

PCB sector

800G high-speed transmission era approaching; big opportunities on PCB upgrades

Overweight · Maintained

Key message

1. Upgrades to high-speed transmission shortened to two years on debut of 800G ethernet switch ports and switches.
2. Tighter transmission requirements for extreme low loss prompting full-fledged substrate material upgrades.
3. Taiwanese 800G switch and ethernet switch port makers the biggest beneficiaries.

Impact

Upgrades to high-speed transmission shortened to two years on the adoption of 800G ethernet switch ports and switches. AI-led mass data and transmission requirements have pushed up the adoption of higher-bandwidth 800G switches and ethernet switch ports. According to Cisco (US), the 800G ethernet switch port market will take off in 2025F. Cisco projects shipments will grow at a 132% CAGR during 2023-28F, from 460k units in 2023, for a weighting of 0.6%, to 31mn units in 2028F, for a weighting of 33%. We predict that after the debut of 800G, upgrades to optical transmission will shorten from four years to two years, and that 1.6T Ethernet switch ports will be rolled out by 2027F.

Extreme low loss needs prompting full-fledged substrate material upgrades. Compared with 400G switches, 800G's bandwidth and frequency are expected to double to 112Gbps and 28Ghz. Copper clad laminate (CCL) will use second-generation low DK glass fiber cloth, advanced PPO series glue and low roughness HVLP2/ 3 copper foil, while mainboard PCB will be lifted from ultra low loss (M7) to extreme low loss (M8). The number of layers will increase from 24-36L to 38-48L. We expect the ASP of a switch will increase by two to three times to US\$1,500. The number of layers in 800G Ethernet switch port (QSFP-DD) PCB will increase from 10L to 14L, adopting M8 materials, 5/ 6-N any-layer stack-ups and HDI/ MSAP linewidth.

Taiwanese 800G switches & ethernet switch port PCB makers to benefit. Consultancy house Prismark forecasts that, driven by 800G Ethernet switch ports and switches, the output of AI/ HPC server-use PCB will grow from US\$770mn in 2023 to US\$3.17bn in 2028, for a shipments value CAGR of 32.5% over 2023-28F, with PCB of more than 18 layers growing shipments by 13.6% (for a weighting of 18% in 2028F, up 3ppts compared to 2023F). Of global 800G switch-use PCB, Taiwan-made CCL has a hefty market share of 80%, led by Elite Material (2383 TT, NT\$618, OP) 60-70%, and Taiwan Union (6274 TT, NT\$170, NR) 15-20%, and these firms will be the biggest beneficiaries. PCB maker Gold Circuit (2368 TT, NT\$241.5, OP) also leads, with a global PCB market share of over 35%. Unimicron (3037 TT, NT\$141, OP) is a major supplier of 800G switch substrate and ethernet switch port PCB, with a greater than 50% market share for substrates and optical modules.

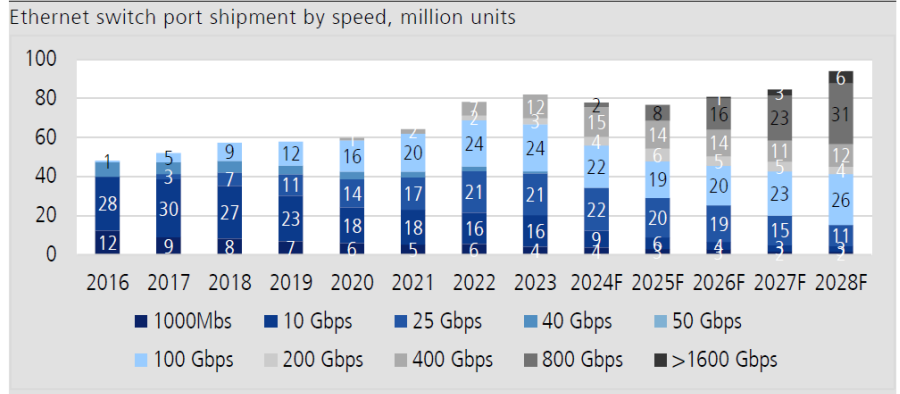
Stocks for Action

We believe growing 800G switch and Ethernet switch port adoption will boost demand for high-speed PCB materials. We are positive on the CCL subsector, expecting it to benefit significantly due to high global market share. Elite Material, Gold Circuit and Unimicron will benefit from the trend.

