

MiniSense 100 Analog PCB

Evaluation Circuit for Vibration Sensor
 Low Power – Battery Powered
 LED for Trigger
 High Sensitivity
 Analog and Digital Signal Access
 Points



The LDTC MiniSense 100 Analog PCB provides a simple way to evaluate the LDTC MiniSense 100. The unit consists of LDTC MiniSense 100, a low-power operation amplifier, comparator, and DC/DC converter, and passive components used in signal conditioning. The sensor and circuit are assembled on a double-sided PCB with test points, ON/OFF switch, and 0.100" plated through holes for easy user interface. The PCB has adjustable gain and demonstrates the basic capabilities of LDTC MiniSense 100 vibration sensor.

FEATURES

- Signal Conditioned Vibration Sensor
- High Pass Filter @ 1.3Hz
- Low Pass Filter @ 177Hz
- On Board 3.3 Battery or User Power Supply
- Both Analog and Digital Output

APPLICATIONS

- Wake-up Sensor
- Drop Detection Sensor
- Flow Sensor
- Activity Sensor
- Alarm Trigger

specifications

CHARACTERISTIC (T=25(C))	SYMBOL	MIN	TYP	MAX	UNITS
Lower Frequency Limit (-3dB Point)	f_{L3dB}	-	1.3	-	Hz
High Frequency Limit (-3dB Point)	f_{U3dB}	-	117	-	Hz
External Supply Voltage	+V	0.9	3.3	5.5	VDC
Supply Current	I _{supply}	-	2.8	-	mA

pin descriptions

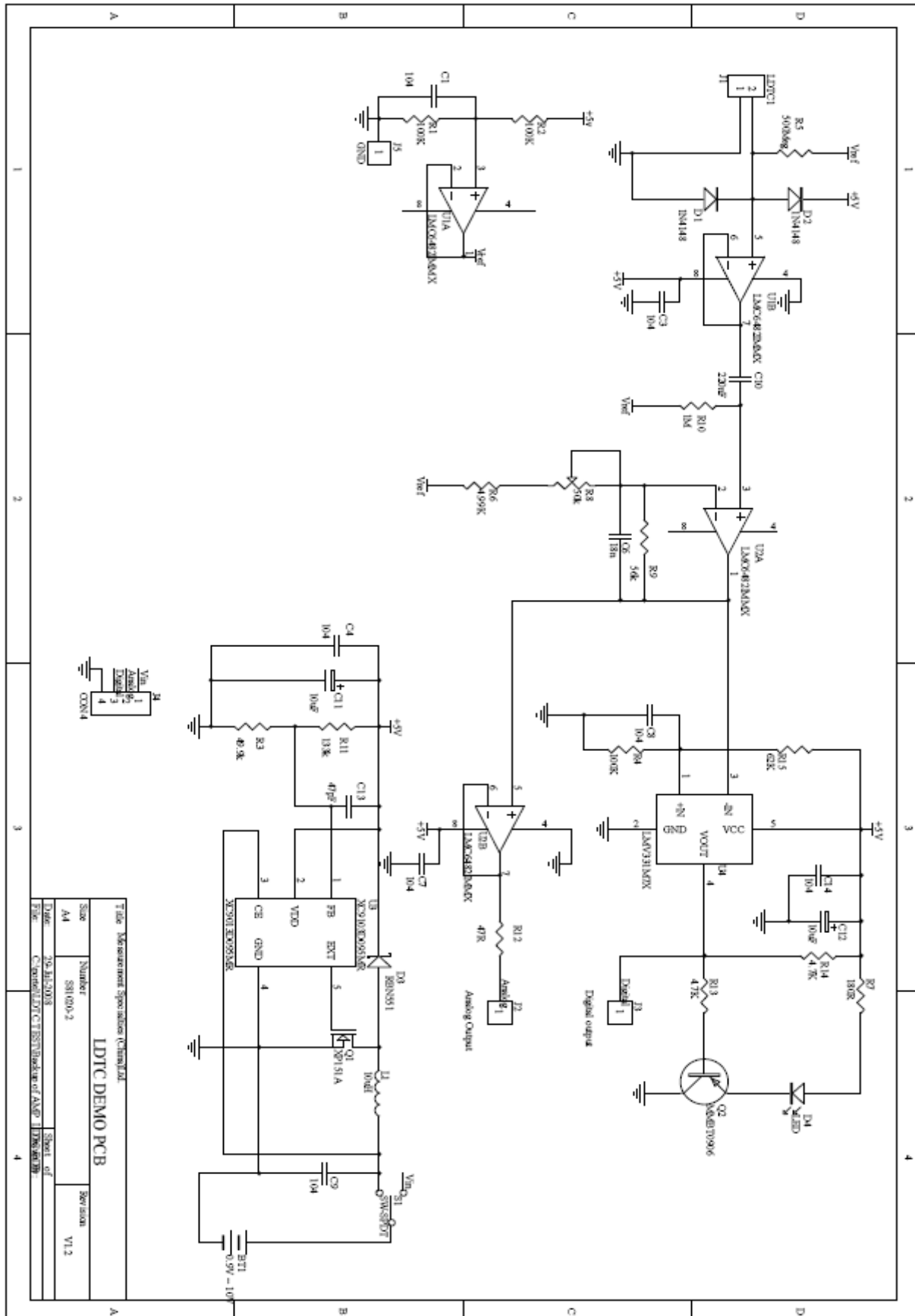
PIN NUMBER	NAME	DESCRIPTION
1	VDD	Connect to Power Supply
2	A	Analog Signal output
3	D	Digital Signal output
4	GND	Connect to GND

