

Company Products & Services – Silicon Microphone (Si MIC) Product Line

A SALES & MARKETING PRESENTATION



苏州敏芯微电子技术有限公司

MEMSensing Microsystems (Suzhou, China) Co. Ltd



CORPORATE OVERVIEW

公司概览



Ultra reliable
High performance
Low cost

WHO WE ARE?

A leading provider of micro sensor products based on MEMS technologies. We have developed proprietary designs that allow us to supply MEMS Microphone, Pressure Sensors, Accelerometers, with **proprietary designed MEMS / ASIC** and a complete domestic **industry chain**.

| 关于我们

敏芯微电子是全球领先的MEMS微传感器制造商。基于长达十几年的研发，我们拥有基于自主研发、自有知识产权的**MEMS / ASIC芯片**的MEMS硅麦克风、压力传感器以及加速度传感器产品线。同时，公司拥有基于中国大陆的**完整的本土化产业链**。

MEMSensing Milestones

公司里程碑



2007

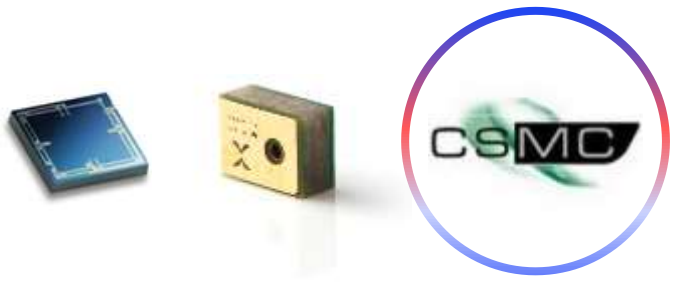
公司获天使风投，在苏州工业园区成立
 Company founded in SIP w/ angel investment
 硅麦克风工程样品
 MEMS Micphone Engineering Sample



2010

中国 MEMS 麦克风技术产业化
 China MEMS microphone technology
 industrialization



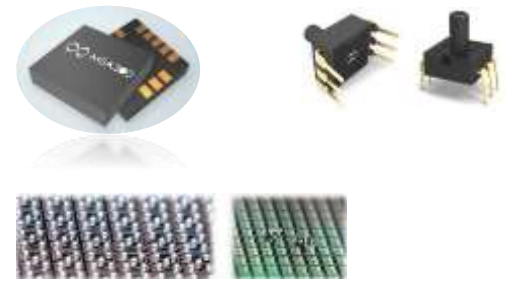


2012

硅麦产品线 6 寸工艺线在华润上华整合成功，硅麦产品开始正式量产
 Si MIC 6" process completed at CSMC. Volume production of started
 基于"SENSA"工艺压力传感芯片产品线开始量产
 Si pressure sensor chip product line mass produced

2015

硅麦产品线 / 加速度产品线的封装在华天实现外包产业资源整合
 Si MIC / G-Sensor products packaging integration completed at Hua Tian
 硅压力传感模块产品开始量产供货
 Pressure sensor module products launched



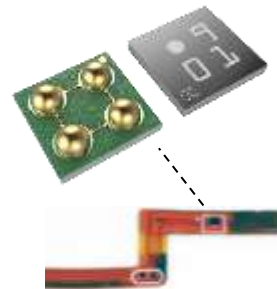
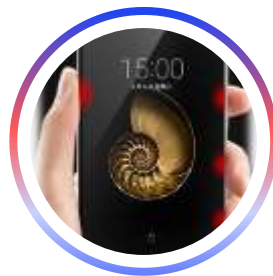
2016

硅麦产品线扩产，累计出货量突破 1 亿颗
 Si MIC continues to ramp up volume, reaching a total of 100M Units



2017

新产品系列 – Force Touch 触力传感器设计开发结束，开始在晶圆厂、封装厂、测试厂进行导入
The new product line – force touch sensor completes its R&D phase, process integration started at foundry



2018

硅麦产品线 8 寸工艺线在中芯国际成功导入，硅麦产品线扩产，累计出货量突破 5 亿颗，全球排名第四

Si MIC 8" process integration completed at SMIC and continued to ramp up volume, reaching a total of 500M Units, ranking No. 4 globally.

全资子公司昆山灵科传感技术有限公司成立，专注于汽车、工控、医疗压力模组
Fully-owned subsidiary - Kunsan Linksensing was founded, focusing on pressure sensor in automotive, industrial, medical applications

2019

全资子公司苏州德斯倍电子有限公司成立，专注于硅麦克风类产品封装和测试
A fully-owned subsidiary - Suzhou DSBEL Electronics was founded, focusing on Si-MIC product line's packaging and testing

NOW!





