



TXC Corporate Company Overview

2025/Q3

Think of Frequency, Think of TXC

41

Years in Timing Industry, Founded in 1983 & Headquarters in Taiwan

- ◆ Ranked **No. 1** in Worldwide Timing Market, QYR 2024, Jul
- ◆ Ranked **No. 1** in Worldwide MHz Crystal Market, QYR 2024, Jul & TXC Shipment
- ◆ Global Ranking **No. 3** in Automotive Market, QYR 2024, Jul
- ◆ Timing Industry Leader in Product Miniaturization, 2012 ~ Present
- ◆ Smallest and Innovative Devices Integration by Ceramic Packaging, Since 2013

2024 Corporate Snapshot

Highlights

Key Market Segments

5G-A, Automotive, AI-Powered Comprehensive Ecosystem

Optimized Product Portfolio

Miniature / Higher Frequency / Tighter Stability / Low Phase Noise / Low Power Consumption

New Production Facilities

Initiate Oversea Facility Plan for N+1

Sales Revenue (USD\$)

\$395M

Qty shipped (pcs)

4.1B▲ From 3.5B

Automotive

21.6%▲

General AI Related

7.4%▲

Miniature Product(%)

40%▲

Advanced Product %

13.1%▲

Essential Component of All Electronics

Quartz Offers the Most Clear & Low Noise Clock to Make Every Connections Better

 Making **Pulse** to the Connections

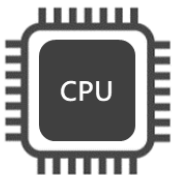
Clock Reference/Generation

Radio Frequency



5G NR
GPS
Wi-Fi 6/BT
NFC
UWB

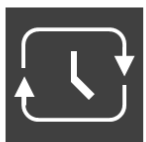
Electronic Devices



Interface
GPU/MCU
PMIC
DRAM
USB

Clock Synchronization/Attenuation

Network Infrastructure & Enterprise Devices



SyncE & IEEE 1588



Access Network
Front/Mid/Backhaul
Core Network
IDC
Optical Module



Crystal

Seam Seal



Glass Seal



Tuning Fork



Temperature Sensor Crystal (TSX)



Oscillator

Crystal Oscillators (XO)

CMOS



Differential



Programmable



Voltage Controlled Oscillators (VCXO)



Temperature Compensated Oscillators (TCXO)



Temperature Compensated Oscillators (S3TCXO)



Oven Controlled Oscillators (OCXO)



Global Presence

3

R&D Centers

15

Sales Office

4+2_(New)

Plants

-  R&D
-  Manufacture Plant
-  Sales Operation
-  Lab Service

North America

San Jose 
Brea 
Toronto 

Europe

Frankfurt 

Great Asia

Shin Yokohama 
Osaka 
Korea 

China

Ningbo 
Chongqing 
Shenzhen 
Wuhan 
Shanghai 
Suzhou 
Beijing 
Taiwan 

3,300 Employee

Global Manufacture Sites

1991

✓ Automotive IATF 16949



Taiwan, Ping Cheng (PCF)

- MHz Crystal

- TSX

- XO

- TCXO

- VCXO

- OCXO

1999

✓ Automotive IATF 16949



China, Ningbo (NGB)

- kHz/MHz Crystal

- TSX

- XO

- TCXO

2013



China, Chongqing (CKG)

- MHz Crystal

- TSX

- 3 manufacturing facilities+ **2024 New Factory (TETC)**
- 200+ automated production lines
- 430M+ monthly capacity(Timing Devices)
- 3 R&D centers (PCF, NGB) with Total 400+ engineers

2020

✓ Automotive IATF 16949



China, Ningbo (TETC)

- kHz/MHz Crystal

- XO

TXC Production **N+1** Plan

4+2 New manufacturing facilities
450M+ monthly capacity for 2025



1991

✓ Automotive IATF 16949



Taiwan, Ping Cheng (PCF)

1999

✓ Automotive IATF 16949



China, Ningbo (NGB)

2020

IATF 16949 Qual in Q3 2025



China, Ningbo (TETC)

2013



China, Chongqing (CKG)

