# Bringing Serial ATA/RAID to the Mainstream

VT8237 South Bridge Overview

- **VIA DriveStation™ Controller Suite**
  - Serial ATA
    - Full duplex high performance 150MB/s Dual Channel Serial ATA interface
    - Support for additional two Serial ATA devices through SATALite™ interface
  - V-RAID
    - Serial RAID controller
    - RAID 0, RAID 1, RAID 0+1 and JBOD
    - User-friendly Windows-based V-RAID software interface
  - Parallel ATA 133
    - Supports up to four PATA devices
- **VIA Advanced Connectivity Suite**
  - USB 2.0 Controller
    - Support for 8 USB 2.0/1.1 ports
  - Network Controller
    - Enterprise Class 10/100Mbps Fast Ethernet MAC
  - PCI & LPC bus controllers
- **VIA Vinyl™ Audio**
  - VIA Vinyl integrated 5.1 surround sound
    - AC '97 audio
    - VIA Six-TRAC codec
  - VIA Vinyl Gold onboard 7.1 surround sound
    - 24/96 resolution audio
    - VIA Envy24PT + VIA Six-TRAC Codec + additional DAC
  - VIA Stylus Audio drivers
    - Integrated Sensaura technology
    - Full 3D gaming support
- **V-MAP Architecture**
  - Ultra V-Link
    - High throughput 1GB/s South Bridge/North Bridge interconnect
    - Supports new generation VIA North Bridges across all processor platforms
  - 8X V-Link
    - High speed 533MB/s South Bridge/North Bridge interconnect
    - Supports current generation VIA North Bridges across all processor platforms
  - VIA Hyperion 4in1 Unified Drivers
    - Optimized system performance and stability

