



ECEC 東晶電子
002199

EAST CRYSTAL ELECTRONIC



CONTENTS

01

About us

02

Product Introduction

03

Technology

04

Production Management

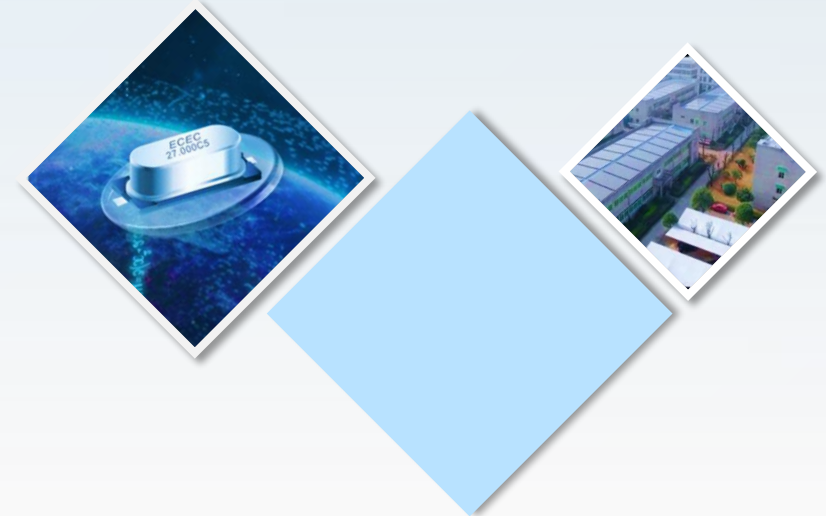
05

Quality Control

01

ABOUT US

Introduction | Culture



East Crystal Electronic Co., LTD (ECEC) was founded in April 1999, which specializing in high precision, high stability and high quality quartz crystal components. The company which has 9 holding subsidiaries, was successfully listed on SZSE in December 2007 with stock code 002199.



More than 20000² of high standard clean workshop, and over 80 of the most advanced SMD automatic production lines. ECEC are exported to more than 100 countries and widely used in automotive electronics, consumer devices, intelligent manufacturing , security, industry and other fields ECEC's production facility is fully compliant to current automotive and environmental standards such as IATF16949:2016, ISO9001:2015, ISO14001:2015 and ISO 45001:2018.

All ECEC products are fully compliant to the latest RoHS and REACH products are widely used in electronic devices in daily life and industrial applications, including Automotive, Smart home, White goods, Consumer, Lighting, Communications, IT and Intelligent instrument etc.

Co-creation, Win-win and
Co-prosperity

Autonomous Innovation, Striding
Mainly Over, Sustainable Development
and Leading the Future



Attention to Detail, Quick
Response, Striving for Perfection

Simplicity, Efficiency, and
Standardization

02

PRODUCT INTRODUCTION

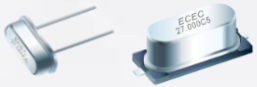
Main Products | Application | Market | Revenue



MAIN PRODUCTS

Crystals

Metal Can



Glass Seal



Seam Seal



Seam Seal

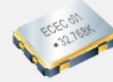
5032S 1 million
3225S 60 million
(Automotive-grade 3 million)
2520S 25 million
2016S 17 million
(Automotive-grade 3 million)
1612AU 8 million
1210AU
1008AU Total: 111 million

Oscillators & Modules

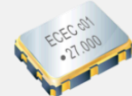
Crystal Oscillators (XO)



Real Time Clock (RTC)



Voltage Controlled Oscillators (VCXO)

