LinearDimensions
SEMICONDUCTOR

LND48XX

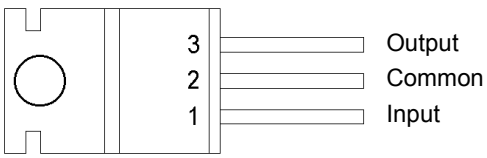
400mA Low Dropout Voltage Regulators

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)	260ºC
Storage Temperature Range	-65ºC to +150ºC
Operating Junction Temperature Range	-55ºC to +150ºC
Input Supply Voltage	-20V to +35V
Continuous total dissipation at 25º C free air temperature	2W
Continuous total dissipation at (or below) 25º 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	-25º C<=T_J <=85ºC Full Operating Temperature	0.985 |Vo| 0.98 |Vo|	Vo	1.015 |Vo| 1.02 |Vo|	V
Output Voltage	1mA<= I_L <=400mA, T_J <=Tjmax	0.975 |Vo|	Vo	1.025 |Vo|	
Input Supply Voltage				26	
Output Voltage Temperature Coefficient	(Note 1)		50	150	ppm/ºC
Line Regulation (Note 2)	13V<=Vin <= 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 I_L =400mA		200 420	400 700	mV
Ground Current (Note 5)	I_L =100µA I_L =150µA I_L =400µA		100 12 30	200 20 50	µA mA mA
Dropout Ground Current(Note 5)	Vin=Vout-0.5V I_L =100µA		110	220	µA
Current Limit	Vout=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 C_L=3.3µF C_L=33µF		500 350 120		µV RMS
Ripple Rejection Ratio	I_O =350mA,f=120Hz, Co=100µF, V_{IN}=Vo+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/ºC
Feedback Pin Bias Current Temperature coefficient			0.1		nA/ºC
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 V_S = 26V		30 450	50 600	µA
Regulator Output Current in Shutdown	(Note 8)				
	5.0V<=Vout<15.0V			10	
	3.3V<=Vout<5.0 V			20	
	2.0V<=Vout<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 150ºC for I_L =5mA. For I_L =100µA and T_J =125ºC, line regulation is guaranteed by design to 0.2%. For LND4815 16V<= Vin <=26V.
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: Vref <=Vout <=(Vin – 1V), 2.3V<=Vin <=26V,100µA <= I_L <=400mA, T_J <= $T_{jmax.}$
Note 8: Vshutdown >=2V, Vin <=26V, Vout =0v.

BLOCK DIAGRAM and TYPICAL APPLICATIONS

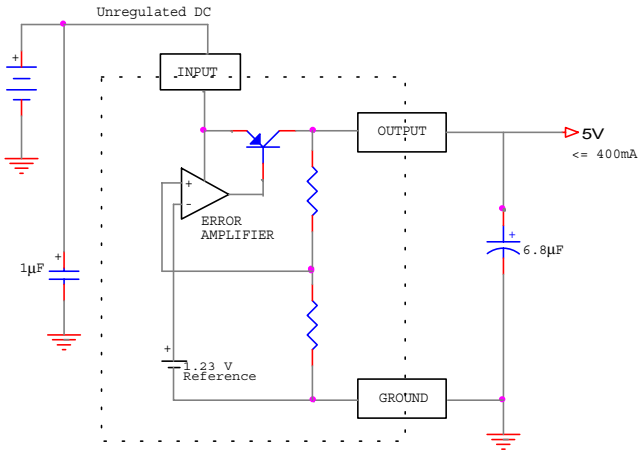
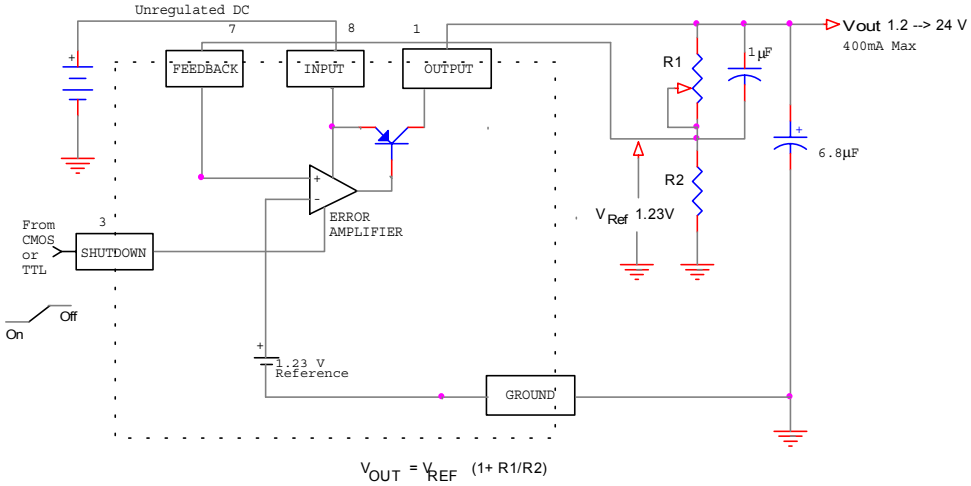


Fig 1 : Fixed Regulator



$V_{OUT} = V_{REF} (1+ R1/R2)$

Fig 2 : Adjustable Regulator