

# AVATEC

## MLCC

Multilayer Ceramic Capacitor





# CEO MESSAGE

Greetings!

Thank you for visiting AVATEC.

Founded in 2000, AVATEC is a company listed on KOSDAQ grown up constantly through the continuous R&D and the management innovation in the rapidly changing managerial environment.

AVATEC coating business set up the thin film coating business with the largest vacuum multi-layer film deposition facility in Korea and high coating technology.

Also TFT-LCD panel etching business division possesses the proprietary etching technology that reduces the thickness of panel according to the trend of making the flat display device lightweight and thin, and is providing best products by incorporating the back ITO coating process in line to prevent the static electricity after etching.

Since 2018, AVATEC started MLCC business.

AVATEC is investing the high-tech facility aggressively and gathering the professional engineers and skillful technicians to develop and manufacture the various MLCC rapidly.

Based on the superior technology skills accumulated till now, all the executives and employees of AVATEC promise to make our best until the day that our customers are touched by our service beyond the customer satisfaction having the principles of challenge, development and creation to diversify our business.

Thank you for the constant interests and encouragement placed by customers and stockholders and we will meet your expectations by maximizing the corporate value without fail.

Thank you.

AVATEC CEO  
Myeong-Seob, Park

안녕하십니까?

아바텍을 찾아주신 고객분들께 진심으로 감사드립니다.

지난 2000년 설립된 아바텍은 IT 부품소재 분야에서 경영환경의 급격한 변화속에서도 지속적인 연구개발과 경영혁신을 통해 지금까지 꾸준히 성장해온 코스닥 상장회사입니다.

(주)아바텍 코팅 사업은 국내 최대 진공 다층 필름 증착설비 및 높은 코팅 기술로 박막 코팅 사업을 시작했습니다. 또한 TFT-LCD 패널 식각사업은 평판디스플레이 기기의 경량, 박형화 트렌드에 따라 패널의 두께를 줄이는 독자적인 에칭 기술을 보유하고 있으며, 식각 후 패널의 정전기 방지 목적으로 배면 ITO 코팅을 In-line하여 최고의 제품서비스를 제공하고 있습니다.

AVATEC은 2018년부터 MLCC 사업을 시작했습니다.

AVATEC은 첨단 시설에 적극적으로 투자하고 전문 엔지니어와 숙련된 기술자를 모아 다양한 MLCC를 신속하게 개발 및 양산하고 있습니다.

현재까지 축적해온 경쟁 우위의 기술력을 기반으로 사업의 다각화를 위해 도전과 개척 & 창조의 신념을 갖고 고객 만족을 넘어 고객이 감동하는 날까지 아바텍 전 임직원이 최선을 다 할 것으로 약속드립니다.

항상 변함없는 관심과 성원을 보내주시는 고객 여러분과 주주님께 진심어린 감사의 말씀을 드리며 반드시 기업가치 극대화를 통해서 기대에 부응토록하겠습니다.

감사합니다.

(주)AVATEC 대표이사 박명섭  
M.S. Park



# COMPANY OUTLINE

**CHAIRMAN** Jae-Gon, Wee (위재곤)

**CEO** Myeong-Seob, Park (박명섭)

**FOUNDED DAY** 2000. 9. 1

**CAPITAL** US\$7,200,000

**HEADQUARTERS & FACTORY** Land -13,200㎡ / Factory -12,800㎡

Residence hall -1,300㎡

**GUMI BRANCH** Land -26,400㎡ / Factory -30,000㎡

**EMPLOYEES** 510 people

**ADDRESS** 100, Dalseo-daero 85-gil, Dalseo-gu, Daegu, 42715, S.Korea

(대구광역시 달서구 달서대로 85길 100)

59-21, Cheomdangieop 7-ro, Sandong-myeon, Gumi-si, Gyeongsangbuk-do, 39615, S. Korea

(경상북도 구미시 산동면 첨단기업7로 59-21)

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# QUALITY & ENVIRONMENT SYSTEM

AVETEC conducts reliability test according to international standard such as IEC, MIL, AEC-Q200 and etc.

