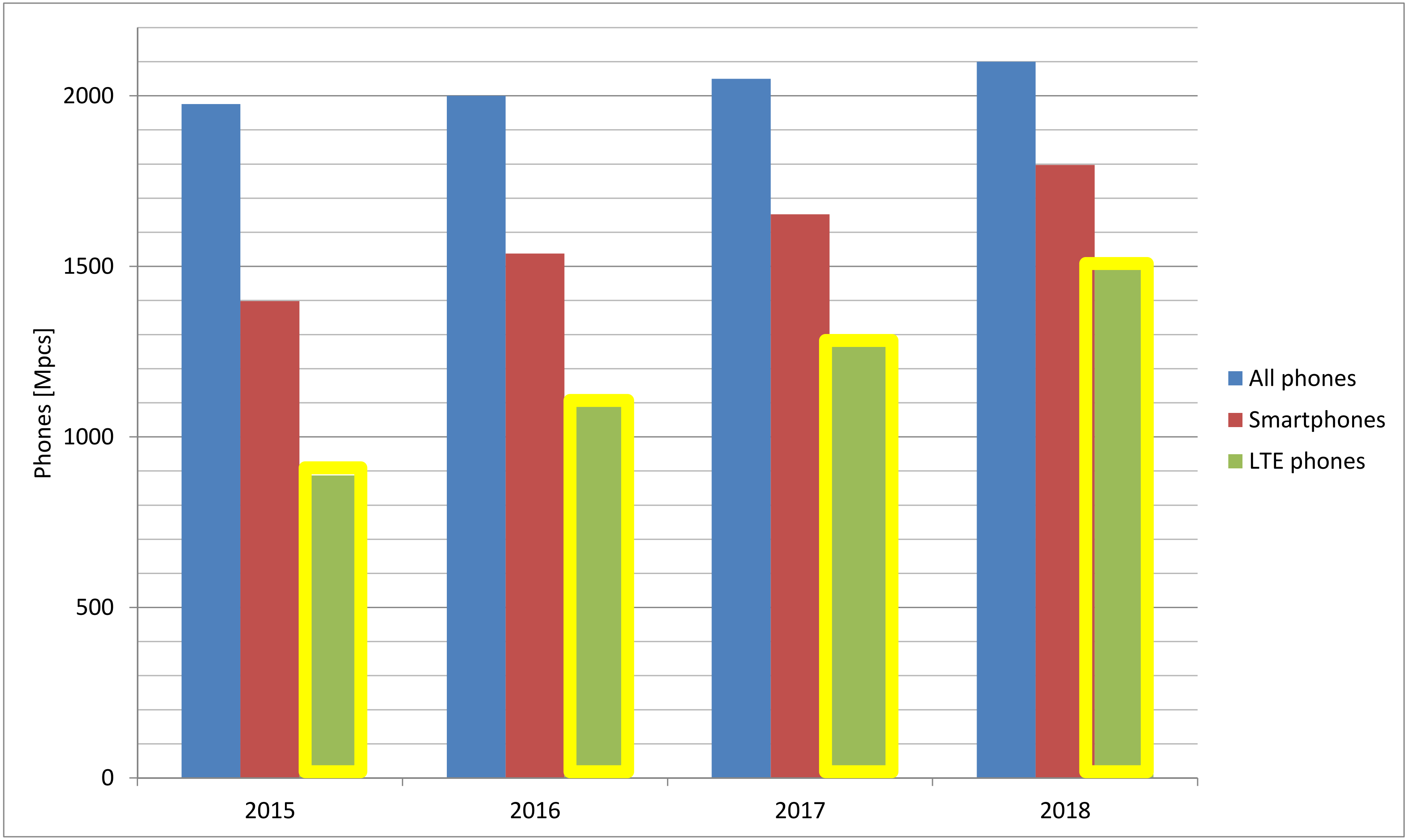
Strategy of High Frequency Components Business