VIA DriveStation

VIA Connectivity

VIA Vinyl Audio

V-MAP

# VT8237 South Bridge Architecture
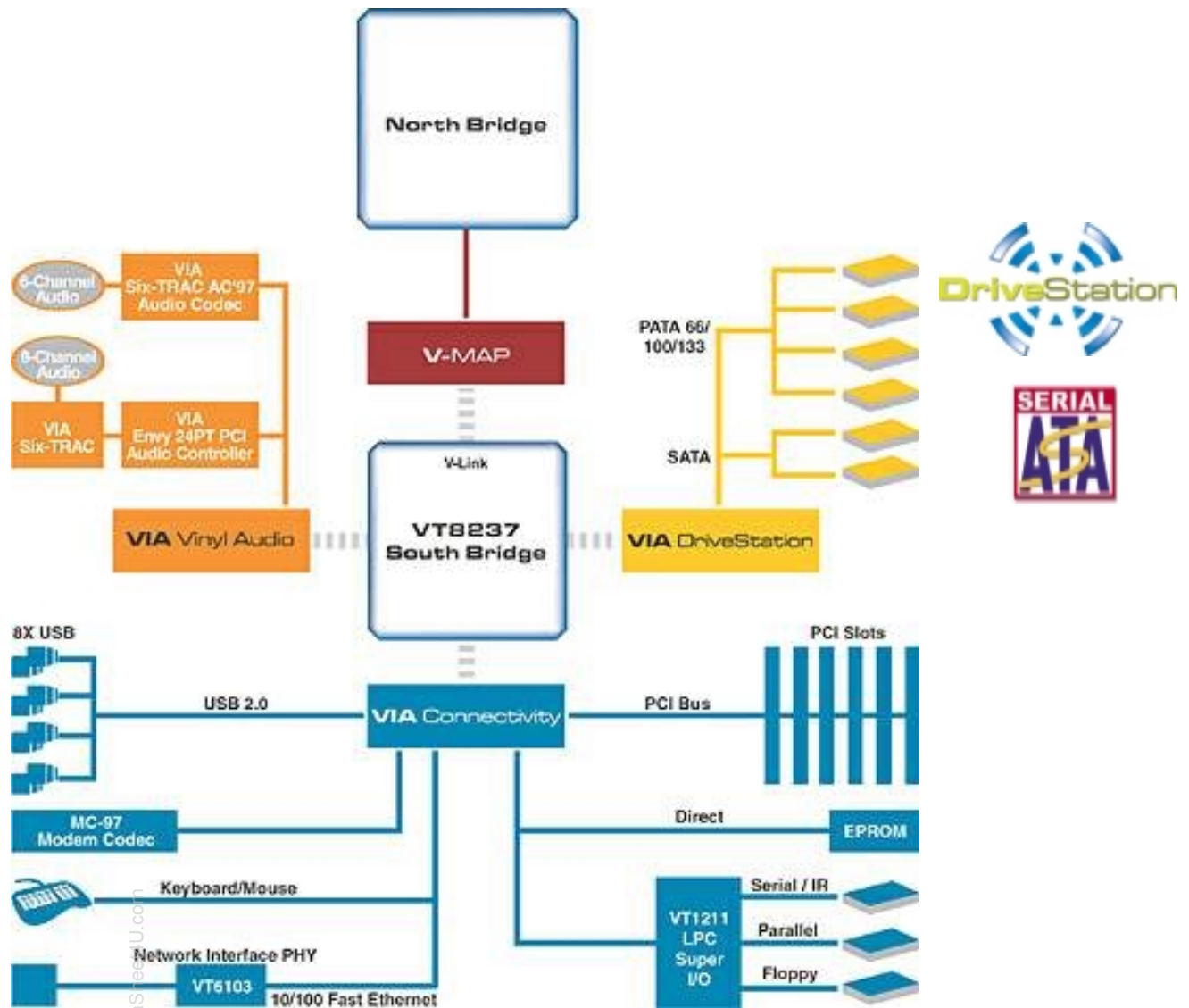
Leading the Way with Native Serial ATA

- **Full Duplex High Performance 150MB/s per Port Dual Channel Serial ATA interface**
  - Direct support for two SATA devices
  - Bypasses PCI Bus; flies straight to the 1GB/s Ultra V-Link chip interconnect for superior performance in the most data intensive applications
  - SATALite™ interface expands support to four SATA devices through external Serial ATA PHY
- **Easier Configuration**
  - Instant recognition by the Operating System for "On the Fly" installation
  - No Master/Slave configurations
  - Full backward Parallel ATA compatibility for seamless migration path
- **System Design Innovation**
  - Simpler cabling for improved airflow and easier system installation
  - Reduced pin-count to minimize use of valuable mainboard real estate
  - Lower power & lower voltage for smoother small form factor and low profile system design implementations
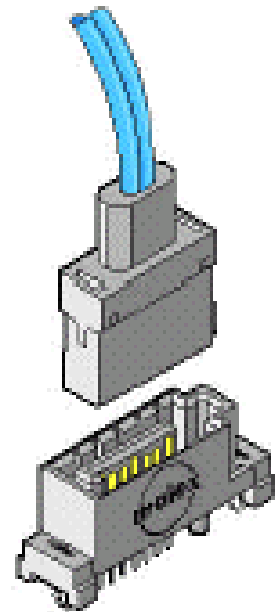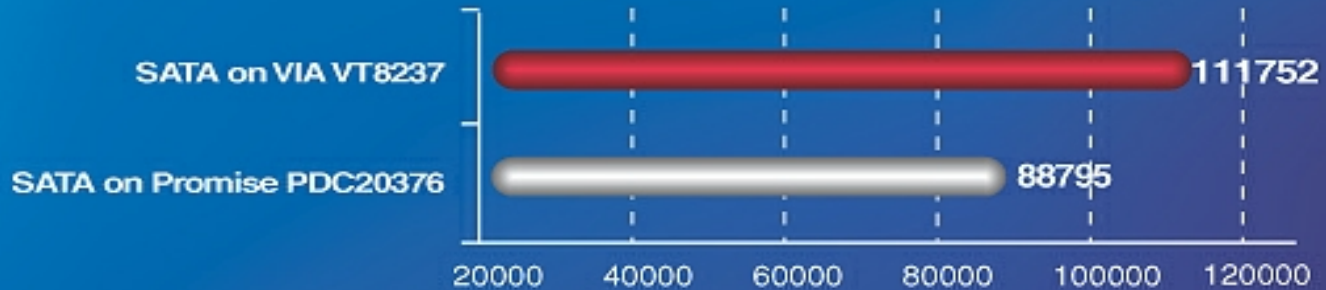
Easier System Integration