WORLDWIDE PRESENCE

全球分支机构及销售网络



Suzhou, China (中国 苏州)

Headquarter

R&D Center

Global support for North America, Europe, South Korea and Japan



Shanghai, China (中国 上海)

Regional Sales Office



Shenzhen, China (中国 深圳)

Regional Sales Office



Taiwan, China (中国 台湾)

Regional Sales Office and Field Support for SE Asia



CORPORATE STRUCTURE

集团架构



控股子公司 – 芯仪微电子

Subsidiary – ChipSens
Microelectronics

ASIC 专用集成电路芯片设计
ASIC design house



全资子公司 – 灵科传感

Fully owned subsidiary – Link
Sensing Technologies

汽车、工控、医疗用压力模组
Automotive / Industrial / Medical
Pressure Sensor module



全资子公司 – 德斯倍电子

Fully owned subsidiary – DSBEL

硅麦克风类产品封装和测试
Si-MIC Packaging & Testing House



Meet The Team

管理团队



Dr. Gary Li (李刚 博士)
CEO

MEMS / CMOS IC expert with
over 20 years experience



James Mei (梅嘉欣)
CTO



Carl Zhang (张辰良)
VP – Sales & Marketing



Wale Hu (胡维)
VP – MEMS Wafer Design

PRODUCTS FAMILY

产品系列

1

Silicon Microphone



SERVING
Consumer Electronics Market

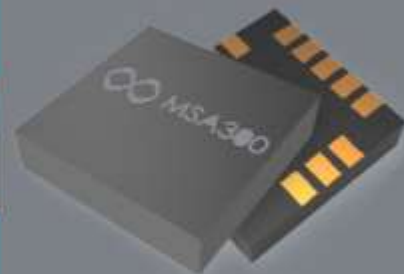


3

Silicon G-Sensor

方寸芯片
“感”动“世界”

SERVING
Consumer Electronics Market



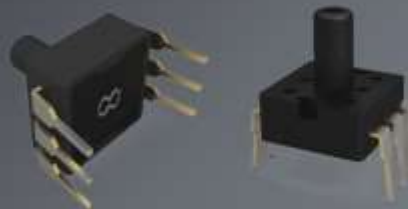
2

Pressure Sensor

Good sense, especially under pressure



SERVING
Consumer Electronics / Industrial
Medical Electronics / Automotive

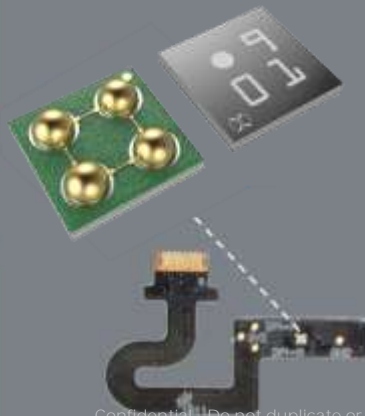


4

Force Touch Sensor



SERVING
Consumer Electronics



QUALITY CERTIFICATION

质量体系认证



1 ISO9001



2 ISO14001



3 OHSAS18001



4 QC080000

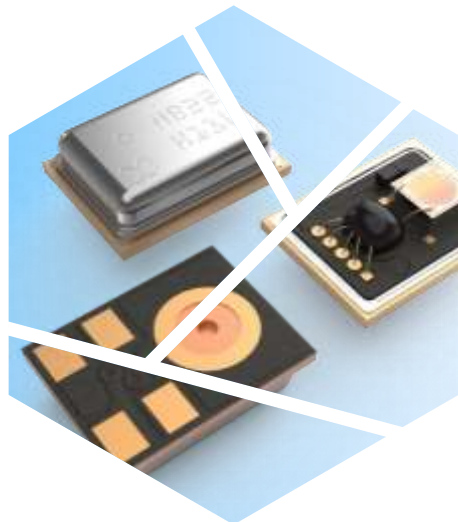


Our Position in Global Si-MIC Market

硅麦产品全球排名（2018年，单位：PCs，based on IHS data）

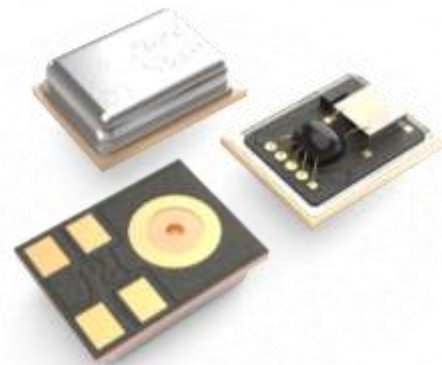
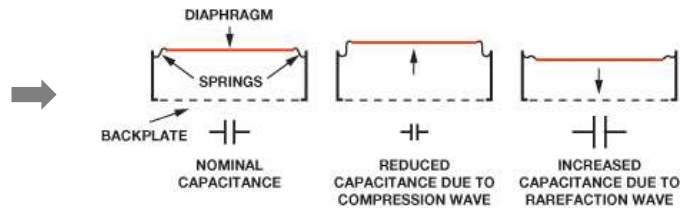
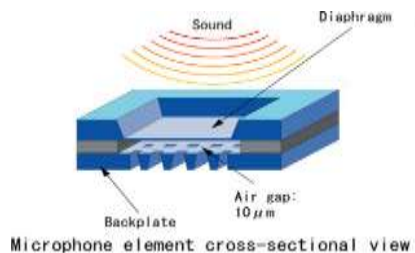


	典型应用和特性要求	尺寸	封装形态	灵敏度一致性	信噪比	模拟输出	数字输出	AOP	差分	ANC
便携式设备	手机	●	●	●		●		●	●	
	平板		●	●		●				
	笔记本电脑			●	●		●			
个人音频	耳机 (线控/TWS)	●				●				●
	可穿戴 (手环/手表)	●	●			●				
	AI/蓝牙音箱			●	●		●	●		
汽车电子	行车记录仪				●	●				
	车载导航仪				●	●				
	车载免提					●		●		
办公设备	TV			●	●		●	●		
	运动相机	●				●				
	智能遥控器					●				

