

BA
221K

100V
0422

BA
221K

“Different manufacturers will use different part numbers for identical passives such as these VK20 series MLCCs”

AN ALTERNATIVE GUIDE TO OBSOLETE PASSIVES

It doesn't matter whether a component costs a few pennies or hundreds of pounds, as soon as it becomes obsolete, the hunt for an alternative begins



Charcroft's Debbie Rowland shares her experience of tracking down alternatives for obsolete passives

For some components, finding an alternative simply means sourcing a direct equivalent from another manufacturer. For others, it can mean using specialist

knowledge, creativity and even custom manufacturing, particularly if it is a passive component.

Passive part numbers are typically more complex than semiconductor part numbers, so it is likely that different manufacturers will use different part numbers for identical passives. For example, the Syfer 8123Z0500104KX, Vitramon VK20BY104KA and Vishay CK05BX104K multilayer ceramic capacitors are all identical and obsolete. Direct alternatives are still being manufactured however, as 19 different part numbers from three manufacturers, as well as under mil-spec mil-C-39014/01 or military part number CKR05BX104Kx.

Understand part numbers

Identifying even a straight-forward alternative for a passive, therefore, requires years of experience and knowledge, as well as a detailed understanding of individual manufacturer part numbers, NATO stock numbers, CECC specifications and other military specifications.

Sometimes it is necessary to go back to an original component catalogue to identify an alternative. After tooling damage meant that a component manufacturer suddenly made their polypropylene capacitors obsolete, Charcroft used a catalogue from its paper catalogue archive to trace a very close alternative with wide availability and long-term continuity of supply. The catalogue, dated 1996, is certainly almost as rare as the components themselves and the long-term memories of the Charcroft team have been invaluable in many alternative searches.

Customise creatively

When there is simply no direct alternative, the answer can lie with a little creative customisation of standard parts.

As an example, Charcroft cites a capacitor and resistor assembly used in an aircraft ejector seat by a major European defence OEM. The assembly, which had been manufactured as a special part for years, was made obsolete by new manufacturers following a company acquisition.

Working from a drawing of the original product, Charcroft created an alternative by soldering together a capacitor and a resistor, adding flying leads with a specific colour and length to simplify mounting and then casing the completed assembly to withstand harsh aerospace conditions.

So far, Charcroft has manufactured over 5,000 of these assemblies over the past five years, including some refinements, such as customer-specific markings. Continuity of supply has been guaranteed for the total lifetime of the project, which is expected to be 30 years or more.

Widen the pool

In Charcroft's experience, original parts are often over-specified, so it is important to define the key, real-world parameters in order to widen the pool of potential alternatives by including parts with different tolerances or PPM ratings.

Regardless of whether the alternative is a simple swap-out, or a full custom assembly, the hunt for an alternative is likely to be faster and more successful if the buyer has followed the Alternatives Check-list. This will ensure that the most important parameters are clearly defined so that they can be matched against potential alternatives.

Notes

Alternatives Check-list

- Define the critical characteristics: voltage, tolerance, ESR, case size, ppm
- Consider commercial factors: low price, short delivery, long-term availability
- Provide the original component drawing
- For a short-term fix, consider variants such as a tighter tolerance or higher voltage
- For a long-term fix, consider the life-time of the product to ensure material availability
- Consider pre-forming leads to match the lead-pitch of an obsolete component