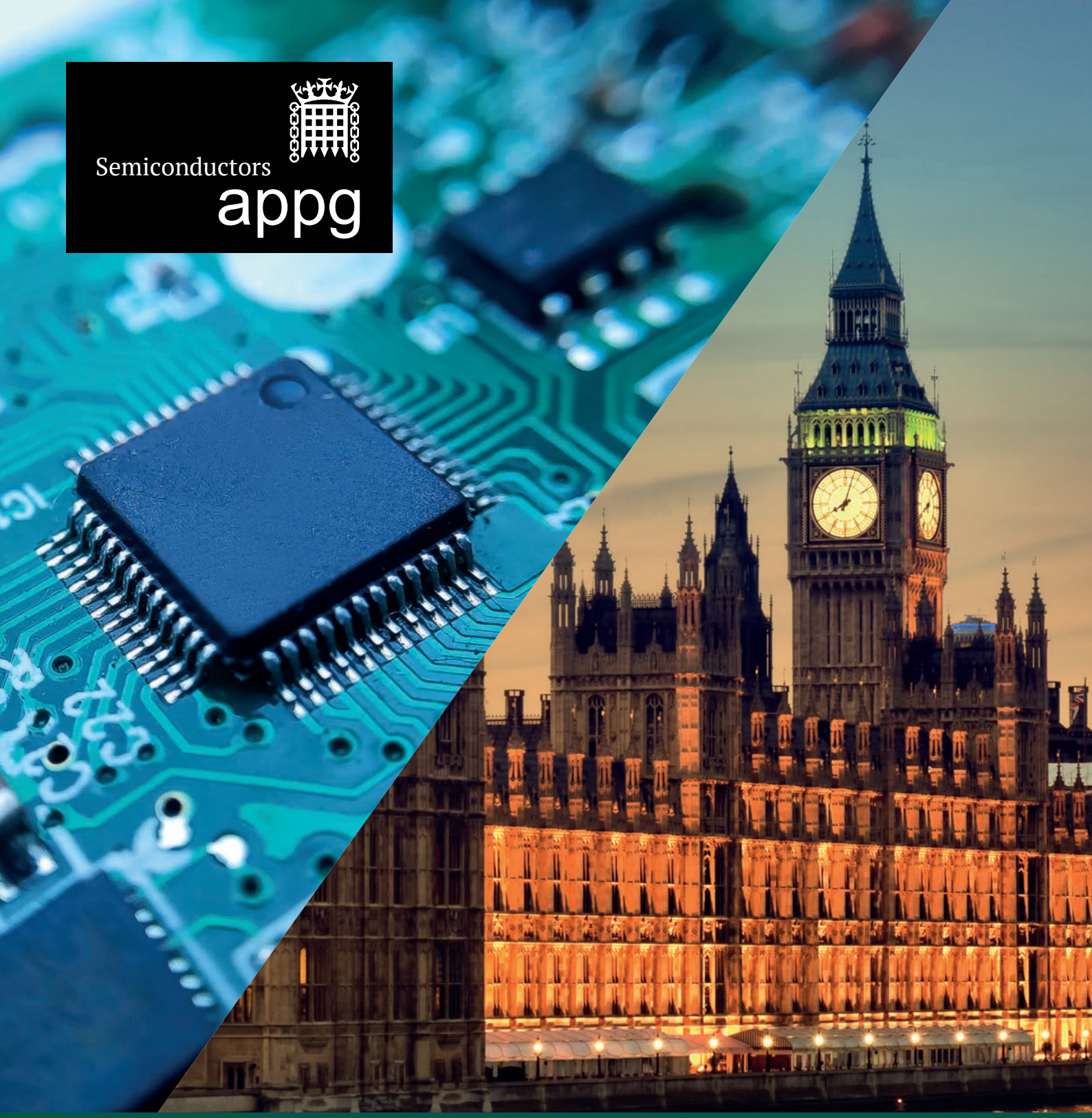

Semiconductors appg

The All-Party Parliamentary Group for Semiconductors:

A Paper on Unlocking UK Economic Growth

Published by the All-Party Parliamentary Group for Semiconductors

To champion the UK's semiconductor industry while advocating the domestic capacities within the global supply chain. The Group will engage with decision-makers in government to push forward the policy agenda surrounding semiconductor design and manufacturing in the UK, while highlighting the economic and skills benefits.