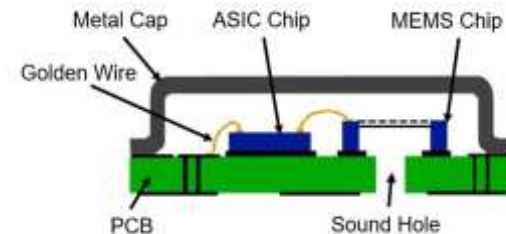


OUR SI-MIC TECHNOLOGY 敏芯硅麦技术

□ Principle & Specifications

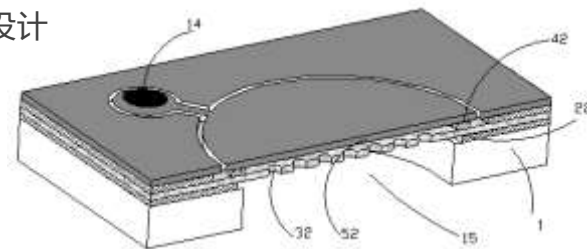


Sensor Size	1 × 1 × 0.4mm
Sensitivity	-42+/-1 dB; -38+/-1 dB
THD	<1% (SPL=100 dB)
SNR	59 dB / 63 / 65dB
Frequency Response:	100 Hz—8 kHz(+/-3dB); 50 Hz—10 kHz(+/-3dB)



Proprietary Designs

- ✓ Proprietary design with over 17 patents / 基于17项专利技术以上的设计
- ✓ One of a few companies with both MEMS and ASIC know-how / 少数具有MEMS和ASIC芯片自主研发能力的公司
- ✓ Highly reliable and robust / 高可靠性、灵活适用性设计



	membrane anchor design	membrane shape	back plate position	stress release
Knowles	free floating (supported by Si_3N_4 posts)	circular	above the membrane	naturally released of all internal stress
MEMSensing	fixed anchor at multiple locations	circular	beneath the membrane	partially released of internal stress

