



江苏长晶科技股份有限公司

JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

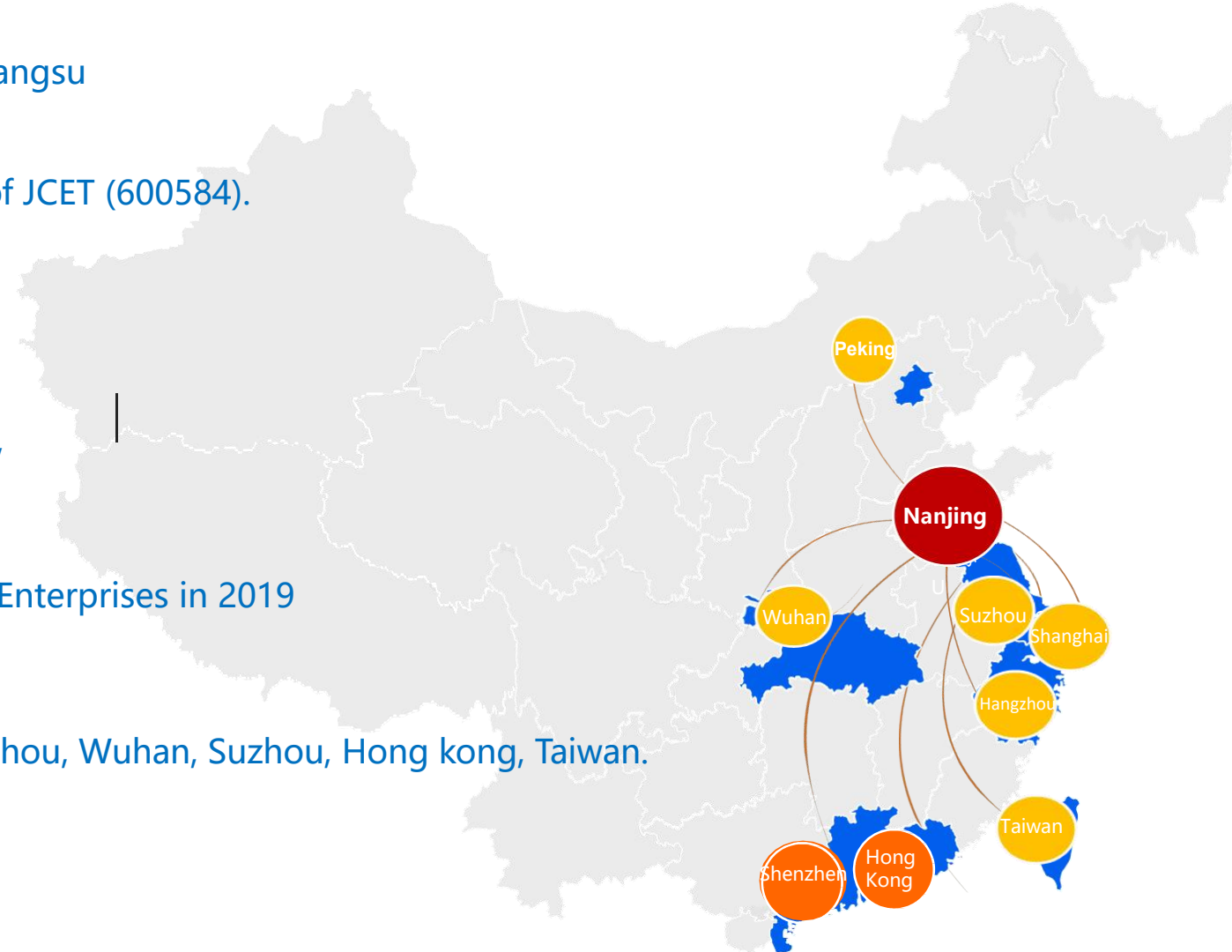
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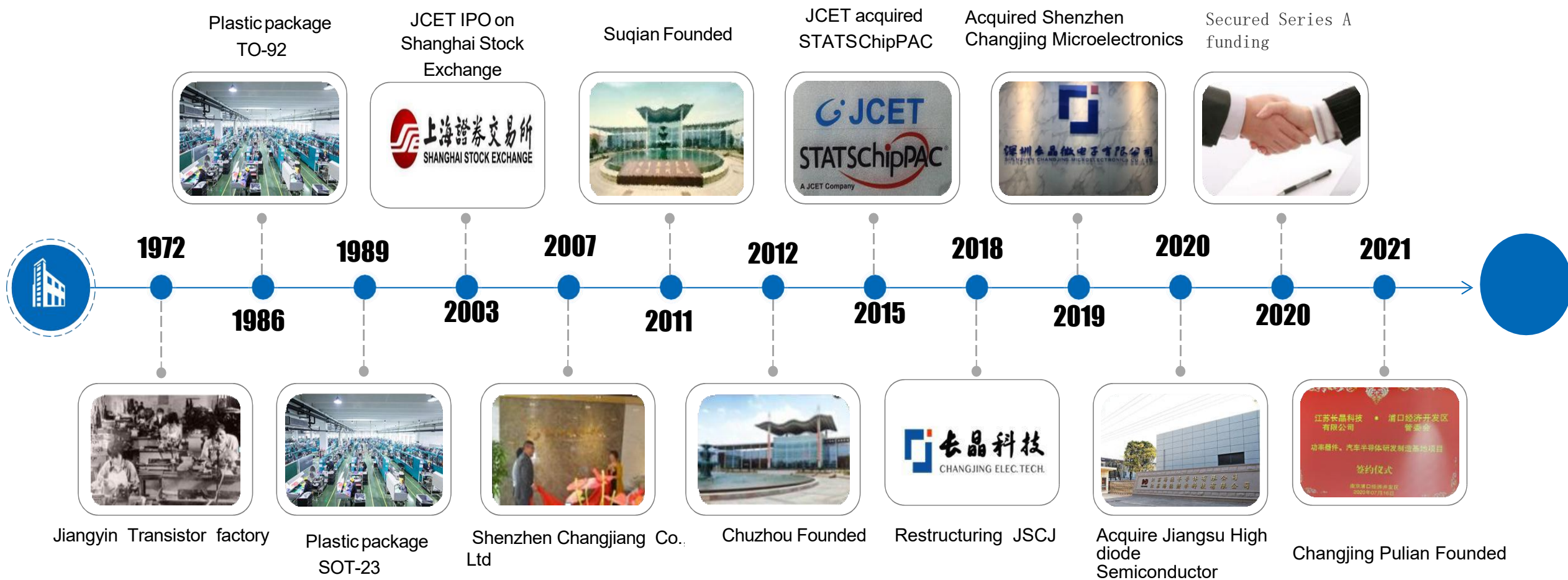


Overview

- Founded in 2018 and headquartered in Nanjing, Jiangsu
- The company's predecessor was the discrete division of JCET (600584).
- Registered Capital is 55.5 million USD
- Provide 15,000 series and models ranging from diode, transistor, MOSFETs, LDOs, DC-DCs, frequency devices, power devices, Auto-Motive devices etc.
- Awarded China's Top 10 Semiconductor Power Device Enterprises in 2019
- Subsidiaries in Shenzhen and Hong Kong
Offices are located in Peking, Beijing, Shanghai, Hangzhou, Wuhan, Suzhou, Hong Kong, Taiwan.