Q1 2025

IATF 16949 Qual in Q4 2025



Japan, Aomori

Q1 2025

IATF 16949 Qual in Q3 2026

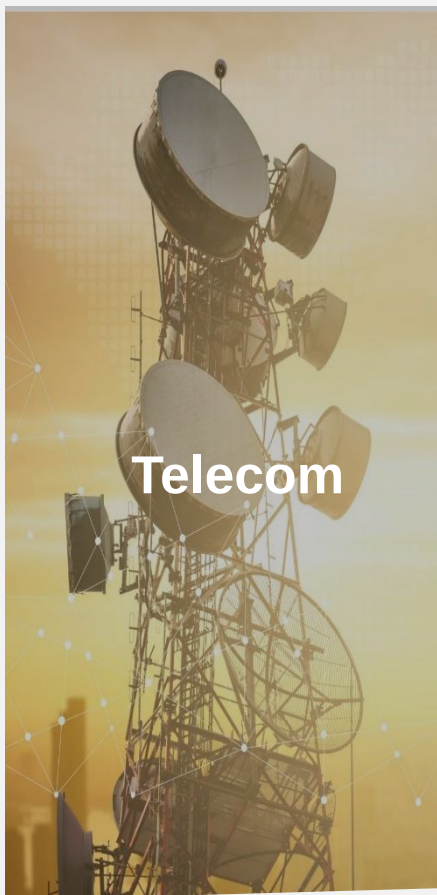


Indonesia, Surabaya

Our Focuses

Provide the Cleanest & Most Stable Clock Source to Every Hearts of Electronics

Precise Stability & Ultra Low Phase Noise & Jitter



