

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 LDTIC MiniSense 100 Analog PCB provides a simple way to evaluate the LDTIC MiniSense 100. The unit consists of LDTIC 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 LDTIC 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

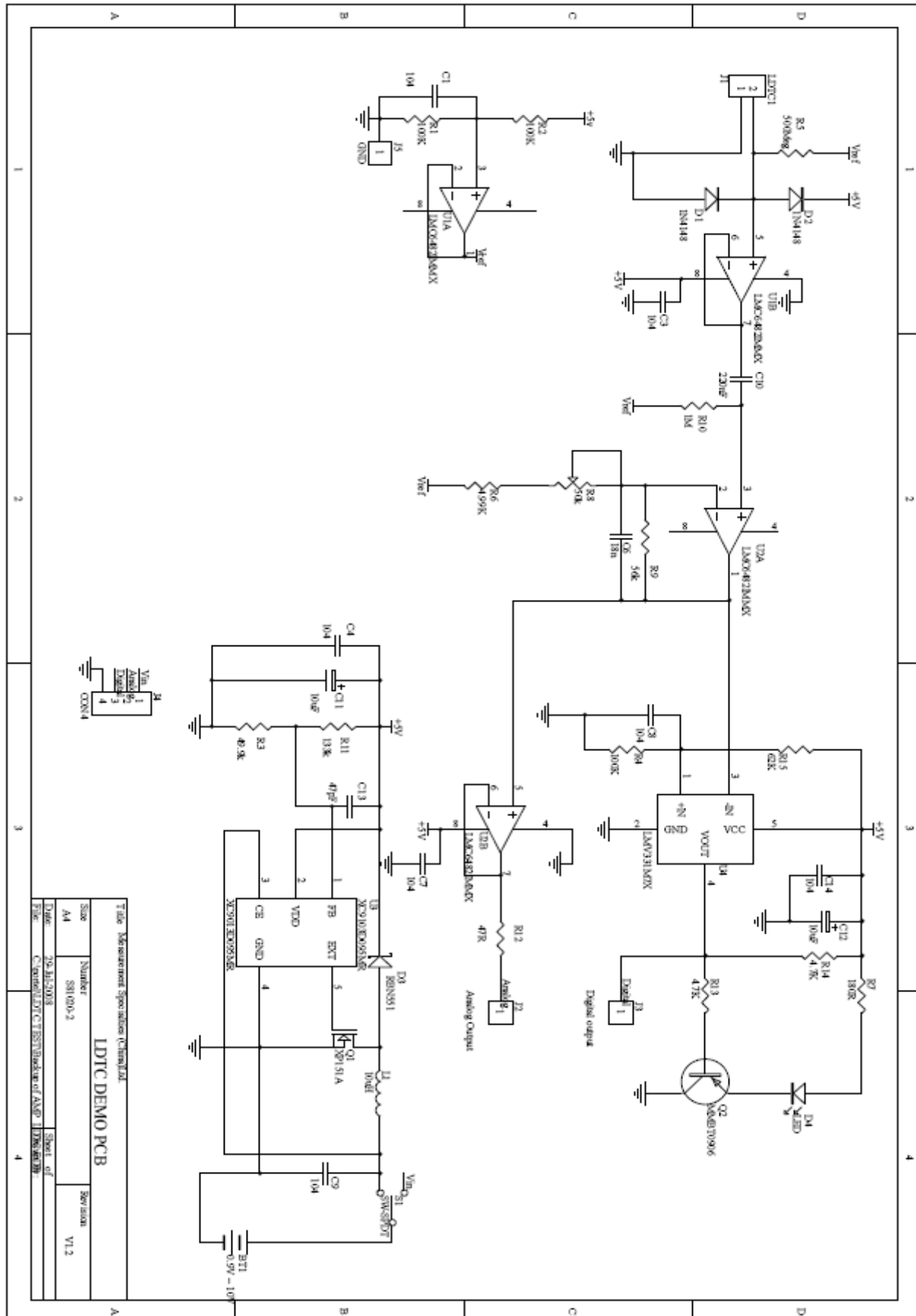
PIN NUMBER	NAME	DESCRIPTION
1	VDD	Connect to Power Supply
2	A	Analog Signal output
3	D	Digital Signal output
4	GND	Connect to GND

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

environmental characteristics

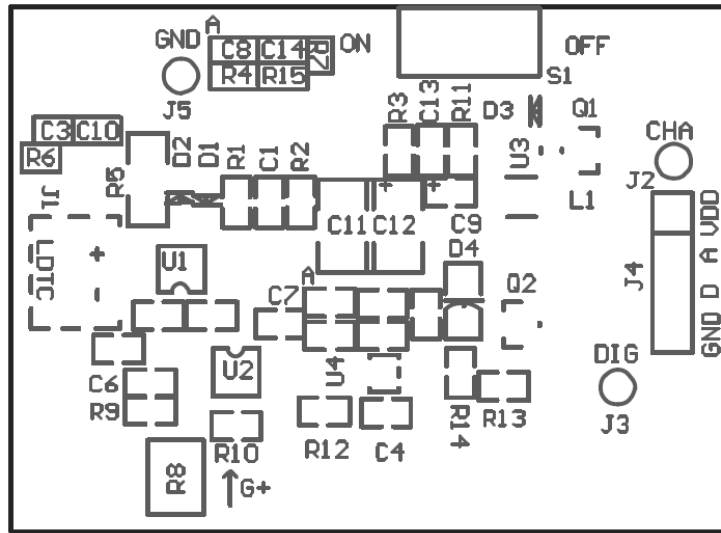
CHARACTERISTICS (T=25(C))	SYMBOL	MIN	TYP	MAX	UNITS
Operating Temperature	TOP	-20	-	+85	°c
Storage Temperature	TS	-40	-	+105	°c
Relative Humidity	RH	0	-	90	%R.H

