

# LM9701 Digital Image Processor w/ Integrated Pre-processor

## General Description

The LM9701 is a cost effective, digital image processor based around the ARM7™ 32 bit RISC processor. The chip has been designed to operate with National's family of advanced CMOS image sensors allowing a complete camera solution for imaging applications.

## Features

- Embedded 32 bit ARM7™ TDNI RISC processor system
  - 16K bytes of internal SRAM
  - 8K bytes of instruction Cache
  - 4 channel DMA
- External memory bus supporting:
  - 64 M-byte address space for SRAM and Flash
  - 64 M-bit address space for SDRAM
- Processor Peripherals
  - Two full duplex UARTs
  - $\mu$ wire/SPI serial port
  - Versatile timer
  - ARM timer
  - Interrupt controller
  - 16 general purpose IOs
  - Real time clock
- Glueless CMOS image sensor interface
  - 10 bit data, vsync, hsync and pclk
  - Fast I<sup>2</sup>C compatible serial Interface
- Image Pre-processor
  - Defective pixel correction (up to 1024)
  - Linearization table
  - 4 channel digital gain and offset adjustment
  - Raw data statistics
- Integrated USB v1.1 for connection to PC
- System management
  - Internal Clock generation from 12MHz Crystal
  - Power management
  - Reset generation
  - JTAG based serial on-chip debug interface

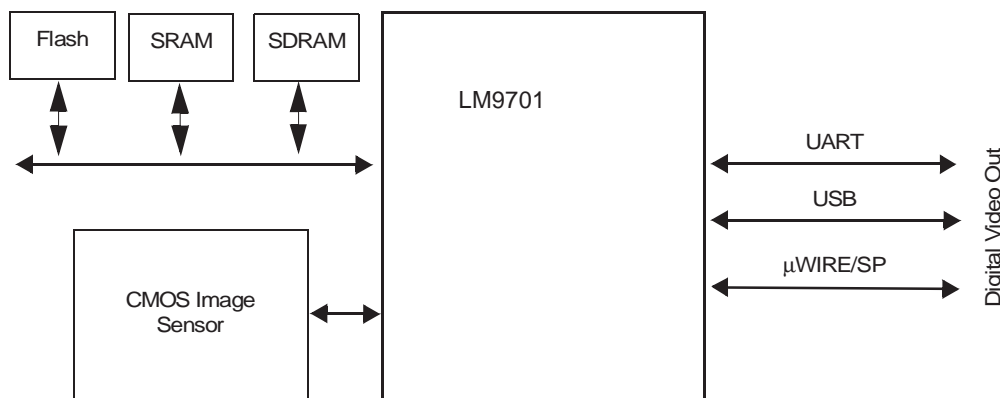
## Applications

- Clip On Camera
- Digital Still Camera
- Industrial Camera
- Automotive Camera
- Security Camera

