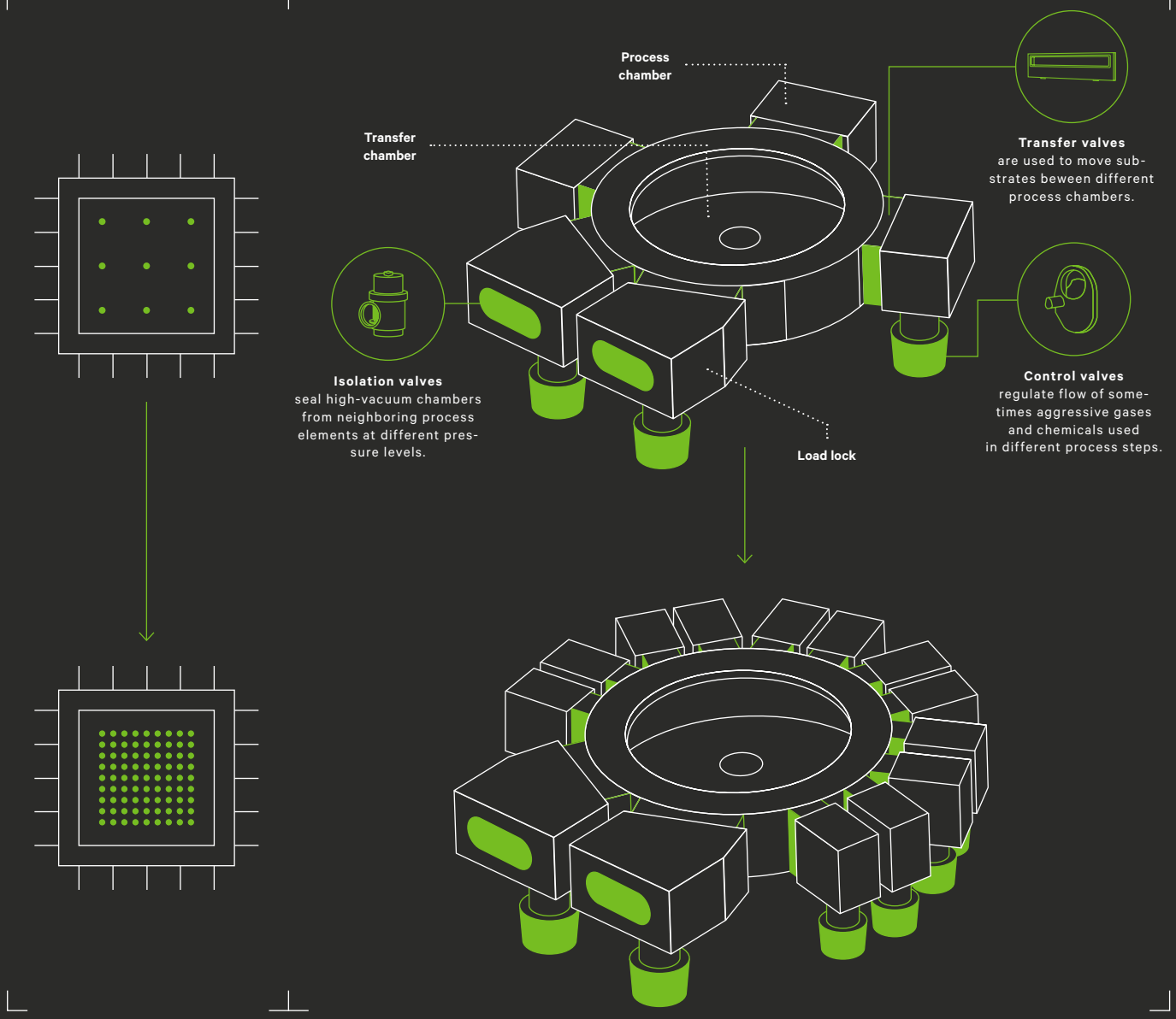
MISSION-CRITICAL TECHNOLOGY

The global digital revolution would not be possible without the pure vacuums enabled by VAT valves. Manufacturing at the molecular scale is being adopted by more and more industries, which plays to VAT's competitive advantage in high-end vacuum valves.

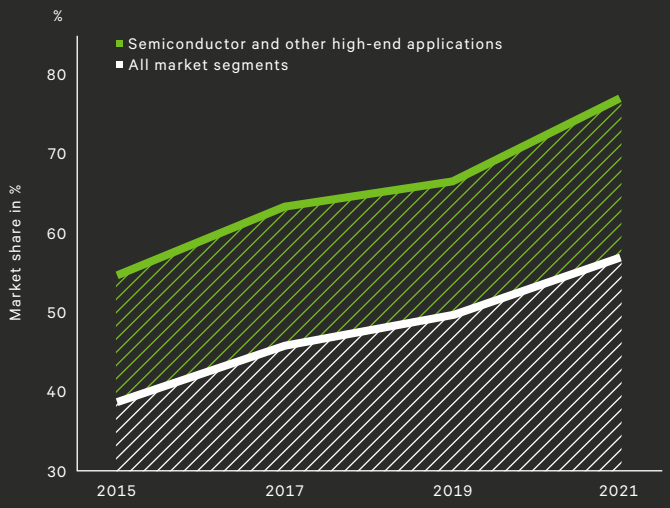
Smaller chip nodes require a longer wafer path
As the density of transistors on a chip increases, so does the number of process steps. This, in turn, requires more, and more advanced, vacuum valves.



Source: 1 VLSI Research July 2020, based on 1Q20 actual plus 2Q20 estimated

High-end market share

VAT has the largest share in the fast-growing semiconductor market [1]



VAT with a proven track record in R&D

Active patents and applications in 2020

>400

New specification wins in 2021

>110

Budget focused on disruptive technologies %

>10

Investment in R&D as share of revenue %

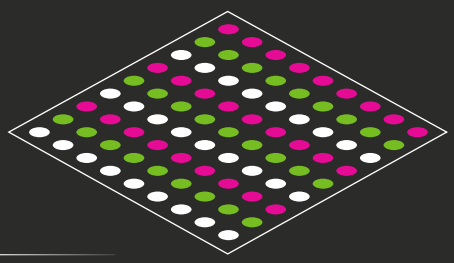
5–6

Ever-smaller display technologies

LEDs (light-emitting diodes) are widely used in TV screens, but the technology is changing rapidly. LEDs are getting smaller, brighter and more energy efficient.

LED

1



Mini-LED

≈1/5

Micro-LED

≈1/100

VAT transfer valve for display manufacturing

Every pixel in a micro-LED display is self-luminous, dimmable and can be switched off. A 4K screen may need more than 24 million LEDs. These delicate components can only be made under high-vacuum conditions, where VAT valves play a key role.