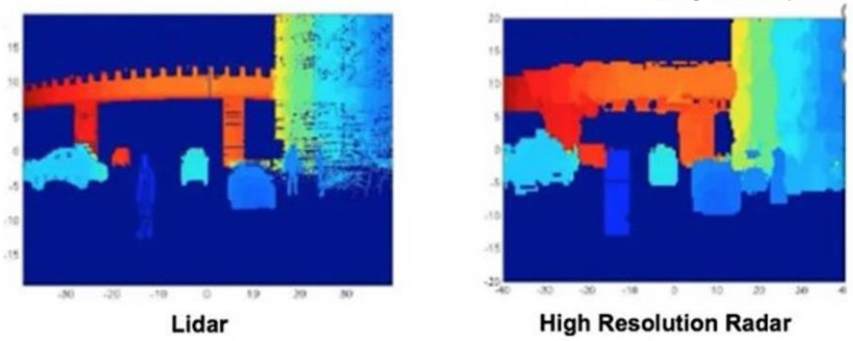
OmniDesign

Application Brief

Automotive

Image courtesy NXP

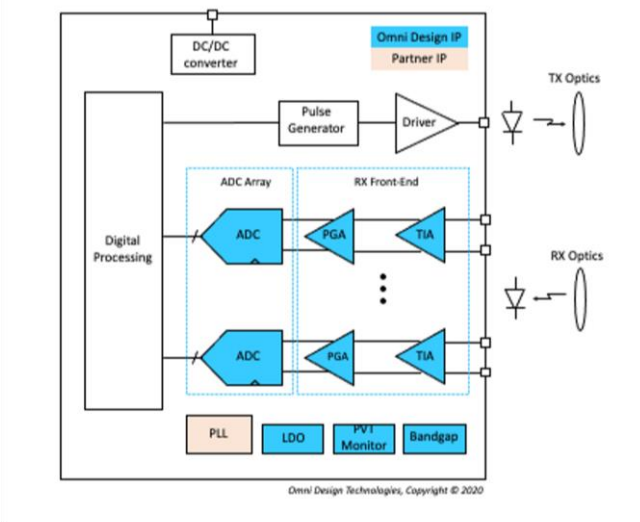


Lidar

High Resolution Radar

Giga sample Swift™ ADCs and DACs are essential for processing the high-frequency signals generated by radar and LiDAR sensors used in autonomous driving and collision avoidance systems.

Customers are pursuing wider IF bandwidths requiring higher sample rates for next generation systems. Omni support both FMCW and dToF/iToF technologies.



Pulsed-based LiDAR block diagram and available Omni Design IP

Omni Design has the IP to support LiDAR solutions connecting the sensor to the digital processor and can support the Laser excitation with High Performance Swift™ DACs. Omni Design also has the foundation IP to ensure these designs integrate well into large systems with all the requisite biasing and supply conditioning to minimize crosstalk and noise in complex systems.

Scan for More Info

Omni Design Technologies is a leading provider of high-performance, ultra-low power IPs, from 28nm down through advanced FinFET nodes, which enable differentiated system-on-chip (SoC), in applications ranging from 5G, 6G, wireless, wireline and optical communications, LiDAR, radar, automotive networking, AI, image sensors, mil/aero and the internet-of-things (IoT). Our Swift™ ADC and DAC data converter IP cores range from 6-bit to 14-bit resolution and from a few MSPS to more than 100 GSPS sampling rates. Omni Design, founded in 2015 by semiconductor industry veterans, has an excellent track record of innovation and collaboration with customers to enable their success. The company is headquartered in Milpitas, California with five additional design centers globally.

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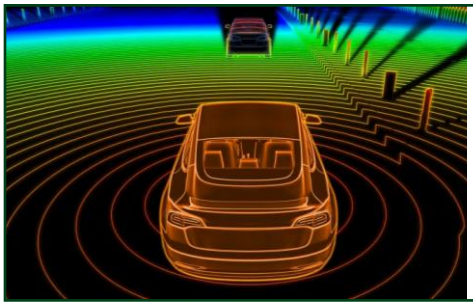
High-speed operation often leads to increased power consumption. Omni Design Technologies' research and development is focused on energy-efficient low power high-performance Swift™ ADC, DAC and AFE architectures for automotive applications.

Type	Resolution	Sample Rate	Features	Node	I/O	Part Name	Quick View
ADC	12-Bit	4GSPS	IQ, Low Power	22nm	0.8V(p-p)	ODT-ADS-12B4GIQ-22	
ADC	12-Bit	32GSPS	Low power	5nm	0.8V(p-p)	ODT-ADS-12B32G-5	
ADC	12-Bit	6GSPS	Low power	16nm	0.8V(p-p)	ODT-ADS-12B6G-16	
DAC	12-Bit	7GSPS	Low Power	16nm	Current Steering	ODT-DAC-12B7G-16	
DAC	14-Bit	7GSPS	IQ, Low Power	22nm	Current Steering	ODT-DAC-14B8GIQ-22	
AFE	12-Bit	2GSPS ADC 2GSPS DAC	Rx/Tx 4 IQ Pairs	12nm	2 x IQ Freq1 2 x IQ Freq2	ODT-AFE-4T4R-12	

Table 1. A sample of some of the advance solutions for communications applications

Additionally, Omni Design offers a family of OmniTRUST™ Voltage, Temperature, and Process monitors in a range of process nodes with compact size, low power consumption, and capable of operating over the entire temperature range of -40°C to 150°C. The temperature monitor achieves ±4°C temperature accuracy without trim and ±1°C temperature accuracy after a single room temperature trim. The voltage monitors support four differential or single-ended inputs with a voltage range up to ±1.8V. The included process monitor provides information on process variation of core P, N as well as I/O P, N MOS devices in an easily readable digital format. Available in advanced FinFET nodes to 28nm.



Scan the QR code to see all product options:

- AEC-Q100 Compliance (Minimum Grade 2)
- ISO26262 for functional safety compliance
- Design Failure Mode & Effects Analysis (DFMEA)
- Failure Modes Effects & Diagnostic Analysis (FMEDA)