

Piezo Film Vibra Tab Mass (#605-00004)

General Description

This Piezo Film Vibra Tab Sensor is the LDT0 Solid State Switch/Vibration Sensor manufactured by Measurement Specialties. The LDT0 is a piezoelectric film device capable of acting as switch or vibration sensor. Characteristics of this device allow even more possibilities for use.

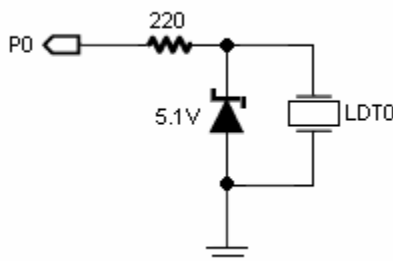
Features

- Wide range of applications
- Thin polymer film laminate with 2 crimped contacts
- Easy interface to BASIC Stamp[®] and SX Microcontrollers
- Can be read using PULSIN, COUNT or by reading input pin level

Application Ideas

- Alarm System Sensor
- Product Damage/Shock Detector
- Accelerometer
- Tap Switch

Quick Start Circuit



Connecting and Testing

The circuit above allows you to start using the LDT0 as a switch or shock detector. You can test for functionality by checking the pin for a HIGH signal on the connected I/O pin when the sensor is tapped, flicked or snapped.

Sensitivity

As a vibration sensor the LDT0 has a sensitivity of 50 mV/g. As mass is added to the device, sensitivity decreases, as does its resonant frequency. Please see the manufacturer's datasheet for further details about how adding mass to the device affects these characteristics.

Resources and Downloads

Check out the Piezo Film Vibra Tab Mass product page for the manufacturer datasheet and example source code:

http://www.parallax.com/detail.asp?product_id=605-00004

Please see the manufacturer's website to obtain a Tech Manual which describes more example applications, configurations and information on piezoelectric film devices.

<http://www.msiusa.com>

Device Information

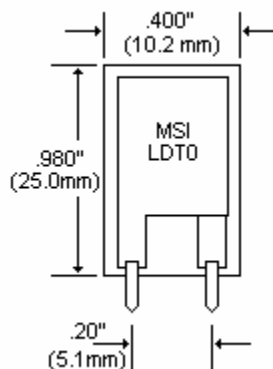
Theory of Operation

The LDT0 is a flexible film piezoelectric device laminated to a polymer substrate and includes two crimped contacts for mounting and electrical connections. As the device is bent or displaced from its neutral axis, a very high strain is generated by the piezo-polymer and high voltage is generated.

Precautions

- This device can generate voltages of ~70 volts. Always be sure to clamp, buffer or filter the signal going to the I/O pin to keep it within acceptable voltage/current limits.

Module Dimensions



Source Code

BASIC Stamp 2 Program

The example below provides a very simple method of reading the device as a vibration sensor or switch. This example will run on any BASIC Stamp 2 model, by updating the \$STAMP directive. It simply displays "Triggered!" on the DEBUG screen when the device is tapped, flicked or snapped. You could easily modify the code to branch to a subroutine on activation instead.

```
' File..... PiezoFilmTrigger.bs2
' Purpose... Detect Pulse On I/O
' Author.... Parallax Tech Support
' E-mail.... support@parallax.com
' {$STAMP BS2}
' {$PBASIC 2.5}
' =====
' -----[ Program Description ]-----
' This program demonstrates using the LDT0 as a switch/trigger
' -----[ I/O Definitions ]-----
TriggerPin      PIN      0           ' Input Pin From LDT0
' -----[ Program Code ]-----
Main:
  IF TriggerPin = 0 THEN Main      ' Check For Trigger
  DEBUG "Triggered!", CR          ' Display Result To DEBUG Window
  GOTO Main
```