Products w/ Analog Output

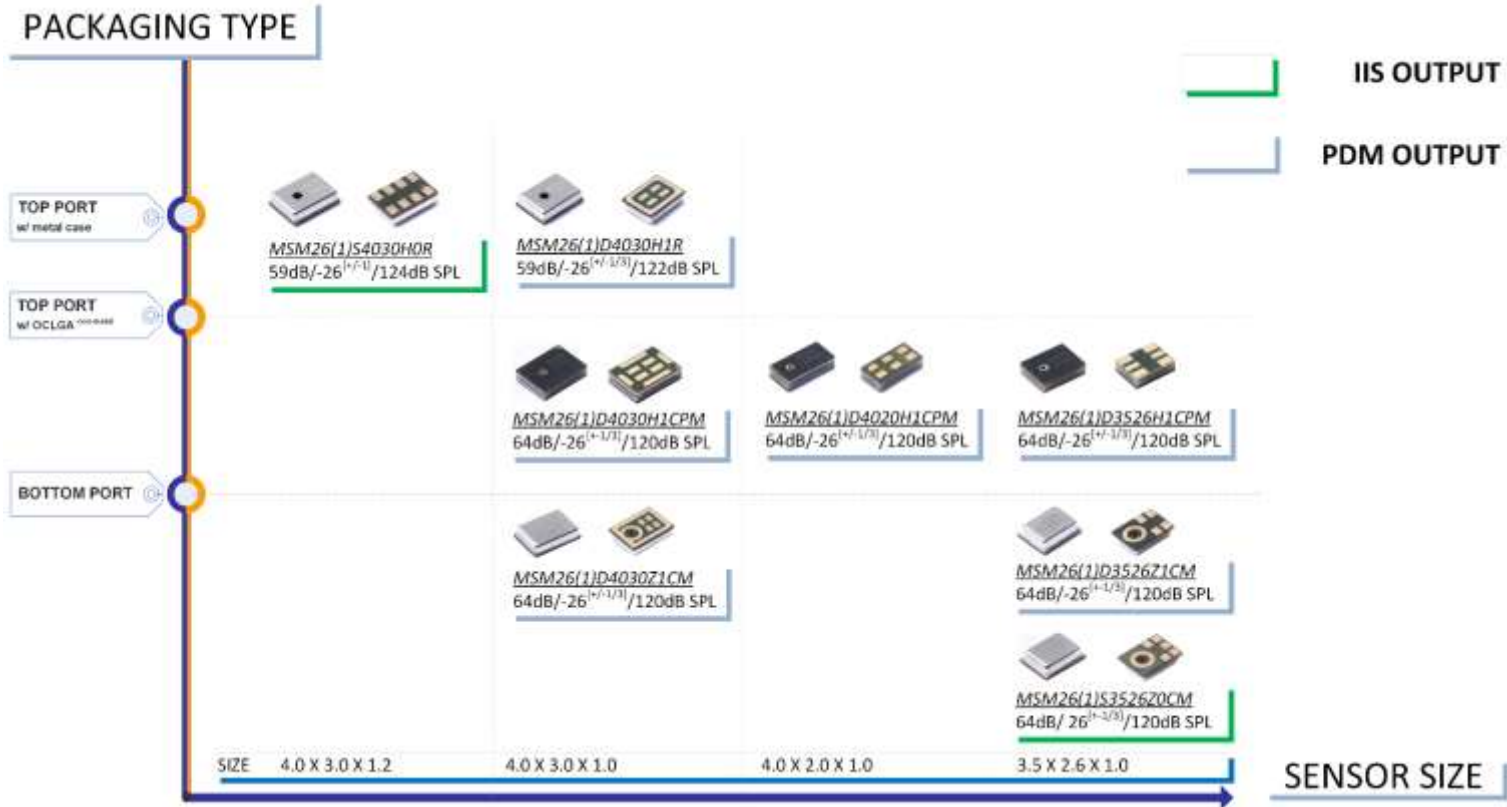
PACKAGING TYPE

PACKAGING TYPE	TOP PORT	TOP PORT	BOTTOM PORT	
  MSM4211A3729H98MC 58dB / -42 ⁽¹⁾ / 150μA <i>Max. 3P</i>	  MSM3871A3722H98B* 58dB / -38 ⁽¹⁾ / 150μA MSM42A3722H98B* 58dB / -42dB / 150μA	  MSM42A3125H98* 58dB / -42dB / 150μA	  MSM42A2778H98* 58dB / -42dB / 150μA MSM3811A2778H98* 58dB / -38 ⁽¹⁾ / 150μA MSM421A2778H98* ANC // 58dB / -38 ⁽¹⁾ / 150μA MSM4211A2778H98HWE 58dB / -42 ⁽¹⁾ / 150μA <i>Max. 8P</i>	
SIZE	3.7 X 2.9 X 1.1	3.7 X 2.2 X 1.1	3.1 X 2.5 X 1.0	2.7 X 1.8 X 1.0
  MSM3871A3729H98P* 65dB / -38 ⁽¹⁾ / 123dB SPL <i>High 30P</i> MSM3871A3729H98PC 65dB / -38 ⁽¹⁾ / 123dB SPL <i>High 30P, RF enhanced</i> MSM3211A3729H98P* 65dB / -32 ⁽¹⁾ / MSM3211A3729H98PC 65dB / -32 ⁽¹⁾ <i>RF enhanced for low-noise app.</i>	  MSM3871A3526H98PC 65dB / -38 ⁽¹⁾ / 123dB SPL <i>High 30P, RF enhanced</i> MSM3871A3526H98PCF 65dB / -38 ⁽¹⁾ / 123dB SPL <i>High 30P with Max. 2P</i> MSM3871A3526H98P* ANC / 65dB / -38 ⁽¹⁾ / 150μA			
SIZE	3.7 X 2.9 X 1.1	3.5 X 2.6 X 1.0		
  MSM3871A3729798M* 65dB / -38 ⁽¹⁾ MSM3871A3729798-C 63dB / -38 ⁽¹⁾ / 150μA <i>RF enhanced</i> MSM3871A3729798MC 64dB / -38 ⁽¹⁾ / 150μA <i>RF enhanced</i> MSM3871A3729798M1-C 64dB / -38 ⁽¹⁾ / 123dB SPL <i>High 30P, RF enhanced, w/ analog output</i>	  MSM3871A3526798MC 65dB / -38 ⁽¹⁾ / 123dB SPL <i>High 30P, RF enhanced</i> MSM3871A3526798MCF 65dB / -38 ⁽¹⁾ / 123dB SPL <i>High 30P with Max. 2P</i>	  MSM3871A2778798M2* 62dB / -38dB / 150μA MSM3871A2778798M2E 62dB / -38 ⁽¹⁾ / RF: -100dB <i>Smart / compatible with Max. 2P</i>	  MSM38A2778798M2* 62dB / -38dB / 150μA MSM3871A2778798M1* 62dB / -38dB / 150μA <i>Smart / compatible</i>	
SIZE	3.7 X 2.9 X 1.1	3.5 X 2.6 X 1.0	2.7 X 1.8 X 0.9	