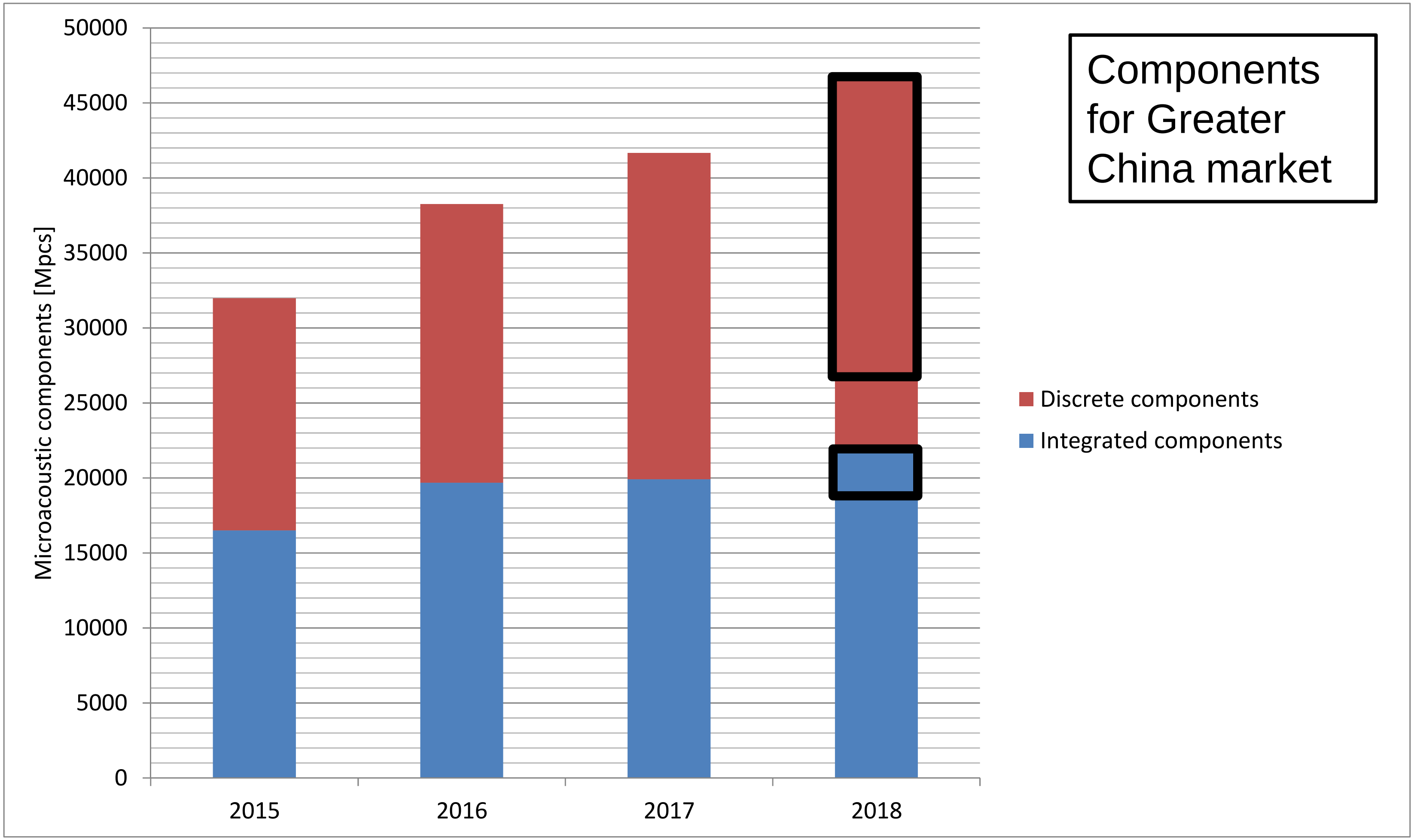
Corporate Officer
Christian Block

Predicted Phone Volumes



