

DA6011

Highly integrated power and clock supply IC for new generation Intel Atom processor

The DA6011 is a single chip power management and clock companion IC for the Intel® Atom™ processor E6xx series (formerly codenamed Tunnel Creek). The single chip solution provides all power and clock supplies as well as system management control. It is designed to support platforms based on the Intel Atom processor E6xx series, including the IO-hubs.

Integrated power management

Dialog Semiconductor's new DA6011 uses a single supply voltage and provides low noise supplies to all CPU and IO-Hub voltage domains with current management for the system DDR2 and boot SPI flash memory.

The DA6011 integrates 11 high performance low dropout (LDO) voltage regulators, which use Dialog's patented Smart Mirror™ technology for very low quiescent current, and includes 3 pass devices for platform power distribution simplification.

Six DC-DC buck converters (three with external FETs and three with integrated FETs) provide current to the Intel Atom E6xx series platform's multiple low voltage domains. These highly efficient buck converters supply the CPU and graphics core and meet Intel IMVP-6 specification. Furthermore, they power the system memories, the IO-hub and further high current loads of the platform.

The power domain architecture has been carefully optimised to deliver enhanced power efficiency to the platform at the lowest power dissipation, thereby maximising battery life and reducing thermal impact. The architecture also takes several IO-hubs with its different power requirements into account.

System Manager Controller

The integrated system management controller takes care of the complete platform start-up, state-transitioning and power-down procedures. It operates autonomously and reduces the overall system power consumption when entering stand-by or power down modes.

The flexible state-machine implementation is designed to control Intel Atom processor E6xx series based platforms including the Intel Platform Control Hub EG20T, OKI Semiconductor ML7223 / ML7213 and ST Microelectronics ConneXt STA2X11 IO-hubs.

An Analog to digital converter (ADC) with 10bit resolution, combined with an input multiplexer and track and hold circuitry will be implemented.

Auxillary function

An analogue to digital converter (ADC) with 10bit resolution combined with an input multiplexer and track and hold circuitry has been implemented. Two inputs can be used to measure signals manually or automatically.

Features

- ▶ Power supplies & power management for Intel Atom processor E6xx series plus IO-hubs
- ▶ Supports Intel Platform Control Hub EG20T, ST Microelectronics ConneXt STA2X11, OKI Semiconductor ML7223 and ML7213 IO-Hubs
- ▶ Programmable clock supplies dedicated to Intel Atom processor E6xx series platforms with IO-Hubs
- ▶ Flexible, hardcoded SMC programmable via OTP
- ▶ Automotive temperature range, meeting AEC-Q100 specifications

Functions

- ▶ 6 high efficient DC-DC buck converter
- ▶ 2 IMVP-6 compatible buck converters for Intel E6xx processor
- ▶ 11 high performance LDOs, which use Dialog's patented Smart Mirror™ technology
- ▶ 3 integrated pass devices for fully featured system with lowest possible BOM
- ▶ A push-pull reference source/sink for DDR2 RAM termination
- ▶ Autonomous, flexible state machine for complete system startup and shut-down procedure
- ▶ 4 fractional divider PLLs including spread spectrum capability, designed for Intel E6xx platforms
- ▶ 2 input 10-bit ADC for signal measurements

Operating conditions

Designed with AEC-Q100 specifications in mind, the DA6011 operates between -40 and +85°C to meet industrial and automotive temperature ranges.

The die temperature and the output currents of each source will be monitored to ensure proper and safe operation.

