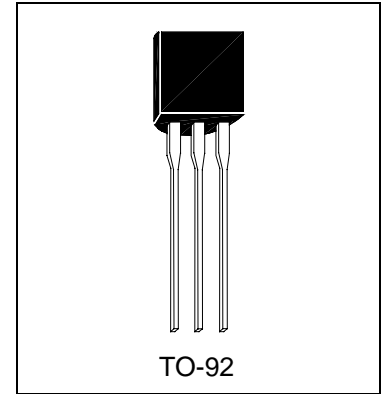




# H7809AA

# H7809BA

3-TERMINAL POSITIVE VOLTAGE REGULATOR



## Description

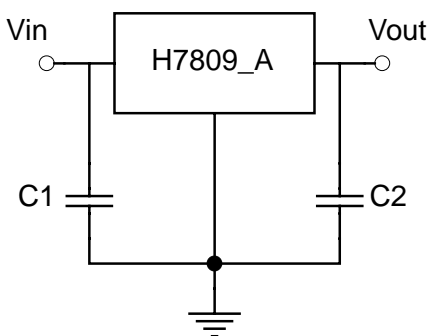
These regulators employ internal current-limiting and thermal-shutdown, making them essentially indestructible. They can deliver up to 100mA output current, if the case temperature can keep in  $T_c=25^\circ\text{C}$ .

They are intended as fixed voltage regulators in a wide range of applications including local (on-card) regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power pass elements to make high-current voltage regulators. The H7809\_A used as a Zener diode/resistor combination replacement, offers an effective output impedance improvement of typically two orders of magnitude, along with lower quiescent current and lower noise.

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

- Input Voltage..... 35 V
- Total Power Dissipation..... Internally limited
- Operating Temperature Range ..... 0 °C to +125 °C
- Maximum Junction Temperature..... 125 °C
- Storage Temperature Range..... -55 °C to +150 °C
- Lead Temperature (Soldering 10S)..... 260 °C

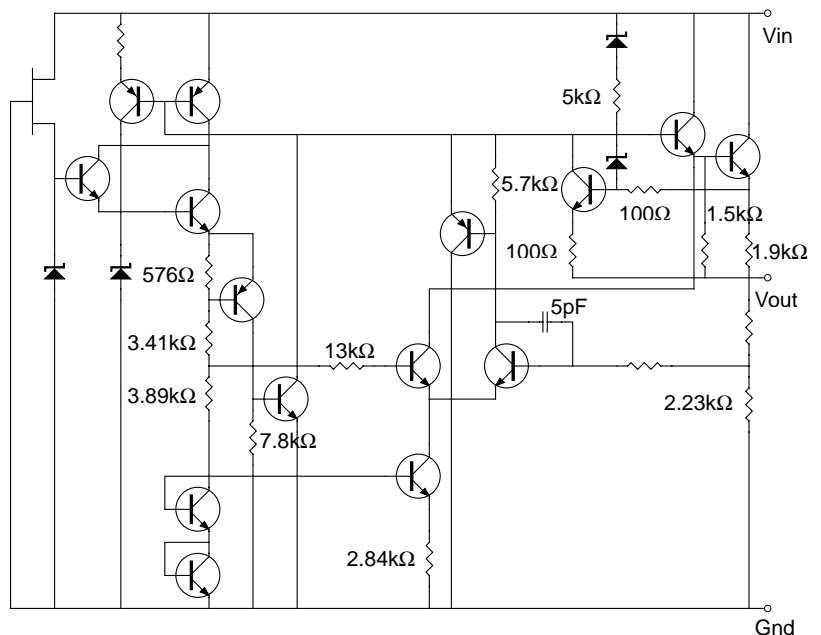
### Typical Application



**Note:**

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

### Schematic Diagram





### Electrical Characteristics

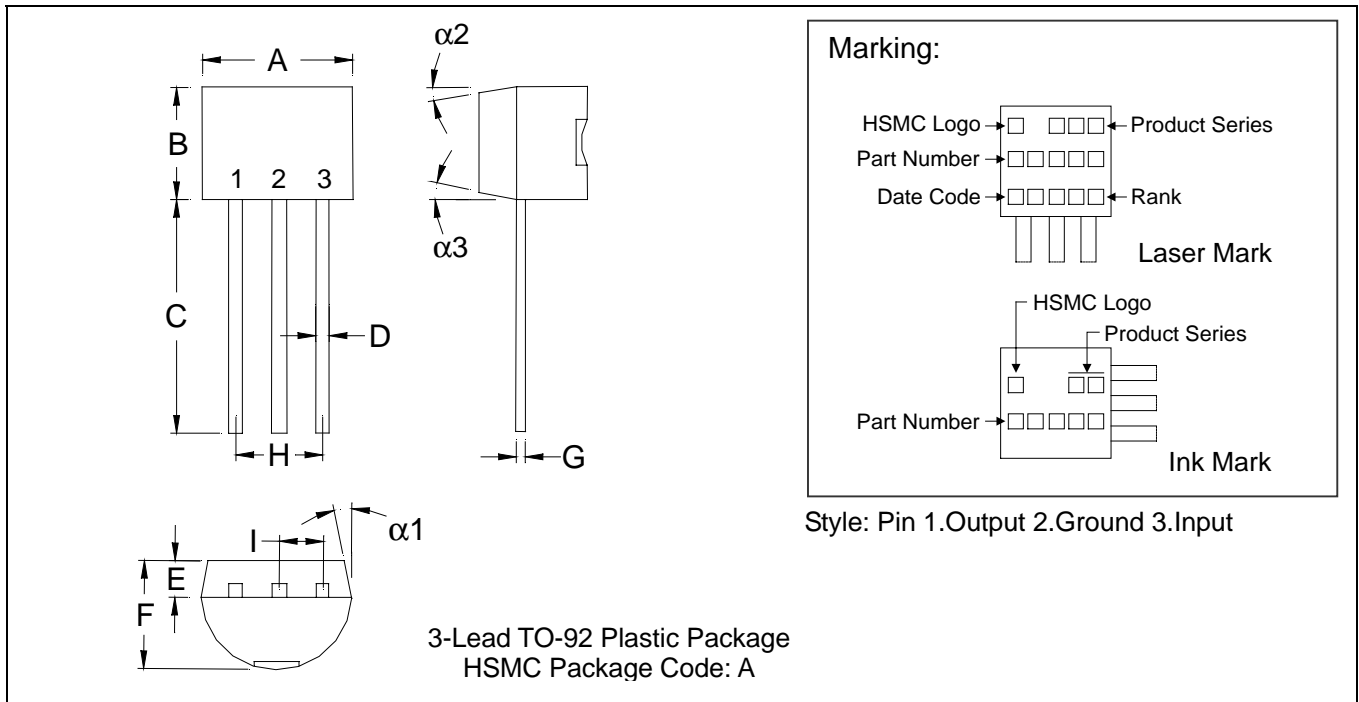
$V_{in}=15V$ ,  $I_{out}=40mA$ ,  $0^{\circ}C \leq T_j \leq 125^{\circ}C$ ,  $C_{in}=0.33\mu F$ ,  $C_{out}=0.1\mu F$  (unless otherwise noted)