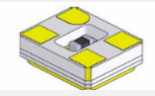


Oscillators

7050 0.8 million
3225 0.8 million
2520 1 million
2016 1 million

TSX

Temperature Sensor Crystal



Seam Seal

2520 12 million
2016 4 million
1612 4 million

TCXO

• Temperature compensated crystal oscillator



TCXO

3225 2 million
2520 2 million
2016 1 million

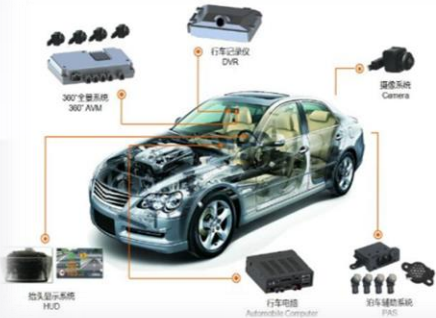
KHZ

• Crystal KHZ



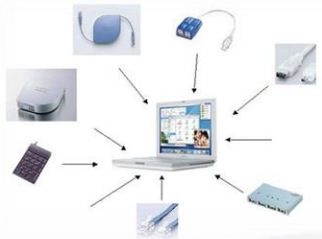
(32.768)KHZ

3215 4 million



Automotive
Electronics, 8%

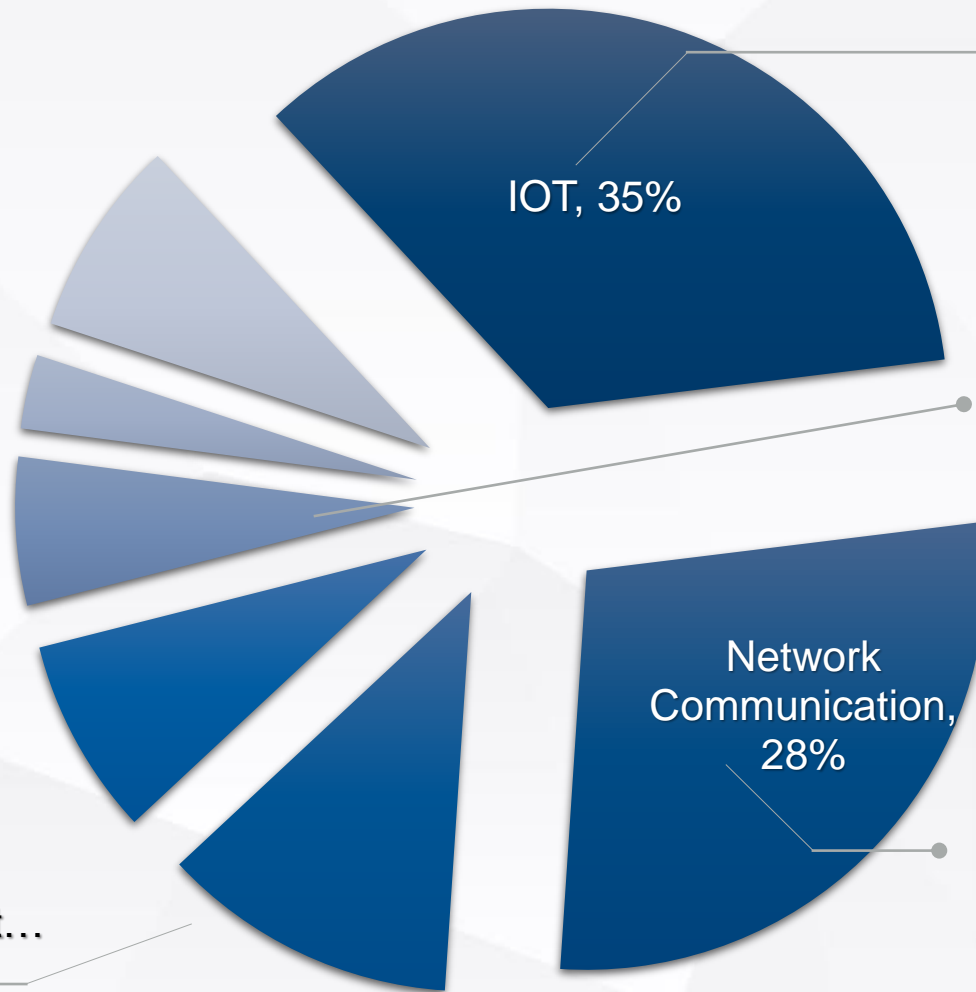
Others, 3%



PC & peripheral
products, 8%



Smart...



Safety Protection,
6%



◆ Wired/Wireless Network

◆ IDC

- I. Router/Switch
- II. Server



◆ Mobile Data Access

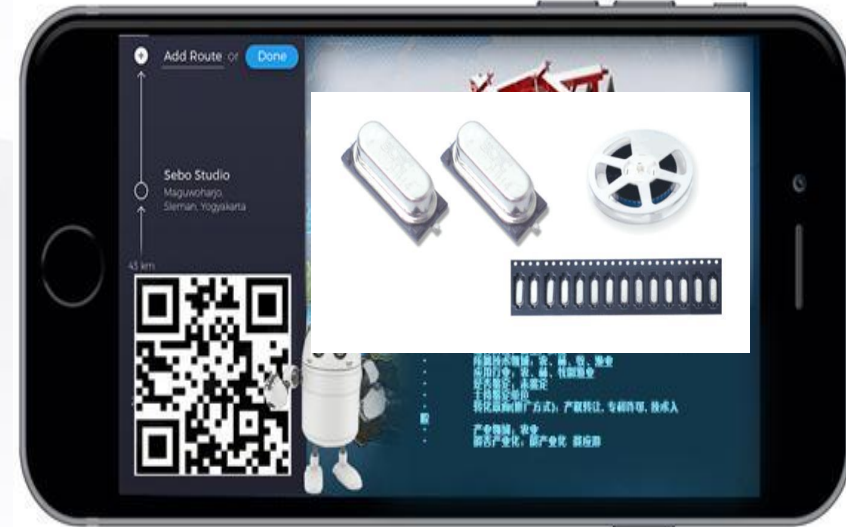
- I. Base Station
- II. Cellular Communication Base Station

◆ Timing Synchronization

◆ Mobile Phone



IBEACOM System



Product
Information

Main Customers: Fiberhome, T&W

- ◆ Vehicle Navigation
- ◆ Vehicular Wireless Communication
- ◆ Remote/Keyless System
- ◆ Video Surveillance in Vehicle
- ◆ Motormeter, Clock
- ◆ Antilock Braking System & Other Electronic Control System
- ◆ Trip Computer
- ◆ ABRS



- ◆ Smart Home
- ◆ Remote Control
- ◆ Infrared Sensing
- ◆ Fingerprint Recognition
- ◆ System Localization