electrical schematic



Title: Measurement Specifications Channel 1		LDTC DEMO PCB	
Size	Number	Revision	
A4	SH 03-2	Version	V1.2
Date:	20.11.2018	Sheet of	
File:	C:\projects\LDTC\REV1\demopcb	Sheet of	

electrical PCB reference

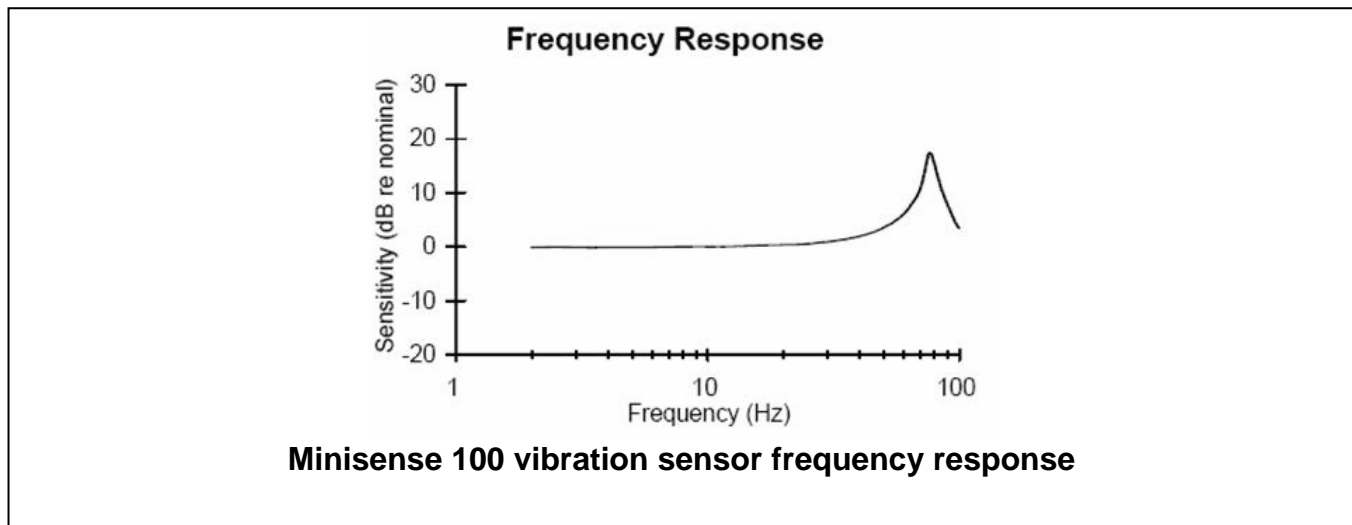


electrical PCB description

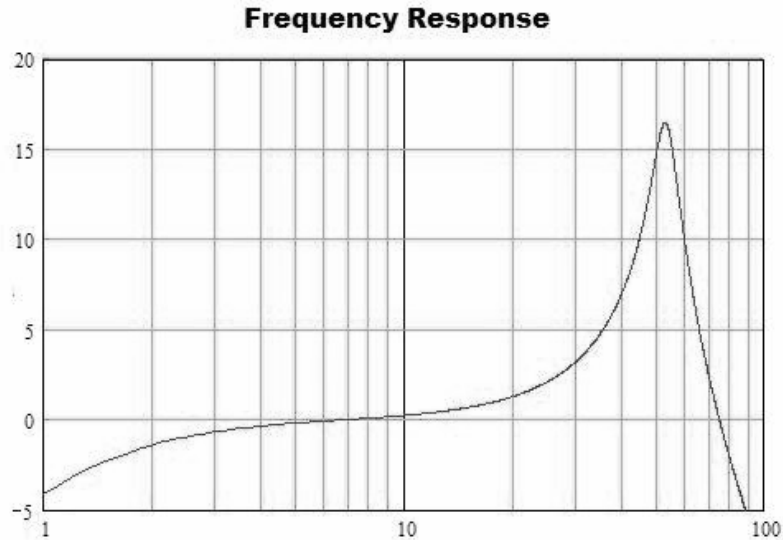
The impedance matching resistor, R5, in parallel with the 240pF sensor capacitance, establishes the high pass input filter at approximately 1.3Hz ($f=1/2\pi RC$). After impedance buffering the LDTC signal is DC coupled to a gain stage through a 0.7Hz high pass filter formed by C10 and R10. The amplifier 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



The information in this sheet has been carefully reviewed and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Furthermore, this information does not convey to the purchaser of such devices any license under the patent rights to the manufacturer. Measurement Specialties, Inc. reserves the right to make changes without further notice to any product herein. Measurement Specialties, Inc. makes no warranty, representation or guarantee regarding the suitability of its product for any particular purpose, nor does Measurement Specialties, Inc. assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Typical parameters can and do vary in different applications. All operating parameters must be validated for each customer application by customer's technical experts. Measurement Specialties, Inc. does not convey any license under its patent rights nor the rights of others.

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