

Features

- Low voltage drop: 0.06V@100mA
- High input voltage: 12V
- Low temperature coefficient
- Low Quiescent Current: 25uA at 5.0V
- Output voltage accuracy: tolerance $\pm 2\%$
- SOT223 and SOT89 packages

Applications

- Battery-powered equipment
- Hand-Hold Equipment
- GRS Receivers
- Wireless LAN

General Description

The HE2008 series is a group of positive voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and laser trimming technologies.

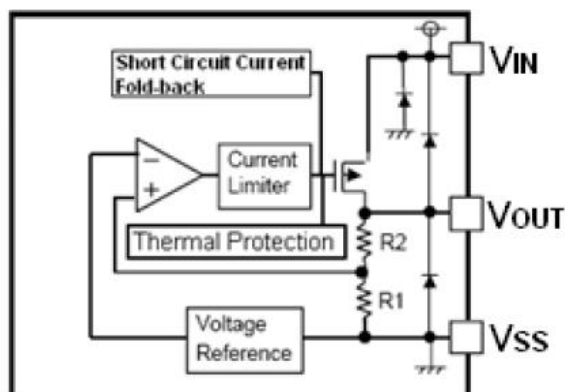
The HE2008 consists of a high-precision voltage reference, an error amplification circuit, and a current limited output driver. Transient response to a load variations have improved in comparison to the existing series.

Order Information

HE2008①②③④

Designator	Symbol	Description
①	P	Package:SOT89
	M	Package:SOT223
②③	Integer	Output Voltage(0.8~5.0V)
④	R	RoHS / Pb Free
	G	Halogen Free

Block Diagram



Pin Assignment

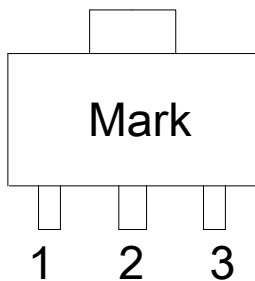


Table1 HE2008 series (SOT89 PKG)

PIN NO.	PIN NAME	FUNCTION
1	GND	GND pin
2	VIN	Input voltage pin
3	VOUT	Output voltage pin

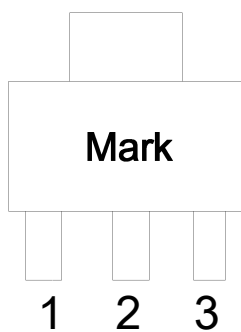
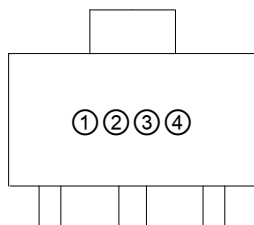


Table2 HE2008series (SOT223 PKG)

PIN NO.	PIN NAME	FUNCTION
1	VIN	Input voltage pin
2	GND	GND pin
3	VOUT	Output voltage pin

Marking Rule



- ① product code: H
- ② output voltage code:

Voltage(V)	Code	Voltage(V)	Code	Voltage(V)	Code
1.0	a	2.4	0	3.8	N
1.1	b	2.5	A	3.9	O
1.2	c	2.6	B	4.0	P
1.3	d	2.7	C	4.1	Q
1.4	e	2.8	D	4.2	R
1.5	1	2.9	E	4.3	S
1.6	2	3.0	F	4.4	T
1.7	3	3.1	G	4.5	U
1.8	4	3.2	H	4.6	V
1.9	5	3.3	I	4.7	W
2.0	6	3.4	J	4.8	X
2.1	7	3.5	K	4.9	Y
2.2	8	3.6	L	5.0	Z
2.3	9	3.7	M		

- ③ code:N
- ④ Data Code: X

Absolute Maximum Ratings

Supply Voltage-0.3V to 12V Operating Temperature-40℃ to 85℃
Output Current.....1.1A Storage Temperature-40℃ to 125℃