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Contents:

1 **Foreword** by Chair, Ruth Jones MP

"As the Chair of the All-Party Parliamentary Group (APPG) for Semiconductors, I am delighted to present this important report from our Group, aimed at maximising the growth potential semiconductors can have on the UK economy.

The APPG has been working very closely with an expert Advisory Board—comprised of industry figures, entrepreneurs, academics, and SMEs—to collectively ensure the UK succeeds in maximising opportunities.

Over the last 12 months, the APPG has enjoyed notable success. From the delivery of an Industrial Strategy with semiconductors prominently featured to a new National Semiconductor Centre, the APPG and its valued Advisory Board have been working closely with government and all national stakeholders. We are especially pleased to have seen the appointment of a minister with specific and named responsibility for semiconductors. These superb achievements show what can happen with strong campaigners and a responsive government.

The Advisory Board has prepared this paper at the request of the APPG. As MPs and Peers, we are keen to ensure this critical part of the Government's Industrial Strategy, as well as national security, is supported. The economic growth potential is considerable, with an economic multiplier of 6x being one of the most significant returns on investment any government can ask for.

We note in this paper that every pillar of the Government's Industrial Strategy is underpinned by the need to generate a thriving domestic semiconductor industry. Every aspect of the Strategy, whether it be Life Sciences, Quantum, AI, or Defence, requires the development of a robust and resilient national strategy to ensure we have a sovereign capability.

The recommendations this paper arrives at have been meticulously researched and delivered by those who are at the forefront of this national challenge. The conclusion is clear: in a rapidly changing and increasingly dangerous world, it is absolutely vital that the Government recognise the need to fully prioritise semiconductors.

Nothing less than a national effort will suffice."

Ruth Jones MP
Chair of the All-Party Parliamentary Group for Semiconductors

2 Executive Summary

This paper sets out the Semiconductor APPG's expert recommendations to ensure the UK Semiconductor Strategy is fully aligned with, and integral to, the Modern Industrial Strategy. Semiconductors are a foundational technology for economic growth, productivity, national security and resilience, and must be treated as a strategic national capability rather than a niche industrial concern.

Despite the UK's strengths in research, design and advanced technologies, current levels of government support remain modest compared with international competitors. Targeted, high-impact policy interventions are therefore essential to maximise economic return, bring in private investment and secure a position for the UK in critical parts of the global semiconductor value chain.

Semiconductor technologies are indispensable to the delivery of key Industrial Strategy priorities, particularly Advanced Manufacturing, Clean Energy, Defence, Digital and Technologies, and Life Sciences. Without assured access to semiconductor capability, progress across these sectors will be constrained. This paper presents case studies from experts, supporting each of these pillars, with suggested policy improvements to drive accelerated growth.

The paper concludes with a focused set of recommendations to strengthen the UK semiconductor ecosystem, enhance supply-chain resilience and deliver long-term economic and strategic advantage for the UK.

3 Introduction: The Economic Case for Semiconductors

The global semiconductor industry is expected to exceed $1 trillion per year by 2030, driven by artificial intelligence, 5G, connected devices and electric vehicles.

A strong domestic semiconductor industry is essential to the UK's national security, economic resilience and technological leadership. Recognised as a Frontier Technology, semiconductors - alongside AI and quantum - are forecast to contribute up to 8.4% of UK GDP by 2035.

The UK semiconductor sector currently:

Future UK semiconductor revenues could reach £13-17 billion by 2030, but this is not guaranteed. Global supply chains are being reshaped by geopolitical tensions, trade restrictions and large-scale state-backed investment overseas, intensifying competition for capital and skills.

If the UK is serious about future-proofing its economy and accelerating growth across key sectors, decisive action is required to protect and build on its semiconductor strengths.

4 The UK's Semiconductor Industry: The Growth Challenge

Despite the fundamental underpinning nature of semiconductor technology to every sector of the economy, and the well understood multiplier effect on job creation and resultant major economic impact, the UK Government has committed a very modest level of funding to its national semiconductor strategy compared with other leading parts of the world (UK £1 billion, US $52 billion, EU €43 billion, Taiwan $10 billion).