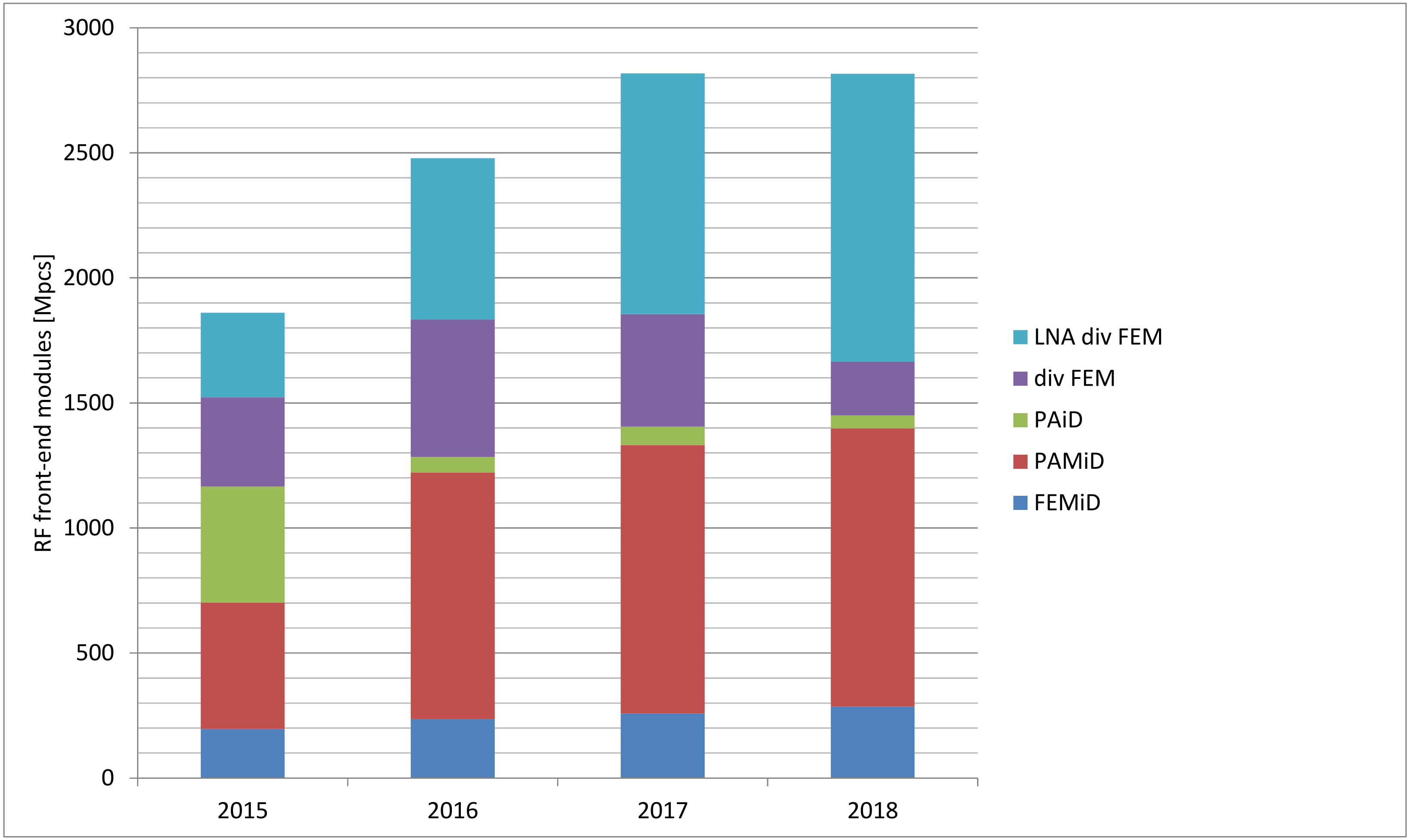
TDK's estimation

Microacoustic Component Market [Mpcs]