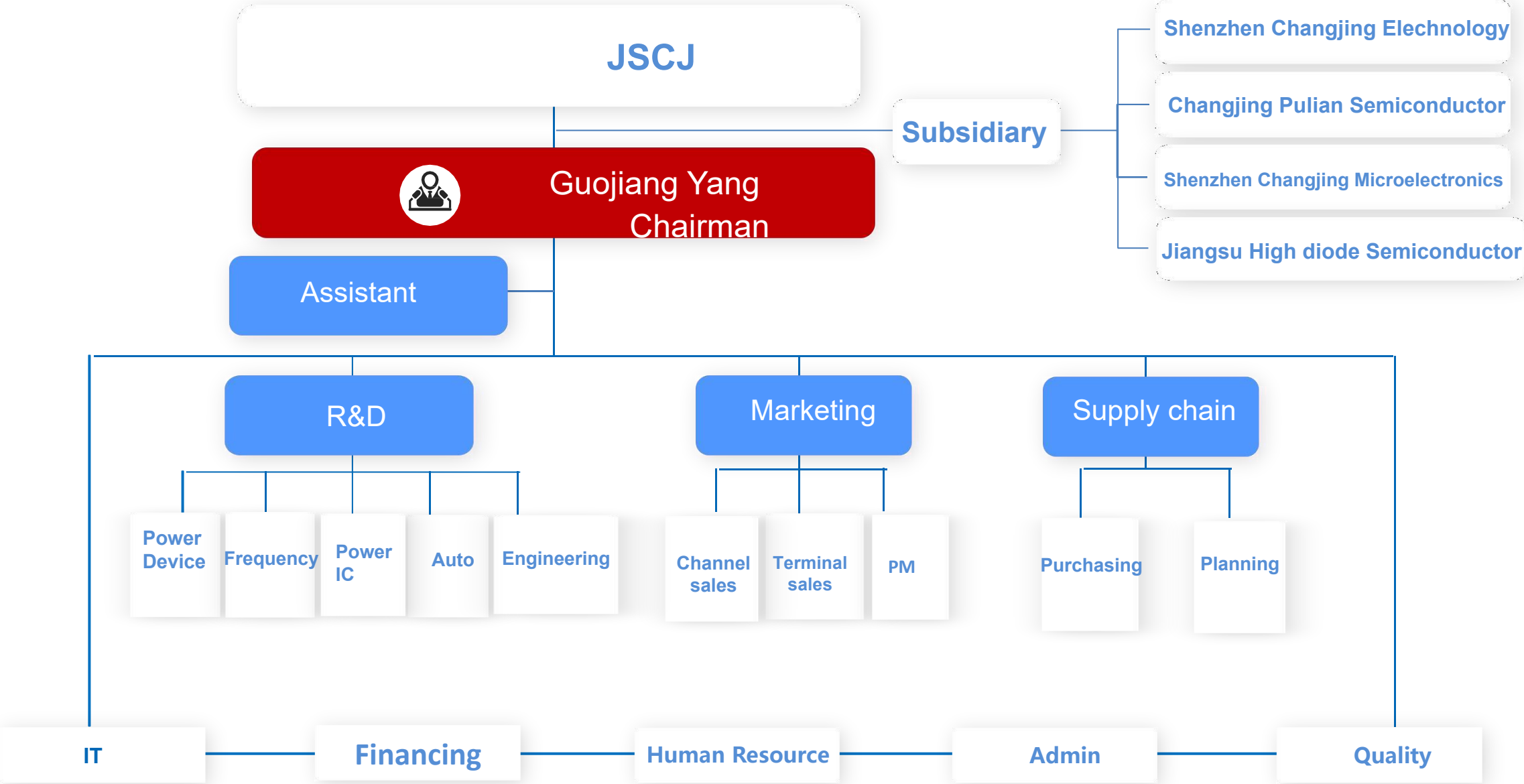


Milestone





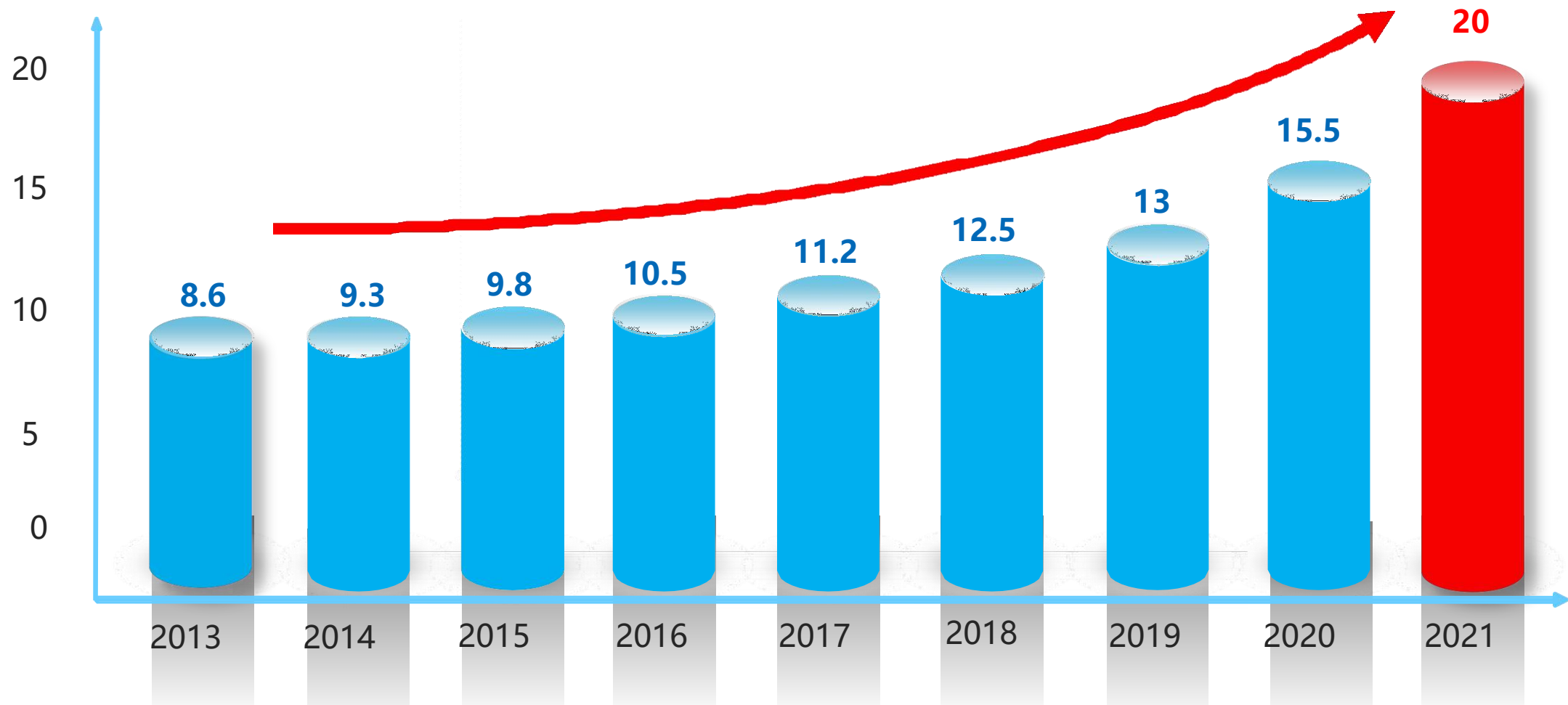
Organization Structure





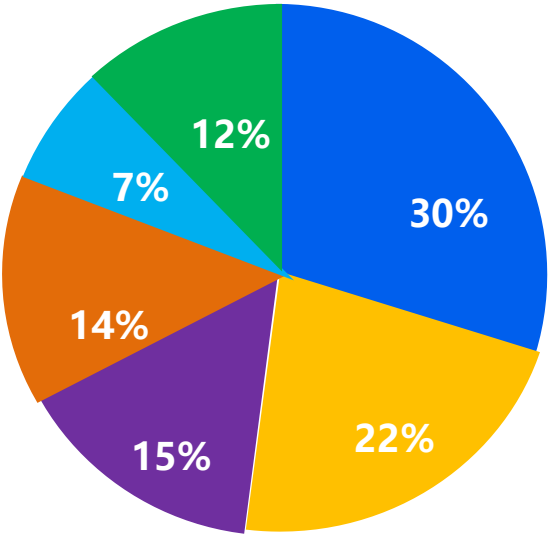
Annual Revenue

JSCJ — 2013-2018 including former JCET discrete components, sales(hundred million RMB)

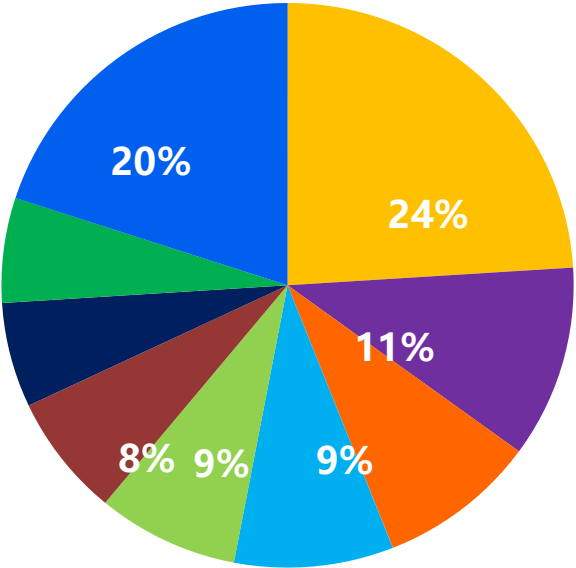
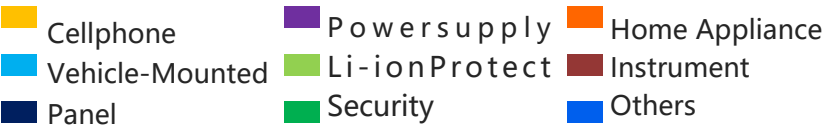




