# 7809

## TO-220 Plastic-Encapsulate Voltage Regulators

### Features:

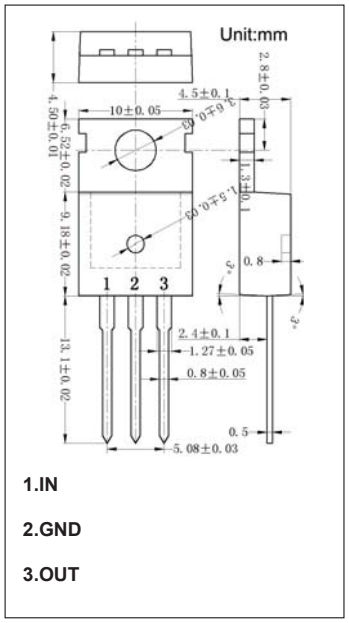
Maximum Output current $I_{OM}$: 1.2 A

Output voltage $V_o$: 9 V

Continuous total dissipation

$P_D$: 1.5W ($T_a$= 25°C)

15W ($T_C$=25°C)




### Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

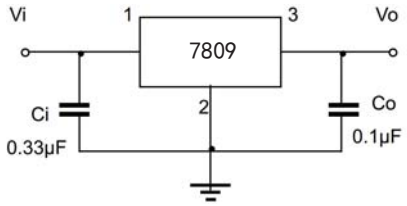
| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_i$ | Input Voltage | 35 | V |
| $T_{OPR}$ | Operating Junction Temperature Range | 0 to +150 | °C |
| $T_{STG}$ | Storage Temperature Range | -55 to +150 | °C |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 83.3 | °C/W |
| $R_{\theta JC}$ | Thermal Resistance from Junction to Case | 8.3 | °C/W |

### Electrical Characteristics At Specified Virtual Junction Temperature

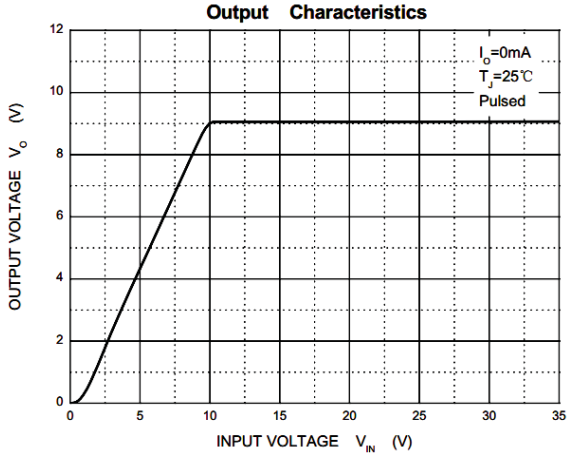
(Vi=16V,Io=500mA, Ci=0.33μF,Co=0.1μF,unless otherwise specified)

| Symbol | Parameter | Test conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Vo | Output Voltage | | 25°C | 8.65 | 9 | 9.35 | V |
| | | 11.5V≤ Vi ≤24V,$I_O$=5mA-1A,P≤15W | 0-125°C | 8.55 | 9 | 9.45 | V |
| ΔVo | Load Regulation | $I_O$=5mA - 1.5A | 25°C | | 12 | 180 | mV |
| | | $I_O$=250mA - 750mA | 25°C | | 4 | 90 | mV |
| ΔVo | Line Regulation | 11.5V≤ Vi ≤27V | 25°C | | 7 | 180 | mV |
| | | 13V≤ Vi ≤19V | 25°C | | 2 | 90 | mV |
| Iq | Quiescent Current | | 25°C | | 4.3 | 8 | mA |
| ΔIq | Quiescent Current Change | 11.5V≤ Vi ≤27V | 0-125°C | | | 1 | mA |
| ΔIq | | 5 mA≤$I_O$≤1A | 0-125°C | | | 0.5 | mA |
| $\Delta V_O/\Delta T$ | Output Voltage Drift | $I_O$=5Ma | 0-125°C | | -1 | | mV/°C |
| VN | Output Noise Voltage | f =10Hz to 100KHz | 25°C | | 60 | | μV |
| RR | Ripple Rejection | f =120Hz,12V≤ $V_i$ ≤22V | 0-125°C | 55 | 70 | | dB |
| Vd | Dropout Voltage | $I_O$=1.0A | 25°C | | 2 | | V |
| $R_O$ | Output Resistance | f = 1KHz | 25°C | | 18 | | mΩ |
| Isc | Short Circuit Current | | 25°C | | 400 | | mA |
| Ipk | Peak Current | | 25°C | | 2.2 | | A |

