



LinearDimensions
SEMICONDUCTOR

LND48XX

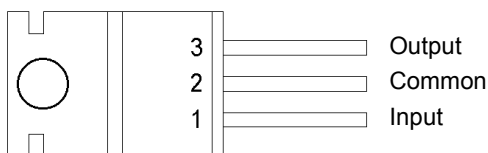
400mA Low Dropout Voltage Regulators

GENERAL DESCRIPTION

This series of fixed-voltage monolithic micropower voltage regulators is designed for a wide range of applications. This device is an excellent choice for use in battery-powered application. Furthermore, the quiescent current increases only slightly at dropout, which prolongs battery life.

This series of fixed-voltage regulators features very low quiescent current (100mA Typ.) and very low drop output voltage (Typ. 60mV at light load and 420mV at 400mA). This includes a tight initial tolerance of 0.5% typ. Extremely good load and line regulation of 0.05% typ., and very low output temperature coefficient. This series of fixed-voltage regulators is offered in 3-pin TO-220 package compatible with other fixed voltage regulators. Adjust model is offered in 5-pin TO-220 package and fixed model with shutdown input is offered in 4-pin TO-220 package.

PIN DIAGRAM



TO – 220 Package

FEATURES

- 400mA output within 2% over temperature
- Very low quiescent current
- Low dropout voltage (420mV Typ)
- Extremely tight load and line regulation
- Very low temperature coefficient
- Current and thermal limiting
- Unregulated DC input can withstand – 20V reverse battery and +60V positive transients
- Direct replacement for SGS-Thomson-L48XX Series, but has lower ground current, higher accuracy of output voltage and extremely tight load and line regulation. The 5 pin version (adjust model) and 4 pin version (fixed model) have a shutdown input.

APPLICATIONS

- High-efficiency linear regulator
- Battery powered systems
- Portable/palm top/ notebook Computers
- Portable consumer equipment
- Portable instrumentation
- Automotive Electronics
- SMPS Post Regulator



ABSOLUTE MAXIMUM RATINGS

Power Dissipation	Internally Limited
Lead Temperature(Soldering, 5 seconds)	260°C
Storage Temperature Range	-65°C to +150°C
Operating Junction Temperature Range	-55°C to +150°C
Input Supply Voltage	-20V to +35V
Continuous total dissipation at 25° C free air temperature	2W
Continuous total dissipation at (or below) 25° C case temperature	15W

DEVICE SELECTION GUIDE

Vout , VOLTS	Device
3.3V*	LND4833
5V	LND4805
8V	LND4808
8.5V	LND4885
9V	LND4809
10V	LND4810
12V	LND4812
15V	LND4815
Adj.	LND48-adj

* Other fixed versions are also available Vout=2.0 V to 5.0V
Please Consult Linear Dimensions for Information.



ELECTRICAL CHARACTERISTICS

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage	-25° C<=T _J <=85°C Full Operating Temperature	0.985 Vo 0.98 Vo	V _o	1.015 Vo 1.02 Vo	V
Output Voltage	1mA<= I _L <=400mA, T _J <=T _{Jmax}	0.975 Vo	V _o	1.025 Vo	
Input Supply Voltage				26	
Output Voltage Temperature Coefficient	(Note 1)		50	150	ppm/°C
Line Regulation (Note 2)	13V<=V _{in} <= 26V (Note 3)		0.1	0.4	%
Load Regulation(Note 2)	1mA<= I _L <=400mA		0.1	0.3	%
Dropout Voltage(Note 4)	I _L =150mA		200	400	mV
	I _L =400mA		420	700	
Ground Current (Note 5)	I _L =100μA		100	200	μA
	I _L =150μA		12	20	mA
	I _L =400μA		30	50	mA
Dropout Ground Current(Note 5)	V _{in} =V _{out} -0.5V I _L =100μA		110	220	μA
Current Limit	V _{out} =0		350	500	mA
Thermal Regulation (Note 6)			0.05	0.2	%/W
Output Noise, 10Hz to 100KHz I _L = 100mA	C _L =2.2μF		500		μV RMS
	C _L =3.3μF		350		
	C _L =33μF		120		
Ripple Rejection Ratio	I _o =350mA, f=120Hz, C _o =100μF, V _{IN} =V _o +3V+2V _{PP}	60			dB
Adjust model					
Reference Voltage		1.21	1.235	1.26	V
Reference Voltage	Over Temperature (Note 7)	1.185		1.285	
Feedback Pin Bias Current			20	40	nA
Reference Voltage Temperature Coefficient	(Note 1)		50		ppm/°C
Feedback Pin Bias Current Temperature coefficient			0.1		nA/°C
Shutdown Input					
Input Logic Voltage	Low(Regulator ON) High (Regulator OFF)	2	1.3	0.7	V
Shutdown Pin Input Current	V _S = 2.4V		30	50	μA
	V _S = 26V		450	600	
Regulator Output Current in Shutdown	(Note 8)				
	5.0V<=V _{out} <15.0V			10	
	3.3V<=V _{out} <5.0 V			20	
	2.0V<=V _{out} <3.3V			30	



