

HX6306

300mA Low Power LDO

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- Low Quiescent Current: 3uA at 6V
- Output voltage accuracy: tolerance ±2%

Applications

- Battery-powered equipment
- Reference voltage sources
- Cameras, video cameras

- Portable AV systems
- Mobile phones
- Portable games

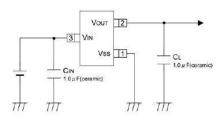
General Description

HX6306 series are a highly precise, lower consumption, 3 terminal,positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage.

The HX6306 consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit. The series is

compatible with low ESR ceramic capacitors. The current limiter's foldback circuit operates as a short circuit protection as well as the output current limiter for the output pin. Output voltages are internally by laser trimming technologies. It is selectable in 0.1V increments within a range of 1.2V to 5.0V. HX6306 series are available in SOT-23、SOT23-3and SOT-89 packages.

Typical Application



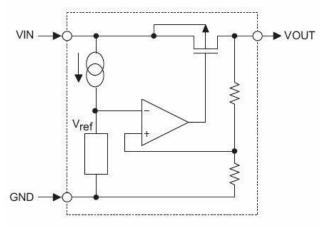
Order Information

HX6306P (1)(2)(3)(4)

Designator	Symbol	Description
12	Integer Output Voltage(2.1~5.0	
	М	Package:SOT23
(3)	N	Package:SOT23-3
3)	Р	Package:SOT89A
	P1	Package:SOT89B
	R	RoHS / Pb Free
(4)	G	Halogen Free

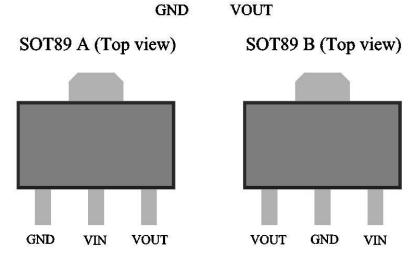
Note:"102" stands for output voltages. Other voltages can be specially customized

Block Diagram



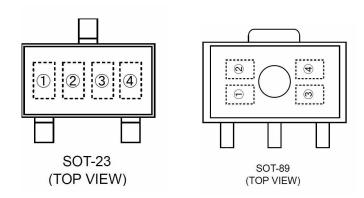
Pin Assignment

SOT23-3 and SOT23
(Top view)
VIN



300mA Low Power LDO

Marking Rule



① represents product number

MARK	PRODUCT SERIES
6	HX6306****

② represents 3 pins regulator

M	PRODUCT	
VOLTAGE=0.1~3.0V VOLTAGE=3.1V~6.0V		SERIES
5	6	HX6306

③ represents output voltage

MARK	V	OLTAGE(V)	MARK	V	OLTAGE(V)
0	-	3.1	-	F	1.6	4.6	-
1	-	3.2	-	Н	1.7	4.7	-
2	-	3.3	-	K	1.8	4.8	-
3	-	3.4	-	L	1.9	4.9	-
4	-	3.5	-	М	2.0	5.0	-
5	-	3.6	-	N	2.1	-	-
6	-	3.7	-	Р	2.2	-	-
7	ı	3.8	-	R	2.3	-	-
8	ı	3.9	-	S	2.4	-	-
9	ı	4.0	-	Т	2.5	ı	-
Α	-	4.1	-	U	2.6	-	-
В	1.2	4.2	-	V	2.7	-	-
С	1.3	4.3	-	Х	2.8		-
D	1.4	4.4	-	Υ	2.9	-	-
Е	1.5	4.5	_	Z	3.0	-	_

4 X

Absolute Maximum Ratings

Para	meter	Symbol	Ratings	Units
Input Voltage		V _{IN}	10	V
Output Current		I _{OUT}	300*	mA
Output Voltage		V _{OUT}	V _{SS} -0.3~V _{IN} +0.3	V
	SOT-23		0.20	W
Dower Dissipation	SOT-89	P _d	0.50	W
Power Dissipation	USP-6B		0.10	W
	TO-92		0.30	W
Operating Temperature Range		T _{opr}	-40~+85	$^{\circ}$
Storage Temp	perature Range	T _{stg}	-55~+125	$^{\circ}$

 $[*]I_{OUT}=P_d/(V_{IN}-V_{OUT})$

Electrical Characteristics

HX6306 for any output voltage

(Ta=25 $^{\circ}$ C)

intesection any eatp	at voltage				u _5 -	
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Output Voltage	Vout	Vin=Vout+1V 1.0mA≤lout≤30mA	Vout×0.98		Vout×1.02	V
Output Current*1	lout	Vin-Vout=1V		300		mA
Low dropout*2	Vdrop	Refer to the next table				
Line Regulation	△Vout1/(Vin·Vout)	1.6V≤Vin≤8V Iout=40mA		0.05	0.2	%/V
Load Regulation	$ riangle$ Vout / $oldsymbol{\Delta}$ lout	Vin= Vout+1V 1.0mA≤lout≤80mA		12	30	mV
Output voltage Temperature Coefficiency	△Vout/(Ta·Vout)	Iout=30mA 0℃≤Ta≤70℃		±100		Ppm/℃
Supply Current	Iss			3	5	uA
Input Voltage	Vin			8	10	V
PSRR	PSRR	F=1KHz Vin=Vout+1V		50		dB
Output Noise	EN	BW=10Hz~100KHz		30		uVrms
	1					