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Electrical Characteristics

HE2008 for any output voltage

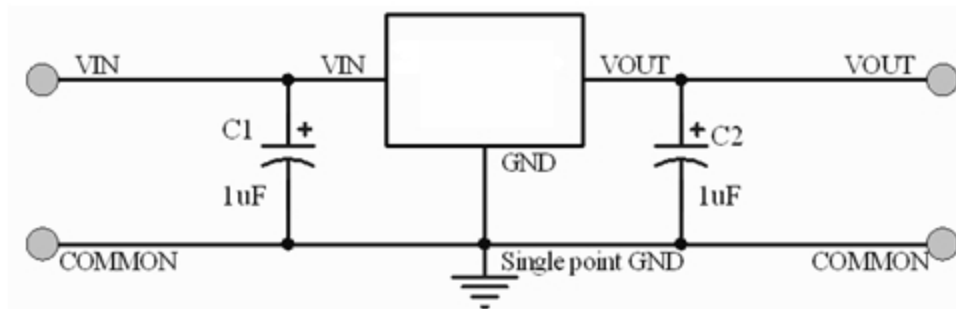
(Ta=25℃)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	Vout	Vin=Vout+1V 1.0mA≤Iout≤30mA	Vout×0.98	--	Vout×1.02	V
Output Current*1	Iout	Vin-Vout=1V	--	1000	--	mA
Low dropout*2	Vdrop	Refer to the next table				
Line Regulation	$\Delta V_{out1}/(V_{in}-V_{out})$	1.6V≤Vin≤8V Iout=100mA	--	0.05	0.2	%/V
Load Regulation	ΔV_{out}	Vin= Vout+1V 1.0mA≤Iout≤100mA	--	12	30	mV
Output voltage Temperature Coefficient	$\Delta V_{out}/(T_a \cdot V_{out})$	Iout=30mA 0℃≤Ta≤70℃	--	±100	--	Ppm/℃
PSRR	PSRR	F=1KHz Vin=Vout+1V	--	70	--	dB
Supply Current	Iss	--	--	25	35	uA
Input Voltage	Vin	--	--	--	12	V
Thermal shutdown detection temperature	TSD	Junction temperature	-	160	-	℃
Thermal shutdown release temperature	TSR	Junction temperature	-	140	-	℃

Electrical Characteristics by Output Voltage:

Output Voltage Vout(V)	Dropout Voltage Vdif (V)		
	Conditions	Typ.	Max.
$V_{out} \leq 2.0V$	$I_{out}=60\text{ mA}$	0.05	0.08
$2.0 < V_{out} \leq 3.0$	$I_{out}=80\text{ mA}$	0.05	0.08
$3.0 < V_{out} \leq 4.0$	$I_{out}=100\text{ mA}$	0.06	0.08
$4.0 < V_{out} \leq 5.0$		0.05	0.08
$3.0 < V_{out} \leq 4.0$	$I_{out}=200\text{ mA}$	0.13	0.16
$4.0 < V_{out} \leq 5.0$		0.12	0.16
$3.0 < V_{out} \leq 4.0$	$I_{out}=1000\text{ mA}$	0.65	0.8
$4.0 < V_{out} \leq 5.0$		0.6	0.8

