



# MediaQ Multimedia Platform Controller

## MQ-1168

The MQ-1168 is the second-generation product in the MQ-11xx series from NVIDIA. This device provides rich video and audio functions in addition to high performance graphics and high-speed peripherals, enabling mobile device OEMs to deliver a true multimedia experience. The MQ-1168 also extends the storage mechanism by supporting the popular Secure Digital interface.

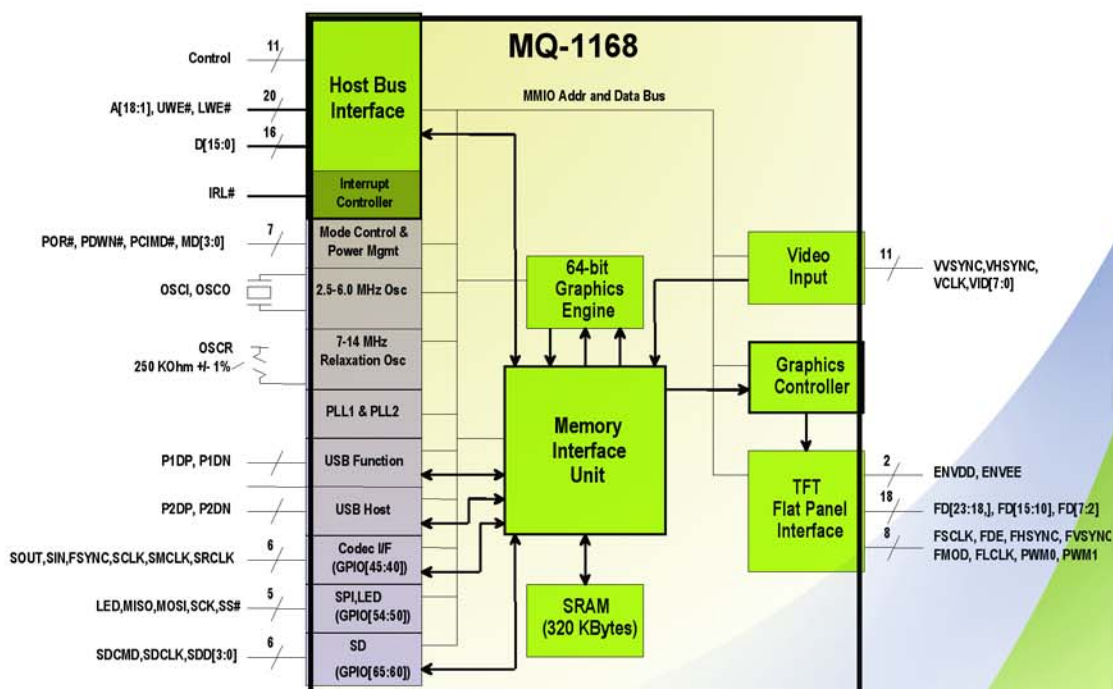
The MQ-1168 supports a flexible CPU interface, integrates a 64-bit 2D graphics engine, and Stretch BLT engine with color space converter for video processing, LCD display interface, dedicated Video Input Module, Secure Digital interface (SD), Serial Peripheral Interface (SPI), AC-97/I2S audio and USB controllers (function and host) on a single chip. This device provides OEMs the flexibility to create products based on performance and power consumption requirements and is ideally suited for mobile, networked platforms such as Personal Digital Assistants, Smart Phones and Mobile Appliances.

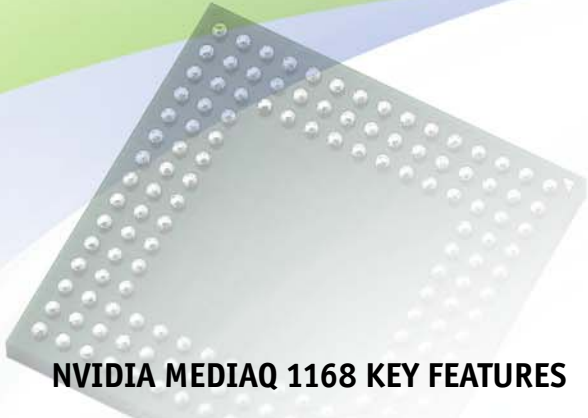
The MQ-1168 has a 64-bit wide internal bus to 320KB of embedded memory providing scalable bandwidth of up to 384MB/sec. The embedded SRAM provides on-chip storage for frame buffer, video buffers and transactional buffers for USB, SD and Audio. Fine-grained power management is made possible by the NVIDIA® DynamIQ™ power saving feature, reducing power consumption in handheld computing platforms.

The MQ-1168 provides hardware assist for video playback applications on mobile devices. The video stream can be input from the CPU host interface or from the dedicated CCIR656 compliant Video Input port. The MQ-1168 provides hardware based color space conversion and image scaling, with the YUV video buffers having space allocated in the embedded SRAM. This feature provides high quality video playback functionality while alleviating compute and memory access overheads from the host CPU.

To speed system integration, the MQ-1168 integrates key interface functions with direct support for a wide range of microprocessor architectures. The CPU interface of the MQ-1168 directly supports custom interfaces to the Intel StrongARM and Xscale architecture based CPUs, the Motorola Dragonball series and the NEC VR-4100 family.

The MQ-1168 is available in 144-pin BGA package with full driver support for popular operating systems.





## **NVIDIA MEDIAQ 1168 KEY FEATURES**

### **MULTIPLE MICROPROCESSOR SUPPORT**

- Intel SA-1110 and PXA2x0
- Motorola Dragonball
- NEC VR-4121 and VR-4122
- PCI v2.1 with clockrun support

### **INTEGRATED 320 KBYTES OF SRAM**

- 384 MB/s throughput
- Frame, Transactional and Video buffers

### **DISPLAY SUPPORT**

- Resolutions up to 320 x 320 (16 bpp)
- 640 x 240 (16 bpp) and 640 x 480 (8 bpp) without Video streaming supported
- S-STN and TFT Panels (Color and Monochrome)
- Built-in Timing Control supports direct interface to Poly Silicon TFT LCDs
- 64 x 64 pixel Hardware Cursor
- Hardware Rotation (90, 180 and 270 degrees)

### **DYNAMIQ POWER MANAGEMENT**

- Efficient Gated clock Design
- Selective Power down on individual modules
- Software and Hardware supported power down modes

### **2D GRAPHICS ACCELERATION ENGINE**

- Rectangular source-copy block transfers
- Hardware ROPs and Hardware line draw
- Monochrome to color conversion

### **VIDEO INPUT MODULE**

- CCIR656 Compliant 8-bit interface
- Supports YUV 4.2.2 and 4.2.0 format
- Hardware Color Space Conversion and Image Scaling

### **PERIPHERAL SUPPORT**

- USB 1.1 Device Interface
- USB 1.1 Host Interface - OHCI Compatible
- Serial Peripheral Interface (SPI)
- AC-97/I2S Audio Interface
- Secure Digital Interface (SD) for storage

### **MISCELLANEOUS**

- 2 PLLs to generate 48 MHz internal clock and Audio Codec Clock
- Relaxation Oscillator to reduce power consumption in idle mode

### **OS SUPPORT**

- Palm 4.0 and Windows CE drivers

### **PACKAGE DIMENSIONS**

- 144-pin BGA - 10mm x 10mm with 0.8mm pitch

