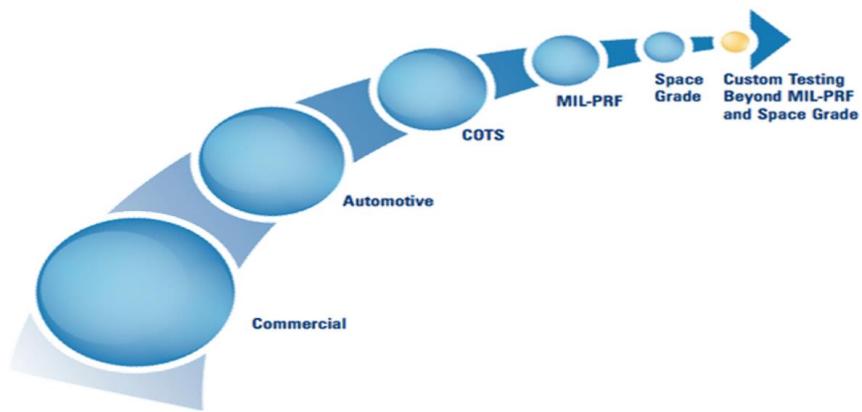


## Commercial-Off-the-Shelf (COTS) Classification

### Introduction

KEMET's dielectric offerings are expansive with different variations of ceramic, tantalum, film and aluminum-based capacitors. In addition to these varieties, we also offer multiple product grades to fit your needs: commercial, automotive, commercial-off-the-shelf (COTS), military, space and custom. Many people are familiar with most of these classifications but there is still some confusion on what exactly a COTS classification represents.



### What are COTS parts?

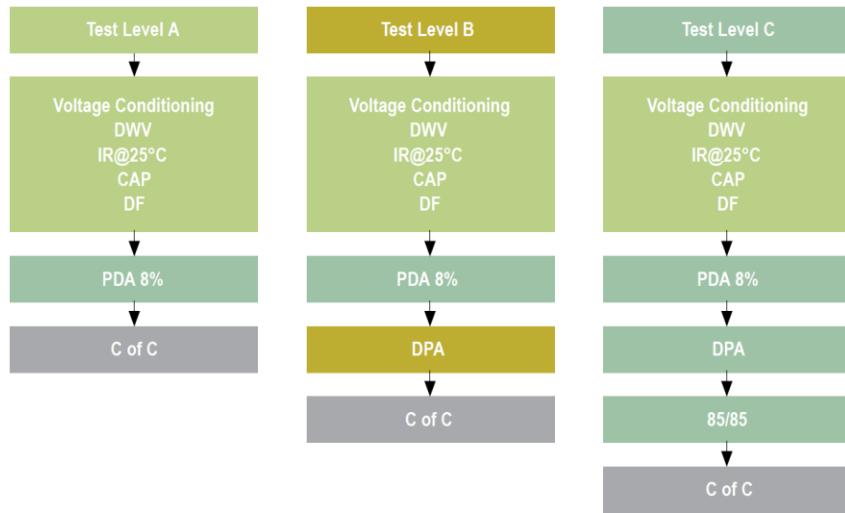
For certain applications, you may want a higher reliability part that exceeds the performance and reliability characteristics of our standard commercial parts. Auto-graded parts offer capacitors certified to the AEC-Q200 standard but does not offer the ability to have parts "up-screened." Military and space grade parts are certified to various military standards and considered more reliable but come at a premium price. With failure rated designs, additional screening options and a more affordable price, our commercial-off-the-shelf, or COTS, parts offer a happy medium.

The COTS option is available for both ceramic and tantalum-based dielectrics. These part series are produced with the same materials sets and manufacturing processes as our commercial and automotive-grade parts. A series of tests and inspections are used to provide accelerated conditioning and 100% screening to eliminate failures. Each series of parts also has additional screening and conditioning options unique to that series to improve reliability and performance.

### Ceramic COTS

KEMET has been manufacturing and selling ceramic capacitors for decades and has been continuously expanding its portfolio: more dielectrics, higher capacitance, etc. With the introduction of the COTS products, we have been able to further expand the product portfolio to better fit your needs. We currently offer our COTS products in the X7R and COG dielectrics with three distinct series: standard COTS, high-voltage industrial and high-voltage military-equivalent. All parts are designed and tested to a military standard or DLA drawing with a maximum PDA of 8%.

All COTS testing includes voltage conditioning and post-electrical testing per MIL-PRF-55681. These parts also have additional options to enhance reliability:



### Tantalum COTs

For higher capacitance requirements, tantalum capacitors are an excellent fit due to their volumetric efficiency. KEMET offers both tantalum with a  $\text{MnO}_2$  cathode and with our conductive polymer technology, which among other things offers longer operational life and high ripple current capabilities. These parts come with a multitude of packaging options varying from termination style (standard, facedown, etc.), construction (standard, multiple anode, etc.) and termination materials (tin, tin-lead, gold, etc.) to fit your needs. Like their ceramic counterparts, these parts are all spec'd to a DLA drawing or military standard. They are also tested to meet a specific failure rate that you select and can have additional surge current testing performed per MIL-PRF-55365.

KEMET also has two exclusive patented testing options available for select KEMET COTS tantalum capacitors to improve reliability and performance: F-Tech and Simulated Breakdown Screening (SBDS). F-Tech is a manufacturing process that eliminates hidden defects in the tantalum dielectric by minimizing oxygen and carbon content in the anode, providing a stronger mechanical connection between anode and lead wire and significantly enhancing capacitor robustness. SBDS provides additional dielectric testing by identifying hidden defects. This is done through a nondestructive technique to simulate the breakdown voltage. These two tests, while at an additional cost, helps create a robust part that minimizes risk of failure.

### Conclusion

More and more applications are requiring high reliability parts to minimize instances of failures. KEMET has recognized this and has expanded our portfolio to include more high reliability parts. Our COTS line is a perfect option for those who want higher reliability at a lower price. For more information, please reference our website and as always, feel free to reach out to your local KEMET FAE with any questions!