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Electronics Sourcing

NORTH AMERICA

THE MAGAZINE FOR PURCHASING PROFESSIONALS

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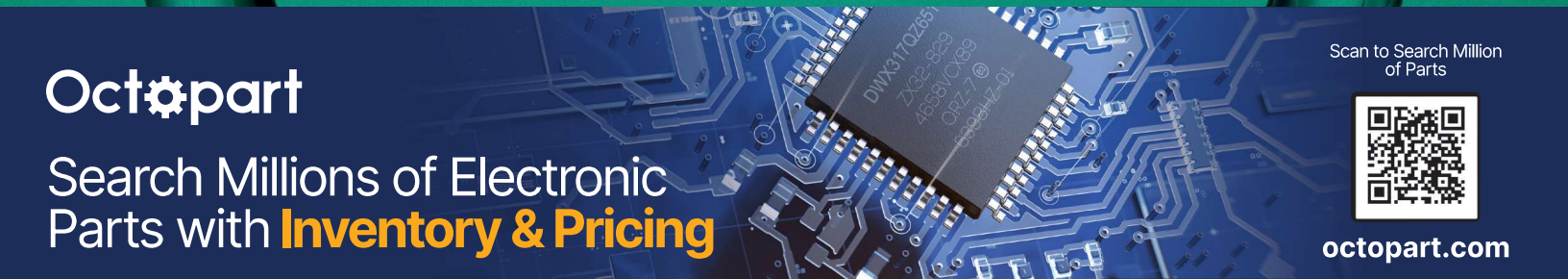

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When redesign isn't an option

Lansdale Semiconductor's sales manager, Amy Clements, explains how die banking and legacy manufacturing protect programs when redesign, requalification and uncontrolled sourcing are unviable

In the military and aerospace obsolescence market, die banks play a critical role in ensuring the long-term availability of trusted integrated circuits long after original manufacturers discontinue production of those lines. By securing and preserving original wafers and finished goods from the original manufacturers—and, where necessary, undertaking the arduous task of fabricating new wafers—authorized legacy manufacturers can extend the life of proven designs without altering form, fit or function.

This continuity is essential for mission-critical systems that cannot tolerate the time, cost and risk associated with lengthy redesign or requalification efforts. Effectively managed die banks provide a known, traceable source of the wafers, enabling continued assembly, testing and qualification using original intellectual property and specifications. For defense programs with decades-long lifecycles, die banking is not simply an inventory strategy; it is a risk-mitigation tool that protects system integrity, supply chain security and operational readiness in an environment where counterfeit or uncontrolled sources pose unacceptable threats.

Founded in 1964, Lansdale modeled its company after the automotive aftermarket, where legacy companies manufacture parts to maintain autos long after the original manufacturers discontinue support and focus on newer models. Lansdale translated that idea into the semiconductor aftermarket. Lansdale recognized early the importance of long-term control over legacy semiconductor production and invested in developing its own wafer fabrication capabilities.

Extensive die banks

During the years those facilities were operational, the company strategically built extensive die banks, securing as many usable wafers as possible to support future demand. At the time, however, long-term requirements were inherently difficult to predict, and military and aerospace program lifecycles could only be estimated. As a result, those early die-banking decisions now play a critical role in sustaining programs whose longevity has far exceeded original expectations.

Restarting wafer fabrication for decades-old integrated circuit designs is a complex and high-risk process. Legacy designs were created for fabrication equipment, materials and process nodes that may no longer exist, making it difficult to identify modern wafer fabs capable of running and qualifying the original process without introducing unintended changes. Design compatibility challenges and limited foundry availability further complicate the effort, while initial sample wafers require extensive testing to verify electrical performance and reliability against historical data. Even small process variations can impact results, making legacy wafer fabrication a demanding endeavor that requires significant expertise and rigorous qualification.

Upscreening commercial devices

In some applications the military version of an integrated circuit is no longer available and it is necessary to use legacy devices that were originally manufactured by the original semiconductor suppliers for commercial applications. If they used the same designs and wafers as their military counterparts, Lansdale extends their product availability by up screening these commercial devices to meet military requirements in accordance with MIL-STD-883. Through additional testing, screening and qualification, these components are validated to perform to the same standards required for military and aerospace applications, allowing them to serve as direct replacements for the original military-qualified parts and providing a viable solution for otherwise obsolete components.

When existing inventories of die and finished goods begin to approach depletion, Lansdale manages part utilization through a structured allocation process designed to ensure fairness and continuity for active programs. Allocation is based on each customer's

historical usage, with available quantities divided proportionally according to prior demand rather than on a first-come basis. Because the number of active customers for legacy parts is typically small, Lansdale does not issue formal public end-of-life announcements. Instead, customers are contacted directly and confidentially to communicate final allocation quantities, allowing them to plan responsibly for the long-term support of their systems.

For military and aerospace customers operating systems with decades-long lifecycles, legacy integrated circuit manufacturing is not a convenience—it is a strategic necessity. The ability to preserve original designs through die banking, controlled wafer fabrication when possible, military-grade upscreening and carefully managed allocation ensure continuity, authenticity and system readiness long after mainstream semiconductor production has moved on.

Eliminate redesign risk

Companies like Lansdale play a vital role in safeguarding these critical supply chains by providing authorized, traceable components that reduce or eliminate redesign risk and protect system integrity. As technology turnover continues to increase at lightning speed, legacy semiconductor manufacturing will remain essential to sustaining the platforms upon which national defense and aerospace operations depend.

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