Risks

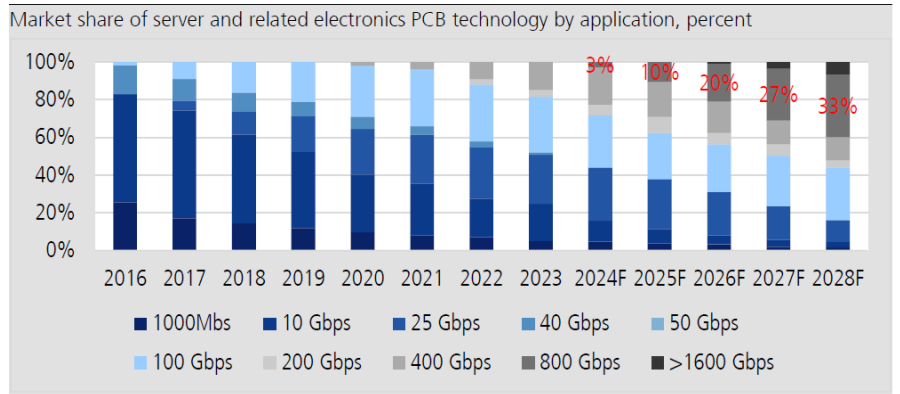
Weaker-than-expected market demand; deeper declines in ASP and profitability.

Figure 1: 2028F 800G ethernet switch port shipments of 31mn units.



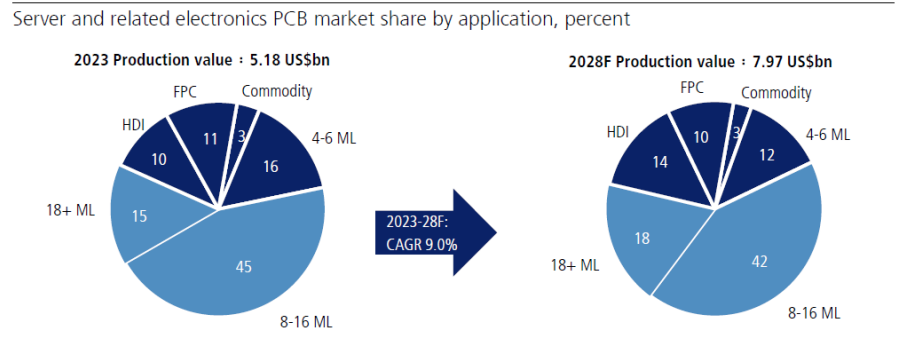
Source: Cisco; KGI Research

Figure 2: 2028F 800G ethernet switch ports have a 33% PCB shipments weighting



Source: Cisco; KGI Research

Figure 3: 2028F weighting of boards with 18 or more layers to rise by 3ppts to 18%



Source: Prismark; KGI Research

All the above named KGI analyst(s) is SFC licensed person accredited to KGI Asia Ltd to carry on the relevant regulated activities. Each of them and/or his/her associate(s) does not have any financial interest in the respectively covered stock, issuer and/or new listing applicant.

Disclaimer All the information contained in this report is not intended for use by persons or entities located in or residing in jurisdictions which restrict the distribution of this information by KGI Asia Limited ("KGI") or an affiliate of KGI. Such information shall not constitute investment advice, or an offer to sell, or an invitation, solicitation or recommendation to subscribe for or invest in any securities or investment products or services nor a distribution of information for any such purpose in any jurisdiction. In particular, the information herein is not for distribution and does not constitute an offer to sell or the solicitation of any offer to buy any securities in the United States of America, or to or for the benefit of United States persons (being residents of the United States of America or partnerships or corporations organised under the laws of the United States of America or any state, territory or possession thereof). All the information contained in this report is for general information and reference purpose only without taking into account of any particular investor's objectives, financial situation or needs. Such information is not intended to provide professional advice and should not be relied upon in that regard.

Some of KGI equity research and earnings estimates are available electronically on www.kgi.com.hk. Please contact your KGI representative for information. The information and opinions in this report are those of KGI internal research activity. KGI does not make any representation or warranty, express or implied, as to the fairness, accuracy, completeness or correctness of the information and opinions contained in this report. The information and opinions contained in this report are subject to change without any notice. No person accepts any liability whatsoever for any loss however arising from any use of this report or its contents. This report is not to be construed as an invitation or offer to buy or sell securities and/or to participate in any investment activity. This report is being supplied solely for informational purposes and may not be redistributed, reproduced or published (in whole or in part) by any means for any purpose without the prior written consent of KGI. Members of the KGI group and their affiliates may provide services to any companies and affiliates of such companies mentioned herein. Members of the KGI group, their affiliates and their directors, officers and employees may from time to time have a position in any securities mentioned herein.