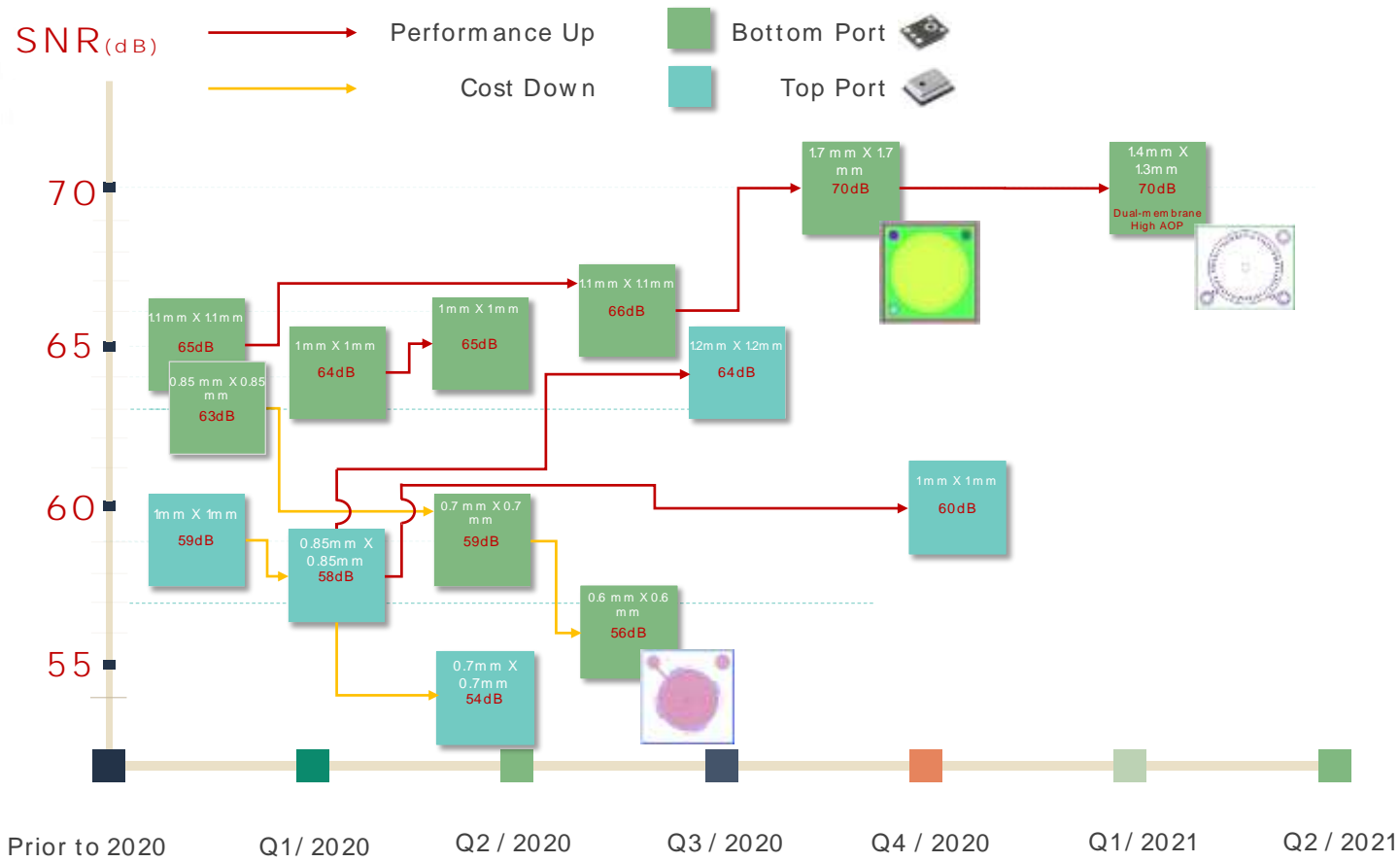
* for non-mobile application

SENSOR SIZE

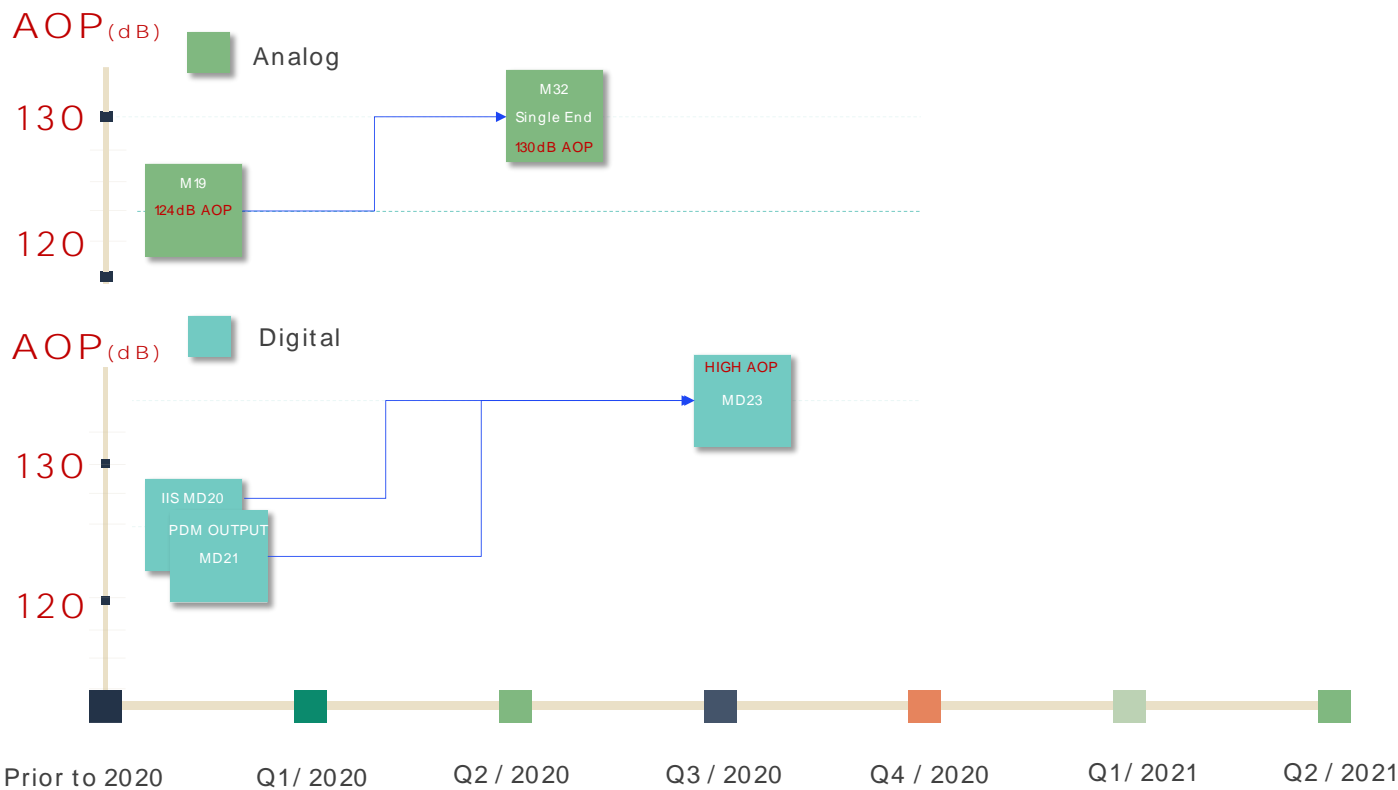
Products w/ Digital Output



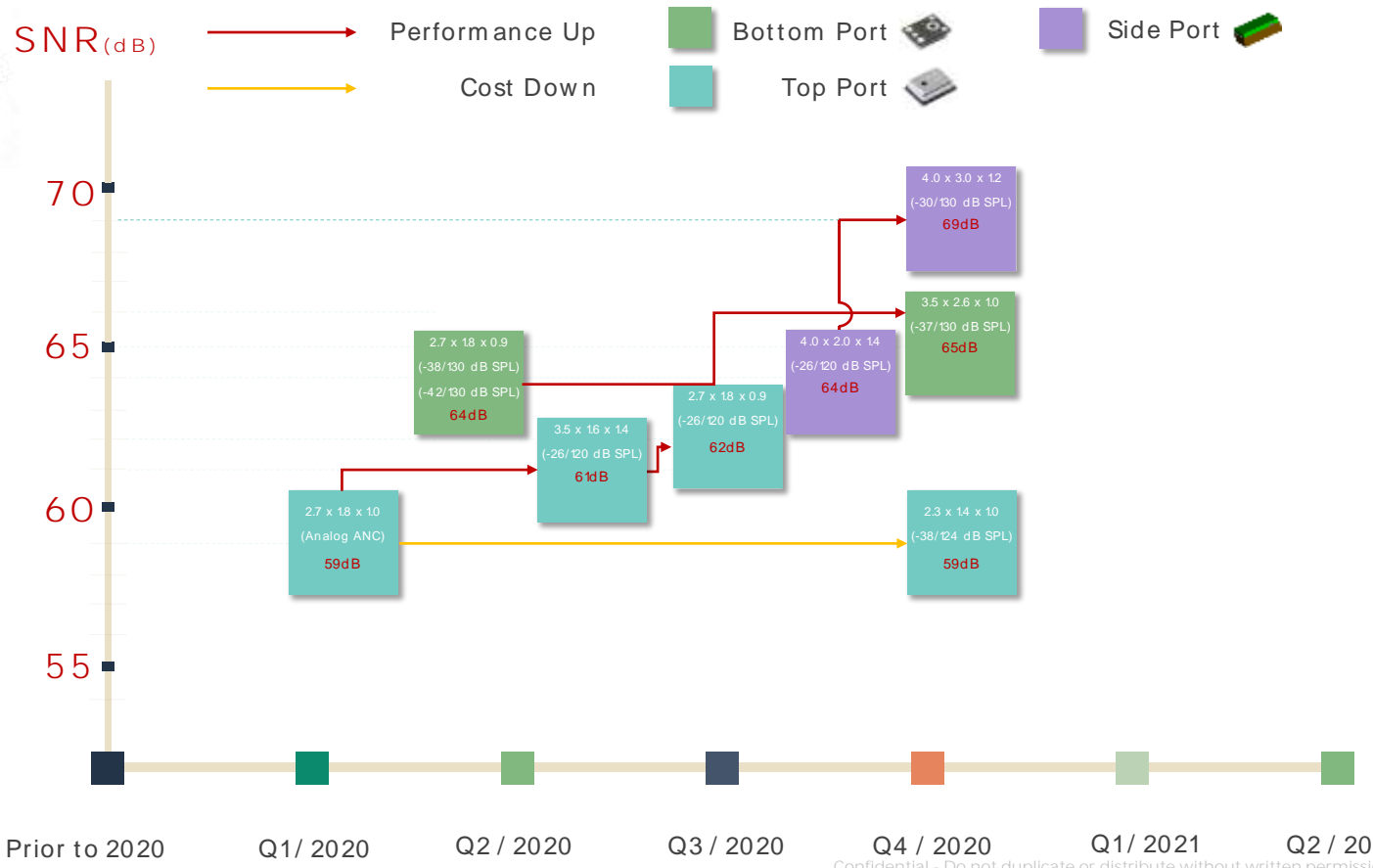
Si-MIC MEMS Chip Roadmap



Si-MIC ASIC Chip Roadmap



Si-MIC Product Roadmap



MAJOR END CUSTOMERS

典型终端客户



MAJOR PLATFORMS & IDHS

认证平台及手机设计合作方

Qualified Platforms

Mobile ODM Partners



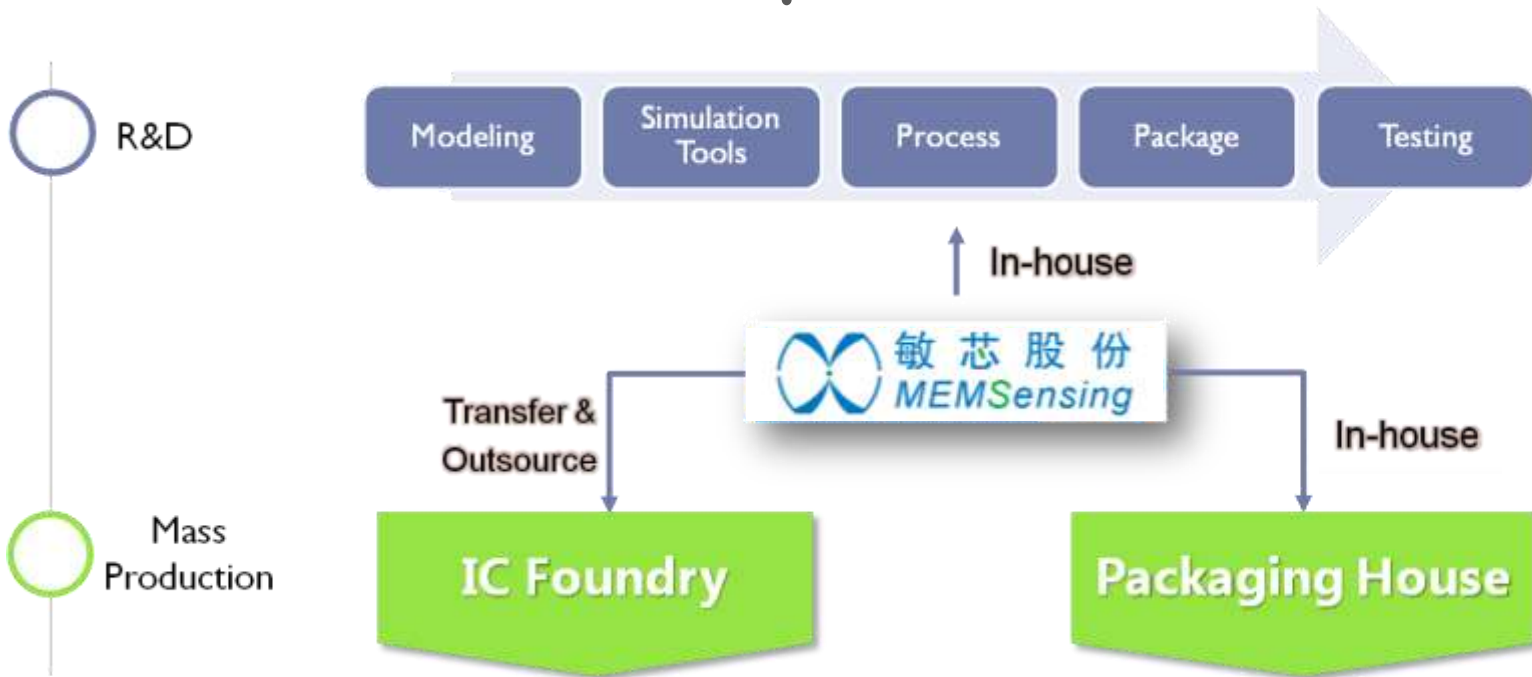


OUR SI-MIC ADVANTAGE

敏芯硅麦优势

MEMSensing Si-MIC Business Model

敏芯硅麦商业模式



MEMSensing Achievements – Industry Chain

敏芯成就 – 产业链整合