Telecom

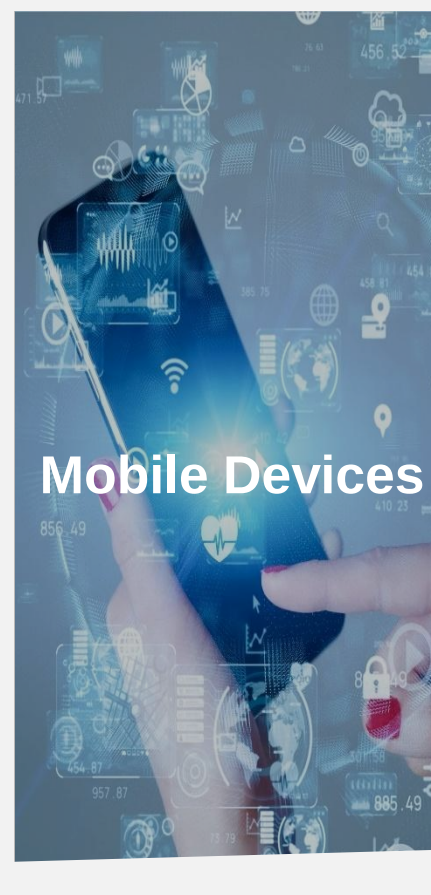


Datacom

High Frequency, Ultra Stability & Miniature



Connectivity



Mobile Devices

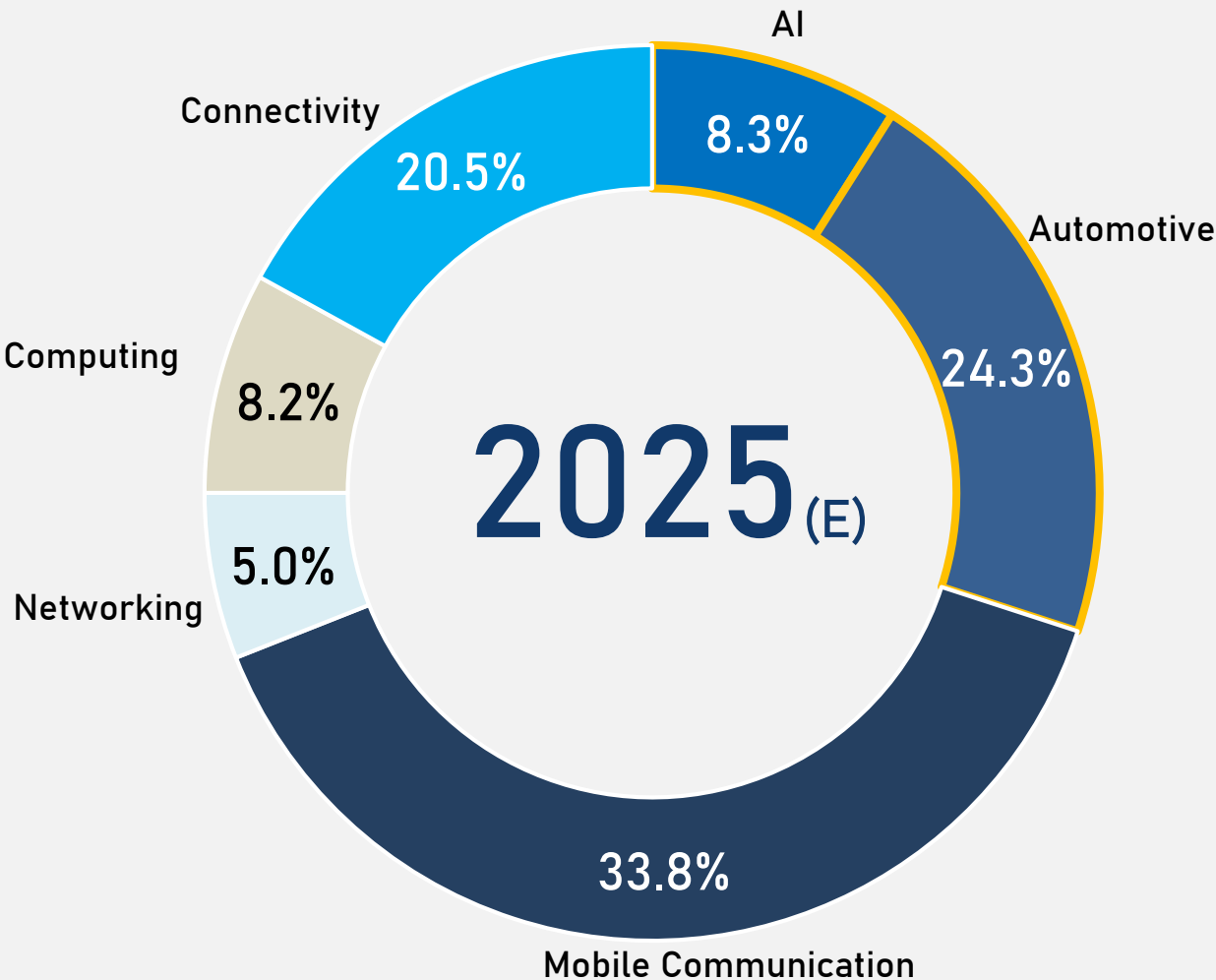
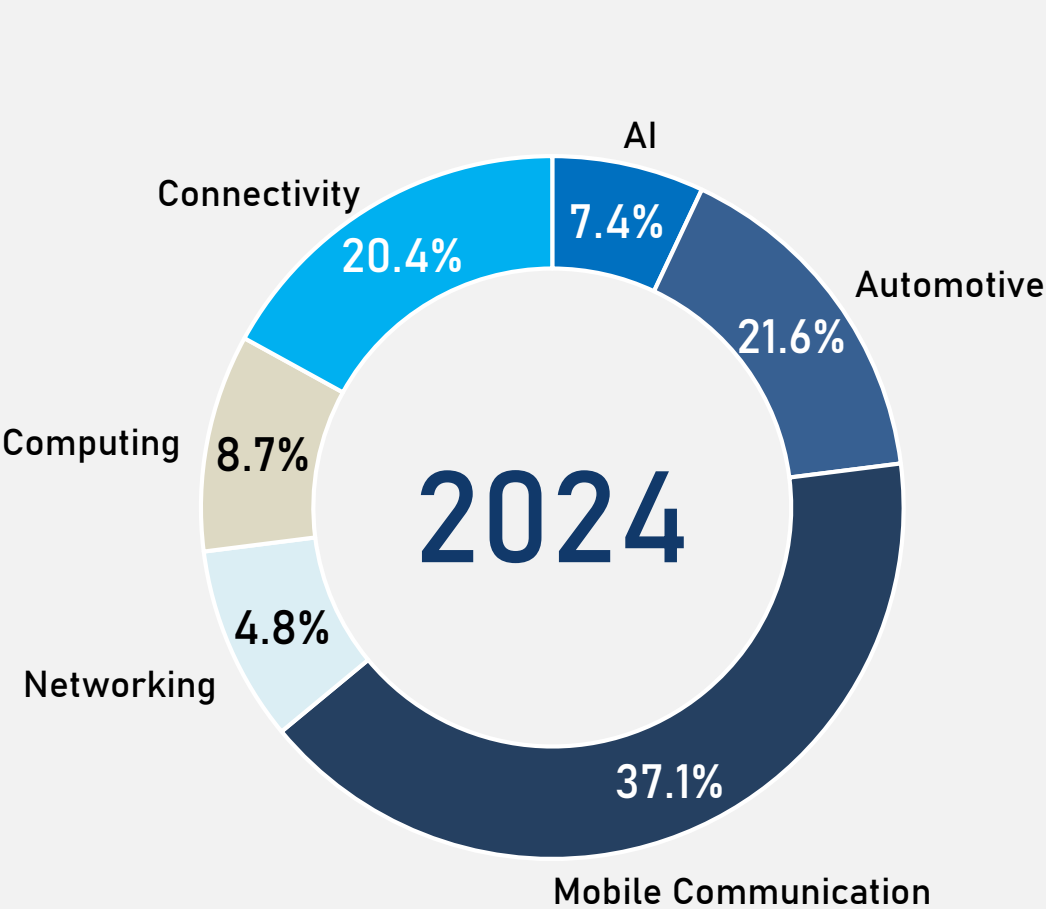
High Reliability & Quality