With very limited Government funding, the National Semiconductor Strategy therefore needs to be concentrated on areas of growth where the UK can make a significant global impact, by doubling down on its competitive advantage, enabling a position of comparative strength from which to negotiate supply chain resilience in areas where the UK will have to rely heavily on overseas suppliers. The table below illustrates the relative strengths in the semiconductor supply chains of major economies around the world .

Global Semiconductor Capability Matrix (2025–2026)

Expanded Side-by-Side Comparison

Region	Leading edge Logic	Memory (HBM)	Compound Semiconductors	Chip Design & IP	Advanced Packaging	Skills & Talent Depth	Strategic Role
US	▪	▪	▪	World leader ▪▪	▪	▪▪	Full-stack AI leader
Taiwan	▪▪	▪	▪	▪	Best ▪▪	▪▪	Manufacturing & packaging hub
Korea	▪	HBM leader ▪▪	▪	▪	▪▪	▪	Memory superpower
Japan	▪	▪	▪	▪	▪	▪▪	Materials & process backbone
EU	▪	▪	▪▪	▪	▪	▪	Tools, automotive & research
UK	▪	▪	World-class niche ▪	▪	▪	▪	Design & compound specialist
China	▪	▪	▪▪	▪	▪	▪	Scale-driven challenger

▪ = strong | ▪▪ = global leader | ▪ = competitive | ▪ = absent

Where the UK has major strengths is clearly in Compound Semiconductors (and other advanced semiconductor materials), Design and IP, and Research and Development. This has been recognised by UK Government and has formed the basis for its strategy to date. In this paper, we seek to add a broad range of views from semiconductor experts on where the strategy can be further strengthened, particularly in support of the Modern Industrial Strategy to drive significant growth in the economy and strengthen the UKs position in the global semiconductor supply chains.

5 Industrial Strategy Key Sectors: Semiconductor-Enabled Evidence from Industry

In the Industrial Strategy published by the Government, eight sectors are identified as having the greatest growth potential over the next decade, with a critical role to play in supporting economic security and resilience, net zero, and regional growth.

While each priority sector has distinct challenges, they share a common foundation: **semiconductors**. Semiconductor technologies are embedded across the economy, enabling productivity, innovation and resilience in every sector identified by Government.

The case studies that follow show how semiconductors support these sectors in practice, acting as a horizontal enabling capability rather than a standalone industry.

Recognising this cross cutting role is essential. Strengthening the UK's semiconductor ecosystem accelerates growth across the entire Industrial Strategy as a whole.

In the **Creative Industries**, semiconductors enable the digital platforms and tools that support content creation, distribution and immersive experiences, including artificial intelligence driven production, gaming, streaming and extended reality. As creative consumption becomes increasingly digital, semiconductor capability underpins productivity, global reach and new business models.

In **Financial Services**, semiconductors support the secure, high-performance computing and communications infrastructure required for fintech, digital payments, trading platforms, cyber security and data analytics.
Reliable and resilient semiconductor enabled systems are essential to maintaining trust, competitiveness and innovation in the UK's global financial centres.

In **Professional and Business Services**, semiconductor enabled digital infrastructure underpins automation, artificial intelligence and real-time data processing, improving productivity while supporting net zero objectives through smarter resource use, reduced travel and lower operational emissions.

The evidence set out in these case studies points to a clear conclusion. While each of the Government's priority sectors has its own objectives and challenges, all are fundamentally enabled by semiconductor capability.

The input from industry demonstrate that semiconductors are not a standalone sector operating alongside the Sector Plans. They are a cross-cutting foundation that penetrates and accelerates delivery across them.

The implication is clear. Strengthening the UK's semiconductor ecosystem delivers a multiplier effect across the Industrial Strategy as a whole, supporting economic growth, national security, net zero objectives and regional development.