High Temperature Exposure, Temperature Cycling, Vibration ESD, Board Flex, Mechanical Shock, Destructive Physical Analysis

## Characteristics & Reliability Assessment

High Temperature  
Resistance Load



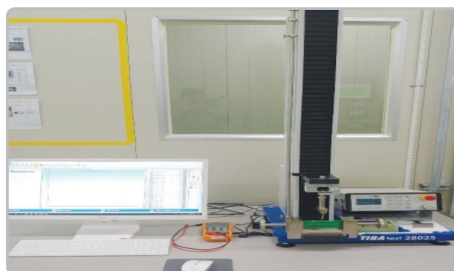
Moisture Resistance  
Load

Temperature  
Characteristics



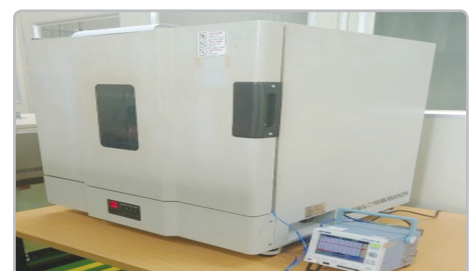
Temperature  
Cycling

Bending & Adhesive  
Strength of Termination



Solder Ability

Vibration



High Temperature  
Exposure

# MANAGEMENT PHILOSOPHY

We create value that can contribute to customers with the best  
**thin film technology and  
MLCC electronic components.**

Focus on the basics, thoroughly on the base

Creation of value for customers

Maximization of performance

Mobile, Tablet  
Touch Window



LCD Panel Slimming &  
ITO Coating



PDP  
EMI Filter



PROJECTION TV  
High Reflection Mirror



CRT ARAS  
Coating



2013

2011

2009

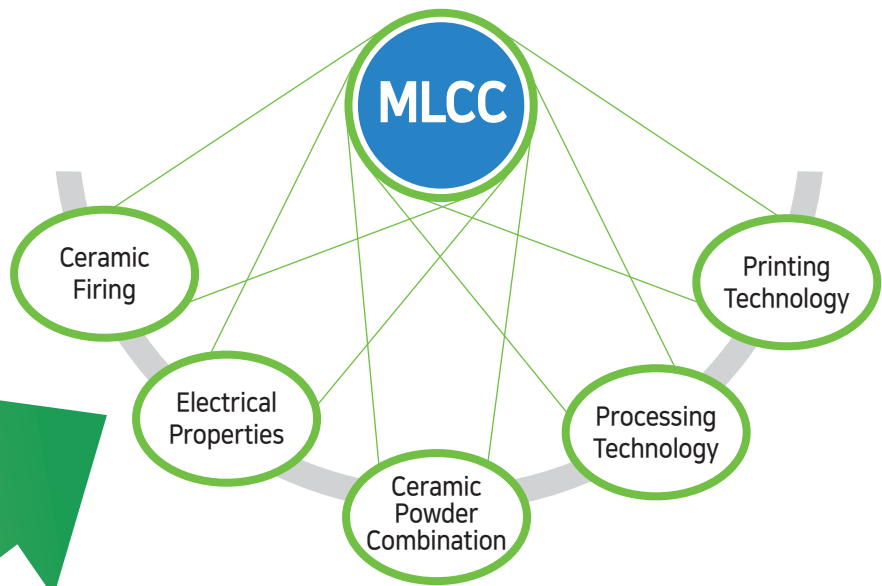
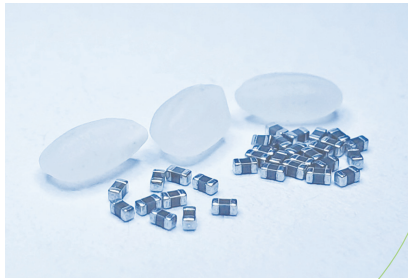
2004

2000

# THE BRIEF HISTORY

In spite of short period of time we have walked,  
we are growing fast.