Automotive

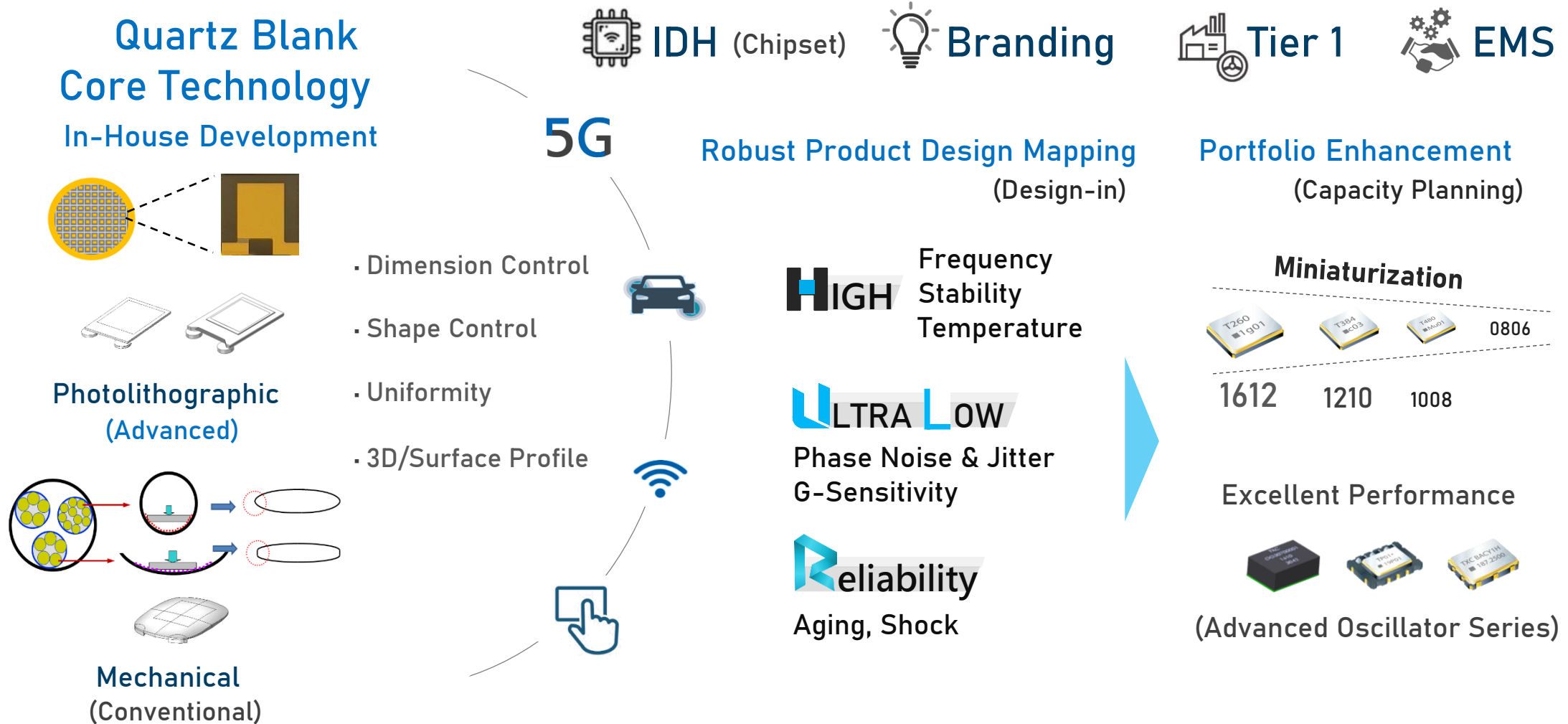
Key Industry Segment Breakdown

Focus on Potential Market with Sustainable Growth

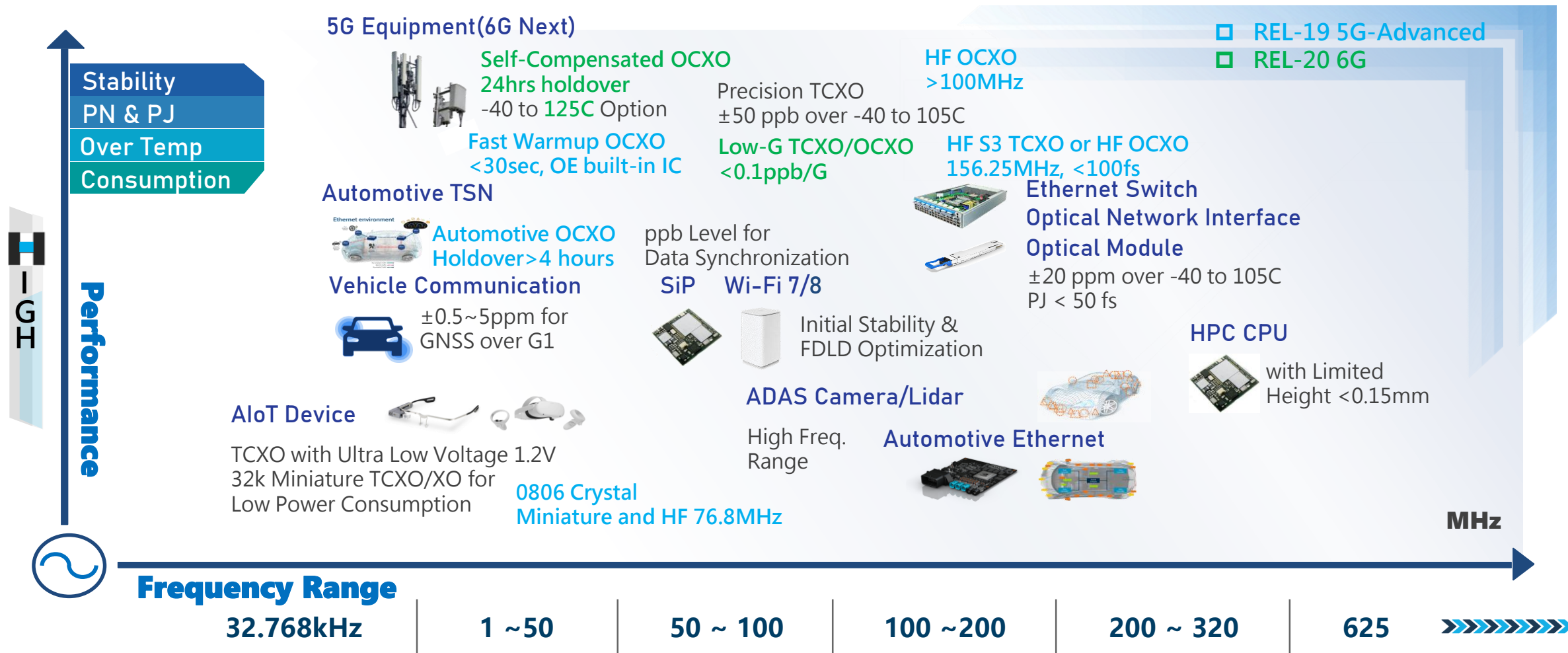


Our Core Competiveness

Improvement and Enhancement of Technology

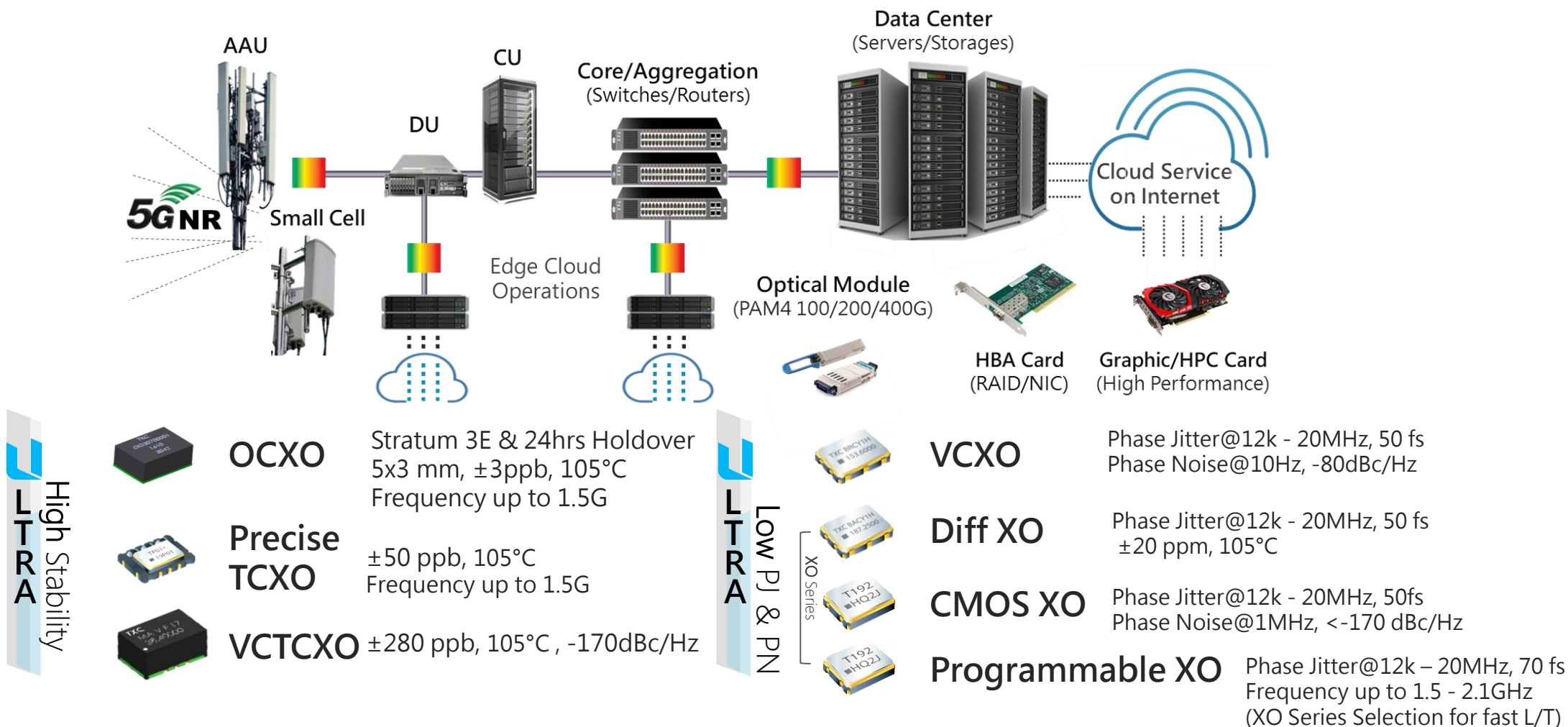


Total Solutions for Comprehensive Ecosystem



Telecommunication & Enterprise

Extra High-Frequency, Ultra-Low Phase Noise & Jitter & Stability Performance



Mobile Connectivity & Devices Ecosystems

Miniature, Higher Frequency & Ultra Low Phase Noise

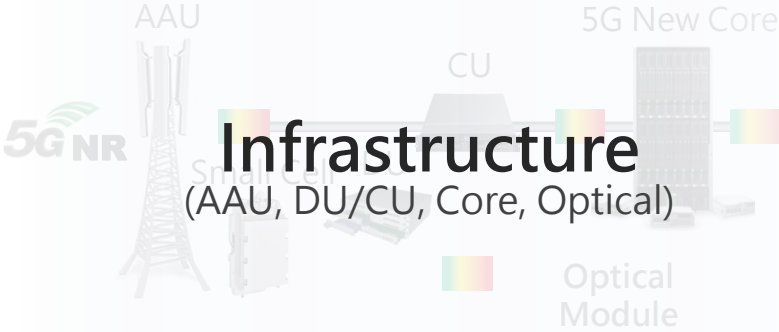