Main Customer: TUYA

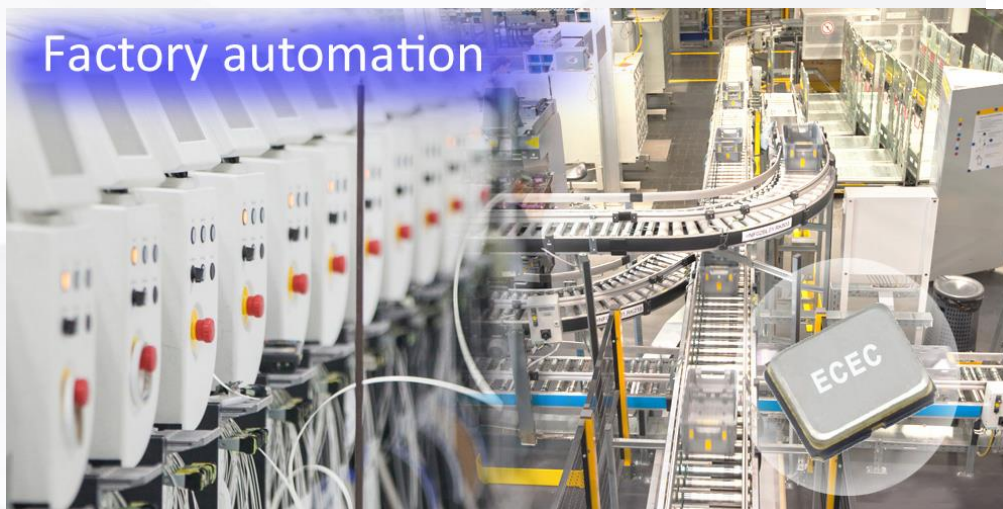


- ◆ Wireless Communication Module
- ◆ Internet Protocol Camera
- ◆ NVR—Network Video Recorder
- ◆ DVR—Digital Video Record
- ◆ Numerical Control Unit
- ◆ PC



Main Customer: DAHUA, HIKVISION

- ◆ Wireless Communication Module
- ◆ Motion Control Module
- ◆ PLC
- ◆ Human-Machine Interface, PC



Main Customer: SUPCON

- ◆ Wireless Communication Module
- ◆ Oscilloscope
- ◆ Frequency Spectrum
- ◆ Signal Generator
- ◆ Universal Counter
- ◆ RF Test Instruments
- ◆ Intelligent Instrument



Main Customer: OMRON

- ◆ Video Monitor
- ◆ HD Camera
- ◆ Video Server
- ◆ SDI Frame Synchronizer
- ◆ High-End Audio
- ◆ Audio and Video switcher



Main Customer: Hisense

APPLICATION IN AUTOMOBILE

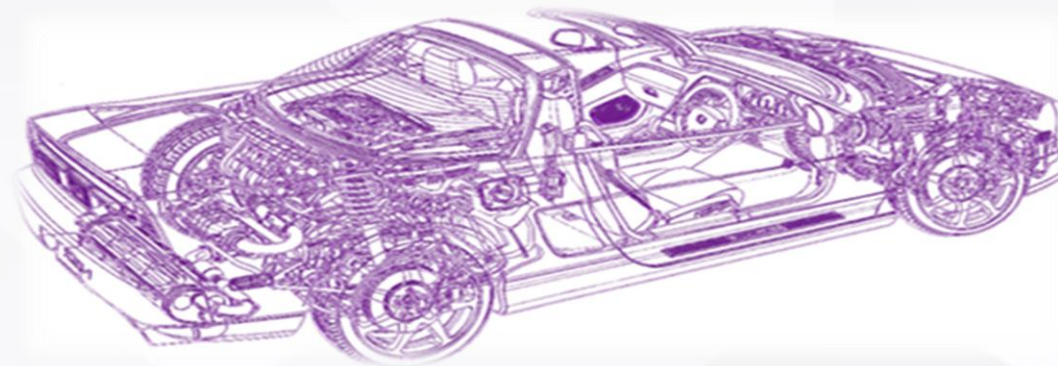
➤ Quartz crystal units covers most of the module components in automotive electronics, and the demand will be more and more large in the future.

Different System	
Drive System	In-Vehicle Infotainment
Sensor/Communication	Image System

Supplemental Restraint System	Steering Wheel Sensor
Intelligent Headlights	Tire Pressure Sensor
Electronic Stability Program	Anti Theft Alarm Systems

Main Crystal Products	
SMD水晶振動子	3.2x2.5/5.0x3.2/8.0x4.5mm
TCXO	2.5x2.0/3.2x2.5mm
SMDクロック用水晶発振器	2.0x1.6/2.5x2.0mm
SAWフィルタ	3.0x3.0/1.4x1.1mm

- Engine Control
- Electronic Modulated Suspension System
- Electrical Park Brake System
- Intelligent Start/Stop
- Antilock Brake System