Note: when switch set to "OFF", PCB uses external power if applied to (+) & (-) input pins

environmental characteristics

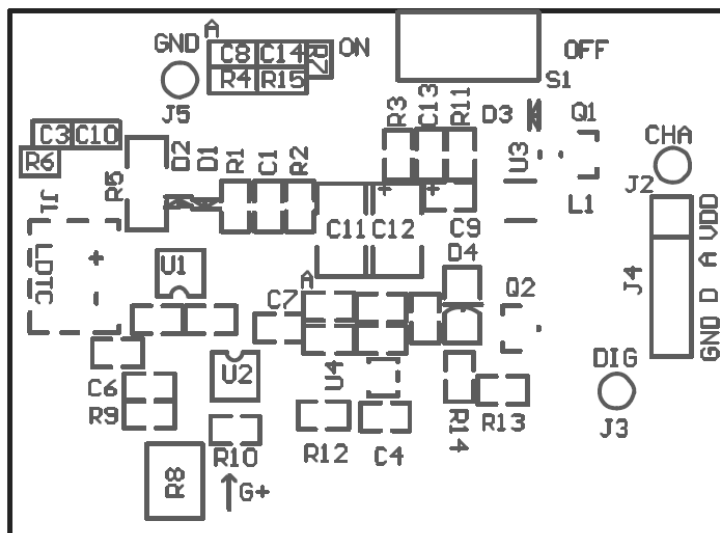
CHARACTERISTICS (T=25(C))	SYMBOL	MIN	TYP	MAX	UNITS
Operating Temperature	TOP	-20	-	+85	°C
Storage Temperature	TS	-40	-	+105	°C
Relative Humidity	RH	0	-	90	%R.H

electrical schematic



Title: Measurement Specifications Channel 1		LDTC DEMO PCB	
Size: A4	Number: SH 03-2	Revision: VI.2	Sheet of: 1
Date: 20.11.2018	Author: C. G. ...		Drawn: ...
File: C:\projects\LDTC\REV1\demopcb...			