- Note 1: Output or reference voltage temperature coefficients defined as the worst case voltage change divided by the total temperature range.
- Note 2: Regulations are measured at constant junction temperature, using pulse testing with a low duty cycle. Changes in output voltage due to heating effects are covered under the specification for thermal regulation.
- Note 3: Line regulation is tested at 150°C for $I_L = 5\text{mA}$. For $I_L = 100\mu\text{A}$ and $T_J = 125^\circ\text{C}$, line regulation is guaranteed by design to 0.2%. For LND4815 $16\text{V} \leq V_{in} \leq 26\text{V}$.
- Note 4: Dropout voltage is defined as the input to output differential at which the output voltage drops 2% below its nominal value measured at 1V differential.
- Note 5: Group pin current is the regulator quiescent current. The total current drawn from the source is the sum of the ground pin current and output load current.
- Note 6: Thermal Regulation is the change in the output voltage at a time T after a change in power dissipation, excluding load or line regulation effects. Specifications are for a 200mA load pulse (3W pulse) for T=10ms.
- Note 7: $V_{ref} \leq V_{out} \leq (V_{in} - 1\text{V})$, $2.3\text{V} \leq V_{in} \leq 26\text{V}$, $100\mu\text{A} \leq I_L \leq 400\text{mA}$, $T_J \leq T_{jmax}$.
- Note 8: $V_{shutdown} \geq 2\text{V}$, $V_{in} \leq 26\text{V}$, $V_{out} = 0\text{V}$.

BLOCK DIAGRAM and TYPICAL APPLICATIONS

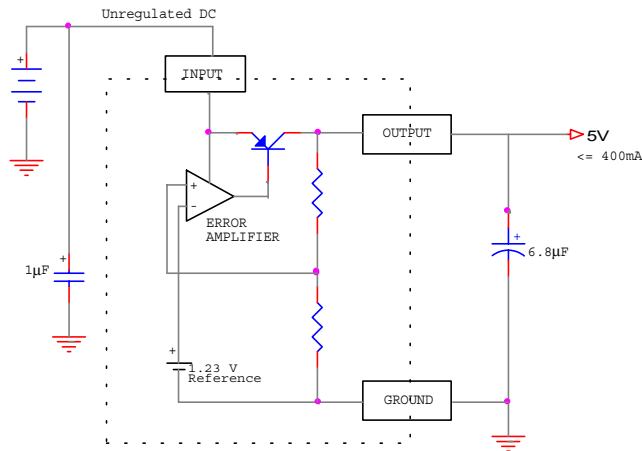


Fig 1 : Fixed Regulator

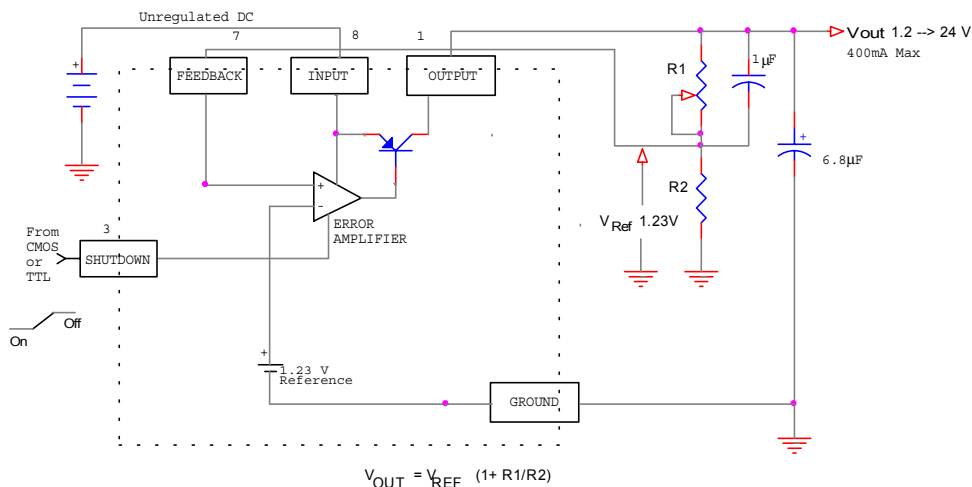


Fig 2 : Adjustable Regulator