SATA Cabling (left) vs PATA Cabling (right)

VIA DriveStation Native Serial ATA Performance

HD Tach Burst Speed in Kps
(Higher is better)

|	Score
SATA on VIA VT8237	111752
SATA on Promise PDC20376	88795

Test Configurations
VT8237 Scores: VIA KT600 reference mainboard; 512MB Corsair XMS3500; ATI Radeon 9700; AMD Athlon XP2600
Promise PDC20376 Scores: KT400 retail board with Promise PDC20376 SATA 150, SATA & RAID Controller; 512MB Corsair XMS3500; ATI Radeon 9700; AMD Athlon XP2600
Hard Drive: Maxtor DiamondMax Plus 9, 160GB SATA/150 HDD

Extended SATA Support with the SATALite Interface
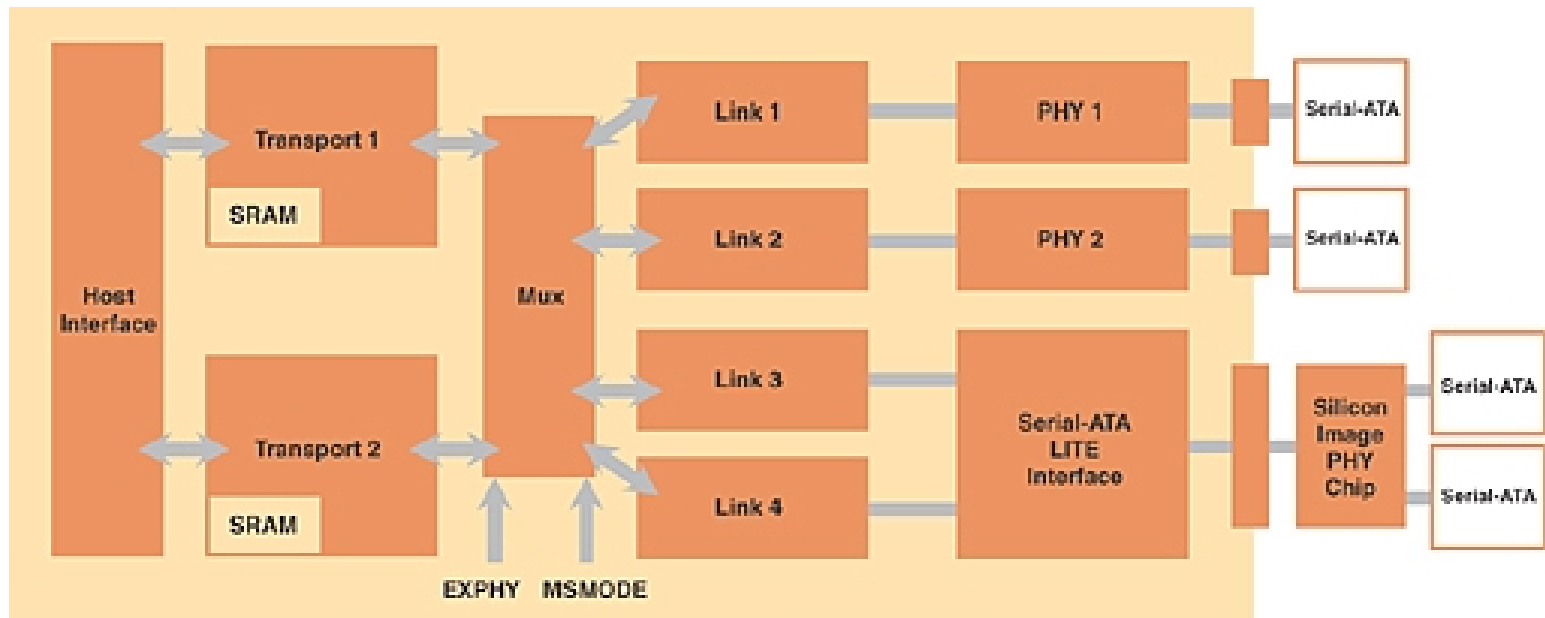
- Enables extended support for additional two Serial ATA devices
- Delivers RAID 0+1 support