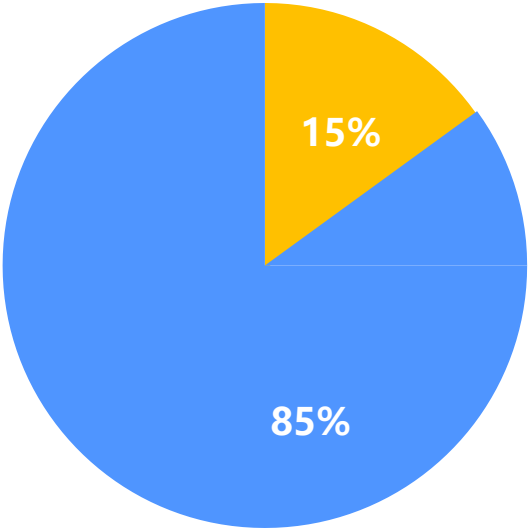
Product Category



Product Application

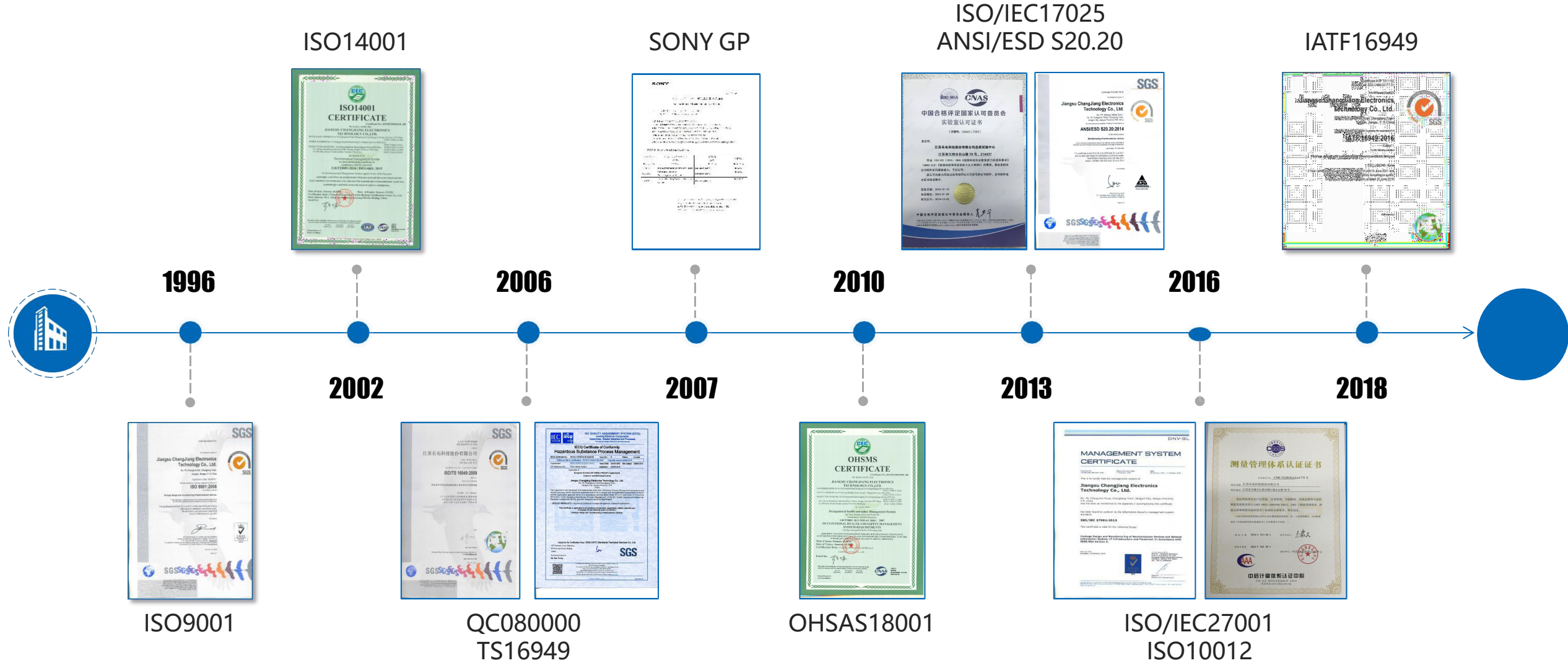


Sales Region





Quality system

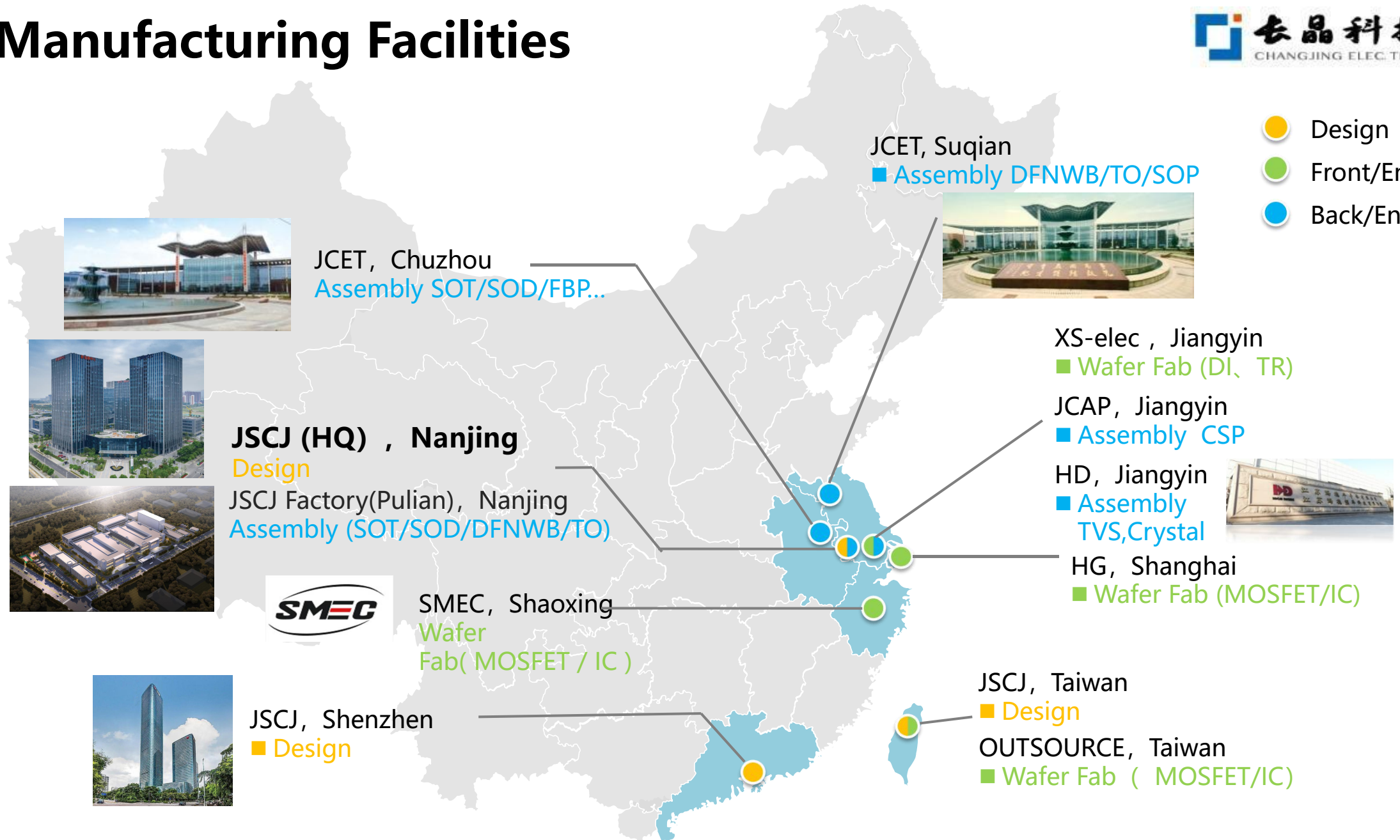




Manufacturing Facilities

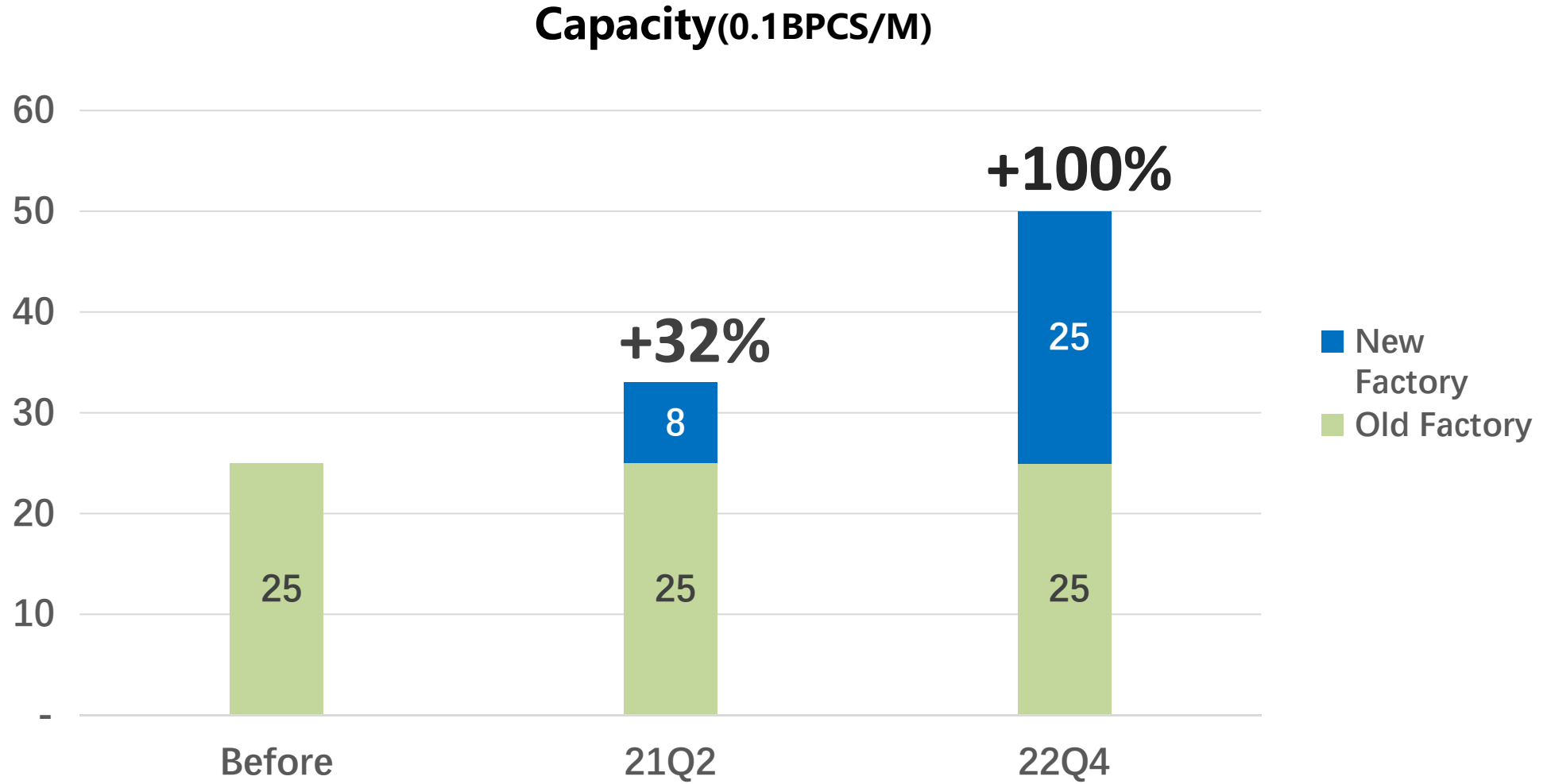


- Design
- Front/End
- Back/End





Core Advantage — Capacity Expansion





Capacity

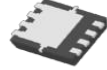
DFNWB Series 40KK/M



DFNWB2x2-6



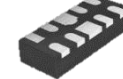
DFNWB2x3-6



DFNWB3x3-8



DFNWB5x6-8-A



DFNWB2.5x1.0-10L-B

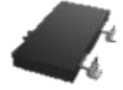
SOT Series 1500KK/M



SOT-23



SOT-323



SOT-523



SOT-223



SOT-89



SOT-363

SOD Series 500KK/M



SOD-123



SOD-123FL



SOD-323



SOD-523



SOD-723

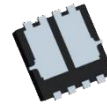
PDFNWB Series 30KK/M



PDFNWB5x6-8



PDFNWB3x3-8



PDFNWB3.3x3.3-8L-B

SOP8 Series 50KK/M



SOP8



TSSOP8



Capacity

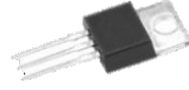
TO Series 200KK/M



TO-126



TO-247



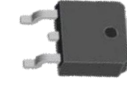