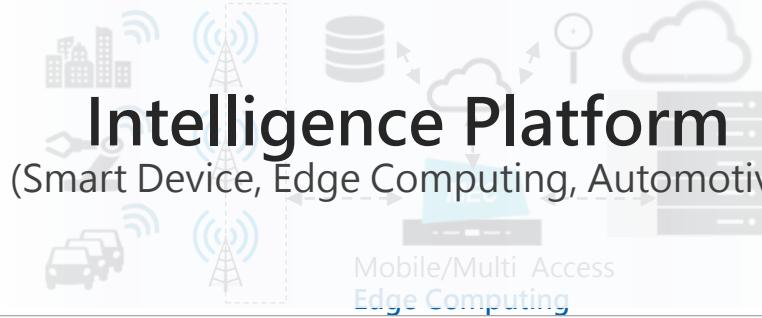


HIGH Frequency Accuracy & Stability

World's Smallest Series

 1612	 1210	 1008	MHz Crystal Miniature, 1.0 x 0.8 (mm) 8 – 320 MHz Next 0806	 1912	TSX (TH+Xtal) Miniature, 1.6 x 1.2 (mm) 19.2 – 76.8MHz	 1912	XO (CMOS/Differential/PLL) PJ@12k – 20MHz, 0.05 – 0.3 ps Low EMI CMOS XO	 1912	TCXO (CMOS/Clipped) PN@100kHz, -166 dBc/Hz Stability, ±0.5 ppm
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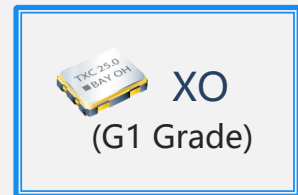
Total Solutions for 5G Advanced Application

Solution	Size	Key Parameters	5G Main Application
OCXO	5032 – 1409	Stability, $\pm 5 \sim 10$ ppb	 Infrastructure (AAU, DU/CU, Core, Optical)
S3TCXO	5032/7050	Stability, ± 100 ppb	
TCXO	1612 – 2520	Phase Noise@100kHz, -166dBc/Hz	
VCXO	2520 – 7050	Phase Jitter@12k - 20MHz, 0.05 ps	 Intelligence Platform (Smart Device, Edge Computing, Automotive)
Diff XO	2520 – 7050	Phase Jitter@12k - 20MHz, 0.05 ps	
PLL XO	2520 – 7050	Frequency, 10MHz - 2.1GHz	
XO	1612 – 2520	Phase Jitter@12k - 20MHz, 0.3 ps	 Device Interconnection (Mobile Phone, Mobile, Computing, CPE)
TSX	1210 – 2520	Frequency, 19.2 – 76.8MHz	
Crystal	1008 – 5032	Frequency, 8 – 320MHz	