HX6306

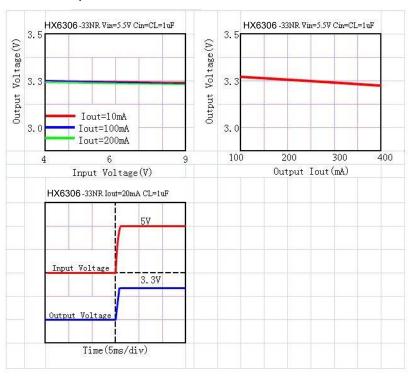
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Electrical Characteristics by Output Voltage:

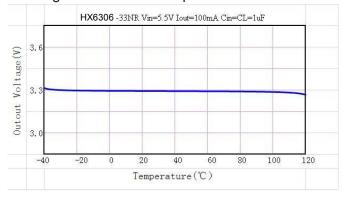
Outrot Valta as Vantov	Dropout Voltage Vdif(V)			
Output Voltage Vout(V)	Conditions	Тур.	Max.	
Vout≤1.5V		0.35	0.57	
1.8 ≤ Vout ≤ 2	lout=100 mA	0.28	0.42	
2.8 ≤ Vout ≤ 5.0	100(-100 IIIA	0.19	0.35	

Typical Performance Characteristics

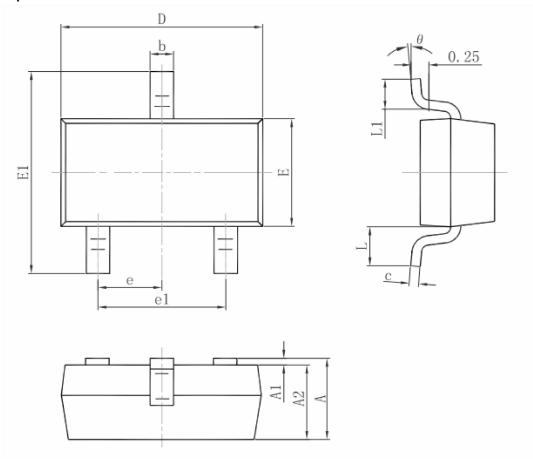
(1) Output Voltage vs Input voltage and Output Voltage vs.Output Current and Input Transient Response



(2) Output Voltage vs. Ambient Temperature

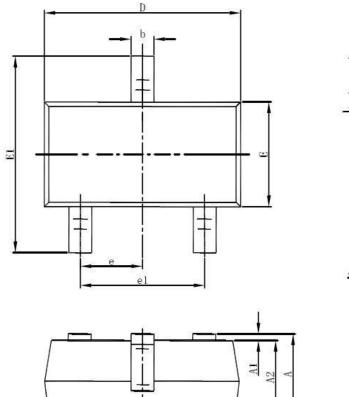


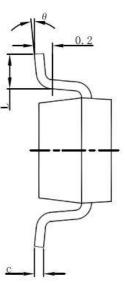
Package Information 3-pin SOT23 Outline Dimensions



Combal	Dimensions	In Millimeters	Dimensions In Inches	
Symbol	Min.	Max.	Min.	Max.
Α	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
С	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
е	0.950 TYP.		0.037	TYP.
e1	1.800	2.000	0.071	0.079
L	0.550	REF.	0.022	REF.
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

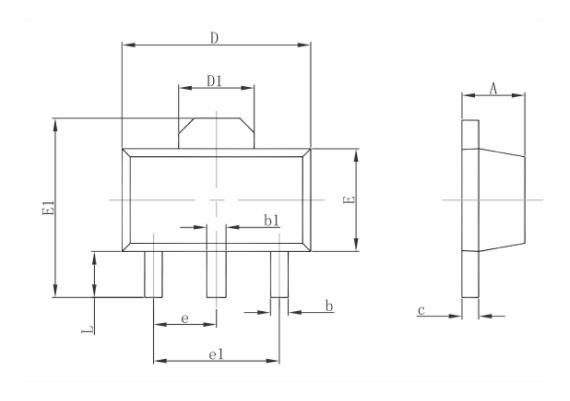
3-pin SOT23-3 Outline Dimensions





C L . I	Dimensions In	Millimeters	Dimensions In Inches	
Symbol	Min	Max	Min	Max
Α	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
С	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
е	0.950(E	BSC)	0.037(BSC)
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

3-pin SOT89 Outline Dimensions



Combal	Dimensions In Millimeters		Dimensions In Inche	
Symbol	Min.	Max.	Min.	
Α	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
С	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
е	1.500 TYP.		0.060 TYP.	
e1	3.000	TYP.	0.118 TYP.	
L	0.900	1.200	0.035	0.047