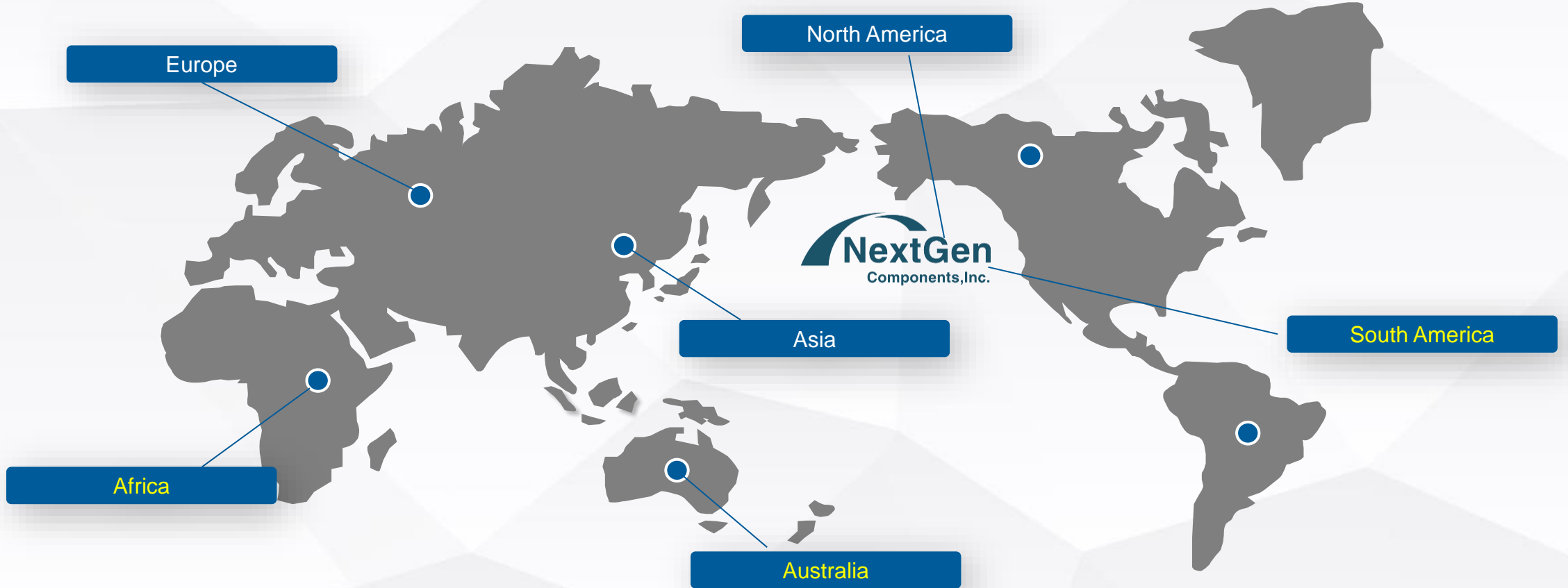
- Auto Navigation
- Car Remote Key
- Road Monitor
- Internet of Vehicles

◆ ADAS-Advanced Driver Assistance System

Distance Sensor	Driving Camera
Rear Obstacle Sensor	Reversing Camera
Communication Module	Infrared Transducer
Automatic Tolling System	Vehicle Safety Distance Keeping System

- Car Audio System
- Car TV
- Intelligent Display
- Radio
- Rear Seat Display

- Head Up Display
- Around View Monitor
- Driving Recorder
- In-Vehicle Cameras



- Domestic - China
Shenzhen, Shanghai, Hangzhou, Hefei, Ningbo, Qingdao, Nanjing, Wuhan, Chengdu, Taiwan and other areas.

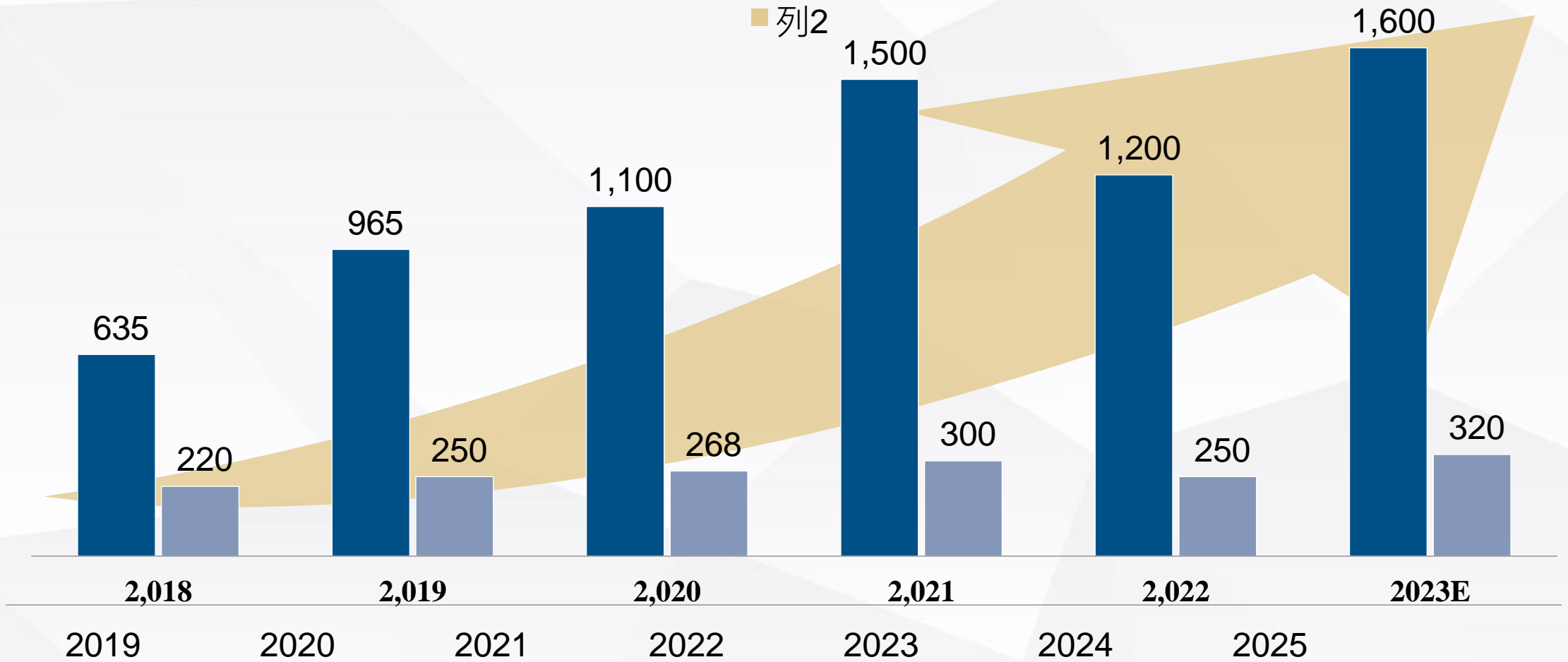
- Overseas - North America/South America
NextGen Components, Inc. (Rep. & Distributor)
9 Orchard, Ste 106, Lake Forest, CA 92630, USA