## MLCC



2018

2019

2020

- 2020. 1Q Progress promotion  
Launches X7R MLCC
- 2020. 2Q Acquires IATF 16949  
Completes AEC-Q200 test on X7R(AEC-Q200 Qualified)
- 2021. 4Q 2<sup>nd</sup> Investment in MLCC Biz
- 2019. 3Q Completes MLCC production line for 3 billion per month
- 2019. 4Q Starts producing the product of MLCC  
(1005, 1uF, X5R, 10V)  
Line-up of 5XR Characteristics MLCCs
- 2018. 4Q 1<sup>st</sup> Investment in MLCC Biz



# MLCC DEVELOPMENT ROADMAP

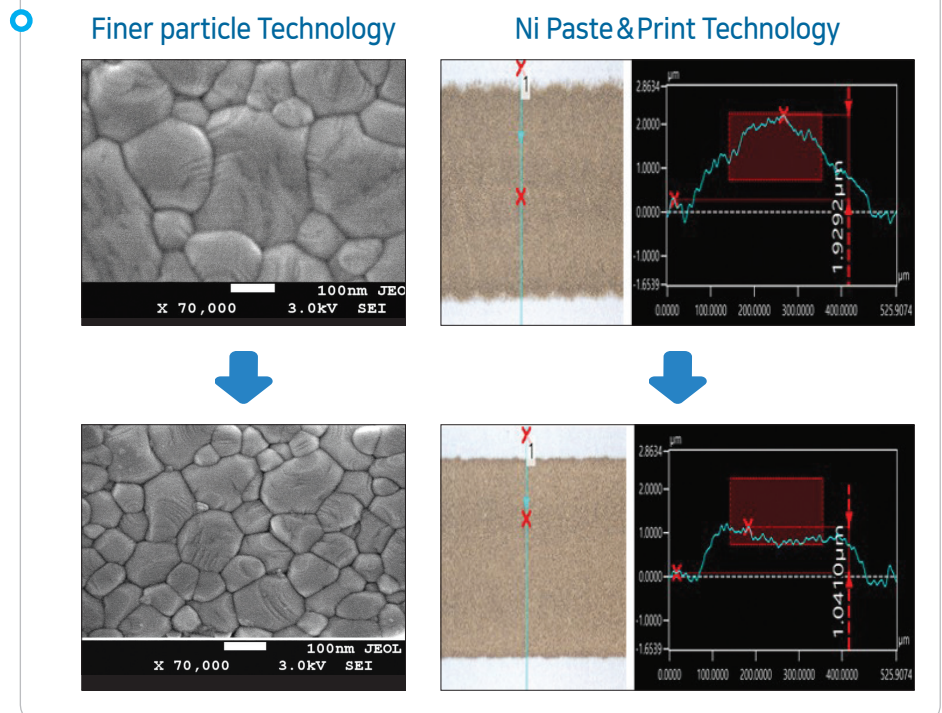
## Technology Roadmap

- High Temperature / High Capacitance / High Voltage

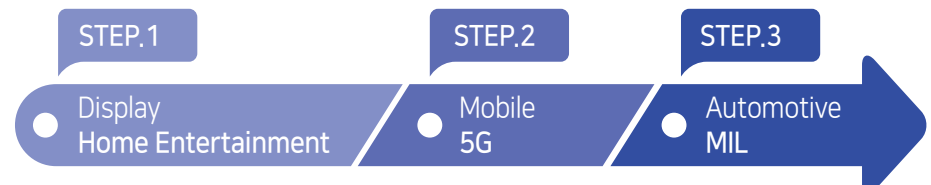
## Products Roadmap

- Expand a variety product size for 0402~3225mm
- Focus on High Reliability MLCCs