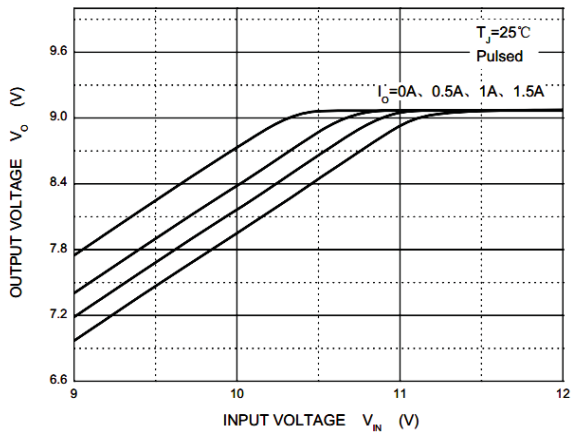
### Typical Application



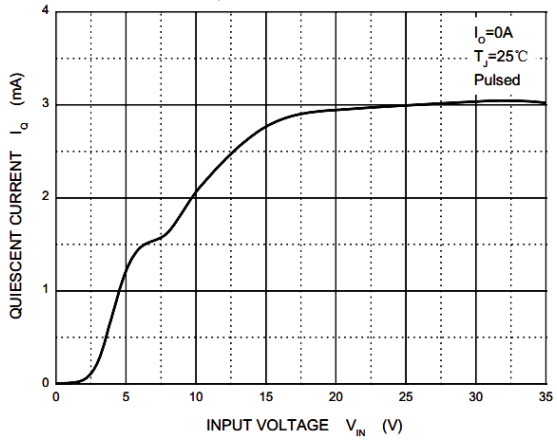
**Output Characteristics**



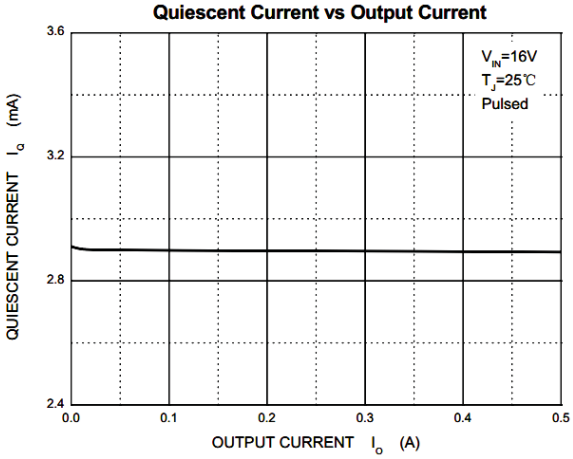

**Dropout Characteristics**



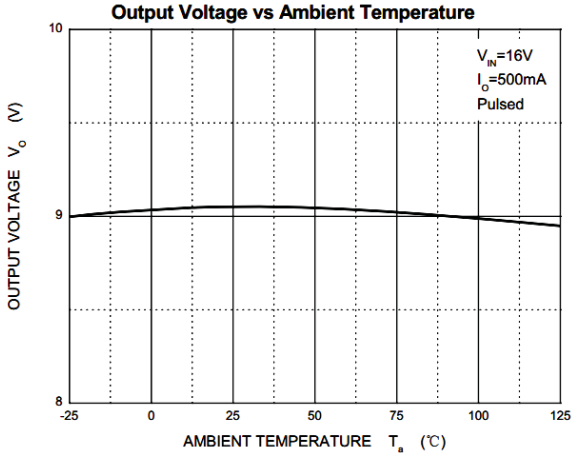

**Quiescent Current**



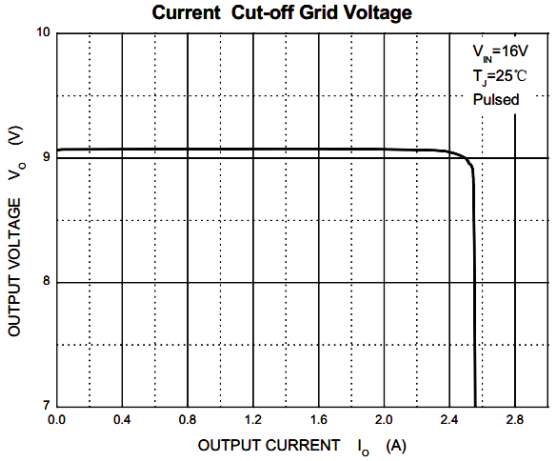

**Quiescent Current vs Output Current**




**Output Voltage vs Ambient Temperature**




**Current Cut-off Grid Voltage**




**Power Derating Curve**