

Space Grade Product Extension for X7R Capacitors, Low Inductance IDC X7R / X7S Components and NPO Discrete Devices

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The X7R Space grade BME capacitors have been in use for 7 years within most major Space flight programs worldwide and this paper will describe the development work focused on extending this range to get higher capacitance values into smaller case sizes in the 25 to 100V ranges. This includes material formulation adjustments combined with enhanced material manufacturing processes and appropriate firing profile modifications. These developments use the most up to date material science concepts to achieve the desired increase in capacitance with a solid reliability performance.

The traditional NPO BME dielectric materials and processes have been adjusted to allow for Space Grade capacitors to be manufactured. The product and process will be reviewed with the test data which includes interim reliability results and a plan to complete the long term 4000hr Life testing needed for approval through 2022.

The Low Inductance devices IDC have been in development for a few years for Military and Space applications and will have completed the 4000hrs reliability testing in early 2022. The IDC process and the final data sets from testing will be reviewed in preparation for the QPL submission to the DLA.