TO-220



TO-220F



TO-277



TO-252



TO-263

WBFBP/ DFN1006 Series 600KK/M



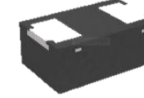
WBFBP-02C



WBFBP-03E



DFN1006-2L



DFN0603-2L

SMX Series 500KK/M



SMAF



SMA

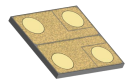


SMB

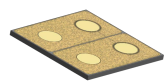


SMC

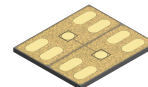
CSP Series 20KK/M



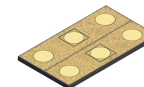
CSPB1111-4



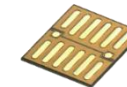
CSPB1313-4



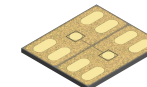
CSPC2018-10



CSPB2117-6



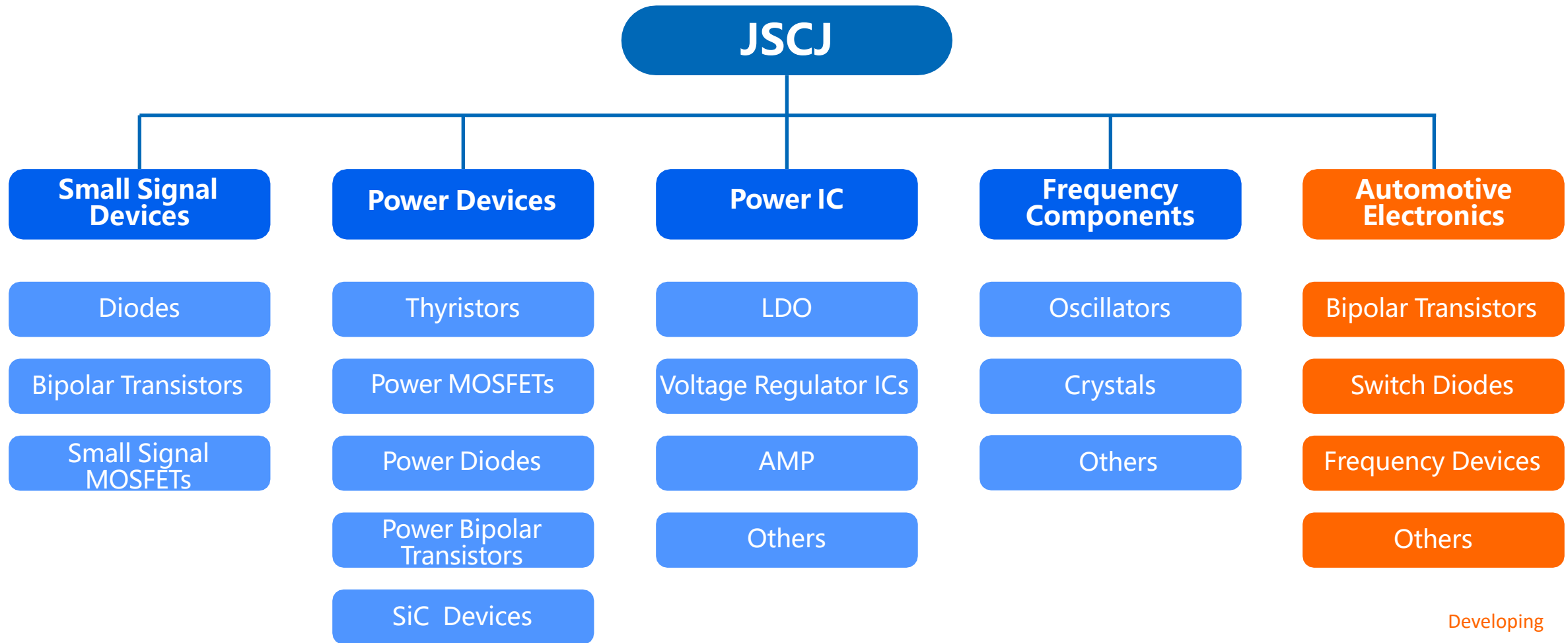
CSPC3128-14



CSPC2018-10



Main Products





Diodes

Switching

25mA-300mA

- 1N SERIES
- 1SS SERIES
- BAV SERIES
- BAS SERIES
- BAW SERIES
- MMBD SERIES

Schottky

100mA-60A

- BAT SERIS
- DSS SERIES
- SS SERIES
- MBR SERIES
- SBD SERIES
- SBL SERIES

Rectifiers

1.0A-60A

- M1-M7
- RS SERIES
- US SERIES
- ES SERIES
- HER SERIES
- MUR SERIES

Bridge

1.0A-35A

- ABS SERIES
- MBS SERIES
- DBS SERIES
- GBU SERIES
- GBP SERIES