The earliest domestic MEMS products company with a completely integrated industry chain within China mainland

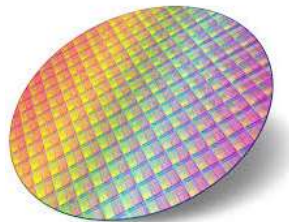
中国大陆最早的全产业链本土化大批量制造的MEMS公司

Cost & ASP Advantages



Complete Domestic Industry Chain

Guarantees that MEMSensing enjoys great Cost performance advantage against most competitors



Self-owned MEMS & ASIC

We have the ability to continuously push Moore's Law, the die size can be further reduced, and the continuous advancement of technology can ensure long-term cost down capability.

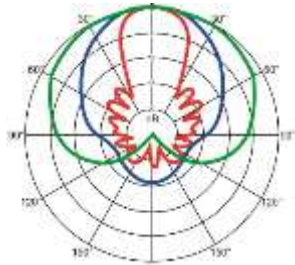


Scale Benefit

World's No.4 Si-MIC shipment except for year 2018;

Huge shipments guarantee the company's bargaining power in the supply chain

Customer Support



Acoustic Simulation

Particularly for wide band applications



Production on site guidance

Many problems with Si-MIC originate from the SMT line

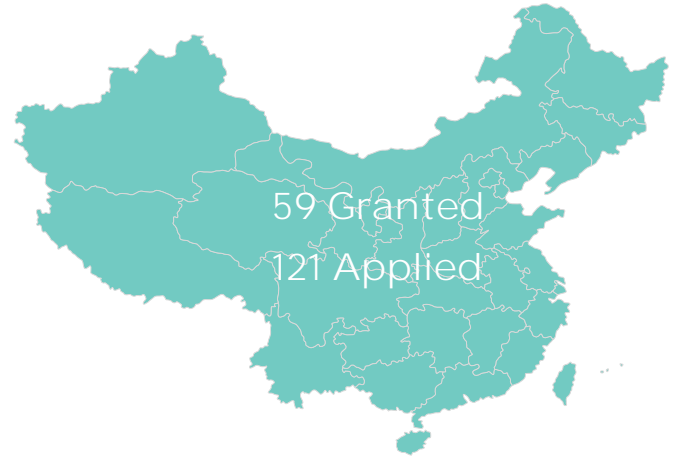
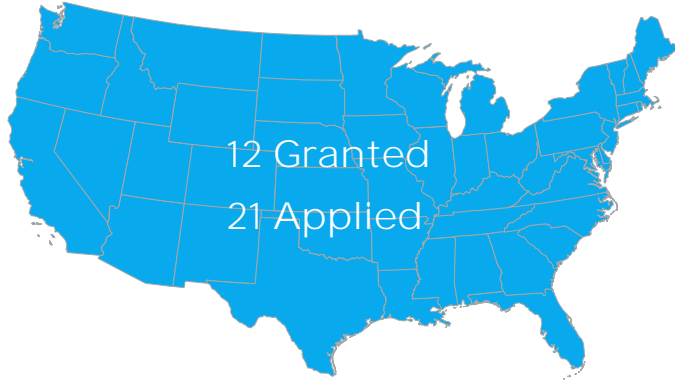


Failure Analysis

Both MEMS and ASIC are developed in-house, fully closed-loop in research and development, and do not rely on external R&D resources for analysis.

