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## **ADI Warns Against Misuse of COTS Integrated Circuits, Invites Customer Participation in Creative Mil/Aero System Solutions**

*-- ADI offers a challenge to customers: Let's work together to achieve the breakthroughs you require.*

### **Product Misuse Suspected**

There is reason to believe that ADI commercial and industrial grade parts are being recommended by third parties for use in military and space applications that exceed their data sheet parameters. As a result, it is possible that ADI parts could be designed into environments for which they are not suited and for which they were not intended.

Additional testing, screening, and handling of these parts by third parties will not improve reliability and durability and, in many cases, may induce defects that can cause serious field failures.

Consultants and database providers who recommend to ADI customers the practice of using commercial or industrial grade parts in Mil/Aero applications for which they were not designed do not have the proprietary knowledge to do so nor do they have permission from Analog Devices to disclose any ADI product technology or data.

### **Liability and Warranties Voided by Misuse**

Analog Devices, Inc. is not responsible and has no liability for any consequences, and all applicable Analog warranties are null and void, if any Analog product is modified in any way or used outside of normal environmental and operating conditions, including the parameters specified in the relevant data sheet.

### **ADI Commercial Off The Shelf IC Products Meet Specified Standards**

Commercial off the shelf (COTS) integrated circuit (IC) products meet detailed product specifications for major markets that include consumer, commercial, industrial, and automotive.

Each market has distinct requirements related to such features as ruggedness, performance, volume, operating conditions, product life cycles, and cost. Standard manufacturing flows have been established around specific product grades required in each major market. These are the Industrial, Commercial, Military, and Space grades.

All products are not capable of being brought to nor can they necessarily be converted to Military and Space grades because of specialized qualification requirements, including temperature, ruggedizing, screening, testing, and radiation. Parts grades are clearly not intended to be interchangeable among the various market applications.

### **COTS at ADI**

At Analog, a COTS product is a standard IC product offered in high volume to data sheet specifications to several standard product grades, including:

Commercial Grade at 0 to +70 degree C

Industrial Grade at -40 to +85 degree C

Military Grade at -55 to +125 degree C. (compliant to Mil-PRF-38535 Level Q and usually specified by Standard Microcircuit Drawings).

Specialty Market Grades such as Automotive and MIL-PRF-38535 Level V for space applications.

Standard IC products are documented in ADI data books as well as at ADI web sites. All ADI Mil/Aero products and data sheets are under revision control and are manufactured on Qualified Manufacturing lines (QML).

## **COTS Mil/Aero Strategy at ADI**

Analog Devices has a long history -- more than 30 years -- of quality performance in the COTS business, including products specifically designed for the military and aerospace industries.

ADI encourages customers who must meet Mil/Aero requirements to use ADI military and space grade products.

Where there is a demand for an ADI product that is not Mil/Aero grade, ADI encourages customers to work with ADI to create an appropriate solution by identifying product requirements.

### **Not all COTS are Compatible to Military Requirements**

Analog Devices offers hundreds of military and aerospace-grade parts representing all of ADI's analog and digital signal processing technologies, thus minimizing the need for the development of special parts for specific applications and providing cost savings to customers. Several misunderstandings about the use of COTS IC products for military use persist:

While equipment used in protected environments is a candidate for commercial or industrial grade ICs, the cost savings of these parts can be lost when additional qualification and up screening costs are added to meet more rugged conditions for which these parts were not designed.

The seriousness of good documentation is under appreciated. Often commercial data sheets are not under the same kind of rigorous revision control specified by Mil/Aero, particularly in the area of specification and process change customer notification. Source Control Drawings can remedy this problem but this makes the part non-COTS and could make the part an expensive special because of additional marking and handling requirements.

The obsolescence factor must be taken into account. Some commercial IC parts, such as computer chips, have product life cycles as low as two to three years while most military systems have 10 to 20 year support requirements. ADI space and military grade ICs have 15 to 20-year lifetimes commensurate with these long-term market needs.

Radiation Hardness Assurance (RHA) requirements are significant. Analog Devices offers parts designed using technologies not specifically developed to be radiation hardened. Therefore product intended for applications that require radiation tolerance must have samples tested from the specific lot used.

A popular justification for the use of COTS products is the large number of state-of-the-art commercial IC parts available. In fact, most space and military systems take many years from development to production. Commercial grade parts used in development are often not available at production time while similar space and military grade parts generally are available because of their much longer life cycles.

### **ADI Customer Challenge**

Analog Devices remains committed to supplying the needs of the space and military markets with reliable, cost-effective products. Analog Devices encourages direct dialogue with its Mil/Aero customers in order to continue to develop cost-conscious, innovative military-aerospace system solutions utilizing the very latest ADI product technology.

To obtain information on our products, please visit [www.analog.com/milaero](http://www.analog.com/milaero). To review your total system IC parts requirements, please contact our nearest Sales Office and a sales engineer will be happy to review your product needs.