MAIN CUSTOMER SERVED



■ Shipment Quantity (Million) ■ Revenue (Million Yuan)

■ 列2



03

TECHNOLOGY

R&D Strength | Patented Technology

Development & Manufacturing Process

Development



Composition
of the R&D
team

3 Experts

9 People with Master's
Degrees or Above

161 People with Bachelor Degree

149 Engineering & Technical Staffs





58 Utility Model Patents

Surface mount type quartz crystal resonator with built-in load capacitor

Quartz crystal resonators and wearable devices

Low frequency small crystal resonator and etc. . .

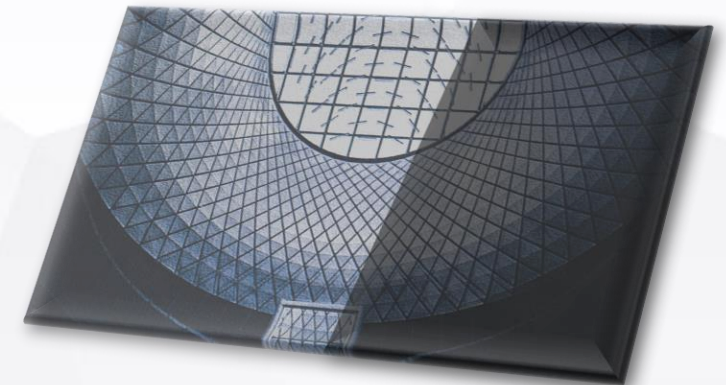


7 Invention Patents

Testing head positioning mechanism

Replaceable test hole for helium leak

Quartz crystal multilayered ion sputtering coating machine and etc. . .

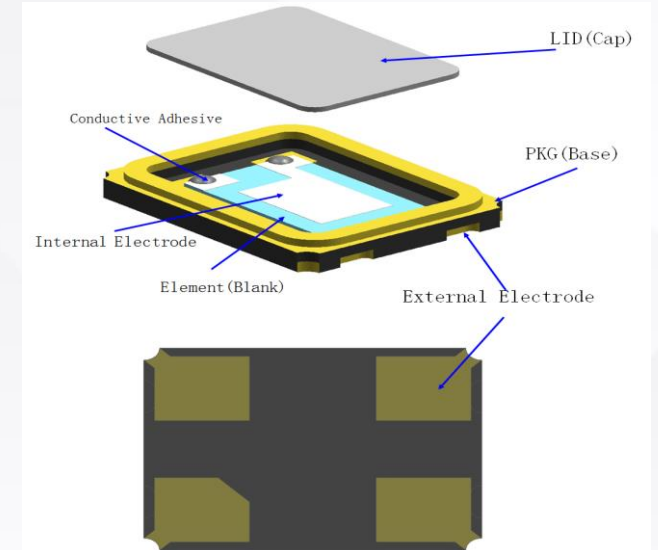
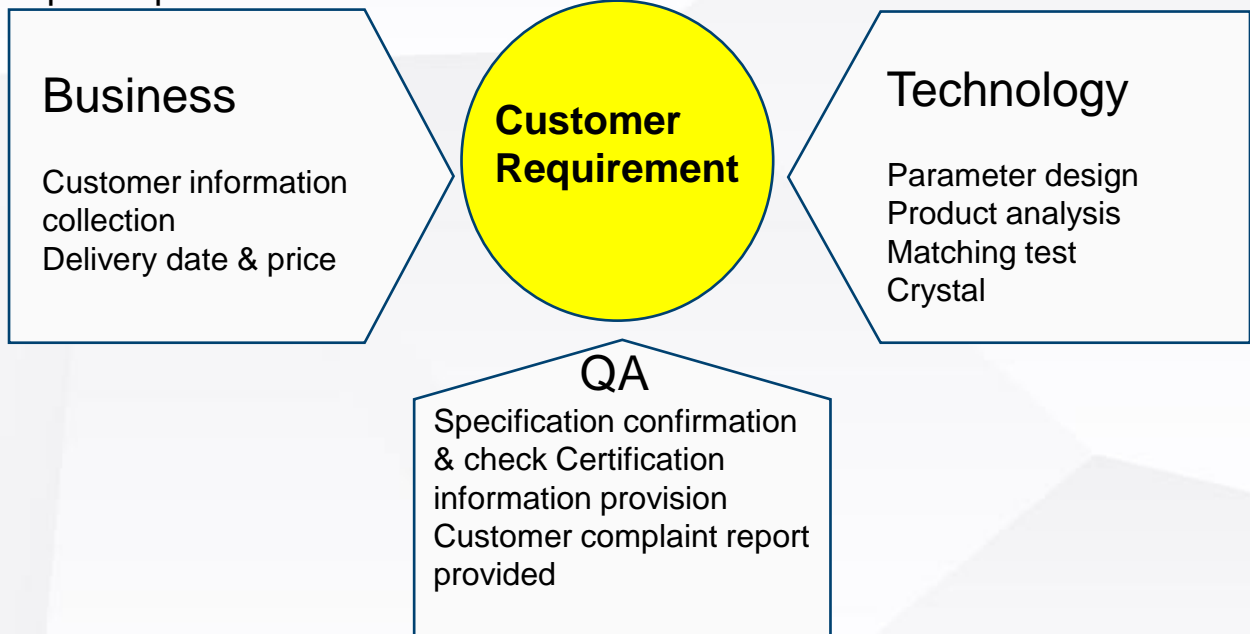


