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Millimeter-Wave IC Market Forecasts to 2032 - Global Analysis By Component (Amplifiers, Oscillators, Mixers, and Phase Shifters), Communication Standard, Functional Block, Technology, Application, End User, and By Geography

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Abstracts

According to Stratistics MRC, the Global Millimeter-Wave IC Market is accounted for $3.6 billion in 2025 and is expected to reach $12.9 billion by 2032 growing at a CAGR of 20.1% during the forecast period. Millimeter-Wave Integrated Circuits (ICs) operate in the 30?300 GHz frequency range and are used for high-speed wireless communication, radar, and imaging systems. These ICs enable ultra-fast data transmission, low-latency connectivity, and compact device integration. Commonly fabricated using GaAs, SiGe, or CMOS technologies, they power 5G networks, automotive radar, satellite links, and security scanners. Their small size and high-frequency capabilities make them essential for next-gen RF applications in telecom, defense, and consumer electronics.

Market Dynamics:

Driver:

Expansion of 5G networks

The rapid expansion of 5G networks is a primary driver for the millimeter?wave IC market. 5G requires high?frequency bands to deliver ultra?low latency, faster speeds, and massive device connectivity. Millimeter?wave ICs enable base stations, smartphones, and IoT devices to operate efficiently in these bands. As telecom operators roll out 5G globally, demand for amplifiers, oscillators, and mixers rises sharply. This expansion ensures sustained growth, positioning millimeter?wave ICs as

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critical components in next?generation communication infrastructure.

Restraint:

High design and fabrication complexity

Designing and fabricating millimeter?wave ICs is highly complex, posing a restraint to market growth. These ICs require advanced semiconductor processes, precise layouts, and specialized packaging to handle high frequencies. Manufacturing challenges increase costs and limit scalability, particularly for smaller players. The need for specialized expertise and equipment further slows adoption. While demand is strong, the technical barriers and high R&D expenses restrict widespread commercialization, making complexity a key hurdle for broader market penetration.

Opportunity:

Automotive radar and sensing growth

Automotive radar and sensing applications present strong opportunities for millimeter?wave ICs. Advanced driver assistance systems (ADAS) and autonomous vehicles rely on radar operating in millimeter?wave frequencies for precise object detection and collision avoidance. Growing safety regulations and consumer demand for smart mobility accelerate adoption. Millimeter?wave ICs enable high?resolution sensing, supporting innovations in adaptive cruise control, blind?spot monitoring, and emergency braking. As automotive electronics evolve, radar and sensing growth creates lucrative opportunities for IC manufacturers.

Threat:

Signal attenuation and propagation challenges

Signal attenuation and propagation challenges threaten the widespread adoption of millimeter?wave ICs. High?frequency signals face significant losses due to obstacles, weather conditions, and limited penetration through walls. These limitations reduce coverage and reliability, requiring dense infrastructure deployment. The need for advanced design solutions and costly compensatory technologies increases complexity. Without effective mitigation, attenuation issues hinder performance, slowing adoption in consumer and industrial applications. This remains a critical challenge for scaling millimeter?wave IC technologies globally.

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Covid-19 Impact:

The COVID?19 pandemic disrupted semiconductor supply chains, delaying production and deployment of millimeter?wave ICs. However, rising demand for remote connectivity, cloud services, and digital infrastructure accelerated 5G rollouts, indirectly boosting adoption. While initial lockdowns slowed manufacturing, recovery was swift as telecom and automotive sectors prioritized innovation. The pandemic highlighted the importance of resilient communication systems, reinforcing millimeter?wave ICs? role in enabling high?speed, reliable networks for post?pandemic digital transformation.

The amplifiers segment is expected to be the largest during the forecast period

The amplifiers segment is expected to account for the largest market share during the forecast period, owing to their critical role in boosting signal strength across millimeter?wave applications. They ensure reliable transmission in 5G base stations, radar systems, and satellite communications. Rising demand for high?performance amplifiers in telecom and automotive sectors reinforces their leadership. Their ability to enhance coverage and compensate for signal losses makes them indispensable, securing amplifiers as the largest segment during the forecast period.

