



Corporate Overview

30052 Tomas. Rancho Santa Margarita. CA 92688 www.virtium.com

Corporate Overview



- **Founded:** 1997
- **Corporate Headquarters:** Rancho Santa Margarita, CA
- **Global Operations:** China, Europe, Vietnam, Singapore, Philippines
- **Corporate Status:** Privately Held, Certified MBE
- **Manufacturing:** Rancho Santa Margarita, CA
- **Certifications:** ISO9001:2000 / AS9100
- **Patents:** Memory and Flash Technologies



Company Overview

- Solutions-driven designer and manufacturer of memory and flash storage solutions for embedded computing applications.
- Founded by engineers deeply committed to providing the highest level of technology and superior value
- One to one customer relationships enables quick-turn solutions at “direct from manufacturer” prices
- Virtium’s size enables us to rapidly customize solutions
- Superior product quality and a high level of customer service create unmatched value for our customers



Stability and Service

- Consistent product focus for long term support
- Privately held and solid financial stability
- Founded 15 years ago, Virtium has been profitable for over 55 consecutive quarters
- Serving our customers with innovation and stability
 - Early to market with new designs
 - Extended product life cycles on older products

Markets & Applications



- **Embedded Systems**
 - Computer on modules
 - Embedded single board computers
 - Industrial temperature motherboards
 - High performance computing systems
- **Military/Aerospace**
 - Ruggedized computing & mobile apps
 - Secure command and control system
- **Networking/Telecom**
- **Medical Equipment**
- **Gaming Devices**
- **Industrial Applications**

Key Customers



GE
Intelligent Platforms

GENERAL DYNAMICS

Strength On Your Side™



GE
Energy



MOTOROLA



Medtronic



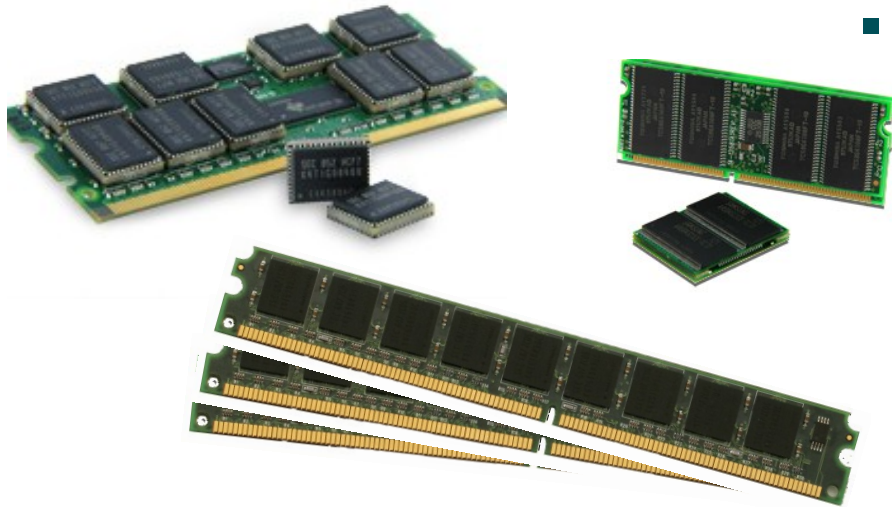
www.virtium.com



Memory Products

Enhanced Features

- Ultra & Very Low Profile (ULP/ VLP)
- VerticalRAM (Chip Stacking)
- Under fill & Conformal Coatings
- Industrial & Extended Temp. Ranges
- Custom Temp. Screening
- Low Power



Memory Modules

- DDR
- DDR2
- DDR3
- SDRAM



Advanced Modules

- SO-DIMM
- Mini-DIMM
- VLP/ULP DIMM
- Extended Temp
- Rugged



Advanced Components

- DDP & Stacked Chips
 - BGA
 - TSOP
 - TwinRAM

Flash Solution Products

Flash Solutions

- 1.8" SATA
- SSDDR
- MSATA
- SlimSATA
- SATADOM
- eUSB
- CFAST
- CF
- SD



Virtium Flash Standards

- B.O.M control and consistent supply
- Advanced Product Change Notification system (PCN)
- Long Term sustainable Product Lifecycle support
- Custom Firmware Support
- Experienced Industrial Flash System Engineering and FAE
- Custom testing for Power Cycling, Data Corruption, Endurance and ECC Error's
- 128MB to 64GB SLC NAND Flash
- Industrial Temps: -40° C to 85° C



Customer Needs

- Embedded computer products used in demanding 24/7 applications demand high reliability, tailored performance and multi-year life-cycle support
- Memory needs: compact size, low power, extended temperature, high density, environmental protection
- Long product lifecycles require stable suppliers
 - Those that chase “sweet spots” cause supply chain uncertainty
 - Consistency in long term product support is paramount
- Integration of new memory designs are often problematic
 - Physical size, density, lack of reference designs
- Innovative supplier partners needed for rapid solutions



Why Virtium?