MEMSensing Achievements – Patents

敏芯成就 – 专利



+ 5 PCT patents and 1 filed in Korea

MEMSensing Achievements – Honors & Awards

敏芯成就 – 荣誉



2015

EDN 电子技术设计
Innovation 创新奖



2016

大中华 IC 设计成就奖



2017

EET 电子工程专辑
IC 设计成就奖



2018

2018 年度中国 IC 设计
成就奖



2019

2019 中国明日之星



THANK YOU

Cost Down

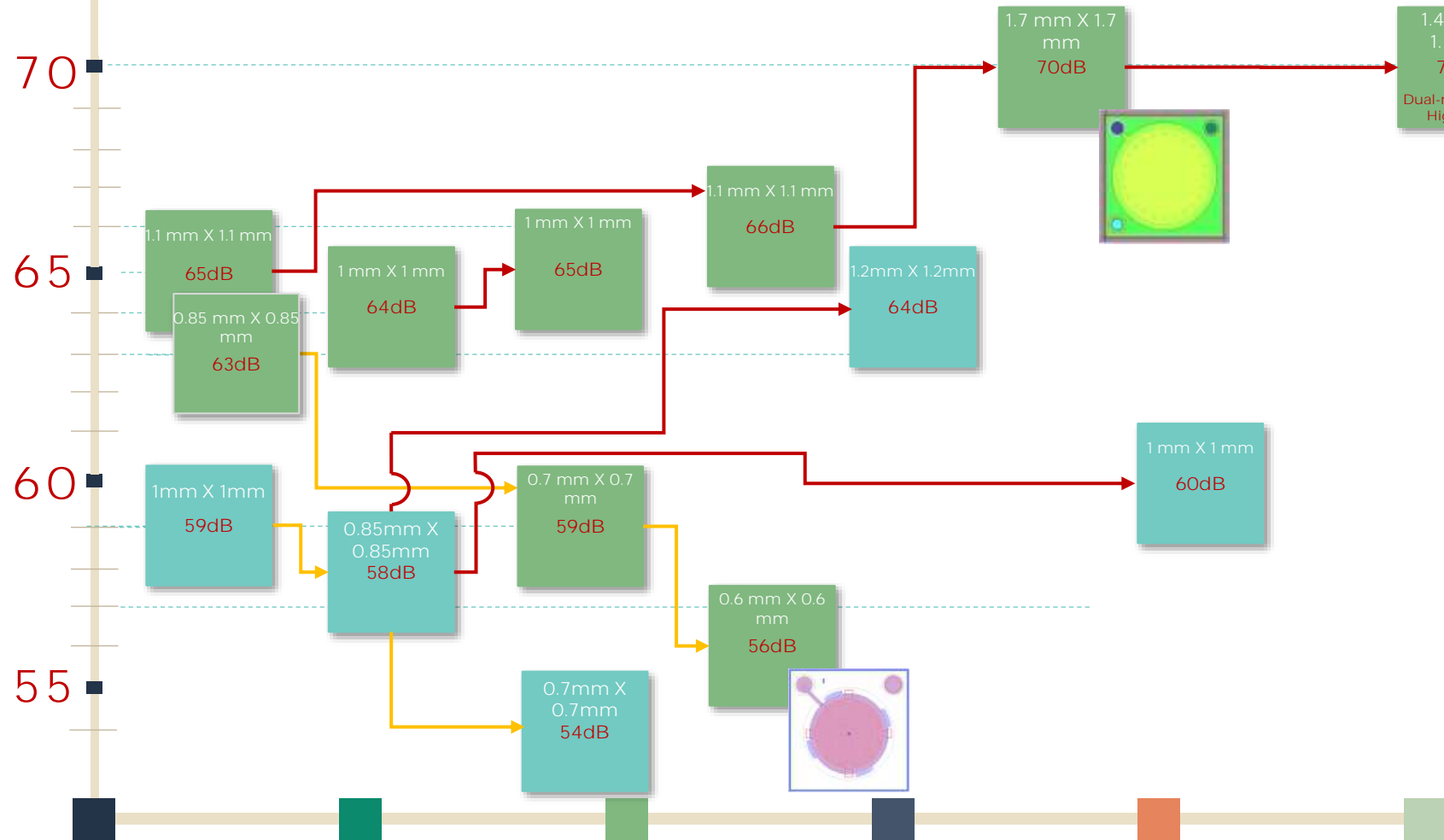
Top Port

70

65

60

55



AOP_(dB)



Analog

130

120

M19

124dB AOP

M32

Single End

130dB AOP

AOP_(dB)



Digital

130

120

IIS MD20

PDM OUTPUT

MD21

HIGH AOP

MD23



Cost Down

Top Port

70

65

60

55

