



# **Hi3516A/Hi3516D Core Power Combination Solutions and Power Consumption Comparison**

**Issue**            **03**

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# About This Document

## Purpose

This document describes the Hi3516A/Hi3516D core power combination solutions and power consumption comparison between these solutions.



### NOTE

This document uses the Hi3516A as an example. Unless otherwise specified, this document applies to the Hi3516D and Hi3516A.

## Related Versions

The following table lists the product versions related to this document.

Product Name	Version
Hi3516A	V100
Hi3516D	V100

## Intended Audience

This document is intended for:

- Technical support engineers
- Board hardware development engineers

## Change History

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made in previous issues.

### Issue 03 (2015-06-15)

This issue is the third official release, which incorporates the following changes:

The power combination solutions are modified.



# 1 Core Power Combination Solutions



## NOTE

Unless otherwise specified, this document applies to the Hi3516A and Hi3516D. Their differences are separately described.

The Hi3516A/Hi3516D core power supplies include VDD, DDR, CPU, and MEDIA. These core power supplies can be combined as follows:

- Two power supplies (1)
  - The CPU frequency is lower than or equal to 600 MHz.
  - The VDD, DDR, and CPU core power supplies are combined into one power supply. PWM3 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
  - The MEDIA supplies power independently. PWM2 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
- Two power supplies (2)
  - When the high-frequency CPU is used, this solution can be adopted if the chip power consumption is not concerned; this solution is not recommended if power consumption reduction is taken into consideration.
  - The VDD, DDR, and MEDIA core power supplies are combined into one power supply. PWM2 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
  - The CPU supplies power independently. PWM3 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
- Three power supplies
  - The VDD and DDR core power supplies are combined into one power supply. PWM1 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
  - The CPU supplies power independently. PWM3 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
  - The MEDIA supplies power independently. PWM2 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
  - This power combination solution is recommended when the high-frequency CPU is used.
- Four power supplies
  - The VDD supplies power independently. PWM0 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.



- The DDR supplies power independently. PWM1 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
- The CPU supplies power independently. PWM3 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
- The MEDIA supplies power independently. PWM2 of the Hi3516A/Hi3516D is used to adjust the voltage of the corresponding DC-DC.
- The chip power consumption is the lowest when this solution is adopted. However, factors including the design complexity, tailoring, and overall power conversion efficiency need to be taken into account.
- One power supply  
The VDD, DDR, CPU, and MEDIA core power supplies are combined into one power supply. PWM3 of the Hi3516A is used to adjust the voltage of the corresponding DC-DC. The power consumption of the master chip is high when this solution is adopted. Therefore, this power combination solution is not recommended.



# 2 Power Consumption Comparison

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## 2.1 Hi3516A

In general, the power consumption of the four-power solution is about 71 mW lower than that of the three-power combination solution.

The two-power combination solution can be used when the CPU frequency is lower than or equal to 600 MHz. The power consumption of the three-power combination solution is about 50 mW lower than that of the two-power combination solution.

The one-power combination solution is not recommended for the Hi3516A core power supplies. The power consumption of the one-power combination solution is about 300 mW higher than that of the two-power combination solution.

## 2.2 Hi3516D

For the Hi3516D core power combination solutions, the power consumption of the four-power solution is about 63 mW lower than that of the three-power combination solution.

The two-power combination solution can be used when the CPU frequency is lower than or equal to 600 MHz. The power consumption of the three-power combination solution is about 40 mW lower than that of the two-power combination solution.

The one-power combination solution is not recommended for the Hi3516D core power supplies. The power consumption of the one-power combination solution is about 260 mW higher than that of the two-power combination solution.