

A10E Datasheet

General Description

The A10E actuator consists of a preloaded piezoelectric element in an aluminium frame. The frame transforms the piezoelectric expansion into a lateral displacement at the actuator tip.

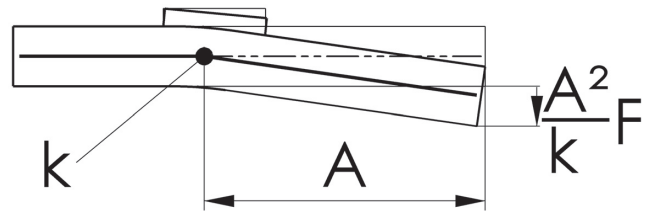
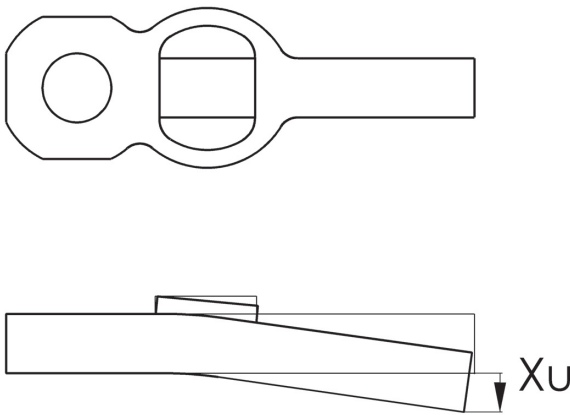
Features

- Preloaded piezoelectric element
- Motion amplified
- Low voltage of operation

Mechanical Properties

When an electric voltage, U , is applied to the piezoelectric element, the actuator tip is displaced by a distance x_U .

When an opposing load, F , is applied to the actuator, the A10E deflects like a rigid bar of length A that is connected to a flexural spring of stiffness k (for excitation frequencies less than R).



Mechanical Parameters

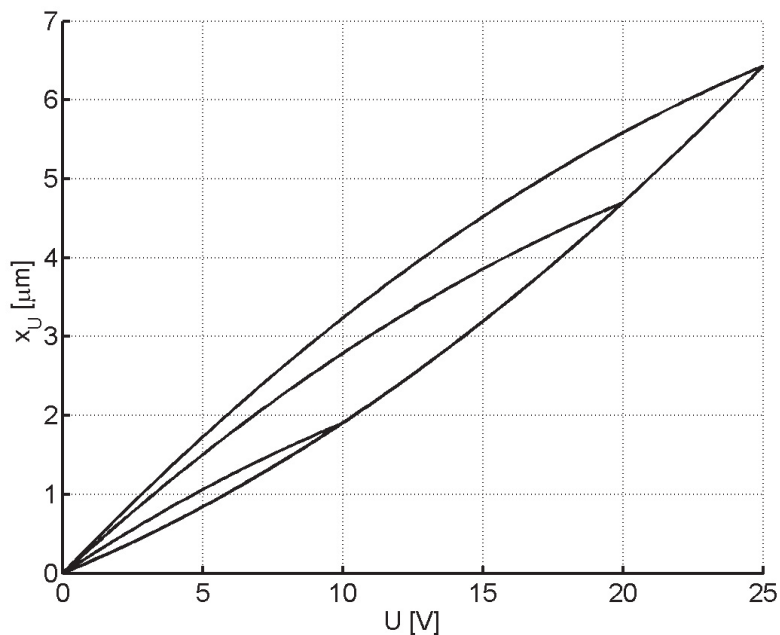
Symbol	Parameter	Ratings			Units	Notes
		min.	typ.	max.		
X_{20}	Actuator Displacement for $U=20V$		4.7		μm	Normal distribution with standard deviation $\sigma = 0.42\mu m$
K	Flexural Spring Stiffness		19.1		Nm	This is a good approximation for excitation frequencies less than R
A	Lever Arm		13.1		mm	First bending mode; note that R depends on actuator mount
R	Resonance Frequency		4800		Hz	For 20V peak-to-peak; may depend on mechanical loading condition
	Load Cycles		10^{10}		cycles	At 24V 600Hz sine wave non-resonant operation with 2N load

Electrical Parameters

($T_A = 25^\circ C$ unless otherwise noted.)

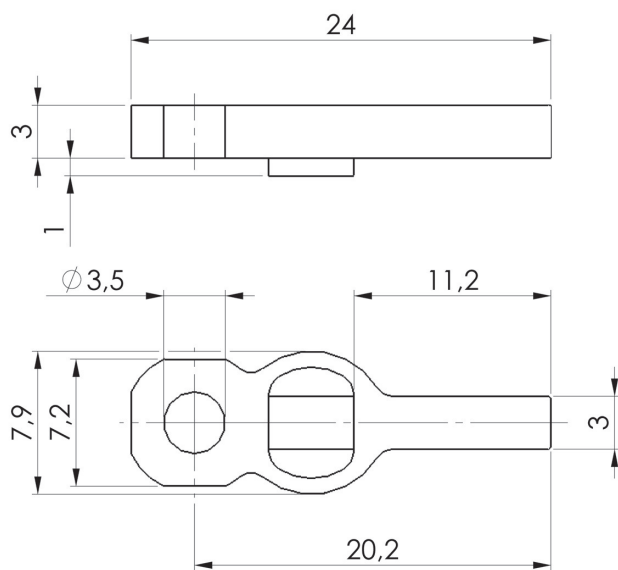
Symbol	Parameter	Ratings			Units	Notes
		min.	typ.	max.		
U	Supply Voltage		20	54	V	
C	Capacitance	400	520	600	nF	
R_i	Internal Resistance	1			$M\Omega$	
V_{pol}	Polarization Voltage		54	55	V	

Hysteresis

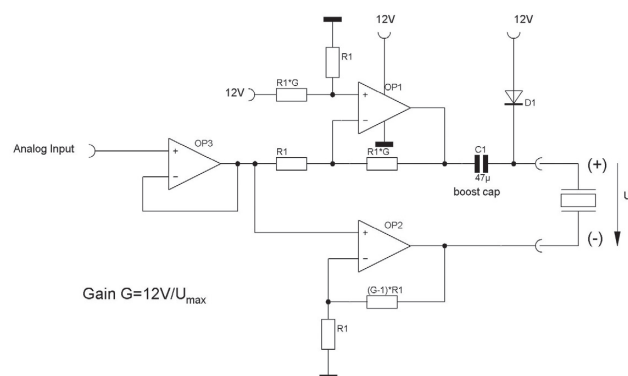
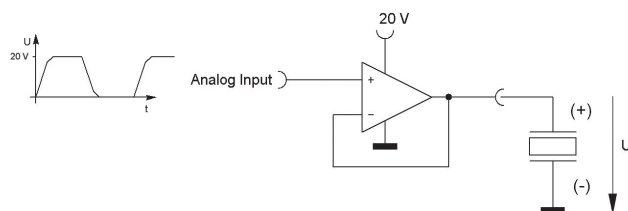


Typical hysteresis loops for [0...10V], [0...20V], [0...25V] cycles

Physical Dimensions (mm)



Driving Circuit (Examples)



Order information

Article Number	Frame	Cable length
A10E	regular	28 mm

Other cable length on request.

For further information
please visit our website at
www.elliptec.com

Subject to change without notice.

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