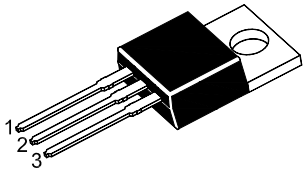
7809

3-Terminal 1 A Positive Voltage Regulator



1.Input 2.Common 3.Output
TO-220 Plastic Package

Features

- Output Current up to 1 A
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value	Unit
Input Voltage	V_I	35	V
Thermal Resistance Junction-Cases	$R_{\theta JC}$	5	°C/W
Thermal Resistance Junction-Air	$R_{\theta JA}$	65	°C/W
Operating Temperature Range	T_{OPR}	0 to + 125	°C
Storage Temperature Range	T_S	- 65 to + 150	°C

Electrical Characteristics

(0 °C < T_J < 125 °C, I_O = 500 mA, V_I = 15 V, C_I = 0.33 µF, C_O = 0.1 µF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J = 25 °C		8.65	9	9.35	V
		5 mA ≤ I_O ≤ 1 A, P_O ≤ 15 W V_I = 11.5 V to 24 V		8.6	9	9.4	
Line Regulation [1]	Regline	T_J = 25 °C	V_I = 11.5 V to 25 V	-	-	180	mV
			V_I = 12 V to 17 V	-	-	90	
Load Regulation [1]	Regload	T_J = 25 °C	I_O = 5 mA to 1.5 A	-	-	180	mV
			I_O = 250 mA to 750 mA	-	-	90	
Quiescent Current	I_Q	T_J = 25 °C		-	-	8	mA
Quiescent Current Change	ΔI_Q	I_O = 5 mA to 1 A		-	-	0.5	mA
		V_I = 12 V to 26 V		-	-	1.3	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5 mA		-	-1	-	mV/°C
Output Noise Voltage	V_N	f = 10 Hz to 100 KHz, T_A = 25 °C		-	58	-	µV
Ripple Rejection	RR	f = 120 Hz, V_I = 13 V to 23 V		56	-	-	dB
Dropout Voltage	V_{Drop}	I_O = 1 A, T_J = 25 °C		-	2	-	V
Output Resistance	R_O	f = 1 KHz		-	15	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35 V, T_A = 25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J = 25 °C		-	2.2	-	A

[1] Load and line regulation are specified at constant junction temperature, Changes in Vo due to heating effects must be taken into account separately, Pulse testing with low duty is used.

Typical Performance Characteristics

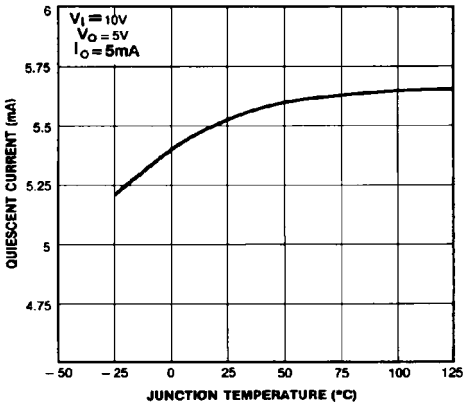


Figure 1. Quiescent Current

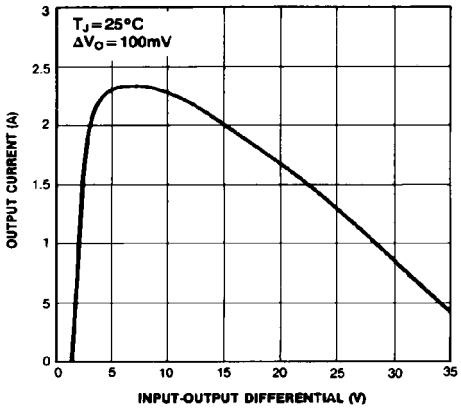


Figure 2. Peak Output Current

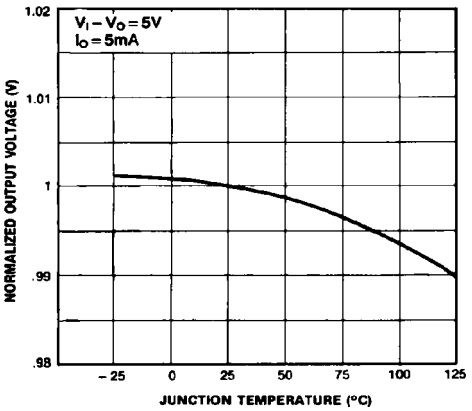


Figure 3. Output Voltage

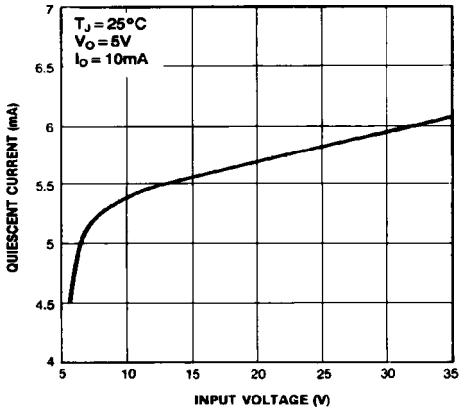


Figure 4. Quiescent Current

TO-220 PACKAGE OUTLINE