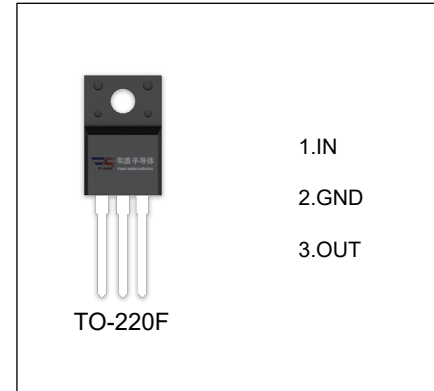


## VS7809F Three-terminal positive voltage regulator

### FEATURES

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



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

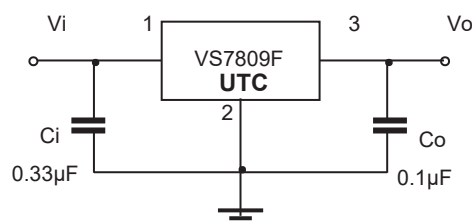
Parameter	Symbol	Value	Unit
Input Voltage	$V_i$	35	V
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	66.7	$^\circ\text{C/W}$
Operating Junction Temperature Range	$T_{OPR}$	-40~+125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65~+150	$^\circ\text{C}$

**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)

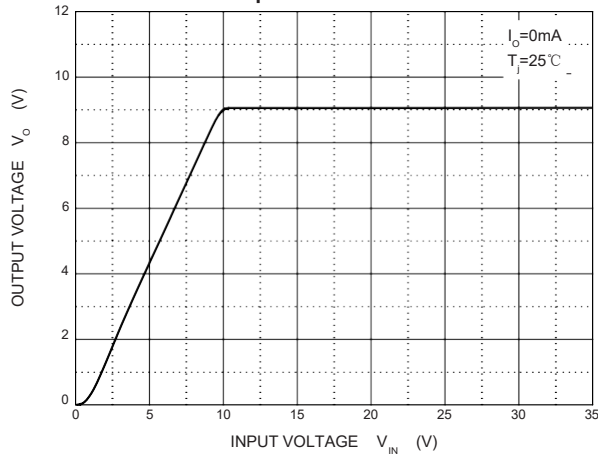
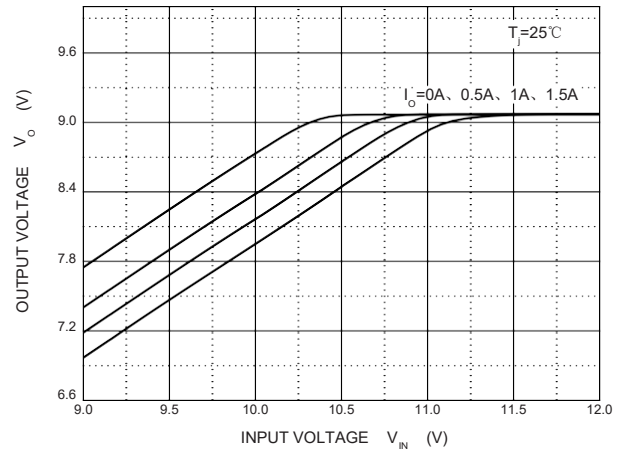
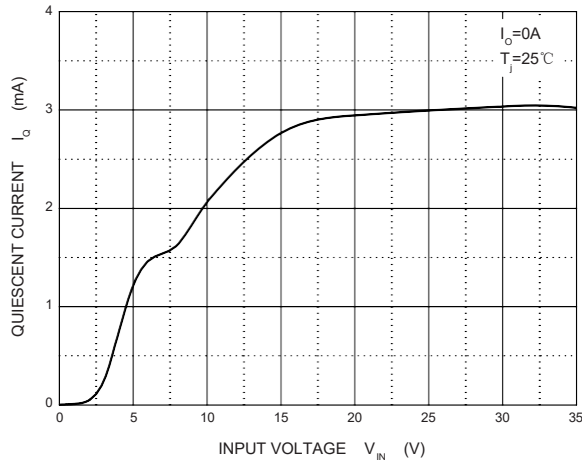
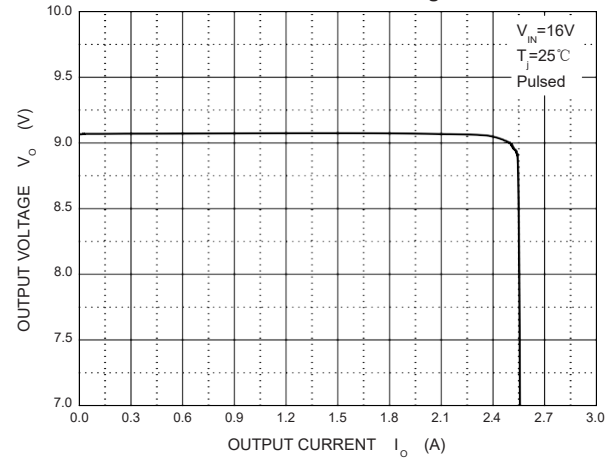
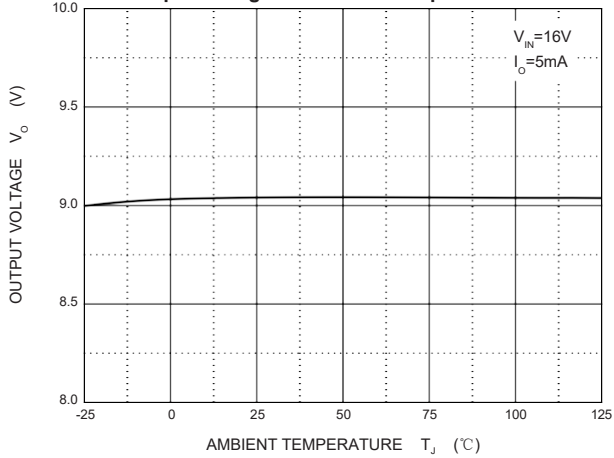
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output voltage	$V_o$	$T_J=25^\circ\text{C}$	8.73	9	9.27	V
		$11.5\text{V} \leq V_i \leq 24\text{V}$ , $I_o = 5\text{mA}-1\text{A}$ , $P \leq 15\text{W}$	8.55	9	9.45	V
Load Regulation	$\Delta V_o$	$I_o=5\text{mA}-1.5\text{A}$ , $T_J=25^\circ\text{C}$		12	180	mV
		$I_o=250\text{mA}-750\text{mA}$ , $T_J=25^\circ\text{C}$		4	90	mV
Line regulation	$\Delta V_o$	$11.5\text{V} \leq V_i \leq 27\text{V}$ , $T_J=25^\circ\text{C}$		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	$\Delta I_q$	$11.5\text{V} \leq V_i \leq 27\text{V}$			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**
