ALPHA SEMICONDUCTOR
Excellence in Analog Power Products

AS812XX

Super-Miniature Package Voltage Regulator

(Advanced Information)

FEATURES

- Low Power Consumption (2.5 µA max.)
- High Accuracy of Output Voltage Up to..... 2%
- Small Input/Output Voltage Difference
- Low Temperature Coefficient of Output Voltage
- Wide Operating Voltage Range..... 12V max.
- Good Line Regulation
- TO-92, SOT-89-3 & SOT-23-5 Packages

APPLICATION

- Constant Voltage Power Supply of Battery-Powered Equipment, Communications Equipment, Video Equipment and Others

PRODUCT DESCRIPTION

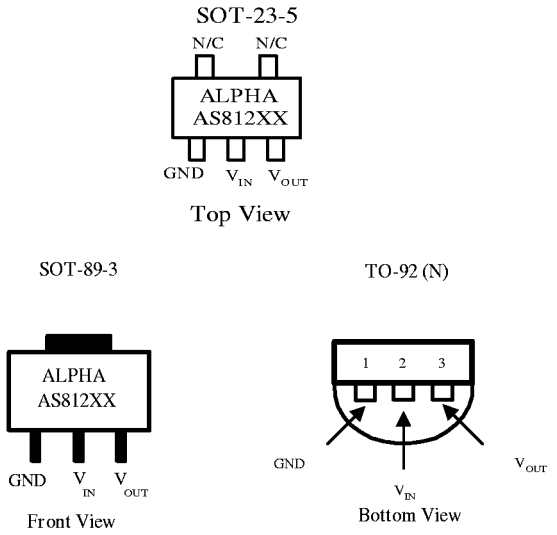
The AS812XX Series is a three-terminal positive voltage regulator made using the CMOS process. Since the AS812XX series has higher precision output voltage and consumes less current than existing three-terminal voltage regulators, battery-powered portable equipment can have a higher performance and a longer service life.

ORDERING INFORMATION

SOT-23-5 PIN	SOT-89-3 PIN	TO-92 3-PIN	Package Type	OPERTEMP. RANGE
AS812M-XX	AS812M1-XX	AS812N-XX	SOT-23-5	-40°C to +125°C

XX = Stands for Output Voltage

PIN CONNECTIONS



BLOCK DIAGRAM

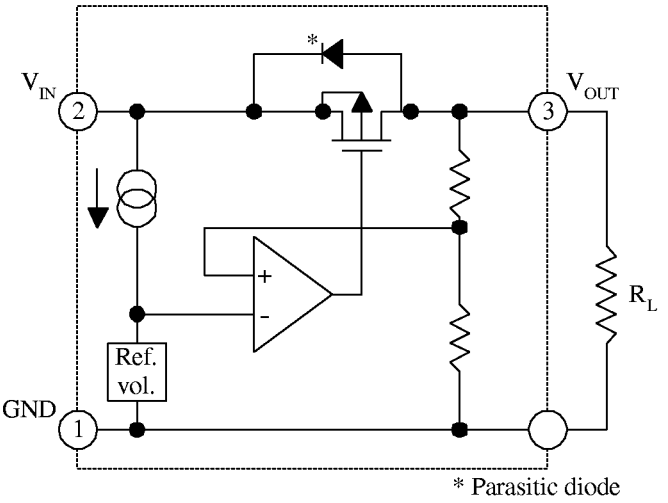


Figure 2

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Rev.12/3/98

ABSOLUTE MAXIMUM RATING (Unless otherwise specified: Ta = 25°C)

Input Voltage..... 16V
Output Current 150mA
Output Voltage ..... (V_{SS}-0.3) to (V_{IN} +0.3)

Operating Temperature Range ..... -40°C to +125°C
Storage Temperature Range ..... -65°C to +150°C
Soldering Temperature..... 260°C, 10 sec
Power Dissipation TO-92..... 400mW
SOT-89-3 ..... 500mW
SOT-23-5 ..... 150mW