The 5G NR mmwave segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the 5G NR mmwave segment is predicted to witness the highest growth rate, driven by global 5G deployments. Millimeter?wave ICs enable ultra?fast data transfer, low latency, and massive connectivity for smartphones, IoT devices, and industrial automation. Telecom operators are investing heavily in mmWave infrastructure, accelerating adoption. As consumer demand for high?speed connectivity grows, 5G NR mmWave applications expand rapidly, positioning this segment as the fastest?growing in the millimeter?wave IC market.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, attributed to strong 5G rollouts, robust semiconductor manufacturing, and expanding consumer electronics demand. Countries like China, Japan, and South Korea lead in telecom infrastructure and automotive innovation, driving adoption of millimeter?wave ICs. Government initiatives supporting digital transformation and

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cost?effective production further reinforce regional dominance. Asia Pacific?s leadership in technology deployment secures its position as the largest contributor to the millimeter?wave IC market.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR supported by early adoption of 5G, strong R&D investments, and innovation in automotive radar and sensing. The U.S. leads in telecom infrastructure modernization, while demand for advanced driver assistance systems accelerates adoption in automotive markets. Strategic initiatives to strengthen domestic semiconductor production further boost growth. North America?s emphasis on high?performance communication and sensing technologies positions it as the fastest?growing region in the millimeter?wave IC market.

Key players in the market

Some of the key players in Millimeter-Wave IC Market include Qualcomm Incorporated, Broadcom Inc., NXP Semiconductors N.V., Infineon Technologies AG, Texas Instruments Incorporated, Analog Devices, Inc., Qorvo, Inc., Skyworks Solutions, Inc., Marvell Technology, Inc., MediaTek Inc., Renesas Electronics Corporation, Samsung Electronics Co., Ltd., Intel Corporation, STMicroelectronics N.V., Murata Manufacturing Co., Ltd., Huawei Technologies Co., Ltd., and Ampleon Netherlands B.V.

Key Developments:

In November 2025, Qualcomm Incorporated announced the launch of its latest 5G NR mmWave chipset, designed to deliver ultra?low latency and high?speed connectivity for smartphones and IoT devices. The innovation strengthens Qualcomm?s leadership in next?generation mobile communications.

In August 2025, Infineon Technologies AG launched high?performance mmWave ICs for satellite communications, offering improved signal integrity and reliability. The innovation expands Infineon?s footprint in aerospace and defense markets.

In May 2025, Qorvo, Inc. introduced next?generation mmWave amplifiers optimized for 5G base stations. The innovation improves coverage and reduces power consumption, reinforcing Qorvo?s telecom portfolio.

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Components Covered:

- Amplifiers
- Oscillators
- Mixers
- Phase Shifters

Communication Standards Covered:

- 5G NR mmWave
- WiGig (IEEE 802.11ad/ay)
- Satellite Ka-Band & V-Band

Functional Blocks Covered:

- RF Front-End Ics
- Baseband Interface Ics
- Transceiver Ics

Technologies Covered:

- Complementary Metal-Oxide-Semiconductor
- Silicon-Germanium
- Gallium Arsenide
- Gallium Nitride

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Applications Covered:

- 5G Communication
- Automotive Radar
- Satellite Communication
- Fixed Wireless Access

End Users Covered:

- Telecom Operators
- Automotive OEMs
- Defense & Aerospace
- Consumer Electronics Manufacturers
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK

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- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia

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UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

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Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Contents

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10 GLOBAL MILLIMETER-WAVE IC MARKET, BY END USER

11 GLOBAL MILLIMETER-WAVE IC MARKET, BY GEOGRAPHY

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12 KEY DEVELOPMENTS

13 COMPANY PROFILING

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List Of Tables

LIST OF TABLES

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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