

MOSFETs

Sales Amount of Products & Application



Current Company Profile

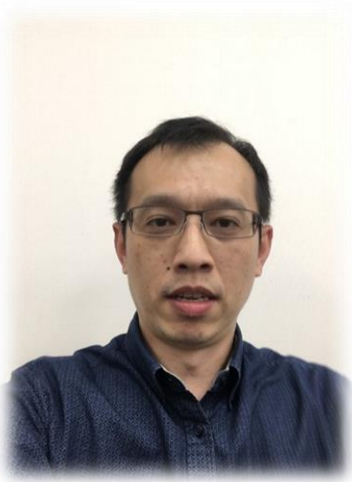
- **Company Name : Force-MOS Technology Co.,LTD**
- **Incorporated : 1ST,Sep.,2006**
- **CEO: 鍾明道(Dover Chung)**
- **Core Business : Design trench and Sales of MOSFETs IC,Diode.**
- **Technology : 0.25/0.18/0.13 μ m for Trench MOSFET**
- **2017 year ETG (Extended Trench Gate) 60V~250V**
- **2018 year FTG (Fast Trench Gate) 20V~40V**
- **2019 year ETG-3 the new 60V RDS_{ON}<2m ohm of MOSFETs.**

Dr. Hshieh Fwn-luan



- ▶ B.S. in Physics from National Central Univ. Taiwan in 1975.
- + M.S. in Physics from National Tsinghua Univ. Taiwan in 1977.
- ▶ Ph.D. in EE from Rensselaer Polytechnic Institute, NY, USA in 1983.
- + Philips Research Lab (1983-1986) in NY, USA as Sr. Design Engineer on fast switching IGBT.
- ▶ General Electric Company (1986~1988) in NY, USA as Process integration manager on power semiconductor devices (Power MOSFET & IGBT).
- + Vishay-Siliconix in CA, USA as manager in 1988 and Vice President in 2000 on Power MOSFET and IGBT, and Power ICs. With his lead, Siliconix is the first company to manufacture trench MOSFET in mass production.
- + 3D Semi (2002-2004) in CA, USA as Chief Operation Officer and Sr. VP of R&D on HV superjunction MOSFETs.
- ▶ M-MOS (2004-2006) in Kuching, Malaysia as CTO on Power MOSFETs (lowest specific Rds achieved in the industry using 0.18 um technologies).
- + Force-MOS(2006 –2011) in Taiwan as CEO and Chief Constant on Power MOSFET and Analog ICs.
- ▶ Force-MOS(2011 –Now) in Taiwan as consultant.

Work experience



Kaoway Tu

2000~2005: CET key designer of Power MOSFET BU

- CET Whole series Power MOSFETs
- Taiwan 1st. HV Power MOSFET designer and started in M/P
- Transform Power MOSFET process to SANYO (2004)
- Develop 400V Planar IGBT for Japan Customer (2004)

2005~2006: Pyramis key designer of Power MOSFET BU

- FA service for Delta

2006~2008: IPS Chief Designer

- IPS whole series Power MOSFETs
- Custom-made design for ON-Semi (500V~650V) Power MOSFETs
- Custom-made design for Flutek (Depletion Mode 400V~1000V)
- Transform Power MOSFETs process & design to CSMC

2008~2012: NIKO Design team Leader

- Over 200V all series Power MOSFETs
- Custom-made design for Rohm (500V~650V) Power MOSFETs
- Custom-made design for Lead-trend (700V) Power MOSFETs
- Custom-made design for SDI (24V) Power MOSFETs