- GBJ SERIES

Zener

0.5W-5.0W

- BZT52 SERIE
- SMF47 SERIES
- BZX584 SERIES
- 1SMA47 SERIES
- 1SMA59 SERIES
- 1SMB59 SERIES

TVS

200W-6600W

- ESD SERIES
- SMFXX(C)A
- SMAJXX(C)A
- SMBJXX(C)A
- SMCJXX(C)A
- 5.0SMDJXX(C)A



Diodes—Package



DO-41



DO-15



DO-27



R-6



DFN series



SOD series



SOT series



SOD123FL



SMAF



SMA



SMB



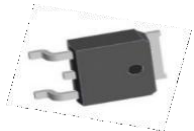
SMC



TO-277



TO-220 series



TO-252



TO-247



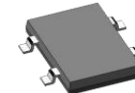
DBS



MBS/F



ABS



JBSL



JBF



KBL



KBU



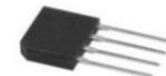
KBP



GBJ



GBU



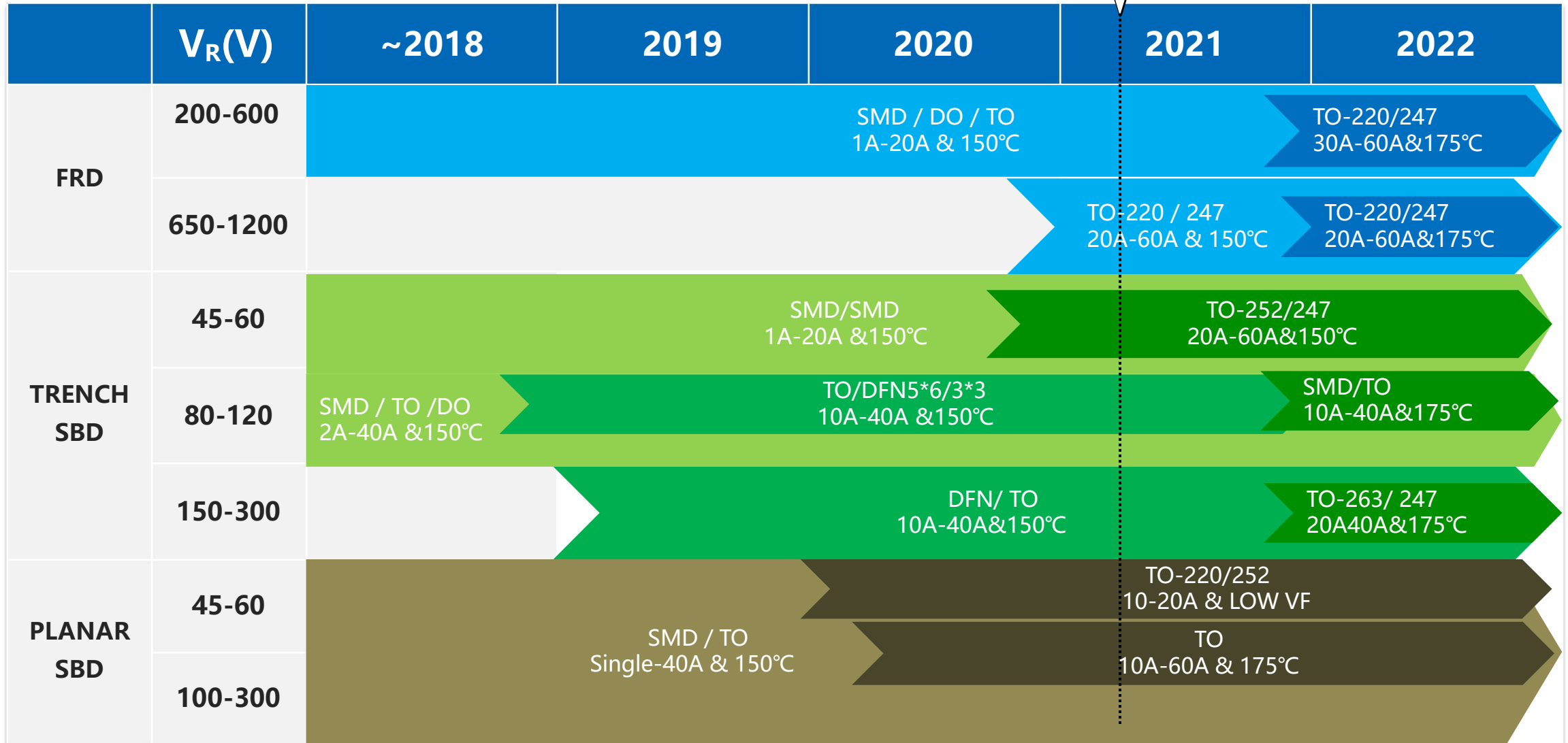
GBP



GBL

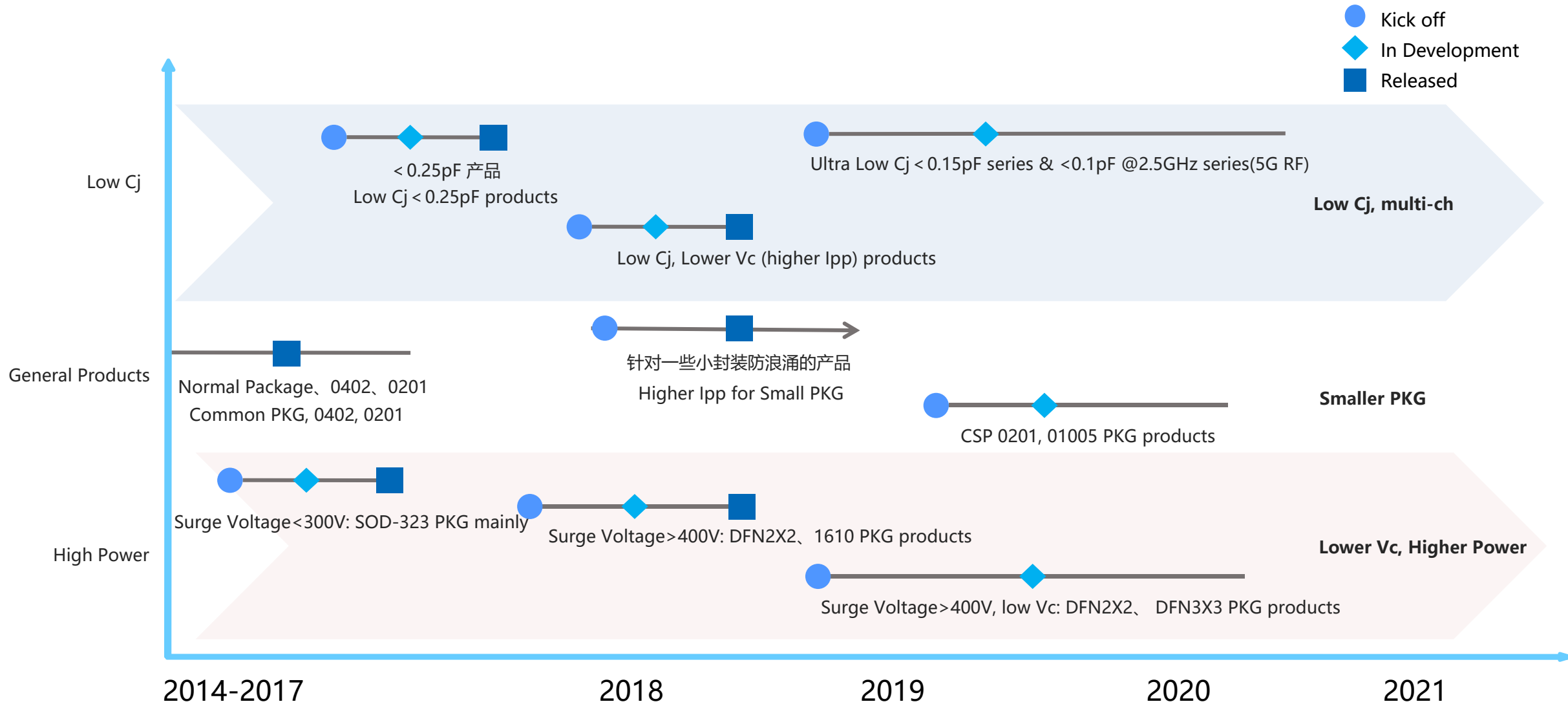


Power Diodes Roadmap





Diodes TVS: ESD/TVS Roadmap





TVS—Power Product series

Ppp	200W	400W	600W	1.5kW	3kW	5kW	6.6kw
VRWM	5v~440v	5v~440v	5v~440v	5v~440v	5v~440v	5v~440v	20v~48v
Polarity	Ui/Bi	Ui/Bi	Ui/Bi	Ui/Bi	Ui/Bi	Ui/Bi	Ui
Series	SMF	SMAJ, P4SMA, P4KE	SMBJ, P6SMB, P6KE	SMCJ, 1.5SMC, 1.5KE	SMDJ, 3KP	5.0SMDJ 5KP	SMEJ