VIA DriveStation: V-RAID

- **Industry's first full-featured native Serial RAID solution to be integrated into PC chipset architecture**
  - Supports RAID Levels 0, 1, 0+1[1] and JBOD
  - Highest HDD Data Transfer Rates for Maximum System Performance
  - Superior Fault Tolerance for Optimum Data Integrity
- **Ease of Use**
  - Easy installation and array management with user-friendly Windows-based V-RAID Software Interface
  - VIA DriveThru™ technology enables 'on-the-fly' upgrades to RAID configurations
- **Bringing RAID to the Mainstream**
  - Integrated V-RAID H/W and S/W solution reduces overall system cost
  - Easy installation and user-friendly software removes technical barriers

[1]RAID Level 0+1 only supported on motherboards and systems where support for two additional Serial ATA drives has been added through the implementation of the VIA SATALite interface.

VIA DriveStation V-RAID Configurations

RAID Level 0
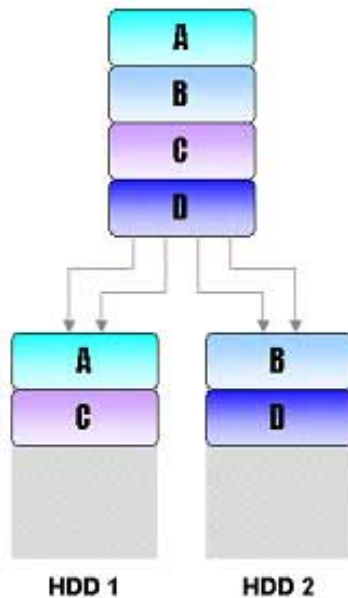
Effect: Striping

Capacity: 100%

Performance: High

Fault Tolerance: Low

RAID Level 1

Effect: Mirroring

Capacity: 50%

Performance: Normal/High

Fault Tolerance: High

RAID Level 0+1[1]