## Key Specifications

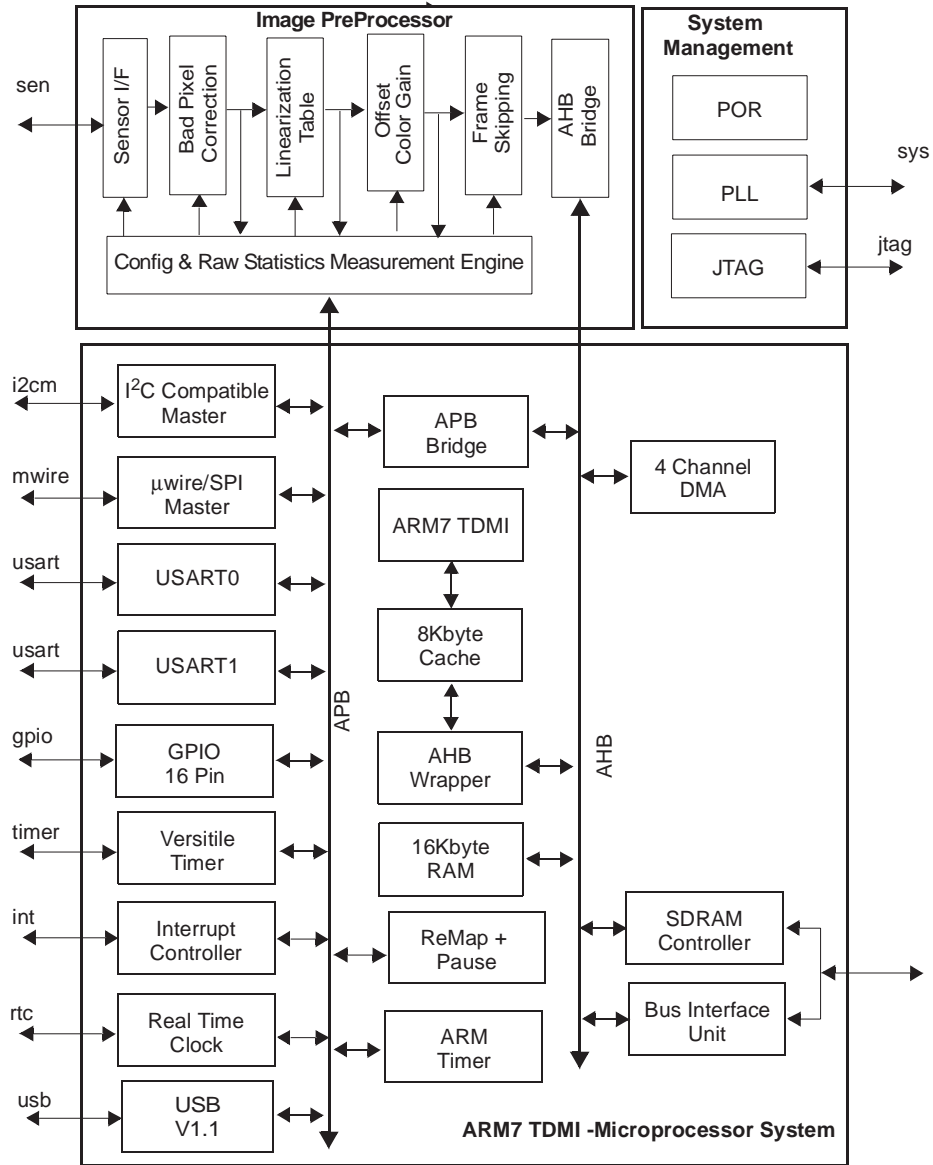
Input Format	Color Bayer Pattern Monochrome
Input Pixel Rate	12 Meg-pixels/s
Digital Image Pre-Processor	10 bit
External Memory	SRAM, Flash, SDRAM
- Memory Type	24 bit
- Address Space	up to 75MHz
- Speed	
Serial Interfaces	
- I <sup>2</sup> C compatible master	up to 400KHz
- $\mu$ wire/SPI	up to 6.0 MHz
- UART	up to 921.6 K bits/s
32 bit ARM7 Processor	
- MIPS	up to 75
- Internal Memory	16K-bytes
- Instruction Cache	8K-bytes
Clock Inputs	
- System	12 Mhz Crystal
- Real Time Clock	32 KHz Crystal
Power Supply	
- Core	1.8 Volt
- IO	3.3 Volt
Power Dissipation	< 100mW
Package	144 LQFP
Operating temperature	-40°C to +85°C

## System Block Diagram



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# Overall Chip Block Diagram