Electrification & Smarter Vehicles Growth Drivers

Define Key Growth Applications with Strong Forecast & Projections

Automotive Grade, AEC-Q100, AEC-Q200 & Other Specified Compliances

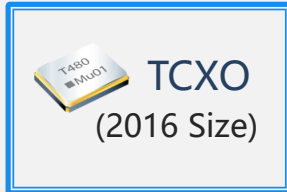


Autonomous
+43%

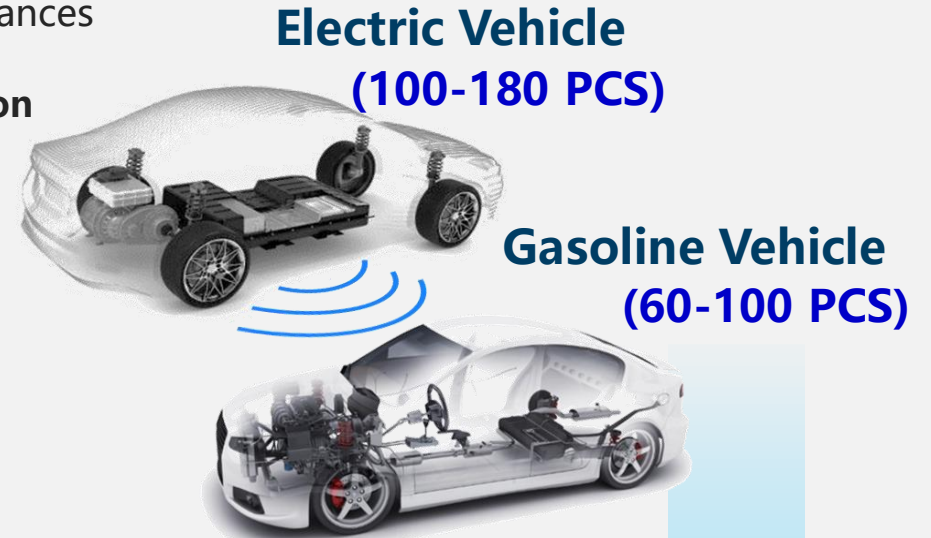


Safety & Motion
+16%

Smart Cockpit
+33%

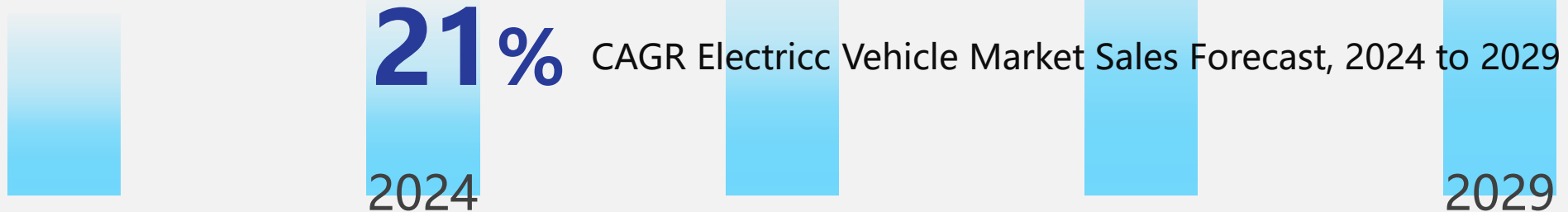


Body Control
+36%



+% CAGR of TXC Sales Estimation during 2021-2025

<Note: Reference to **AVG 30 PCS of Usage in Traditional Vehicle**>



Automotive Main Applications Deployment

Reliability with AEC-Q100/200 & Other Specified Compliances

IVI System
Smart Cockpit
AI Applications



Device Connectivity
(Wi-Fi, BT, UWB, etc)
Connected Car
(5G/LTE, V2X, GNSS, etc)