electrical PCB reference

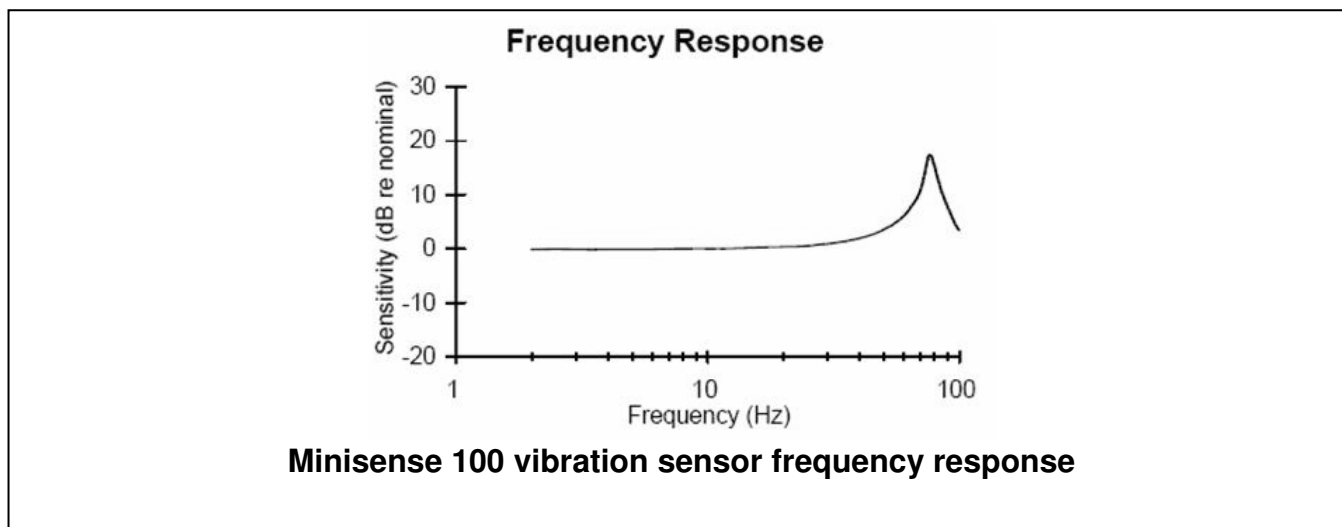


electrical PCB description

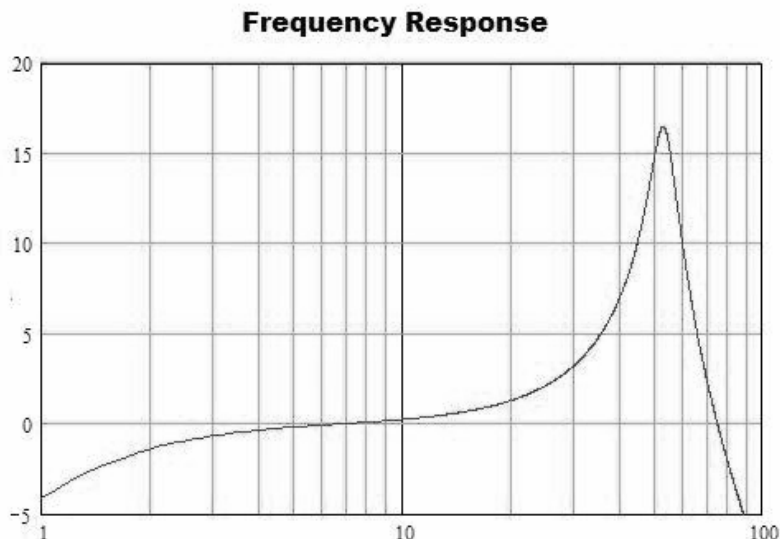
The impedance matching resistor, R5, in parallel with the 240pF sensor capacitance, establishes the high pass input filter at approximately 1.3Hz ($f=1/2\pi RC$). After impedance buffering the LDTC signal is DC coupled to a gain stage through a 0.7Hz high pass filter formed by C10 and R10. The amplifier gain is set by R9, R6, and the R8 potentiometer in the OP-amp's feedback loop: $Gain=1+ [R9/(R8+R6)]$ with a max gain of 20dB, min gain of 6dB. C6 in parallel with R9 in the feedback loop form a low pass filter with a corner frequency of 177Hz.

After signal conditioning the analog voltage is buffered for output and also fed into a comparator. R15 & R4 set the threshold voltage. If the amplified signal exceeds the threshold voltage, the comparator output will be pulled low through a 4.7K resistor and the PNP transistor will turn on the LED. The reference voltage, VREF, is 1.65V, or half of the internal 3.3V rail. The on board 3.3V battery and external power are converted to a 5V supply using a DC-DC converter.

frequency response



MiniSense 100 vibration sensor Analog PCB Acceleration Response



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ordering information

Description

Part Number

MiniSense 100 Analog PCB

1007215

North America

Measurement Specialties, Inc.
1000 Lucas Way
Hampton, VA 23666
Sales and Customer Service
Tel: +1-800-745-8008 or
+1-757-766-1500
Fax: +1-757-766-4297
Technical Support
Email: piezo@meas-spec.com

Europe

MEAS Deutschland GmbH
Hauert 13
44227 Dortmund
Germany
Sales and Customer Service
Tel: +49 (0)231 9740 21
Technical Support
Tel: +49 (0)6074 862822
Email: piezoeurope@meas-spec.com

Asia

Measurement Specialties (China), Ltd.
No. 26 Langshan Road
ShenZhen High-Tech Park (North)
Nanshan District
ShenZhen, China 518107
Sales and Customer Service
Tel: +86 755 3330 5088
Technical Support
Email: piezo@meas-spec.com