					
Sector context – strategic importance to the UK	The UK is the world's third largest tech economy and the eighth largest manufacturing nation globally. Advanced manufacturing is a core driver of productivity, exports and economic resilience, with significant semiconductor innovation underpinning future competitiveness.	Clean energy is a central pillar of government policy, with binding commitments to Net Zero by 2050, 50 GW of offshore wind by 2030, and large scale electrification of transport, heating and industry. Delivery depends fundamentally on advanced semiconductors.	Defence is strategically vital to national security and economic growth. Semiconductors underpin every modern military platform and are recognised as critical to the UK's economic and national security.	The D+T sector plan encompasses frontier technologies of AI, Advanced Connectivity Technologies (ACT), **future compute** and cybersecurity, Semiconductors and Quantum. The plan references a £1Trillion UK tech ecosystem which is the largest in Europe, which ranks 3rd in the world for Venture Capital investment, and contributes £207B in GVA, accounting for 9% of the UK economy, estimated to grow by £90 billion (43%) by 2035.	Life Sciences already contribute tens of billions of pounds to the UK economy, supporting hundreds of thousands of jobs. Medicines and medical equipment are amongst the UKs largest goods exports by value, and the UK attracts the worlds third largest global investment.
Role of semiconductors – enabling productivity, resilience and innovation	Semiconductors sit at the heart of the digital economy, enabling artificial intelligence, advanced computing, 5G and 6G networks, quantum technologies and net zero energy systems. 5G 6G Advanced materials semiconductors represent a realistic area for UK leadership.	CO_2 Power semiconductors control how electricity is generated, converted, transmitted and consumed. They directly determine efficiency, grid stability, system reliability and infrastructure cost across offshore wind, grids and data infrastructure.	Semiconductors enable secure communications, sensing, radar, electronic warfare, autonomous systems and space capabilities. Compound semiconductors are particularly critical for high frequency defence applications.	**AI** cannot be deployed without high performance custom silicon processors (cf Nvidia), photonic enabled datacentre transmission and a step change in energy efficiency enabled by compound semiconductors. **ACT:** The evolution to 6G+ wireless network requires new semiconductor components to increase network coverage, resilience and energy efficiency. **Quantum** enabled computing, secure communications and ultra precise timing and sensing require new paradigms in semiconductor technology.	Through the critical role that semiconductors play in underpinning the whole AI infrastructure and hyperscale datacentre operations, world class R&D is enabled for areas such as genomics, advanced therapies and new drug discoveries. This in turn has a major impact on productivity in the life sciences sector and provides powerful resilience through improved healthcare outcomes.
Economic and strategic upside – multiplier effect	The UK semiconductor sector has grown at around 8 percent per year over the past decade, with revenues projected to reach up to £17 billion by 2030. Productivity is high, with GVA per employee around £460,000, supporting high skill, high wage jobs.	Advanced semiconductors such as silicon carbide and gallium nitride deliver efficiency gains of 0.5 to 1 percent per conversion stage. When compounded, these reduce total system losses by 20 to 35 percent. The global offshore wind market will exceed $1.5 trillion by 2030.	Increased defence spending and domestic manufacturing drive high value jobs, exports and sovereign capability. Defence investment strengthens supply chain resilience and industrial partnerships.	The D+T frontier technologies are expected to drive significant economic growth, aiming to make the UK a top tech hub, potentially adding 8.4% to GDP by 2035 through new economic activity and productivity gains, supported by substantial R&D funding, Tech Growth Zones, and reforms to procurement to foster innovation.	Semiconductors are the 'engine' of modern biotechnology as life sciences are now data driven, automated and rely on precision systems. Semiconductors sit beneath most of the leading innovations including imaging, diagnostics, manufacturing, genomics, wearables and drug design/discovery.
Current constraint – primary barrier limiting growth	Global supply chain pressure and geopolitical uncertainty highlight the need for greater domestic capability. Limited scale up capital and weak demand signals through procurement restrict manufacturing investment.	Without clear UK demand signals, global manufacturers will source power electronics overseas even where UK capability exists, exporting jobs, margins and strategic leverage.	Limited access to domestic manufacturing and prototyping capacity constrains scale. Skills shortages across technicians, engineers and researchers further limit growth.	The UK is highly ranked in science excellence in all the D+T frontier technologies. However, the connection between novel semiconductor IP driving system advantage is weak due to the lack of large-scale digital system manufacturers in the UK. This is persistent in AI and ACT hardware, and commercialisation of quantum is dominated by high-risk start-up activity.	The UK is good at creating chip enabled life sciences ideas but weak at turning these into scaled, manufactured, clinically adopted and globally dominant systems. Medical devices require tight integration between chip design, packaging, bio interfaces and regulation.

