

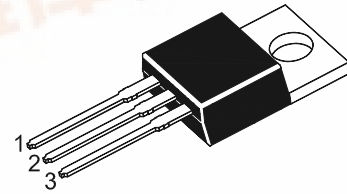
# ST 7809

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## 3-terminal 1 A positive voltage regulator

### Features

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



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

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

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

### Electrical Characteristics

( $0^\circ\text{C} < T_J < 125^\circ\text{C}$ ,  $I_O = 500\text{ mA}$ ,  $V_I = 15\text{ V}$ ,  $C_I = 0.33\ \mu\text{F}$ ,  $C_O = 0.1\ \mu\text{F}$ , unless otherwise specified)

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

<sup>1)</sup> Load and line regulation are specified at constant junction temperature, Changes in  $V_O$  due to heating effects must be taken into account separately, Pulse testing with low duty is used.

**SEMTECH ELECTRONICS LTD.**

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ISO/TS 16949 : 2002  
Certificate No. 05103

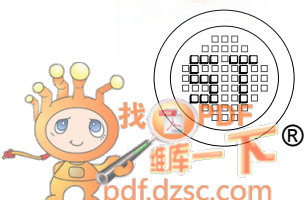


ISO 14001:2004  
Certificate No. 7116



ISO 9001:2000  
Certificate No. 050098

Dated : 13/01/2007



Typical Performance Characteristics

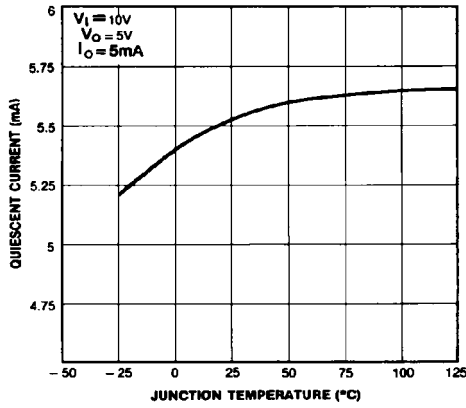


Figure 1. Quiescent Current

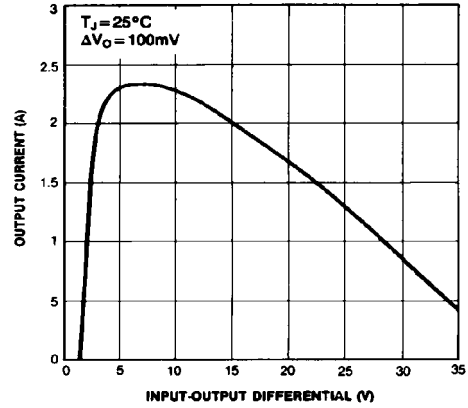


Figure 2. Peak Output Current

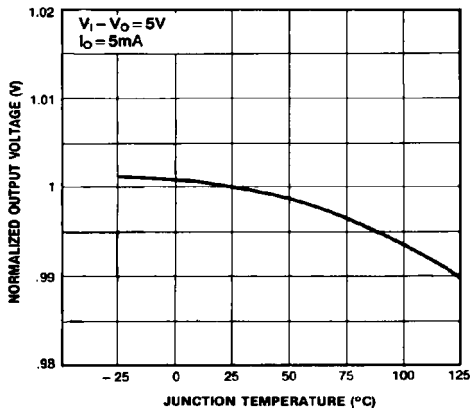


Figure 3. Output Voltage

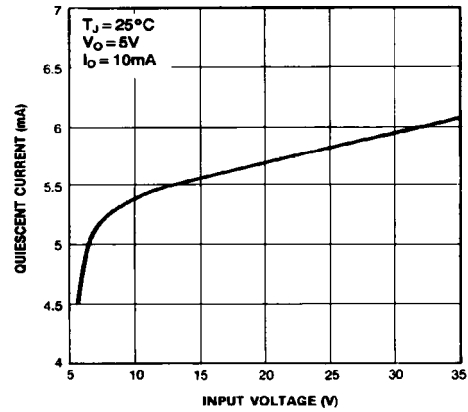
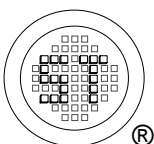


Figure 4. Quiescent Current



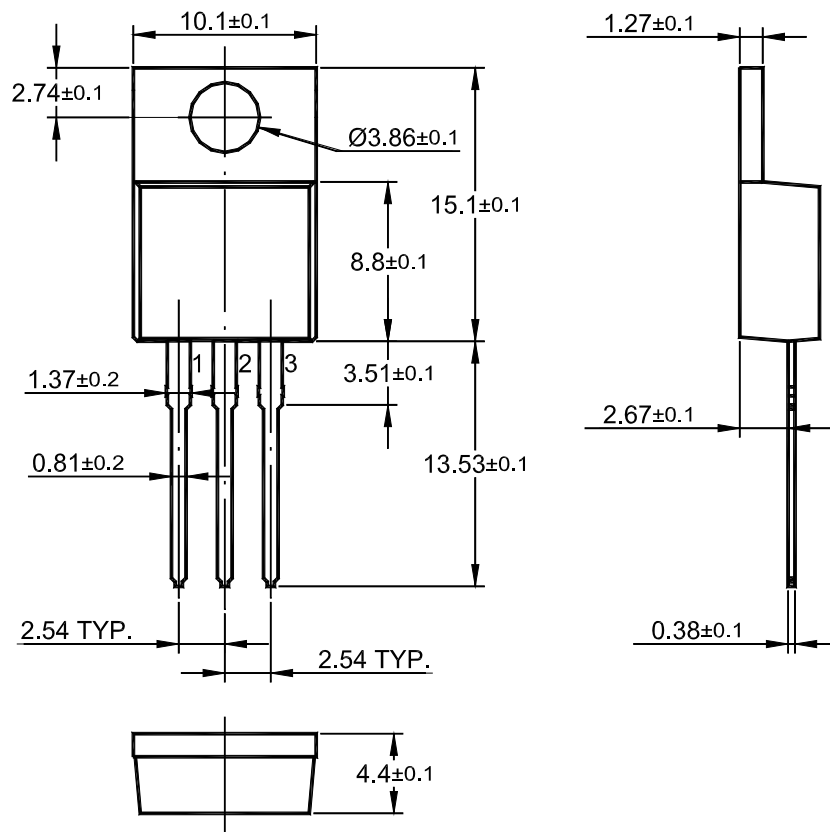
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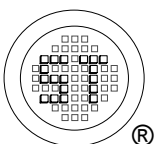
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## TO-220 PACKAGE OUTLINE

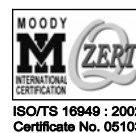


Dimensions in mm



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