TDK's estimation

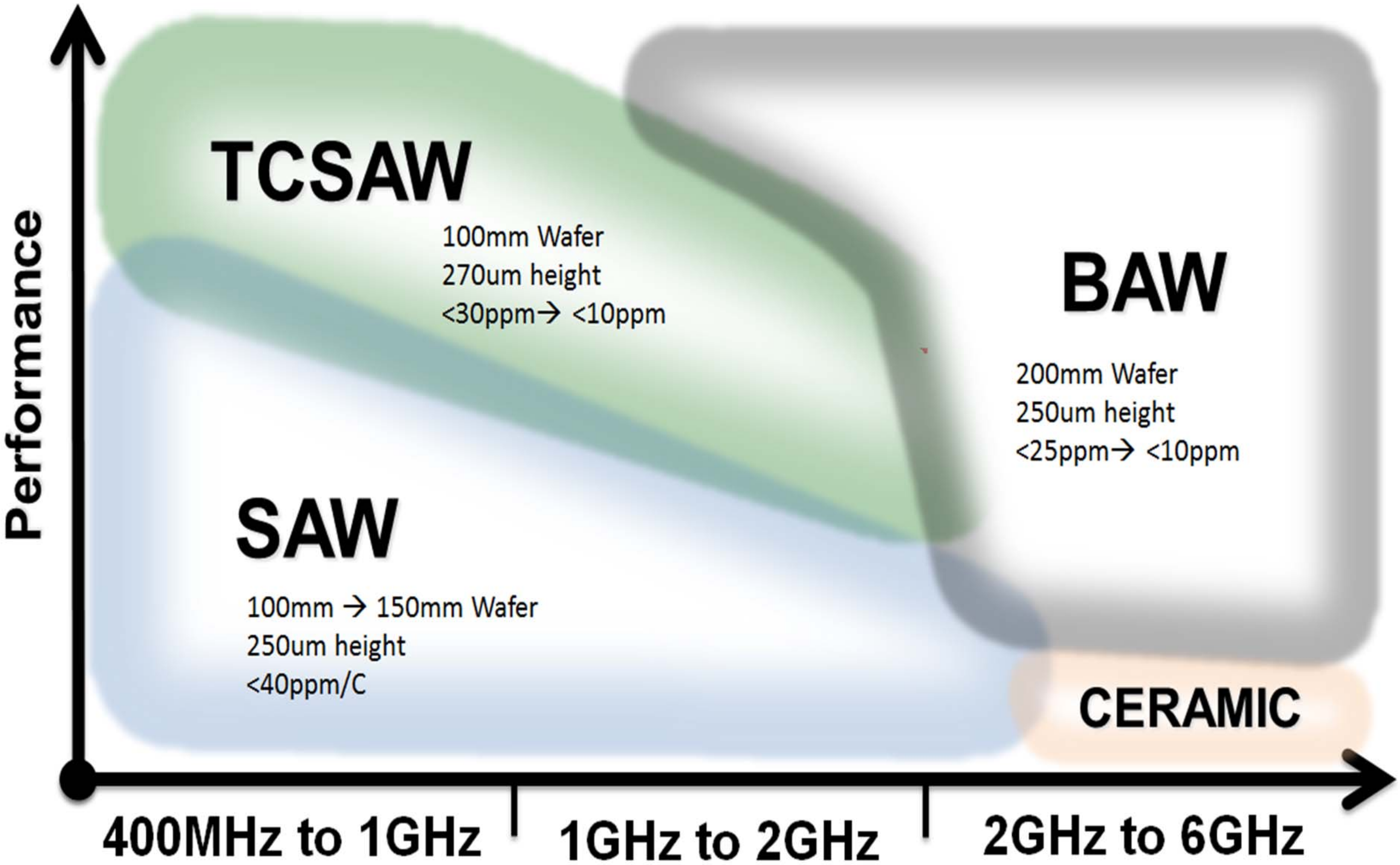
RF Front-end Module Market [Mpcs]