Instrument Cluster
Interior Control Unit
Smart Key

Infotainment

Communication

Security

Power Steering
Braking System

Safety



EV Applications
BMS, OBC, Inverter

Electric Vehicle



Camera
Radar/Lidar

ADAS



TPMS



Seam Crystal

1.6 x 1.2 – 5.0 x 3.2 (mm)
G3 – G1



Glass Crystal

2.0 x 1.6 – 8.0 x 4.5 (mm)
G3 – G0



TSX

2.0 x 1.6 – 2.5 x 2.0 (mm)
G3 – G2



XO

1.6 x 1.2 – 5.0 x 3.2 (mm)
G3 – G1
Low EMI



TCXO

2.0 x 1.6 – 3.2 x 2.5 (mm)
G3 – G2
One Cavity Version

TXC Automotive Grade Recommendations

Type	Solution	MHz	Size	Grade	Application Focus
SMD Crystal	Glass (2/4 Pads)	4 – 62.4	3225 – 8045	G3 – G0	Glass, Seam All Applications Related 
	Seam (4 Pads)	8 – 80	1612 – 5032	G3 – G1	
	kHz (TF) (2 Pads)	32.768 kHz	3215	G3 – G1	
AEC-Q200 Compliant	TSX (4 Pads)	19.2/38.4/ 55.2/76.8	1612/2016	G3 – G2	kHz (TF) Infotainment, Security 
SMD Oscillator	XO ※Low EMI XO (CMOS)	32k – 125 ※10 – 40	1612 – 5032 ※ 2016/2520	G3 – G1 ※G3 – G1	TSX, TCXO Infotainment, Communication 
	Diff XO (LVPECL/LVDS)	50 – 156.25	3225	G3 – G1	
	TCXO (Clipped Sinewave)	6 – 52	2016 – 3225	G3 – G2	
AEC-Q100 Compliant					XO Series Infotainment, Security ADAS, EV Related 

Grade : Operating Temperature, G3: -40 to 85°C, G2: -40 to 105°C, G1: -40 to 125°C, G0: -40 to 150°C

Trustworthy Quality for All Mission Critical Vehicle Applications



Zero Risk Approach

(Lowest DPPM Target per Management Standard & System)

IATF 16949 Certified & VDA 6.3 Mgt.

(Qualified Manufacture Facilities)

Reliability

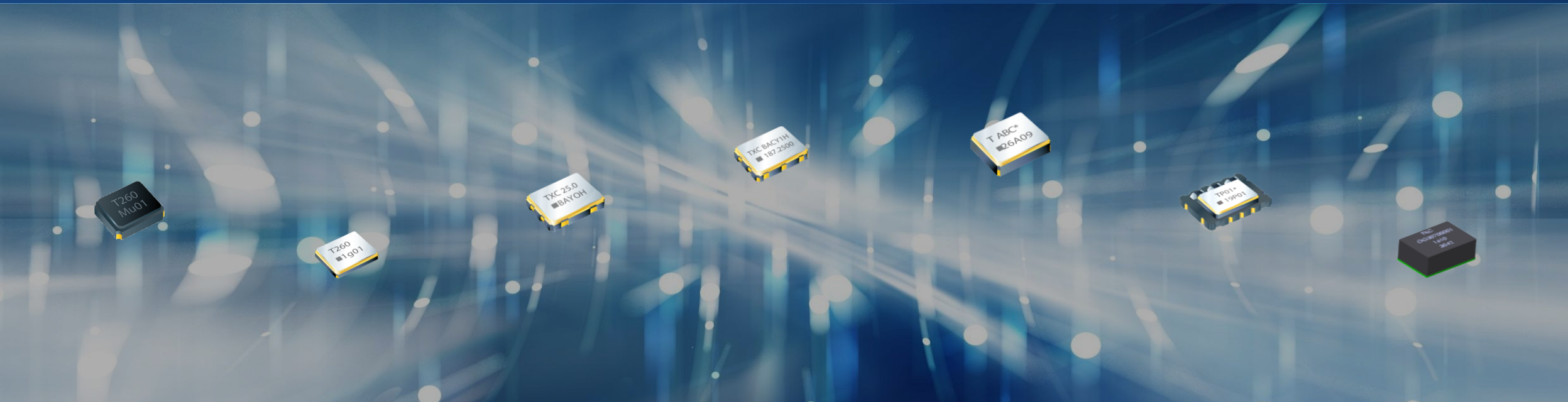
(AEC-Q100, AEC-Q200 & Other Specified Compliances)

Product Robustness

(Design per Classification by Application, Refer to ASIL)

Leading Timing Industry Moving Forward

Evolved Sensing, Computing, & Communication Technology with AI-Powered Ecosystem



Innovative Leadership
in High Growth Rate Market
Segments. (8~10+% R&D Investment)

Precise Timing Solution
For Telecommunication & Data
Computing

Higher Frequency & Miniature
For Communications
Optimization



Environments, Sustainability, Governance

We Care, We Committee, We Dedicate
Healthy Growth with Value based Sustainability

2024 RE%
6 % (On Schedule)

Roadmap to Net Zero Carbon
RE 30 By 2030
RE100 By 2050

MORNINGSTAR SUSTAINALYTICS

ESG Risk Rating

17.7 pts (Low Risk)



Top 6%~20% Listed Corporates of the 10th Corporate Governance Evaluation



"Taiwan Best-in-Class 100"



"Conform to 1.5°C temperature control target" label from Common Wealth Magazine



ISO 14064 / ISO 14067 / ISO 50001



| **Thank You**
Think of Frequency, Think of TXC

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