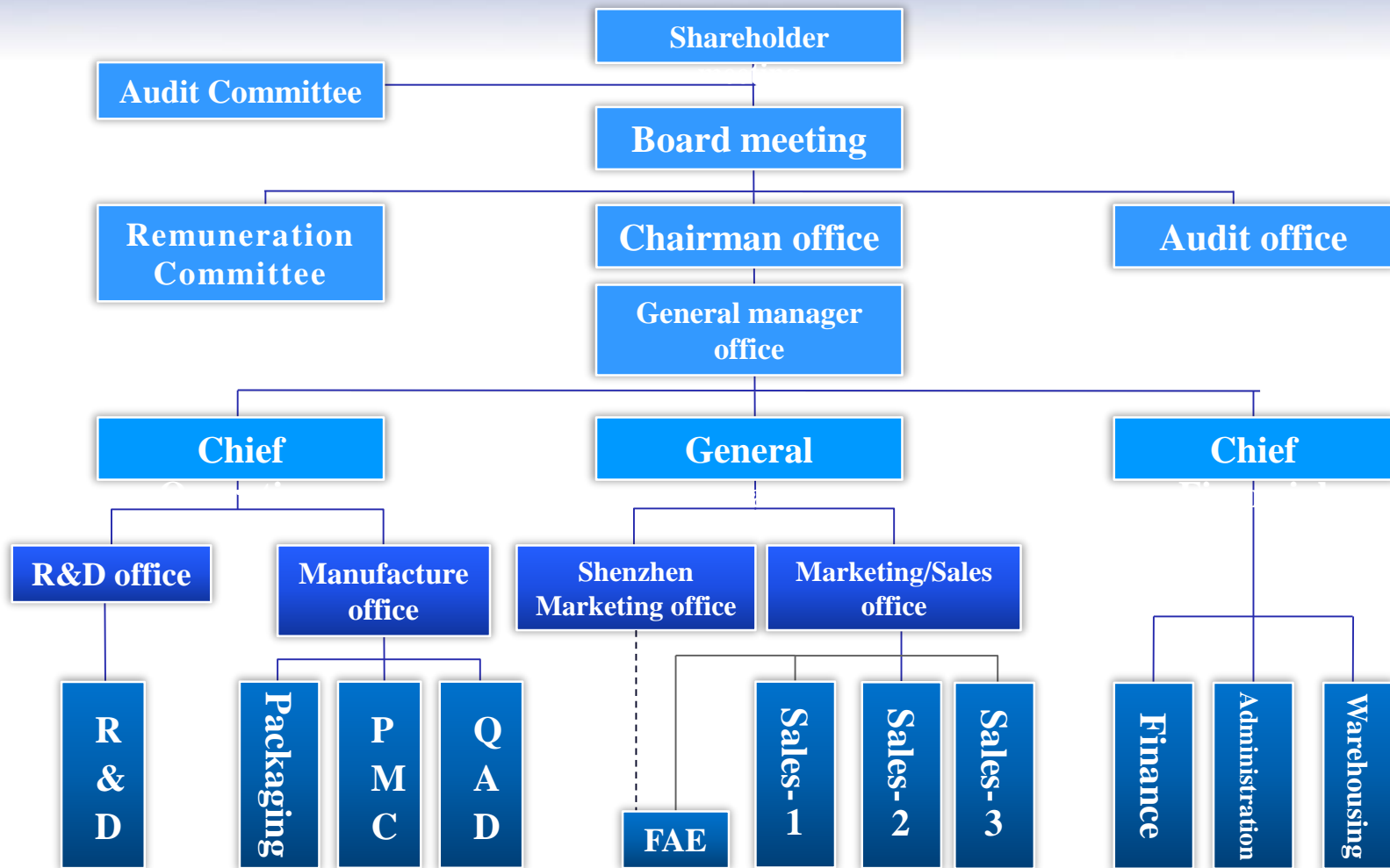
2014~2018: Toward Design team Leader

- Photo-MOS relay for Hyundai motor
- Photo-MOS relay for Benz
- Photo-MOS relay for BMW

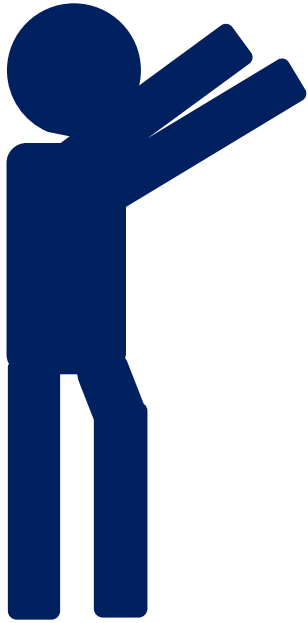
Power MOSFET patent filed.

- 20 USA, 41 Taiwan & 25 China patents granted

Organization



Business Concept



1

Force-MOS Technology Co.,Ltd is a world leading MOSFET technology IC design house in Taiwan.

2

Leading edge MOSFET technologies in 0.18 um for Low Voltage, medium and high voltages.

