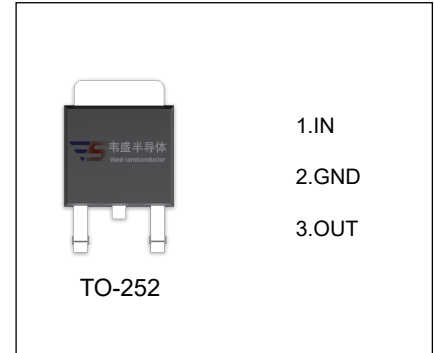


VS7809 Three-terminal positive voltage regulator

FEATURES

- Maximum output current
 I_{OM} : 1.5 A
- Output voltage
 V_O : 9V
- Continuous total dissipation
 P_D : 1.25 W ($T_a = 25^\circ\text{C}$)



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

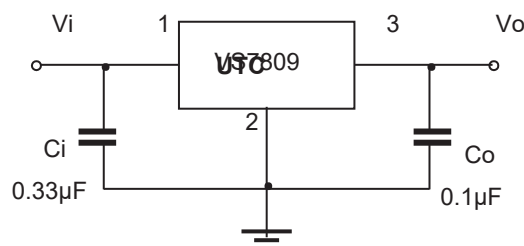
| Parameter | Symbol | Value | Unit |
|---|-----------------|----------|--------------------|
| Input Voltage | V_i | 35 | V |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 80 | $^\circ\text{C/W}$ |
| Operating Junction Temperature Range | T_{OPR} | -40~+125 | $^\circ\text{C}$ |
|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

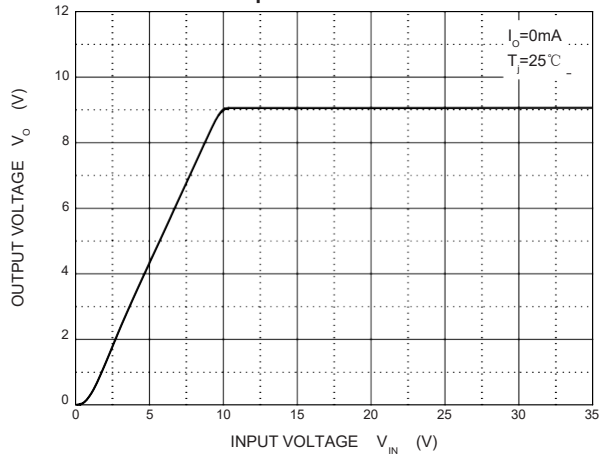
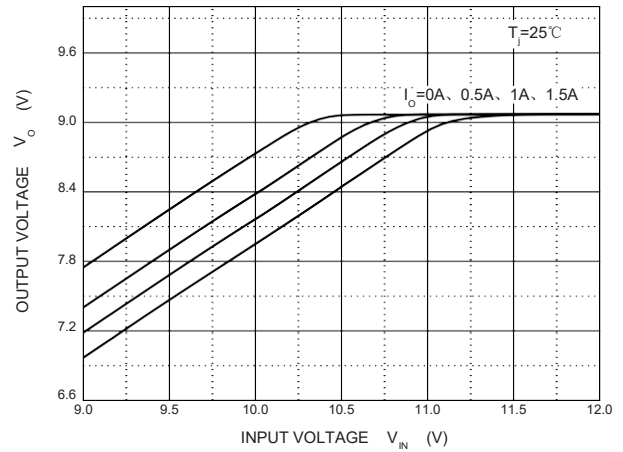
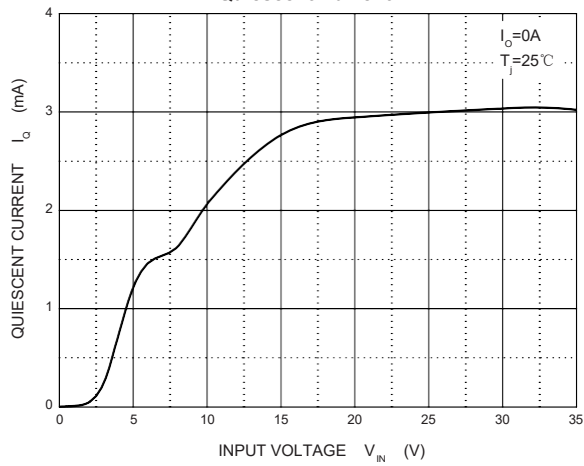
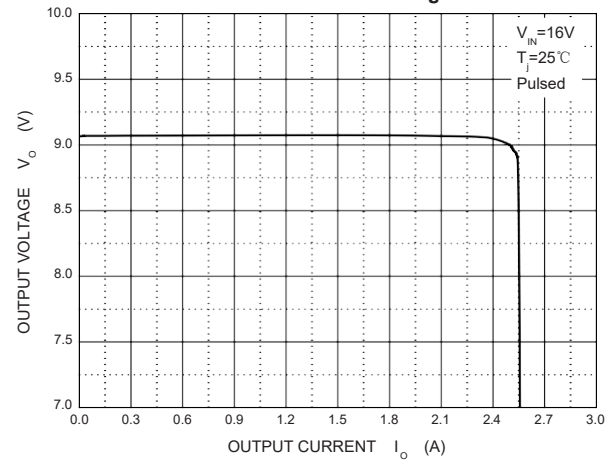
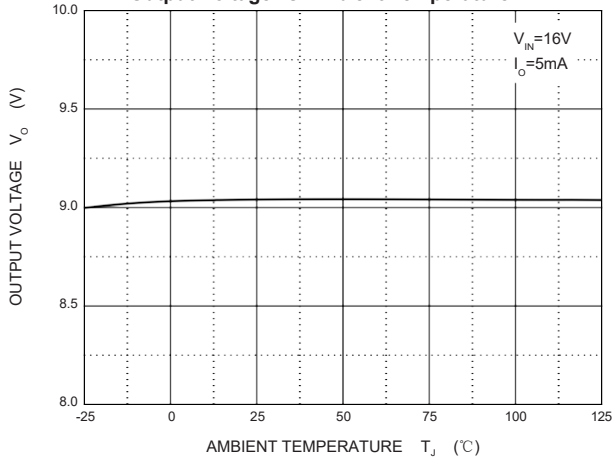
| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------|-------------------------|--|------|-----|------|----------------------|
| Output Voltage | V_o | $T_J=25^\circ\text{C}$ | 8.73 | 9 | 9.27 | V |
| | | $11.5\text{V} \leq V_i \leq 24\text{V}$, $I_o = 5\text{mA}-1\text{A}$, $P \leq 10\text{W}$ | 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 | | m Ω |
| 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
