



# H7809AI

# H7809BI

3-TERMINAL POSITIVE VOLTAGE REGULATOR

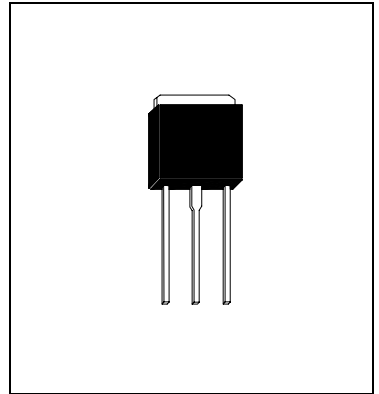
## Description

The H7809\_I series of three-terminal positive regulators are available in the TO-251 package and with several fixed output voltages, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shut-down and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

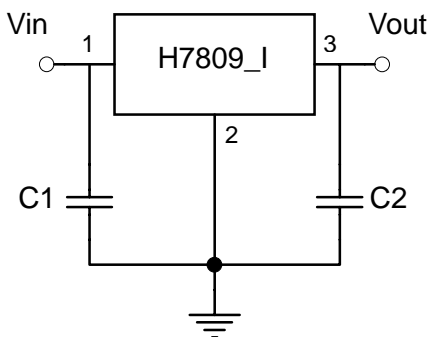
H7809\_I is characterized for operation from 0°C to +125°C, and if operating temperature will always hi, please refer the power dissipation curve.

## Absolute Maximum Ratings (Ta=25°C)

- Input Voltage..... 35 V (5V Through 9V), 40 V (24V)
- Total Power Dissipation ..... Internal limit
- Operating Temperature Range ..... 0°C to +70°C
- Maximum Junction Temperature..... 125°C
- Storage Temperature Range ..... -55°C to +150°C
- Lead Temperature (Soldering 10S)..... 230°C

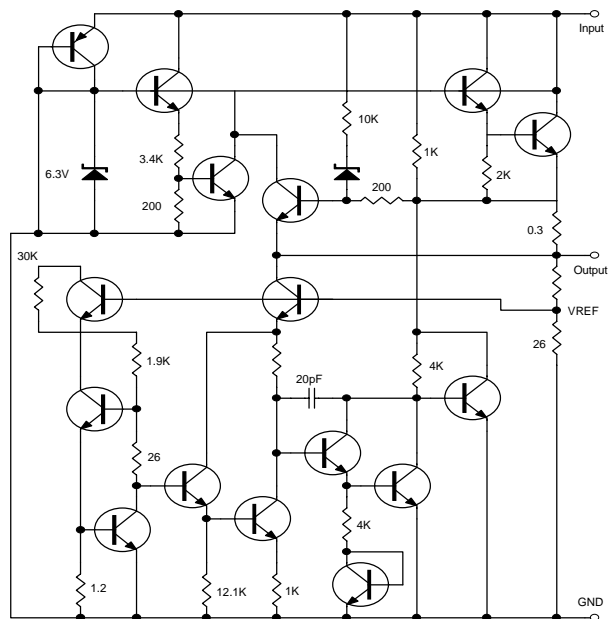


## Typical Application



Note :  
C1 and C2 are required if regulator is located far from power supply filter and load, or oscillation may induced on the loop.

## Schematic Diagram





### Electrical Characteristics

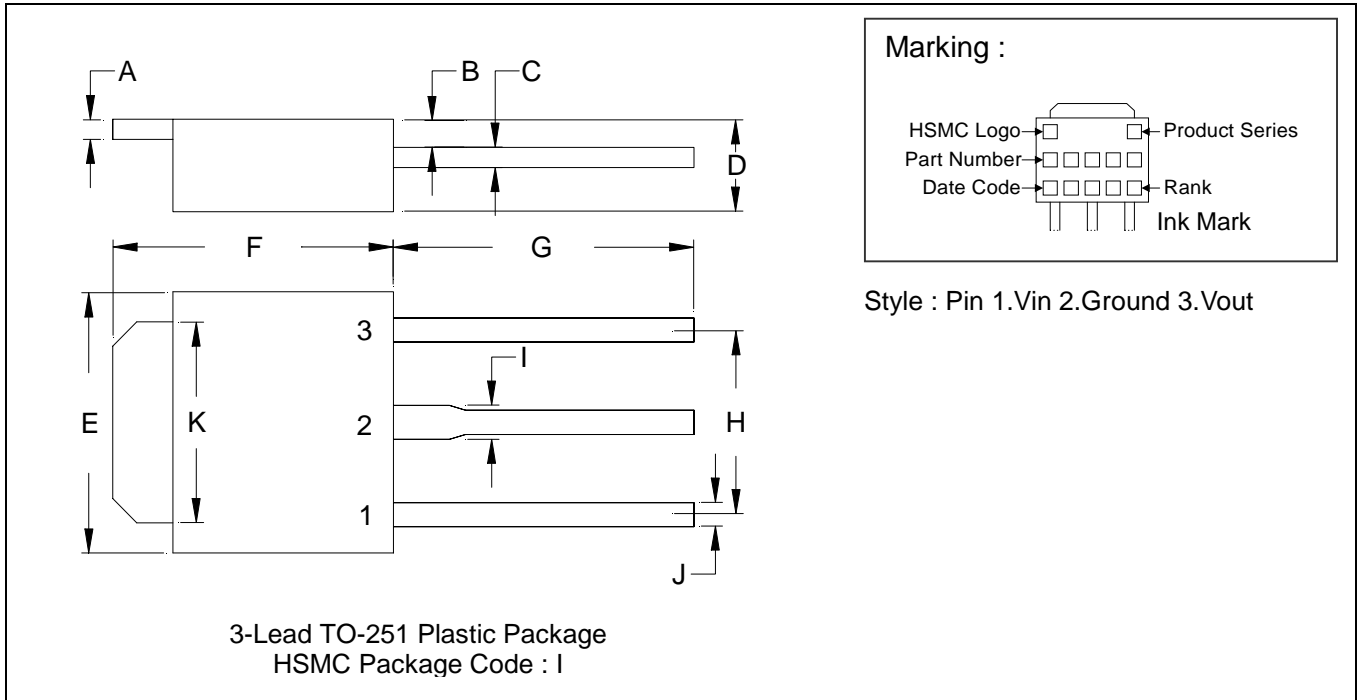
$V_{in}=15V$ ,  $I_o=500mA$ ,  $0^{\circ}C \leq T_j \leq 125^{\circ}C$  (unless otherwise noted)

