

Piezo Polymer Coax Cable

Coaxial Design Piezo Sensor
Shielded Constuction
Ideal for Linear Application
Rugged
Water Resistant
Piezo Film Technology

Piezo Cable is another form of Piezo polymer sensors. Designed as a coax cable, the Piezo polymer is the “dielectric” between the center core and the outer braid. When the cable is compressed or stretched, a charge or voltage is generated proportional to the stress.

Piezo cable has a number of advantages in certain applications. Due to its coaxial design, the cable is self-shielded, allowing its use in a high EMI environment. The Piezo cable can be spliced to passive coax, using standard coax splice techniques. It is extremely rugged and will stand up to heavy loads as with the truck axle counting. Its linear format makes it ideal for monitoring large areas.

Two versions of the Piezo cable are offered, copolymer and spiral. With the copolymer version, a special version of the piezo material is extruded directly onto the cable and then polarized. With the spiral wrap, the PVDF film is double helically would around the inner conductor. The copolymer is a much more expensive raw material and is available only on a limited basis.

Please note: It should not be assumed that the copolymer cable will be available on a long term basis due to restrictions on the availability of the raw copolymer resin.



FEATURES

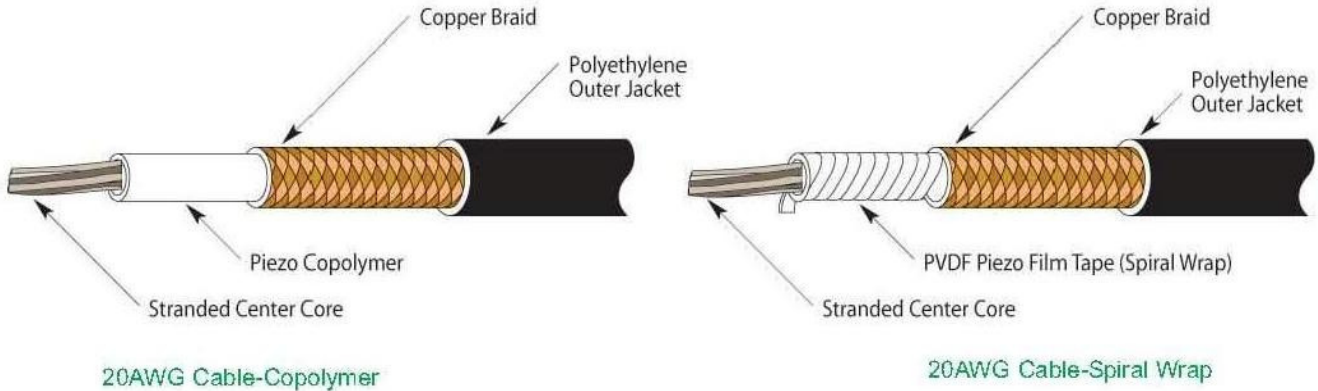
- Passive, Long Length Sensor
- Very Tough, Water Resistant and Flexible
- Temperature Stability to 85 °C
- Self-Shielded Coaxial Construction
- High Voltage Response
- Low Impedance Per Unit Length
- Field Repairable
- Simplified Interconnections

APPLICATIONS

- Perimeter Intrusion Detection
- Safety and Security Fencing
- Door Edge/Vehicle Bumper Switch
- Cable Tampering Detector
- Traffic Classification/Counting
- Weather Sensing/Rain/Hail
- Structural NDT/Strain/Vibration
- Underwater Acoustics
- Patient Mattress Monitor
- Sports Scoring/Foul Line

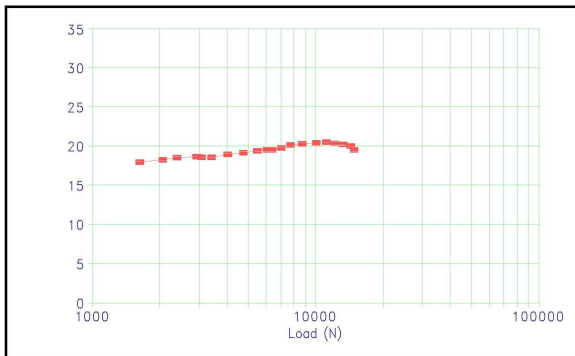
Piezo Film Solid State Switches

construction

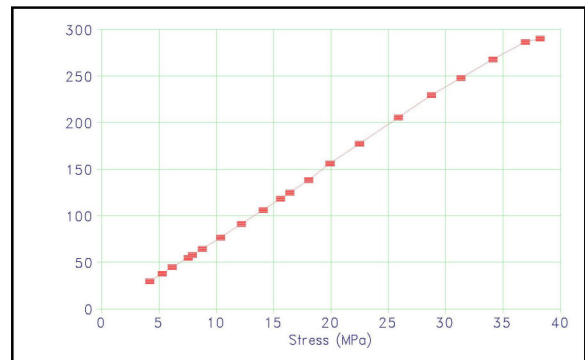


specification

Typical Properties	Units	Spiral Cable	Copolymer Cable
Outside Diameter	mm	2.69	2.72
Capacitance @ 1 kHz	pF/m	950	655
Weight	Kg/km	14.5	15.5
Resistance (Shield)	DCR/km	47	47
Tangent Delta	@ 1 kHz	0.016	0.017
Hydrostatic Piezo Coefficient	pC/N	20	15
Hydrostatic Piezo Coefficient	Vm/N		150×10^{-3}
Resistance (Center)	DCR/km	31	31