TDK’s estimation

Filter Technologies / Applications

Capable of mixed technologies



TCSAW

100mm Wafer
270um height
<30ppm→ <10ppm

BAW

200mm Wafer
250um height
<25ppm→ <10ppm

SAW

100mm → 150mm Wafer
250um height
<40ppm/C

CERAMIC

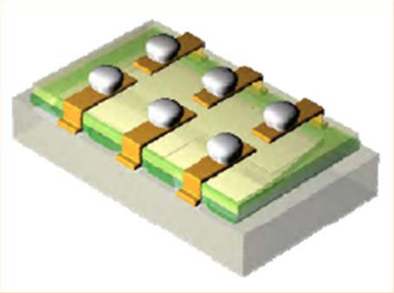
Performance

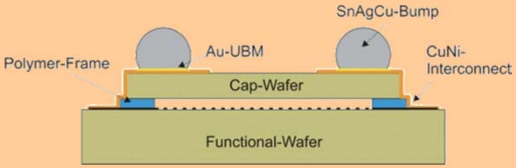
400MHz to 1GHz | 1GHz to 2GHz | 2GHz to 6GHz

TDK Wafer Level Package Technology Platforms

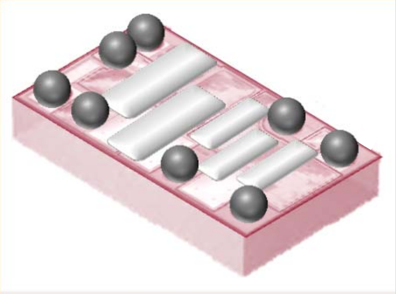
- Wafer Level Packages for SAW, TC SAW (HQTCF) and BAW components
- Die Size Saw Package DSSP and Thin Film Acoustic Package TFAP
- All WLP platforms running in mass production
- Package height 0.25 mm max. for DSSP and 0.17 mm max. for TFAP
- Overmold capability

