

---

# **Actions-micro AM8350 Datasheet**

**Document Number: AM8350 Datasheet**

**Revision 1.0.0**

**Release date: 11/05/2022**

**Actions Microelectronics Co., Ltd.**

**701, 7floor, Golder Plaza, No.10 huayuangonglu, Haidian District,  
Beijing, China**



# Declaration

Circuit diagrams and other information relating to products of Actions Microelectronics Company, Ltd. (“Actions-micro”) are included as a means of illustrating typical applications. Consequently, complete information sufficient for construction purposes is not necessarily given. Although the information has been



---

**ACTIONS-MICRO DISCLAIMS AND EXCLUDES ANY AND ALL WARRANTIES, INCLUDING WITHOUT LIMITATION ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND AGAINST INFRINGEMENT AND THE LIKE, AND ANY AND ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR USAGE OF TRADE.**

**IN NO EVENT SHALL ACTIONS-MICRO BE RELIABLE FOR ANY DIRECT, INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES; OR FOR LOST DATA, PROFITS, SAVINGS OR REVENUES OF ANY KIND; REGARDLESS OF THE FORM OF ACTION, WHETHER BASED ON CONTRACT; TORT; NEGLIGENCE OF ACTIONS-MICRO OR OTHERS; STRICT LIABILITY; BREACH OF WARRANTY; OR OTHERWISE; WHETHER OR NOT ANY REMEDY OF BUYER IS HELD TO HAVE FAILED OF ITS ESSENTIAL PURPOSE, AND WHETHER ACTIONS-MICRO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR NOT.**

Copyright © Actions Microelectronics Co., Ltd 2010. All rights reserved.



## Table of Contents

Terms and Acronyms

General Conventions

|                                 |           |
|---------------------------------|-----------|
| Declaration.....                | 2         |
| 1 Introduction.....             | 7         |
| <b>1.1 Overview .....</b>       | <b>7</b>  |
| 2 Feature .....                 | 9         |
| 3 Power on Sequence.....        | 11        |
| 4 Pin Out Specification .....   | 12        |
| <b>4.1 Pin out diagram.....</b> | <b>15</b> |
| 5 Operating Conditions.....     | 16        |
| 6 Crystal Requirements.....     | 17        |
| 7 Mechanical Specification..... | 18        |

## Revision History

| Version | Date       | Description    | Author    |
|---------|------------|----------------|-----------|
| 1.0.0   | 11/09/2021 | Initial Create | maweishuo |

## Terms and Acronyms

| Terms and Acronyms | Definition                                           |
|--------------------|------------------------------------------------------|
| CF                 | Compact Flash                                        |
| SM                 | Smart Media                                          |
| XD                 | xD picture                                           |
| SD                 | Secure Digital                                       |
| Micro SD           | Micro Secure Digital                                 |
| MS                 | Memory Stick                                         |
| MS Pro             | Memory Stick Pro                                     |
| MMC                | Multimedia Card                                      |
| SDRAM              | Synchronous Dynamic Random Access Memory             |
| MD                 | MicroDrive                                           |
| TF                 | T Flash                                              |
| LCD                | Liquid Crystal Display                               |
| ICE                | In-circuit emulation, or in-circuit emulator         |
| JTAG               | Joint Test Action Group(ANSI/ICEEE Std.11149.1-1990) |
| PQFP               | Plastic Quad Flat Package                            |
| LQFP               | Low-Profile Quad Flat Package                        |
| BGA                | Ball Grid Array                                      |
| PIP                | Picture In Picture                                   |
| TAP                | TEST ACCESS PORT                                     |
| RGB                | Red-Green-Blue color space representation            |
| TCON               | Timing controller                                    |
|                    |                                                      |
|                    |                                                      |



## General Conventions

| Symbol                              | Description                                                                                                                                                                                                                                                                                                              | Notes |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Note</b>                         |                                                                                                                                                                                                                                                                                                                          |       |
| H                                   | In the notes column, an H indicates the pin is hidden behind the actual physical pin listed in the Alternate Functions column and is not included in the pin count. No H indicates the actual pin is listed in the Signal Name column and the Alternate Functions column lists the alternate signals present on the pin. |       |
| <b>Pad GP</b>                       |                                                                                                                                                                                                                                                                                                                          |       |
| 1                                   | Pad group 1                                                                                                                                                                                                                                                                                                              |       |
| 2                                   | Pad group 2                                                                                                                                                                                                                                                                                                              |       |
| <b>Dir/Pol (direction/polarity)</b> |                                                                                                                                                                                                                                                                                                                          |       |
| I                                   | Input                                                                                                                                                                                                                                                                                                                    |       |
| O                                   | Output                                                                                                                                                                                                                                                                                                                   |       |
| B                                   | Bidirectional                                                                                                                                                                                                                                                                                                            |       |