# Connection Diagram

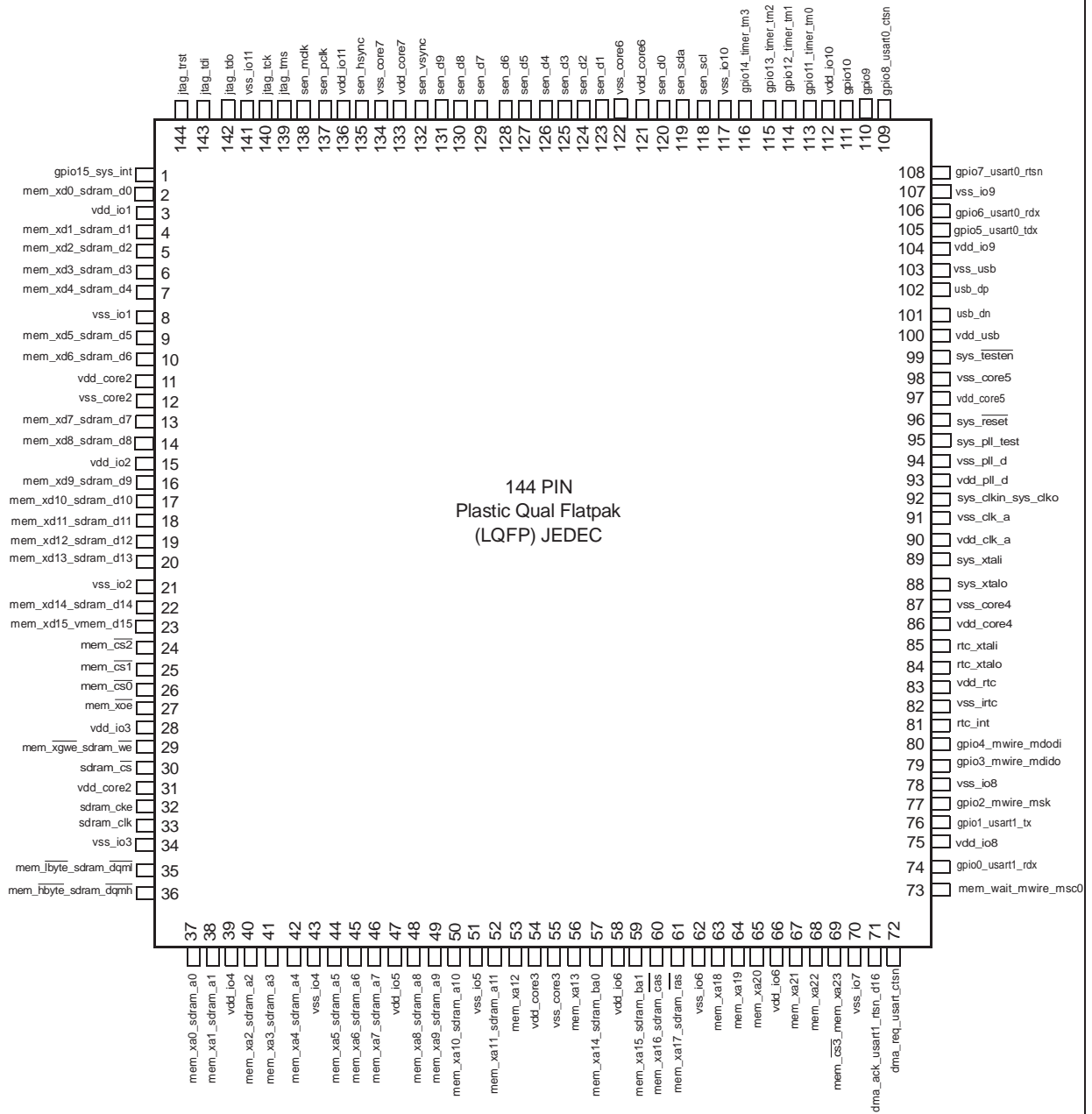


Figure 1. Pin Diagram

# Signal Grouping Diagram

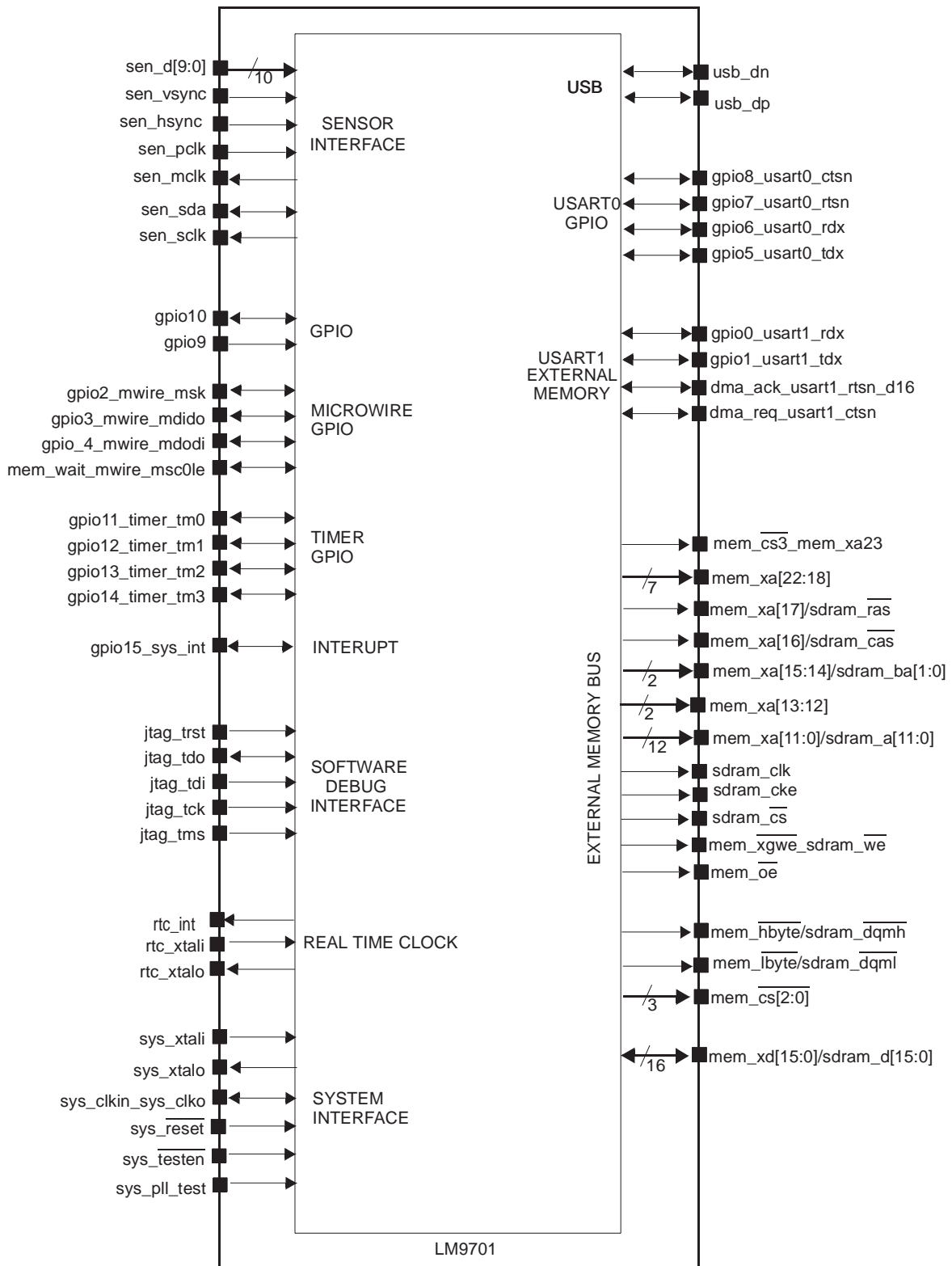