- **Focus On Demanding Applications**
 - Address unique requirements for industrial & embedded environments
 - Consultative sales, design & application engineering
 - Exceptional support for many years in service
 - Highest reliability components meeting rigorous qualification
 - Design with special features and characteristics
- **FILO:**
 - FIRST IN with new designs, LAST OUT with Legacy Products
 - Provides our customers with early to market advantage
 - Long product cycles make frequent re-qualifications unnecessary



Why Virtium?

- **Strong Design and Field Application Engineering Support:**
 - Rapid development and delivery of unique solutions and enhanced features
 - Custom Firmware, Hardware, Testing Support
 - Onsite FAE with broad system level knowledge
- **Enhanced Product Management and Control**
 - BOM Control
 - Advanced PCN Systems, EOL product transition-requalification assistance
 - Direct purchasing relationship with Tier 1 semiconductor suppliers
 - Inventory management for long term supply security
 - Global support logistics with consistent delivery

Virtium Supply Chain Management

- **Direct relationship with major DRAM manufacturers**
 - Provides low pricing and consistent supply during component allocation
 - Data on market trends and future product volatility
 - Manage DRAM volatility and roadmap review
- **Global Sourcing**
 - Maintains cost through market fluctuations and access to legacy products
- **Proactive Life Cycle Management**
 - Manage to customer long term product life cycles
 - Assure availability through project life
 - Monthly review of market pricing and product roadmaps
 - Staged inventory at global hubs for immediate product availability





Customer Supply Chain Management

- **PCN - Part Change Notification**

- Each program manager prioritizes customer notification of product changes such as die revisions at the component level
- Six month customer notification advising of impending changes
- Inventory protection of EOL product to maintain LT operability
- Prompt delivery of evaluation units for customer qualification
- First to acquire latest/next generation die revision DRAM due to purchasing/technical relationship at semiconductor manufacturers



Engineering Strength

- **Cutting edge product & technology**
 - Pioneers of next generation memory and flash solution technology
 - Experts in designing the most reliable and highest performance memory and flash solutions available
 - Influencing and collaborating with JEDEC, PICMG/aTCA, CFA & SFF standards committees resulting in early to market next generation products
 - Assist with the qualification process- including joint qualification
 - Validation of design by replicating/duplicating customer platform
- **Dedicated engineers, FAE, and program management assigned to your specific project:**
 - In depth pre-design simulation, thermal analysis, system design timing analysis using Cadence & SiSoft Toolsets
 - Firmware and software tool development based on application specifications
 - Fast response to special feature and custom design request
 - Custom testing to meet unique platform requirements



Enhanced Product Features

- **Our design collaboration goes beyond offering standard solutions:**
 - Our patented chip stacking technology is often more cost effective than high density components
 - Pioneers in compact form factors: MiniDIMM, MicroDIMM, SoUDIMM, VLP, ULP, RSDIMM and other technology
 - Flash Form factors and Interface: Compact Flash, Cfast, eUSN, SlimSATA, mSATA, SSDDR
 - Our industrial temperature-screened products provide 40% lower cost over factory I-temp components
 - Utilization of heat sink technology for no noise, fan-less applications
 - Protective conformal coating/underfill for extreme environment conditions
 - Choice of DRAM/Flash brand, i.e. Samsung, Micron, Hynix, Toshiba
 - Controller options, Hyperstone, JMicron, and Silicon Motion



World Class Manufacturing and Quality

- Quality Certified: ISO9001:2000 & AS9100
- Manufacturing located in Orange County California:
 - Three SMT lines – 30,000 → 150,000 units/month
 - 3D Solder Paste Inspection
 - Automatic Optical Inspection
 - X-ray equipment for BGA inspection
- Facility inspected & approved by Global OEMs
- Fully automated data collection system
- Stringent quality and test metrics system



Summary

- Since 1997, leading embedded computer OEMs around the globe have been using Virtium memory solutions
- Virtium combines innovative early to market memory solutions with continuity of support for legacy memory products and Flash Storage Solutions for the embedded markets
- Virtium saves design engineers and procurement professionals time and money by reducing costly qualifications through multi-year life-cycles
- Product and logistic hubs in Asia support OEM requirements at manufacturing facilities
- Enhanced product management controls minimize supply chain disruptions



Conclusion

- Since 1997, Virtium memory and flash solutions have been trusted by leading embedded computer manufacturers around the globe, for a wide variety of challenging industries **where performance and reliability are paramount.**
- Virtium combines **innovative first to market memory and Flash** solutions with **continuity of support for legacy memory products** in mature systems.
- Virtium prides itself on providing **world class customer service** to support your new, current and legacy business.
- Virtium **has supported the Embedded Computing industry since our inception**, and we clearly provide the products, services and solutions to enable your growth and profitability