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IC Knowledge – Cost and Price Model Product Line Summary

IC Knowledge produces five cost and price models, and, in this document, the five models will be summarized and compared. The five models are:

1. Discrete and Power Products Cost and Price Model - The Discrete and Power Products Cost and Price Model is designed to easily calculate the manufacturing cost and selling price of past and current high-power ICs and discrete devices fabricated on silicon, GaAs, GaN and SiC. The price includes twelve months of upgrades with phone and email support. Wafer fabrication, test and packaging costs are all covered. This model is sold in individual and enterprise licenses.
2. IC Cost and Price Model - The IC Cost and Price Model is designed to easily calculate the manufacturing cost and selling price of low power silicon ICs (such as microprocessor, ASIC, analog, etc.). The price includes twelve months of upgrades with phone and email support. Wafer fabrication, test and packaging costs are all covered. This model is sold in individual and enterprise licenses.
3. MEMS Cost and Price Model - The MEMS Cost and Price Model is designed to easily calculate the manufacturing cost and selling price of most MEMS products. The model supports up to two MEMS die and up to two IC die in the same package with packaging and test costs. The price includes twelve months of upgrades with phone and email support. This model is sold in individual and enterprise licenses.
4. Packaging Cost and Price Model - The Packaging Cost and Price Model is designed to calculate the manufacturing cost and selling price of most semiconductor packages. The model supports leadframe and organic substrate packages including EMIB, wafer level packaging and InFO. The price includes twelve months of upgrades with phone and email support. This model is sold in individual and enterprise licenses.
5. Strategic Cost and Price Model - The Strategic Cost and Price Model is a node-based model for forward projecting state-of-the-art semiconductor technology. The model covers the top three companies of each of four categories, DRAM, Foundry, IDM Logic and NAND Flash. The model presents user editable process, equipment and materials details and has every 300mm fab for the target companies pre-defined (also user editable). Output includes detailed wafer cost and equipment and materials requirements in units and cost. Also includes die counts and die yield projections, margins and selling prices. The price includes twelve months of updates with phone and email support. This model is sold in individual and enterprise licenses.

All of our model run in Microsoft Excel, the Packaging Cost and Price Model and Strategic Cost and Price Model require Excel 2010 or higher, the other models currently run in Excel 2007 or higher but will be transitioning to Excel 2010 or higher.

Summary and comparison table

Elements	Discrete and Power Products Cost and Price Model	IC Cost and Price Model	MEMS Cost and Price Model	Packaging Cost and Price Model	Strategic Cost and Price Model
Model coverage	High powered integrated circuits and discrete devices fabricated on silicon, GaAs, SiC and GaN	Low powered integrated circuits fabricated on silicon.	MEMS products	Semiconductor packages	Leading edge integrated circuit processes
Difficulty of use	Low	Low	Moderate	Moderate	High
Cost elements - Wafer cost - Wafer sort - Packaging - Class test	Yes Yes Yes Yes	Yes Yes Yes Yes	Yes Yes Yes Yes	No No Yes (detailed) Yes	Yes (detailed) No No No
Target customers	Should cost for automotive (widely used), and electronic systems. Benchmarking for IDMs. General usage by analysts and consultants.	Should cost for automotive, electronic systems and fabless companies. Benchmarking for IDMs and foundries. General usage by analysts and consultants. Materials and OEMs.	Should cost for automotive and electronic systems companies. Benchmarking for IDMs and MEMS companies. General usage by analysts and consultants.	Anyone needing detailed packaging costs.	Preferred model for OEMs and Materials companies. Technology and cost planning for IDMs, Foundries, Fabless, Consultants and Analysts.
Processes	BCD, HVIC, Power MOSFET, IGBT, Thyristor, diodes, IPD	CMOS, RFCMOS, DRAM, SRAM, Flash.	MEMS and IC signal conditioning	Molded leadframe, organic substrate, wafer level, InFO	Foundry and IDM CMOS logic, DRAM, 2D and 3D Flash, 3D XPoint, Silicon Photonics

Elements	Discrete and Power Products Cost and Price Model	IC Cost and Price Model	MEMS Cost and Price Model	Packaging Cost and Price Model	Strategic Cost and Price Model
Typical products	Power control ICs, high and low side switches, power MOSFETs, IGBTs, high voltage diodes, thyristors	Low power ASICs, FPGAs, microcontrollers, microprocessors, DSP, SOC	Accelerometers, gyroscopes, MEMS microphones, pressure sensors.	IC and discrete packages	Leading edge wafers
Companies covered	Any relevant to the model	Any relevant to the model	Any relevant to the model	Top 10 OSATs, user entered	Top 3 foundries, DRAM and 2D NAND, top 4 3D NAND, 2 most advanced logic, Intel-Micron 3D XPoint
Nodes	Past, current and any expected in the next twelve months	Past, current and any expected in the next twelve months	Past, current and any expected in the next twelve months	NA	All 300mm to-date, 3D NAND to 256 layers, logic to 1.5nm, DRAM and 2D NAND to 1z, 3D XPoint 3 generations
Wafer sizes - 75mm - 100mm - 125mm - 150mm - 200mm - 300mm - 450mm	No Yes Yes Yes Yes Yes No	No Yes Yes Yes Yes Yes No	No Yes No Yes Yes Yes No	Yes Yes Yes Yes Yes Yes No	No No No No Limited Yes Limited
Packages	Power and discrete packages such as SOT, DFN, TO, etc.	Standard IC packages such as QFN, BGA, LGA, QFP, etc.	Multiple die specialty packages used for MEMS.	Molded leadframe, organic substrate, wafer level, InFO	None
Customizability	Low, can add selected process steps	Low, can add selected process steps	High for MEMS processes, can build custom process flows	Moderate, can activate/deactivate an extensive list of packaging steps	Very high, custom processes, materials and equipment usage and characteristics

Elements	Discrete and Power Products Cost and Price Model	IC Cost and Price Model	MEMS Cost and Price Model	Packaging Cost and Price Model	Strategic Cost and Price Model
Output details	Wafer, die, test and packaging costs. Approximate fab equipment and materials costs.	Wafer, die, test and packaging costs. Approximate fab equipment and materials costs.	Wafer, die, test and packaging costs. Detailed fab equipment and materials costs for MEMS.	Overall packaging cost, cost per step, materials usage.	Detailed wafer cost, cost per block and step, equipment set cost and units, material usage and cost
Comments	Has a module calculator for multi-chip packaging. Compound semiconductor coverage.	Has a multiple die calculator for multi-chip packaging.	Can cost out up to 2 MEMS die and up to 2 IC die in the same product. Users can define their own MEMS processes.	Detailed ability to define the packaging process elements and parameters.	The fabs, processes, equipment and materials can all be user adjusted.
Price [1] - Single user - new - Single user - renewal - Enterprise - new - Enterprise - renewal	\$2,300 \$1,533 \$7,821 \$5,214	\$2,300 \$1,533 \$7,821 \$5,214	\$1,995 \$1,330 \$6,783 \$4,521	\$1,200 \$800 \$4,080 \$2,720	\$5,000 \$4,500 \$14,000 \$10,000

[1] Prices shown are for purchase orders with 30 days net terms, lower prices may be available for on-line purchases with a credit card. Renewal prices are only valid for users with a current license or a license that has expired in the last 30 days. Once a license has expired for more than 30 days you must pay the new license price. Prices and features are subject to change without notice.