JSCJ

General Purpose & Small Signal Devices

Diodes

Transistors

Small Signal MOSFETs

Others

Power Devices

Power Diodes

Power MOSFETs

Thyristor

Bipolar Transistors

SiC Devices

Power Management IC

Voltage Regulator ICs

OP-AMPs

Battery Management ICs

Others

Frequency Devices

Oscillators

Crystals

Others

Automotive Electronics Devices

Bipolar Transistors

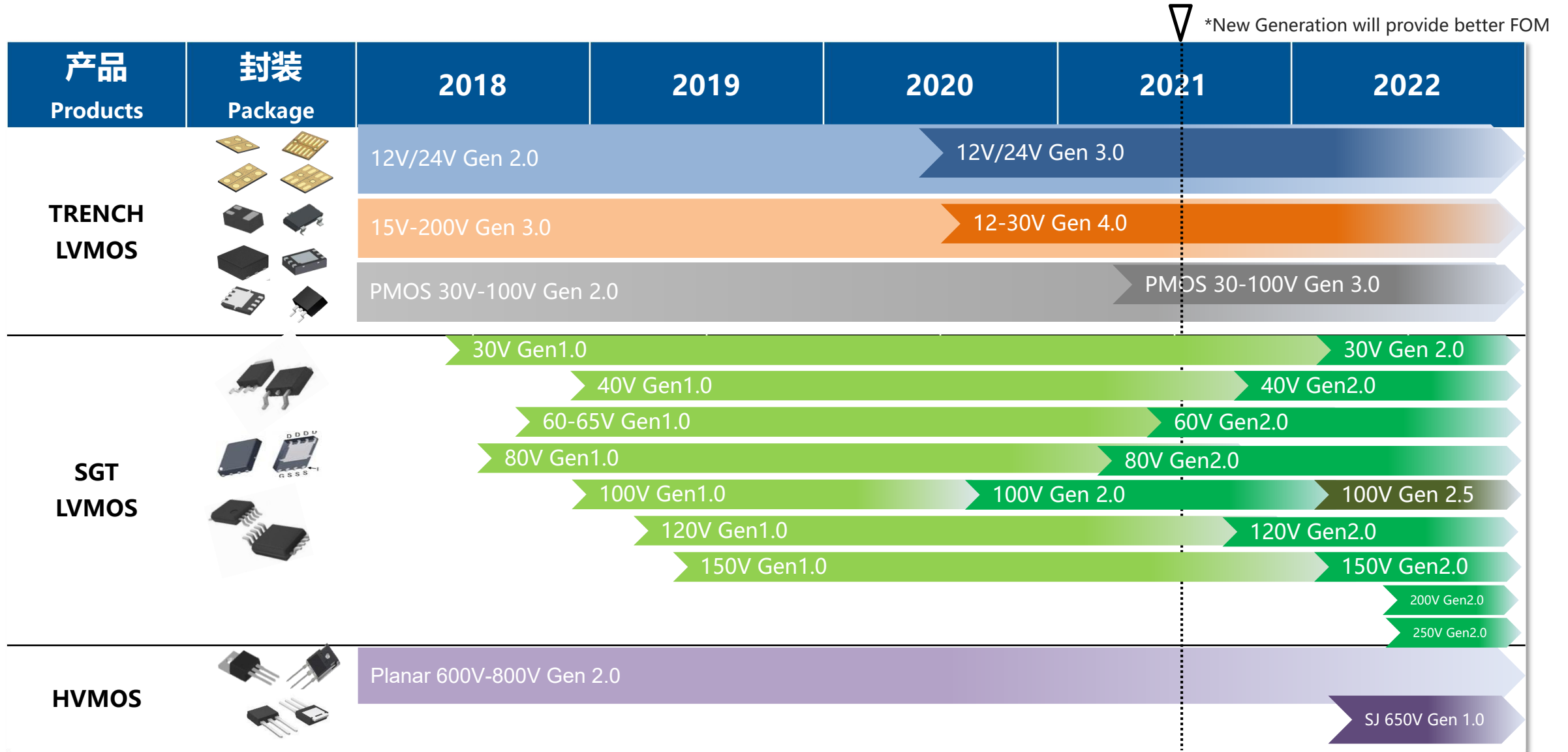
Switch Diodes

Frequency Devices

Others



Power MOSFET—Roadmap





80V SGT Benchmark

Company	Part Number	Package	BVDSS (V)	VGS (V)	EAS*1 (mJ)	Ron Typ@10V (mOhm)	Qg @10V (nC)	Ciss (pF)	Coss (pF)	Crss (pF)	FOM*2 (mOhm-nC)
JSCJ	CJAC100SN08U	PDFN5060	80	+/-20	500	3.0	60	3780	1800	25	180
DIODES	DMTH8003SPS	PDFN5060	80	+/-20	375	3.1	124	8952	533	26	384
NCE Power	NCEP055N80G	PDFN5060	80	+/-20	423	4.6	51	3197	598	24	234
TOSHIBA	TPH4R008NH	SOP Adv	80	+/-20	340	3.3	59	4100	890	32	195



60V SGT Benchmark

Company	Part Number	Package	BVDSS (V)	VGS (V)	EAS* ¹ (mJ)	Ron Typ@10V (mOhm)	Qg @10V (nC)	Ciss (pF)	Coss (pF)	Crss (pF)	FOM* ² (mOhm-nC)
JSCJ	CJAC13TH06	PDFN5060	60	+/-20	250	2.2	63.7	5298	1635	74.8	140
Diodes	DMTH62M8SPS	PowerDI 5060-8	60	+/-20	207	2.2	95.4	4556	1383	105	210
NCE Power	NCEP60T15AG	PDFN5060	60	+/-20	819	2.7	88	5500	955	25	237
TOSHIBA	TPH2R306NH	SOP Adv	60	+/-20	453	1.9	72	4700	1500	55	136.8