DEVELOPMENT & MANUFACTURING PROCESS

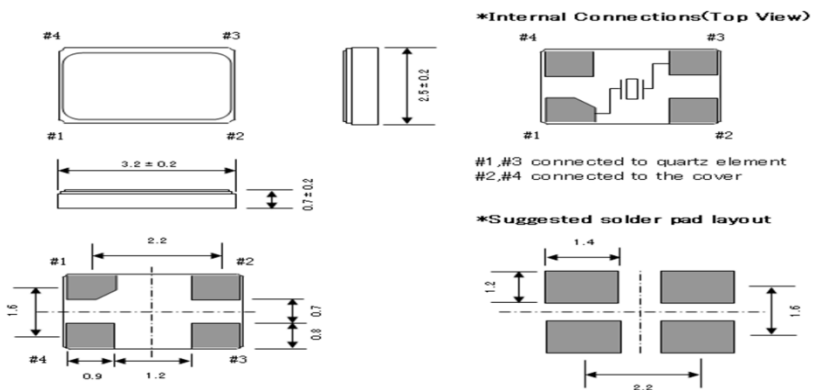
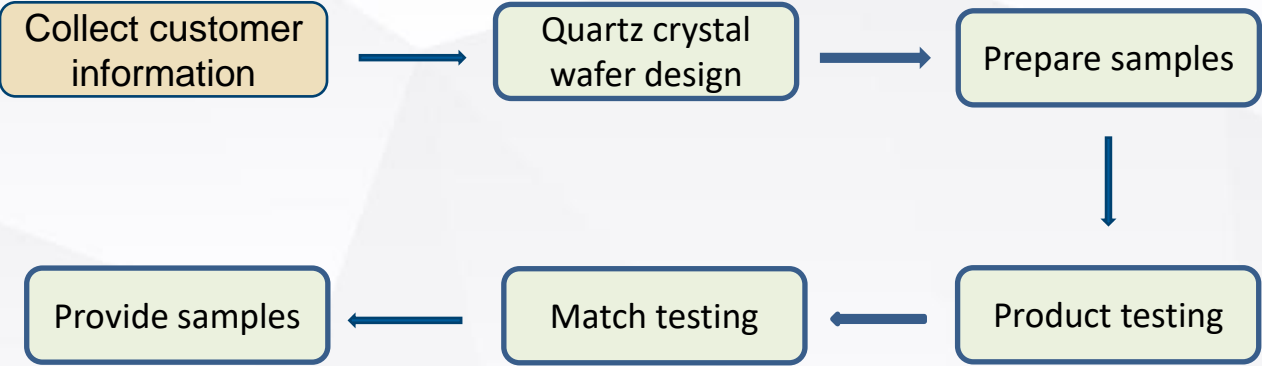


Products		<p>TSX-1612 AU-1210 AU-1008 TCXO</p>
Crystal Plate		<p>32.768K</p>
Frequency	<p>49S Series MIN: 3Mhz MAX: 30Mhz → SMD Series MIN: 12Mhz MAX: 30Mhz → 49S Series MIN: 3Mhz MAX: 48Mhz SMD Series MIN: 8Mhz MAX: 40Mhz → 49S Series MIN: 3Mhz MAX: 125Mhz SMD Series MIN: 8Mhz MAX: 54Mhz → 49S Series MIN: 3Mhz MAX: 125Mhz SMD Series MIN: 8Mhz MAX: 96Mhz</p>	<p>High frequency/ Temperature frequency customized style</p>

According to the special needs of customers, the technical team can develop and manufacture special products



Service: Crystal failure analysis, communication of technology application, Introduction of crystal production process



04

PRODUCTION MANAGEMENT

Workshop Equipment | Production Process
Product Distribution Map



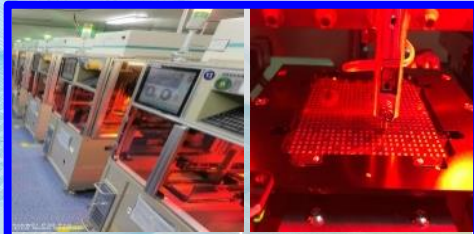
WORKSHOP EQUIPMENT

More Than 20000² of High Standard Clean Workshop, And Over 80 Of The Most Advanced SMD Automatic Production Lines



