

Thyristor Market Size Expected to Grow from USD 2.11 Billion in 2026 to USD 2.93 Billion by 2035

Thyristor Market Size, Share and Research Report By Power Rating (500 MV, 500 MV-1000 MV, and 1000 MV), By End Use (Consumer Electronics, Telecommunication)

SEOUL, SEOUL, SOUTH KOREA, August 14, 2026 /EINPresswire.com/ -- The Global [thyristor market](#) reached an estimated USD 1.93 billion in 2025 and is projected to grow from USD 2.11 billion in 2026 to USD 2.93 billion by 2035, registering a CAGR of 3.73% during the forecast period. Two major

catalysts are accelerating this trajectory: the global expansion of high-voltage direct current (HVDC) transmission infrastructure to support renewable energy integration across intercontinental power grids, and the accelerating electrification of industrial motor drives, traction systems, and EV charging infrastructure demanding robust, high-power semiconductor

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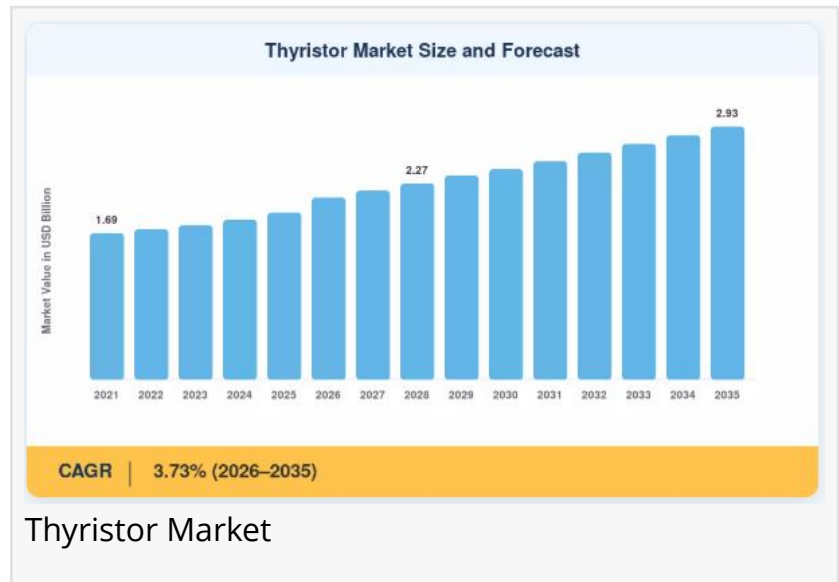
Thyristor Market: Thyristors provide efficient power control and switching solutions across industrial, automotive, energy, and electronic applications.”

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switching devices. With over USD 2.6 trillion in global power infrastructure investment anticipated through 2035, utilities, industrial manufacturers, and transportation electrification developers face mounting pressure to adopt advanced power semiconductor solutions or risk competitive and operational disadvantage.

Legacy electromechanical switching systems many relying on aging contactor and relay technologies with high failure rates and slow response times are rapidly giving way to thyristor-based power control platforms that integrate

gate turn-off (GTO) switching, integrated gate-commutated thyristors (IGCTs), and silicon-controlled rectifier (SCR) arrays.



A recent IHS Markit power electronics study estimated that top-quartile industrial facilities deploying modern thyristor-based motor drive systems alongside real-time power quality monitoring achieved 21–26% reductions in energy consumption compared with peers still operating legacy variable-speed drive architectures. This technology shift is not incremental it represents a structural transformation of how the global power electronics industry addresses energy efficiency, grid reliability, and electrification mandates.

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□ How Significant Is the Thyristor Market's Growth?

The thyristor market has demonstrated consistent and robust expansion, rising from approximately USD 5.11 billion in 2021 to an estimated USD 1.93 billion in 2025, representing a healthy historical growth trajectory. The market is expected to nearly double over the next decade, driven by rising global electricity consumption, proliferating renewable energy installations requiring grid-interface power conversion, and the deepening electrification of transportation, industrial automation, and [smart grid](#) infrastructure.

