

High Reliability, Low Cost Semiconductors for New Space Opportunities

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The New Space Era is making access to Space almost common place and there has been an explosion in the number of companies and agencies that are planning to put payloads on orbit. Space has become the new frontier for many commercial ventures. The size of the payloads is getting smaller and have terms like micro, nano, and pico satellites. However, there are two diametrically opposed factors in the development and operation of these new payloads; cost and reliability. For many of these New Space companies, cost is the prime design criteria, so the use of commercial, non-hermetic parts is predominating. But, the harsh space environment and the mechanical stresses of getting a payload into orbit requires a higher level of reliability for the parts to achieve mission success. Many New Space ventures are willing to gamble on the use of commercial, non-hermetic parts due to their cost constraints. Semicoa has developed a line of low cost, hermetic, high reliability semiconductors that can help New Space companies bridge that gap between cost and reliability and achieve mission success. The Semicoa 901 line of devices are targeted for these low cost, high reliability applications.

The Semicoa 901 line of devices utilizes wafers that were produced on the same wafer fab as their MIL-PRF-19500 JANS devices. The wafers used for the 901 line of devices go through the same exact Sample Evaluation process as the MIL-PRF-19500 JAN devices. The parts are assembled on the same line, and the same personnel as the 19500 parts. Therefore, the inherent reliability of these products will be realized, and minimal testing will ensure fully functional parts. The significant cost savings is in the reduced level of screening performed on these devices, which also minimizes lead time for product delivery.

This talk will focus on the 901 line of devices and present the Sample Evaluation process for wafer selection. The Assembly process will be described, comparing it to the standard 19500 flow of product. The level of testing performed on the product will also be presented, discussing 100% screening and sample tests performed on the lot to ensure reliability. At the conclusion of the talk a list of 901 devices currently available will be presented.