



DEFENSE LOGISTICS AGENCY

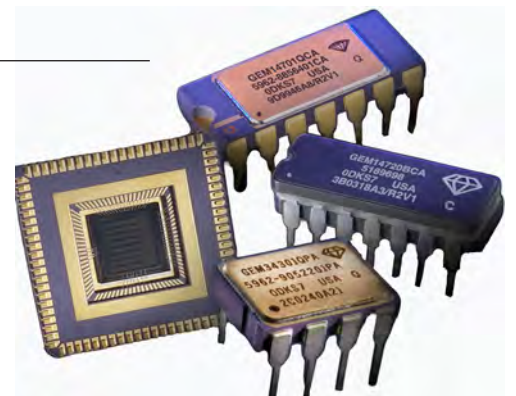
GEM & AME PROGRAMS

EMULATION PROGRAMS OVERVIEW

The Defense Logistics Agency's Generalized Emulation of Microcircuits (GEM) and Advanced Microcircuit Emulation (AME) Programs provide a continuing source of Form, Fit, Function, and Interface replacements for nonprocurable microcircuits. The programs deliver a permanent solution to microcircuit obsolescence that can be utilized during any phase of a weapon system life cycle.



**MICROCIRCUIT EMULATION CENTER
PRINCETON, NJ**



FORM, FIT, FUNCTION, INTERFACE

REPLACEMENT MICROCIRCUIT

UNAVAILABLE MICROCIRCUIT

When a request for an obsolete microcircuit is received, we begin our unique Emulation process to manufacture a Form, Fit, Function, and Interface (F3I) compliant microcircuit. Our on-demand manufacturing process significantly reduces the time to deliver a part.



REVERSE ENGINEERING

We utilize the customer's procurement specification(s), and relevant documentation such as catalog datasheets, original component manufacturer application notes, next higher assembly maintenance manuals, etc... to resolve any ambiguities or omissions in the procurement documentation. An Emulation design specification is created using this documentation augmented by electrical characterization of known, good samples of the obsolete microcircuit and physical reverse engineering processes.



DESIGN & LAYOUT

Our in-house design center uses a suite of modern CAD tools covering all aspects of chip integration and reliability. Working closely with our on-site Trusted foundry and advanced TCAD tools to model and characterize the fabrication process provides us with a unique capability to meet our customers' requirements. Our digital and analog design capabilities cover a range of technologies (CMOS, BiCMOS, Bipolar, etc...) and feature sizes (3.0 μm and below).



MICROCIRCUIT MANUFACTURING

All parts are manufactured in Princeton, NJ. The Microcircuit Emulation Wafer DoD Trusted foundry occupies 25,000 sq ft. The Wafer Fab has ISO 4 and ISO 5 classified cleanrooms. The facility uses the MESA WIP tracking system which enables realtime wafer lot tracking and historical record retrieval. Statistical Process Control is implemented in all process areas. We maintain all process equipment with OEM trained staff and service contracts.



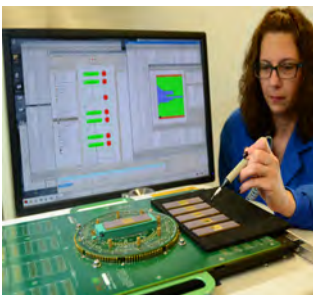
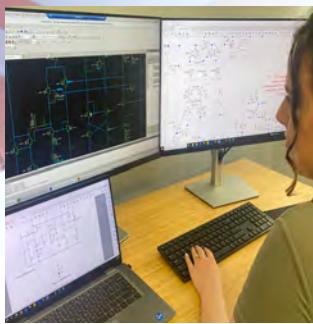
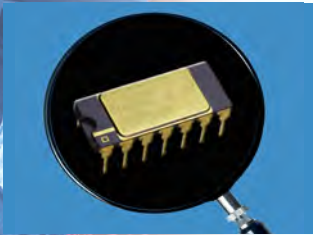
ELECTRICAL TESTING

We maintain in-house capability to perform the qualification, screening, and inspection tests for quality level B and Q microcircuits. High performance automated test equipment supports parametric and functional testing over the military temperature range for both wafers and packaged parts. All GEM devices are fully screened and QC inspected in accordance with MIL-PRF-38535.



AVAILABLE MICROCIRCUIT

Emulated parts are fully traceable and certified to customer procurement requirements, preserving existing configuration control and logistic support. GEM parts are never discontinued and can be manufactured at any time in the future.





ARMY



MARINE CORPS



NAVY



AIR FORCE

WE PROVIDE WARFIGHTER SUPPORT

Microcircuit Obsolescence Threatens Readiness of American Defense Systems

- Made in the USA
- Over 560 Weapons Systems Supported*
- Over \$2 Billion Estimated Cost Avoidance
- Manufacturing Capability for Over 30,000 Part Numbers*
- QML-Certified, Military Quality Manufacturing
- Lab Suitability per MIL-STD-883
- Over 1000 Parts Listed on DLA QML-38535
- Low Volume, On Demand Manufacturing
- Continuous Development and Production Transition of Emulation Technologies
- Over 175,000 Parts Delivered

*Search feature for systems and parts on website



MICROCIRCUIT EMULATION

A PERMANENT SOLUTION TO MICROCIRCUIT OBSOLESCENCE

OUR STORY

In the late 1980s, DLA recognized that microcircuit obsolescence threatened the readiness of many American defense systems. Numerous systems in the armed forces were designed and developed in the 1960s and 1970s. For example, the U.S. Air Force began flying the F-15 Eagle tactical fighter in 1972, and the U.S. Navy first tested the A phased-array radar at sea in 1973. Because of continued advancements in semiconductor technology, the original suppliers stopped manufacturing the microelectronic components used in these and other systems. In 1987, DLA contracted with SRI to begin research and development on how to best replace obsolete microcircuits with standardized, modern integrated circuits (IC). DLA and SRI collaborated to develop the GEM Program. Using its on-site Trusted semiconductor foundry and deep knowledge of IC design/development, SRI produces on-demand, Class Q microcircuits matching the Form-Fit-Function-Interface (F3I) criteria of the required microcircuit. DLA is developing the next generation of F3I microcircuit Emulation capability through the AME Program to further alleviate growing IC obsolescence issues caused by the continued rapid advancements in technology. The new capabilities developed by AME are utilized by the GEM Program to ensure the Emulation Programs continue to meet weapons systems wide-ranging requirements. SRI's semiconductor foundry is accredited as a Department of War (DOW) Trusted Foundry supplier, and our manufacturing processes are qualified to MIL-PRF-38535.

OUR MISSION

TO MAINTAIN AND CONSISTENTLY DEVELOP MICROCIRCUIT MANUFACTURING CAPABILITY FOR THE DEFENSE LOGISTICS AGENCY AND ITS DMSMS CUSTOMER BASE TO MITIGATE OBSOLESCENCE AND SUPPORT U.S. MILITARY WEAPONS SYSTEMS AND READINESS.



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