Application Circuits

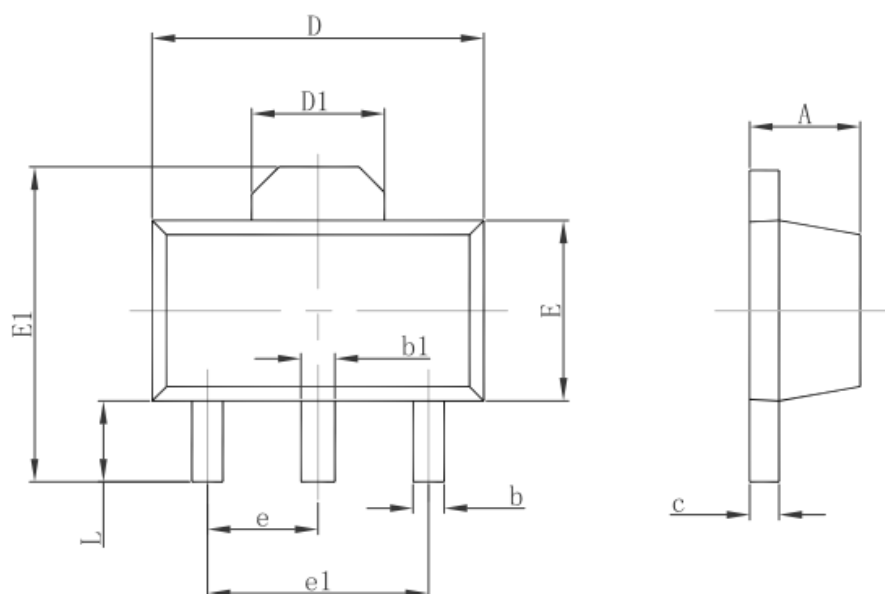


Note1: Input capacitor $C_{IN}=1\mu F$.

Note2: Output capacitor $C_{OUT}=1\mu F/6.8\mu F$ (1 μF Tantalum capacitor or 6.8 μF ceramic capacitor is recommended).

Package Information

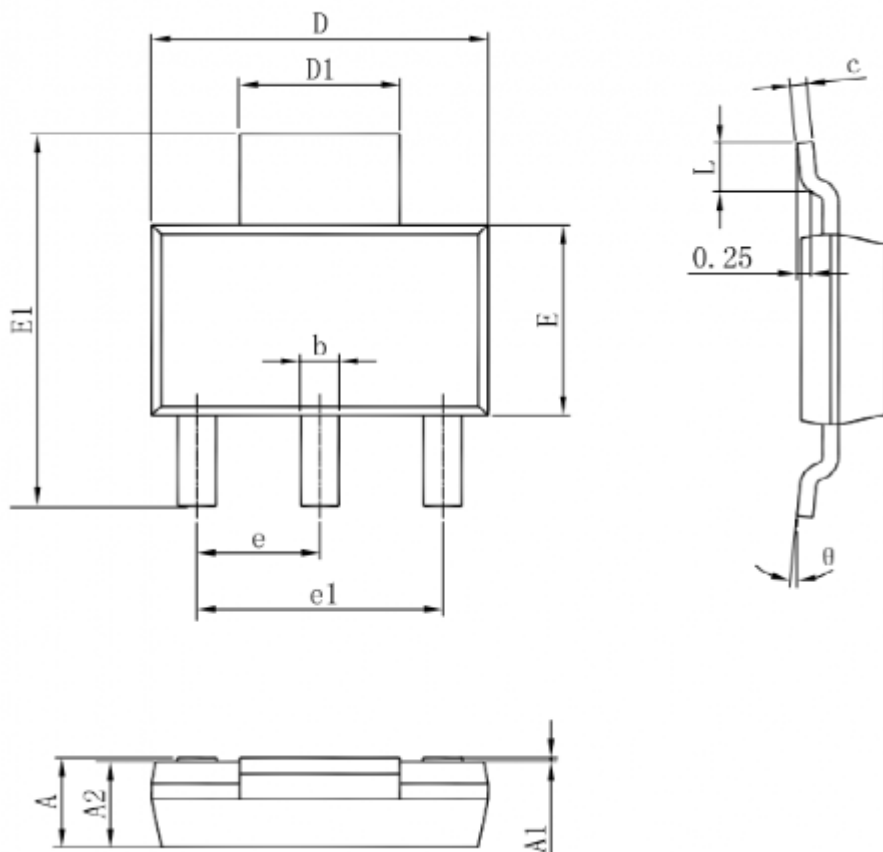
SOT-89-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

PACKAGE OUTLINE

SOT-223 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°