

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
 - μ 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 I²C 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

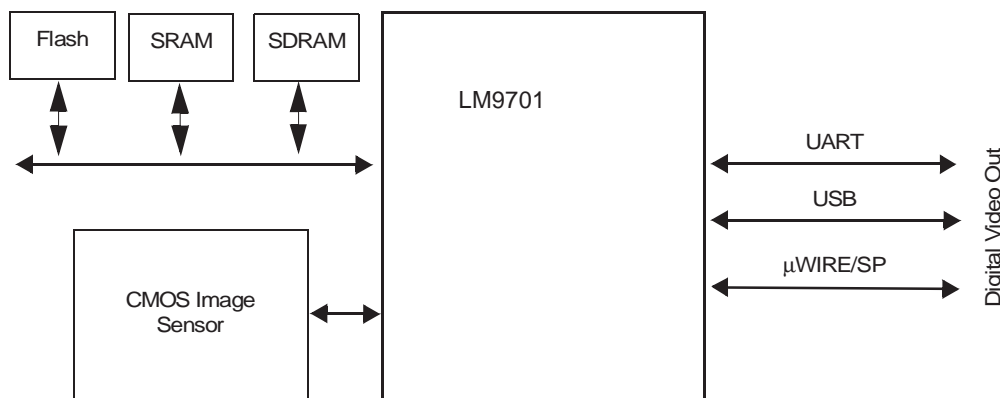
Applications

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

Key Specifications

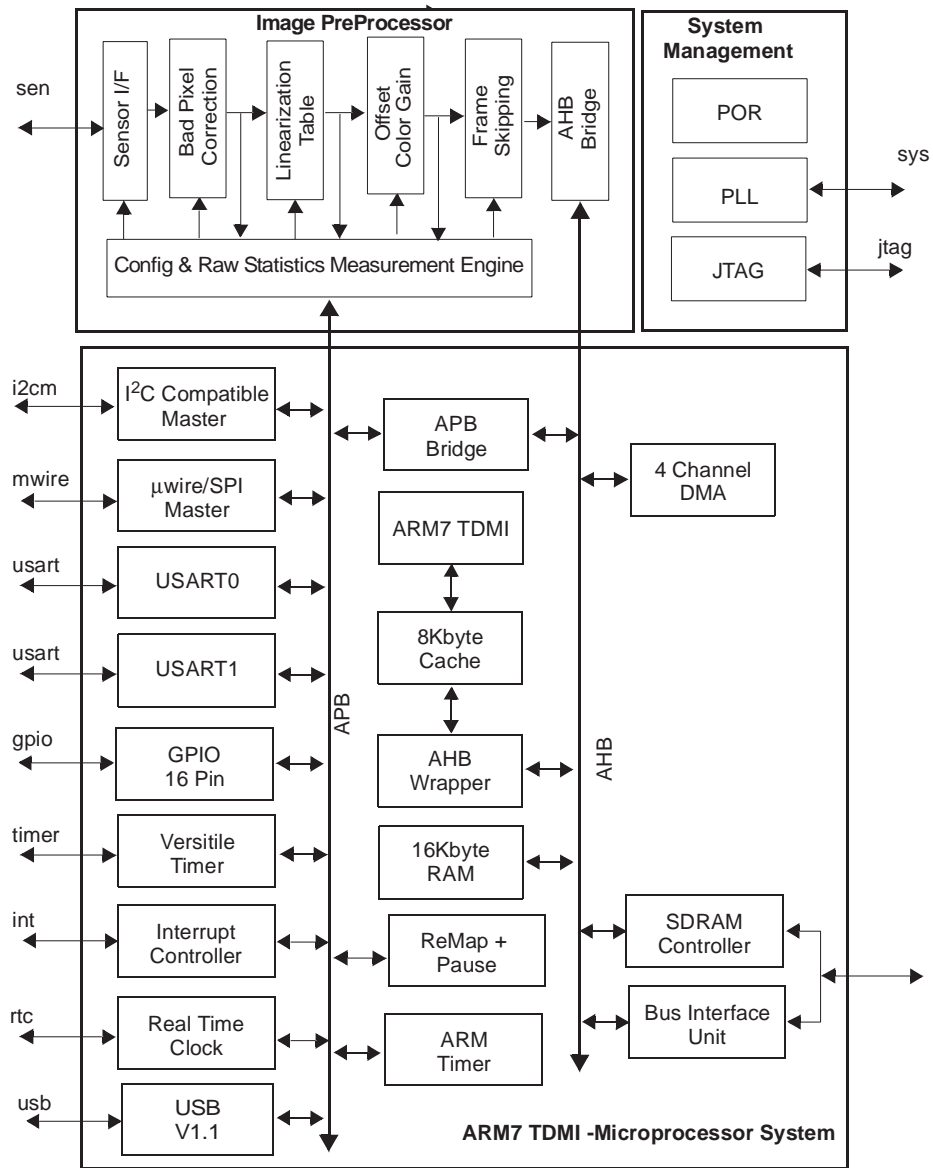
Input Format	Color Bayer Pattern Monochrome
Input Pixel Rate	12 Meg-pixels/s
Digital Image Pre-Processor	10 bit
External Memory	SRAM, Flash, SDRAM
- Memory Type	24 bit
- Address Space	up to 75MHz
- Speed	
Serial Interfaces	
- I ² C compatible master	up to 400KHz
- μ wire/SPI	up to 6.0 MHz
- UART	up to 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



