

## Piezo Film Vibra Tab (#605-00004)

The Piezo Film Vibra Tab sensor consists of a flexible piezoelectric film laminated to a polymer substrate. When the sensor is bent or displaced from its neutral axis, the strain within the piezo film generates voltage, up to 70 V voltages. A microcontroller can detect this voltage, making the Vibra Tab useful as an inexpensive switch or vibration sensor.

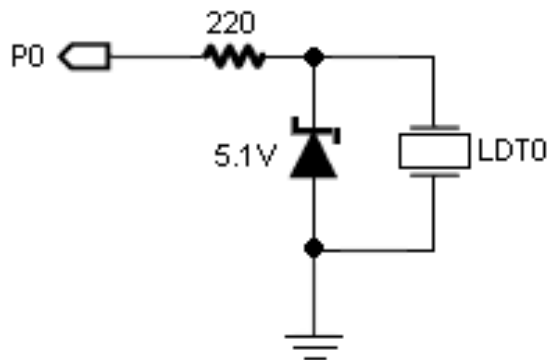
### Features

- Two crimped contacts for mounting and electrical connections
- Sensitivity of 50 mV/g
- Generates voltage when vibrated, flicked, or bent, from 0 to 70 V
- Attach a small mass to decrease sensitivity and resonant frequency

### Application Ideas

- Alarm system sensor
- Product damage/shock detector
- Acceleration sensor
- Tap switch

### Example Circuit (With Clamping Diode)



The circuit above allows you to start using the Vibra Tab as a switch or shock detector with a microcontroller. The 5.1 V Zener diode clamps the sensor's output voltage to protect microcontrollers whose I/O pins do not have internal clamping diodes. Use this circuit with the BASIC Stamp 2 example program, below. It tests the sensor for functionality by checking for a HIGH signal when the sensor is tapped, flicked or snapped. The BASIC Stamp microcontroller, SX microcontroller and Propeller chip have internal clamping diodes and do not require the 5.1 V Zener diode in the circuit.

**CAUTION!** This device can generate voltages of ~70 volts if bent to 90°. If your microcontroller does not have internal clamping/protection diodes on the I/O pins, be sure to clamp, buffer or filter the sensor's output signal to keep it within acceptable voltage/current limits for your microcontroller's I/O pin. See the manufacturer's datasheet for voltage output vs. tip deflection information.

## Resources and Downloads

Check out the Piezo Film Vibra Tab product page for the manufacturer datasheet and example source code; go to [www.parallax.com](http://www.parallax.com) and enter "605-00004" in the search field.

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

<http://www.msiusa.com>

## BASIC Stamp 2 Example 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 Terminal 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 ]-----
DO
  IF TriggerPin = 1 THEN DEBUG "Triggered!", CR
  PAUSE 50
LOOP
```

## Revision History

Version 1.1: revised product name to remove "mass." Updated product description and features, and explanation of the example circuit.