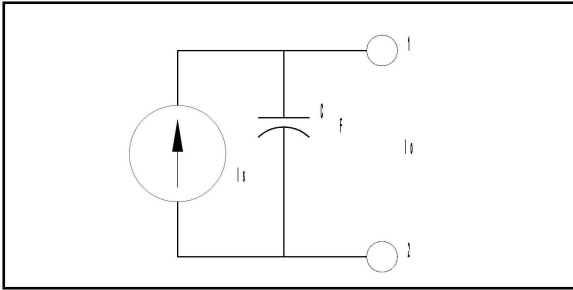


Typical Sensitivity vs. Load

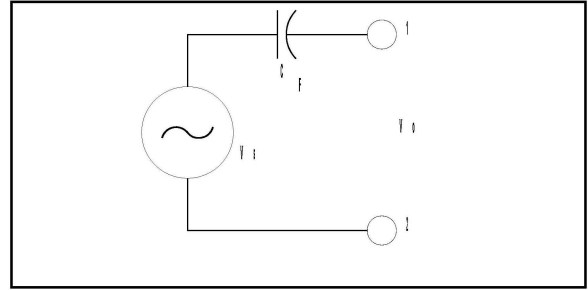


Typical Peak Charge vs. Stress

equivalent circuit



Current Source

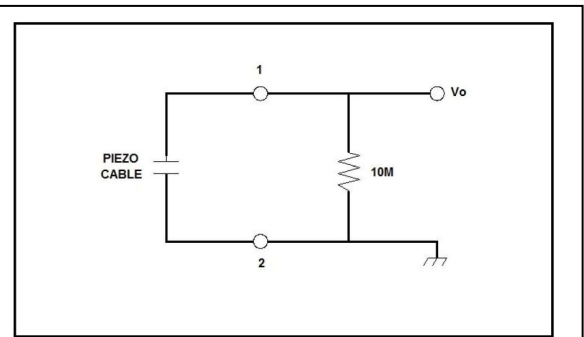


Voltage Source

typical interface circuits

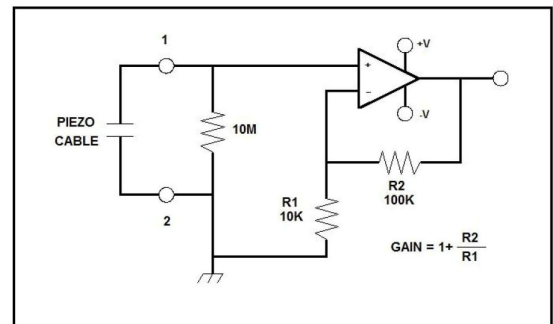
Example 1:

- Taxiway Sensor (100 m cable)
- Large Impact Force (Aircraft or Truck)
- Low Frequency Event (0.1...10 Hz)



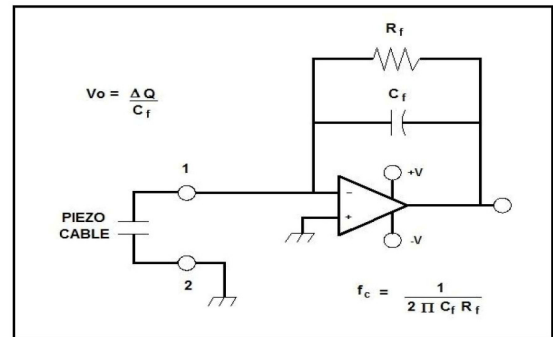
Example 2:

- Fence Sensor (1 km cable)
- Small Vibration Signals (intruder)
- Higher Frequency (10 Hz...10 kHz)



Example 3:

- Step Switch Mat (1 m cable)
- Foot Pressure
- Low Frequency (0.1 Hz...100 Hz)



Piezo Film Solid State Switches

Ordering information

Description	Dimensions		Capacitance	Part Number
	Center Core INCHES (mm)	Outside Dia. INCHES (mm)	pF/ft (pF/m)	
20 AWG Piezo Cable (copolymer)	.040 (1.02)	.107 (2.72)	200 (655)	1005646-1
20 AWG Piezo Cable (spiral)	.040 (1.02)	.105 (2.67)	279 (980)	1005801-1

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