Escalating demand for high-power, high-voltage semiconductor switching in HVDC converter stations, flexible AC transmission systems (FACTS), and utility-scale static VAR compensators (SVCs) has created acute demand for advanced thyristor devices. Utility operators, EPC contractors, heavy industrial manufacturers, and rail traction system integrators are all investing heavily in next-generation thyristor platforms to improve grid stability, reduce harmonic distortion, and extend asset operating lifespans.

□ What Does the Future Hold for the Thyristor Market?

Wide-bandgap semiconductor integration and advanced packaging technologies stand at the forefront of the market's next growth phase. Silicon carbide (SiC)-based thyristor variants and hybrid SiC-Si power modules are transforming power conversion from a thermally constrained, efficiency-limited discipline into a high-frequency, high-temperature-capable switching paradigm. Next-generation IGCT and ETO (emitter turn-off thyristor) platforms are now delivering switching frequencies and blocking voltages previously achievable only with multi-device IGBT stacks at significantly lower component counts and system costs.

The growing emphasis on grid modernization and renewable energy integration is another defining force shaping the market's future. As offshore and onshore wind, utility-scale solar, and pumped hydro facilities proliferate, thyristor-based HVDC transmission links and FACTS devices are becoming critical infrastructure for long-distance power delivery, cross-border grid interconnection, and voltage stability management. Platforms supporting multi-level converter topologies, digital gate control, and condition monitoring integration are displacing both legacy thyristor stacks and competing IGBT-based solutions in ultra-high-voltage applications.

The electrification of rail traction is also reshaping demand. High-speed rail expansion programs in Asia, Europe, and the Middle East are driving procurement of traction-grade thyristor modules capable of handling the demanding duty cycles and voltage transients characteristic of locomotive and metro applications. Additionally, the surge in EV fast-charging infrastructure is generating new demand for high-power rectifier and soft-start thyristor assemblies in grid-interface charging equipment.

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□ Who Are the Key Players in the Thyristor Market?

The thyristor market landscape is characterized by a mix of established power semiconductor conglomerates, vertically integrated device manufacturers, and specialized high-power electronics companies. Key participants shaping the competitive dynamics include:

ABB Ltd — a global leader in HVDC thyristor valves, FACTS devices, and integrated grid-interface power electronics

Infineon Technologies AG — delivering a broad portfolio of SCRs, GTOs, IGCTs, and high-voltage thyristor modules for industrial and traction applications

STMicroelectronics — providing standard and logic-level thyristors, TRIACs, and power control ICs for industrial and consumer electronics markets

Vishay Intertechnology — offering a comprehensive SCR, TRIAC, and diode thyristor product line serving diverse industrial and automotive segments

ON Semiconductor (onsemi) — supplying high-performance thyristors and power control modules for automotive, industrial, and energy applications

Mitsubishi Electric Corporation — a major supplier of high-power thyristor modules, GTOs, and integrated power assemblies for traction and utility markets

Hitachi Energy (formerly ABB Power Grids) — specializing in light-triggered thyristors (LTTs) and HVDC valve assemblies for ultra-high-voltage grid applications

Semikron Danfoss — delivering thyristor-based power modules and stacks for industrial drives, renewable energy converters, and traction systems

Littelfuse Inc. — providing silicon-controlled rectifiers and thyristor surge protection devices across industrial and automotive end markets

Dynex Semiconductor — focusing on high-power discrete thyristors and diode assemblies for traction, HVDC, and utility-scale power conversion applications

Competition in the market is intensifying as vendors race to develop SiC-enhanced thyristor variants, expand high-voltage blocking capability, and deepen integration with digital gate driver and condition monitoring systems. Strategic partnerships with HVDC project developers, rail OEMs, and renewable energy system integrators are also reshaping the competitive landscape.

□ What Are the Emerging Trends in the Thyristor Market?

Several transformational trends are redefining how the thyristor market evolves through 2035:

SiC-Enhanced Thyristor Development: Silicon carbide material adoption is enabling next-generation thyristor variants capable of operating at junction temperatures exceeding 200°C, with superior switching speeds and dramatically reduced conduction losses compared with conventional silicon-based devices.

