

Global Technology CAD Software Market Size Study & Forecast, By Application (CMOS, Image Sensors, Solar Cells, Analog/RF Devices), and Regional Analysis, 2023-2030

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Abstracts

Global Technology CAD Software Market is valued at approximately USD 9.68 billion in 2022 and is anticipated to grow with a healthy growth rate of more than 8.3% over the forecast period 2023-2030. Technology Computer-Aided Design (TCAD) software is specialized software used in the semiconductor industry for simulating and modeling semiconductor devices and processes. It allows engineers to analyze and optimize device performance by simulating fabrication processes, electrical behavior, and optoelectronic properties. TCAD tools help save time and resources by enabling virtual testing and optimization before physical fabrication. They use mathematical models and numerical methods to solve semiconductor physics equations, ensuring accurate predictions of device behavior and reliability. TCAD software helps in enhancing yield and durability while also assessing the impact of process variations on device performance, factors that are poised to drive the growth of computer-aided design software in the forecast period. This anticipated growth is fueled by expansion of semiconductor industry, increasing technological advancements and the escalating adoption of sophisticated electronic components, particularly in the healthcare sector. The rise of smart healthcare systems like Implantable and Wearable Medical Devices (IWMD) and the advent of transformative technologies have had a positive impact on market expansion. Additionally, the increasing use of digital equipment such as computer-controlled medical devices is expected to incentivize manufacturers to embrace TCAD software for designing essential Multi-Chip Modules (MCMs) and Printed Circuit Boards (PCBs).

In addition, there has been a surge in sales of consumer and wireless electronic

products, leading to a heightened demand for chips and systems offering advantages like compact size, enhanced functionality, improved performance, and lower energy consumption. As per Statista, globally there were around 8,298.7 million pieces of consumer electronics accounted for 2022. Also, it is projected that the figure is constantly rising and is expected to reach 9,181 million pieces by the year 2027. Designing these sophisticated chips and systems entails a highly intricate process that necessitates cutting-edge design solutions. This complexity is anticipated to be a driving factor for the growth of the Technology CAD Software Market globally. Moreover, the rising trend toward miniaturization of chips and other systems, as well as the increasing demand for advanced semiconductor technologies present various lucrative opportunities over the forecasting years. However, the high cost of software and shift towards subscription-based licensing models are challenging the market growth throughout the forecast period of 2023-2030.

The key regions considered for the Global Technology CAD Software Market study include Asia Pacific, North America, Europe, Latin America, and Middle East & Africa. North America dominated the market in 2022 owing to the high presence of technology computer-aided design software providers and semiconductor manufacturing firms. Additionally, the rising adoption of automated, connected, and intelligent vehicles, along with the continuous development of infrastructure to support their connectivity, is anticipated to fuel market growth in the region. Whereas, Asia Pacific is expected to grow at the highest CAGR over the forecast years. The increasing adoption of technology computer-aided design software in this region is driven by the growing presence of electronics manufacturing companies, rapid digitalization, along with governments across Asia Pacific are implementing initiatives to encourage product innovation and development.

Major market players included in this report are:

Cogenda

Crosslight Software Inc

NTT DATA Mathematical Systems Inc

Global TCAD Solutions (GTS) GmbH

Silvaco, Inc

Synopsys, Inc.

Dassault Systèmes SE

Siemens AG

Autodesk, Inc.

SolidWorks Corporation

Recent Developments in the Market:

In June 2023, Silvaco Group, Inc., a leading provider of TCAD software and design IP, announced that SK Powertech had selected its Victory TCAD solution for power devices. The aim is to accelerate the research and development (R&D) of SK Powertech's next-generation SiC power devices. By leveraging Silvaco's Victory TCAD solution, SK Powertech expects significant advancements in its power management technology.

In April 2022, Synopsys, Inc. revealed a definitive agreement to acquire WhiteHat Security, a respected provider of Software-as-a-Service (SaaS) application security solutions. This strategic acquisition is likely to enhance Synopsys' SaaS capabilities and strengthen its dynamic application security testing (DAST) technology, reinforcing its leadership in the application security testing market.

In May 2022, Nanoacademic Technologies Inc., a Montreal-based software company introduced QTCAD, an advanced spin-qubit modeling tool designed for the quantum academic community. QTCAD employs finite-element method (FEM) simulation to accurately predict the performance of solid-state spin-qubit devices operating at sub-Kelvin temperatures. QTCAD offers a valuable cost-saving solution, facilitating extensive exploration of different semiconductor design scenarios by enabling pre-production evaluation of these devices.

Global Technology CAD Software Market Report Scope:

Historical Data – 2020 - 2021

Base Year for Estimation – 2022

Forecast period - 2023-2030

Report Coverage - Revenue forecast, Company Ranking, Competitive Landscape, Growth factors, and Trends

Segments Covered - Application, Region

Regional Scope - North America; Europe; Asia Pacific; Latin America; Middle East & Africa

Customization Scope - Free report customization (equivalent up to 8 analyst's working hours) with purchase. Addition or alteration to country, regional & segment scope*

The objective of the study is to define market sizes of different segments & countries in recent years and to forecast the values to the coming years. The report is designed to incorporate both qualitative and quantitative aspects of the industry within countries involved in the study.

The report also caters detailed information about the crucial aspects such as driving factors & challenges which will define the future growth of the market. Additionally, it also incorporates potential opportunities in micro markets for stakeholders to invest along with the detailed analysis of competitive landscape and product offerings of key players. The detailed segments and sub-segment of the market are explained below:

By Application:

CMOS

Image Sensors

Solar Cells

Analog/RF Devices

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

ROE

Asia Pacific

China

India

Japan

Australia

South Korea

RoAPAC

Latin America

Brazil

Mexico

Middle East & Africa

Saudi Arabia

South Africa

Rest of Middle East & Africa

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