

# DesignWare IP

## Data Conversion Solutions

### Portfolio

- ▶ Analog-to-Digital Converters (ADCs)
- ▶ Digital-to-Analog Converters (DACs)
- ▶ Touch Screen Controllers (TSC)
- ▶ Housekeeping ADCs, Aux. DACs
- ▶ Video DAC

### Foundries and Processes

- ▶ Available in major foundries and in the most advanced technology nodes from 180nm down to 40nm

### Key Applications

- ▶ Wireless Communications
- ▶ Smartphones, PDAs and PMPs
- ▶ Notebooks, Dongles
- ▶ Digital TVs and Set-top Boxes
- ▶ Modems and Satellite Receivers
- ▶ Digital Cameras, DVD

The explosive growth of communications and consumer electronics is driving developers to provide constant innovation, higher performance, smaller geometries, extended battery life, and a richer feature set.

With more than 12 years of experience in developing data conversion IP solutions, Synopsys offers a comprehensive portfolio of over 200 silicon-proven DesignWare Data Conversion IP solutions consisting of Oversampling Sigma-Delta ADCs, Pipeline ADCs, SAR ADCs, current steering DACs and much more.

Synopsys' DesignWare data converter IP solutions have been implemented in over 100 designs, giving designers confidence that they can integrate high performance analog IP into their SoCs with significantly less risk and improved time-to-results. Combined with advanced design techniques and a robust feature set, Synopsys enables SoC developers to easily incorporate high-performance analog IP into their SoCs and achieve first pass silicon success.

Synopsys focuses on delivering high quality IP that helps customers meet their specific design requirements for their target applications. The DesignWare data converter IP products offer very low power dissipation, small area and support a wide range of process technologies and foundries ranging from 180nm down to 40nm.

### Technology Highlights

- ▶ #1 provider of Data Conversion IP for four years in a row (Gartner, 2009)
- ▶ Over 12 years of expertise in designing differentiated Data Converter IP Solutions.
- ▶ Proven ADC/DAC technology.
- ▶ Extensive offering: Oversampling Sigma-Delta ADC, Pipeline ADC, SAR ADC, current steering DAC, and more.
- ▶ High-performance, small area and low-power
- ▶ Strong Application Expertise in Broadband Wireless Communications, Wired Communications, Video, etc
- ▶ Seamless integration of hard macro into SoCs with excellent support
- ▶ Available in broad range process technologies from 180nm down to 40nm
- ▶ Over 200 IP components integrated in over 100 SoCs

Application	IP Type	Resolution	Conversion Range
Broadband wireless communications WiFi, WiMAX, LTE	Dual ADC Dual DAC Auxiliary ADC/DAC	10-bit/12-bit 10-bit/12-bit 8-bit/10-bit/11-bit	Up to 80 MSPS (Typ=25/40/44/80) Up to 80 MSPS (Typ=25/40/44/80) Up to 20 MSPS
Broadcast Receivers (DVB, DMB, ISBD, CMMB...)	Dual ADC/ADC	10-bit	8.192 MSPS up to 50 MSPS
UWB (e.g. W-USB)	Dual ADC Dual DAC	6-bit 6-bit	Up to 1 GSPS Up to 1 GSPS
Analog Video Input/ IF Sampling	High-speed ADC/ Dual ADC	8-bit/10-bit/12-bit	Up to 165/205 MSPS
Analog Video Output	Video DAC	10-bit/12-bit	Up to 200/250/300 MSPS
Touchscreen Controller (TSC)	TSC	10-bit/12-bit	Typ = 125 kSPS
Housekeeping ADCs (all types of applications)	Low-speed ADC	8-bit/10-bit/12-bit	Few kHz to 2 MSPS

## About DesignWare® IP

Synopsys is the leading provider of high-quality, silicon-proven interface and analog IP solutions for system-on-chip designs. Synopsys' broad IP portfolio delivers complete connectivity IP solutions consisting of controllers, PHY and verification IP for widely used protocols such as USB, PCI Express, DDR, SATA, HDMI and Ethernet. The analog IP family includes Analog-to-Digital Converters, Digital-to-Analog

Converters, Audio Codecs, Video Analog Front Ends and more. In addition, Synopsys offers SystemC transaction-level models to build virtual platforms for rapid, pre-silicon development of software. With a robust IP development methodology, extensive investment in quality and comprehensive technical support, Synopsys enables designers to accelerate time-to-market and reduce integration risk.

For more information on DesignWare IP, visit <http://www.synopsys.com/designware>



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