ADVANCE DATASHEET

PHYSIOsensiics™ with nanoPower Technology

LinearDimensions SEMICONDUCTOR

LNDINA333

INA333 Footprint Compatible Instrumentation Amplifiers (INA) use 60% Less Current

GENERAL DESCRIPTION

The LNDINA333 are precision instrumentation amplifiers designed to be footprint compatible with the TI INA333. Although the LNDINA333 are footprint compatible they offer similar performance to the INA333 with a significant reduction in power consumption (20uA typical and 25uA maximum vs. 50uA typical and 80uA maximum for the INA333).

To select a gain, an RG resistor is connected between the RG pins. Gain may be set from 100V/V to 2000V/V. The LNDINA333 offers extremely low offset voltage (25uV) and high CMRR (>100dB).

The LNDINA333 will operate with a supply voltage as low as 2.7V, and offers a noise figure of <35nV/√Hz input referred noise (@100Hz).

The LNDINA333 features 2kV HBM ESD protection. Additionally, the inputs are RFI filtered to reduce EMI susceptibility.

The LNDINA333 is available in a EPAD DFN-8 package which has a 65°C/W thermal resistance.

BLOCK DIAGRAM

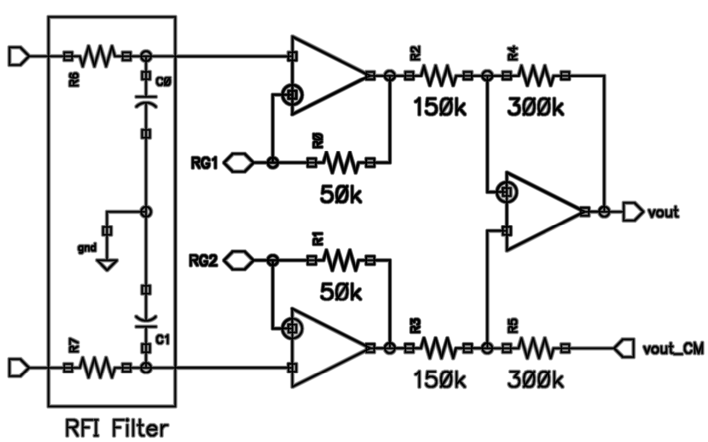


Figure 1 – LNDINA333 Equivalent Block Diagram

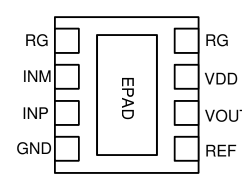
FEATURES

- Instrumentation Amplifier
- Single ended output
- +2.7V to +3.6V input range
- 20µA typ current consumption (INA333,50µA)
- 27µA max current consumption (INA333,80µA)
- <25µV typical input offset voltage
- >100db CMRR
- <35nV/√Hz input referred noise (@100Hz)
- RFI Filtered Inputs
- External resistor Rg gain progrrammable
- Minimum gain setting 100V/V
- Input range: GND-0.1V to VDD-1.25V
- Output range: GND+0.05V to VDD-0.05V
- <100pA typical input bias current
- 5mA short circuit current
- Temperature range: -40°C to +125°C
- Footprint compatible with EPAD DFN-8

APPLICATIONS

- Fitness & health bands and watches
- Medical patches
- Audio equipment
- Portable fitness & wellness products
- Medical devices
- Heart Rate, Glucose, Oxygen Monitors
- Bridge amplifiers
- Pressure sensors
- Weigh scales
- Sensor amplifiers

PACKAGE



Parameter	Test Conditions	Min	Typ	Max	Units
INPUT					
Offset Voltage	$5°C \leq t \leq 45°C$	-150	25	150	μV
vs Temperature	$5°C \leq t \leq 45°C$		**2**		$\mu V/°C$
Long Term Stability			TBD		
Turn-On Time			100		μs
Common-Mode Input Voltage Range		(V-) + 0.1		(V+) - 1.25	V
Common-Mode Rejection					
Gain = 250 to 2000	DC to 60Hz, V_{CM}=(V-)+0.1V to (V+)-1.25V		100		dB
INPUT BIAS CURRENT					
Input Bias Current				$\pm$100	pA
vs Temperature				**TBD**	**pA**
INPUT VOLTAGE NOISE					
Input Voltage Noise					
f = 10Hz			60		nV/$\sqrt{Hz}$
f = 100Hz			35		nV/$\sqrt{Hz}$
f = 1kHz			30		nV/$\sqrt{Hz}$
f = 0.1Hz to 150Hz			4.8		μV_{pp}
GAIN					
Gain Equation			$2 \cdot (1 + 100k\Omega/R_G)$		
Range of Gain		250		2000	V/V
OUTPUT	$V_S = 2.8V$, $R_L = 10k\Omega$				
Output Voltage Swing From Rail				50	mV
Capacitive Load Drive			100		pF
Short Circuit Current			5		mA
FREQUENCY RESPONSE					
Bandwidth -3dB					
G = 250			1400		Hz
G = 500			700		Hz
G = 1000			350		Hz
G = 2000			175		Hz
POWER SUPPLY					
Voltage Range		2.7		3.6	V
Quiescent Current	$V_S = 2.8V$, V_{CM}=(V-)+0.1V to (V+)-1V		20	25	μA
vs Temperature				**27**	**μA**
TEMPERATURE RANGE					
Specified Temperature Range		0		70	$°C$
Operating Temperature Range		-40		125	$°C$
Thermal Resistance			65		$°C/W$