
Actions

MICROELECTRONICS Co., Ltd.

Actions-micro AM8370 Datasheet

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1 Introduction

1.1 Overview

The AM8370 processor from Actions-Micro is a highly integrated mix signal SoC target at multi-media applications. The AM8370 emmedded CPU is a high performance, low power 32bit RISC core with DSP instruction extension, which can run as fast as 700MHz.

The AM8370 integrated lossless or near-lossless image/video compress and de-compress module which can transfer 1080P video with format RGB888 through 1Gbit/s Ethernet.

The AM8370 multi-media processor provided display solutions with the help of on chip HDMI transmitter and receiver interface.

AM8370 is also integrated with 1 USB OTG controllers, UART, I2C, SPI, etc.

2 Feature

The AM8370 provides high level of system integration to support a wide variety of applications. The features of the AM8370 include:

- ✓ **32BIT RISC CORE**
 - 32K byte instruction cache and data cache
 - F/W can program from DC up to 800MHz transparently
 - DSP instruction for multi-media acceleration
 - Static design allows changing clock at run-time for power saving

- ✓ **VIDEO ENCODER**
 - 60 frames per second at 1920x1080 resolution for video all format

- ✓ **IMAGE/VIDEO COMPRESSOR**
 - Support upto 1080P Resolution
 - Support 8bit YCbYCr/RGB
 - Adaptive compress ratio up to 1:6
 - Lossless or Near-lossless compress

- ✓ **OSD**
 - 1,2 OSD bitmap data width
 - 256x128 size in 2 bit or 256x256 in 1 bit

- ✓ **DISPLAY INTERFACE**
 - HDMI Tx support, industry standard compliance HDMI 1.2
 - HDMI Rx support, industry standard compliance HDMI 1.3a

- ✓ **AUDIO**
 - I2S IN & I2S OUT interface
 - Support 32 levels volume control

- ✓ **Ethernet MAC**
 - Support MII/RMII/RGMII up to 1Gbps rate
 - Support SDIO interface for WIFI transfer

- ✓ **Transfer Schedule Manager**
 - Transfer compressed video/audio data through Ethernet
 - Receive compress video/audio data through Ethernet
 - The transferred video upto 1920x1080 60fs

- ✓ **MEMORY Storage**

-
- DDR2/3 SDRAM up to 4Gb @ 16bit up to 1066Mbps
 - OTP ROM 64bit Chip ID
- ✓ **DMA CONTROLLER**
- 8 physical channels and 4 bus channels
 - Stride mode support
 - Software configurable priority
- ✓ **Boot ROM**
- On chip boot ROM with boot loader
 - The system could be loaded from SPI Nor flash
- ✓ **USB 2.0 OTG**
- Complies with Universal Serial Bus Specification. Revision 2.0.
 - Complies with On-The-Go Supplement to the USB2.0 Specification Revision 1.0a.
 - Supports point-to-point communication with one low-speed, full-speed or high-speed device in Host mode.
 - Supports full-speed or high-speed in peripheral mode.
 - Supports USB Mass Storage Class Bulk-Only Transport Revision 1.0 as host or device.
 - Supports Electronic still picture imaging Picture Transfer Protocol (PTP)
 - Supports direct print function using pict-bridge
 - Supports Universal Serial Bus Device Class Definition for Printing Devices Version 1.1 as host
 - Supports Universal Serial Bus Still Image Capture Device Definition Revision 1.0 as host
 - Configurable/programmable size of endpoints.
 - Configurable/programmable single, double, triple or quad buffering.
 - Programmable type of endpoints.
 - Supports high-speed high-bandwidth Isochronous and Interrupt transfer.
 - Supports suspend, resume and power managements function.
 - Support USB wakeup
- ✓ **OTHER INTERFACE**
- UART/I2C/SPI
 - 3 external interrupts
 - 35 configurable GPIO shared with function pins
- ✓ **POWER**
- 1.3v for core
 - 3.3v/2.5v/1.8/1.5v for mac io,3.3v for others
 - Core PLL, LCD PLL,Audio PLL and DDR PLL support spread spectrum
- ✓ **PACKAGE**
- QFP 128pin (epad), 14x14mm

4.1 Pin out diagram

P_SPINSS	1	P_SPINSS	96
VCC3	2	VCC3	95
DVCC_PLL	3	VDD	94
HOSCI	4	P_DDRDM0	93
HOSCO	5	P_DDRDMI	92
AVCC2	6	P_DDRDQ14	91
VDD	7	P_DDRDQ9	90
EXT_R	8	P_DDRDQ11	89
AVDD33	9	P_DDRDQ12	88
RXCN_CH	10	P_DDRDQ6	87
RXCP_CH	11	P_DDRDQ1	86
RX0N_CH	12	P_DDRDQ3	85
RX0P_CH	13	P_DDRDQ4	84
RX1N_CH	14	SVCC	83
RX1P_CH	15	VDD	82
RX2N_CH	16	P_DDRWEB	81
RX2P_CH	17	P_DDRBA2	80
AVDD12	18	P_DDRBA0	79
HDMI_ON0	19	P_DDRBA1	78
HDMI_OP0	20	P_DDRA10	77
AVCCPLL	21	P_DDRA1	76
HDMI_ON1	22	P_DDRA3	75
HDMI_OP1	23	P_DDRA5	74
HDMI_ON2	24	P_DDRA7	73
HDMI_OP2	25	P_DDRA9	72
DVCCPAD	26	P_DDRA12	71
HDMI_ON3	27	SVCC	70
HDMI_OP3	28	VDD	69
CRCTX	29	P_UARTTX0	68
CBCRX	30	P_UARTRX0	67
P_I2C1SCL	31	VCC2	66
P_I2C1SDA	32	P_I2C0SDA	65
		P_I2C0SCL	65
VCC1	33		
P_RESETB	34		
P_UARTTX1	35		
P_UARTRX1	36		
P_EXTINT0	37		
P_EXTINT1	38		
P_I2SCK	39		
P_I2SSD	40		
P_I2SW/S	41		
P_MACRVL0	42		
P_MACMD10	43		
P_MACMD1C	44		
P_MACTVLD	45		
P_MACTD1	46		
P_MACTD0	47		
P_MACTCLK	48		
VCC0(2.5V)	49		
P_MACRD1	50		
P_MACRD0	51		
P_MACTD2	52		
P_MACTD3	53		
P_MACRD2	54		
P_MACRD3	55		
P_MACTER	56		
P_MACTRCLK	57		
VDD	58		
AVCC	59		
VBUS0	60		
DM0	61		
DP0	62		
UVCC0	63		
P_DRVVBUS0	64		
P_DDRDQSB0	97		
P_DDRDQSB1	98		
P_DDRDQSB1	99		
P_DDRDQSB1	100		
P_DDRDQ15	101		
P_DDRDQ8	102		
P_DDRDQ10	103		
P_DDRDQ13	104		
P_DDRDQ7	105		
P_DDRDQ0	106		
P_DDRDQ2	107		
P_DDRDQ5	108		
SVCC	109		
P_DDRCLK	110		
P_DDRCLKB	111		
P_DDRDQ11	112		
P_DDRASB	113		
P_DDRASB	114		
P_DDRASB	115		
VDD	116		
P_DDRM0	117		
P_DDRM2	118		
P_DDRM4	119		
P_DDRM6	120		
P_DDRM8	121		
P_DDRA11	122		
SVCC	123		
VDD	124		
P_IRTX	125		
P_SPINSS	126		
P_SPINSS	127		
P_SPICLK	128		

AM8370 PIN-OUT DIAGRAM