## Materials Roadmap



## Applications Roadmap



*We do our best to provide customers with the best quality products.*

# MLCC

## ELECTRICAL CHARACTERISTICS DATA

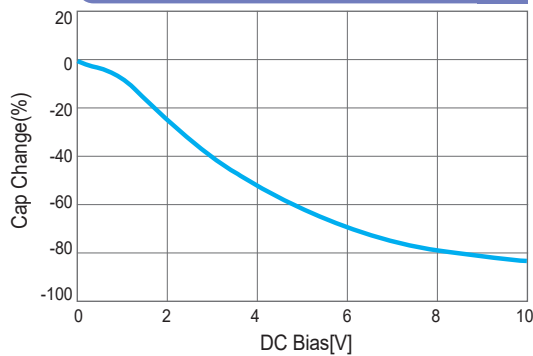
## DC Bias

## AC Voltage

## Frequency

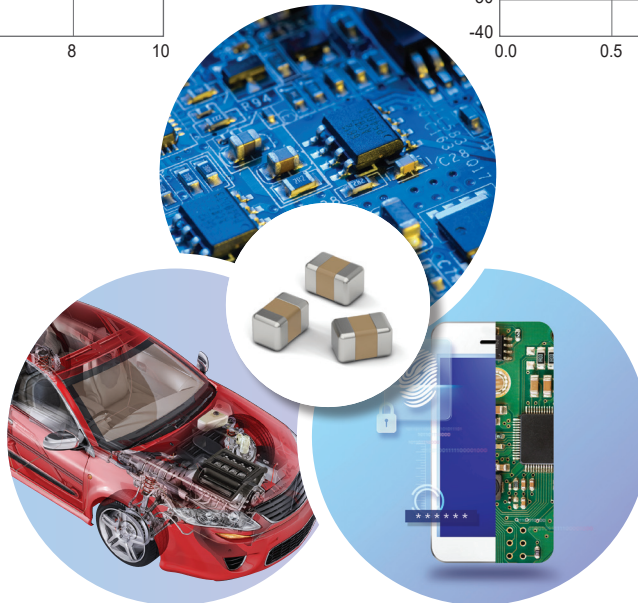
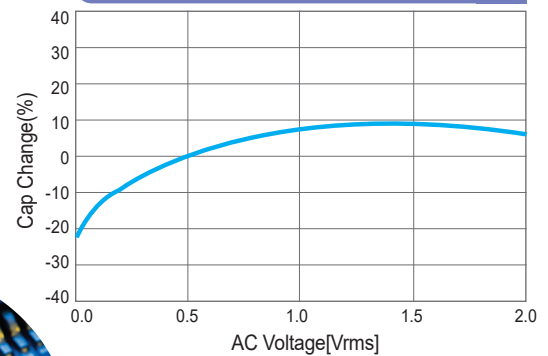
## Temperature Characteristics

## DC Bias Characteristics

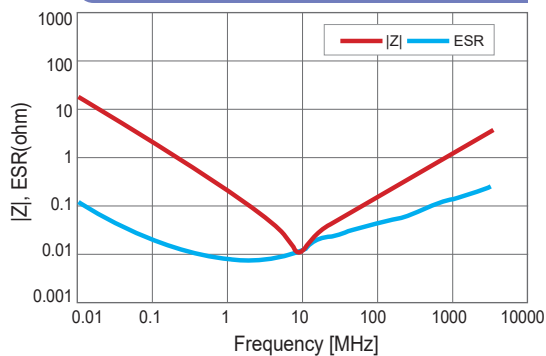


Data Reference  
:1005 X5R 1uF 10V

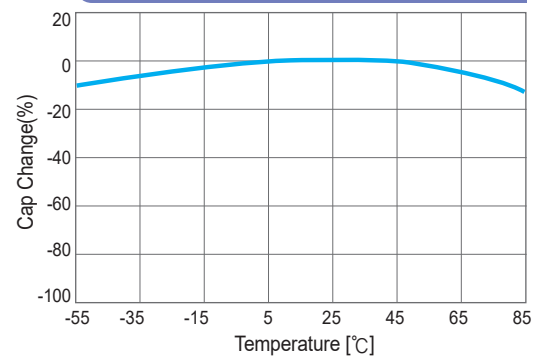
## AC Voltage Characteristics



## Frequency Characteristics



## Temperature Characteristics



**AVATEC provide all Electrical Characteristics Data considering circuit environment for customer.**

# MLCC COMMERCIAL APPLICATIONS

## Mobile & Networking



Smart Phone  
Tablet

Wearable  
Device

Base Station  
Repeater

## IT & Peripherals



PC  
Multifunction Printer

Memory / Storage  
Monitor

## Automotive

(AEC-Q200/IATF16949)