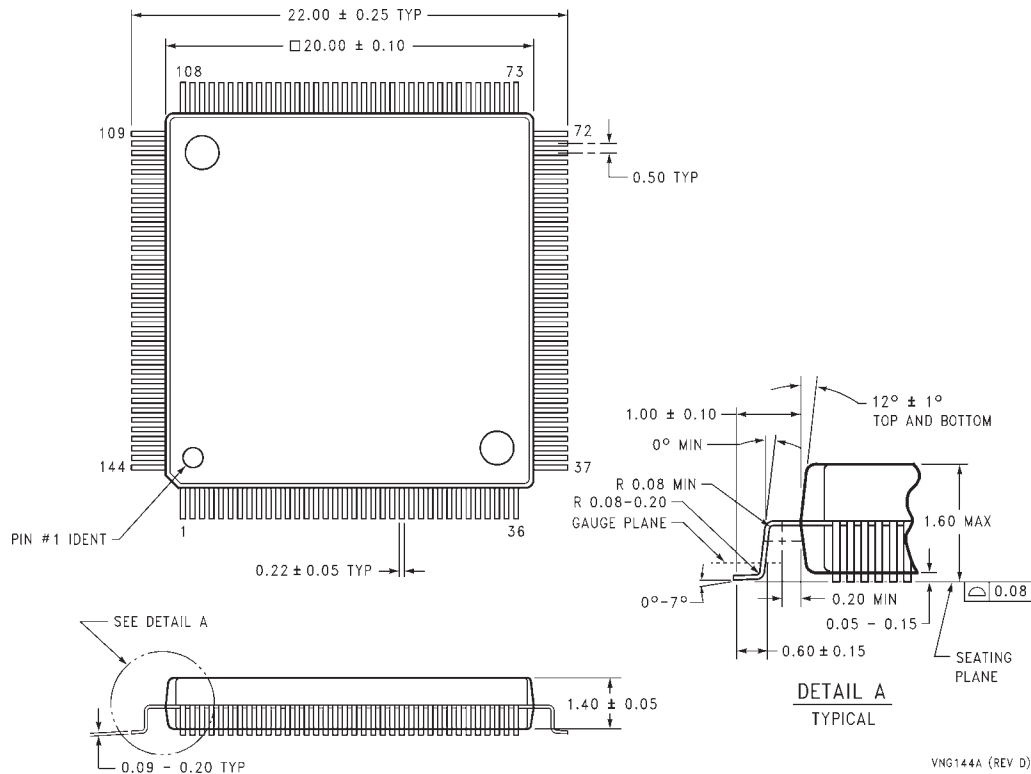


Figure 2. Signal Grouping Diagram

## PACKAGE INFORMATION



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