

DesignWare

Data Converter IP Solutions

Portfolio

- ▶ High speed, Analog-to-Digital Converters (ADCs)
- ▶ High speed, Digital-to-Analog Converters (DACs)
- ▶ General purpose, high resolution ADCs
- ▶ Auxiliary DACs
- ▶ Video DACs

Foundries and Processes

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

Key Applications

- ▶ Markets:
 - Wireless communications
 - Wireline communications
 - Multimedia and video
 - Digital TV reception
 - Sensor acquisition/MCU
 - Digital office
- ▶ End Applications:
 - Smartphones, PDAs and PMPs
 - Notebooks, Dongles
 - Digital TVs and Set-top boxes
 - Modems and Satellite receivers
 - Digital cameras, DVDs
 - Femto-cell, Base station

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 fourteen years of experience in developing data converter IP solutions, Synopsys offers a comprehensive portfolio of over 100 silicon-proven DesignWare[®] Data Converter IP solutions consisting of Oversampling Sigma-Delta ADCs, Pipeline ADCs, SAR ADCs, Current Steering DACs and much more.

With strong application expertise in broadband wireless communications (LTE/WiMAX, WiFi802.11n, WiFi-ac), wireline communications (G.hn, MoCA, etc.), IF demodulation, video, imaging and more, 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 high performance, high speed, ultra low power dissipation, small area and support a wide range of process technologies and foundries ranging from 180 nm down to 40 nm.

Synopsys' DesignWare Data Converter IP solutions have been implemented in over 100 products, giving designers confidence that they can successfully integrate high performance analog IP into their SoCs with 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.

Technology Highlights

- ▶ #1 provider of data conversion IP for six years in a row (Gartner, 2010)
- ▶ Over 14 years of expertise in designing differentiated data conversion solutions
- ▶ Strong application expertise in broadband wireless communications, wireline communications, video, etc.
- ▶ Proven ADC/DAC technology
- ▶ Extensive offering: Oversampling Sigma-Delta ADC, Pipeline ADC, SAR ADC, Current Steering DAC, and more
- ▶ Very high performance, high speed 12-bit @ 250 MSPS ADC and 14-bit @ 400 MSPS DAC, small area and delivering ultra low power dissipation

Application	IP Type	Description	Resolution	Conversion rate
Broadband wireless communications LTE, WiMAX, WiFi	Pipeline ADC Oversampling ADC	Dual ADC	10/12-bit	Up to 125 MSPS (Typ=25/44/80)
	High Speed DAC	Dual DAC	10/12-bit	Up to 320 MSPS (Typ=50/88/160)
	SAR ADC Pipeline ADC	Auxiliary ADC	8/10-bit	Up to 20 MSPS (Typ=2)
	Voltage Output DAC	Auxiliary DAC	8/10/11-bit	Up to 20 MSPS
Broadcast receivers/ MTV (DVB, DMB, ISDB, CMMB...)	Pipeline ADC Oversampling ADC	Dual ADC/ADC	10-bit	Up to 50 MSPS
IF sampling/Wireline/ Infrastructure (Femto Cell)	Pipeline ADC	High Speed ADC/ Dual ADC	8/10/12-bit	Up to 250 MSPS
	High Speed DAC	High Speed DAC/ Dual DAC	12/14-bit	Up to 400MSPS
Analog video output	Video DAC	Video DAC	10/12-bit	Up to 300 MSPS
Housekeeping ADCs (MCU interfaces)	SARADC Oversampling ADC	Low Speed ADC	8/10/12/16-bit	Few kSPS to 2 MSPS
Touchscreen Controller (TSC)	TSC w/SARADC	TSC	10/12-bit	Up to 1 MSPS

About DesignWare IP

Synopsys is a leading provider of high-quality, silicon-proven IP solutions for SoC designs. The broad DesignWare® IP portfolio includes complete interface IP solutions consisting of controllers, PHY and verification IP for widely used protocols, analog IP, embedded memories, logic libraries, configurable cores and SoC infrastructure IP.

In addition, Synopsys offers SystemC transaction-level models to build virtual prototypes for rapid, pre-silicon development of software. With a robust IP development methodology, reuse tools, 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>. Follow us on Twitter at http://twitter.com/designware_ip.



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