6 Conclusion: From Paper to Action and Key Recommendations

	Previous Recommendations (2025)		Progress and Updated Recommendations (2026)
Governance	1. Establish a clear, standalone Semiconductor Strategy.	✓	UK Gov published updated Semiconductor Strategy alongside Modern Industrial Strategy.
	2. Develop the strategy through an independent, expert-led body (e.g., National Semiconductor Institute).	✓	National Semiconductor Centre announced June '25. Need to ensure NSC management possess high level of domain expertise and Terms of Reference include policy coordination across all main Gov departments and IUK/EPSRC .
	3. Create an Office for Semiconductors within the Government		Re emphasis of need for close semiconductor policy coordination between all pillars of Industrial Strategy and within all major Gov departments incl DSIT, DBT, MoD, DOE
Scale-Up	4. Transform the funding ecosystem to support growth.		High requirement for mission driven programs to enhance UK capabilities in key end user technologies of UK semiconductor strengths
	5. Align UK policy with IPCEI (Important Projects of Common European Interest) principles.		There is a continued need for policy alignment with EU to promote and fund scale up from prototyping to full manufacturing of new semiconductor products. Policy should include significantly bolstering protoyping capabilities within UK to support early stage companies through to full manufacturing capabilities
	6. Expand Semiconductor Investment Zones.	✓	Semiconductor Investment zones announced June '25
	7. Enhance Government procurement opportunities.		Government mandated procurement for UK manufactured components and systems will drive investment, R&D and strategic leverage
	8. Develop an Open Access device foundry model.		Continued requirement for open access device foundry capacity within the UK to facilitate a flourishing fabless ecosystem and prevent the need for UK fabless companies to develop their products overseas
(R,D&I)	9. Increase EPSRC portfolio support for semiconductor research.		Should focus on expansion of existing facilities within the UK, inserting state of the art capabilities for open access, and ensuring staffing levels and capabilities match requirements to maximise UK RD&I impact
	10. Establish an Assured Supply Chain Innovation		Continued requirement for supply chain innovation driving closer alignment between academia, translational hubs and industry
Skills	11. Develop and implement a comprehensive semiconductor skills framework.	✓	Skills development programs initiated during '25, but focussed principally on design. Much more emphasis required on skills development for manufacturing to help grow the economy by semiconductor led manufacturing
UK Resilience & Export Growth	12. Designate semiconductors as a National High Potential Opportunity	✓	Semiconductors have been recognised as a frontier technology in the Industrial Strategy, but are also the fundamental underpinning technology for the other 5 frontier technologies of AI, Cyber, ACT, Engineered Biology and Quantum. Consideration should be given to elevating semiconductor policy and funding to at least equivalent levels

This paper has set out the economic case for semiconductors, the evidence from industry across the Government's priority sectors, and a set of practical recommendations to strengthen delivery. Taken together, they point to a clear conclusion.

Semiconductors are not a standalone policy area. They are a foundational capability that underpins every pillar of the Modern Industrial Strategy, from advanced manufacturing, clean energy and defence, to digital technologies, life sciences and the wider service economy. Where semiconductor capability is strong, sectors scale faster, attract investment and build resilience. Where it is weak or fragmented, growth is constrained and value is lost overseas.

The progress made to date is welcome. The updated Semiconductor Strategy, the establishment of the National Semiconductor Centre, and the recognition of semiconductors as a frontier technology reflect a growing understanding of their strategic importance. The challenge now is execution. With limited public funding relative to international peers and a rapidly changing global environment, the UK must focus on coordination, prioritisation and delivery to maximise impact.

If the UK is serious about accelerating economic growth, strengthening national security, delivering net zero and building long-term resilience, semiconductor capability must be treated as a national priority in practice as well as in principle. The world is moving quickly. This paper makes the case that decisive, coordinated action now will determine whether the UK secures lasting advantage in a technology that underpins the entire economy.