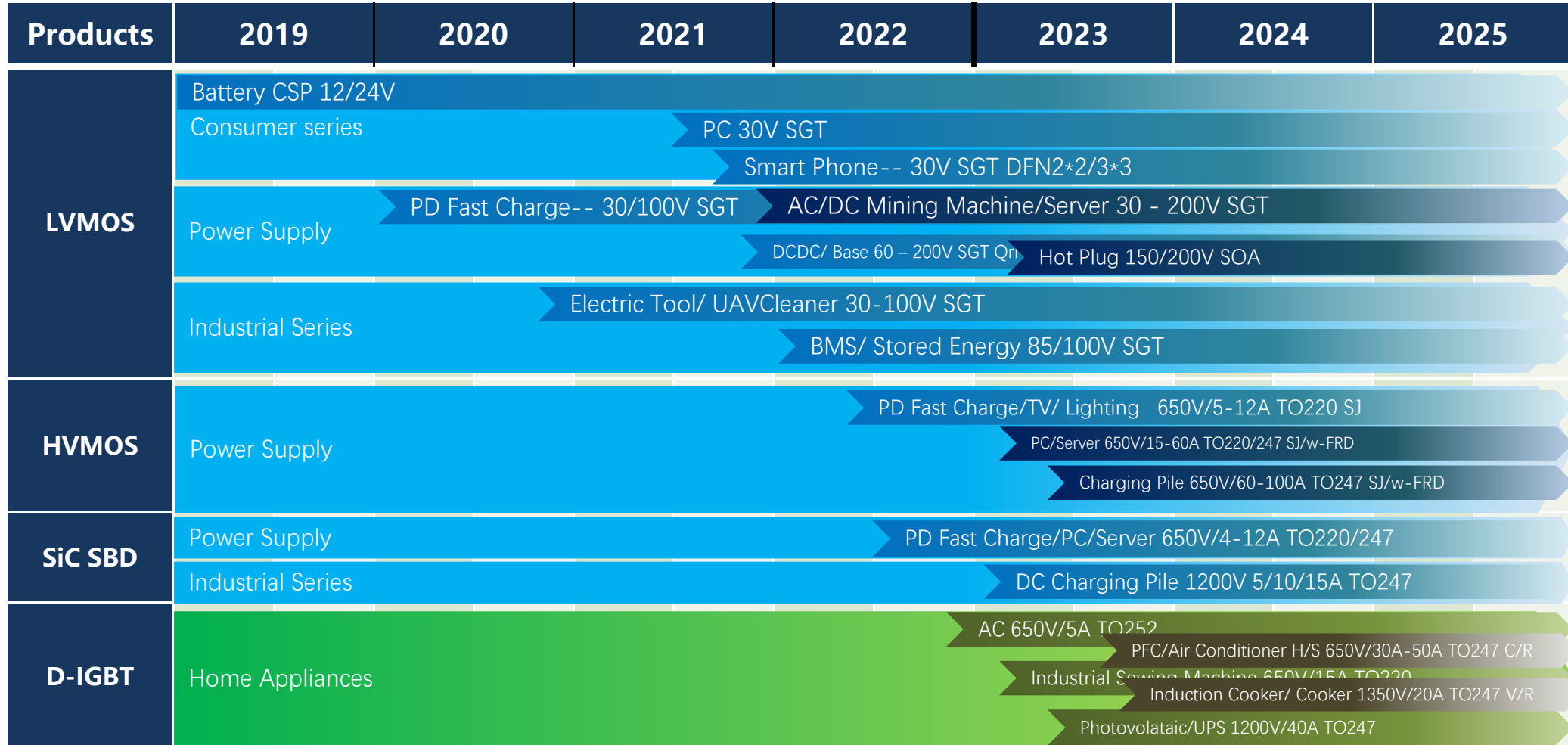


40V SGT Benchmark

Company	Part Number	Package	BVDSS (V)	VGS (V)	EAS* ¹ (mJ)	Ron Typ@10V (mOhm)	Qg @10V (nC)	Ciss (pF)	Coss (pF)	Crss (pF)	FOM* ² (mOhm-nC)
JSCJ	CJAC200SN04	PDFN5060	40	+/-20	400	0.88	120	7450	220	3.5	105
Diodes	DMTH4001SPS	PowerDI 5060-8	40	+/-20	440	0.73	144	10787	3929	156	105
NCE Power	NCEP40T20GU	PDFN5060	40	+/-20	1800	0.85	137	8085	2123	121	116
TOSHIBA	TPH1R204PL	SOP Adv	40	+/-20	127	1.0	74	5500	1300	93	74



Power Devices—Application Roadmap



Power IC

Three-Terminal
Voltage regulators

78 Series
79 Series
1117 Series

DC-DC

Boost
5V_1A
24V_4A
Buck
5V_1A/2A
18V_2A
36V_3A

LDO

High PSRR 80dB
Low Powers
Consumption 0.5 μ A
Output Adjustable
Large Current 1A
Low Noise 10 μ Vrms
High Voltages
36V/45V/65V

AMP

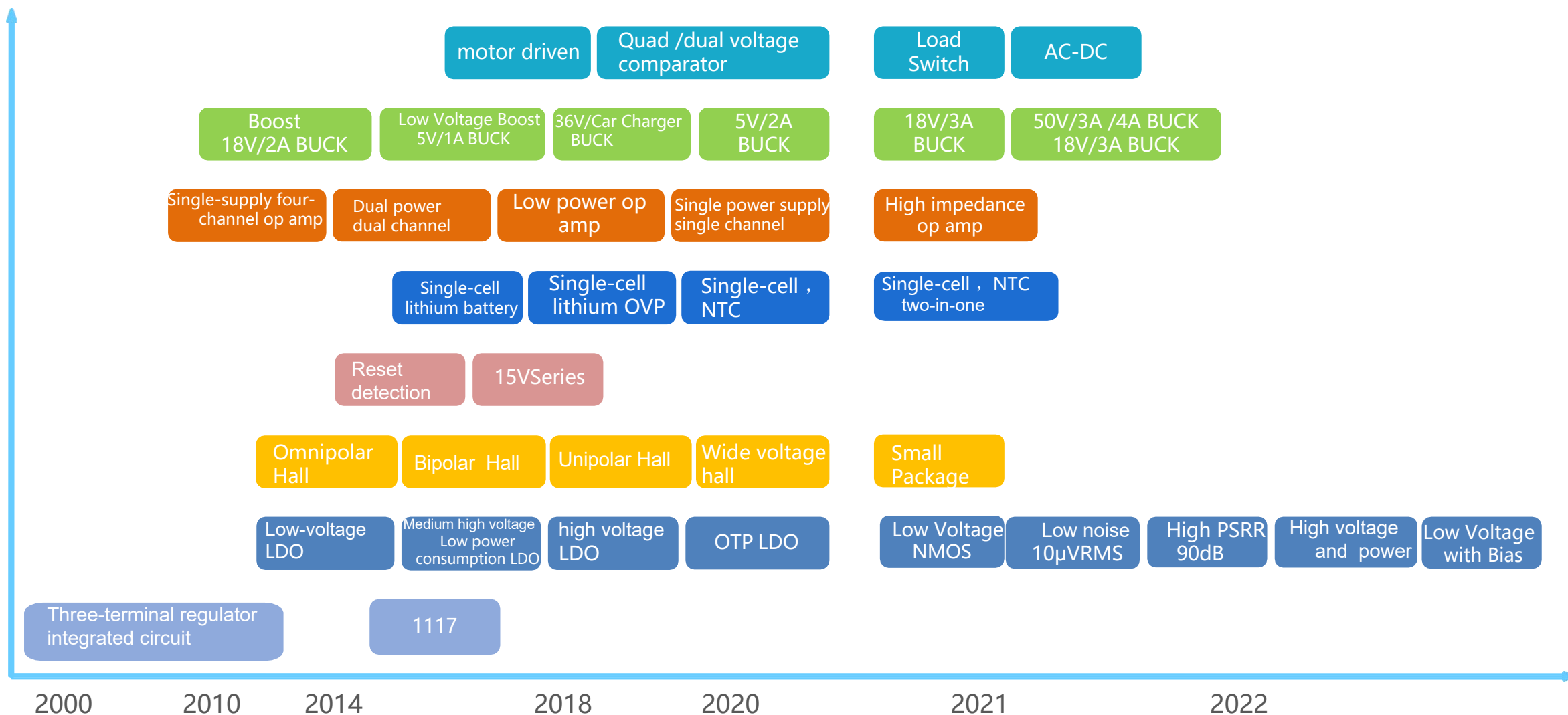
Bipolar
5.5V_Single
12V_Dual
Rail-to-Rail
32V_Dual
32V_Quad