### Power train

- Engine control unit
- Engine cooling fan
- DC/DC-converter
- Transmission control unit
- Pump control unit
- Hybrid Electric Vehicle

### Interior

- Radio & Navigation
- HVAC & climate control
- Body control unit
- Instrumental clusters & displays
- Door control unit
- Seat control



### Chassis & Safety

- Power steering
- Air bag control
- Camera & radar systems
- Breaking unit
- ABS & Traction control
- Telematics

### Exterior

- Lighting
- Roof modules
- Shutter grill
- Power closures
- Wiper control

## Digital Appliances / TV & AV



Air Conditional  
Refrigerator

Washing Machine  
Air Purifier

Microwave Oven  
IH Rice Cooker

Vacuum Cleaner

## Industrial



3D Printer  
Smarter

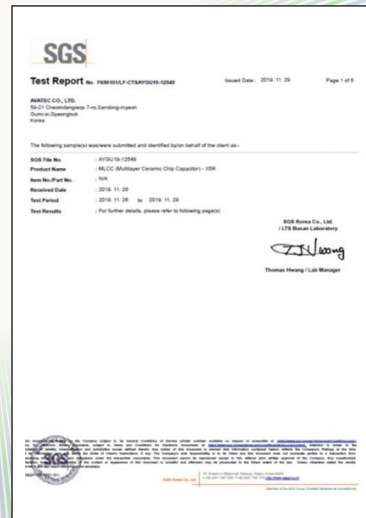
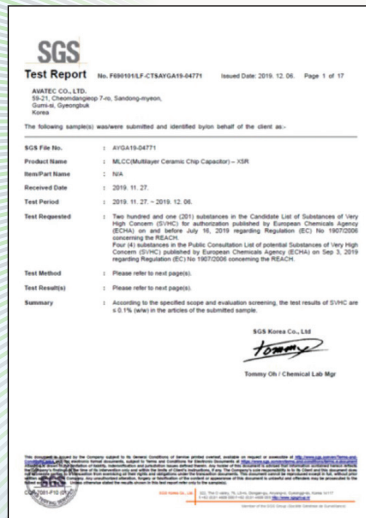
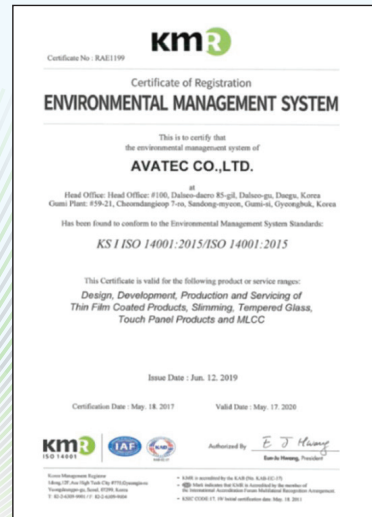
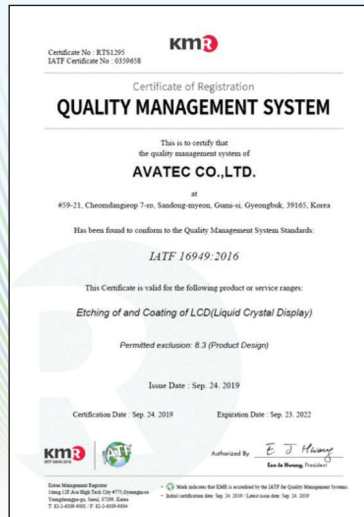
Electronic POS

Heavy Duty Vehicles

Security & Safety



# MLCC QUALITY & ENVIRONMENT SYSTEM



Quality System Certification  
ISO 9001

Environment System Certification  
ISO 14001

AVATEC

Automotive Quality System Certification  
IATF 16949

Harmful substance Certification  
SVHC/REACH, RoHs



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