FORM, FIT AND FUNCTION FUNDAMENTALS

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There has been a lot of discussion lately about form, fit, and function and it is an especially important thing to understand in the area of DMSMS. Opinions certainly vary as to what constitutes an item's form, fit, and function. A good place to start is with their definitions. Form is the shape, size, dimension, mass, weight and other visual parameters which uniquely characterize an item. Fit is the ability of an item to physically interface or interconnect with or become an integral part of another item. Finally, function is the action or actions that an item is designed to perform. One of the reasons that opinions vary is that not every characteristic of form, fit, and function is relevant to the intended application.

For example, although weight is a factor delineated under "form", I'm not aware of any manufacturer of monolithic ICs who includes it in their data sheets or would agree that he had changed the form, fit, and function of the product if it weighed more than the last time he made it. On the other hand, a satellite manufacturer may in fact consider weight important in his application. To ensure he conveys that weight is part of his idea of form, fit, and function for that part, he selects or creates a procurement document that includes that characteristic in its requirements. As always, the user must ensure interchangeability by creating or selecting a procurement document whose requirements fully describe the form, fit, and function characteristics required by the intended application.

That is the way designers and suppliers come to agreement on just which of the characteristics of a given part constitute its form, fit, and function. In the case of a military specification, the same is true; the form, fit, and function of a military part number is solely defined by its requirements. When buying to a manufacturer's part number, the form, fit, and function is defined by the manufacturer and only includes what is published in his part specification (i.e., his data sheet), subject to change without prior notification. In either case, the procurement document forms the basis of a contract between the user and the supplier. No supplier can be required to provide more than the procurement specification requires and no user can be sure of getting more.

In the end, although opinions may vary on what the form, fit, and function of an item might be, it is established by an agreement between a user and a supplier and defined by a part specification. So, a little quiz: The original manufacturer discontinues a part and a new source is added to the spec you are using. If you buy a part which meets that spec and it doesn't work in the system, is it A) an inadequate part because it is not form, fit and function equivalent to the original item or B) an inadequate spec? If you answered A, go back to the top of this article and start over.