Paktron

› For more information contact
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Quality & Reliability System Overview

Company Overview

In existence since 1953, Paktron is one of the oldest capacitor manufacturers in the US. Paktron is the technological leader in the manufacture of multilayer polymer film capacitors and sells across diverse markets including automotive, commercial, Hi-Rel, military, space, and telecommunications. As a quality conscience company, Paktron follows the proven philosophy of building quality into its products. Inherent quality provides for both long-term reliability as well as outstanding product performance. Paktron's longevity is testament to its commitment to Quality.

Quality System Overview

Paktron's unique approach to quality assurance sets us apart in the multi-industry sales markets. Since 1953, we have crafted and refined our own documented quality system tailored specifically to the capacitor industry. This system not only meets but exceeds the requirements of standardized systems in various markets, allowing us to deliver unrivaled products unrestricted by market limitations. At Paktron, our relentless focus on quality assurance drives us to consistently produce the finest products in the industry. ISO 9001:2015 Certified by NQA. The system includes, but is not limited to:

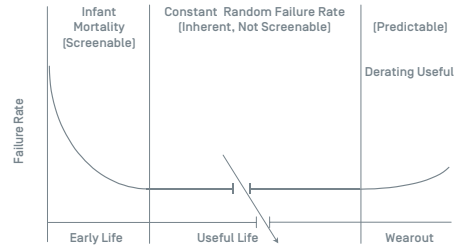
1. Operator Training
2. Inspection
3. Calibration
4. Failure Analysis
5. Statistical Process Control
6. New Product/Process Authorization
7. Vendor Qualification
8. Material Review
9. Surveillance Testing
10. Qualification Testing
11. Reliability Testing

Statistical Process Control

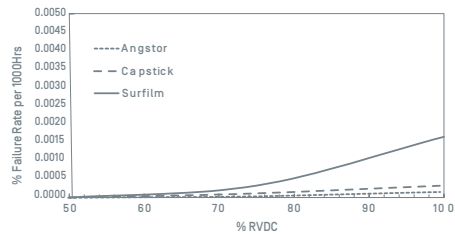
Like many other manufacturers, in order to meet the changing quality needs of its various customers, Paktron has long ago implemented a program of Statistical Process Control(SPC). This program places the responsibility for quality directly on the production operators who must build quality into the product rather than trying to test defects out in the final test operations. This results in the production of more consistent quality and performance products. Day-to-day process control is being done by the operators with Paktron's QA department moving into an overview function of doing trending analysis, process averaging, specification compliance control, etc. Using these systems, quality levels in the low PPMs becomes not just a goal, but a reality.

Reliability

Paktron's Quality Assurance does not end once the product has been shipped to the customer. The long-term reliability of the product is as important as its initial implementation. Theoretically, a well-designed, well-engineered, thoroughly tested and properly applied component should "never" fail in operation (within the life of the equipment). However, practical experience shows that even the best design, manufacturing, and engineering efforts do not completely eliminate the occurrence of "field" failures. Usually, field failure categories encountered in components are the "infantile", "random", and in the case of misapplication, "wear out". Paktron eliminates the "infantile" category through extensive testing and strict controls. The " wear out " category is eliminated by "guard-banding" the performance characteristics of the products and by maintaining close contacts between the Paktron and customer Engineering groups. "Random" failures occur after the infant mortality stage. They occur because of "undetectable" weaknesses in the products. Although the time of occurrence of random failures cannot be predicted, the probability of occurrence or non-occurrence of such failures can be calculated by means of the theory of probability. Paktron's reputation for "Quality" in the Industry is based not only on its ability to eliminate "infantile" failures through strict QA controls, but also on being able to minimize "random" failures through its process controls which detects/eliminates heretofore "undetectable" weaknesses and significantly increases the reliability of the product. Paktron's film capacitors are so inherently reliable that useful life is measured in decades rather than hours of operation. While Paktron's own rigorous accelerated testing shows theoretical PPM failure levels in the single digits, customer feedback consistently reports zero PPM failure levels.



	@ %RVDC and 40°C		
	50%	75%	100%
Angstor (RA)	0.0000	.00003	.00014
ST3827/ST4	0.0000	.00010	.00030
ST3827/ST4	0.0000	.00030	.00150



Voltage Ratings

Like all polymer film capacitors, Paktron's product offerings have "true" voltage ratings and unlike other dielectric systems require no voltage de-ratings for maximizing reliability (MTBF) or use life. With FIT rates of well under 5 FIT when used at rated voltage, these capacitors provide a positive contribution to circuit MTBF calculations.

Circuit designers requiring 500 volt ratings in other dielectric systems for their 370 volt input applications are being penalized by that dielectric system's inherent deficiencies. In the polymer film capacitor industry, if a capacitor is rated at a certain voltage, then the capacitor is designed to be fully functional and reliable at that voltage for the life of the equipment. Many leading edge circuit designs take advantage of a polymer film capacitor's inherent reliability at rated voltage to both reduce board size and significantly improve performance.

Material Content

Paktron's product offerings neither contain nor are manufactured with any risk level hazardous material. The material content for polymer film capacitors is basically: polymer, aluminum, copper, tin, iron, microcrystalline polyolefin, trace amounts of other materials such as antimony and lead and various non-toxic, non-hazardous thermoplastics used for encasements. The polymers typically used are polyethylene terephthalate (PET), polyethylene napthalate (PEN) and/or polyphenylene sulfide (PPS). The products' terminations are coated (tinned) with either 60Sn-40Pb or 100% Sn to a thickness of 100-500 micro inches in order to facilitate soldering without the possibility of whisker growth with the 100% Sn meeting current industry guidelines for lead-free (Pb-free) with a lead (Pb) material content of under 0.1 wt% (1000ppm).