Degree and Scale of Automation

China Top3



Sheet Arrangement
Placement Machine



Cleaning
Automatic Cleaning
Machine



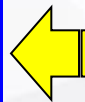
Splashing
Ion Sputter Coater



Dispensing
Automatic Dispensing
Machine



Testing
Testing Equipment



Aging
Aging Oven, Reflow
Soldering

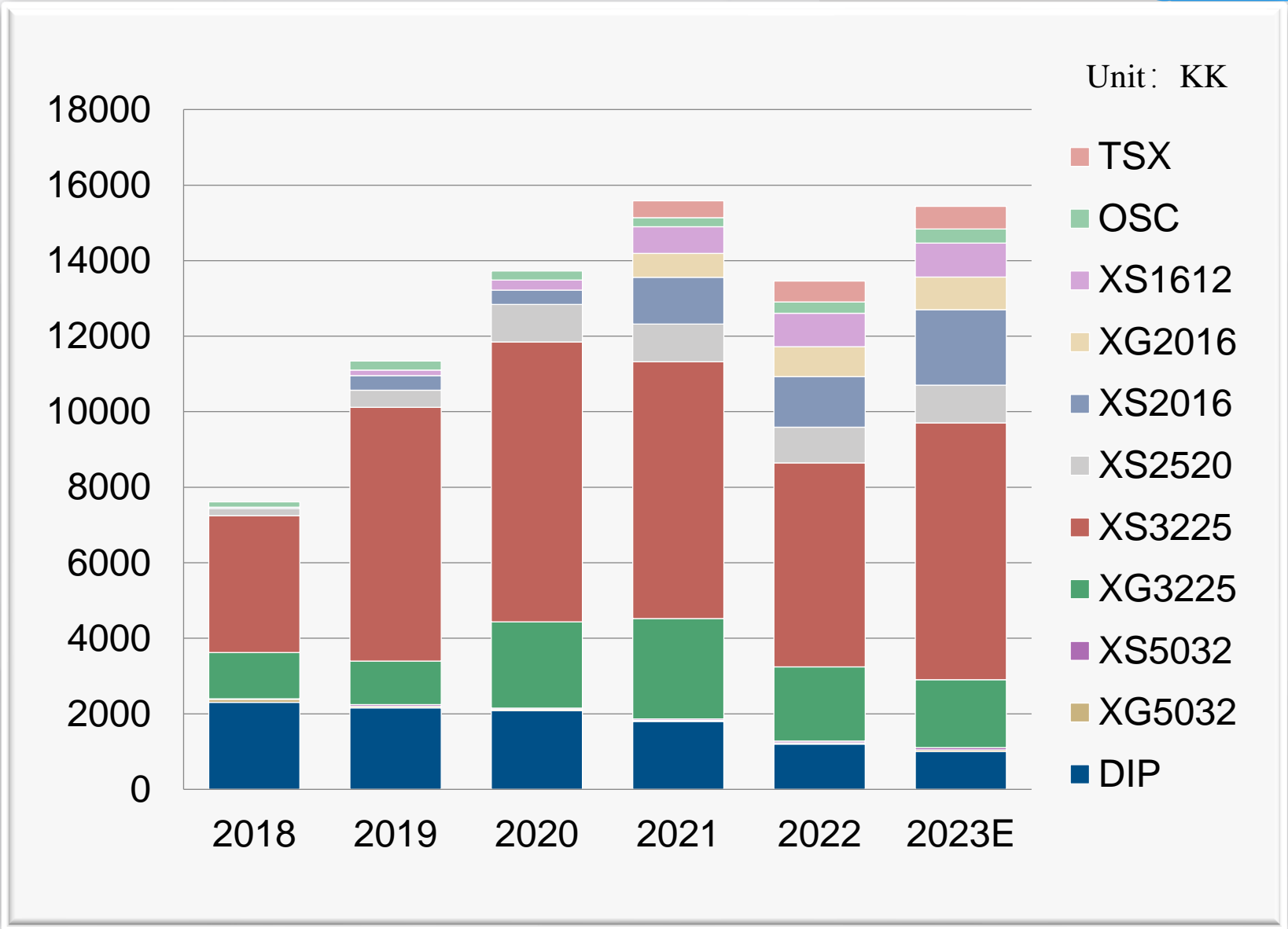


Sealing Welding
Parallel Sealing
Equipment



Fine Adjustment
Plasma Etching Fine
Tuning Machine

PRODUCT DISTRIBUTION MAP



05

QUALITY CONTROL

System Assurance | Quality Control Process

Quality Control Assurance





ISO9001:2015

First certification in January 2003
Passed the review in March 2021



ISO14000:2015

First certification in May 2006
Passed the review in March 2021



ISO45001:2018

First certification in July 2012
Passed the review in March 2021



IATF16949:2016

First certification in December 2007
Passed the review in July 2021



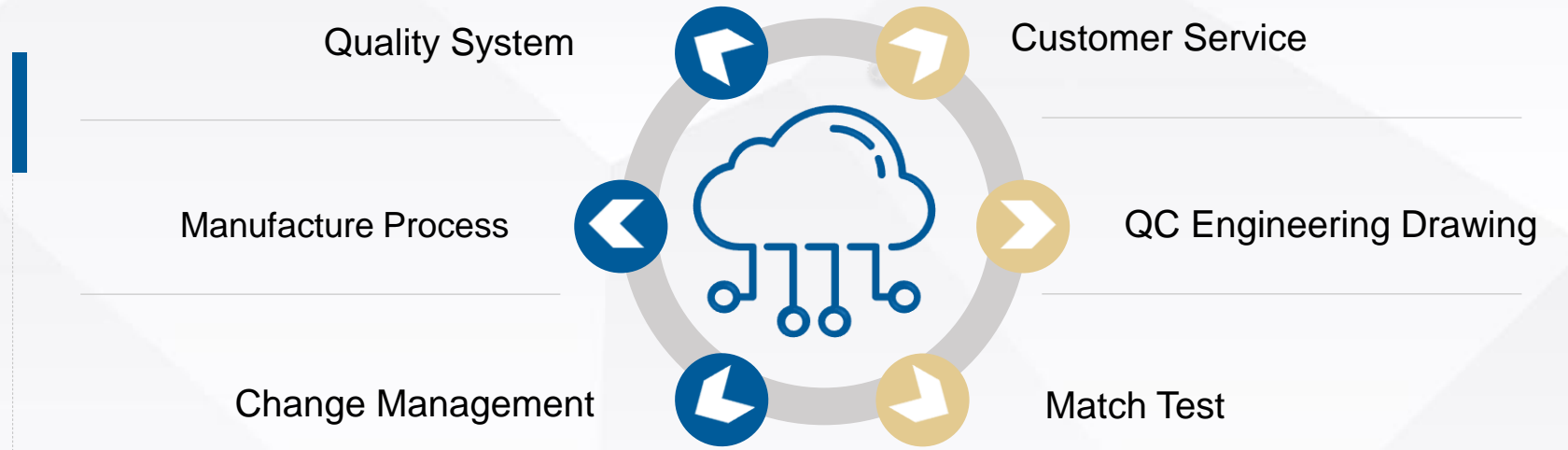
IECQ QC 080000

First certification in April 2022



AEC-Q200:2022

First certification in May 2022





Daily Monitoring of Exception at Important Station

- 01 Set exception control standard of each station
- 02 Program comparison benchmarking after task
- 03 Send out an exception email notification
- 04 Trigger exception handling

Real-time Monitoring of Product Characteristics

- 01 Make production schedule of materials
- 02 Save summary data of testing
- 03 E-Analysis
- 04 Abnormal work order review



Hazardous Substance Control

01

RoHS2.0



REACH



Packaging Directive



02

Halogen
CL & Br



PFOS,PFOA



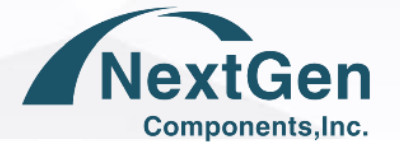
Conflict
Minerals



Number	Test Item	Automotive Quartz Crystal	Normal Quartz Crystal
1	Storage in high temperature	Operating temperature:150°C±3°C,test period: 1000hrs ±12hrs	Operating temperature:85°C±3°C,test period:500hrs