Effect: Mirroring & Striping

Capacity: 50%

Performance: High

Fault Tolerance: High

[1]RAID Level 0+1 only supported on motherboards and systems where support for two additional Serial ATA drives has been added through the implementation of the VIA SATALite interface.
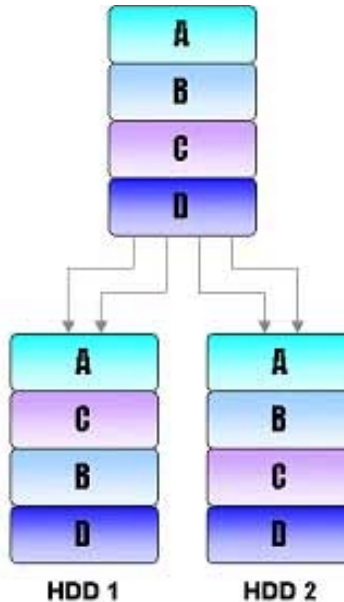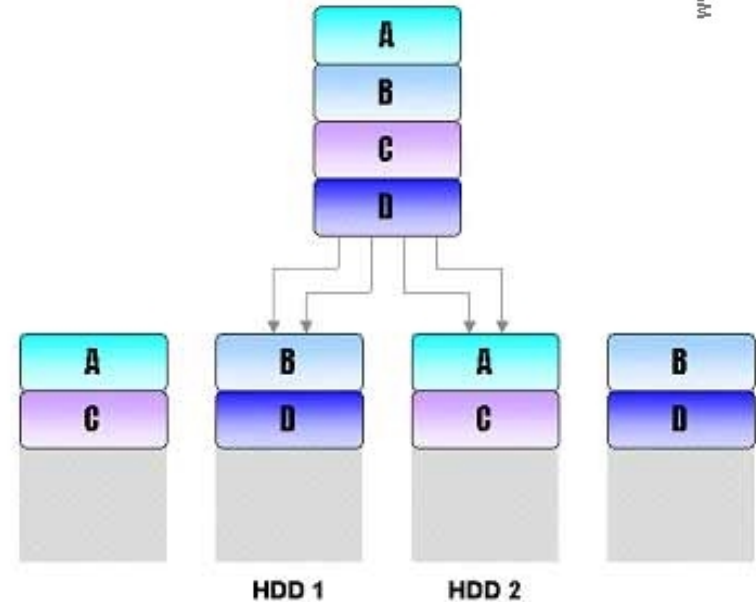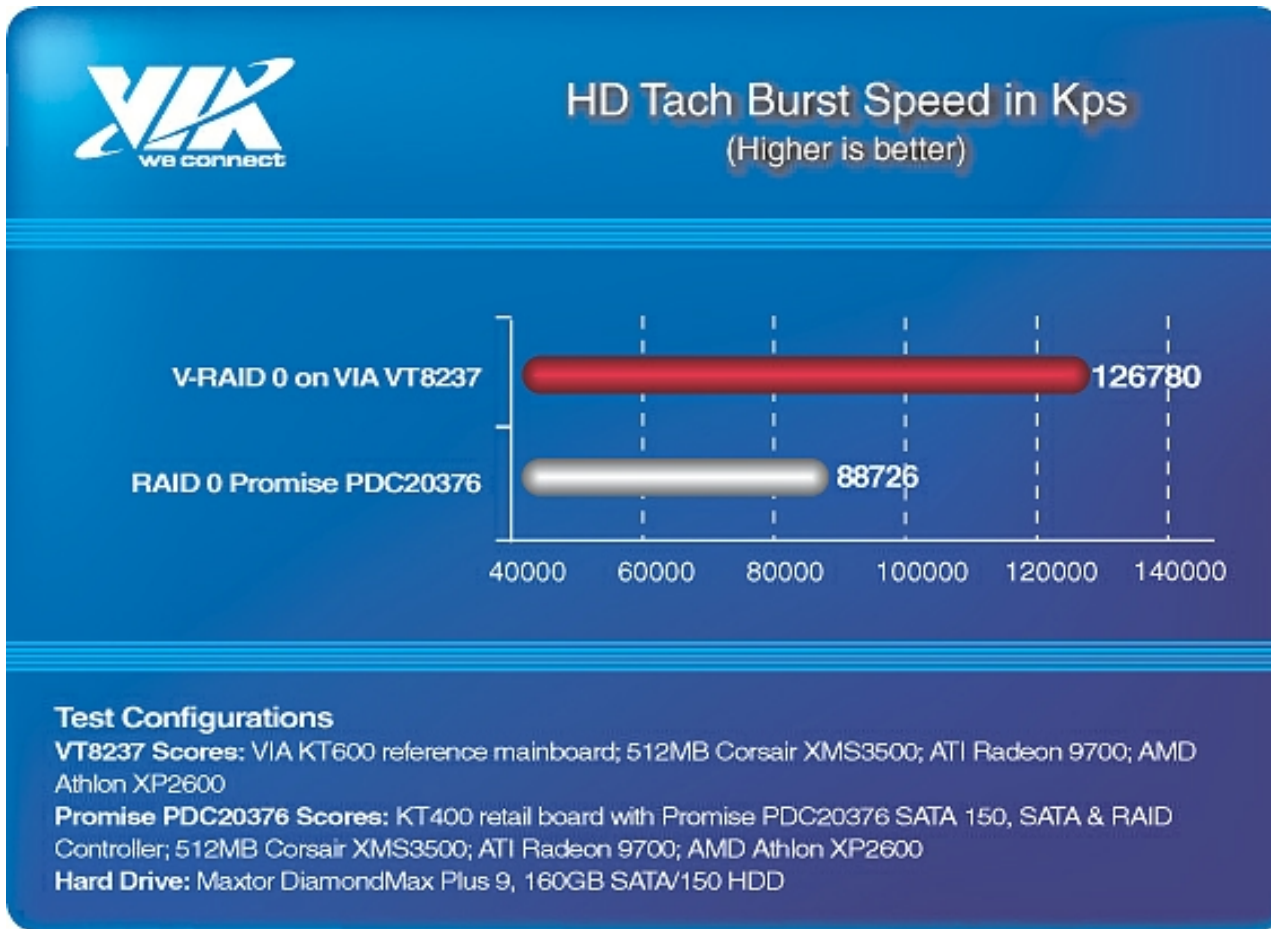
V-RAID Software Interface

