



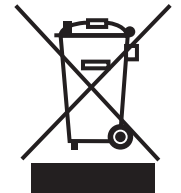
PK2FSF1

Description

The PK2FSF1 amplified piezoelectric actuator consists of a discrete stack in a flexure mount. The flexure increases the travel range through lever amplification and a U-shaped cover provides protection for the discrete PZT stack and wire connections. It offers a maximum displacement of $220 \mu\text{m} \pm 15\%$. A red wire is attached to the electrode that should receive positive bias, and a black wire is attached to the electrode that should be grounded.

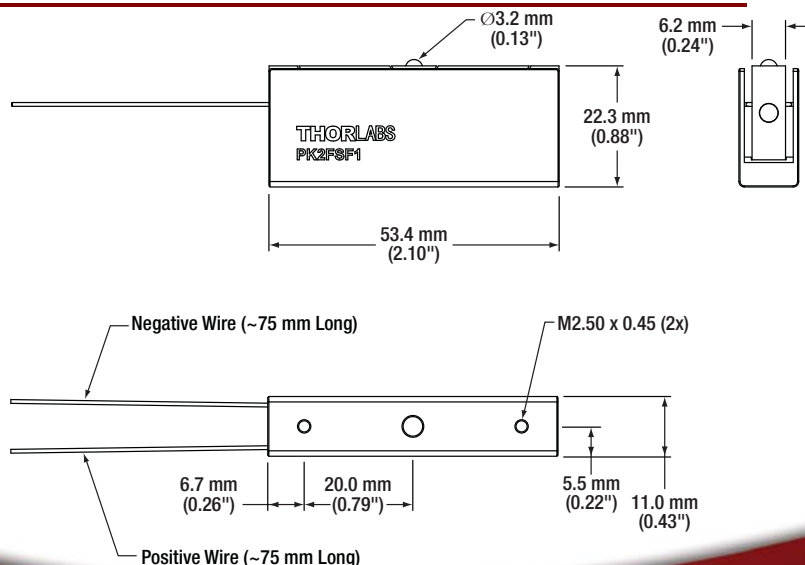
Specifications

PK2FSF1 ^a	
Drive Voltage Range	Maximum: 0 - 75 V
Displacement (Free Stroke) at 75 V	220 $\mu\text{m} \pm 15\%$
Maximum Push Force In Motion Direction	100 N (22.5 lbs)
Maximum Pull Force In Motion Direction	5 N (1.1lbs)
Hysteresis	<15% (See Graph on Next Page)
Piezo Stack Used Inside	PK2FSP2
Resonant Frequency	1.0 kHz (No Load)
Impedance at Resonant Frequency	2000 m Ω
Dissipation Factor	<2.0%
Capacitance	9.0 $\mu\text{F} \pm 15\%$
Operating Temperature	-25 to 130 °C
Curie Temperature	230 °C
Outer Dimensions	22.3 mm x 11.0 mm x 53.4 mm
Piezo Stack Dimensional Tolerance	$\pm 0.1 \text{ mm}$

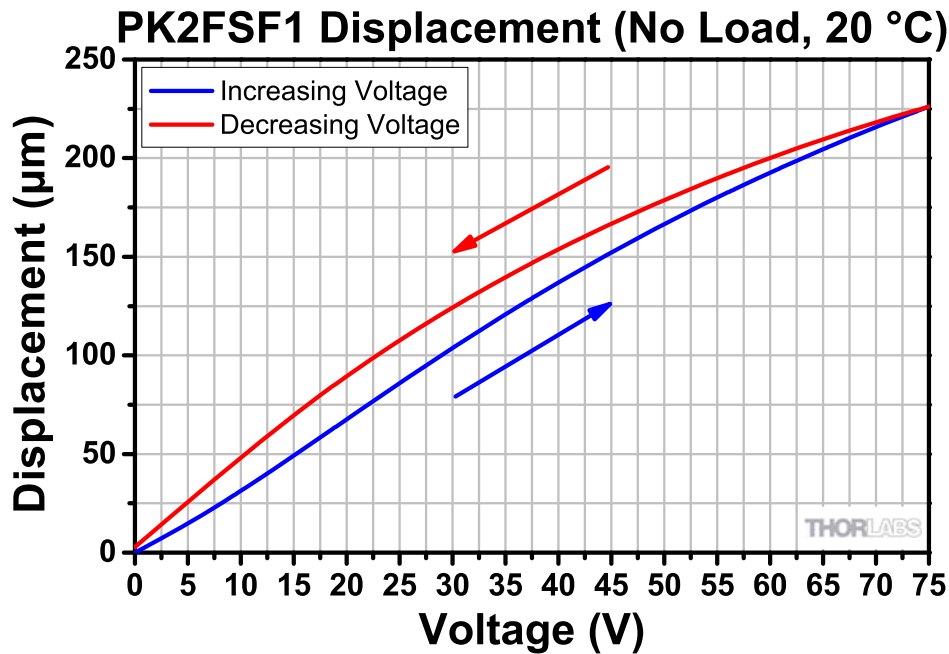


a. All specifications are quoted at 25 °C, unless otherwise stated.

Drawing



Typical Performance Plots



Operation

Electrical Considerations

- The electrode attached to the red wire should be positively biased, and the electrode attached to the black wire should be grounded. The recommended maximum drive voltage is 75 V, and the absolute maximum voltage is 75 V. Exceeding 75 V will decrease the device's lifespan and may cause mechanical failure. Reverse biasing the device may cause mechanical failure.
- Caution: After driving, the piezo is fully charged. Directly connecting the red and black wires has the risk of electricity discharging, spark, and even failure. We recommend using a resistor (>1 kΩ) between the wires to release the charge.

Attaching Devices to the Piezo

- Any epoxy which cures at a temperature lower than 80 °C is safe to use. We recommend Thorlabs Item Numbers 353NDPK or TS10. Loctite Hysol 9340 is also usable.
- There are two M2.5x0.45 tapped holes on the bottom of this amplified stack which can be used for mounting.
- Loads should only be attached to the ball in the middle of the top side. Attaching a load to any other side may lead to mechanical failure.

Storage Instructions

- Do not store the device at temperatures above 80 °C.
- Do not store the device in humid environments. The relative humidity (RH) should be less than 40%.
- Do not immerse the device in organic solvents.
- Do not use the device around combustible gases or liquids.