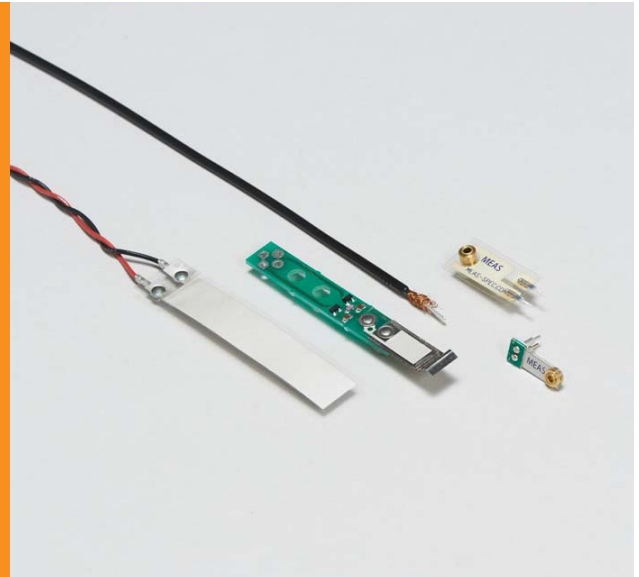


# PIEZO FILM SENSORS



## PIEZO FILM



### DT1, SDT1

<b>Package</b>	Unshielded element with twisted pair or shielded element with shielded cable
<b>Type</b>	Flexible film, adhesive mount
<b>Range</b>	15 mV/ $\mu\epsilon$ up to 1% strain
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>• Thin, flexible, robust</li> <li>• Withstands &gt;2% strain</li> <li>• Ultra-low power (Self generating)</li> </ul>
<b>Accuracy</b>	$\pm 20\%$ (Typical)
<b>Operating Temp.</b>	-40°C to 70°C (Higher available custom)
<b>Dimensions (mm)</b>	Application dependent
<b>Typical Applications</b>	Dynamic strain gage, contact microphone, acoustic pickup



### Piezo Cable

<b>Package</b>	Shielded coaxial 20 gage piezo cable
<b>Type</b>	Polymer jacketing, armored jacketing
<b>Range</b>	$\mu\text{Pa}$ sensitivity
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>• Continuous lengths of up to 1 km</li> <li>• Shielded construction</li> </ul>
<b>Accuracy</b>	$\pm 20\%$ (Typical)
<b>Operating Temp.</b>	-40°C to 85°C
<b>Dimensions (mm)</b>	$\varnothing 3$ (Continuous lengths)
<b>Typical Applications</b>	Perimeter and fence security, geophone, impact sensors, intrusion detection, seat occupancy (e.g. airbag), patient bed vital signs monitor



### CM-01

<b>Package</b>	Metallized plastic housing
<b>Type</b>	Contact microphone
<b>Range</b>	40 V/mm; 8 Hz to 2.2 kHz
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>• Low noise</li> <li>• Shielded construction</li> <li>• High sensitivity</li> </ul>
<b>Accuracy</b>	—
<b>Operating Temp.</b>	5°C to 60°C
<b>Dimensions (mm)</b>	$\varnothing 18 \times 11$ high
<b>Typical Applications</b>	Electronic stethoscope, contact microphone, vibration



### FLDT1

<b>Package</b>	Unshielded film element with screen printed leads
<b>Type</b>	Flexible film, adhesive mount
<b>Range</b>	15 mV/ $\mu\epsilon$ , up to 1% strain
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>• Thin, flexible</li> <li>• Leads screen printed on film</li> <li>• Connects to standard connector</li> </ul>
<b>Accuracy</b>	$\pm 20\%$ (Typical)
<b>Operating Temp.</b>	-40°C to 70°C; (Higher available custom)
<b>Dimensions (mm)</b>	12 x 30 active; (Custom available)
<b>Typical Applications</b>	Event timing, dynamic strain, motion detection

## PIEZO FILM



### Sleep Monitor Strip

<b>Package</b>	Unshielded element with crimps
<b>Type</b>	Flexible film, adhesive mount
<b>Range</b>	15 mV/ $\mu\epsilon$ up to 1% strain
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Thin, flexible, robust</li> <li>Withstands &gt;2% strain</li> <li>Ultra-low power (Self generating)</li> </ul>
<b>Accuracy</b>	$\pm 20\%$ (Typical)
<b>Operating Temp.</b>	-40°C to 70°C (Higher available custom)
<b>Dimensions (mm)</b>	28 $\mu\text{m}$ PVDF; 8mm x 800mm
<b>Typical Applications</b>	Respiration and heart beat monitoring for mattress or seat



