Application Report
SPRACD9–June 2017

66AK2G12 Power Estimation Tool

Catalog Processors

ABSTRACT

This power estimation spreadsheet provides power consumption estimates based on measured and simulated data; they are provided “as is” and are not ensured within a specified precision. Power consumption depends on electrical parameters, silicon process variations, environmental conditions, and use cases running on the processor during operation. Actual power consumption should be verified in the real system.

The spreadsheet discussed in this application report can be downloaded from the following URL: http://www.ti.com/lit/zip/spracd9.

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1 Introduction

The Power Estimation Tool (PET) allows users to gain insight into the power consumption of 66AK2G12 DSP + ARM Processor. The tool includes the ability for the user to choose multiple application scenarios and understand the power consumption as well as how advanced power saving techniques can be applied to further reduce overall power consumption.

PET spreadsheet is comprised of two parts:

- Input – The input part of the spreadsheet is the mechanism in which users input device parameters needed for their application. Parameters include device junction temperature, clock configurations and use case input.
- Output – The output part of the spreadsheet contains the information on 66AK2G12 power consumption based on power calculations in the spreadsheet. The output report which includes voltage, current and power will be shown in 66AK2G12 power consumption section.

The data presented in the PET spreadsheet are based on measurements performed on 66AK2G12 silicon, as well as estimates.

For additional details about the 66AK2G12 processor, see the TI.com product page.

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2 Using the Power Estimation Tool

The Input part of the spreadsheet consists of two sections: General and Use Case Input. To use the input part of the spreadsheet, users need to modify the input fields with their appropriate usage parameters. Cells that are designed for user input are light blue in color. Simply configure the light blue cells to a value most closely aligned with your intended scenario.

2.1 Macro Buttons

The spreadsheet includes macros. If you can't run macros, please review your excel security settings described in below articles.

- Change macro security settings in Excel (Office 2010)
- Change macro security settings in Excel (Office 2007)

The input part of the spreadsheet has command buttons to run macros as follows:

- "Reset Settings" - Clear all settings and configure them to the default values.
- "Generic" - Set use case condition for typical ARM and DSP usage scenario.
- "High DSP Activity" - Set use case condition for high DSP activity scenario.

2.2 General

This section allows users to set a junction temperature (not ambient temperature) and PLL clock frequency option.

- Junction Temperature (°C) : 0°C to 125°C (negative values are not supported in the tool)
- Power Estimation Mode : Max ('Max' accounts for the worst-case silicon process variation. The option is fixed to Max in this version of the PET)
- Main PLL Frequency (MHz): 1000, 600, or 400 MHz
- ARM PLL Frequency (MHz): 1000, 600, 400, 200 MHz
- DDR PLL Frequency (MHz): 533 or 400 MHz
- ICSS PLL Frequency (MHz): 225 MHz

2.3 Use Case Input

- Power Domain: Power domain information for each modules
- Module: Name of processing cores or peripheral modules.
- Frequency (MHz): The module operating frequency configured by PLL configurations
- State: Specifies whether a peripheral is enabled and configured for use, or disabled and unconfigured
- Utilization (%): Specifies the utilization as a percentage of processing load relative to a full load condition

2.4 66AK2G12 Power Consumption

The power estimation tool generates a power analysis report in this section. The report lists power supply name, voltage in V, current in mA and power consumption in mW per power rail groups. The total power consumption in mW is listed at the end of the table.

3 Important Notes and Limitations

The following limitations apply to the 66AK2G12 Power Estimation Tool:

It is up to the user to input reasonable utilization numbers for processing cores (MPU and DSP) for the purposes of maximum power analysis. 90-100% loading on the processing cores is not realistic for most application scenarios

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