Symbol	Parameter	Conditions	H7809AI			Units
			Min	Typ	Max	
Vo	Output Voltage	$T_j=25^{\circ}C$	8.73	9	9.27	V
		$PD \leq 15W, 5mA \leq I_o \leq 1A$	8.73	9	9.27	
$\Delta V_o$	Line Regulation	$T_j=25^{\circ}C, 11.5V \leq V_{in} \leq 25V$	-	6	90	mV
		$T_j=25^{\circ}C, 12V \leq V_{in} \leq 25V$	-	2	45	
$\Delta V_o$	Load Regulation	$5mA \leq I_o \leq 1A$	-	-	100	mV
		$250mA \leq I_o \leq 750mA$	-	-	50	
IQ	Quiescent Current	$I_o \leq 1A, T_j=25^{\circ}C$	-	5.5	8	mA
$\Delta IQ$	Quiescent Current Change	$5mA \leq I_o \leq 1A$	-	-	0.5	mA
		$11.5V \leq V_{in} \leq 26V$	-	-	1.3	
Vn	Output Noise Voltage	$T_a=25^{\circ}C, 10Hz \leq f \leq 100KHz$	-	-	200	$\mu V$
RR	Ripple Rejection	$13V \leq V_{in} \leq 23V, f=120Hz$	-	68	-	dB
VD	Dropout Voltage	$T_j=25^{\circ}C, I_o=1A$	-	2	-	V
Isc	Short Circuit Current	$T_j=25^{\circ}C$	-	1.5	-	A
Ipk	Peak Output Current	$T_j=25^{\circ}C$	1.7	-	-	A
$\Delta V_o / \Delta T$	Average Tc of Vout	$0^{\circ}C \leq T_j \leq +125^{\circ}C, I_o=5mA$	-	-0.8	-	$mV/^{\circ}C$

Symbol	Parameter	Conditions	H7809BI			Units
			Min	Typ	Max	
Vo	Output Voltage	$T_j=25^{\circ}C$	8.64	9	9.36	V
		$PD \leq 15W, 5mA \leq I_o \leq 1A$	8.55	9	9.45	
$\Delta V_o$	Line Regulation	$T_j=25^{\circ}C, 11.5V \leq V_{in} \leq 25V$	-	4	100	mV
		$T_j=25^{\circ}C, 12V \leq V_{in} \leq 25V$	-	2	50	
$\Delta V_o$	Load Regulation	$5mA \leq I_o \leq 1A$	-	-	180	mV
		$250mA \leq I_o \leq 750mA$	-	-	90	
IQ	Quiescent Current	$I_o \leq 1A, T_j=25^{\circ}C$	-	5.5	8	mA
$\Delta IQ$	Quiescent Current Change	$5mA \leq I_o \leq 1A$	-	-	0.5	mA
		$11.5V \leq V_{in} \leq 26V$	-	-	1.3	
Vn	Output Noise Voltage	$T_a=25^{\circ}C, 10Hz \leq f \leq 100KHz$	-	-	300	$\mu V$
RR	Ripple Rejection	$13V \leq V_{in} \leq 23V, f=120Hz$	62	73	-	dB
VD	Dropout Voltage	$T_j=25^{\circ}C, I_o=1A$	-	2.5	-	V
Isc	Short Circuit Current	$T_j=25^{\circ}C$	-	1.5	-	A
Ipk	Peak Output Current	$T_j=25^{\circ}C$	1.7	-	-	A
$\Delta V_o / \Delta T$	Average Tc of Vout	$0^{\circ}C \leq T_j \leq +125^{\circ}C, I_o=5mA$	-	-0.8	-	$mV/^{\circ}C$



## TO-251 Dimension



\*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0177	0.0217	0.45	0.55	G	0.2559	-	6.50	-
B	0.0354	0.0591	0.90	1.50	H	-	*0.1811	-	*4.60
C	0.0177	0.0236	0.45	0.60	I	-	0.0354	-	0.90
D	0.0866	0.0945	2.20	2.40	J	-	0.0315	-	0.80
E	0.2520	0.2677	6.40	6.80	K	0.2047	0.2165	5.20	5.50
F	0.2677	0.2835	6.80	7.20					

Notes : 1.Dimension and tolerance based on our Spec. dated May. 24,1995.  
 2.Controlling dimension : millimeters.  
 3.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 4.If there is any question with packing specification or packing method, please contact your local HSMC sales office.

**Material :**

- Lead : 42 Alloy ; solder plating
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0

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