-1		mV/ $^\circ\text{C}$
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	$12\text{ V} \leq V_i \leq 22\text{ V}$, $f = 120\text{ Hz}$	55	70		dB
Dropout Voltage	V_d	$I_o = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
Output resistance	R_o	$f = 1\text{ KHz}$, $T_J = 25^\circ\text{C}$		18		$\text{m}\Omega$
Short Circuit Current	I_{sc}	$T_J = 25^\circ\text{C}$		400		mA
Peak Current	I_{pk}	$T_J = 25^\circ\text{C}$		2.2		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 Ambient Temperature

Power Derating Curve
