

ALPS Develops Miniature Piezoelectric Actuator

ATSA Series: Industry's Smallest Piezoelectric Actuator

Duesseldorf, Germany, August 5, 2008 – ALPS ELECTRIC has completed development of the ATSA Series miniature piezoelectric actuator used in mechanisms requiring linear movement, such as in mobile phones and other handheld devices as well as in the sensitive drives essential to precision devices.

Today's mobile phones and precision devices are well known for offering a sophisticated array of functions, with the trend being toward ever smaller and thinner products. Consequently, the parts used in these devices are also becoming smaller, yet at the same time high performance is in demand.

This is evidenced by the delicate and precise adjustments—in increments of 10 micrometers (μm . $10\mu\text{m}=0.01\text{mm}$)—needed to correct the spherical aberration^{*1} that occurs when the collimator lens^{*2} of a Blu-ray optical pickup is commanded to execute linear movement.

Traditionally, an electromagnetic motor has been used for the linear movement of the collimator lens in this type of optical pickup, as well as for the zoom and auto focus functions of mobile phone cameras and digital cameras. However, miniaturization of these motors is approaching its limits, and actuators that offer high performance in a small size have become essential.

The ATSA Series has realized the industry's smallest piezoelectric actuator, with main body dimensions of 1.8mm x 1.8mm x 6.0mm (wide x deep x long, excluding the shaft portion).

This product employs a structure in which four piezoelectric elements envelop a central screw shaft, with the drive directly rotating the shaft by utilizing the properties of these elements—namely their ability to change shape as voltage is applied. It thus becomes possible to reduce the number of parts and miniaturize parts in the assembly, in comparison with actuators with electromagnetic motors, successfully enabling a significant reduction in overall actuator size.

This product has been developed under an engineering license agreement with U.S.-based New Scale Technologies, Inc. For commercialization and mass production, Alps Electric's microfabrication technology will be employed to manufacture the shaft to 1.1mm, the diameter of a pen tip.

The characteristics of the ATSA Series include a push force of more than 0.169N and a drive speed of more than 5mm/second^{*3}, in addition to being the industry's smallest actuator to sufficiently exert the required drive force for collimator lens adjustment, and linear lens movement for camera zoom and auto focus functions. In addition, the ATSA Series enables a long drive distance, being capable of moving a distance of 6mm with a shaft length of 12mm.

Furthermore, no other parts or assemblies are required to maintain the drive position. Because the screw holds its position when power is turned off, this contributes to the low power consumption of other electronic components in the unit.

*1 Spherical aberration is a deviation of focal distance as light enters from outside a lens compared with light rays that strike nearer its center. With optical pickup, this aberration is corrected by using multiple lenses.

*2 A collimator lens is an instrument that properly focuses parallel light.

*3 When supply voltage is 33V and power consumption is 0.6W

Features

Development of the industry's smallest piezoelectric actuator for linear movement mechanisms

1. Realization of industry's smallest piezoelectric actuator under an engineering agreement with New Scale Technologies, Inc.
2. Sufficient push force and speed in a small size, enables assured movement distance

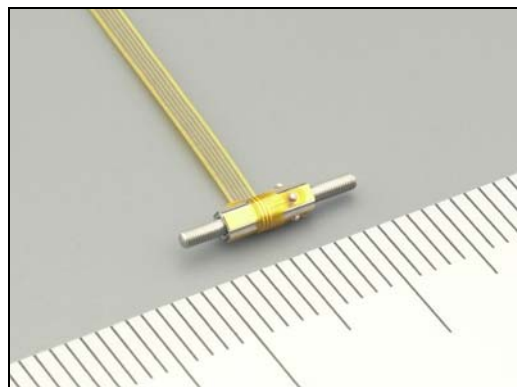
Principal Applications

Actuators used in Blu-ray disc collimator lens drives, mobile device auto lock features, camera zoom and other linear movement in mobile phones and digital cameras.

Specifications

Product name	ATSA Series
Dimensions (W x D x L)	1.8mm x 1.8mm x 6.0mm (actuator tube) *Not including shaft length
Supply voltage	33V
Power consumption	Less than 0.6W
Push force	More than 0.169N (20gf)
Speed	More than 5mm/second *With supply voltage of 33V, power consumption of 0.6W

For more information on the new the product please visit
http://www3.alps.com/e/npv_product/0724_ATSA/ATSA_E.PDF



ALPS Electric Co., Ltd.

Since its establishment in 1948 ALPS has grown as a comprehensive manufacturer of electronic components. At present ALPS is creating innovative high-value-added products in its main business segments – Components, Magnetic Devices, Communications, Peripheral Products, and Automotive Electronics – which are contributing to the advance of a digital society. ALPS is a global company that carries out its operations with 23 production bases in 9 countries as well as 57 sales bases in 14 countries. Consolidated net sales in the year ended March 31, 2008 amounted to YEN 693 billion.

ALPS ELECTRIC EUROPE GmbH, a subsidiary of ALPS Electric Co., Ltd., was established in 1979. Since 1989, the European Head Office has been located in Düsseldorf, where a team of specialists works in Sales, Marketing, and Product Engineering. The activities of our branch offices in Munich, Paris and Milton Keynes, our sales office in Milan and our European distribution work are co-ordinated from Düsseldorf. ALPS Nordic AB, a 100 percent subsidiary of ALPS ELECTRIC EUROPE GmbH, is based in Sweden and services the Scandinavian market.

Contact:**ALPS ELECTRIC EUROPE GmbH**

Ulrich Kuhs / Paul Garratt
Phone.: +49-211-59 77-170 / -250
Fax: +49-211-59 77-146
Email: info@alps-europe.com
Internet: www.alps.com

PR Agency:

MEXPERTS AG
Kurt Loeffler / Peter Gramenz
Phone.: +49-89-897361-0
Fax: +49-89-87 29 43
Email: kurt.loeffler@mexperts.de
Internet: www.mexperts.de
Press Portal: www.presseagentur.com

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