- **Industry-first user-friendly V-RAID software enables easy installation and management**
    - Tricky BIOS configurations are a thing of the past
    - Compatible with Windows® or Linux operating systems
    - VIA DriveThru™ technology enables 'on-the-fly' upgrades to RAID configurations

V-RAID vs Promise RAID Feature Comparison

Utility	V-RAID	Promise RAID
Availability	Packaged with driver	Download from the website
Create arrays	Yes	No
Delete arrays	Yes	No
Delete/Create spare HDD	Yes	No
Select boot array	Yes	No
Report RAID configuration status	Yes	Yes
Warning when HDD is broken	Pop-up dialog box and manual rebuild control	PC noise and auto rebuild

DriveStation

V-RAID Performance

HD Tach Burst Speed in Kps
(Higher is better)

V-RAID 0 on VIA VT8237	126780
RAID 0 Promise PDC20376	88726

40000   60000   80000   100000   120000   140000

Test Configurations
VT8237 Scores: VIA KT600 reference mainboard; 512MB Corsair XMS3500; ATI Radeon 9700; AMD Athlon XP2600
Promise PDC20376 Scores: KT400 retail board with Promise PDC20376 SATA 150, SATA & RAID Controller; 512MB Corsair XMS3500; ATI Radeon 9700; AMD Athlon XP2600
Hard Drive: Maxtor DiamondMax Plus 9, 160GB SATA/150 HDD

VIA DriveStation V-RAID Performance

South Bridge Serial ATA/RAID Feature Comparison

Specification	VIA VT8237	Intel ICH5R	Nvidia MCP-T
Serial ATA	Full-Duplex Dual Channel Serial ATA	Full-Duplex Dual Channel Serial ATA	None
Maximum number of SATA Devices	2+2	2	0
RAID	RAID 0 RAID 1 RAID 0+1 JBOD	RAID 0	None
RAID Setup Interface	V-RAID Window-based Utility	BIOS-based Utility	None

VIA Advanced Connectivity Suite

- **USB 2.0 Controller**
  - Support for 8 USB 2.0/1.1 ports
  - 480 Mb/s connection to the latest peripheral and multimedia devices

- **Network Controller**
  - 10/100Mb/s Fast Ethernet MAC
  - Industrial-strength networking capabilities

- **PCI & LPC bus controllers**
  - PCI 2.2 compliant
  - 6 PCI Masters

VIA Vinyl™ Multichannel Audio Suite

- **VIA Vinyl™ Audio**
  - Richest choice of market leading integrated and onboard audio performance options
    - VIA Vinyl integrated 5.1 surround sound
      - VIA Vinyl AC '97 audio controller
      - VIA Six-TRAC codec
    - VIA Vinyl Gold onboard 7.1 surround sound
      - VIA Envy24PT + VIA Six-TRAC + additional DAC
      - Only onboard audio solution with 8-channel immersion audio
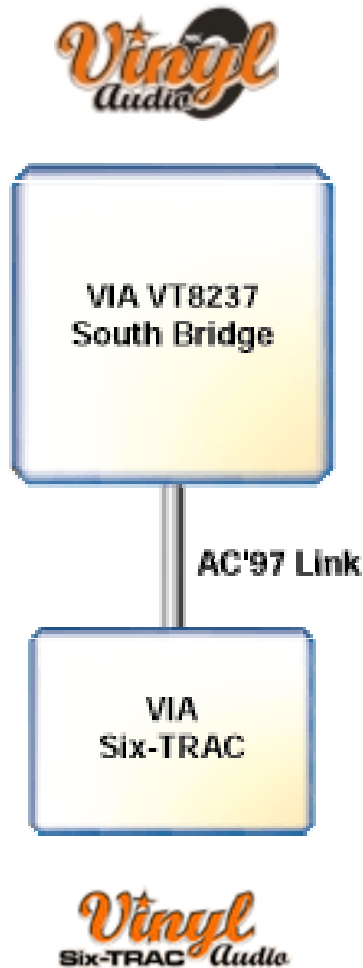   - 24/96 resolution digital outputs
    - VIA Stylus Audio Driver
      - Combo audio driver
      - Integrated Sensaura Technology
      - Awesome 3D positional audio effects
      - Full gaming support