Caution: Keep static electricity to a minimum.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified: Ta = 25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
3.0V Version						
Output Voltage	V_{OUT}	V_{IN} = 5.0V, I_{OUT} = 10mA	2.940	3.000	3.060	V
VO Voltage Difference	V_{DIF}	I_{OUT} = 10mA		0.44	1.04	V
Line Regulation 1	$\Delta V_{OUT}1$	V_{IN} = 4.0 to 16V I_{OUT} =1mA		39	78	mV
Line Regulation 2	$\Delta V_{OUT}2$	V_{IN} = 3.7 to 10V I_{OUT} = 1µA		39	210	mV
Load Regulation	$\Delta V_{OUT}3$	V_{IN} = 5.V I_{OUT} = 1µA to 10mA		60	100	mV
Current Consumption	I_{SS}	V_{IN} = 5.0V Unloaded		1.2	2.5	µA
Input Voltage	V_{IN}				16	V
Temperature Characteristic of ΔV_{OUT}	$\frac{\Delta V_{OUT}}{\Delta Ta}$	V_{IN} = 5.0V, I_{OUT} = 10mA T_A = -40°C to 85°C		±0.375		mV/°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
3.3V Version						
Output Voltage	V_{OUT}	V_{IN} = 5.3V I_{OUT} = 10mA	3.234	3.300	3.366	V
VO Voltage Difference	V_{DIF}	I_{OUT} = 10mA		0.37	0.91	V
Line Regulation 1	$\Delta V_{OUT}1$	V_{IN} = 4.3 to 16V I_{OUT} =1mA		42	84	mV
Line Regulation 2	$\Delta V_{OUT}2$	V_{IN} = 4.3 to 16V I_{OUT} = 1µA		42	231	mV
Load Regulation	$\Delta V_{OUT}3$	V_{IN} = 5.3V I_{OUT} = 1µA to 10mA		60	100	mV
Current Consumption	I_{SS}	V_{IN} = 5.3V Unloaded		1.2	2.5	µA
Input Voltage	V_{IN}				16	V
Temperature Characteristic of ΔV_{OUT}	$\frac{\Delta V_{OUT}}{\Delta Ta}$	V_{IN} = 5.3V, I_{OUT} = 10mA T_A = -40°C to 85°C		±0.0.413		mV/°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
4.0V Version						
Output Voltage	V_{OUT}	V_{IN} = 6.0V I_{OUT} = 10mA	3.920	4.000	4.080	V
VO Voltage Difference	V_{DIF}	I_{OUT} = 10mA		0.27	0.70	V
Line Regulation 1	$\Delta V_{OUT}1$	V_{IN} = 5.0 to 16V I_{OUT} =1mA		48	96	mV
Line Regulation 2	$\Delta V_{OUT}2$	V_{IN} = 5.0 to 16V I_{OUT} = 1µA		48	280	mV
Load Regulation	$\Delta V_{OUT}3$	V_{IN} = 6.0V I_{OUT} = 1µA to 30mA		50	90	mV
Current Consumption	I_{SS}	V_{IN} = 6.0V Unloaded		1.2	2.5	µA
Input Voltage	V_{IN}				16	V
Temperature Characteristic of ΔV_{OUT}	$\frac{\Delta V_{OUT}}{\Delta Ta}$	V_{IN} = 6.0V I_{OUT} = 10mA T_A = -40°C to 85°C		±0.500		mV/°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
5.0V Version						
Output Voltage	V_{OUT}	V_{IN} = 7.0V I_{OUT} = 10mA	4.900	5.000	5.100	V
VO Voltage Difference	V_{dif}	I_{OUT} = 10mA		0.16	0.50	V
Line Regulation 1	$\Delta V_{OUT}1$	V_{IN} = 6.0 to 16V I_{OUT} =1mA		55	110	mV
Line Regulation 2	$\Delta V_{OUT}2$	V_{IN} = 6.0 to 16V I_{OUT} = 1µA		55	350	mV
Load Regulation	$\Delta V_{OUT}3$	V_{IN} = 7.0 V I_{OUT} = 1µA to 30mA		40	80	mV
Current Consumption	I_{SS}	V_{IN} = 7.0V Unloaded		1.2	2.5	µA
Input Voltage	V_{IN}				16	V
Temperature Characteristic of ΔV_{OUT}	$\frac{\Delta V_{OUT}}{\Delta Ta}$	V_{IN} = 7.0V I_{OUT} = 10mA T_A = -40°C to 85°C		±0.625		mV/°C