Symbol	Parameter	Conditions	H7809AA			Units
			Min	Typ	Max	
Vo	Output Voltage	$T_j=25^{\circ}C$	8.73	9	9.27	V
		$1mA \leq I_o \leq 70mA$	8.55	-	9.45	
		$1mA \leq I_o \leq 40mA$ and $11.5V \leq V_{in} \leq 24V$	8.55	-	9.45	
$\Delta V_o$	Line Regulation	$T_j=25^{\circ}C$ , $11.5V \leq V_{in} \leq 24V$	-	-	200	mV
		$T_j=25^{\circ}C$ , $13V \leq V_{in} \leq 24V$	-	-	150	
$\Delta V_o$	Load Regulation	$T_j=25^{\circ}C$ , $1mA \leq I_o \leq 40mA$	-	-	45	mV
		$T_j=25^{\circ}C$ , $1mA \leq I_o \leq 100mA$	-	-	90	
IQ	Quiescent Current	$T_j=25^{\circ}C$	-	-	5.5	mA
$\Delta IQ$	Quiescent Current Change	$1mA \leq I_o \leq 40mA$	-	-	0.1	mA
		$11.5V \leq V_{in} \leq 24V$	-	-	1.5	
Vn	Output Noise Voltage	$T_a=25^{\circ}C$ , $10Hz \leq f \leq 10KHz$	-	70	-	$\mu V$
$\Delta V_{in} / \Delta V_{out}$	Ripple Rejection	$15V \leq V_{in} \leq 25V$ , $f=120Hz$	38	44	-	dB
Isc	Peak Output / Short Circuit Current	$T_j=25^{\circ}C$	-	140	-	mA
VD	Dropout Voltage	$T_j=25^{\circ}C$	-	1.7	-	V

Symbol	Parameter	Conditions	H7809BA			Units
			Min	Typ	Max	
Vo	Output Voltage	$T_j=25^{\circ}C$	8.55	9	9.45	V
		$1mA \leq I_o \leq 70mA$	8.5	-	9.5	
		$1mA \leq I_o \leq 40mA$ and $11.5V \leq V_{in} \leq 24V$	8.5	-	9.5	
$\Delta V_o$	Line Regulation	$T_j=25^{\circ}C$ , $11.5V \leq V_{in} \leq 24V$	-	-	200	mV
		$T_j=25^{\circ}C$ , $13V \leq V_{in} \leq 24V$	-	-	150	
$\Delta V_o$	Load Regulation	$T_j=25^{\circ}C$ , $1mA \leq I_o \leq 40mA$	-	-	45	mV
		$T_j=25^{\circ}C$ , $1mA \leq I_o \leq 100mA$	-	-	90	
IQ	Quiescent Current	$T_j=25^{\circ}C$	-	-	5.5	mA
$\Delta IQ$	Quiescent Current Change	$1mA \leq I_o \leq 40mA$	-	-	0.1	mA
		$11.5V \leq V_{in} \leq 24V$	-	-	1.5	
Vn	Output Noise Voltage	$T_a=25^{\circ}C$ , $10Hz \leq f \leq 10KHz$	-	70	-	$\mu V$
$\Delta V_{in} / \Delta V_{out}$	Ripple Rejection	$15V \leq V_{in} \leq 25V$ , $f=120Hz$	38	44	-	dB
Isc	Peak Output / Short Circuit Current	$T_j=25^{\circ}C$	-	140	-	mA
VD	Dropout Voltage	$T_j=25^{\circ}C$	-	1.7	-	V



## TO-92 Dimension



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1704	0.1902	4.33	4.83	G	0.0142	0.0220	0.36	0.56
B	0.1704	0.1902	4.33	4.83	H	-	*0.1000	-	*2.54
C	0.5000	-	12.70	-	I	-	*0.0500	-	*1.27
D	0.0142	0.0220	0.36	0.56	$\alpha 1$	-	*5°	-	*5°
E	-	*0.0500	-	*1.27	$\alpha 2$	-	*2°	-	*2°
F	0.1323	0.1480	3.36	3.76	$\alpha 3$	-	*2°	-	*2°

- Notes:**
- 1.Dimension and tolerance based on our Spec. dated Apr. 25,1996.
  - 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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