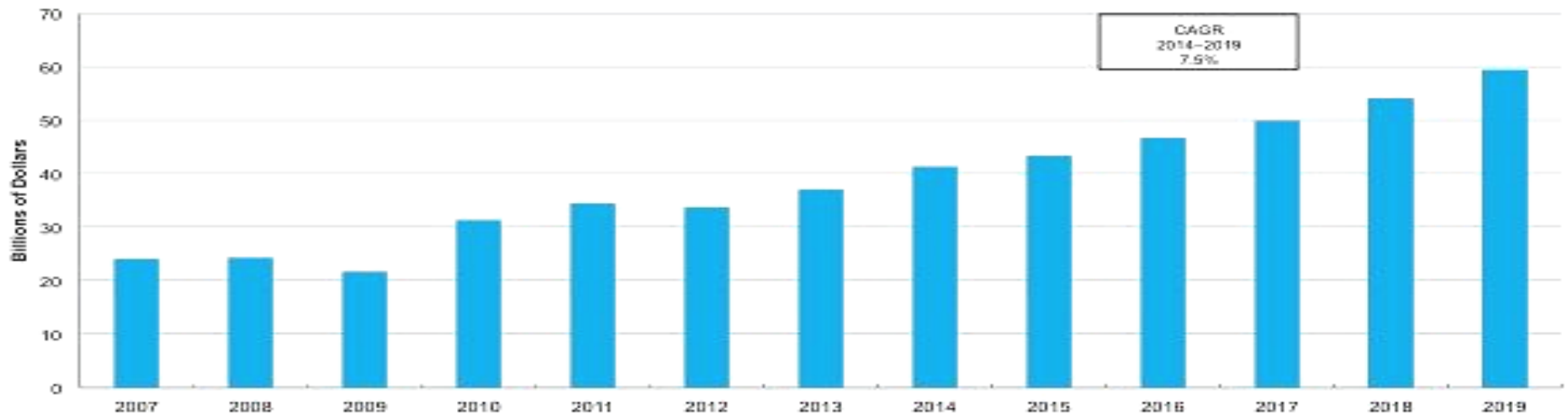
3

Achieve total solution of power management and conversion applications by incorporating with analog IC, MOSFET, Schottky diode and passive components in Co-Pak or COB.

Introduction

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Industrial semiconductor market, 2007–2019



Source: Industrial Semiconductor Market, Frost & Sullivan - 2015

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全球工業半導體市場預計將在2019年達到595億美元的市場規模

2019 global industrial semiconductor market size of about 59.5 billion US dollars to 8% compound annual growth rate, the mainland MOSFET market size of about 3 billion US dollars, 3% growth, this year 2017 scale of about 50 billion US dollars.

Technical advantages 1

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- Force-mos technology wafer to its own design of the exclusive transfer of technology to the cooperation of wafer fab production production, the whole by Dr.shieh to many years of professional experience in the implementation.
- Compared with other competitors, Force-mos uses the industry's most advanced 8 "wafers, 0.18 μ m process mass production, most competitors are still using 6" wafers, 0.35 / 0.25 μ m process, in the cost control with higher Advantage. Using the most simplified process technology, product yield can guarantee greater than 95%.

Technical advantages 2

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- According to customer application line design of the electrical needs, the development of more optimized products.
- Development of MSD patents, MOSFET, Schottky, ESD Diode triple integration, in addition to other leading technology manufacturers, the more in line with customer application needs.
- New develop of ultra low $R_{DS(ON)} = 1.08\text{m}\Omega$ (Max.), $0.9\text{m}\Omega$ (Typ.), $V_{DS}=30\text{V}$ MOSFET.
- Has been planned to complete the $0.13\mu\text{m}$ process technology in the future of the product line.
- Has applied for dozens of trench MOSFET and Split-Gate process and component patents.

Operating advantage

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- Up to now, in the United States, Taiwan, China to apply for 184 patents, to 2016 and has made 108 patents (of which 100 US patents).
- Own process mainly using advanced 0.25 / 0.18 / 0.13 μm process technology, all-round application in low pressure, medium voltage and high voltage field.

MOSFET Strength

Patent (U.S; Taiwan; China)

>100 **U.S** Patents and 108 items are approved vantage

Advanced Trench Process

0.35 μ m \rightarrow 0.18 μ m

Patented 3 mask process and Device structure for LV products



High performance products

Patented SGT for LV products.

Patented SGT with Superjunction for MV products.
ETG 60V~100V, die size reduction of **30%** and
FTG 30V~40V, Low Qg, Ciss

High cell density

700M/in² \rightarrow 900M/in² \rightarrow **2G/in²**

EX: FMW2N7002 GDPW 353K

Competitor
6", 0.35 μ m, 300M/in²

Lowest Rds_(on)

Reduce conduction loss and improve efficiency at 40V
1.08m Ω (Max.), 0.9m Ω (Typ.)

Thank You