2	Temperature cycle	Operating temperature:-55±3°C~+125±3°C,test period:1000 cycles, and residence time at each extreme temperature was 30min	Operating temperature:-30±3°C~+85±3°C,test period:1000 cycles, and residence time at each extreme temperature was 30min
3	High temperature and humidity	Temperature:85±2°C, humidity:85%RH,test period:1000Hrs	Temperature:85±2°C, humidity:85%RH,test period:500Hrs
4	Aging	Operating temperature:125°C±3°C,test period:1000hrs±12hrs	Operating temperature:85°C±3°C,test period:500hrs±12hrs
5	Reflow soldering	Max temperature 260±5°C / 10±1s. Reflow soldering 2 times	Max temperature 260±5°C / 10±1s. Reflow soldering 1 time
6	Weldability test	Solder temperature 260°C, solder cover area> 95%	Solder temperature 260°C, solder cover area> 95%
7	Storage in low temperature	Operating temperature:-55±3°C,test period 1000 hours	Operating temperature:-40±3°C,test period 500 hours
8	Vibration Test	Entire frequency range: 10 ~ 2000Hz	Entire frequency range:10~55Hz
		Amplitude: 1.52mm	Repeated Period: 1~2min
		P peak acceleration: 5g (49m / S2)	Amplitude:1.5mm
		Direction: x, y, z	Direction: x, y, z
		12 cycles in each direction, each cycle 20 minutes	Period: 2 Hours/Each direction
9	Mechanical shock	Acceleration is 100G, pulse duration is 6mS, 3 times on each X,Y,Z directions. Total 3 cycles	N/A
10	Drop Test	Dropping three times from the height of 75cm onto the steel board of the 2cm thickness	Dropping three times from the height of 75cm onto the steel board of the 2cm thickness
11	Substrate bending test	PCB size 100*40(mm), deformation 2 mm	N/A
12	Dimension	According to customer requirement	According to customer requirement
13	Appearance Inspection	Check apperance and marking	Check appearance and marking



THANK YOU !



REP. & DISTRIBUTOR

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