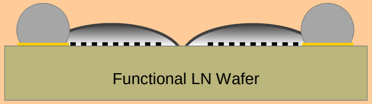
SAW / DSSP



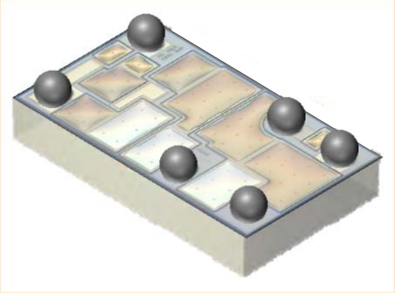


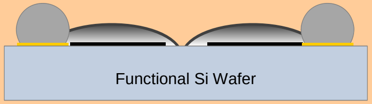
SAW TC / TFAP





BAW / TFAP



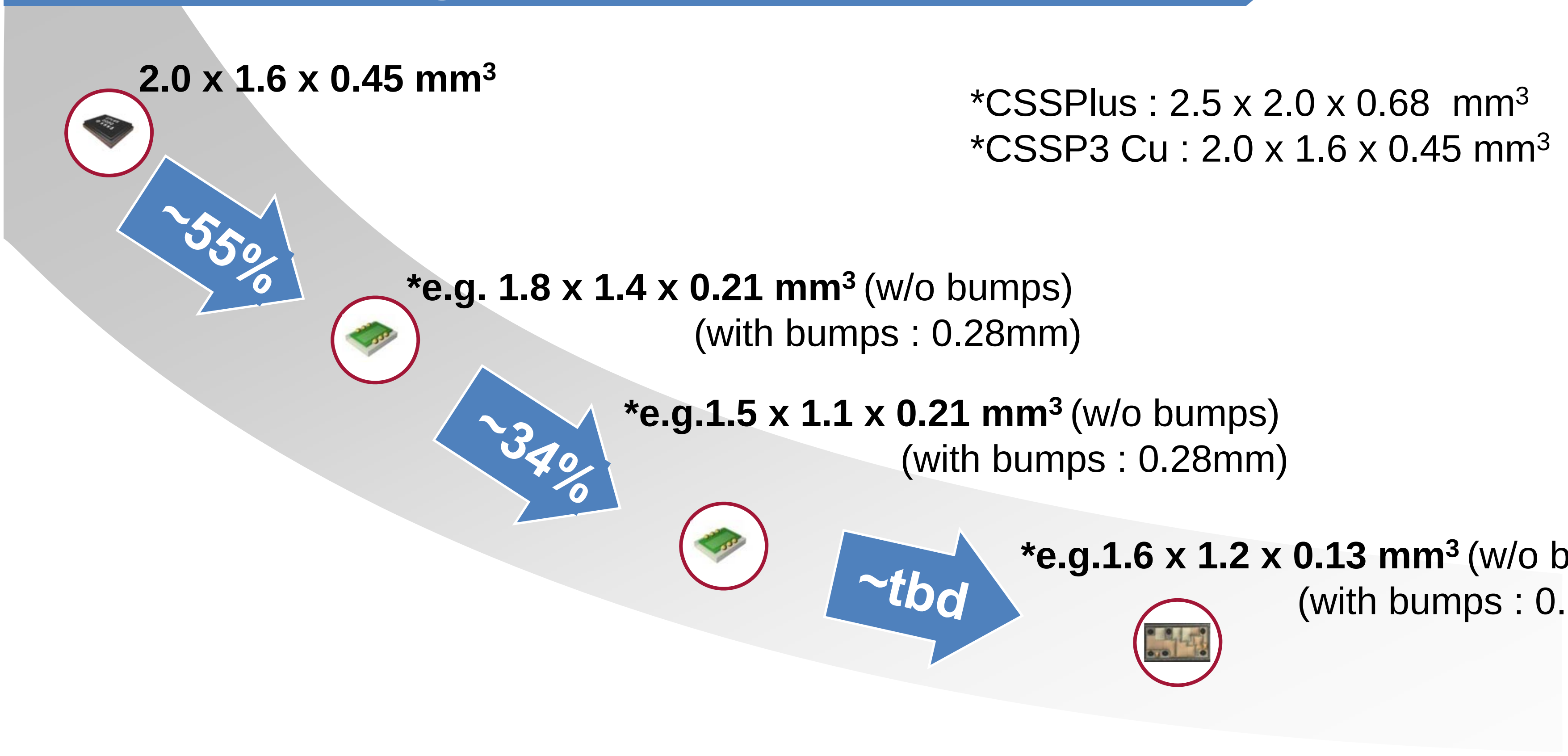


Wafer Level Package

Bare Die Package

Duplexers for Module Integration

Minus 60% height reduction



2.0 x 1.6 x 0.45 mm^3

*CSSPlus : 2.5 x 2.0 x 0.68 mm^3
*CSSP3 Cu : 2.0 x 1.6 x 0.45 mm^3

***e.g. 1.8 x 1.4 x 0.21 mm^3** (w/o bumps)
(with bumps : 0.28mm)

***e.g.1.5 x 1.1 x 0.21 mm^3** (w/o bumps)
(with bumps : 0.28mm)

***e.g.1.6 x 1.2 x 0.13 mm^3** (w/o bumps)
(with bumps : 0.20mm)

CSSP3 **DSSP1** **DSSP1** **TFAP BAW/LN**

*) package size depends on product

Technology Toolbox and Link to Strategies

	Power Amplifier	Switch	Module assembly	WLP	SAW	TC-SAW	BAW
TDK			✓	✓	✓	✓	✓

- Exploring ways how to serve the PA module market to full extent

- WLP component sales to module vendor partners

- Discrete component sales to serve the growing Chinese market

- Continuously improving presence in reference designs of leading chipset vendors

- Supply leading div FEM, LNA div FEM and FEMiD solutions

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