7 Acknowledgements

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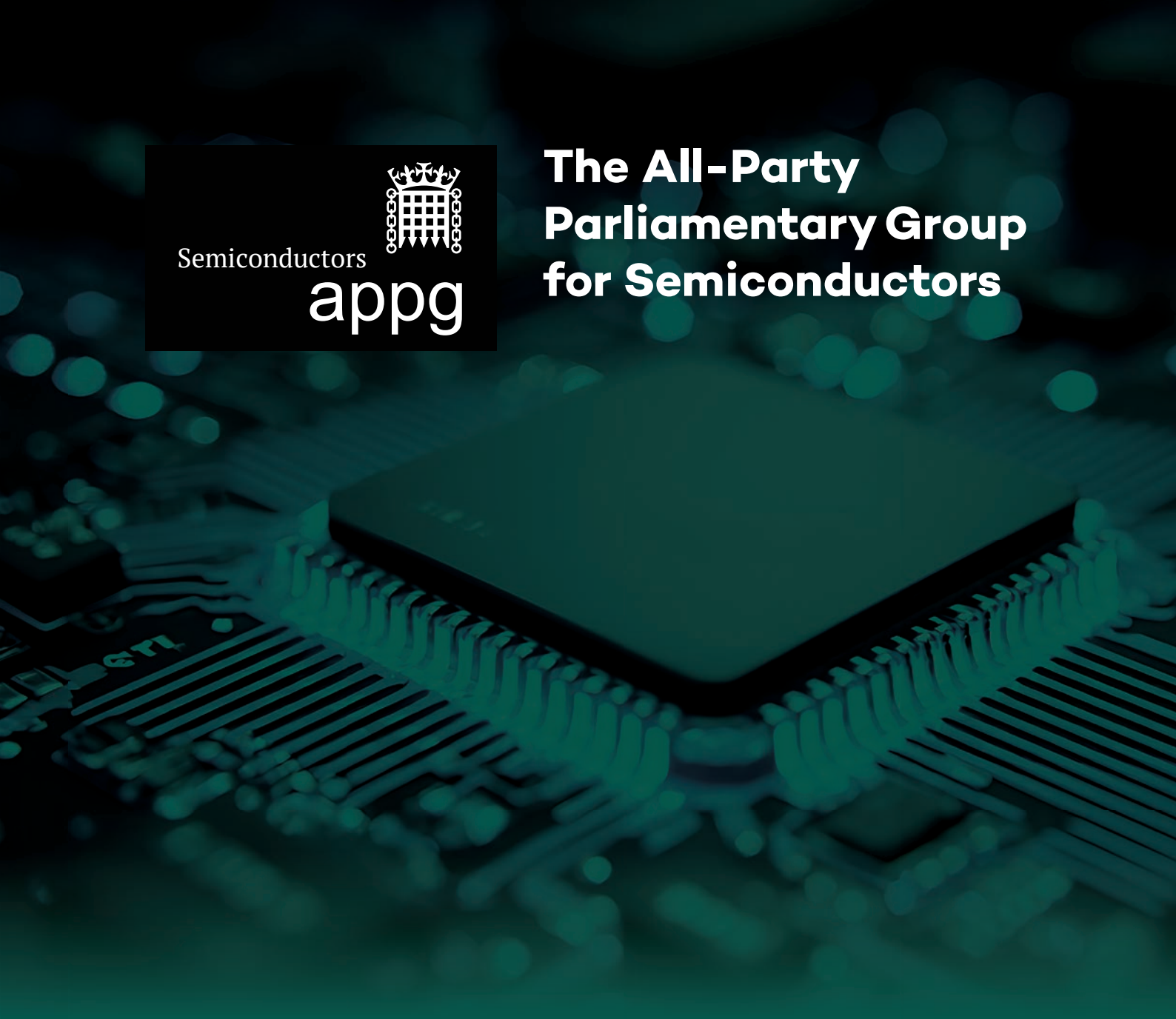

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This paper was co-written by the All Party Parliamentary Group for Semiconductors Advisory Board and CalComms, the Secretariat to the APPG.

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