Applications

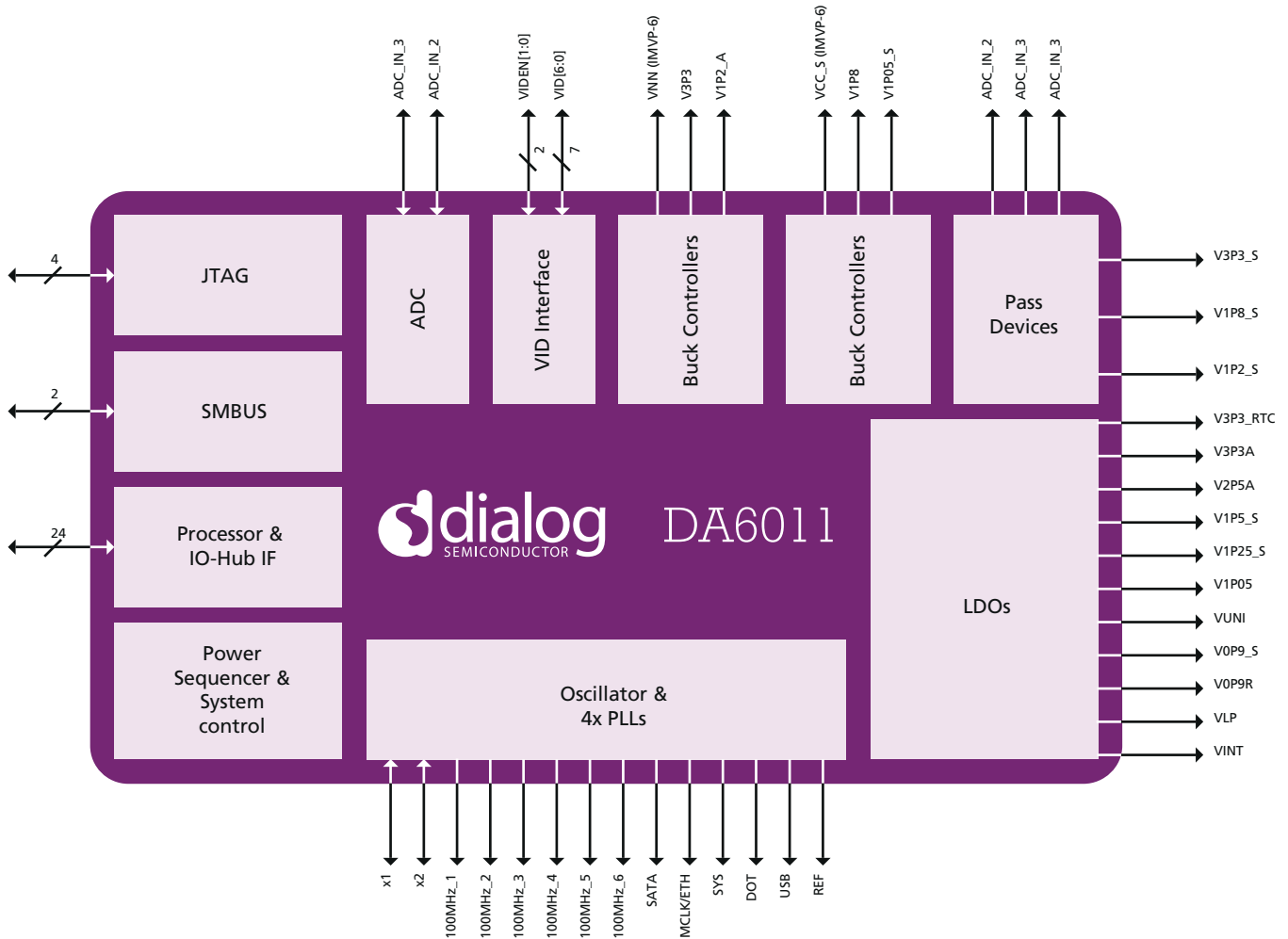
- ▶ Vehicle command systems
- ▶ Telematic devices
- ▶ Car navigation systems
- ▶ Mobile internet devices
- ▶ UMPCS
- ▶ High End PNDs
- ▶ Multimedia phones

Package

- ▶ 169 VFBGA 11x11mm
- ▶ 0.8mm pitch



Block Diagram



Dialog Semiconductor Worldwide Sales Offices - www.dialog-semiconductor.com

email: info@diasemi.com

United Kingdom
Phone: +44 1793 757700

The Netherlands
Phone: +31 73 640 88 22

Japan
Phone: +81 3 5425 4567

Singapore
Phone: +65 648 499 29

Korea
Phone: +82 2 3469 8200

Germany
Phone: +49 7021 805-0

North America
Phone: +1 408 845 8500

Taiwan
Phone: +886 281 786 222

Hong Kong
Phone: +852 3769 5200

China (Shenzhen)
Phone: +86 755 2981 3669
China (Shanghai)
Phone: +86 21 5424 9058

This publication provides outline information only, which unless agreed by Dialog Semiconductor may not be used, applied or reproduced for any purpose, or be regarded as a representation relating to products. Please refer to Dialog standard supply terms on the company website (www.dialog-semiconductor.com).

© Dialog Semiconductor 2015. All rights reserved. 0415XXX