HVDC Infrastructure Buildout: Global commitment to long-distance renewable energy transmission is driving large-scale procurement of thyristor-based HVDC converter valves, with projects spanning North Sea offshore wind corridors, China's ultra-high-voltage (UHV) transmission network, and intercontinental green hydrogen export links.

Smart Grid and FACTS Deployment: Grid operators are deploying thyristor-controlled series compensators (TCSCs), static VAR compensators (SVCs), and thyristor-switched capacitors (TSCs) at scale to manage the voltage variability and reactive power challenges introduced by high renewable energy penetration.

Digital Gate Control and Condition Monitoring: Advanced gate driver ICs with integrated fault detection, predictive wear monitoring, and IoT connectivity are transforming thyristor-based power assemblies from passive switching devices into intelligent, self-diagnosing system nodes.

Rail Traction Electrification: High-speed rail expansion programs across Asia, Europe, and the Gulf region are driving sustained demand for traction-grade thyristor modules with enhanced vibration tolerance, wide operating temperature ranges, and extended mean-time-between-failure (MTBF) ratings.

Power Quality and Harmonic Mitigation: Growing regulatory pressure on industrial facilities to comply with IEEE 519 and IEC 61000 harmonic emission standards is accelerating adoption of thyristor-based active front-end rectifiers and soft-start systems as cost-effective power quality solutions.

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□ How Is the Thyristor Market Segmented?

The thyristor market report provides a comprehensive segmentation framework:

- 1 By Device Type: Silicon Controlled Rectifier (SCR), Gate Turn-Off Thyristor (GTO), Integrated Gate-Commutated Thyristor (IGCT), TRIAC, DIAC, Light-Triggered Thyristor (LTT)
- 2 By Voltage Rating: Below 1 kV, 1–5 kV, 5–10 kV, Above 10 kV
- 3 By Current Rating: Below 100 A, 100–1,000 A, Above 1,000 A
- 4 By End-Use Application: Power Transmission & Distribution (HVDC/FACTS), Industrial Motor Drives, Rail Traction, Renewable Energy Converters, EV Charging Infrastructure, Consumer & Industrial Electronics
- 5 By Geography: North America, Europe, Asia-Pacific, Middle East & Africa, South America

□ What Are the Regional Insights from the Thyristor Market?

Asia-Pacific commands approximately 42% of global thyristor market share, underpinned by China's massive UHV transmission network expansion, India's national grid modernization program, and the region's dominant position in industrial manufacturing and rail infrastructure investment. Japan and South Korea further reinforce the region's leadership through advanced power semiconductor R&D and export-oriented device manufacturing.

Europe holds the second-largest share at approximately 28%, driven by ambitious offshore wind HVDC interconnection projects across the North Sea, aggressive industrial energy efficiency mandates, and major high-speed rail infrastructure investments in France, Germany, Spain, and Italy. The EU's Net Zero Industry Act is further accelerating procurement of domestic power semiconductor production capacity, bolstering regional thyristor supply chains.

North America holds approximately 19% market share, with strong demand anchored in U.S. grid modernization spending, industrial motor drive upgrades, and growing EV charging infrastructure deployments. The U.S. Department of Energy's Grid Resilience and Innovation Partnerships (GRIP) program is channeling significant capital into thyristor-based FACTS and transmission technology installations across the national grid.

Middle East & Africa is projected to register the highest CAGR at approximately 8.6% through 2035. Landmark renewable energy megaprojects across Saudi Arabia, UAE, and Egypt including NEOM's HVDC backbone, the Sudair Solar Farm, and the Egypt-Europe green energy corridor are creating exceptional demand for high-power thyristor converter and transmission equipment.

South America rounds out the global picture, with Brazil, Chile, and Colombia representing the most active markets for thyristor procurement, principally driven by hydroelectric power transmission upgrades, copper and lithium mining electrification programs, and expanding urban metro rail systems.

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