### BL Traffic Sensor

<b>Center Core:</b>	16 gage copper wire
<b>Piezoelectric Material:</b>	Piezoelectric film cable
<b>Outer Sheath:</b>	0.016" thick brass
<b>Type</b>	Spiral wrapped PVDF piezo film cable
<b>Range</b>	15 mV/ $\mu\epsilon$ up to 1% strain
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Flexible, durable, available in many lengths</li> <li>Withstands &gt;2% strain</li> <li>Ultra-low power (Self generating)</li> </ul>
<b>Accuracy</b>	$\pm 20\%$ (Typical)
<b>Operating Temp.</b>	-40°C to 70°C (Higher available custom)
<b>Dimensions (mm)</b>	0.260" wide x 0.063" thick; 0.005"
<b>Typical Applications</b>	Traffic counting, classifying, toll booths, speed detection, red light cameras



### Laboratory Amplifier

<b>Package</b>	Bench top
<b>Type</b>	Piezo film lab amp
<b>Range</b>	0.1 Hz to 100 kHz
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Voltage or charge mode settings</li> <li>Multi-pole high-pass and low-pass filters</li> <li>Adjustable gain</li> </ul>
<b>Accuracy</b>	Application dependent
<b>Operating Temp.</b>	0°C to 40°C
<b>Dimensions (mm)</b>	150 x 100 x 100
<b>Typical Applications</b>	Low frequency dynamic strain, pyroelectric signals, machine vibration, piezo cable and traffic sensor interface



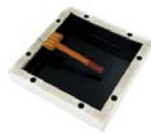
### 80 KHz Transducers

<b>Package</b>	Pin mounted
<b>Type</b>	Air ultrasound transducer
<b>Range</b>	80 kHz
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Small size</li> <li>Low mechanical Q</li> <li>Shielded package</li> </ul>
<b>Accuracy</b>	Application dependent
<b>Operating Temp.</b>	-20°C to 80°C
<b>Dimensions (mm)</b>	$\varnothing 6 \times 9$
<b>Typical Applications</b>	Air ranging, ultrasonic mouse, digitizers



### NDT-1

<b>Package</b>	Adhesive mounted
<b>Type</b>	High frequency ultrasound transducer
<b>Range</b>	3 MHz
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Flexible</li> <li>High bandwidth, low Q</li> <li>Low impedance</li> </ul>
<b>Accuracy</b>	Application dependent
<b>Operating Temp.</b>	-20°C to 60°C
<b>Dimensions (mm)</b>	12 x 30
<b>Typical Applications</b>	Thickness measurement, speed of sound measurement, pulse/echo NDT



### Tamper Box

<b>Package</b>	Flat film or box mounted
<b>Type</b>	Tamper detection sensor
<b>Range</b>	Application dependent
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Low power</li> <li>Custom shapes and sizes</li> <li>High security</li> </ul>
<b>Accuracy</b>	Application dependent
<b>Operating Temp.</b>	-40°C to 85°C
<b>Dimensions (mm)</b>	Application dependent
<b>Typical Applications</b>	Encryption modules, POS card readers, PIN entry devices



### ACH-01

<b>Package</b>	Ceramic base, plastic cover, shielded cable
<b>Type</b>	Adhesive mount
<b>Range</b>	$\pm 250$ g (Typical)
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Extremely high bandwidth</li> <li>Low cost</li> <li>Ultra-low power</li> </ul>
<b>Accuracy</b>	$\pm 20\%$ (Typical)
<b>Operating Temp.</b>	-40°C to 85°C
<b>Dimensions (mm)</b>	18.80 x 13.21 x 6.10
<b>Typical Applications</b>	Vibration sensing, gear box and high speed monitoring, high speed bearings and centrifuges, speaker motional feedback



### LDTC Family

<b>Package</b>	Piezo film elements with or without mass
<b>Type</b>	Cantilever beam with vertical or horizontal pins
<b>Range</b>	$\pm 10$ g (Typical)
<b>Unique Features</b>	<ul style="list-style-type: none"> <li>Very low cost</li> <li>High sensitivity (1 V/g)</li> <li>Ultra-low power (Self generating)</li> </ul>
<b>Accuracy</b>	$\pm 20\%$ (Typical)
<b>Operating Temp.</b>	-40°C to 70°C
<b>Dimensions (mm)</b>	19.05 x 6.35 x 6.35
<b>Typical Applications</b>	Wake-up switch, load imbalance, antitheft devices, impact sensing, vital signs monitoring