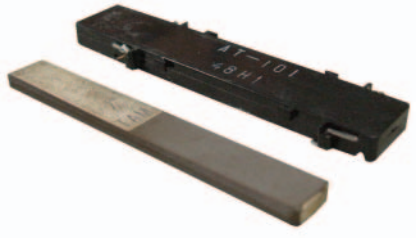
Piezo and Transducer Information Page

Piezo Applications & Features:

- LCD Backlighting
- Dust Collectors
- Copy Machines
- Ionaizers
- High efficiency
- High reliability
- Low Profile

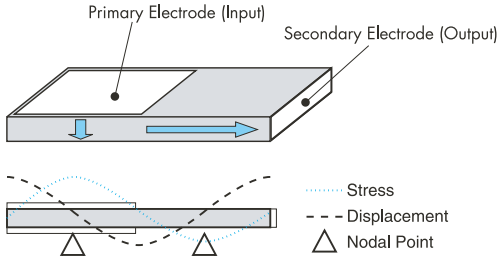
Transducer Applications & Features:

- Medical Probes
- Sonar Equipment
- Fish Finders
- Ultrasonic Cleaners
- Very high quality Piezo Ceramic material
- Stable over high range of temperatures



The basics of Piezoelectric Transformers

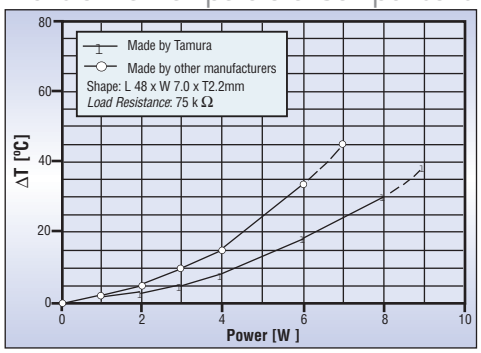
Piezoelectric ceramics are used to convert electric energy to mechanical energy and vice versa and have wide applications in various industries. Piezoelectric transformer (SOLIDFORMER®) can generate a high voltage by a low voltage input through the utilization of a resonance phenomenon of the piezoelectric transducer. The piezoelectric transformer has primary and secondary electrodes on the piezoelectric ceramic. The primary side is polarized in the thickness direction and the secondary side in the length direction. (Arrow mark shows polarization direction). When a voltage having a resonance frequency (Fr), determined by the length dimension, is input on the primary side, a strong mechanical oscillation is generated by inverse piezoelectric effect, and a high voltage (Vo) is output from the secondary side, matching its oscillation by direct piezoelectric effect. TAMURA is engaged in extensive development and manufacturing, from composition to processing of piezoelectric ceramics materials, which are used mainly for high power application products. TAMURA's ceramics possess various features such as high strength, wide amplitude characteristic, fit for fine processing, and a low aging rate. Applications include piezoelectric transformers, ultrasonic transducers, fish finder equipment, ultrasonic probes, and various types of sensors.



The Piezo and Transducer Ceramic Material

Tamura's goal is to build piezoelectric transformers that are failure free. By doing detailed studies on composition development and the grinding and firing processes, Tamura has been able to develop a unique ceramic (SS material) that can withstand heavy pressure, has low power loss and has high efficiency. Tamura has the technology to produce all the wiring and bonding elements necessary for the transformers. With all these materials readily available, Tamura can produce and ensure top quality products. The chart to the right compares performance between Tamura's piezoelectric transformers and other manufacturer's transformers of the same shape and size.

Transformer Temperature Comparisons



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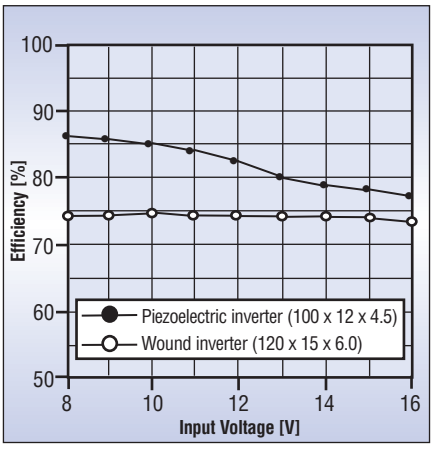
The Piezoelectric Transformer Advantage

Piezoelectric inverters have a higher conversion efficiency (they are over 85% efficient) while the wire-wound is approximately 74% efficient. Piezoelectric inverters are thinner, more reliable, and they have less chance of burning out. Wire-wound inverters have a constant output of 1200 Vrms which means the cold-cathode tube's voltage is controlled by a ballast condenser. Whereas the piezoelectric inverter's output is controlled by its load impedance which means adjustments are not necessary. Cold-cathode tubes last longer and are quieter when they use piezoelectric inverters because of their sine wave output. Piezoelectric inverters have a wider input range without using DC-DC converters.



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