Others

Reference Powers
Li-ion Battery
Protection
Hall IC
Detect/Reset IC
Charger

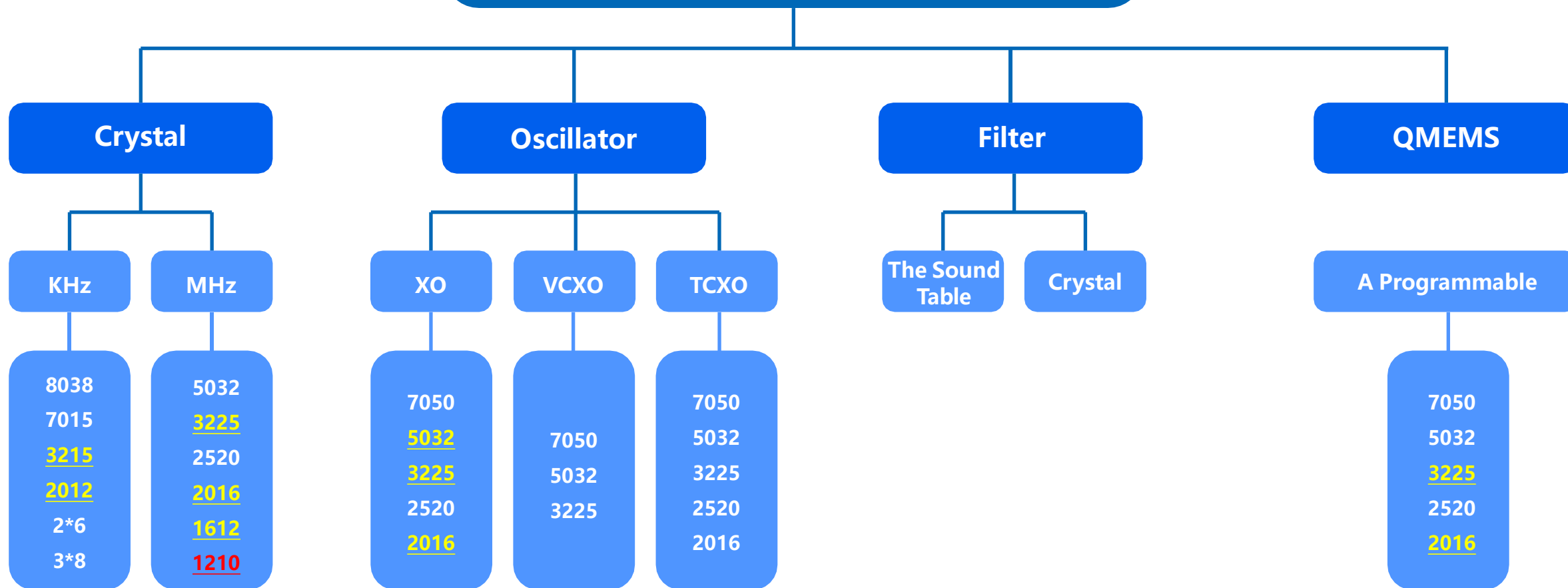


IC Roadmap



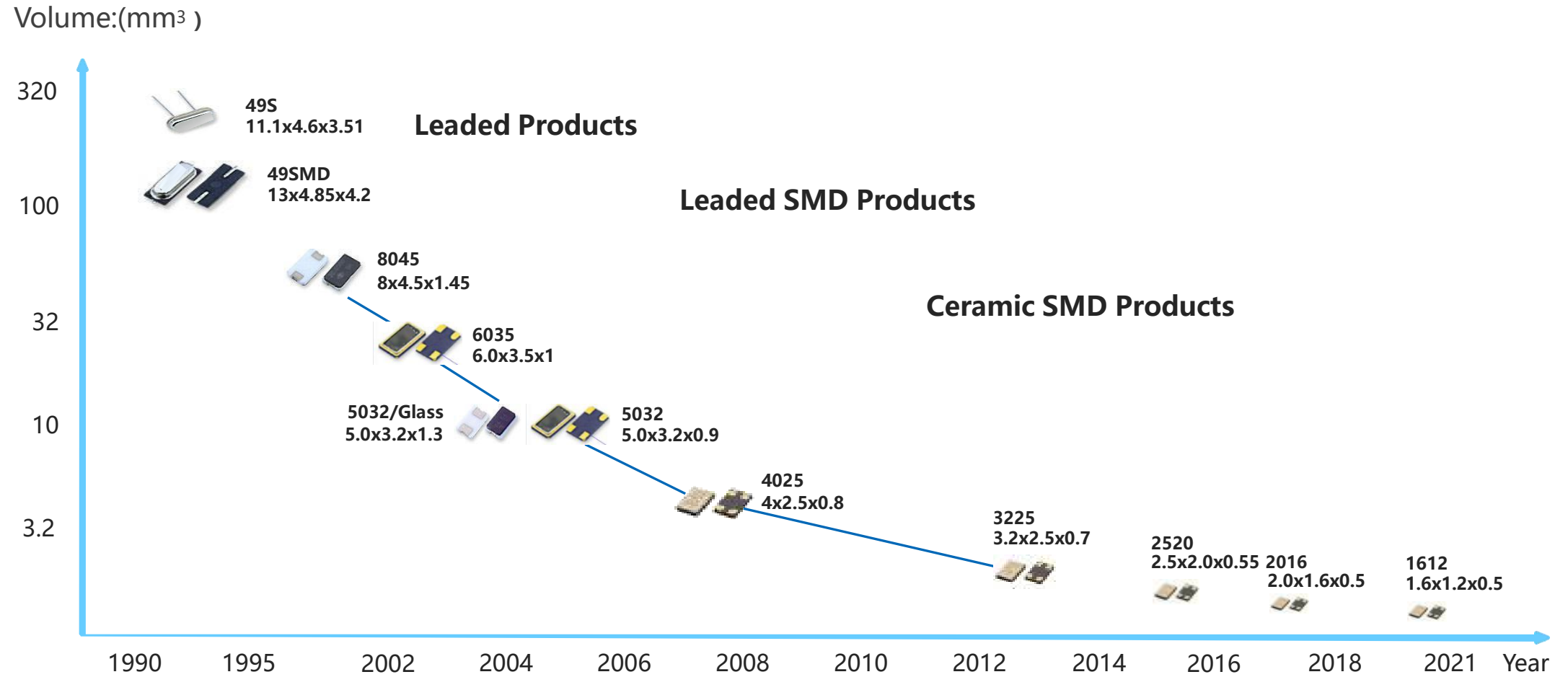


Frequency components





Frequency Components Roadmap





Application

1 Power Supply



2 Home Appliances



3 Lighting



4 Electric Tool



5 Automotive



6 Intelligent Instrument



7 Security Monitoring



8 Industrial Control



9 Wireless Charging



10 PC





Customers





Reliability Items

ITEMS	STANDARD	GOAL
PRE	JESD22-A113F	Simulated placement products are affected by environmental changes such as temperature and humidity during transportation, storage and reflow soldering. This test shall be performed prior to the reliability test and represents only the package level of the product.
MSL	IPC/JEDEC J-STD-020	Identify the classification of non-hermetic solid surface mount components that are moisture sensitive so that they can be properly packaged, stored and handled to prevent damage to components during reflow and repair.
THT	GB/T2423.3 JESD22-A101	The ability of the product to apply humidity and temperature stress over a long period of time is assessed.
TCT	JESD22-A104 GB/T 2423.22	Evaluate the ability of the product package to withstand extreme high temperatures and extreme low temperatures, as well as the effects of extreme high temperatures and extreme low temperatures.
HTST	GB/T 2423.2 JESD22-A103	Assess the ability of the product to withstand long-term high temperature stresses.
LTST	GB/T 2423.1 JESD22-A119	Assess the ability of the product to withstand long periods of low temperature stress.
PCT	JESD22-A102	Assess the moisture resistance of the product package.
HAST	JESD22-A110 JESD22-A118	The non-hermetic package is evaluated for its resistance to moisture under (none) bias conditions.
Reflow	JESD22-A113	Evaluate the thermal resistance and effects of the product during reflow soldering.
BURN-IN	GB/T 4587	The ability of the device to apply electrical stress (voltage, current) and temperature stress (product temperature rise due to load) over a long period of time is assessed.
HTRB	GB/T 4587 JESD22-A108	The ability of the device to withstand long-term electrical stress (voltage) and temperature stress is assessed.
SHT	GB/T 2423.28 JESD22-B106	Assess the heat resistance of the product during its welding.
Solderability	GB/T 2423.28 EIA/IPC/JEDEC J-STD-002	Assess the weldability of the product.
Tin Whisker Test	JESD201 JESD22-A121	Assess the growth of tin whiskers under long-term application of temperature and humidity stress.
Electrical Test	GB/T 4589.1 GB/T 4586 GB/T 6571 GB/T 4587 GB/T 4023	Assess the electrical capacity of the product. Mainly for discrete device product testing.



ITEMS	STANDARD	GOAL
Optical Microscopy Test		Observe the appearance of the sample, surface shape, chip cracks, stains, scratches, oxide layer defects and metal layer corrosion, etc., and measure the size and observation function.
X-RAY Test		Observe the welding wire, load, hollow, etc.
*Ultrasonic Scanning Microscopy	JEDEC J-STD-035-1999	Used to detect interface delamination, voids in plastic bodies, chip cracks, etc.
JUNO Test		Electrical testing of semiconductor devices such as diodes, transistors, digital transistors, and Zener diodes.
*Semiconductor Characteristic Diagram Tester	GB/T 13973-2012	Confirm the failure mode and the failure pin positioning, identify the partial failure mechanism, and any difference between the failure tube and the same batch quality curve needs attention.
Package Unsealing Detection		LASER Opening: used to reduce the thickness of the plastic body, keep the pins Acid-opening: open the inner chip, inner leads and nips with a wet open cap
Chip Probe Station Detection		Probe test chip, observe the electrical parameters or characteristic curves of the chip.
Package Crater Test		Remove the wire and nip metal layer and observe the nip condition
Package Section Analysis Test - Ion Grinding System		Obtain the appropriate observation surface for the sample to observe the joint of the solder joint, layering, void, etc.
*Scanning Electron Microscopy	JY-T 010-1996	Observing the short circuit, open circuit, electromigration, pinholes and corrosion of the oxide layer on the surface of the chip can also be used to observe the stacking faults, dislocations, and dimensional measurements of the pattern lines.
		EDX confirms the surface composition of the sample.
Chip De-layering (RIE) Detection		It is mainly used to solve the observability and testability of the underlying layers of the chip multilayer structure.



THANK YOU

