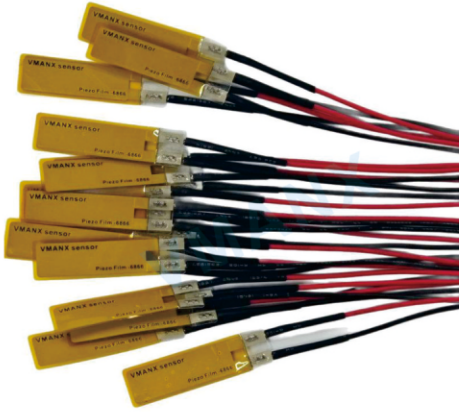


PVDF Piezoelectric Film Sensor



1. Product Overview

- The VMANX PVDF Piezoelectric Film Sensor utilizes high-purity Polyvinylidene Fluoride (PVDF) film.
- A stable beta-phase crystalline structure is formed through multi-axial stretching and high-voltage polarization processes.
- Combined with precision screen-printed electrode technology and multi-layer composite encapsulation.
- Delivers high sensitivity and broad frequency response for electromechanical signal conversion.
- Suitable for dynamic force detection, vibration monitoring, acoustic sensing, and other applications.



2. Key Characteristics

Parameter	VMANX VV-PVDF6866	Unit	Test Condition
Piezoelectric Strain Constant (d_{33})	20-25	pC/N	25°C, 1Hz
Piezoelectric Voltage Constant (g_{33})	≥200	mV·m/N	25°C, 100Hz
Frequency Response Range	0.1 Hz - 100MHz	-	±3dB
Dielectric Constant (ϵ/ϵ_0)	11-13	-	1kHz
Capacitance Density	350-400	pF/cm ²	44µm thick, 1kHz
Acoustic Impedance	2.5-3.0	MRayl	Water Load
Operating Temperature	-20°C ~ +85°C	-	Long-term stability
Pyroelectric Coefficient	≤35	µC/(m ² ·K)	ΔT=1K
Breakdown Voltage	≥1800	V (DC)	25°C, 44µm film thickness
Linearity Error	±1%	F.S.	Dynamic Range >120dB

3. Product Structure

3.1 Core Layer: 28/44/110µm PVDF film (customizable)	Equivalent circuit diagram
▶ High-voltage polarization treatment, Beta-phase content ≥80%	
3.2 Electrode Layer	<p>Reference diagram of charge amplification circuit</p> <p>Reference diagram of voltage amplification circuit</p>
▶ Dual-side silver paste printed electrodes (5-10µm thick)	
▶ Edge non-metalized treatment (Prevents short circuit)	
3.3 Encapsulation Layer	
▶ Top layer : 12µm polyester protective film	
▶ Bottom layer : 50µm flexible adhesive layer	
▶ Optional EMI shielding layer (Copper mesh embedding, Magnetron sputtering)	

4. Key Performance Curves

Frequency Response Characteristics

- ▶ -3dB cutoff frequency ≤0.5Hz @ 10MΩ load resistor

Temperature Stability

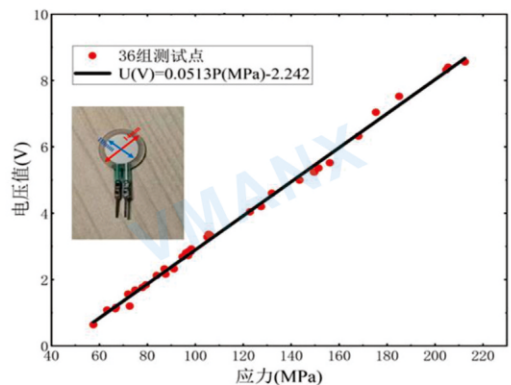
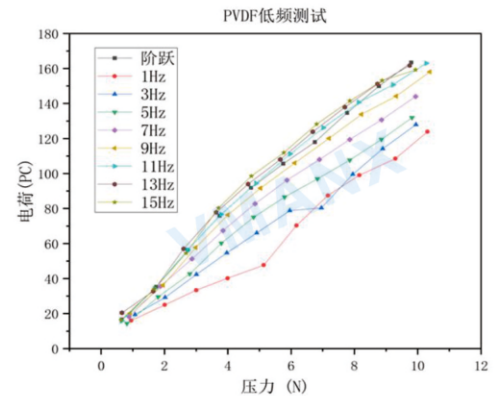
- ▶ Variation rate of d_{33} < ±5% @ -40°C~85°C

5. Typical Application Scenarios		
Field	Application Solution	Advantage
Industrial Monitoring	Bearing wear detection, yarn break sensing	Wide frequency response (0.1-10kHz)
Intelligent Transportation	Piezoelectric cable vehicle classification systems	Linearity $\pm 0.5\%$, IP68 protection
Medical Devices	Ultrasonic imaging probes; Heart rate, respiration monitoring	Flexible, patchable, lightweight, high sensitivity
Consumer Electronics	Instrument pickups, wearable haptic feedback	Thickness <0.2mm, bend radius 5mm

6. Electrical Interface Design Guide
Recommended Circuit Configuration
▶ Recommended input impedance: $\geq 100M\Omega$ (charge amplifier)
▶ Cable type : Double-shielded coaxial cable (capacitance $\leq 50pF/m$)
Anti-Interference Design
▶ Differential output used to suppress pyroelectric noise
▶ Offset electrode layout prevents high-voltage breakdown

7. Quality & Certification
▶ Reliability Standards
▶ ▶ Mechanical fatigue life : $> 10^9$ cycles @10% strain
▶ ▶ Damp Heat Test : 85°C/85%RH 1000 hours, parameter drift <3%
▶ Certifications : RoHS, REACH, ISO 13485 Medical Grade

8. Customization Services
▶ Supports the following non-standard designs:
▶ ▶ Custom electrode patterns (laser etching / mask deposition)
▶ ▶ Integrated output signal conditioning circuits
▶ ▶ Film-silicon heterogenous integration (MEMS process)



9. Product Illustration