VIA Vinyl Audio integrated 5.1 Surround Sound

- **Integrated six-channel AC'97 surround sound**
  - Warmest AC '97 audio experience
- **VIA Six-TRAC codec**
  - 20-bit architecture
  - Excellent audio performance
    - 90dB SNR tested on a motherboard
    - 97dB on Soundcard
  - DualMAX hardware downmixing
  - CoolAMP reduced heat for consistent performance

VIA VT8237
South Bridge

AC'97 Link

VIA
Six-TRAC

Positional 3D	
EAX 1.0	
EAX 2.0	
A3D^{TM} 1.x compatibility	
Bass Boost	
I3DL2	
Fast Panning 3D Algorithm fallback	
MMX optimization	
SSE2 optimization	
Voice manager	
Multichannel	
Multidrive	
Global Reverb	
Multidrive 5.1	

VIA Vinyl Gold Audio onboard 7.1 Surround Sound
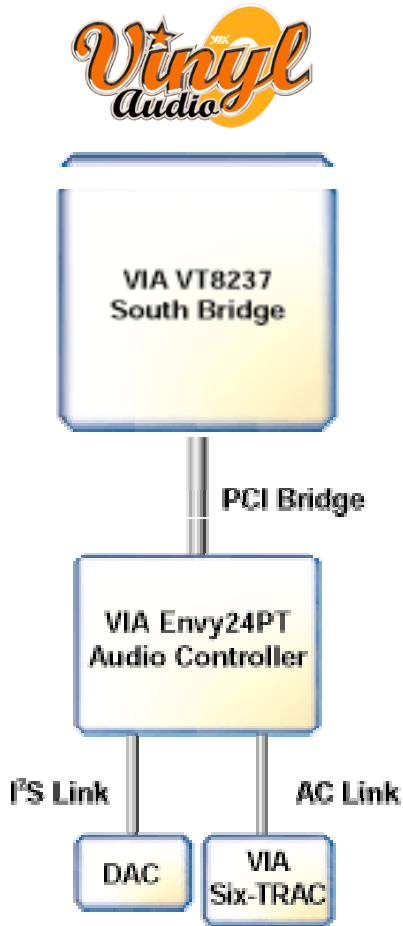
- **VIA Envy24PT high-resolution onboard 8-channel surround sound**
  - Only 8-channel onboard audio solution on the market
  - Highest quality digital outputs
    - 24-bit resolution support
    - Sampling rates up to 96kHz
  - Bit-for-bit accurate transfers
  - Configured for maximum performance
    - VIA Six-TRAC
    - 3rd party DAC

- **VIA Six-TRAC codec**
  - 20-bit architecture
  - Excellent audio performance
    - 90dB SNR tested on a motherboard
    - 97dB on Soundcard
  - DualMAX hardware downmixing
  - CoolAMP reduced heat for consistent performance

V-MAP Architecture

- **Ultra V-Link**
  - High throughput 1GB/s South Bridge/North Bridge interconnect
  - Supports next generation VIA North Bridge options across all processor platforms
    - PT880, K8T800, CM400, etc

- **8X V-Link**
  - High speed 533MB/s South Bridge/North Bridge interconnect
  - Supports current generation VIA North Bridge options across all processor platforms
    - KT600, PT800, CLE266, etc

- **VIA Hyperion 4in1 Unified Drivers**
  - Optimized system performance and stability
  - Regular Updates
  - Downloads and support at www.viaarena.com
  - Reducing Support Costs for VIA and VIA motherboard customers

Thank You