ARM, ARM7 and ARM7TDMI are registered trademarks of ARM Limited

Overall Chip Block Diagram



Connection Diagram

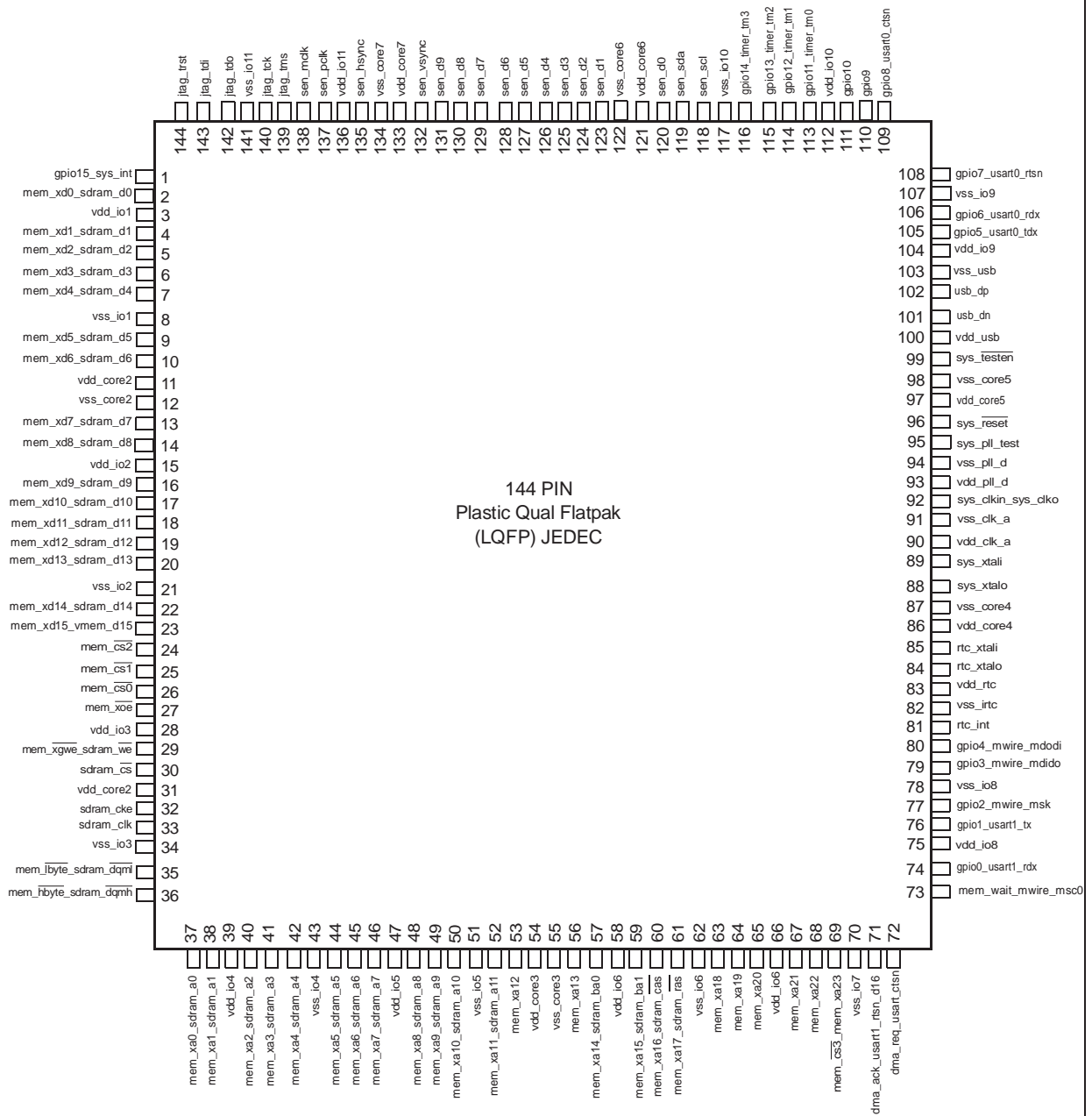


Figure 1. Pin Diagram

Signal Grouping Diagram

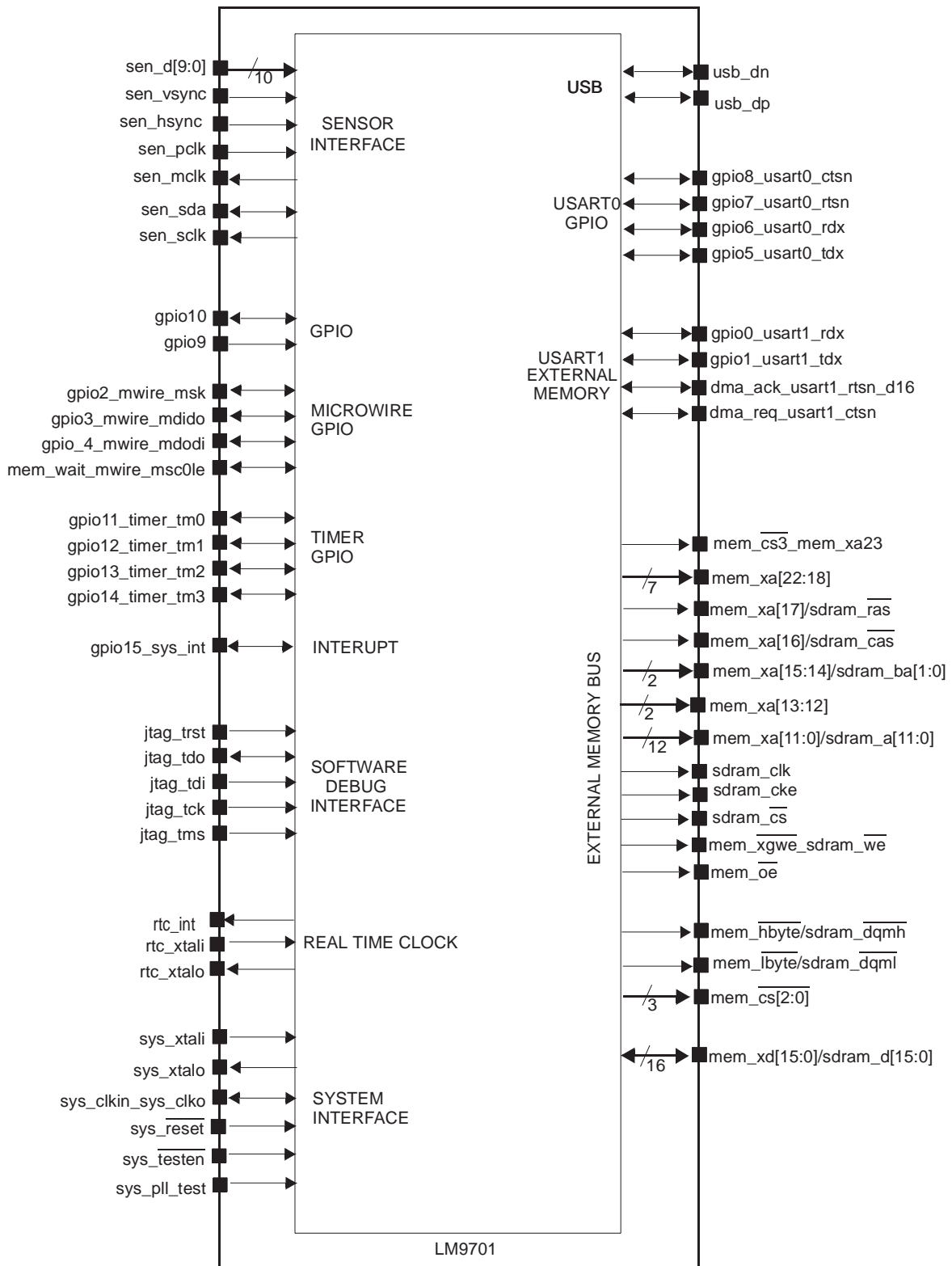
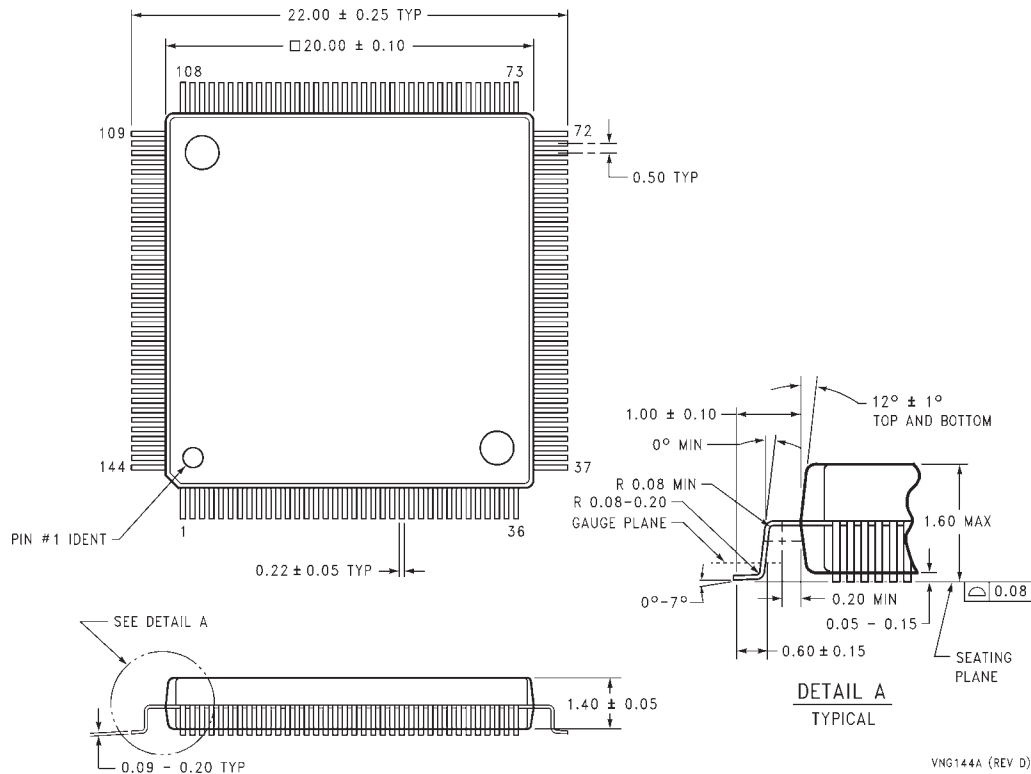


Figure 2. Signal Grouping Diagram

PACKAGE INFORMATION



LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT AND GENERAL COUNSEL OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.



National Semiconductor Corporation
Americas
Tel: 1-800-272-9959
Fax: 1-800-737-7018
Email: support@nsc.com

www.national.com

National Semiconductor Europe
Fax: +49 (0) 1 80-530 85 86
Email: europe.support@nsc.com
Deutsch Tel: +49 (0) 69 9508 6208
English Tel: +44 (0) 870 24 0 2171
Francais Tel: +33 (0) 1 41 91 8790

National Semiconductor Asia Pacific Customer Response Group
Tel: 65-2544466
Fax: 65-2504466
Email: ap.support@nsc.com

National Semiconductor Japan Ltd.
Tel: 81-3-5639-7560
Fax: 81-3-5639-7507