# 1 Introduction

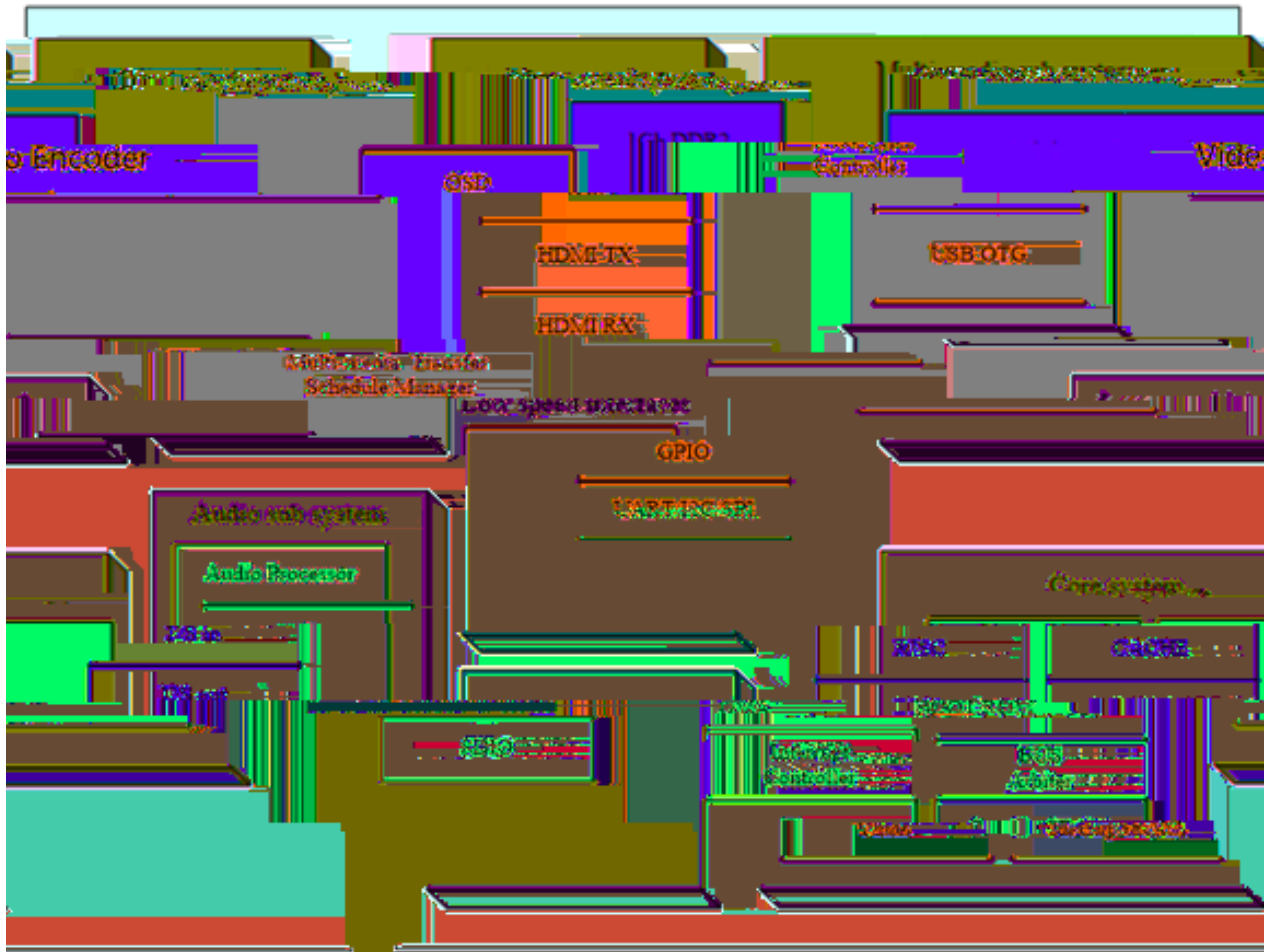
## 1.1 Overview

The AM8350 processor from Actions-Micro is a highly integrated mix signal SoC target at multi-media applications. The AM8350 emmedded CPU is a high performance, low power 32bit RISC core with DSP instruction extension, which can run as fast as 800MHz.

The AM8350 processor features a hardwired multi-format video encoder, which supports a large variety of popular video formats including: MJPEG/H.264 at full HD resolution.

The AM8350 multi-media processor provided display solution

### Block Diagram



## AM8350 BLOCK DIAGRAM



## 2 Feature

The AM8350 provides high level of system integration to support a wide variety of applications. The features of the AM8350 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**

- Support ISO/IEC 14496-10/YU-T Rec.H.264
- Base Profile,Level 1-



- 8 physical channels and 4 bus channels
- Stride mode support
- Software configurable priority

✓ **Boot ROM**

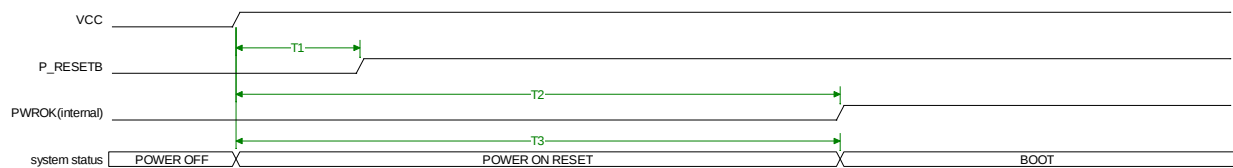
- On chip boot ROM with boot loader
- The system could be loaded from SPI Nor flash

✓ **USB 2.0 OTG**

-

### 3 Power on Sequence

The power on sequence requirements of the AM7xxx and AM8xxx products are the same, which are shown in the following figure. VDD represents the power pins supplying power for the core. VCC represents the power pins supplying power for the general purpose pads. SVCC represents the power pins supplying power for the DDR2 or DDR3 SDRAM related pads. P\_RESETB is the asynchronous reset pin. PWROK is an internal signal. It is low during the power-on phase to reset all the registers in the chip. The system boots at the moment when PWROK turns to high.



**Figure 1 Power on Sequence Diagram**

Timing Requirements:

1.  $T1 = 20ms$
2.  $T2 = 128ms$
3.  $T3$  is equal to the greater one between  $T1$  and  $T2$
4. The power on sequence of VDD/VCC/SVCC is not cared



|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|





|    |           |     |          |
|----|-----------|-----|----------|
| 79 | P_DDRBA1  | B   | P_DDRBA1 |
| 80 | P_DDRBA0  | B   | P_DDRBA0 |
| 81 | P_DDRBA2  | B   | P_DDRBA2 |
| 82 | P_DDRWEB  | B   | P_DDRWEB |
| 83 | VDD       | PWR | VDD      |
| 84 | SVCC      | PWR | SVCC     |
| 85 | P_DDRDQ4  | B   | P_DDRDQ4 |
| 86 | P_DDRDQ3  | B   | P_DDRDQ3 |
| 87 | P_DDRDQ1  | B   | P_DDRDQ1 |
| 88 | P_DDRDQ6  | B   | P_DDRDQ6 |
| 89 | P_DDRDQ12 | B   |          |



|     |          |     |                                                                   |
|-----|----------|-----|-------------------------------------------------------------------|
| 122 | P_DDRA11 | B   | P_DDRA11                                                          |
| 123 | SVCC     | PWR | SVCC                                                              |
| 124 | VDD      | PWR | VDD                                                               |
| 125 | P_IRTX   | B   | Ien-US (ang/ 166 512S)11(TS)8g (8(K(en-US)-BDC q198.29 704.26 53. |



## 5 Operating Conditions

### Absolute Maximum Ratings

| SYMBOL            | PARAMETER            | RATING | UNITS |
|-------------------|----------------------|--------|-------|
| V <sub>cc</sub>   | Power Supply (3.3V)  | 3.8    | V     |
| V <sub>svcc</sub> | Power Supply (1.5V)  | 1.575  | V     |
| V <sub>dd</sub>   | Power Supply (1.35V) | 1.4    | V     |

## 6 Crystal Requirements

Requirements for 24MHz oscillator.

| Description                        | Specification Requirement                    |
|------------------------------------|----------------------------------------------|
| Nominal Frequency                  | 24MHz                                        |
| Oscillation Mode                   | Fundamental                                  |
| Frequency Tolerance at 25          | 30ppm                                        |
| Temperature Stability              | 50ppm                                        |
| Shunt Capacitance (Co)             | 7pF max                                      |
| Load Capacitance (CL)              | 12pF~18pF                                    |
| Equivalent Series Resistance (ESR) | 50ohm max                                    |
| Drive Level                        | 500uW max                                    |
| Aging (at 25 )                     | 3ppm/year                                    |
| Insulation Resistance              | 10meg                                        |
| Net Weight                         | This will b.77 553.75 226.4918.024K081ET@EMU |

## 7 Mechanical Specification

